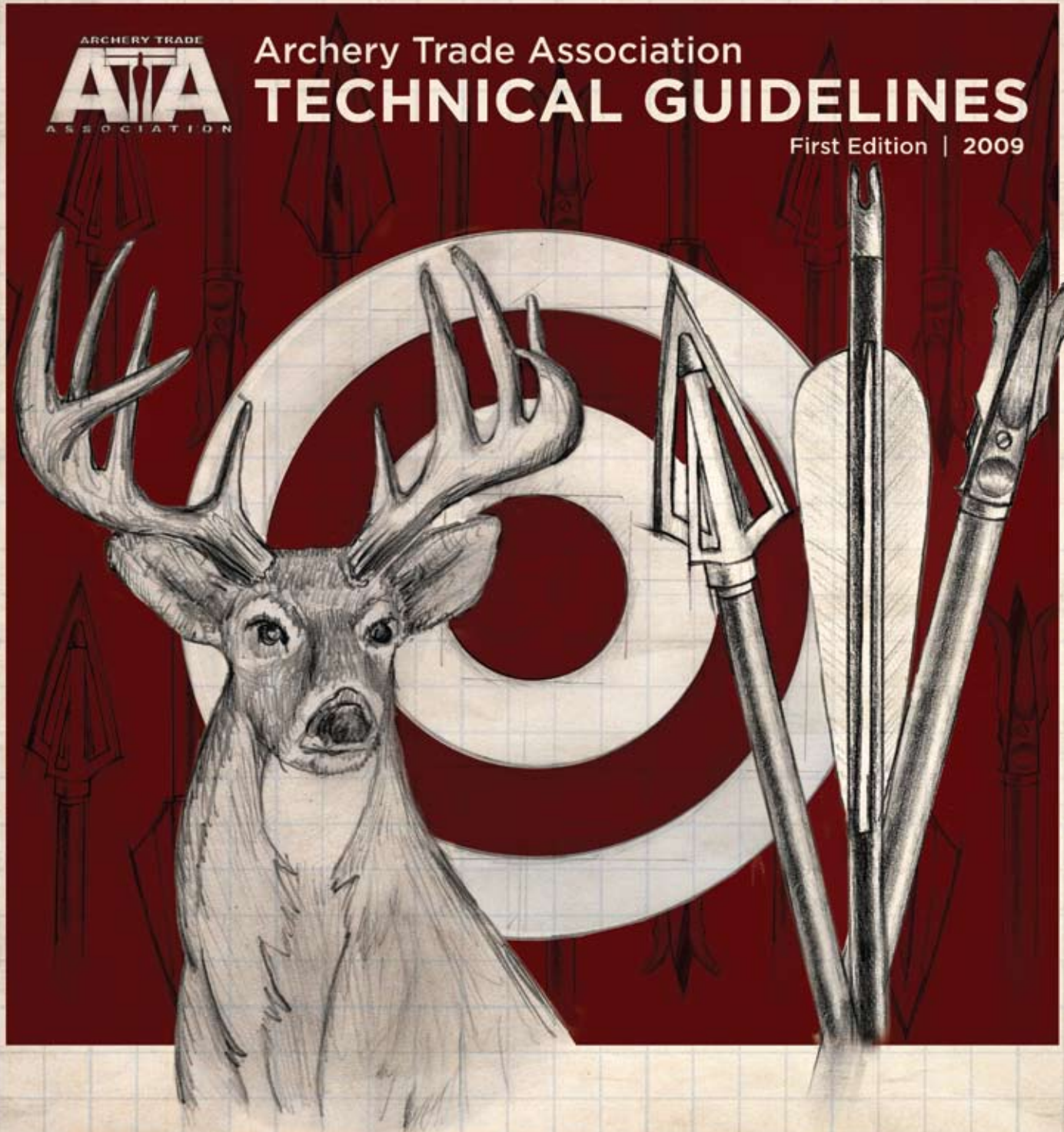

ARCHERY TRADE
ATA
ASSOCIATION
Archery Trade Association
TECHNICAL GUIDELINES
First Edition | 2009

Preface

The Archery Trade Association is a nonprofit, member-driven organization whose purpose is to grow the sports of archery and bowhunting by carrying out goals and programs determined by its Board of Directors. These Board members represent individual companies–or ATA dealer and sales rep committees–but they work together as a team to create programs and policies that benefit the entire archery/bowhunting industry.

One of those benefits is the ***ATA Technical Guidelines***, which provides ATA members a vital tool for generating sales and establishing credibility with archery dealers and their customers. Even as manufacturers compete in the marketplace, they realize it's good business for dealers and consumers to know the equipment they sell and buy has met tough, consistent industry guidelines that don't vary by manufacturer.

Among other things, these guidelines describe how the industry tests, measures and evaluates its products to ensure consistency and compatibility between components. The guidelines also ensure consistency in terminology, definitions, thread dimensions, the distance between mounting holes for sights, and other basic specifications.

Only by working together under the umbrella of the ATA Technical Committee are such guidelines possible. By pooling their years of expertise, these unpaid volunteers provide consistent, well-conceived guidelines that benefit the industry as a whole.

With that in mind, I wish to commend the following individuals and companies, who used their considerable expertise to update or conceive the 22 guidelines found in this manual:

Randy Walk, *ATA Technical Committee Chair, President of Hoyt*
Darik Bollig, *Bear Archery*
Bob Deston, *BCY Fibers*
Chris Deston, *BCY Fibers*
Norb Mullaney, *Bowhunting World*
Jeff Pestrue, *Eastman Outdoors/Gorilla Inc.*
Ken Giles, *Easton*
Dave Gordon, *Gordon Composite*
Jason Fogg, *Hoyt*
Henry Gallops, *Mathews Inc.*
Gary Simonds, *Mathews Inc.*
Jon Simonds, *Mathews Inc.*
David Kronengold, *Precision Shooting Equipment*
Tom Saunders, *Saunders*
John Woller Sr., *Summit Treestands LLC*
Steve Gibbs (deceased), *Sure Loc Archery Products*

– **Jay McAninch,** *ATA President/CEO*
November 2008

Foreword

ATA Technical Guidelines

A Product of History and Teamwork

The 22 essential guidelines found in the ***ATA Technical Guidelines*** manual represent about 50 years of accumulated engineering knowledge and expertise dating to Earl Hoyt, Dick Mauch (Bear Archery), and Chuck Saunders. Although these early manufacturers were business rivals, they wanted archery dealers and consumers to know their archery equipment met tough, consistent industry guidelines that wouldn't vary by manufacturer.

With customers buying from a growing list of manufacturers by the 1950s, modern archery's pioneers realized their industry needed uniformity in basic equipment categories. Eventually, the Archery Manufacturers and Merchants Organization (AMO) created a Technical Committee to set uniformity guidelines. In the early days, AMO members had little difficulty agreeing where to place mounting holes for stabilizers and sights; or determining the proper size and threads for bolt-on attachments or screw-in points and broadheads.

By 1986, however, with the industry and innovations booming from the advent of compound bows, Hoyt, Bear, Precision Shooting Equipment, Easton and other AMO-member companies realized the industry's manufacturing guidelines required more rigorous formality. That's when the AMO's Board of Directors appointed Milwaukee engineer Norb Mullaney chairman of its Technical Committee. Mullaney served in that role for nearly two decades, with his committees establishing unprecedented consistency and exactness for the industry's manufacturing guidelines.

Mullaney stepped down as committee chair in January 2004, and in 2005 the ATA's Technical Committee began work on reviewing the industry's manufacturing guidelines. The review process occurs every three to five years to ensure the guidelines keep pace with archery technology.

The ATA guidelines in this book are the result of this most recent review. The intent of these guidelines isn't to tell manufacturers how to design or build new products. Nor do the guidelines tell archery pros how to fix or fine-tune this equipment. Rather, these guidelines ensure everyone knows how the industry tests, measures and evaluates its products to ensure consistency and compatibility between components. This also means consistency in terminology, definitions, thread dimensions, the distance between mounting holes for sights and other basic specifications.

These guidelines make life easier for manufacturers and customers alike. For instance, customers can buy new accessories for their latest bow–no matter its manufacturer–and know its mounting holes for the sights and stabilizer will be the correct size and in the exact location needed. And when reviewing a bow's performance, customers will be able to compare its many attributes with those of other bows, knowing all were tested using the same specifications.

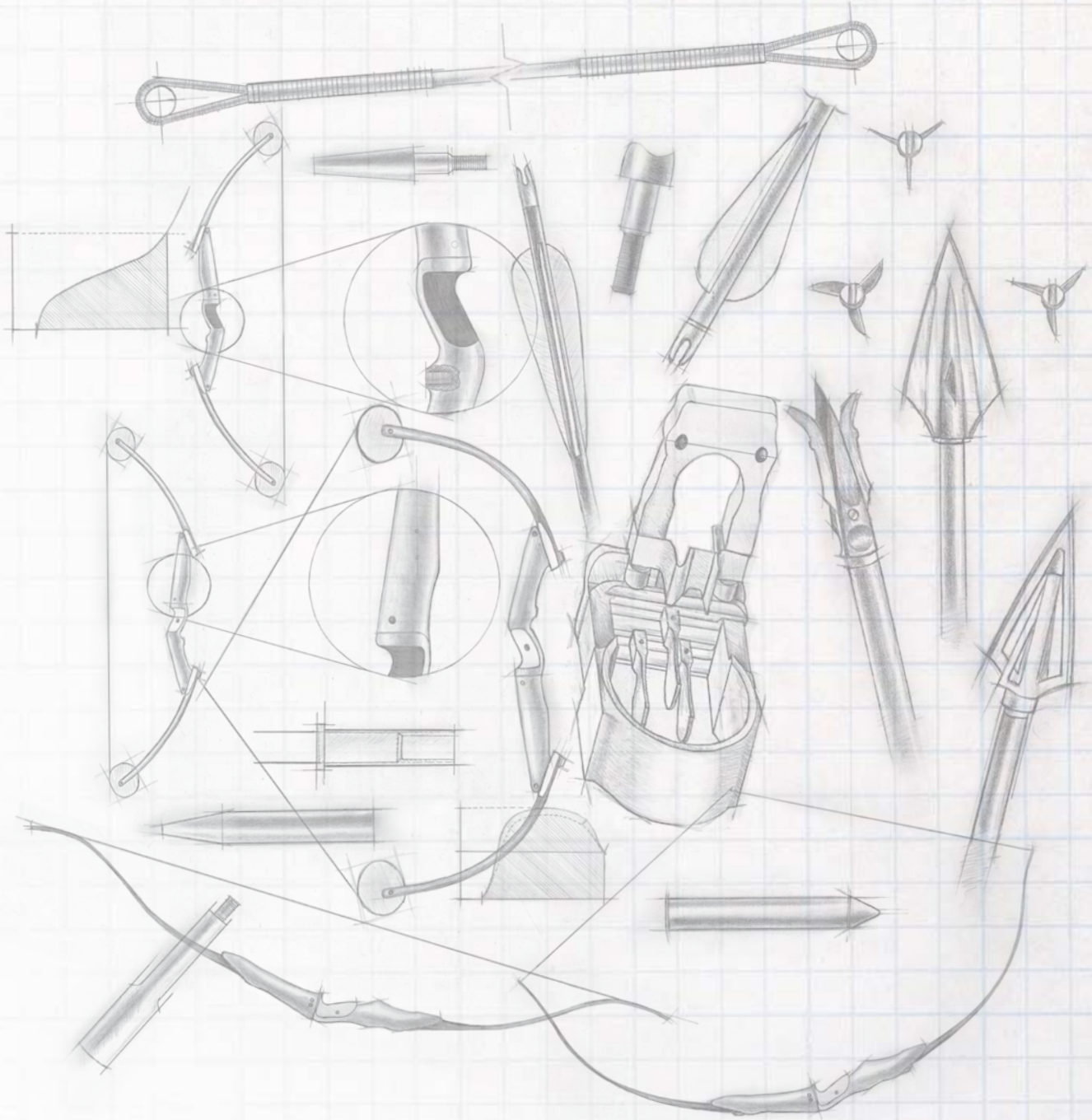
Many of today's 22 ATA guidelines date back to the days of Earl Hoyt and Fred Bear. As technology created better materials and more precise manufacturing processes, the Technical Committee rewrote the guidelines to ensure they remained relevant. Still other guidelines are less than five years old and will likely need revisions in the future. But no matter their age or genesis, the intent of each guideline is to assure customers they're buying products that measure up to tough industry expectations.

None of this would be possible without the work and dedication of the many designers and engineers–past and present–who have served on the industry's technical committees, including Dave Gordon of Gordon Composites, who was Norb Mullaney's long-time vice-chair. These are voluntary positions, but they attract skilled, dedicated professionals who take their work seriously.

In addition, we encourage new people to serve whenever possible because we want a wide range of expertise and input. Serving on the committee is a lot of work, but it keeps all of us abreast of what's going on outside our own companies and fields of expertise.

Keep that in mind as you use this book and follow its guidelines. If you see shortcomings or guidelines that require improvements, please contact one of us by phone, email or in person. We also meet each year before the ATA Trade Show and welcome guests to the meetings, so we hope you'll share your ideas with us as the need arises.

– **Randy Walk,** *Chair, ATA Technical Committee; President, Hoyt*
November 2008



Archery Trade Association

TECHNICAL GUIDELINES

First Edition | 2009

Archery Trade Association (ATA) Technical Guidelines

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BOWS

ARROWS

ACCESSORIES

Guideline for Determining the ATA Force-Draw and Let-Down Curves for Archery Bows

Designation ATA/BOW-101-2008

Summary:

To determine the Force-Draw and Let-Down Curve of an archery bow, the test bow will be mechanically drawn from brace height to full draw while in continuous motion or with continuous load. The force-drawing the bowstring shall be positioned at or near the nocking point location on the bowstring. The device contacting the bowstring shall be a round or radiused section with a radius of ⅛ inch. Then the bow will be let down in continuous motion from full draw to brace height. A scale will be attached to the bowstring at or near the normal nocking point location of the bow. While the bow is being drawn, or let-down, and while in continuous motion, the weight reading of the scale will be recorded at one (1) inch intervals or less. The Force-Draw and Let-Down Curves are plotted on a rectangular coordinate system. The plotted curves can then be used to reveal the energy storage characteristics, Peak Draw Force, Holding Force, draw length, hysteresis, and Percent of Let-Off (if present) of the bow.

1. Scope

1.1 This test method covers the procedure to be used to determine the Force-Draw and Let-Down Curves for archery bows.

1.2 Force-Draw Curves, Let-Down Curves, and the associated graphs provide insight to the bow's design, energy storage capabilities, hysteresis, draw lengths, percent of let-off (if any), and general configuration.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Compound Bow. This Guideline does not provide any warranty, expressed or implied, that a particular Compound Bow is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 (none)

3. Terminology and Definitions

3.1 **Compound Bow:** A type of archery bow that imposes a secondary system of control of the force-draw characteristic on the usual limb geometry control system.

3.2 **Non-Compound Bow:** A type of archery bow consisting of a handle (riser) and two flexible limbs. The limbs are connected to each other solely by the handle and a single bow string, which attaches at, and contacts the limb tips.

3.3 **ATA (Archery Trade Association) Actual Draw Length:** The distance from the bowstring at the nocking point location, while at the bow's full-draw condition, measured to a vertical line through the pivot point of the bow grip, plus 1¾ inches (+ ¼ , - 0 inch).

3.4 **Brace Height:** The dimension in inches from the grip pivot point (low point) of the grip to the nearest side of the bowstring, measured perpendicular to the bowstring, with the bow strung and in the undrawn condition.

3.5 **Draw:** To move the shooting string of a bow from the rest, or braced position, toward the full-drawn position by applying force to the bowstring. Such action causes the bow's limbs to bend and store energy. Moving the string from brace height to the full-draw position corresponds to the draw-cycle, or power-stroke, of a bow.

3.6 **Full-Draw:** The position in a draw cycle of a bow from which the string of the bow is released and the force is applied to the rear of the arrow to commence the arrow launch.

3.7 **Compound Bow Full Draw Condition:** The full-draw condition of a Compound Bow is reached when the force required to draw the bow reaches the Let-Off Force and the Center of Valley of the bow's Force-Draw Curve.

3.8 **Draw Force:** The level of force necessary and coincidental with drawing a bow to a specific position within its draw length.

3.9 **Holding Force:** The force required to retain the bowstring of a drawn bow at a specific draw length.

3.10 **Let-Down Force:** The force required to retain the bowstring of the drawn bow at a specific draw length during the let-down cycle. This force differs from the draw force at the same corresponding draw length by the amount of static hysteresis.
3.11 **Draw Length Pivot Point (DLPP):** The bow's true draw length. The distance at the bow's full-drawn position, measured from the string at the nocking point to a vertical line through the pivot point of the bow grip.
3.12 **Force-Draw Curve:** The graph curve generated by recording the draw force readings of an archery bow at one (1) inch intervals or less, taken while the bow is being drawn from brace height through the Peak Draw Force and to the Center of Valley (if present). This curve is used to reveal the energy storage characteristics, Peak Draw Force, Holding Force, draw length, and Percent of Let-Off (if present) of the bow.
3.13 **Let-Down Curve:** The graph curve generated by recording the force readings of an archery bow at one (1) inch intervals or less, taken while the bow is being let down (relaxed) from the bow's full-drawn position to the bow's brace height or static position. This curve is used to reveal the static hysteresis characteristics of the bow.
3.14 **Let-Off:** The difference between the peak or maximum draw force reached during the draw cycle of a compound bow, and the lowest level of draw force reached subsequent to that peak. It is most frequently expressed as a percentage of the peak force, and is then referred to as the percent of let-off.
3.15 **Center of Valley:** The lowest points on a Force-Draw Curve of a Compound Bow where the Let-Off Force reaches its minimum.
3.16 **Peak Draw Force:** The maximum force reached when drawing a bow. For Non-Compound Bows, the Peak Draw Force is usually reached at the full-draw condition. For Compound Bows the Peak Draw Force is reached part way through the draw cycle.
3.17 **Static Hysteresis:** The difference in pounds measured under static conditions, between the draw force and the let-down force for any given draw length, integrated over the full power-stroke of the bow. Static hysteresis is expressed as foot-pounds of energy.
3.18 **Stored Energy:** The energy required to draw a bow from brace height to full-draw. The pounds measured, under static conditions, of the draw-force curve for any given draw length, integrated over the full power-stroke of the bow. Stored Energy is expressed as foot pounds of energy.

4. Significance and Use

4.1 This test method establishes the procedures to be used to measure the force necessary to draw an archery bow from brace height to the full-draw position, and the holding force necessary to retain the bowstring when the bow is let down from full draw to brace height. The force values taken at increments of draw length (usually one (1) inch) are then plotted versus draw length using rectangular coordinates. The resulting curves are known as the Force-Draw Curve and the Let-Down Curve.
4.2 The Force-Draw Curve is used to determine the energy the limbs of the bow store when it is drawn. The area under the curve between the positions of brace height and full draw can be expressed as stored energy.
4.3 The Let-Down Curve is used to determine the energy required to restrain the bowstring as the bow is let down from full draw to brace height. The energy represented by the area under the curve can be subtracted from the stored energy in order to establish the static hysteresis of the bow system.

5. Apparatus

5.1 **Force-Draw Machine:** A device capable of holding the bow with the restraining force located at the low point of the grip while the bowstring is being drawn from brace height to full draw. The force-drawing the bowstring shall be positioned at or near the nocking point location on the bowstring. The device contacting the bowstring shall be a round or radiused section with a radius of ⅛ inch. The system used to draw the bowstring shall be capable of a smooth and steady movement, and must maintain continuous unrelaxed force so that no hysteresis effect is experience during the draw cycle.
5.2 **Force Reading Device:** A scale or load cell shall be interposed between the bowstring and the cable or rod used to draw the bowstring so the force reading is direct and not contaminated in any way. The force measuring device shall have a resolution of ±¼ pound.
A spring scale with adequate resolution may be capable of measuring the draw force for Standard Bows, but will provide questionable values when used for compound bows, which typically let off from their peak weight towards the end of the draw cycle.
5.3 **Draw Length Scale:** A graduated linear scale of commercial accuracy and at least 36 inches in length shall be used to measure the draw length. It shall be indexed at a point 1¾ inches forward of the low point, or pivot point, of the grip.

6. Measurement Method

6.1 Adjust the bow to the desired Peak Draw Force and draw length. On most Standard Bows it will not be possible to adjust the draw force and/or the draw length. However, on a Standard Bow, the bowstring length should be twisted or untwisted to provide the recommended brace height.

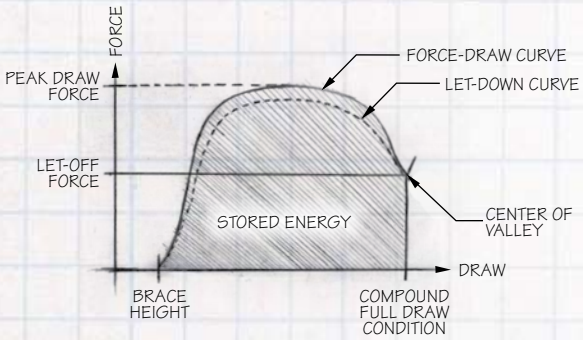
6.2 To derive data for the Force-Draw Curve, mount the bow in the force-draw device with the low or pivot point of the grip engaging the retaining surface of the device. Set the index of the linear scale 1¾ inches forward of the low point of the grip. Attach the drawing device to the bowstring at or near the nocking point location of the bowstring, position the bowstring at brace height, and draw the bow to the first incremental value of draw length. Record the force without relaxing the tension to eliminate any effect of hysteresis. Continue to draw the bowstring, recording the force for each one (1) inch increment of draw length until reaching one increment beyond the desired full-draw position. The recorded data will be the basis of the Force-Draw Curve.

6.3 To obtain data for the Let-Down Curve, with the bow drawn one increment past the full-drawn condition, relax the force retaining the bowstring until it returns to the next increment down and record the corresponding force. It will be somewhat lower than the force recorded when the bow was drawn to the same position. The difference is the level of static hysteresis present. Continue to let down the bowstring, recording the force readings at the identical increments of draw length used when the Force-Draw Curve was established. The recorded force levels and the corresponding draw length values are the data for the Let-Down Curve.

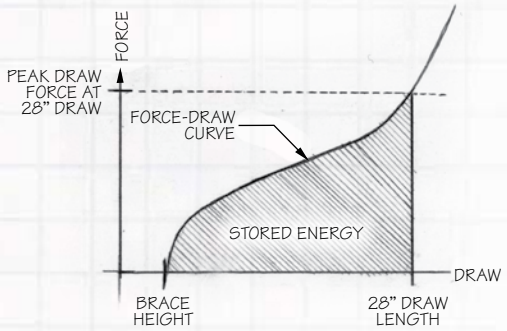
6.4 The Force-Draw and Let-Down Curves are plotted on rectangular coordinate scales with the force values as the ordinate and the draw length values as the abscissa. It is common practice to superimpose the Let-Down Curve on the Force-Draw Curve. The area under the curves may be determined by any acceptable method, and it is usually expressed in units of stored energy, for example, foot-pounds.

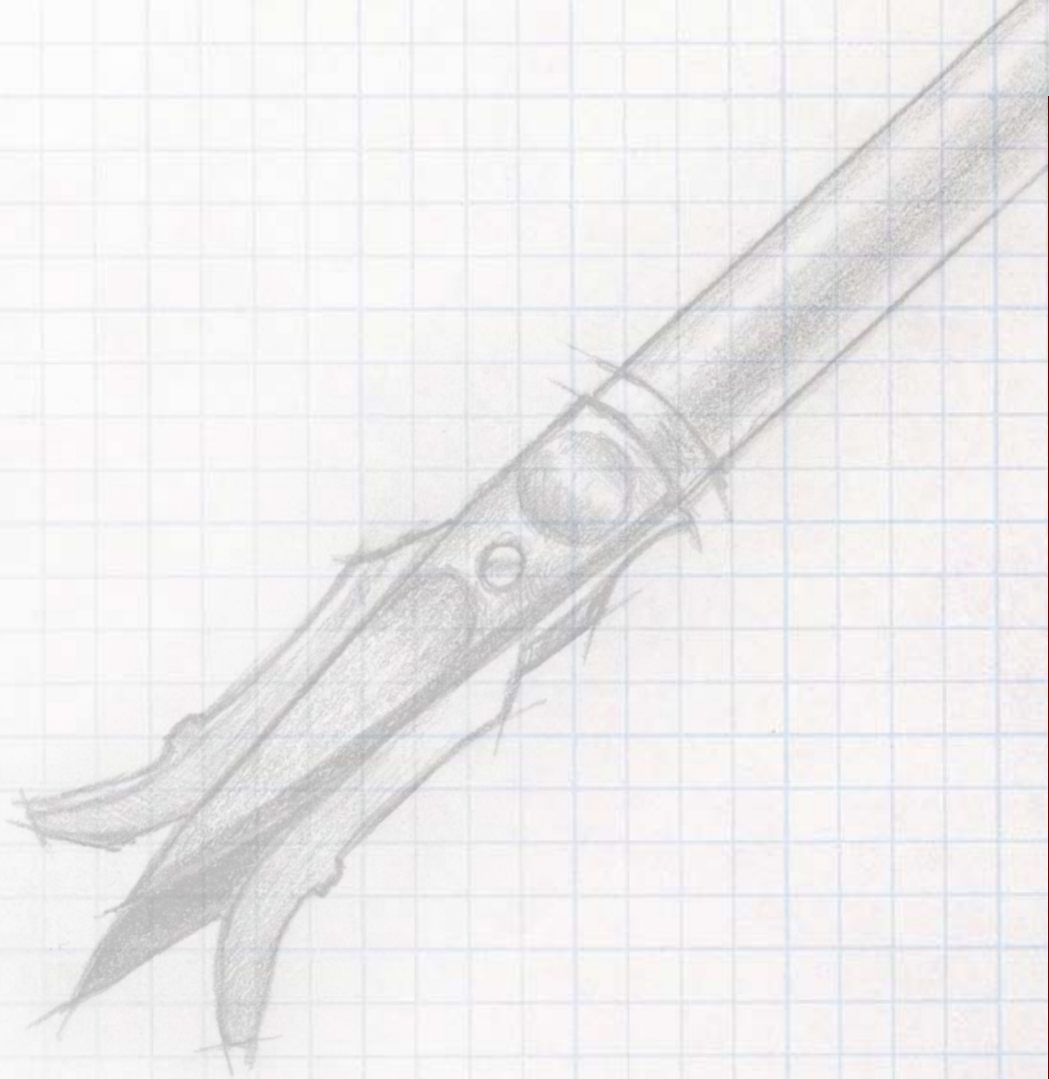
7. Drawings

7.1 Compound Bow typical Force-Draw Curve:



7.2 Non-Compound bow typical Force-Draw Curve:





Guideline for Determining the ATA Actual Draw Length of Compound Archery Bows

Designation: ATA/BOW-102-2008

Summary:

To accurately and correctly measure the draw length of a Compound Bow, the bow should be drawn to its full-draw condition and held at the bow's Center of Valley. The force-drawing the bowstring shall be positioned at or near the nocking point location on the bowstring. The device contacting the bowstring shall be a round or radiused section with a radius of ⅛ inch. While held at this position, measure from the string nocking point location to a vertical line through the pivot point of the bow grip and then add 1¾ inches to the measurement. This is the Compound Bow's ATA Actual Draw Length. ATA Technical Guideline ATA/BOW-101-2008 (Guideline for Determining the Force-Draw and Let-Down Curves for Archery Bows) details the preferred method to determine the bow's draw length.

1. Scope

1.1 This guideline covers the method used to determine a Compound Bow's ATA Actual Draw Length.

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Compound Bow. This guideline does not provide any warranty, expressed or implied, that a particular Compound Bow is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 ATA Technical Guideline for Determining the Force-Draw and Let-Down Curves for Archery Bows ***(ATA/BOW-101-2008).***

3. Terminology and Definitions

3.1 **Compound Bow:** A type of Archery bow that imposes a secondary system of control of the force-draw characteristic on the usual limb geometry control system.

3.2 **ATA (Archery Trade Association) Actual Draw Length:** The distance from the bowstring at the nocking point location while at the bow's full-draw condition, measured to a vertical line through the pivot point of the bow grip, plus 1¾ inches (+ ¼ , -0 inch).

3.3 **Draw-Length Pivot Point (DLPP):** The bow's true draw length. This is the distance at the bow's full-drawn position measured from the string at the nocking point to a vertical line through the pivot point of the bow grip.

3.4 **Full-Draw:** The position in a draw cycle of a bow from which the string of the bow is released and the force is applied to the rear of the arrow to commence the arrow launch.

3.5 **Center of Valley:** The lowest points on a force-draw curve of a Compound Bow where the Let-Off Force reaches its minimum.

3.6 **Compound Bow Full-Draw Condition:** The full-draw condition of a compound bow is reached when the force required to draw the bow reaches the let-off force and the Center of Valley of the bow's Force-Draw Curve.

3.7 **Let-Off:** The difference between the peak or maximum draw force reached during the draw cycle of a Compound Bow, and the lowest level of draw force reached subsequent to that peak. It is most frequently expressed as a percentage of the peak force, and is then referred to as percent of let-off.

3.8 **Peak Draw Force:** The maximum force reached when drawing a bow. For Non-Compound Bows, the Peak Draw Force is usually reached at the full-draw condition. For Compound Bows, the Peak Draw Force is reached part way through the draw cycle.

4. Significance and Use

4.1 This guideline will be used to determine an Archery Bow's ATA Actual Draw Length.

5. Measurement Method

5.1 The preferred method of measuring a Compound Bow's draw length is to use the ATA Technical Guideline for Determining the Force-Draw and Let-Off Curves of Archery Bows ***(ATA/BOW-101-2008)***. This guideline provides both a means and device suitable to accurately perform the required steps to measure draw length.

5.2 Draw the Compound Bow to its full-draw condition and hold the bow steady at the bow's Center of Valley.

5.3 While holding the Compound Bow at its full-draw condition, measure the distance from the nocking point to a vertical line through the pivot point of the bow grip (DLPP) and record the measurement.

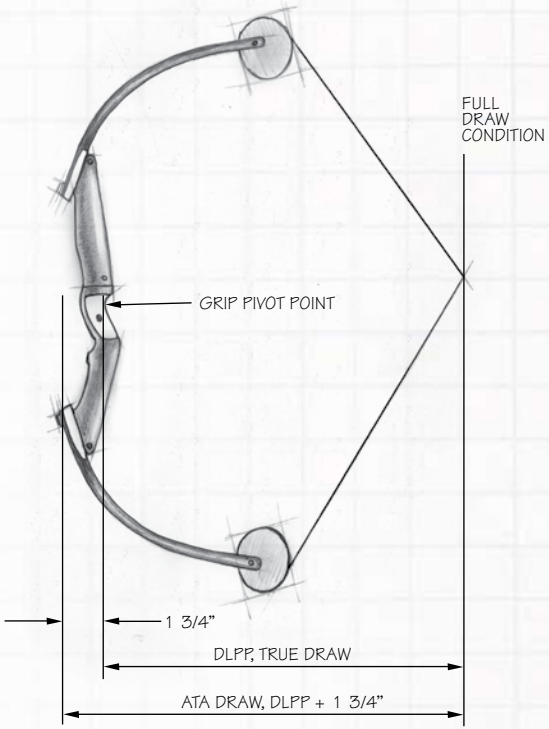
5.4 Add 1¾ inches to the recorded measurement. This is the Compound Bow's ATA Actual Draw Length.

5.5 The Compound Bow manufacturer's specified draw length should be marked to be within a tolerance of (+ ¼,-0 inch) when measured to Center of Valley.

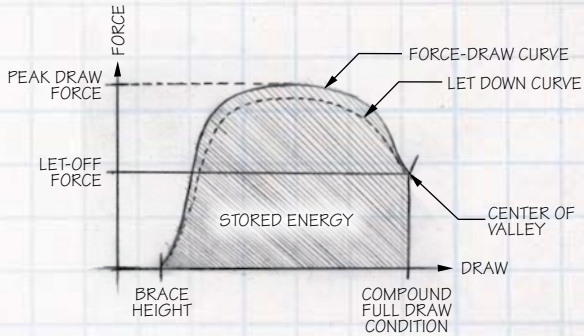
Example: For a Compound Bow, where the ATA Actual Draw Length of the bow is measured at or between 30 inches and 30¼ inches, the manufacturer's specified draw length should be marked at 30 inches.

6. Drawing

6.1 Compound Bow draw length measurements:



6.2 Compound Bow typical Force-Draw Curve:



Guideline for Determining ATA Percent of Let-Off for Archery Bows

Designation: ATA/BOW-103-2008

Summary:

To determine the Let-Off and Let-Off Percentage of a Compound Bow, determine and plot the Force-Draw Curve of the bow. Identify and record the maximum Peak Draw Force (peak bow weight) of the Force-Draw Curve and the minimum or lowest Let-Down Force at the Center of Valley of the Force-Draw Curve. Once the Peak Draw Force and the Let-Down Force has been determined, make the following calculation: *Percent of Let-Off = 100 x (Peak Draw Force – Let-Down Force) / Peak Draw Force.* ATA Guideline ATA/BOW-101-2008 (Guideline for determining the Force-Draw and Let-Down Curves for archery bows) details the preferred method to collect the required data.

1. Scope

1.1 This test method establishes the procedure to be used to determine the ATA Percent of Let-Off for Archery Bows.

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Compound Bow. This Guideline does not provide any warranty, expressed or implied, that a particular Compound Bow is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 ATA Technical Guideline for Determining the Force-Draw and Let-Down Curves for Archery Bows ***(ATA/BOW-101-2008).***

3. Terminology and Definitions

3.1 **Compound Bow:** A type of Archery bow that imposes a secondary system of control of the force-draw characteristic on the usual limb geometry control system.

3.2 **Non-Compound Bow:** A type of archery bow consisting of a handle (riser) and two flexible limbs. The limbs are connected to each other solely by the handle and a single bowstring which is attached at, and contacts the limb tips.

3.3 **ATA (Archery Trade Association) Actual Draw Length:** The distance from the bowstring at the nocking point location, while at the bow's full-draw condition, measured to a vertical line through the pivot point of the bow grip, plus 1¾ inches (+¼, -0 inch).

3.4 **Brace Height:** The dimension in inches from the grip pivot point (low point) of the grip to the nearest side of the bowstring, measured perpendicular to the bowstring, with the bow strung and in the undrawn condition.

3.5 **Draw:** To move the shooting string of a bow from the rest, or braced position, toward the full-drawn position by applying force to the bowstring. Such action causes the bow limbs to bend and store energy. Moving the string from brace height to the full-draw position corresponds to the draw-cycle, or power-stroke, of a bow.

3.6 **Full-Draw:** The position in a draw cycle of a bow from which the string of the bow is released and the force is applied to the rear of the arrow to commence the arrow launch.

3.7 **Compound Bow Full-Draw Condition:** The full-draw condition of a Compound Bow is reached when the force required to draw the bow reaches the Let-Off Force and the Center of Valley of the bow's Force-Draw Curve.

3.8 **Draw Force:** That level of force necessary and coincidental with drawing a bow to a specific position within its draw length.

3.9 **Holding Force:** The force required to retain the bowstring of a drawn bow at a specific draw length.

3.10 **Let-Down Force:** The force required to retain the bowstring of the drawn bow at a specific draw length during the Let-Down Cycle. This force differs from the draw force at the same corresponding draw length by the amount of static hysteresis.

3.11 **Draw Length Pivot Point (DLPP):** The bow's true draw length. This is the distance at the bow's full-drawn position measured from the string at the nocking point to a vertical line through the pivot point of the bow grip.

3.12 **Force-Draw Curve:** The graph curve generated by recording the draw force readings of an archery bow at one (1) inch intervals or less, taken while the bow is being drawn from brace height through the Peak Draw Force and to the Center of Valley (if present). This curve is used to reveal the energy storage characteristics, Peak Draw Force, Holding Force, draw length, and Percent of Let-Off (if present) of the bow.

3.13 **Let-Down Curve:** The graph curve generated by recording the force readings of an archery bow at one (1) inch intervals or less, taken while the bow is being let down (relaxed) from the bow's full-drawn position to the bow's brace height or static position. This curve is used to reveal the bow's static hysteresis characteristics.

3.14 **Let-Off:** The difference between the peak or maximum draw force reached during the draw cycle of a compound bow, and the lowest level of draw force reached subsequent to that peak. It is most frequently expressed as a percentage of the peak force and is then referred to as percent of let-off.

3.15 **Center of Valley:** The lowest points on a force-draw curve of a compound bow where the let-off force reaches its minimum.

3.16 **Peak Draw Force:** The maximum force reached when drawing a bow. For Non-Compound Bows, the Peak Draw Force is usually reached at the full-draw condition. For Compound Bows the Peak Draw Force is reached part way through the draw cycle.

3.17 **Static Hysteresis:** The difference in pounds measured under static conditions, between the draw force and the let-down force for any given draw length, integrated over the full power-stroke of the bow. Static hysteresis is expressed as foot-pounds of energy.

4. Significance and Use

4.1 It is recognized that certain designs of compound bow cams used in archery bows may cause variations in the Percent of Let-Off with change in draw length, draw weight, or both. This is true particularly with the style of cam that achieves draw length adjustment by effectively altering the length of the shooting string by any of several methods. In this case, the mid-draw length and the maximum draw weight obtainable (but not to exceed the maximum rated weight of the bow) shall be used to determine the ATA Percent of Let-Off for the bow in question.

5. Measurement Method

5.1 The preferred method of measuring and calculating a Compound Bow's Percent of Let-Off is to use the ATA Technical Guideline for Determining the Force-Draw and Let-Down Curves for Archery Bows (ATA/BOW-101-2008). This guideline provides both a means and a device suitable to accurately perform the required steps to measure the Percent of Let-Off.

5.2 The bow shall be rated for percent of let-off with the draw length set in mid-range (if adjustable) and the peak draw weight adjusted to the maximum rated value for that specific draw length.

5.3 Determine and plot the Force-Draw Curve for the given bow.

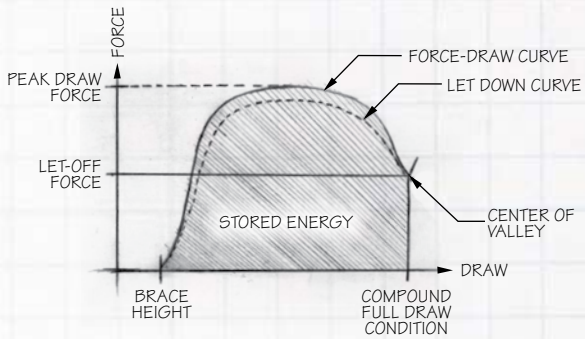
5.4 The reduction due to hysteresis shall not be considered in the determination of the force value at either peak or let-off condition when determining the ATA Percent of Let-Off.

5.5 From the Force-Draw Curve, identify and record both the Peak Draw Force and the Let-Off Force at the Center of Valley. The Peak Draw Force is the maximum force obtained during the draw cycle. The Let-Off Force is the lowest force read at the Center of Valley.
It is very important to not allow the bow to relax or slip into a Let-Down condition while recording the Let-Off Force. By doing so, the let-off measurement will be taken from the Let-Down Curve rather than from the Force-Draw Curve and the effects of hysteresis will be present, distorting the calculated Let-Off.

5.6 The percent of let-off shall be calculated using the following formula:
Percent Let-Off = 100 x (Peak Draw Force − Let-Off Force) / Peak Draw Force

6. Drawings

6.1 Compound Force-Draw Curve:



Guideline for Determining the ATA Rating Velocity of Compound Archery Bows

Designation: ATA/BOW-104-2008

Summary:

To determine and/or test the rating velocity of a Compound Archery Bow, the bow must be shot from a mechanical shooting machine. The Compound Bow's Peak Draw Force (weight) will be set at either 50 pounds, 60 pounds, or 70 pounds (± 0.1 pounds). The Compound Bow will be drawn to and shot at the ATA Actual Draw Length of 30 inches (+ ¼, -0 inches). The Compound Bow should be shot from the Center of Valley at the lowest let-off position so long as this position falls within the ATA 30-inch draw length guideline of + ¼, -0 inch. Test arrows must weigh 5 grains per pound of total bow Peak Draw Force (± 0.5 grains on total arrow weight). ***Example: A 50-pound bow requires the use of a 250-grain arrow (± 0.5 grains), a 60-pound bow requires the use of a 300-grain arrow (± 0.5 grains), and a 70-pound bow requires the use of a 350-grain arrow (±0.5 grains).*** A minimum of five (5) shots for each test must be performed. Test-shot velocities will then be averaged to determine the ATA Rating Velocity of the Compound Bow.

1. Scope

1.1 This guideline covers the testing technique and method used to determine the ATA Rating Velocity of a Compound Archery Bow.

1.2 This guideline will provide only a certification of performance; that is, the velocities at which a given Compound Bow will launch arrows of specified weights under standard conditions.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Compound B ow or any particular arrow or arrow shaft. This Guideline does not provide any warranty, expressed or implied, that a particular Compound Bow, arrow, or arrow shaft is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 (none)

3. Terminology and Definitions

3.1 **Compound Bow:** A type of Archery bow that imposes a secondary system of control of the force-draw characteristic on the usual limb geometry control system.

3.2 **ATA (Archery Trade Association) Actual Draw Length:** The distance from the bowstring at the nocking point location, while at the bow's full-draw condition, measured to a vertical line through the pivot point of the bow grip, plus 1¾ inches (+ ¼, - 0 inch).

3.3 **Draw:** To move the shooting string of a bow from the rest, or braced position, toward the full-drawn position by applying force to the bowstring. Such action causes the bow's limbs to bend and store energy. Moving the string from brace height to the full-draw position corresponds to the draw-cycle, or power-stroke of a bow.

3.4 **Full-Draw:** The position in a draw cycle of a bow from which the string of the bow is released and the force is applied to the rear of the arrow to commence the arrow launch.

3.5 **Compound Bow Full-Draw Condition:** The full-draw condition of a compound bow is reached when the force required to draw the bow reaches the let-off force and the Center of Valley of the bow's Force-Draw Curve.

3.6 **Draw Force:** That level of force necessary and coincidental with drawing a bow to a specific position within its draw length.

3.7 **Draw Length Pivot Point (DLPP):** The bow's true draw length. This is the distance at the bow's full-drawn position measured from the string at the nocking point to a vertical line through the pivot point of the bow grip.

3.8 **Force-Draw Curve:** The graph curve generated by recording the draw-force readings of an archery bow at one (1) inch intervals or less, taken while the bow is being drawn from brace height through the Peak Draw Force and to the Center of Valley (if present). This curve is used to reveal the energy storage characteristics, Peak Draw Force, Holding Force, draw length, and percent of let-off (if present) of the bow.

3.9 **Let-Off:** The difference between the peak or maximum draw force reached during the draw cycle of a compound bow, and the lowest level of draw force reached subsequent to that peak. It is most frequently expressed as a percentage of the peak force and is then referred to as percent of let-off.

3.10 **Center of Valley:** The lowest points on a force-draw curve of a compound bow where the let-off force reaches its minimum.

3.11 **Peak Draw Force:** The maximum force reached when drawing a bow. For Non-Compound bows, the Peak Draw Force is usually reached at the full-draw condition. For compound bows the Peak Draw Force is reached part way through the draw cycle.

3.12 **ATA Compound Bow Rating Velocity:** The average velocity of the initial velocities of an arrow weighing 5 grains per pound of the bow's Peak Draw Force (weight), shot 5 times from the compound bow at either 50 pounds, 60 pounds, or 70 pounds and at 30 inches ATA Draw length (+ ¼, -0 inches).

3.13 **Shooting Machine:** A device equipped with a mechanical release that secures a bow and releases an arrow to obtain highly repeatable shooting results for various testing purposes.

4. Significance and Use

4.1 This guideline will be used to determine an ATA Rating Velocity of a Compound Archery Bow.

5. Measurement Method

5.1 For Compound Bows with adjustable draw force, adjust peak or maximum draw force to desired peak weight of either 50 pounds, 60 pounds, or 70 pounds (± 0.1 pounds). The Center of Valley of the Force-Draw Curve (lowest holding force) on compound bows shall be located at ATA Actual Draw Length of 30 inches (+ ¼, - 0 inches).

5.2 Select the test arrows of a shaft, material size, and stiffness to match the specified test bow's Peak Draw Force and draw length, and that will meet the 5 grains per pound of peak draw weight requirement (± 0.5 grain on total arrow weight). The test arrows do not need to be fletched.

5.3 Compound bows should be tested and rated as manufactured, and the condition of the bowstring should include all manufacturer's added-on devices (such as string dampers, etc.) as well as, at a minimum, a nocking point or D-loop for properly attaching the arrow to the bowstring.

5.4 Mount the compound bow in a shooting machine with a mechanical release and draw the bow to its full-drawn condition. Draw length should be set at ATA Draw Length of 30 inches (+ ¼, - 0 inches). Adjust the shooting machine draw length as close as possible to match the test bow's specific center of valley while keeping within the draw length specification of 30 inches (+ ¼, - 0 inches).

5.5 Use an appropriate gate chronograph. The chronograph shall have a precision of 1 μs (one microsecond) and an accuracy of 2 μs (two microseconds). The chronograph's triggering device shall be of either the photoelectric or conductive screen types. The triggering device shall be spaced at a span dictated by the timing circuit requirements to an accuracy of ± .010 inches.

5.6 Radar based, bow-mounted type Hall-effect, and single-gate chronographs are not acceptable for evaluating Compound Bows.

5.7 The entrance gate of the chronograph shall be set at 36 inches (± 1.0 inch) from the pivot point of the bow handle mounted on the shooting machine.

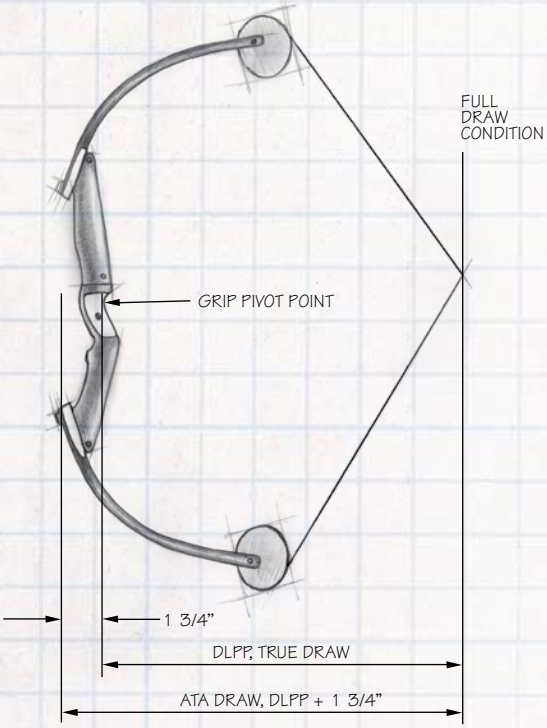
5.8 Using the shooting machine, shoot the appropriate test arrows from the bow through the chronograph.

5.9 Chronograph and record a minimum of five shots for each test arrow. The velocity values of all shots for a given test arrow must fall within a range of 2 feet per second.

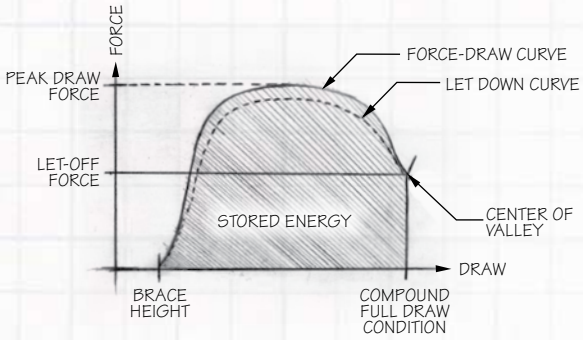
5.10 Using the test arrows' recorded velocities, obtain an arrow velocity average. This average velocity is the ATA Rating Velocity of the specific Compound Bow tested.

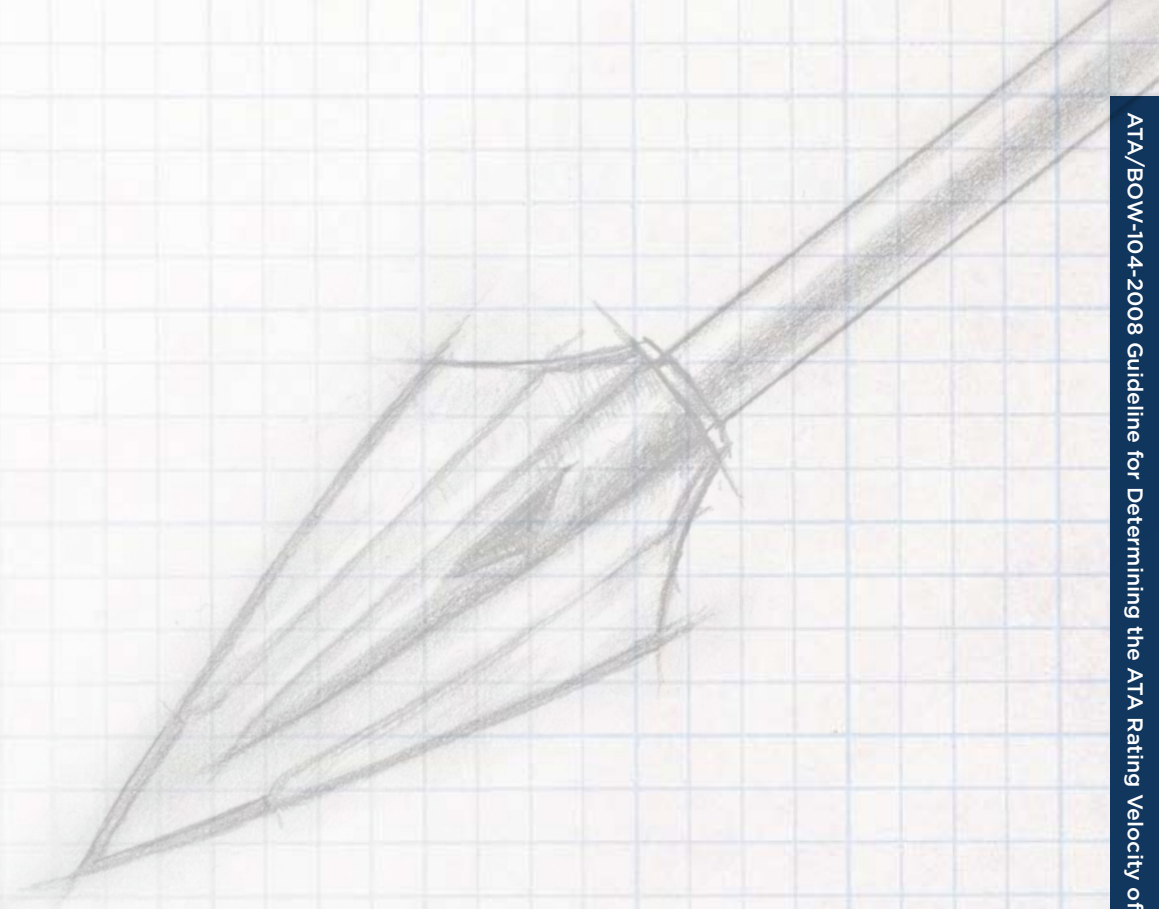
6. Drawings

6.1 Compound Bow:



6.2 Compound bow Force-Draw Curve:





Guideline for Determining the ATA Rating Velocity of Intermediate Compound Archery Bows

Designation: ATA/BOW-105-2008

Summary:

To determine and/or test the rating velocity of an Intermediate Compound Archery Bow, the bow must be shot from a mechanical shooting machine. The Intermediate Compound Bow's Peak Draw Force (weight) will be set at either 40 pounds or 50 pounds (± 0.1 pounds). The Intermediate Compound Bow will be drawn to and shot at the ATA Draw Length of 28 inches (+ ¼, - 0 inches). The Intermediate Compound Bow should be shot from the Center of Valley at the lowest let-off position so long as this position falls within the ATA 28-inch draw length guideline of + ¼, - 0 inch. Test arrows for all bow Peak Draw-Force settings (weights) must weigh 5 grains per pound of peak draw weight (± 0.5 grains). ***Example: A 40-pound bow requires the use of a 200-grain arrow (± 0.5 grains), and a 50-pound bow requires the use of a 250-grain arrow (±0.5 grains).*** A minimum of five (5) shots for each test must be performed. Test shot velocities will then be averaged to determine the Rating Velocity of the Intermediate Compound Bow.

1. Scope

1.1 This guideline covers the testing technique and method used to determine the ATA Rating Velocity of an Intermediate Compound Archery Bow.

1.2 This guideline will provide only a certification of performance; that is, the velocities at which a given Intermediate Compound Bow will launch arrows of a specified weight under standard conditions.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular compound bow, arrow, or arrow shaft. This Guideline does not provide any warranty, expressed or implied, that a particular compound bow, arrow, or arrow shaft is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Terminology and Definitions

2.1 **Compound Bow:** A type of Archery bow that imposes a secondary system of control of the force-draw characteristic on the usual limb geometry control system.

2.2 **Intermediate Compound Bow:** Compound bow in that the designed model has a maximum ATA Specified Draw Length of 28 inches and a maximum Peak Draw Force of 50 pounds.

2.3 **ATA (Archery Trade Association) Actual Draw Length:** The distance from the bow's string at the nocking point location, while at the bow's full-draw condition, measured to a vertical line through the pivot point of the bow grip, plus 1¾ inches (+ ¼, - 0 inch).

2.4 **Draw:** To move the shooting string of a bow from the rest, or braced position, toward the full-drawn position by applying force to the bowstring. Such action causes the bow's limbs to bend and store energy. Moving the string from brace height to the full-draw position corresponds to the draw cycle, or power-stroke of a bow.

2.5 **Full-Draw:** The position in a draw cycle of a bow from which the string of the bow is released and the force is applied to the rear of the arrow to commence the arrow launch.

2.6 **Compound Bow Full-Draw Condition:** The full-draw condition of a compound bow is reached when the force required to draw the bow reaches the let-off force and the Center of Valley of the bow's Force-Draw Curve.

2.7 **Draw Force:** That level of force necessary and coincidental with drawing a bow to a specific position within its draw length.

2.8 **Draw Length Pivot Point (DLPP):** The bow's true draw length. The distance at the bow's full-drawn position measured from the string at the nocking point to a vertical line through the pivot point of the bow grip.

2.9 **Force-Draw Curve:** The graph curve generated by recording the draw-force readings of an archery bow at one (1) inch intervals or less, taken while the bow is being drawn from its brace height through the Peak Draw Force and to the Center of Valley (if present). This curve is used to reveal the energy storage characteristics, the Peak Draw Force, Holding Force, draw length, and Percent of Let-Off (if present) of the bow.

2.10 **Let-Off:** The difference between the peak or maximum draw force reached during the draw cycle of a compound bow, and the lowest level of draw force reached subsequent to that peak. It is most frequently expressed as a percentage of the peak force and is then referred to as Percent of Let-Off.

2.11 **Center of Valley:** The lowest points on a Force-Draw Curve of a Compound Bow where the Let-Off Force reaches its minimum.

2.12 **Peak Draw Force:** The maximum force reached when drawing a bow. For Non-Compound bows, the Peak Draw Force is usually reached at the full-draw condition. For Compound Bows the Peak Draw Force is reached part way through the draw cycle.

2.13 **ATA Intermediate Compound Bow Rating Velocity:** The average velocity of the initial velocities of an arrow weighing 5 grains per peak draw weight (±0.5 grains), shot 5 times from an Intermediate Compound Bow with a set Peak Draw Force of 40 pounds, or 50 pounds (± 0.1 pounds), and set at 28 inches ATA Draw length (+ ¼, - 0 inch).

2.14 **Shooting Machine:** A device equipped with a mechanical release that secures a bow and releases an arrow to obtain highly repeatable shooting results for various testing purposes.

3. Significance and Use

3.1 This guideline will be used to determine the ATA Rating Velocity of an Intermediate Compound Archery Bow.

4. Measurement Method

4.1 For Intermediate Compound Bows with adjustable draw force, adjust peak or maximum draw force to desired peak weight of 40 pounds or 50 pounds (±0.1 pounds). For test purposes, the Center of Valley of the Force-Draw Curve (lowest holding force) on an intermediate compound bow shall be located at ATA Actual Draw Length of 28 inches (+ ¼, - 0 inch).

4.2 Select the test arrows of a shaft, material size, and stiffness to match the specified test bow's Peak-Draw Force and draw length, and that will meet the 5-grains per peak draw weight, arrow-weight requirement (± 0.5 grain on total arrow weight). The test arrows do not need to be fletched.

4.3 Intermediate Compound Bows should be tested and rated as manufactured, and the condition of the bowstring should include all the manufacturer's added-on devices (such as string dampers, etc.) as well as, at a minimum, a nocking point or D-loop for properly attaching the arrow to the bowstring.

4.4 Mount the Intermediate Compound Bow in a shooting machine with a mechanical release and draw the bow to its full-drawn condition. Draw length should be set at ATA Draw Length of 28 inches (+ ¼, - 0 inches). Adjust the shooting machine draw length as close as possible to match the test bow's specific center of valley while keeping within the draw length specification of 28 inches (+ ¼, - 0 inches).

4.5 Use an appropriate gate chronograph. The Chronograph shall have a precision of 1 μs (one microsecond) and an accuracy of 2 μs (two microseconds). The chronograph's triggering device shall be of either the photoelectric or conductive screen types. The triggering device shall be spaced at a span dictated by the timing circuit requirements to accuracy of ± .010 inches.

4.6 Radar-based, bow-mounted type Hall-effect, and single-gate chronographs are not acceptable for evaluating Intermediate Compound bows.

4.7 The entrance gate of the chronograph shall be set at 36 inches (± 1.0 inch) from the pivot point of the bow handle mounted on the shooting machine.

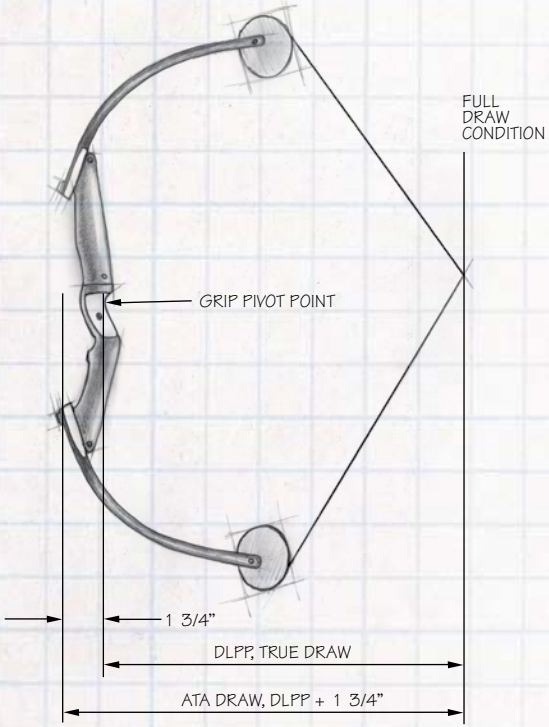
4.8 Using the shooting machine, shoot the appropriate test arrows from the bow through the chronograph.

4.9 Chronograph and record a minimum of five shots for each test arrow. The velocity values of all shots for a given test arrow must fall within a range of 2 feet per second.

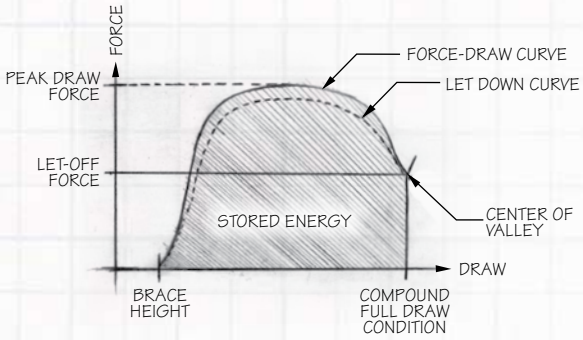
4.10 Using the test arrow recorded velocities, obtain an arrow velocity average. This average velocity is the ATA Rating Velocity of the specific Intermediate Compound Bow tested.

5. Drawings

5.1 Compound Bow:



5.2 Compound Force-Draw Curve:



Guideline for Determining the ATA Rating Velocity of a Non-Compound Bow

Designation: ATA/BOW-106-2008

Summary:

To determine and/or test the rating velocity of a Non-Compound Archery Bow (non-compound bow such as a Recurve Bow, American Flat Bow, or Long Bow), the bow must be shot from a mechanical shooting machine. The Non-Compound Bow's Peak Draw Force will be measured at the ATA Draw Length of 28 inches (+ 1/16, - 0 inch). Test arrows for hunting bows must weigh 9 grains per pound of total bow Peak Draw Force (± 0.5 grains on total arrow weight). Test arrows for Target bows must weigh 7 grains per pound of total bow Peak Draw Force (± 0.5 grains on total arrow weight). ***Example: A 42-pound Non-Compound Hunting Bow requires the use of a 378-grain arrow (± 0.5 grains). A 42-pound Non-Compound Target Bow requires the use of a 294-grain arrow (± 0.5 grains).*** For Non-Compound hunting bows, the string shall be made of any string material with not less than 0.5 twists per inch at nominal manufacturer recommended brace height and weighing not less than 120 grains exclusive of nock set, if any. For Non-Compound Target bows, the string shall be made of Spectra or Dyneema type string materials with not less than 0.5 twists per inch at nominal manufacturer recommended brace height and weighing not less than 100 grains exclusive of nock set, if any. A minimum of five (5) shots for each test must be performed. Test-shot velocities will then be averaged to determine the Rating Velocity of the Non-Compound Bow.

1. Scope

1.1 This guideline covers the test technique and method used to determine the ATA Rating Velocity of a Non-Compound Archery Bow.

1.2 This guideline will provide only a certification of performance; that is, the velocities at which a given Non-Compound Bow will launch arrows of specified weights under standard conditions.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery bow, arrow, or arrow shaft. This Guideline does not provide any warranty, expressed or implied, that a particular Archery Bow, arrow, or arrow shaft is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 (none)

3. Terminology and Definitions

3.1 **Non-Compound Bow:** A type of archery bow consisting of a handle (riser) and two flexible limbs. The limbs are connected to each other solely by the handle and a single bowstring, which is attached at and contacts the limb tips.

3.2 **ATA (Archery Trade Association) Actual Draw Length (Non-Compound Bow):** The distance from the bowstring at the nocking point location, while at the bow's full-draw condition, measured to a vertical line through the pivot point of the bow grip, plus 1¾ inches (+ 1/16, - 0 inches).

3.3 **Draw:** To move the shooting string of a bow from the rest, or braced position, toward the full-drawn position by applying force to the bowstring. Such action causes the bow's limbs to bend and store energy. Moving the string from brace height to the full-draw position corresponds to the draw cycle, or power-stroke of a bow.

3.4 **Full-Draw:** The position in a draw cycle of a bow from which the string of the bow is released and the force is applied to the rear of the arrow to commence the arrow launch.

3.5 **Draw Force:** That level of force necessary and coincidental with drawing a bow to a specific position within its draw length.

3.6 **Draw Length Pivot Point (DLPP):** The bow's true draw length. This is the distance at the bow's full-drawn position measured from the string at the nocking point to a vertical line through the pivot point of the bow grip.

3.7 **ATA Non-Compound Bow Rating Velocity:** The average velocity of the initial velocities of an arrow weighing 9 grains per pound of a Non-Compound Hunting Bow's Peak Draw Force (weight), or 7 grains per pound of a Non-Compound Target Bow's Peak Draw Force (weight), shot 5 times from a Standard Bow at 28 inches ATA Draw length (+ 1/16, - 0 inches).

3.8 **Shooting Machine:** A device, equipped with a mechanical release that secures a bow and releases an arrow to obtain highly repeatable shooting results for various testing purposes.

4. Significance and Use

4.1 This Guideline will be used to determine an ATA Rating Velocity for a Non-compound Bow.

5. Measurement Method

5.1 For Non-Compound Bows with adjustable draw weight, adjust bows to the maximum draw force allowed by the design.

5.2 Measure the Peak Draw Force at ATA Draw Length of 28 inches (+ 1/16, - 0 inches) to determine the required arrow mass.

5.3 Non-Compound Target Bow arrow requirement is 7 grains per pound of Peak Draw Force (weight) ± 0.5 grains total arrow weight.

5.4 Non-Compound Hunting bow arrow requirement is 9 grains per pound of Peak Draw Force (weight) ± 0.5 grains total arrow weight.

5.5 The test arrows shall be constructed of a shaft material and stiffness to match the specified Peak Draw Force and length, while meeting the arrow weight grain per pound requirements, ± 0.5 grains. Test arrows need not be fletched.

5.6 Non-Compound Bows should be tested and rated as manufactured, and the condition of the bowstring should include all the manufacturer's added-on devices (such as string dampers and etc.) as well as, at a minimum, a nocking point or D-loop for properly attaching the arrow to the bowstring.

5.7 Mount the Non-Compound Bow in a shooting machine with a mechanical release and draw the bow to its full-drawn condition. Draw length should be set at ATA Draw Length of 28 inches (+ 1/16, - 0 inches).

5.8 Use an appropriate gate chronograph. The Chronograph shall have a precision of 1 μs (one microsecond) and an accuracy of 2 μs (two microseconds). The chronograph's triggering device shall be of either the photoelectric or conductive screen types. The triggering device shall be spaced at a span dictated by the timing circuit requirements to an accuracy of ± .010 inches.

5.9 Radar-based, and bow-mounted type Hall-effect chronographs are not acceptable. Single-gate chronographs are acceptable for evaluating non-compound bows.

5.10 The entrance gate of the chronograph shall be set at 36 inches (± 1.0 inch) from the pivot point of the bow handle mounted on the shooting machine.

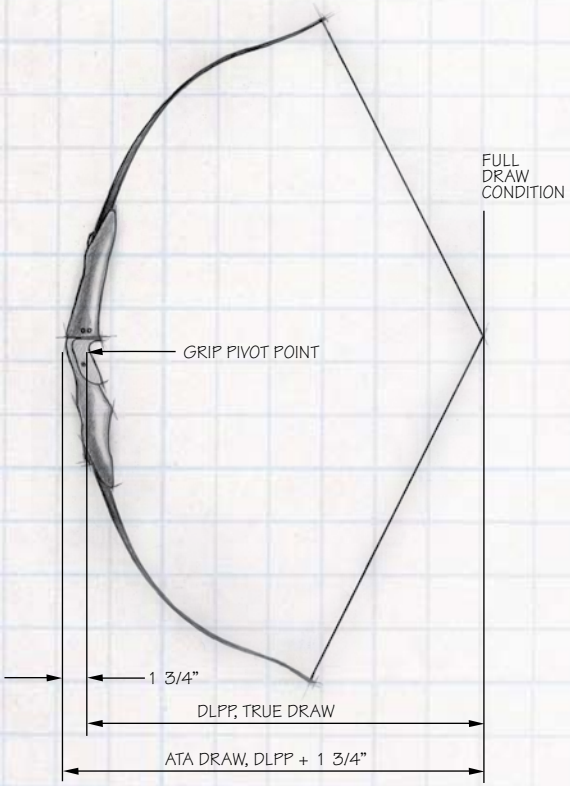
5.11 Using the shooting machine, with the draw length set at 28 inches (+ 1/16, -0 inches), shoot the appropriate test arrows from the bow through the chronograph.

5.12 Chronograph and record a minimum of five shots for each test arrow. The velocity values of all shots for a given test arrow must fall within a range of 2 feet per second.

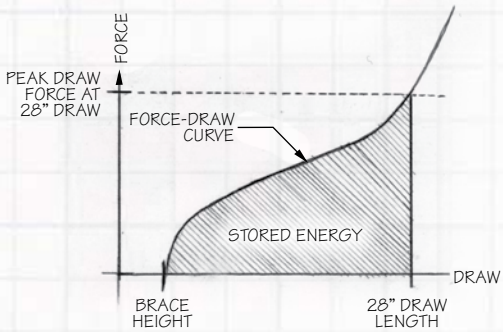
5.13 Using the test-arrow recorded velocities, obtain an arrow-velocity average. This average velocity is the ATA Non-Compound Bow Rating Velocity of the specific Non-Compound Bow tested.

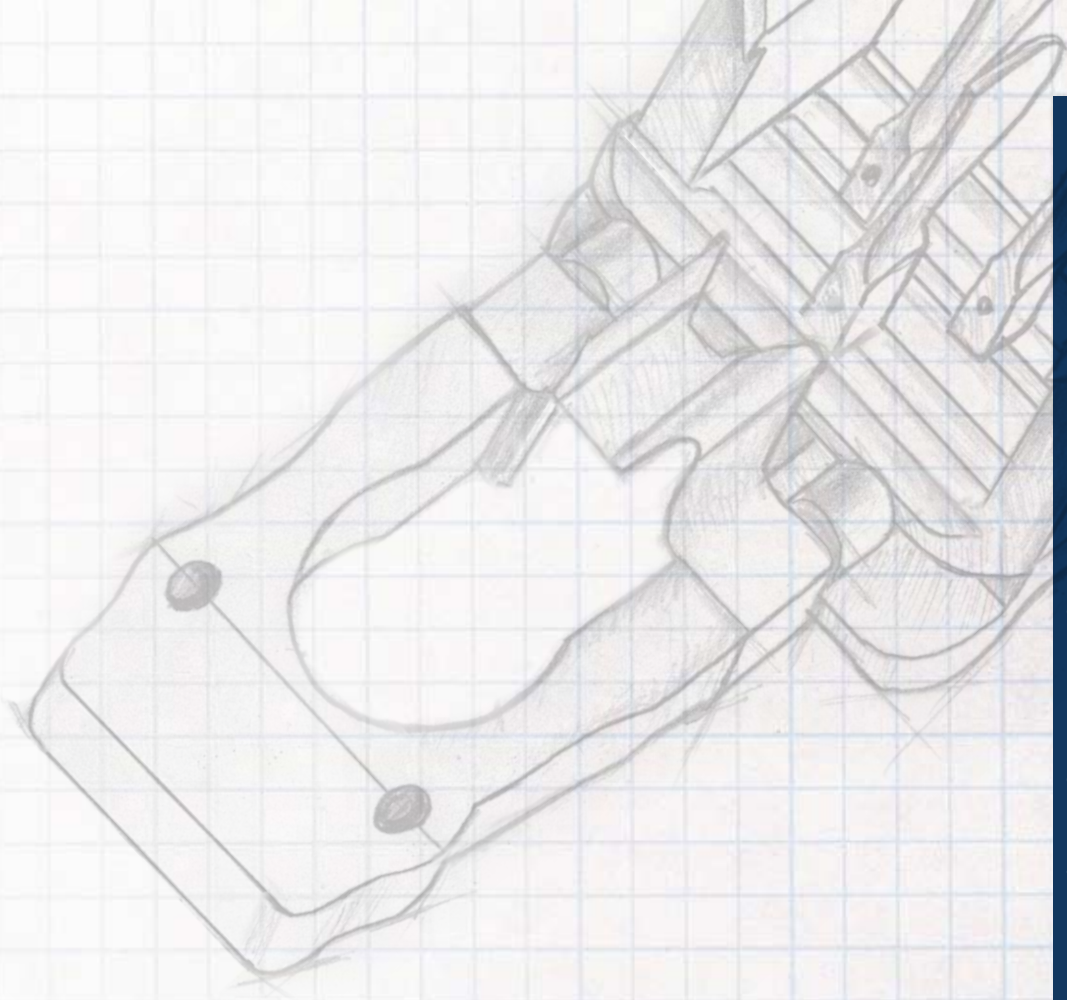
6. Drawings

6.1 Non-Compound Bow:



6.2 Non-Compound bow Force-Draw Curve:





Guideline for Measuring the ATA Finished Length of Bowstrings and Cables

Designation: ATA/BOW-107-2008

Summary:

To determine the actual length of a bowstring or cable, the end loops of the string or cable are placed over two ¼-inch diameter steel pins. The bowstring or cable should be twisted to the bowstring manufacturer's recommended number of twists. While holding one ¼-inch diameter pin fixed, a 100-pound tension load is placed on the second ¼-inch pin, effectively tensioning the string or cable. After the load has been held for a minimum of 20 seconds, the string or cable length is determined by measuring the distance from the outside edge of both ¼-inch steel pins.

1. Scope

1.1 This guideline covers the technique and method to be used in determining the finished length of bowstrings and cables.

1.2 This guideline will provide only a certification of a bowstring's and/or cable's length as measured under these circumstances.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Bow, bowstrings, or bow cables. This Guideline does not provide any warranty, expressed or implied, that a particular Archery Bow, bowstrings, or bow cables are fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 (none)

3. Terminology and Definitions

3.1 (none)

4. Significance and Use

4.1 This guideline will be used to determine the ATA Finished Length of Bowstrings and Cables.

5. Apparatus

5.1 A device capable of holding a string or cable at both loop ends by attaching said loop ends over two ¼-inch diameter steel pins. One steel pin must remain fixed while the second must be free to move while a load is placed onto the pin to effect the tensioning of the string or cable. A load cell or other acceptable load-measuring device must be in line with the load source and the second pin to determine and measure required tension load.

6. Measurement Method

6.1 Determine and specify if the string or cable to be measured will be in a twisted or untwisted condition.

6.2 If the string or cable is specified as twisted, then the component should be twisted in the direction that tightens the end servings. The total number of twists put into the bowstring or cable should be equal to the string or cable manufacturer's recommendations, but its minimum should equal ½ twist per one (1) inch of bow string or cable length (Example: 40-inch string should have a minimum of 20 twists).

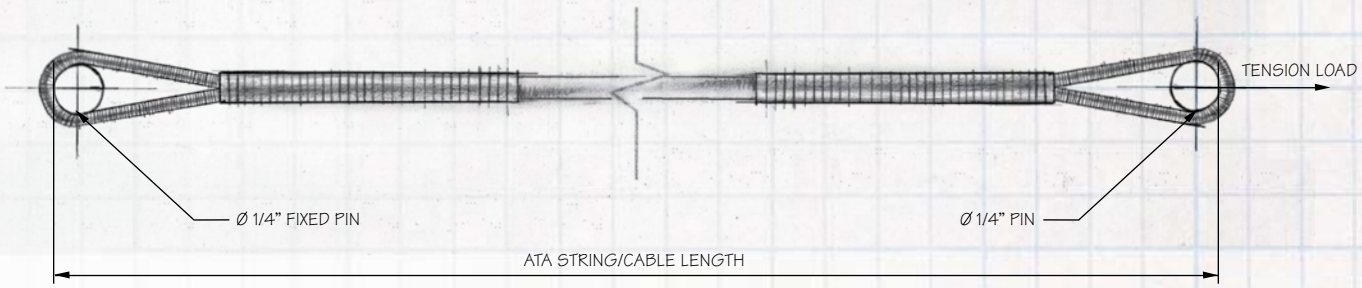
6.3 Place both end loops of string or cable to be measured over the two ¼-inch diameter steel pins.

6.4 All 8- and 10-strand bowstrings and cables made from polyester (i.e. Dacron) are to be measured under 50 pounds (±1 pound) tension.

6.5 All bowstrings and cables made from materials other than polyester (i.e. Dacron) and all polyester strings and cables with more than ten (10) strands will be measured under 100 lbs (±1 pound) tension.
6.6 After the bowstring or cable has remained under tension load for 20 seconds, the string or cable length can be measured.
6.7 Determine the string or cable length by measuring the component from the outside edge to edge of the two ¼-inch steel pins. (see drawing)
6.8 Bowstrings and cables will be marked to be either twisted or untwisted, and within a length tolerance of ± 1/16 inch when measured under the required tension load.

7. Drawings

7.1 String/Cable tension diagram:



Guideline for ATA Bow Sight Mounting Holes Specification

Designation: ATA/BOW-108-2008

Summary:

To define and promote the standardization of an Archery Bow's sight mounting holes located on the outside surface of the bow's handle or riser section, to be 1.312 inches (±0.005 inch) center to center, and to be 10-24 UNC thread size with a minimum thread depth of 0.312 inches. Bow sights designed to specifically attach to an Archery Bow's handle or riser section, at this location, should conform to these dimensions.

1. Scope

1.1 This guideline covers the ATA recommendation for the specification of an Archery Bow's sight and accessory mounting holes.

1.2 The defined threaded holes within this guideline have proven over time to be adequate for attaching sighting devices to the bow. These dimensions may not be adequate for attaching other accessory devices as they may overload the screw and/or mounting hole threads.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Bow or any particular accessory. This Guideline does not provide any warranty, expressed or implied, that a particular Archery Bow or accessory is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 ATA Guideline for Accessory Sight Mounting Holes ***(ATA/ACC-303-2008).***

3. Terminology and Definitions

3.1 (none)

4. Significance and Use

4.1 This guideline will be used to define the ATA recommended Sight and Accessory mounting holes for Archery Bows.

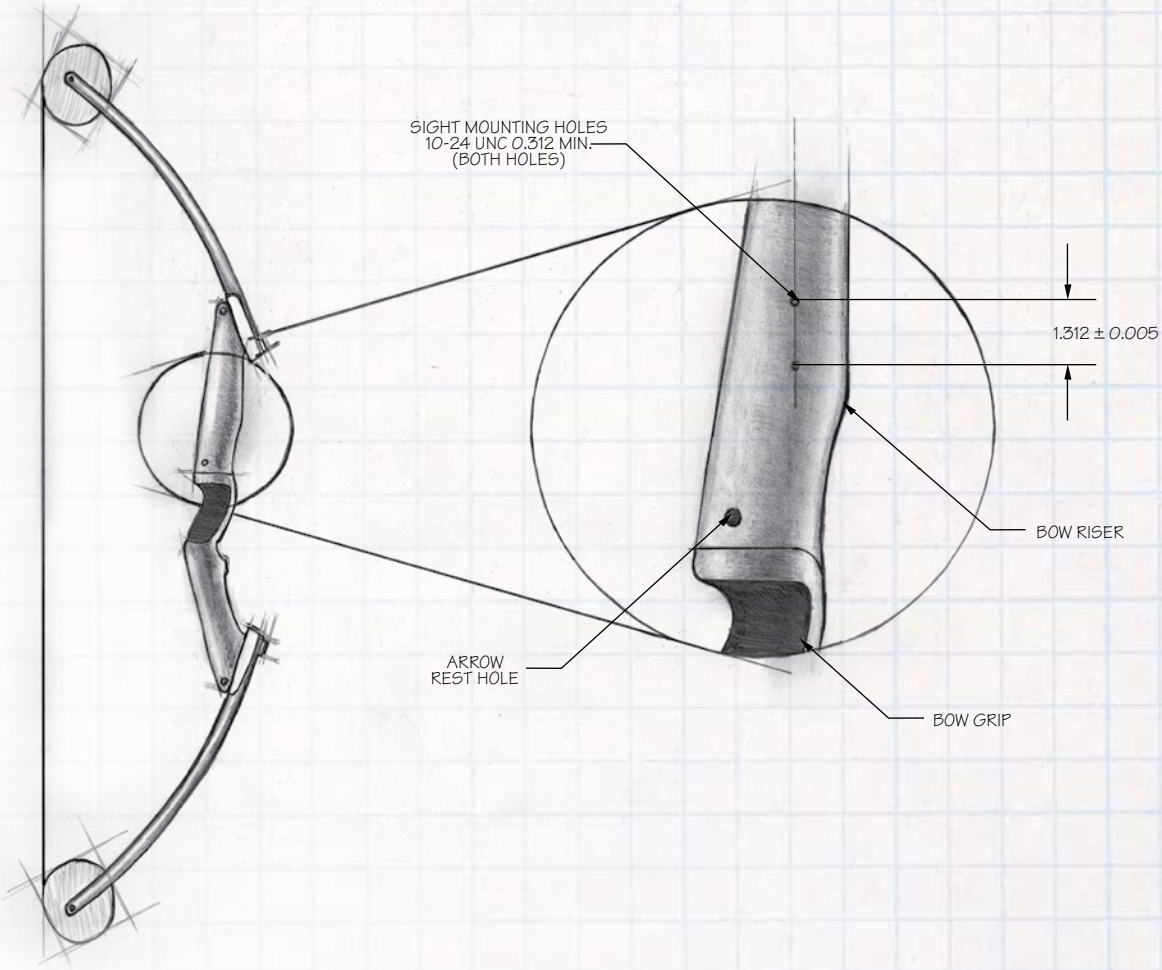
5. Guideline

5.1 On Archery Bows, the ATA recommended sight and accessory mounting holes are to be 10-24 UNC thread size and are to be at 0.312 inches minimum thread depth.

5.2 ATA recommended sight and accessory mounting holes for both Bows and Accessories are to have a "center-to-center" dimension of 1.312 inches (±0.005 inch).

6. Drawings

6.1 ATA recommended sight and accessory mounting hole dimensions and specification drawings.



Guideline for ATA Stabilizer and Accessory Mounting Holes Specifications

Designation: ATA/BOW-109-2008

Summary:

To define and promote the standardization of an Archery Bow's Stabilizer and Accessory Mounting Hole specifications to be 5/16-24 UNF thread size with a minimum thread depth of .750 inches. It's generally accepted that the 5/16-24 UNF threaded hole and threaded bolt, or stud, provides an adequate margin of strength needed to cope with the stress loads imposed by modern Compound Bows, long and heavy stabilizers, and the combined use of high-performance bowstring materials.

1. Scope

1.1 This guideline covers the ATA recommendation for the specification of an Archery Bow's stabilizer and accessory mounting holes.

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Bow or any particular accessory. This guideline does not provide any warranty, expressed or implied, that a particular Archery Bow or accessory is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 ATA Technical Guideline for ATA Stabilizer Rod Mounting Stud Specifications ***(ATA/ACC-301-2008).***

3. Terminology and Definitions

3.1 (none)

4. Significance and Use

4.1 This guideline will be used to define the ATA recommended Stabilizer and Accessory mounting hole for Archery Bows.

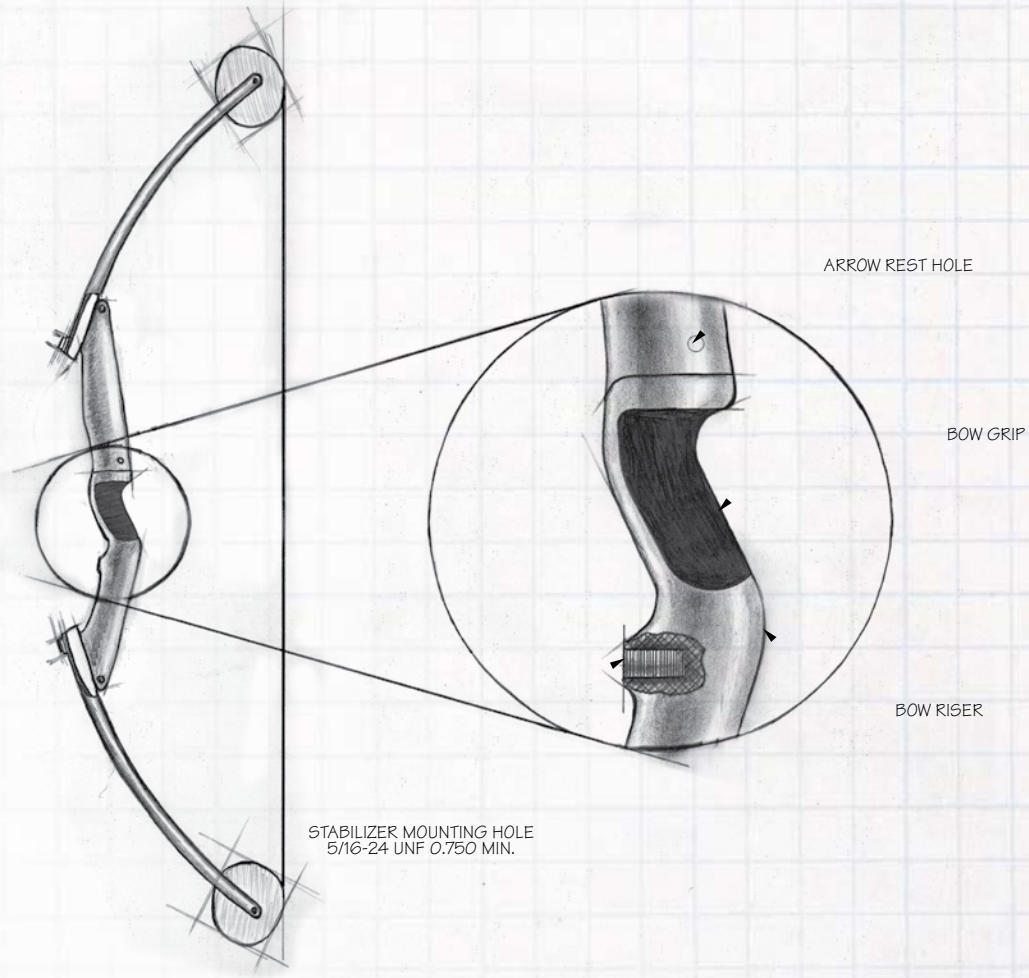
5. Guideline

5.1 On Archery Bows, the ATA recommended Stabilizer and Accessory Mounting Hole should be 5/16-24 UNF thread size.

5.2 On Archery Bows, the ATA recommended Stabilizer and Accessory Mounting Hole should be at a minimum of .750 inches thread depth.

6. Drawings

6.1 ATA recommended Stabilizer and Accessory Mounting Hole dimensions and specification drawing.



Guideline for ATA Non-Compound Bow Draw Weight Specification

Designation: ATA/BOW-110-2008

Summary:

This Guide is for the purpose of creating a uniform ATA Non-Compound Bow draw weight designation. Bow weight shall be designated as the force required to draw a Non-Compound Bow from brace height to ATA Actual Draw Length of 28 inches (+ 1/16, - 0 inch). For Non-Compound Bows that have adjustable Draw weight capability, the Draw Force (weight) of the bow should be adjusted to the Manufacturer's suggested setting.

1. Scope

1.1 This guideline covers the ATA specification for measuring and/or determining a Non-Compound Bow's rated draw force (weight).

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Bow or any particular Archery Accessory. This guideline does not provide any warranty, expressed or implied, that a particular Archery Bow or Archery Accessory is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 ATA Technical Guidelines for determining the ATA Force-Draw and Let-Down Curves for Archery Bows ***(ATA/BOW-101-2008).***

3. Terminology and Definitions

3.1 **Non-Compound Bow:** A type of archery bow consisting of a handle (riser) and two flexible limbs. The limbs are connected to each other solely by the handle and a single bowstring, which is attached at and contacts the limb tips.

3.2 **ATA (Archery Trade Association) Actual Draw Length (Non-Compound Bow):** The distance from the bowstring at the nocking point location, while at the bow's full-drawn condition, measured to a vertical line through the pivot point of the bow grip, plus 1¾ inches (+ 1/16, - 0 inch).

3.3 **Brace Height:** The dimension in inches from the grip pivot point (low point) of the grip to the nearest side of the bowstring, measured perpendicular to the bowstring, with the bow strung and in the undrawn condition.

3.4 **Draw:** To move the shooting string of a bow from the rest, or braced position, toward the full-drawn position by applying force to the bowstring. Such action causes the bow's limbs to bend and store energy. Moving the string from brace height to the full-drawn position corresponds to the draw-cycle, or power-stroke, of a bow.

3.5 **Full Draw:** The position in a draw cycle of a bow from which the bowstring is released and the force is applied to the rear of the arrow to commence the arrow launch.

3.6 **Draw Force:** That level of force necessary and coincidental with drawing a bow to a specific position within its draw length.

3.7 **Holding Force:** The force required to retain the bowstring of a drawn bow at a specific draw length.

3.8 **Draw Length Pivot Point (DLPP):** The bow's true draw length. This is the distance at the bow's full-drawn position measured from the string at the nocking point to a vertical line through the pivot point of the bow grip.

3.9 **Peak Draw Force:** The maximum force reached when drawing a bow. For Non-Compound Bows, the Peak Draw Force is usually reached at the full-drawn condition. For Compound Bows the Peak Draw Force is reached part way through the draw cycle.

4. Significance and Use

4.1 This guideline will be used to uniformly define and determine a "Non-Compound Bow's" Draw Force (weight) at ATA Actual Draw Length of 28 inches.

5. Apparatus

5.1 **Force-Draw Machine:** A device capable of holding the bow with the restraining force located at the low point of the grip while the bowstring is being drawn from brace height to full draw. The Force-Drawing the bowstring shall be positioned at or near the nocking point location on the bowstring. The device contacting the bowstring shall be a round or radiused section with a radius of ⅛ inch. The system used to draw the bowstring shall be capable of a smooth and steady movement, and must maintain continuous unrelaxed force so that no hysteresis effect is experienced during the draw cycle.

5.2 **Force-Reading Device:** A scale or load cell shall be interposed between the bowstring and the cable or rod used to draw the bowstring so that the force reading is direct and not contaminated in any way. The force-measuring device shall have a resolution of ±¼ pound. A spring scale with adequate resolution may be capable of measuring the draw force for Standard Bows.

5.3 **Draw Length Scale:** A graduated linear scale of commercial accuracy and at least 36 inches in length shall be used to measure the draw length. It shall be indexed at a point 1¾ inches forward of the low point, or pivot point, of the grip.

6. Measurement Method

6.1 The preferred method of measuring and determining a Non-Compound Bow's weight designation is to use the ATA Technical Guideline for Determining the ATA Force-Draw and Let-Down Curves for Archery Bows ***(ATA/BOW-101-2008)***. This Guideline provides both a means and a device suitable to accurately perform the required steps to measure the bow's Peak Draw Force at the specified ATA Actual Draw Length of 28 inches (+ 1/16, - 0 inches).

6.2 Adjust the Non-Compound Bow's Peak Draw Force to its manufacturer's suggested setting.

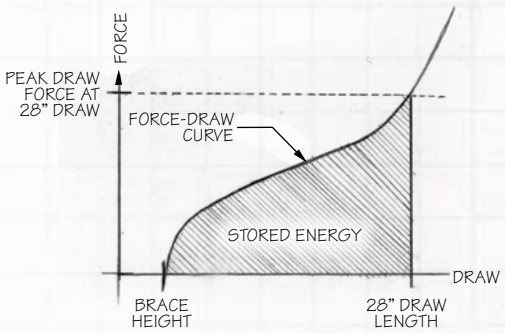
6.3 Twist or untwist the bowstring to achieve the manufacturer's recommended brace height.

6.4 Mount the bow into the force-draw device with the low or pivot point of the grip engaging the retaining surface of the device. Set the index of the linear scale 1¾ inches forward of the low point of the grip. Attach the drawing device to the bowstring at a location at or near the nocking point location of the bowstring, position the bowstring at brace height and draw the bow to ATA actual Draw Length of 28 inches (+ 1/16, - 0 inches).

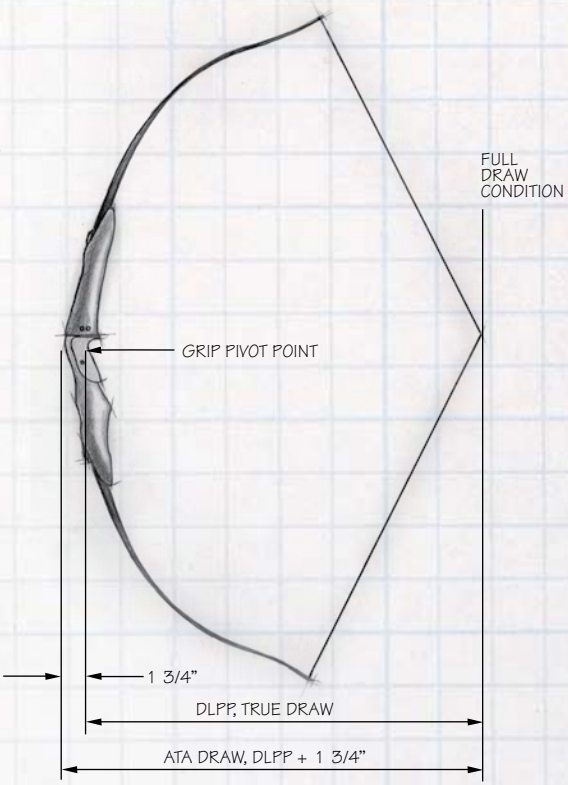
6.5 While holding the bow at its full-drawn condition of 28 inches, record the Peak Draw Force (weight) of the bow. This Force reading will be the ATA designated Non-Compound Bow's weight.

7. Drawings

7.1 Non-Compound Bow Force-Draw Curve:



7.2 ATA Non-Compound Bow:



Guideline for ATA String Center Serving Diameter Specification

Designation: ATA/BOW-111-2008

Summary:

To define and promote the standardization of Archery bowstrings center serving diameter specifications. Though there are many individual preferences of archers in how tight or snug an arrow nock should fit to the bowstring, it is generally accepted that the proper fit of arrow nocks to the bowstring should allow for a nocked arrow to fit the string in a manner that holds the nocked arrow in place during the draw cycle of the bow, and allows the arrow to launch with accuracy and consistent velocity. These guidelines are based on an analysis of currently used materials for the manufacture of bowstrings and the strength requirements of a bowstring dictated by archery bows with up to 80 pounds of Peak Draw Force. For "Low Peak Weight" bows, Archery Bows with Peak Draw Force values under 30 pounds, the bowstring center serving diameter specification is 0.102 inches (±0.004 inches). For Archery Bows with Peak Draw Force values of 30 pounds up to 80 pounds, the bowstring center serving diameter specification is 0.112 inches (±0.004 inches). No recommendations are made for bows with Peak Draw Force values over 80 pounds.

1. Scope

1.1 This guideline covers the ATA recommendation for the specification of the archery bowstring's Center Serving diameter dimensions.

1.2 This guideline is not meant to be all-inclusive because there are, and will continue to be, special circumstances that might dictate the use of nonconforming dimensions. Overall, it is the individual archery bow manufacturer's and bowstring manufacturer's responsibility to ensure the bows they produce are equipped with bowstrings of proper strength for their designed bow.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Bow, archery bowstring, or arrow nock or any particular archery accessory. This guideline does not provide any warranty, expressed or implied, that a particular Archery Bow, bowstring, arrow nock or any archery accessory is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 (none)

3. Terminology and Definitions

3.1 **Bowstring:** The special multi-strand cord that spans an archery bow from tip to tip (Standard Bows), or from Cam to Cam (Compound Bows), and holds the bow to its braced position. The Bowstring is used to engage the rear end of the arrow in order to launch the arrow into flight.

3.2 **Center Serving:** A wrapping of twisted or braided synthetic line, or monofilament material, that is placed on the bowstring to cover the area where the arrow nock engages the bowstring. The center Serving is used to resist the abrasive wear of repeated shooting.

3.3 **Arrow Nock (or Nock):** A slot in the rear end of an arrow or a special fitting that contains a slot that is positioned on the rear end of an arrow to allow engagement of the arrow to the bowstring.

3.4 **Nock String Groove (or Slot Throat Dimension):** The narrowest portion of the slot opening in the Arrow Nock, usually located near the open end of the Nock.

3.5 **Nock String Hole Size:** The dimension at the bottom or base of the Arrow Nock slot. This is the area where the bowstring sits when it is engaged onto the arrow.

3.6 **Draw:** To move the shooting string of a bow from the rest, or braced position, toward the full-drawn position by applying force to the bowstring. Such action causes the bow's limbs to bend and store energy. Moving the string from brace height to the full-drawn position corresponds to the draw-cycle, or power-stroke, of a bow.

3.7 **Full-Draw:** The position in a draw cycle of a bow from which the string of the bow is released and the force is applied to the rear of the arrow to commence the arrow launch.
3.8 **Draw Force:** That level of force necessary and coincidental with drawing a bow to a specific position within its draw length.
3.9 **Holding Force:** The force required to retain the bowstring of a drawn bow at a specific draw length.
3.10 **Peak Draw Force:** The maximum force reached when drawing a bow. For Non-Compound Bows, the Peak Draw Force is usually reached at the full-drawn condition. For Compound Bows the Peak Draw Force is reached part way through the draw cycle.

4. Significance and Use

4.1 This guideline will be used to define the ATA recommended bowstring Center Serving diameter dimensions.
4.2 In order to provide arrow nock manufacturers with basic dimensions and tolerances on which to base their nock designs, it is necessary to establish recommended specifications and tolerances for the outside diameter of bowstring Center Servings.

5. Guideline

5.1 Analysis has determined that two sizes of Center Serving diameter can permit sufficient latitude to cover appropriate bowstrings for bows up to 80 pounds in Peak Draw Force.
5.2 This is made possible by varying the type of material used in the fabrication of the bowstrings, the number of strands employed to fabricate the bowstring, and the type and sizing of Center Serving material available for creating the Center Serving.
5.3 For Archery Bows with a Peak Draw Force of less than 30 pounds, the recommended Center Serving diameter of the bow's bowstring is 0.102 inches (±0.004 inches).
5.4 For Archery Bows with a Peak Draw Force of 30 pounds up to 80 pounds, the recommended Center Serving diameter of the bow's bowstring is 0.112 inches (±0.004 inches).
5.5 No Recommendations are made for bows with Peak Draw Force values greater than 80 pounds.

6. Drawings

6.1 None

Guideline for ATA Non-Compound Bow Length and Bowstring Length Specifications

Designation: ATA/BOW-112-2008

Summary:

The ATA Non-Compound Bow length designation is specified to be three inches longer than the required bowstring's actual length that braces the bow to its proper or manufacturer's recommended brace height specification. For Non-Compound Bows, the bowstring's ATA marked length should be three inches longer than the string's actual length. ***Example: A "Non-Compound Bow" bowstring marked as ATA 66 inches will have an actual measured length (using the ATA Technical Guideline for Measuring the Finished Length of Bow strings) of 63 inches long.***

1. Scope

1.1 This guideline covers the ATA recommendation for the specification of a Non-Compound Bow's Length designation.

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Bow or any particular Archery Accessory. This Guideline does not provide any warranty, expressed or implied, that a particular Archery Bow or any Archery Accessory is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 ATA Technical Guideline for Measuring the ATA Finished Length of Bowstrings and Cables ***(ATA/BOW-107-2008).***

3. Terminology and Definitions

3.1 **Bowstring:** The special multi-strand cord that spans an archery bow from tip to tip (Non-Compound Bows), or from Cam to Cam (Compound Bows), and holds the bow to its braced position. The Bowstring is used to engage the rear end of the arrow in order to launch the arrow into flight.

3.2 **Non-Compound Bow:** A type of archery bow consisting of a handle (riser) and two flexible limbs. The limbs are connected to each other solely by the handle and a single bowstring, which is attached at and contacts the limb tips.

3.3 **Brace Height:** The dimension in inches from the grip pivot point (low point) of the grip to the nearest side of the bowstring, measured perpendicular to the bowstring, with the bow strung and in the undrawn condition.

3.4 **Non-Compound Bow Designated Length:** The length of the bowstring used to "brace" the bow to its manufacturer's recommended Brace Height plus three inches.

4. Significance and Use

4.1 This guideline will be used to define the ATA "Non-Compound Bow" bow length and the required Actual String length.

5. Guideline

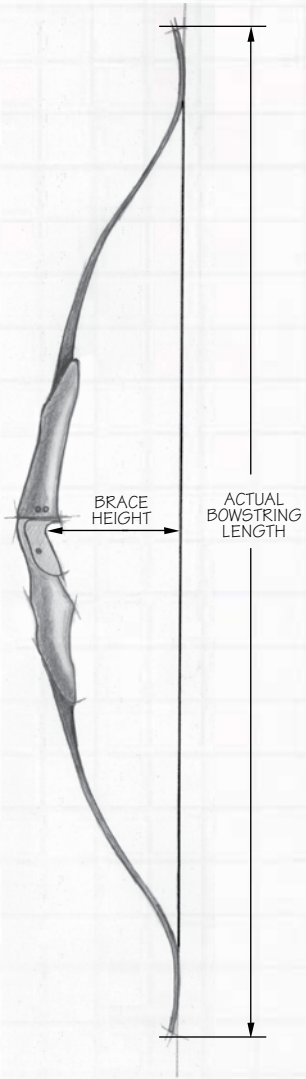
5.1 For a Non-Compound Bow, the designated bow length shall be 3 inches longer than the actual length of the bowstring required to "brace" the bow to the manufacturer's recommended Brace Height.

5.2 Bowstrings used on Non-Compound Bows shall be designated and marked as 3 inches longer than their actual length as measured by the ATA guideline for measuring finished bowstring length ***(ATA/BOW-107-2008).***

6. Drawings

6.1 ATA Non-Compound bow drawings:

DESIGNATED BOWLENGTH = ACTUAL BOWSTRING LENGTH +3"



EXAMPLE:

ACTUAL STRING LENGTH = 63 INCHES

ATA DESIGNATED STRING LENGTH = 66 INCHES (63 INCHES + 3 INCHES)

ATA DESIGNATED NON-COMPOUND BOW LENGTH = 66 INCHES AND USES AN ACTUAL STRING LENGTH OF 63 INCHES.

Guideline for Determining ATA Actual Arrow Length and Arrow Front of Center (F.O.C.) Balance Point

Designation: ATA/ARR-201-2008

Summary:

To achieve good arrow flight the balance point or center of gravity of an arrow assembly must be located at some position forward of the longitudinal dimensional center of the Actual Arrow Length. This guideline provides a method for determining the ATA Actual Arrow Length and the Arrow's "Front of Center" (F.O.C.) balance point with an ATA formula to calculate an arrow's F.O.C. and a general F.O.C. range recommendation for all types of archery disciplines.

1. Scope

1.1 This guideline covers the designations used to define the ATA Actual Arrow Length and the Arrow Front of Center (F.O.C.).

1.2 This guideline recommends an ATA general range of F.O.C.s for all disciplines of archery and provides a good starting point when constructing a set of arrows or when analyzing an arrow's flight characteristics.

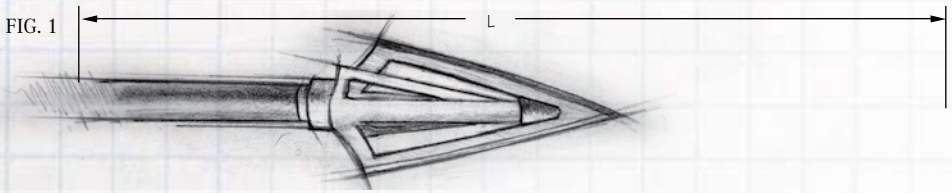
1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance from any arrow or arrow shaft. This guideline does not provide any warranty, expressed or implied, that any particular arrow or arrow shaft is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Terminology and Definitions

2.1 **ATA Actual Arrow Length — L:** The length of the arrow measured from the bottom of the nock groove forward to the leading edge or designated location near the front of the arrow shaft. The designated location varies because of the differences in arrow point design and attachments as shown in figures 1-4.

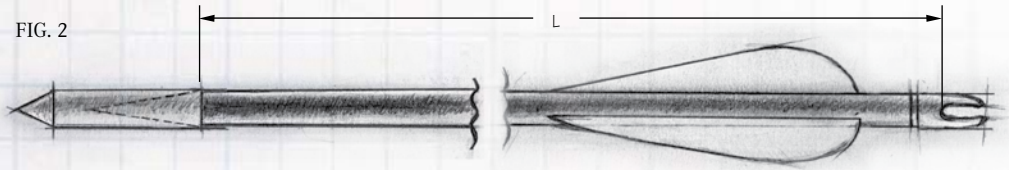
2.1.1 **Threaded Inserts and Point:** (FIG. 1) Threaded Replaceable Point Inserts or Hidden inserts are an internal adapter that permits attachment of a threaded point to an arrow shaft. Actual Arrow Length is measured from the bottom of the nock groove to the front leading end of the arrow shaft. The arrow length does not include the insert shoulder.

FIG. 1



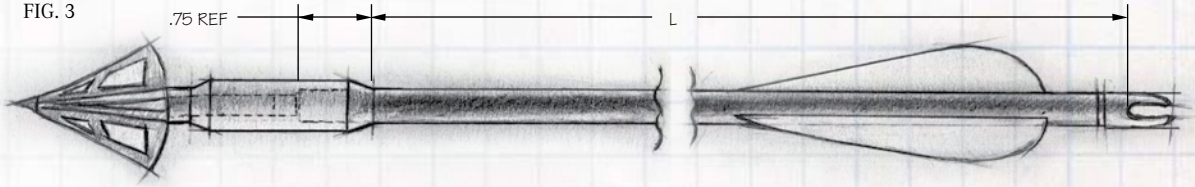
2.1.2 **Arrow Shaft Taper or Swage:** (FIG. 2) An "Arrow Shaft Taper or Swage Front" is to accept a tapered point or broadhead. Arrow length is measured from the bottom of the nock groove to the swage or taper shoulder.

FIG. 2



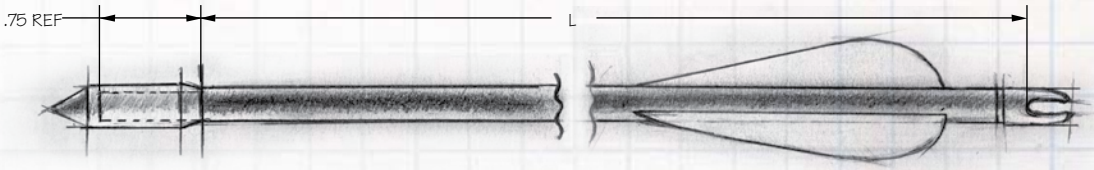
2.1.3 **Outsert Adapter:** (FIG 3) A Threaded Outsert Adapter fits over and attaches to the outside diameter of an arrow shaft and permits attachment of a threaded point. Arrow length is measured from the bottom of the nock groove to the back of the Outsert Adapter.

FIG. 3



2.1.4 **Outsert Point:** (FIG 4) An Outsert Point fits over the outside diameter of the arrow shaft and attaches directly to the shaft. Arrow length is measured from the bottom of the nock groove to the back of the Outsert Point.

FIG. 4



2.2 **Center of the Arrow:** The longitudinal dimensional location of the center of the arrow measured from the bottom of the nock groove to the end of the shaft and expressed by the formula: ***L/2 (L equals the length of the arrow as shown in figures 1-5).***

2.3 **Balance Point:** The location along the length of the arrow which, when positioned over a knife-edge, will result in the arrow being in a perfectly balanced condition. It is the longitudinal location of the arrow's center of gravity.

2.4 **Front of Center (F.O.C.) Formula:** Place the arrow assembly on a knife edge and move the arrow longitudinally until achieving perfect balance. Mark this balance point accurately to permit subsequent measurements. Perform the following calculation to determine the arrow's F.O.C.

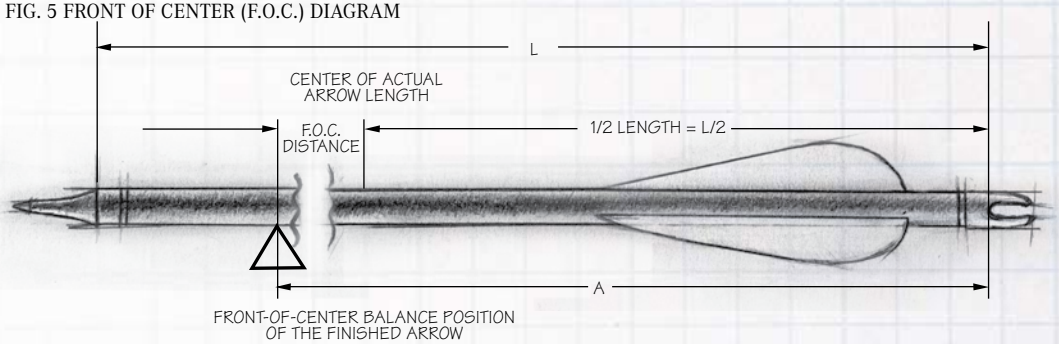
The ATA F.O.C. balance formula is:

$$F.O.C\ \% = 100\ X\ \frac{(A - L/2)}{L}$$

L = **Actual Arrow Length:** Distance from bottom of the nock groove to the end of the shaft as shown in figures 1-5.

A = Distance measured from the bottom of the nock groove to the finished arrow balance position (includes point or broadhead, insert, nock system, and fletching weight).

FIG. 5 FRONT OF CENTER (F.O.C.) DIAGRAM



3. Significance and Use

3.1 To achieve good arrow flight the balance point or center of gravity of an arrow assembly must be located at some position forward of the longitudinal dimensional center of the arrow. The F.O.C. distance is not a fixed dimension. It can vary with the design and length of the arrow assembly and its components. Because of the differences in archers and types of shooting there is not a perfect F.O.C. for each setup. This guideline provides an ATA recommended starting point for F.O.C. weight and a formula to calculate F.O.C by which benchmarks and comparisons can be made by manufacturers and consumers.

4. F.O.C. Recommendation

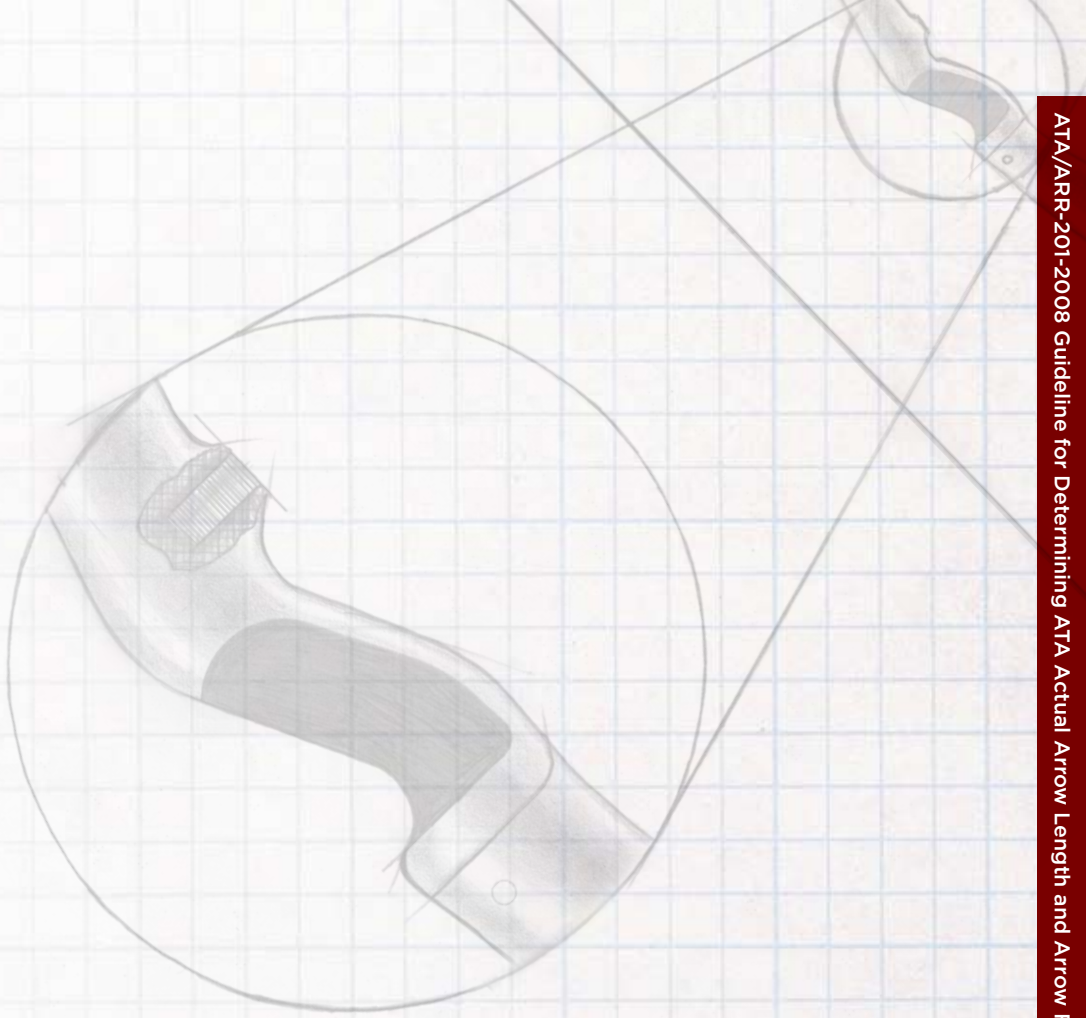
To provide a good starting point when constructing a set of arrows or when analyzing an arrow's flight characteristics, ATA recommends this general range of F.O.C.s for each discipline of archery.

TYPICAL F.O.C. RANGES

Archery Discipline	F.O.C. Range
FITA (Olympic-Style)	11-16%
3-D Archery	6-12%
Field Archery	10-15%
Hunting	10-15%

5. ATA Guidelines for Specification Disclosure

5.1 **ATA Front of Center (F.O.C.):** The term ATA Front of Center (F.O.C.) Recommendation may be used in instances where an arrow is measured and or calculated to this recommendation.



Guideline for the ATA Measurement of Arrow Shaft Static Spine (Stiffness) of a Non-Wood Arrow Shaft

Designation: ATA/ARR-202-2008

Summary:

To determine or test Non-Wood Arrow Spine Measurement. The arrow shaft length shall be the span distance plus a minimum of 1.0 in. (2.54 cm). The arrow shaft shall be supported at a fixed span of 28.0 in. (71.1 cm) for shafts manufactured above 29.0 in (73.7 cm) or a fixed span of 23.0 in. (58.4cm) for shafts manufactured shorter than 29.0 in. (73.7cm). The arrow shaft shall be deflected by a 1.94 lb (880g ±0.05g) weight at the center of the span. The measurement difference in inches between the center of the shaft at rest and center of the shaft during deflection shall be the shaft spine value.

1. Scope

1.1 This guideline covers the testing technique, method, formulations, and designations used to define an arrow spine measurement guide.

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance from any arrow or arrow shaft. This guideline does not provide any warranty, expressed or implied, that any particular arrow or arrow shaft is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Terminology and Definitions

2.1 **Arrow Spine:** The deflection of the arrow shaft, measured in inches, in a three-point load test where a specific mass is applied to the midpoint of the arrow shaft supported at a fixed span.

2.2 **SAS (Spine Around Shaft Variation):** Spine variation between four readings taken at 90° spacing around the shaft.

2.3 **Static Spine:** Stiffness of the arrow shaft at rest on a spine measurement device at a set span.

2.4 **Shaft Length:** The shaft length to be used for ATA spine measurement is the span distance plus 1.0 in. (2.54 cm) to allow for axial travel during deflection.

2.5 **Span Distance:** The length of the span to be used for this guideline is 28.0 in. (71.1 cm). For those shafts that are manufactured less than 29.0 in. (73.7 cm) in length, the span distance to be used is 23.0 in. (52.4 cm).

2.5.1 **Span** = 28.0 in. (71.1 cm) for shafts longer than 29.0 in. (73.7 cm).

2.5.2 **Span** = 23.0 in. (58.4 cm) for shafts shorter than 29.0 in. (73.7 cm).

2.5.3 **Conversion Formula:** Convert a 23.0 in. (58.4 cm) spine to a 28.0 in. (71.1 cm) spine.

Formula: $\frac{(28\ in.)^3}{(23\ in.)^3} = 1.804$ *or* $\frac{(71.1\ cm)^3}{(58.4\ cm)^3} = 1.804$ *or* ***23.0 in. (58.4 cm) spine x 1.804 = 28.0 in. (71.1 cm) spine***

This conversion formula will calculate the shaft spine within ±.015 of actual.

2.6 **Measurement Location:** Spine measurement location shall be at the center of the arrow shaft span. In instances where this is not practical due to shaft design, the manufacturer shall disclose the measurement location(s) from an identifiable datum on the shaft.

2.7 **Measurement Equipment:** Measurement equipment may involve the use of dial indicators, probe indicators, and laser gauging devices.

2.7.1 **Mechanical Indicators:** In the case of mechanical indicators, probe pressure should be limited to no more than 0.176 oz (5 g).

2.7.2 **Non-contact Gauging Equipment:** Non-contact gauging equipment, such as laser-gauging equipment, shall read to within 0.001 in. (.0254 mm) of mechanical measurement equipment, conforming to the test methods and specifications outlined herein.

2.8 **Span Support Points:** Support points shall allow free axial travel of the shaft as the shaft is deflected during measurement.

2.8.1 Span Support Point Configuration: The shaft support point shall have a maximum diameter of 0.125 in. (3.175 mm) at the point of contact with the arrow shaft.

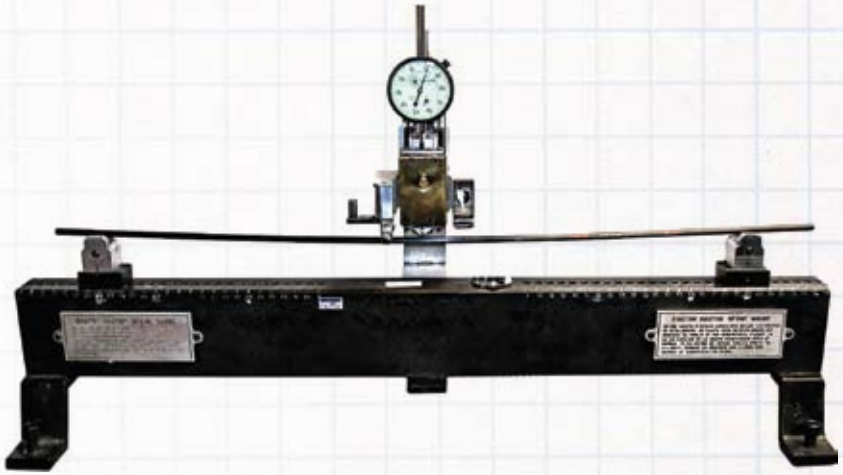
3. Significance and Use

3.1 This guideline will be used to determine an ATA Arrow Shaft Spine by which benchmarks and comparisons can be made by manufacturers and consumers.

4. Test Methods

4.1 **Test Description:** The arrow shaft shall be deflected by a 1.94 lb (880g ±0.05g) weight at the center of the span. The weight may suspend from or rest upon the shaft. The measurement difference between the position of a given datum at the center of the shaft at rest and the position of the same datum during deflection shall be the shaft spine value. The reading shall be taken within 30 seconds to prevent plastic deformation of the shaft material affecting the measurement.

4.2 **Measurement Accuracy:** The accuracy and span tolerance of the equipment and setup shall have a measured accuracy of at least ±0.002 in. (0.05 mm).



5. ATA Guidelines for Specification Disclosure

5.1 **ATA Standard Spine:** The term ATA Standard Spine may be used in instances where a measurement is taken in accordance with this test method.

5.2 **Temperature Measurement Range:** Spine readings shall be taken within a standard temperature range of 60° to 80°F (15° to 26° C). Because humidity range is not a factor in arrow-shaft spine measurement, a relative humidity range of 5% to 85% is permissible.

5.3 **English Units:** The shaft spine for which the measurement has been taken shall be clearly defined in English units, specifically inches (for example, 0.470 in. spine will be referred to as 0.470 ATA Standard Spine @ 28 in. span, a 1.00 in. spine will be referred to as a 1.00 ATA Standard Spine @ 28 in. span).

5.4 **SAS:** Spine variation around the arrow shaft may be expressed as SAS or (standard spine around shaft variation) < (x) where x is a value, in inches, of the total spine variation, derived from four spine readings taken evenly spaced 90° around the shaft.

SAS Formula:
SAS = Maximum Spine − Minimum Spine
From 4 measurement readings taken @ 90° apart around the circumference of the shaft.

5.5 **Measurement Tolerance:** In instances where a manufacturer wishes to specify a plus/minus reading, this should be indicated as distinct from the standard spine (for example, ±0.001 in.).

Guideline for the ATA Measurement of Round Arrow Shaft Straightness

Designation: ATA/ARR-203-2008

Summary:

To determine or test Round Arrow Straightness Measurement. The length of the span to be used for this guideline is 28.0 inch (71.1 cm). Arrow shafts shall be measured for straightness at the center of the arrow shaft span. Measurements shall be taken with a non-contact laser type optical measurement device or a mechanical indicator with specified probe pressure. The arrow shaft shall be rotated about its longitudinal axis while being measured for straightness at the center of the span.

1. Scope

1.1 This guide covers the formulation and designation of straightness measurement guidelines and nomenclature for arrow shafts.

1.2 This guideline is designed to provide manufacturers and consumers a means for measuring the straightness of arrow shafts with tools and devices available in the archery industry.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance from the arrow or arrow shaft. This guideline does not provide any warranty, expressed or implied, that any particular arrow or arrow shaft is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Terminology and Definitions

2.1 **Arrow Straightness:** The conformance of the material or load axis of an arrow shaft to the true linear, longitudinal axis of the shaft.

2.2 **Standard Total Indicator Reading (TIR):** Total indicator reading of arrow straightness obtained through methods outlined in this guide.

2.3 **Span Distance:** The length of the span to be used for this guideline is 28.0 inch (71.1 cm) with a length tolerance of ±0.125 inches (0.3175 cm). For those shafts manufactured 29.0 inches in length or less, the span distance to be used is 25 inches (63.5 cm) and adjusted to an equivalent 28.0 inches reading using the following conversion formula.

Conversion Formula:
28-inch straightness value = 25-inch straightness value x $^{28}/_{25}$
For example:
Measured Straightness at 25 inch = 0.0030 inch
Calculated Straightness at 28 inch = 0.0030 inch x $^{28}/_{25}$, Where $^{28}/_{25}$ = 1.12
Straightness at 28 inch = 0.0030 inch x 1.12 = 0.0034 inch

2.5 **Measurement Location:** Arrow shafts shall be measured for straightness at the center of the arrow shaft span distance. The tolerance for the measurement's location shall be equal to or better than ±0.250 inch (0.635 cm).

2.6 **Measurement Equipment:** Measurements may be taken with a non-contact laser type optical measurement device or a mechanical indicator.

2.7 **Mechanical Indicators:** In the case of mechanical indicators, probe pressure should be limited to no more than 0.176 oz (5 g).

2.8 **Support Wheels:** Support wheels must feature low-friction bearings and exhibit a positive crown to limit the contact area with the arrow shaft.

3. Significance and Use

3.1 This straightness measurement guideline will be used to determine and ensure a uniform ATA Arrow Shaft Straightness Measurement by which benchmarks and comparisons can be made by manufacturers and consumers.

4. Test Methods

4.1 **Test Description:** The arrow shaft shall be rotated about its longitudinal axis while being measured for straightness at the center of the span. This rotation cancels out the effect of gravity-induced sag. The rotation speed shall not exceed the resolution ability of the measurement device to ensure accurate straightness measurement.

4.2 **Shaft Roundness:** Accuracy of this measurement method depends upon the roundness of the arrow shaft. In situations where shafts are not round, this attribute can be factored out of the straightness measurement by using additional measurement devices at the span supports. If this adjustment method is used, it shall be noted along with the measurement value.

4.3 **Measurement Accuracy:** The measurement accuracy of the laser or mechanical device shall be equal to or better than ±0.001 inch (0.025 mm) for this ATA guideline.

5. ATA Guidelines for Specification Disclosure

5.1 **ATA Standard Arrow Straightness:** The term ATA Standard Arrow Straightness may be used in instances where a measurement is taken in accordance with this test method.

5.2 **English Units:** The shaft straightness for which the measurement has been taken shall be clearly defined in English units, specifically inches (for example, ±0.005 inch ATA Standard Arrow Straightness at 28 inch span).

5.3 **Straightness Tolerance:** Straightness tolerance measurements are commonly presented in two ways, including a plus-minus (±) reading, as well as Total Indicator Reading (TIR). The method of measurement shall be clearly defined with a measurement value.

5.3.1 **Plus-Minus (±):** This measurement value in inches represents the range of measurement from the average straightness measurement value. For example: Arrow Straightness = ±0.001 inch (0.025mm).

5.3.2 **Total Indicator Reading (TIR):** This measurement value in inches represents the total range of measurement values. For example: Arrow Straightness = 0.002 inch TIR (0.050 mm).

5.4 **Characterization of a group of arrows:** Often it is necessary to characterize the straightness of a group of arrows, such as a dozen arrows or the differentiation between two models of arrows. The straightness value of a group of arrows should either be the average straightness of the population or the maximum (also know as "worst-case") value for a single arrow within the group. It should be clearly stated which value is being used for a population. In addition, it should be clearly stated that the reading is a Plus-Minus (±) reading.

Examples:
Straightness of model ABC arrows = ±0.005 inch average
Straightness of model DEF arrows = ±0.002 inch worst case

Guideline for the ATA Threaded Replacement Point System Specifications

Designation: ATA/ARR-204-2008

Summary:

A recommended guideline for arrow components that will ensure components produced to this ATA guide will fit together onto the arrow shaft.

1. Scope

1.1 This guide provides the recommended basic dimensions required to ensure that Threaded Inserts, Points and Broadheads or Tapered Broadheads produced by component manufacturers to this guideline will fit together as intended to provide the archer with quality components.

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance from the component or component fit. This guideline does not provide any warranty, expressed or implied, that a particular component fit or component is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Terminology and Definitions

2.1 **Threaded Replacement Point System:** Specifically referring to Inserts, Points, and Broadheads with 8-32 UNC threads as the standard, wherein all these parts will fit and screw together.

2.2 **Threaded Insert:** (FIG. 1) An "Arrow Shaft Threaded Insert" is threaded to accept a screw-in Point or Broadhead.

2.3 **Threaded Point:** (FIG. 2) An "Arrow Shaft Threaded Point" is threaded to screw into a threaded insert.

2.4 **Threaded Broadhead:** An "Arrow Shaft Threaded Broadhead" (fixed or mechanical) is threaded to screw into a threaded insert.

2.5 **Tapered Broadhead Adapter:** (FIG. 3) An "Arrow Shaft Tapered Broadhead Adapter" is threaded to screw into a threaded insert.

2.6 **Tapered Broadhead:** An "Arrow Shaft Tapered Broadhead" is adhered with adhesive to the Broadhead Adapter.

3. Significance and Use

3.1 This Technical Guideline will ensure that arrow components produced to this guide will fit with each other and with other arrow shafts within the industry. This ATA Replacement Point System will be the recommendation by which benchmarks and comparisons can be made by manufacturers and consumers.

4. ATA Guidelines for Specification Disclosure

4.1 **ATA Threaded Replacement Point:** The term ATA Threaded Replacement Point System may be used in instances where Inserts, Points, and Broadheads meet the dimensions specified in accordance with this guideline.

FIG. 1. THREADED INSERT 8-32UNC

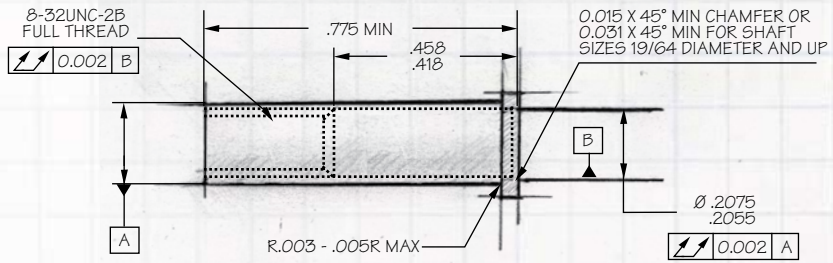


FIG. 2. THREADED POINT 8-32UNC

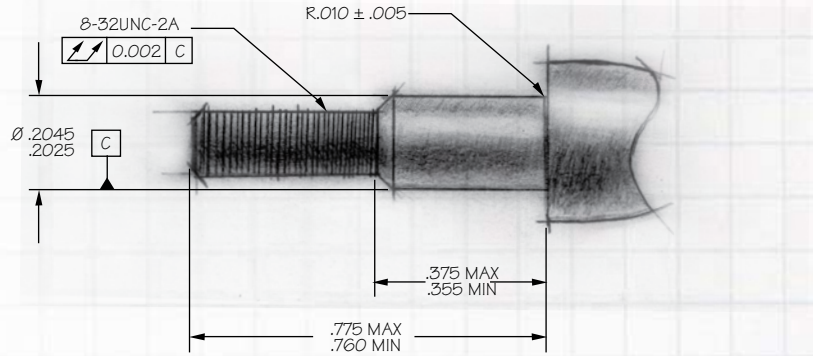
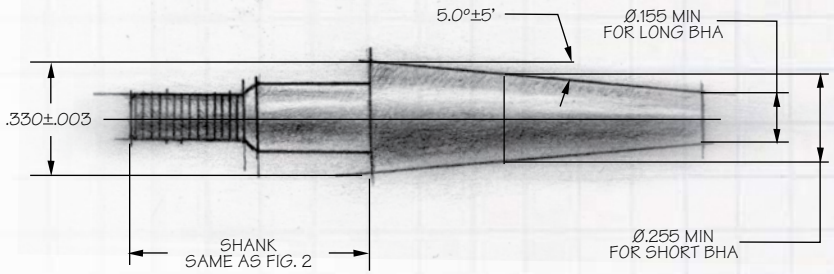


FIG. 3. TAPERED BROADHEAD ADAPTER (BHA) 8-32UNC



Guideline for the ATA Arrow Nock and Point Tapers Specifications

Designation: ATA/ARR-205-2008

Summary:

A recommended guideline for "Arrow Point and Nock Tapers" that ensures components produced to this ATA guide will fit onto the arrow shaft.

1. Scope

1.1 This guide provides the recommended basic dimensions required to ensure that Tapered Points and Broadheads produced by component manufacturers to this guideline will fit together as intended to provide the archer with quality components.

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance from any arrow or arrow shaft. This guideline does not provide any warranty, expressed or implied, that any particular arrow or arrow shaft is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Terminology and Definitions

2.1 **ATA Arrow Nock Taper Guide:** (FIG 1) An Arrow Shaft that has been tapered to accept a conventional nock.

2.2 **ATA Arrow Point Taper Guide:** (FIG 2) An Arrow Shaft that has been tapered to accept a Tapered Point or Broadhead.

3. Significance and Use

3.1 This Technical Guideline ensures that arrows tapered and components produced to this guide will fit together.

4. ATA Guidelines for Specification Disclosure

4.1 **ATA Arrow Point and Nock Taper Guide:** The term ATA Standard Point and Nock Taper Guide may be used in instances where Arrows, Shafts, Points, and Broadheads meet the dimensions specified in accordance with this guideline.

FIG. 1. ARROW NOCK TAPER

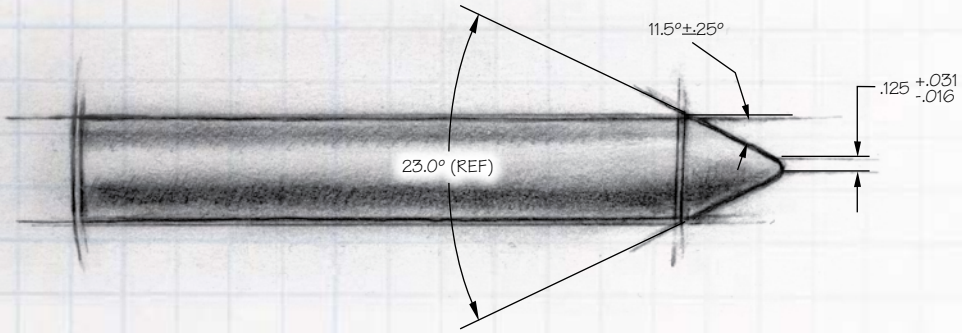


FIG. 2. ARROW POINT TAPER

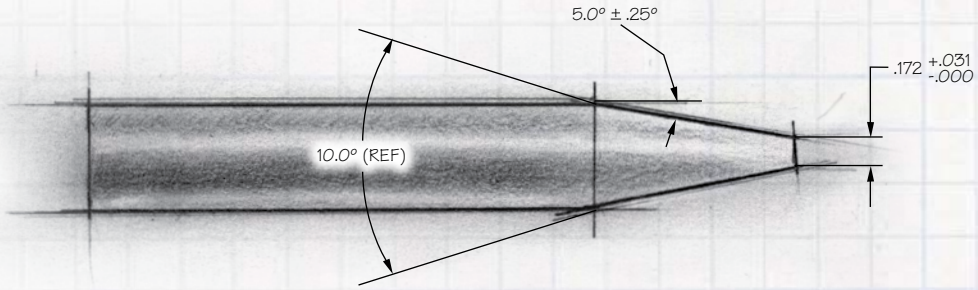
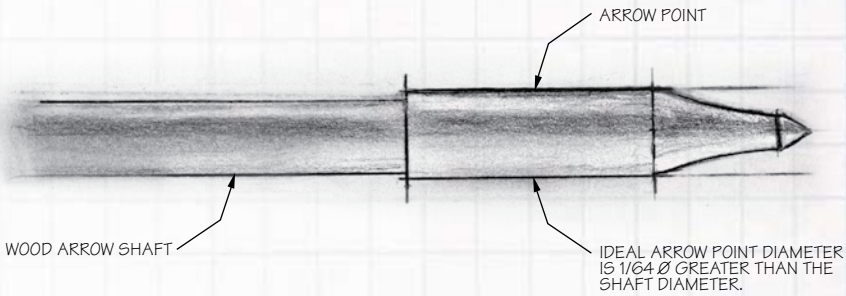


FIG. 3. IDEAL ARROW POINT DIAMETER FOR WOOD ARROWS



Guideline for ATA Arrow Fletching Recommendations, Hunting and Target Arrows

Designation: ATA/ARR-206-2008

Summary:
To provide a general Fletching Guideline for fletching arrow shafts with Target Points and Broadheads. The purpose of fletching is to stabilize the arrow in flight and to prevent planing when using broadheads.

1. Scope

1.1 This guideline covers the designations used to define an ATA Arrow Fletching Recommendation guide with relation to the steerage required based on the type of point or broadhead used.

1.2 In general, fixed non-vented broadheads require the maximum fletching steerage/stabilization (a longer vane or feather and offset or helical fletching orientation), vented broadheads require less stabilization, and mechanical broadheads require less fletching steerage/stabilization than any fixed broadhead. Target points require the least amount of steerage/stabilization. Size and length of the broadhead, and fletching/arrow-rest clearance are also other critical factors when considering the correct fletching size and orientation.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance from any arrow or arrow shaft. This guideline does not provide any warranty, expressed or implied, that any particular arrow or arrow shaft is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Terminology and Definitions

2.1 **Target Point:** A target point is a point used for field and target shooting.

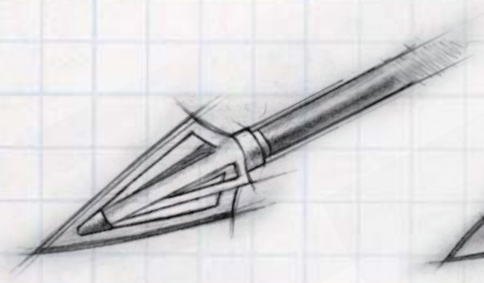
2.2 **Broadhead:** A point with blades having cutting edges suitable for hunting.

2.2.1 **Fixed Broadheads (Vented and Non-Vented):** A broadhead with blades permanently fixed in the open position.

2.2.2. **Vented Fixed Broadhead:** Broadheads with air vent holes cut into the blades of the broadheads.

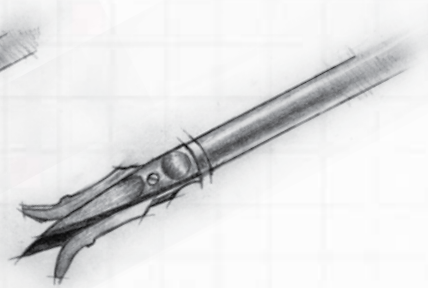
2.2.3. **Non-Vented Broadheads:** Broadheads with solid or closed blades.

2.3 **Mechanical Broadheads:** A broadhead with blades contained in the body of the broadhead remaining hidden in flight and opening on contact.



VENTED FIXED BROADHEAD
TYPICAL

NON-VENTED FIXED BROADHEAD
TYPICAL



MECHANICAL BROADHEAD
TYPICAL

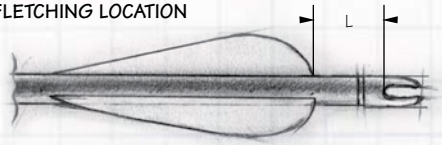
2.4 **Fletching:** Fletching is three to four feathers or plastic vanes in lengths of 1 to 5 inches, glued to the back of the arrow around the circumference of the shaft, providing the steerage required to keep the arrow flying straight and true to the target.

2.4.1 **Vane:** Fletching vanes are made of soft, flexible plastic in many shapes, colors, lengths, thicknesses, and styles. Vanes are generally more durable, quieter, waterproof, and less expensive than feathers.

2.4.2 **Feathers:** Fletching feathers are available in both right-wing and left-wing, in many colors, sizes, and styles. Feathers are generally lighter than vanes and provide better stabilization.

2.5 **Fletching Location:** Position fletching approximately one (1) inch (L) from the bottom of the nock groove.

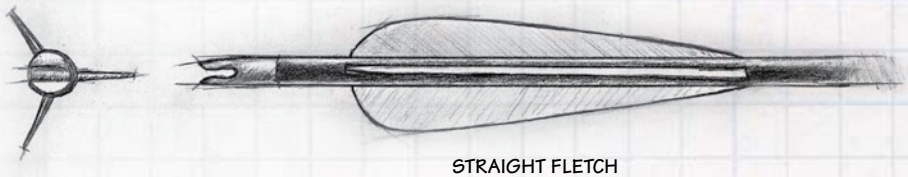
RECOMMENDED FLETCHING LOCATION



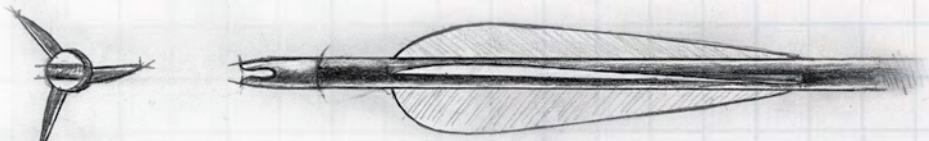
2.6 **Straight Fletch:** Fletch is adhered to the shaft inline with the centerline of the arrow and spaced around the circumference in a three- or four-fletch configuration. Straight fletch provides the best arrow-rest clearance but the least amount of arrow stabilization for broadheads. Feathers typically cannot be fletched in a straight pattern. Straight fletch is not recommended with hunting broadheads.

2.7 **Offset Fletch:** Fletch is adhered to the shaft at an angle greater than 1° offset from the centerline of the arrow and spaced around the circumference in a three- or four-fletch configuration. Offset fletch provides good arrow-rest clearance and better arrow stabilization for broadheads. An offset fletch generally provides good arrow stabilization for Vented Fixed Broadheads and Mechanical Broadheads.

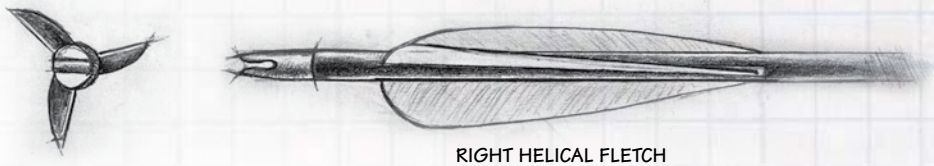
2.8 **Helical Fletch:** Fletch is adhered to the shaft in a right-hand or left-hand spiral around the circumference of the arrow and spaced evenly in a three- or four-fletch configuration. Fletching with vanes in a right- or left-hand helical twist is a matter of personal preference. Right-wing feathers must be fletched in a right-helical or offset direction and left-wing feathers must be fletched in a left-helical or offset direction.



STRAIGHT FLETCH
MINIMAL ROTATION IN FLIGHT



RIGHT OFFSET FLETCH
ROTATES IN FLIGHT



RIGHT HELICAL FLETCH
ROTATES DRAMATICALLY IN FLIGHT

3. Significance and Use

3.1 This guideline provides an ATA recommendation for Arrow Fletching.

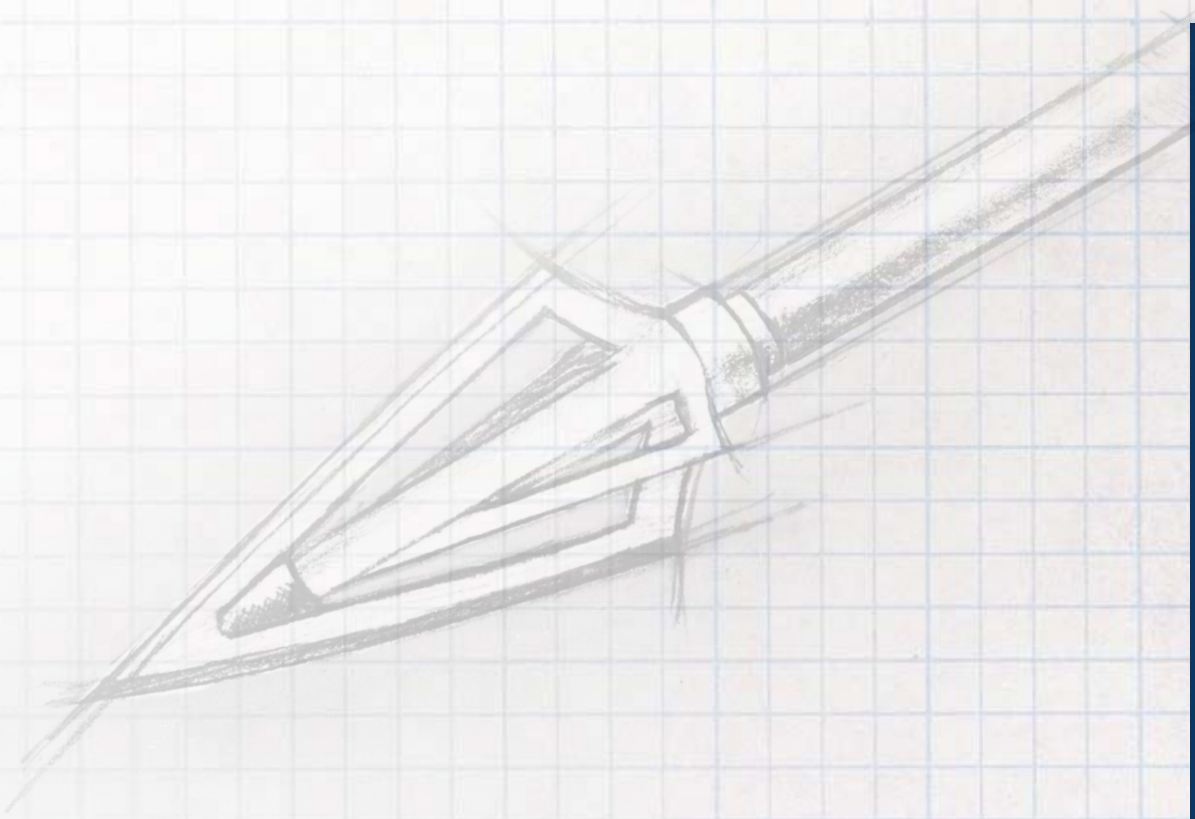
4. Fletching Recommendation

In general, the best control for straight arrow flight is obtained using straight-line fletching that is offset from the centerline of the shaft, or fletching that is applied with a spiral or helical twist. Offset or helical fletching causes the arrow to spin around its longitudinal axis in flight, producing improved directional stability. The requirement for the level of control (length of vane or feather and offset or helical orientation) to obtain straight arrow flight will vary with the individual type of broadhead or point used. Fletching/arrow-rest clearance is also a critical factor when considering the correct fletching size and orientation. It is desirable to have as little vane or feather interference with the arrow rest as possible and still achieve straight arrow flight.

An arrow with a target or field point will generally fly straight with a 1- to 3-inch vane or feather in a straight or offset orientation, while an arrow with a broadhead may require a 3- to 5-inch vane or feather applied in an offset or helical arrangement to achieve straight arrow flight.

5. ATA Guidelines for Specification Disclosure

5.1 **ATA Fletching Recommendation:** The term ATA Fletching Recommendation may be used in instances where an arrow is fletched to these recommendations.



Guideline for the ATA Measurement of Wood Arrow Shaft Static Spine (Stiffness)

Designation: ATA/ARR-207-2008

Summary:

To determine or test Wood Arrow Shaft Static Spine Measurement. The arrow shaft shall be supported at a fixed span of 26.0 in. (66.0 cm). The arrow shaft shall be deflected by a 2.00 lb (907g ±0.05g) weight at the center of the span. The measurement difference in inches between the center of the shaft at rest and center of the shaft during deflection shall be the shaft spine value.

1. Scope

1.1 This guideline covers the testing technique, method, and ATA Wood arrow selection recommendation.

1.2 This guideline is not intended to provide any engineering or structural evaluation of the arrow shaft or components that would determine their fitness for the use intended, safe function, or any other attribute except as stated.

2. Terminology and Definitions

2.1 **Wood Arrow Spine:** The deflection of the arrow shaft measured in inches parallel to the wood grain, in a three-point load test where a 2.00 lb (907g ±0.05g) weight is applied to the midpoint of the arrow shaft supported at a 26.0 inch (66.0cm) fixed span.

2.2 **Wood Arrow Span Distance:** The length of the span to be used for this guideline is 26.0 in. (66.0cm).

2.3 **Spine Measurement Weight:** The weight used to determine the Wood Arrow Spine is 2 lb (907g ±0.05g).

2.4 **Measurement Location:** The Spine measurement location shall be at the center of the arrow shaft span.

2.5 **Measurement Equipment:** Measurement equipment may involve the use of dial indicators, probe indicators, and laser gauging devices.

2.6 **Mechanical Indicators:** In the case of mechanical indicators, probe pressure should be limited to no more than 0.176 oz (5 g).

2.7 **Non-contact Gauging Equipment:** Non-contact gauging equipment, such as laser-gauging equipment, shall read to within 0.001 in. (.0254 mm) of mechanical measurement equipment conforming to the test methods and specifications outlined herein.

2.8 **Span Support Points:** Support points shall allow free axial travel of the shaft as the shaft is deflected during measurement.

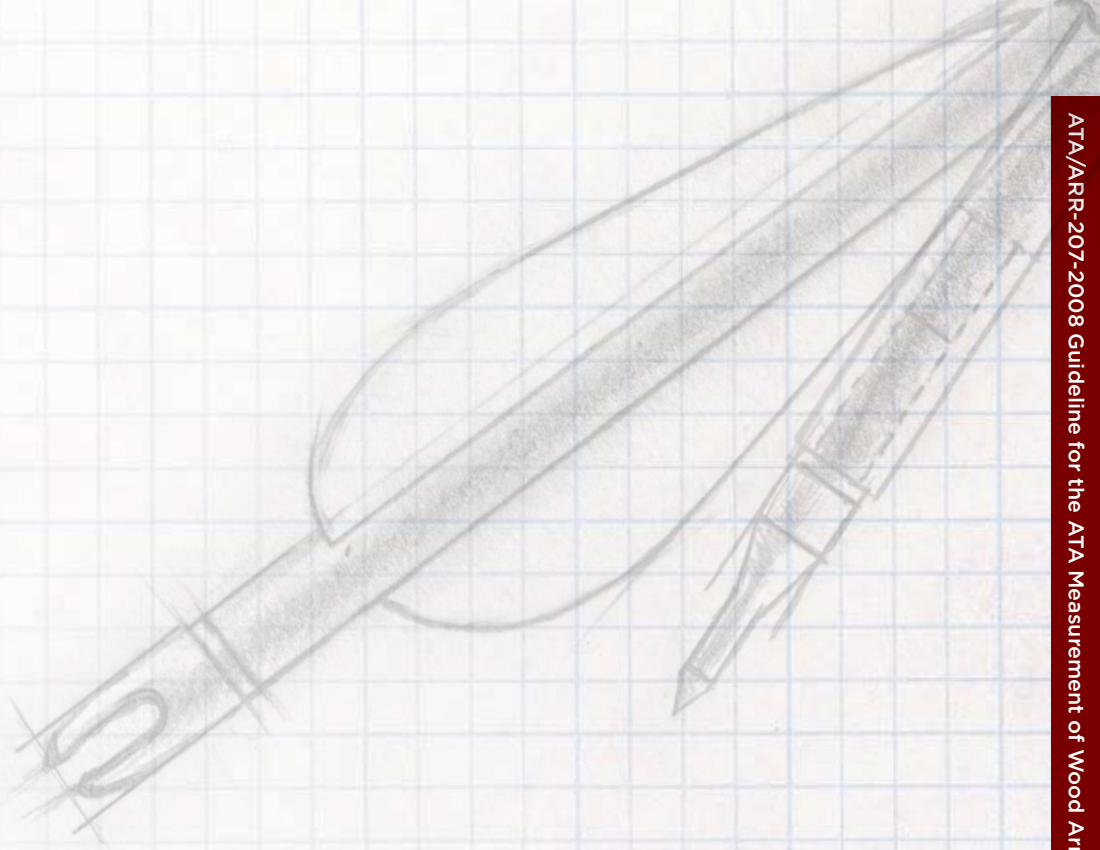
2.9 **Span Support Point Configuration:** The shaft support point shall have a maximum diameter of 0.125 in. (3.175 mm) at the point of contact with the arrow shaft.

3. Significance and Use

3.1 This guideline will be used to determine an ATA Wood Arrow Shaft Spine by which benchmarks and comparisons can be made by manufacturers and consumers.

4. Test Methods

4.1 **Test Description:** The wood arrow shaft shall be oriented with the wood grain parallel to and deflected by a 2 lb (907g ±0.05g) weight at the center of the 26-inch (66.0cm) span. The weight may suspend from or rest upon the shaft. The measurement difference between the position of a given datum at the center of the shaft at rest and the position of the same datum during deflection shall be the shaft spine value.



Guideline for ATA Stabilizer Rod Mounting Studs Specification

Designation: ATA/ACC-301-2008

Summary:

To define and promote the standardization of an Archery Stabilizer's rod mounting stud specifications to be 5⁄16-24 UNF thread size with a length of .625 inches (±.125 inch). It's generally accepted that the 5⁄16-24 UNF threaded hole and threaded bolt, or stud, provides an adequate margin of strength needed to cope with the stress loads imposed by modern Compound Bows, long and heavy stabilizers, and the combined use of high-performance bowstring materials.

1. Scope

1.1 This guideline covers the ATA recommendation for the specification of Archery Stabilizer's rod mounting stud.

1.2 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Stabilizer or any particular Archery Accessory. This Guideline does not provide any warranty, expressed or implied, that a particular Archery Stabilizer or Archery Accessory is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 ATA Technical Guideline for ATA Stabilizer and Accessory Mounting Holes Specifications ***(ATA/BOW-109-2008).***

3. Terminology and Definitions

3.1 (none)

4. Significance and Use

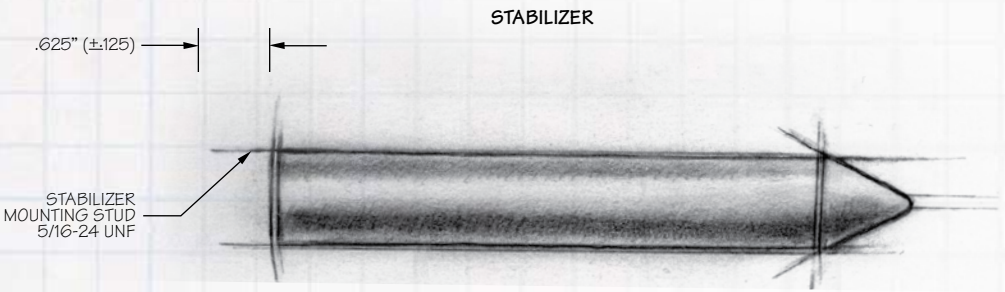
4.1 This guideline will be used to define the ATA recommended Stabilizer Rod mounting stud for Archery Stabilizers.

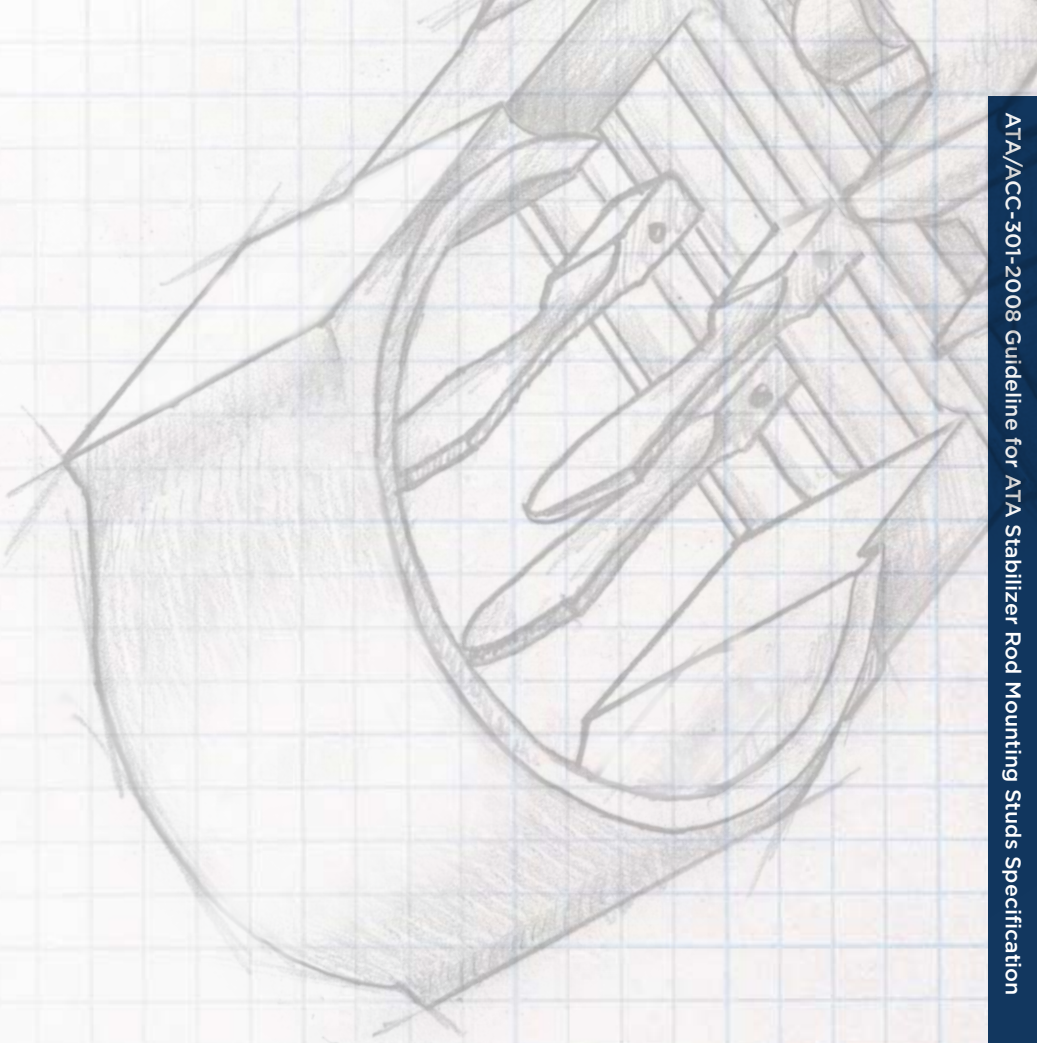
5. Guideline

5.1 On Archery Stabilizers, the ATA recommended Stabilizer Rod mounting stud should be 5⁄16-24 UNF thread size and should be a minimum of .625 inches long (±.125 inch).

6. Drawings

6.1 ATA recommended Stabilizer and accessory mounting stud dimensions and specification drawings.





Guideline for ATA Specification for Marking of Single-Lens Scopes for use with Archery Bows

Designation: ATA/ACC-302-2008

Summary:

This guideline outlines the method used to determine the archer's apparent target magnification of a given lens with a specific Diopter, and the distance the lens is placed from the archer's eye.

1. Scope

1.1 This guideline covers the ATA procedures and specifications for classification of lenses and sighting scopes magnification as used in conjunction with archery bows.

1.2 This system for classification of these lenses, in terms of their optical magnification, depicts the empirical relationship of the apparent magnification the archer can expect to obtain when a correctly marked lens is used under specific conditions.

1.3 The visual acuity of these lenses is related to the magnification of the lens, the specific archer, lens quality and the size and quality of the rear aperture (peep sight) used in conjunction with the lens. Acuity is not the subject of this guideline but should also be considered in choosing the appropriate lens for the archer's style of shooting and personal needs.

1.4 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Bow, Archery Bow Scope lens, or any other particular Archery Accessory. This Guideline does not provide any warranty, expressed or implied, that a particular Archery Bow, Archery Bow Scope, or any Archery Accessory is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 (none)

3. Terminology and Definitions

3.1 **Apparent magnification:** The apparent increase in the size of an object when viewed through the subject lens held at a specific distance from the archer's eye.

3.2 **Diopter:** The reciprocal of the focal length of the lens as measured in meters. One Diopter is the rating obtained when the constant one (1) is divided by the focal length value of a lens having a 1-meter focal length.

3.3 **Focal Length:** The distance, measured in meters, from the center of the lens to the point where incident plane light waves passing through the lens are brought to the sharpest possible focus.

3.4 **Eye-to-Scope Distance:** The distance the lens is placed from the individual's eye when in use. If measured in meters it is expressed as ESM. If measured in inches it is expressed as ESI.

3.5 **Optical Magnification:** The characteristic of a particular lens defined as the reciprocal of the lens focal length as measured in meters and stated in Diopters.

3.6 **Peep Sight:** A rear sighting device placed in or onto the bowstring, having a small opening through it that the archer peers through to view the bow sights or scope lens being used.

4. Significance and Use

4.1 This guideline is intended to ensure a uniform classification of lenses and the marking of scopes to avoid confusion by archers as to the expected apparent magnification the individual may experience based on the lens diopter marking.

5. Guideline and Classification

5.1 The Magnifying power of a lens as measured by the reciprocal of the focal length of the lens in meters is expressed as Diopter. The larger the Diopter number, the greater the magnifying power of the lens.

5.2 The classification of lenses for use with archery bows shall be determined by measuring their focal length in meters. These lenses shall be specified as a given Diopter and should conform to that classification by having a focal length that corresponds to that Diopter value within ±3 percent.

5.3 The apparent magnification that an archer experiences depends on two important factors. First, the Optical magnification, or Diopters of the lens; and secondly, the distance the lens is placed from the user's eye.

5.4 Given the optical magnification, or Diopters, of a lens and the distance it is placed from the archer's eye, the apparent magnification can be determined.

5.5 The apparent magnification is defined empirically by the following formula:
Apparent Magnification = 1/ (1-D X ESM),
Where D = lens optical magnification, or Diopters, and:
ESM (Eye to Scope Distance) is in meters.

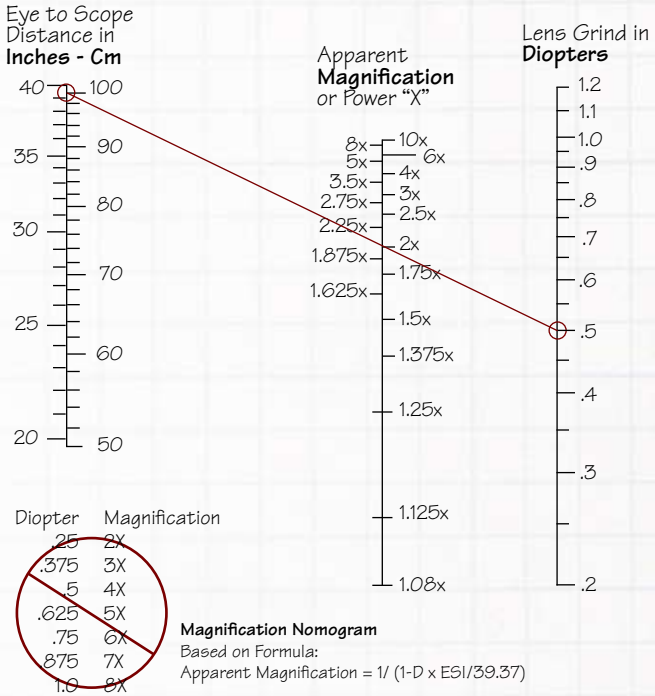
5.6 If the Eye-to-Scope distance is measured in inches (ESI), then ESM is substituted in the formula with (ESI / 39.37).

5.7 Lenses and Scopes should be marked clearly and permanently with the Diopter number of that lens.

6. Charts

6.1 ATA Approved Single-Lens bow Scope chart.

Single Lens Bow Scope Magnification Made Simple



Magnification Nomogram
Based on Formula:
Apparent Magnification = 1/ (1-D x ESI/39.37)

Basic Facts: The actual manufacturers of bow scope lenses specify their product in diopters, which is a small measure of the lens' optical strength.
Depending on the lens manufacturer, the diopter rating of a given lens may vary ± some fraction of a diopter.

How to use this chart:

- Knowing any two (2) of these values, you can easily solve for the third (unknown) value.
- Simply find the two values that you know on their respective graphs and connect those numbers with a straight line.
  a) If the values you know lie on two adjacent graphs, then you will have to extend that line to the third graph where it will reveal the third unknown value.
  b) If the values that you know lie on the two outside graphs then a line connecting those values will cross the center graph indicating the magnification one would obtain under those circumstances.

Guideline for ATA Accessory and Sight Mounting Holes Specification

Designation: ATA/ACC-303-2008

Summary:

To define and promote the standardization of Archery Bow Sight mounting hole specification, to be two each through holes with a diameter of .206(±0.005 inch) and with a center to center span of 1.312 inches (±0.005 inch). This specification accommodates the use of a 10-24 UNC bolt and matches the guideline for the mounting hole specifications on Archery Bows.

1. Scope

1.1 This guideline covers the ATA recommendation for the specification of an Archery Bow Sight and Accessory mounting holes.

1.2 The defined holes within this guideline have proven over time to be adequate for attaching sighting devices to the bow. These dimensions may not be adequate for attaching other accessory devices as they may overload the screw and/or mounting hole threads.

1.3 This guideline does not provide any expressed or implied warranty in respect to any engineering or structural performance of a particular Archery Bow, Archery Bow Sight, or any particular Accessory. This Guideline does not provide any warranty, expressed or implied, that a particular Archery Bow or Accessory is fit for any particular purpose, or will function safely, or will possess any other attribute.

2. Reference Documents

2.1 ATA Technical Guideline for Sight Mounting Holes ***(ATA/BOW-108-2008).***

3. Terminology and Definitions

3.1 (none)

4. Significance and Use

4.1 This guideline will be used to define the ATA recommended Sight and Accessory mounting holes for Archery Sights.

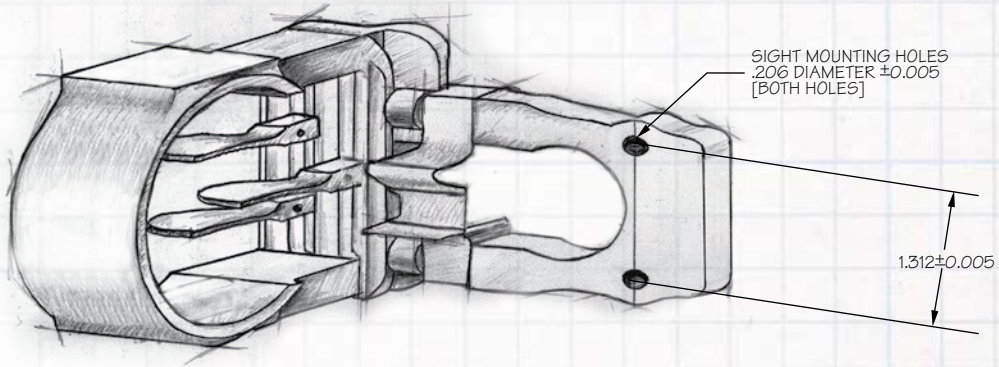
5. Guideline

5.1 On Archery bow sights, the ATA recommended sight and accessory mounting holes are to be .206 (± 0.005) inch through holes.

5.2 ATA recommended sight and accessory mounting holes for both Bows and Accessories are to have a “center to center” dimension of 1.312 inches (±0.005 inch).

6. Drawings

6.1 ATA recommended sight and accessory mounting hole dimensions and specification drawings.



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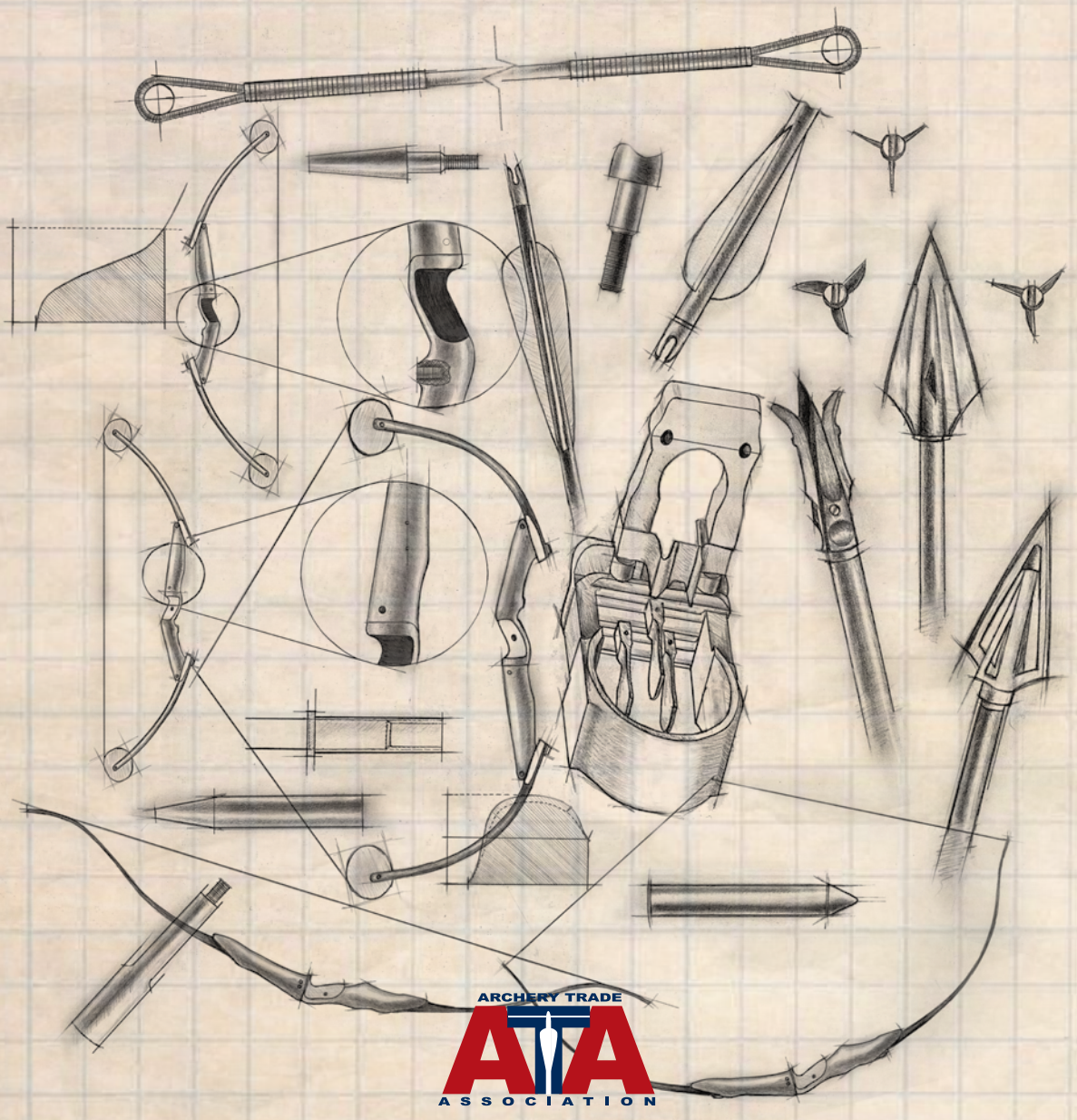

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