

Yamaha's Takedown Bow Series features an ideal tackless insertion hub system. Before using the bow, make sure the limbs and handle are fully set. For perfect setting, it is recommended to use the Yamaha Stringer.

### Precautions on handling

1. Be sure to remove the string from the bow when ever storing it.
2. In storing or carrying the bow, in order not to damage the handle and limbs, wrap them with a cloth and put them in the archery case.
3. Properly place the bow while in use or storage so as not to put improper pressure on it.
4. Be careful not to try shooting without an arrow or with the nock disconnected from the bowstring.
5. When the bow gets wet, carefully wipe it off, with a dry cloth including the handle/limb joint unit.
6. When storing the bow for a long period of time, lay it horizontally and keep it out of direct sunlight or dampness.
7. The string should be replaced from time to time depending on frequency of use.
8. If there's any defect in or damage to the handle or limbs, there's a danger of breakage. Be sure to check the bow from time to time for defects or damage.  
Never modify the handle by yourself. Improper modification may cause trouble.
9. The above precautions should be strictly observed by every purchaser. The manufacturer shall not bear the responsibility for any troubles caused by misuse.

This instruction manual has been prepared so that you can always keep your bow in top condition.

How well the bow continues to give satisfactory performance depends on the way it's used. Please read this manual carefully so you can enjoy high-precision archery performance to the fullest.

### How to choose the string

#### 1. Material

The materials used in today's strings are roughly classified into two categories: Tetron or Dacron, and Kevlar. These two materials represent the original thread used in manufacturing the bowstring.

##### a. Features of 'Tetron' Bowstrings:

- Low in price
- Extremely superior durability
- Gives soft shooting feel

##### b. Features of 'Kevlar' Bowstrings:

- Stretching is very little
- Gives sharp shooting feel due to lack of stretching
- Provides greater responsiveness due to lighter mass
- 4 - 8 F.P.S. gain over Tetron String

Both string materials have advantages and disadvantages over the other.

In general, the Tetron String provides characteristics of soft shooting feel and extremely long life. It is preferred by beginners and intermediates because of this long life and consequent low maintenance.

The Kevlar String material provides a higher degree of performance, but does so over a shorter usable life span.

Kevlar Strings are preferred by top archers because of this superior performance and because periodic maintenance requires some technical expertise.

#### 2. Strand number (string thickness)

A bowstring consists of multiple strands twisted together. Archers should use the proper number of strands to match the drawing weight for best shooting without being worried by the string breaking.

It is recommended the string be chosen within the ranges shown in the following tables, though the strand number differs depending on the kind of the string.

DRAW WEIGHT		~35	35 ~ 43	40 ~
BOW LENGTH	64	○	○	
	66		○	○
	68		○	○
	70		○	○
STRAND		8	10	12

Table 1. 'Tetron' strings to choose from (8 thread applications is not manufactured by Yamaha)

DRAW WEIGHT		~38	35 ~ 45	42 ~
BOW LENGTH	64	○	○	
	66	○	○	○
	68	○	○	○
	70		○	○
STRAND		16	18	20

Table 2. 'Kevlar' strings to choose from (Estimated applications by other manufacturers)

As shown in the tables, sometimes a bow can be used with strings of different thickness due to the allowance provided.

In this regard, attention should be paid to the point that a thicker string has a lower ratio of elongation giving less variation in height when shooting. However, it has inferior energy efficiency due to the greater mass of the bowstring. On the other hand, a thinner string snaps back quicker after release but is less durable. This means there's a delicate interrelation between energy efficiency, shooting feel and durability of the bowstring.

So it is very important for you to find out for yourself the proper bowstring thickness that's just right for you.

DRAW WEIGHT		~40	35 ~ 45	40 ~
BOW LENGTH	64	○	○	
	66	○	○	○
	68	○	○	○
	70		○	○
STRAND		8	10	12

Table 3. 'Kevlar' strings to choose from

\*Yamaha strings of 'Kevlar' have strand numbers that are different from other brands. By employing a special manufacturing process with fewer strands of larger diameter, Kevlar's disadvantage of "breaking ease" has been substantially reduced.

#### 3. String Height

The bowstring height, or bracing height, of your bow is very important. The height is measured as the distance between the pivot point and the string. Bracing too high or too low can adversely affect accuracy as well as arrow velocity.

The following are suggested brace heights for most recurve bows. Usually the ultimate bracing height will be found within these limits. However, there are always exceptions which only the individual can determine for himself.

64" or less — 8-1/4 — 8-3/4  
64" — 66" — 8-3/8 — 9  
66" — 68" — 8-1/2 — 9-1/4  
68" — 70" — 8-3/4 — 9-1/2

Bear in mind these are suggested string heights and will not apply to all archers or all bows. When the proper string height is achieved the recoil action of the bow smooths out and best arrow flight is achieved.

#### 4. Nocking Point

The nocking point is the point on the bowstring where the arrow should be nocked. Determining the nocking point may be difficult sometimes for beginners. In such a case, don't hesitate to consult more advanced archers.

The best method for determining the proper nocking point is to use the "Bare Shaft Planning Test". The procedures for performing this test are outlined in a later section on the adjustment of the Cushion Plunger. If the Bare Shaft impacts higher than the fletched group, raise the nocking point. Do the opposite if the reverse is true.

### How to choose an arrow rest

The arrow rest is where the arrow is placed when shooting. There are a variety of the rests made of cloth, plastic or metal. They are available in two different types: one is used with the rest only and the other used combined with a cushion plunger.

Attention should be paid to the following points when choosing a rest:

1. Smooth operation.  
(not too stiff and always identical in operation)
2. Has no variables in operation, especially in vertical direction.
3. Has no needless parts in construction.



There are occasions when the feature hits the arrow rest when shooting depending on the archer's technique. In this case, it is necessary for the archer to trim the rest to eliminating that hitting.

### How to adjust the cushion plunger

Recently cushion plungers have been used on competition bows for more efficient shooting. For better on-target precision, it is an essential factor to know how to adjust the cushion plunger.

The Yamaha EX Bow has the exclusive cushion plunger 'EX' and the YTDII has a 'rubber' cushion plunger (patent pending), as standard equipment.

Use the cushion plunger paying careful attention to the following points:

#### I Adjustment of the cushion plunger

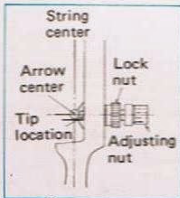


Fig. 1  
CUSHION PLUNGER

The plunger adjustment is done by changing the tip location or rubber cushion rate. These two elements are inter-related. The same effect can be obtained by moving the tip out and by tightening the rubber cushion, or by doing the reverse.

#### (II) How to adjust and use the cushion plunger "EX"

The Yamaha Cushion Plunger "EX" has been given greater operational sensitivity along with greatly improved stability and durability thanks to its long-sized, 'Teflon' slide-block construction with an inner spring guide system.

- ① The plunger adjustment is made through tip location and spring pressure. These two elements are interrelated. The same effect can be obtained by moving the tip out and by increasing the spring pressure or by doing the reverse.
- ② You may adjust the cushion plunger by shooting at a distance of 10-15 meters from the target. It is recommended to start close and conduct fine adjustments until the path of the arrow is straight.

③ Begin by installing the Cushion Plunger and adjusting the location of the pressure point so that the tip or point of the arrow shaft is aligned  $1/8'' - 3/16''$  (0.30cm - 0.45cm) outside the bow string with the bow string centered to the bow. The tip can be shifted 0.75 mm by a single turn. In addition, make sure to adjust the rest position so as to align the arrow center with the Cushion Plunger tip center.

④ Having determined the tip location, fix it with the lock nut and firmly tighten the setscrew (B).

⑤ The best method to determine the flight characteristics of the arrow is to use the "Bare Shaft Planing Test". This test can only be performed after all accessories have been properly installed and the individual has developed a reasonably sound and consistent shooting technique. To perform this test shoot at least 3 fletched arrows at a specific aiming point on the target. Then shoot an identically aimed unfletched arrow shaft. If the unfletched arrow impacts to the left of the fletched group (for right-handed archers) decrease the spring loading on the Cushion Plunger. If the unfletched shaft impacts to the right of the fletched group, increase the spring pressure thru the adjusting nut. Loosen the setscrew (A). Turning the adjusting nut, adjust the Spring Pressure. When you want to increase the pressure, turn the nut to the right and when decreasing the pressure, turn to the left. Having determined the spring pressure, tighten the setscrew (A) to fix the nut.

⑥ Sometimes the problem may arise that it is impossible to adjust the unfletched shaft so as to impact with the fletched group. If you can bring the bare shaft to within 6 inches of either side of the fletched group at 15 meters it is within an acceptable range and good arrow flight should be achieved.

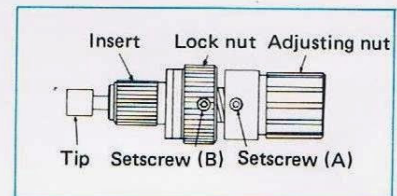


Fig. 2

#### (III) Replacement of the spring

When you want to decrease the spring pressure, replace the spring with the separately attached spring. To replace it, loosen the setscrew (A) and remove the adjusting nut and spring.

#### (III) Replacement of the tip

When the tip is worn, replace it with the new one attached.

Note: Adjustment of the 'rubber' cushion plunger for the YTDII can be done in accordance with the procedure for the plunger 'EX'.

#### II Installation of arrow rests

When using the cushion plunger, also use the Yamaha arrow rest, 'Flip II' or 'Flip EX'. After removing the back-paper, attach it on the window section. (See Fig. 1.)

At the EX handle window section, the lines are printed to indicate each location where a clicker and an arrow rest (upper and lower) are mounted. Attach the 'EX' rest along the line.

For the YTSII handle, a 'plastic arrow rest' is provided as standard equipment. Attach it on the window section after removing the back-paper.

\*Note: A cushion plunger cannot be installed on the YTSII. A side projection (pressure point) on the plastic rest substitutes for the plunger tip. Determine its installing location referring to the above illustration.

### Installation of Stabilizer and Adjustment of Dampers

A stabilizer is used to control the rotational torque of the bow. There are no restrictions on the weights and lengths of stabilizers in use for competitions, according to International rules.

Choose the appropriate stabilizer in weight, length and numbers just right for you and your shooting technique. When using longer and heavier stabilizers, you can get greater efficiency in controlling rotational torque. If no cushion plunger is used, however, there may be occasions of inferior performance in arrow flight due to interference with the natural movement of the bow. A damper is used to overcome this disadvantage.

A damper calms fine vibrations occurring during aiming and absorbs shock at the same time, it allows the arrow to clear the sight window and arrow rest more smoothly by giving an appropriate rotation to the bow.

You are advised, therefore, to choose the stabilizers appropriate to your physical strength and technique, and correctly adjust the damper tightness to secure better efficiency.

#### Yamaha Damper FD-80 and FD-EX

Yamaha dampers are available in two types: FD-80 and FD-EX. The Yamaha FD-EX damper has a new damping configuration (patent pending) to control the imbalance in the stabilizer deflections at shooting due to the differential vibrations between the longitudinal and transverse directions of the bow.

When using these dampers, make sure to choose one which fits your bow because there are a variety of screw sizes depending on the combination of component parts.

(Separately available are some optional adaptors for use with different screw sizes. Contact your dealer.)

Note: The YTDII handle has the FD-80 as standard equipment.

### Spacers for adjusting the tiller heights (Standard equipment on the EX handle)

#### General Instructions

In assembled and strung bow, a distance between the limb/handle joint and the bowstring is called a tiller height. Generally, a bow is constructed with a lower limb greater in strength than the upper limb, having the tiller height L1 larger than the L2 as shown in Fig. 2.

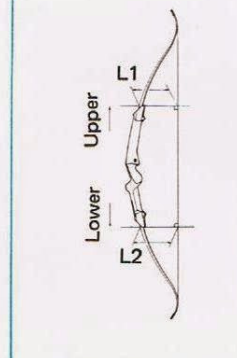


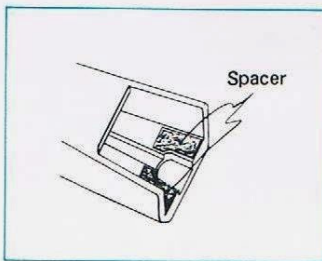
Fig. 2

This tiller should normally be in the range from  $1/8''$  to  $3/8''$

Spacers are used to adjust the tiller height appropriate to the limb/handle combination and the individual archer's technique.

It is not necessary to adjust the tiller height when it is within the allowable range of use for the archer in relation to the limb/handle combination.





Spacers are available in two different thicknesses: 0.1 mm and 0.3 mm. Attach the spacer to the limb insert section after removing the back-paper as shown in Fig. 3, According to the following procedure for adjustment.

\* The spacer should be used only to adjust the tiller height and not to adjust the draw weight.

Fig. 3

#### Adjustment of tiller heights

1. Holding the strung bow vertically, measure the tiller heights L1 and L2 at both the upper and lower ends of the handle as shown in Fig. 1.
2. Obtain the difference in tiller heights between L1 and L2.  
Difference in tiller heights:  $\Delta L = L1 - L2$

#### (Precautions)

The correction range between the spacer thicknesses and tiller height differences is as follows, with a standard string height of 22cm (8-5/8").

Spacer thickness	Correction range in tiller height
0.1mm	1 to 2mm
0.3mm	3 to 4mm

It should be noted that the correction range becomes larger when the string height applied is greater than the standard height (22cm), and becomes smaller when lower than the standard.

\* Every spacer is made of the same material used. Make sure to use spacers identical in thickness. In addition, be sure to use the same thickness spacers on a single insert section.

#### (A) When extending the tiller height difference:

Attach the spacers meeting the correction range on the limb insert section of the lower handles as shown in Fig. 2.

Ex. Tiller height difference, measured ( $\Delta L$ ): 1 to 2mm  
Tiller height difference, to be corrected: 4 to 6mm

Attach spacers 0.3mm thick onto the lower insert section.

#### (B) When shortening the tiller height difference:

Attach the spacers on the upper limb insert section.

Ex. Tiller height difference, measured ( $\Delta L$ ): 6 to 8mm  
Tiller height difference to be corrected: 3 to 4mm

Attach spacers 0.3mm thick on the upper insert section.

#### Special Attention is Called

Magnesium alloy is used in the handle of Yamaha bows.

There may be occasions where some cracks on breakage happens to the handle which may have been weakened due to fatigue in the material caused by repeated arrow shooting or corrosion during a long period of time in use. In case such an abnormality is found on your bow, immediately discontinue using it and contact the dealer your purchased your bow from.

In addition, never modify the handle by shaving it or drilling a hole in it. Any remolding of the handle unit will advance fatigue or corrosion in the metal, cutting down its durability.

Yamaha designs and builds its high-quality handles by fully utilizing its long-time expertise and know-how including rational distribution of rigidity, intensive research in handle design and materials and uniformity of casting.

To assure the superb quality of the EX handle, for instance, Yamaha carried out many stringent tests and trials including durability tests for metal fatigue by sampling every casting lot. In addition, a minimum of 60,000 shots were made in actual shooting with the substantial draw weight of 50 lbs., after which the durability of the handles was checked by means of X-ray.

Specifications subject to change without notice.

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NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

ENTER THE AGE OF EXCELLENCE

# YAMAHA TAKE DOWN BOW

GENERAL INSTRUCTIONS