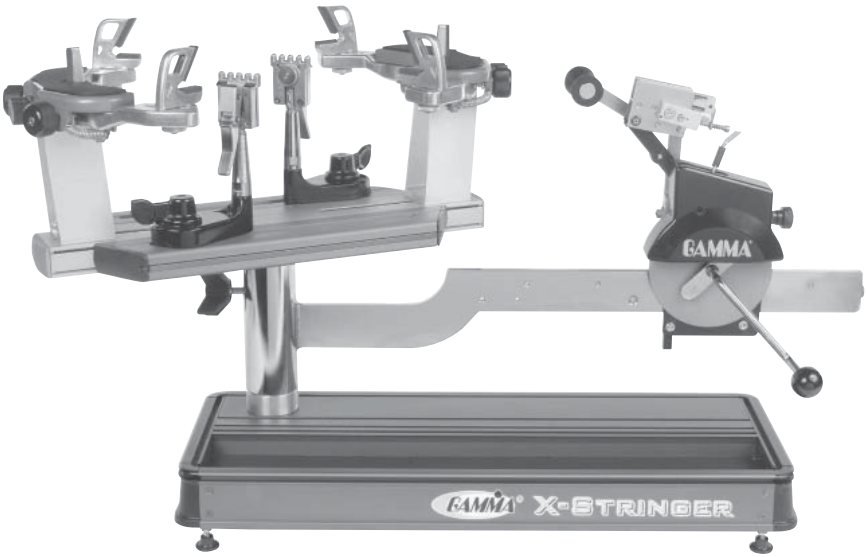
X-STRINGER

X-ST

STRINGING MACHINE



OWNER'S MANUAL

Issue 1 - May 2004

X-STRINGER

OWNER'S MANUAL

GAMMA X-ST

TABLE OF CONTENTS

LIMITED WARRANTY

GAMMA Sports (GAMMA) warrants to the original purchaser that the X-STRINGER stringing machine ("EQUIPMENT") purchased is free from defects in materials and workmanship for a period of five (5) years from the date of original purchase for mechanical parts (excluding any electrical parts and string clamps), and for a period of one (1) year from the date of purchase for any electrical parts and string clamps. Should any defects develop under normal use within the specified time periods, GAMMA will at its option, repair or replace the defective EQUIPMENT provided it is returned to GAMMA prepaid at the purchaser's expense. This warranty does not apply to any damage or defect caused by negligence, abuse, misuse, unauthorized alteration, shipping, handling, or part wear and tear as a result of normal use.

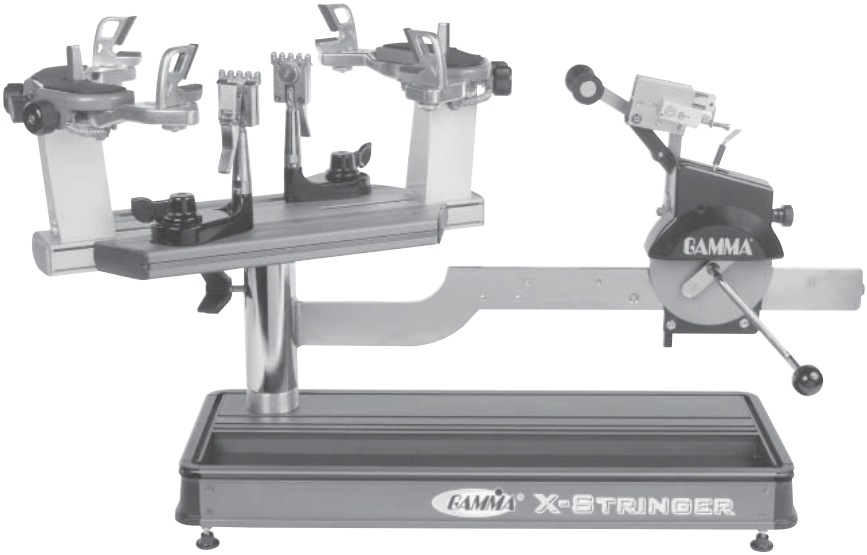
Routine maintenance, adjustment, and cleaning required to ensure proper operation are the responsibility of the purchaser and are not covered under the terms of this warranty. These include, but are not limited to: String Clamp adjustment, as described on page 13, tension calibration, as described on page 11, Tensioner Brake adjustment, as described on page 12, and clamp base locking nut adjustment, as described on page 13..

GAMMA's obligation under this warranty is limited to repair or replacement of defective EQUIPMENT, and no one is authorized to promise any other liability. GAMMA shall in no event be liable for any incidental or consequential damages.

To return defective EQUIPMENT, a return authorization (RA#) must be obtained from a GAMMA customer service representative. The RA# must be marked on the outside of the shipping carton being returned. All returns must be shipped prepaid by the customer to GAMMA. Please retain the original shipping carton and packing materials for any future shipments. GAMMA will not be responsible for machines which are not sent in the original undamaged packaging.

GAMMA X-ST

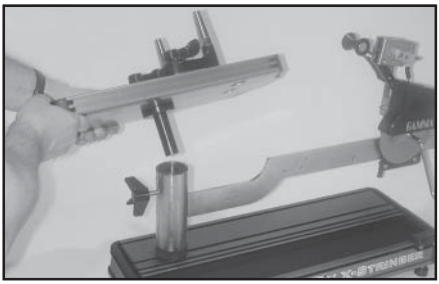
MACHINE FEATURES



MACHINE FEATURES

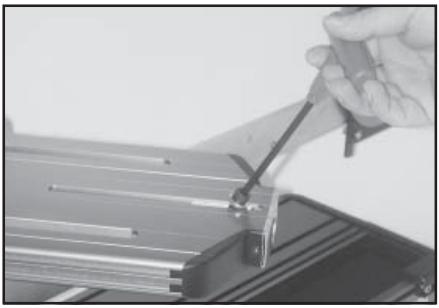
- Manual Spring Tension Winder (11-89 lbs range)
- Patented Roller Guide for Maximum Accuracy and Consistency
- Professional Six Point "Quick Mount" Racquet Mounting System - Accomodates All Racquets Without Adapters
- Parallel Jaw Gripper w/ Diamond Dust Coated Gripping Surfaces
- Professional Dual Action, Rotating, Diamond Dust Coated, Fixed String Clamps
- High Strength Extruded Aluminum Frame with Durable Anodized Finish and Convenient Padded Tool Tray
- Unique Internal Drawer System for Storing Tools and Adaptors.

ASSEMBLY INSTRUCTIONS



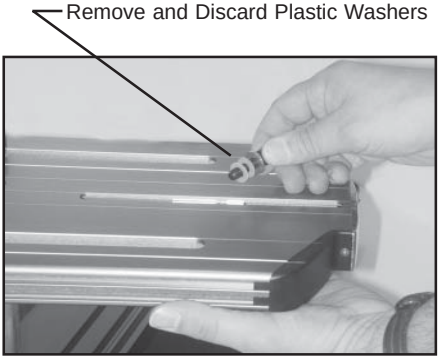
Turntable Installation

Insert the turntable pin into the bearing of the machine base.



Support Post Installation

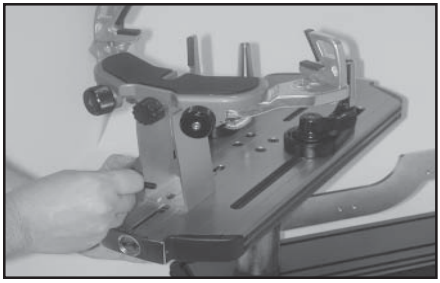
To install the support posts you must first remove the mounting bolt from the mounting plate that sets inside the central cavity of the turntable. There are large holes stamped on the underside of the turntable that allow you to support the mounting plate with your fingers while removing the mounting bolt.



Support Post Installation (con't)

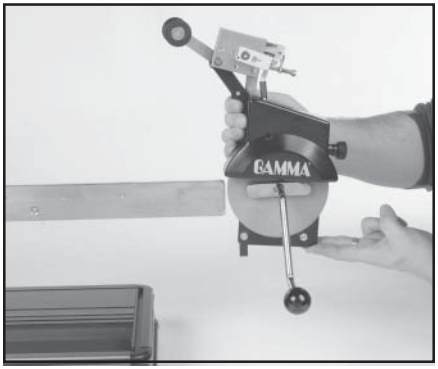
After removing the mounting bolt, remove and discard the plastic washers that are installed for shipping purposes.

ASSEMBLY INSTRUCTIONS



Support Post Installation (cont'd)

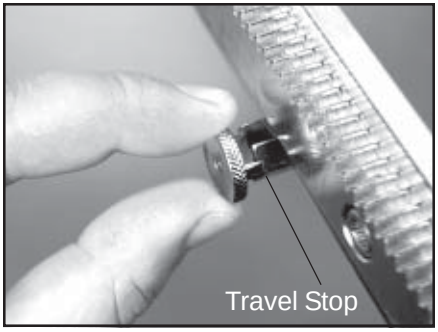
Place the support post onto the central slot of the turntable. With your fingers placed through the large hole in the underside of the turntable, press the mounting plate against the inside top surface of the turntable while aligning the hole in the support post with the hole in the mounting plate and fix them with the mounting bolt. Repeat procedure on to attach the support post on the opposite side of the turntable.



Installing the Tensioner

Remove the button head screw and washer located at the end of the tensioner bar with the 3 mm hex wrench provided. Slide the tensioner onto the bar, being careful to align the bar with all of the bearings and the drive gear with the gear track. Replace the screw and washer into the end of the tensioner bar.

Note: The tensioner bar is equipped with a tensioner travel stop to limit travel of the tensioner along the bar.

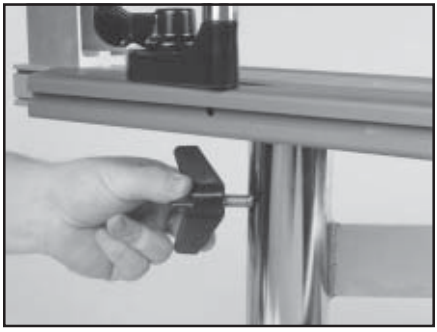


Tensioner Travel Stop

The tensioner bar is equipped with a tensioner travel stop to limit travel of the tensioner along the bar and prevent contact between the tensioner and the racquet mounting system while stringing. The travel stop is located about midpoint along the tensioner bar below the gear track.

To disengage the stop, pull and hold the knob, rotate 90 degrees and release. To engage the stop, repeat the above procedure until the travel stop pin protrudes beyond the opposite surface of the tensioner bar.

ASSEMBLY INSTRUCTIONS

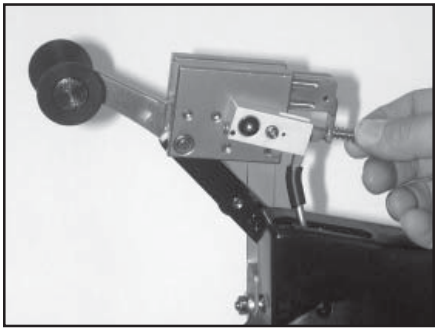


Locking the Turntable

The turntable may be locked in any position.

The turntable winged lock knob is packed separately in the accessory polybag. Install the lock knob into the threaded hole located on the side of the tensioner bar post.

Rotate the knob clockwise to lock the turntable, and counter-clockwise to release the turntable.



Setting the Gripper Jaw Spacing

The gripper jaws of the tensioner are adjustable to accomodate varying string gauges.

If the string slips through the gripper jaws while pulling tension, rotate the gripper jaw adjustment screw counter-clockwise.

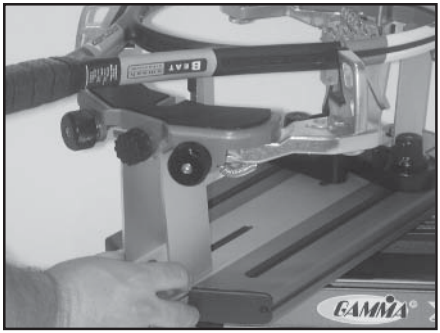
If the string is damaged while pulling tension, rotate the gripper jaw adjustment screw clockwise.

The jaws will be properly adjusted when there is enough pressure to securely grip the string without causing damage to the string.

String Clamp Installation

The post of the string clamp and tube of the string clamp base are treated with grease to provide protection against corrosion during shipping. Remove any excessive grease with a clean cloth prior to use. The post and tube may also be cleaned with isopropyl alcohol. After this type of thorough cleaning, the post and tube should be treated with a light coating of machine oil to protect the surfaces against corrosion and to ensure smooth operation.

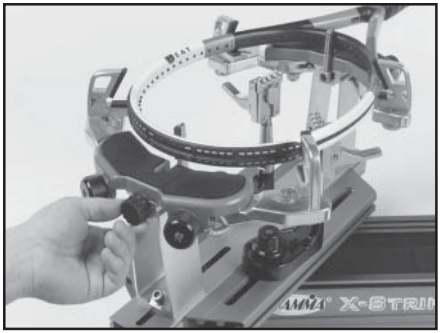
MOUNTING THE FRAME



Adjusting the Frame Support Posts

Loosen the lock bolts of the frame support posts and space them apart with the frame support slides separated by the approximate length of the racquet head. Although it is not required, it is good practice to center the support posts on the turntable. Lock one of the posts in position by tightening the lock bolt and position the other post until the frame support slide is positioned near the inside surface of the racquet frame. Securely tighten the lock bolt of the second support post.

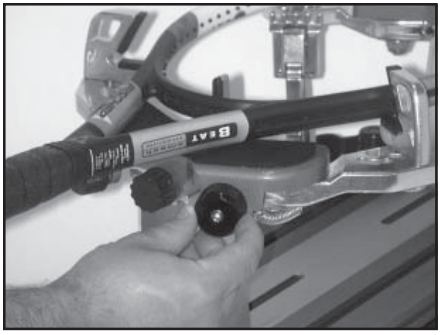
Caution: To avoid racquet damage, the center posts should not contact the racquet prior to locking down the support posts.



Tightening the Frame Supports

Tighten the Frame Support Slides by turning the adjustment knob clockwise until snug against the racquet frame and slight resistance is felt.

Caution: Overtightening the Center Supports will stretch the head of the racquet and could cause racquet damage.



Frame Shoulder Support Adjustment

Being sure the shoulder supports are free to swivel in their mountings, simultaneously rotate the shoulder support adjustment knobs clockwise until both shoulder supports gently and squarely contact the frame.

MOUNTING THE FRAME

Securing the Frame Shoulder Clamps

Lock the shoulder supports in position by turning the knob at the base clockwise.

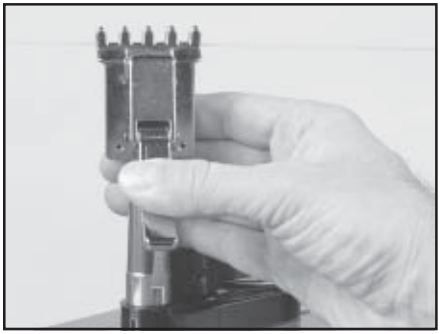
Repeat the adjustment procedure for the remaining support post.

Re-tighten all of the frame supports in the same order as before.

Do not overtighten any of the supports as racquet damage may occur.

The supports should be tightened to the point where the racquet frame will not move in the mounting system when the handle is grasped and attempts are made to move it. Should any supports lose contact with the frame while stringing, they should be re-tightened.

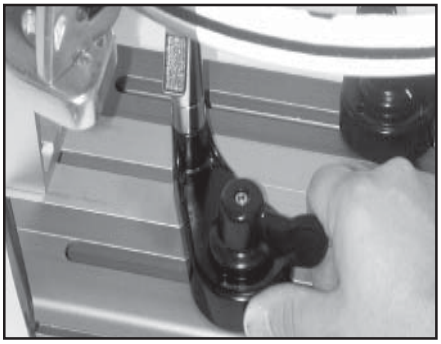
STRINGING THE FRAME



String Clamp Operation

The string clamps are a dual action design where the string clamp and clamp base operate independently of one another.

To clamp a string, lift the clamp head and place the string between the jaws and depress the string clamp lever to secure the string. The clamping pressure applied to the string should be adjusted to provide sufficient pressure to secure the string when subjected to the desired pulling tension. The diamond coated gripper plates provide for increased friction between the clamps and the string to allow for reduced clamping pressure while securing and holding the string under tension.

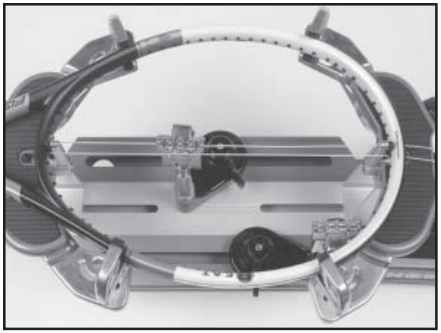


Clamp Base Operation

To lock the string clamp base to the turntable, rotate the clamp base locking lever clockwise. To release the string clamp base from the turntable, rotate the clamp base locking lever counter-clockwise.

The Locking Lever should be tightened enough to prevent clamp base slippage on the turntable, when the desired tension is placed on the string. To go from the loose position to the clamped position and back, generally requires the rotation permitted by the slot in th clamp base.

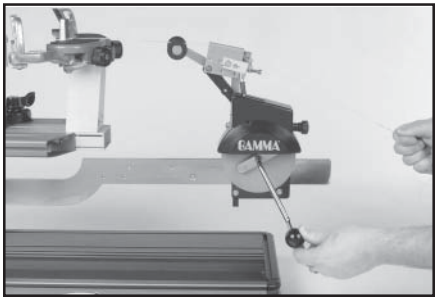
STRINGING THE FRAME



Getting Started

To begin stringing the main strings, thread the two ends of the string through the two center holes at the appropriate end of the frame and continue through the opposite center holes. Thread one end of the string through the adjacent grommet hole and pull excess by hand.

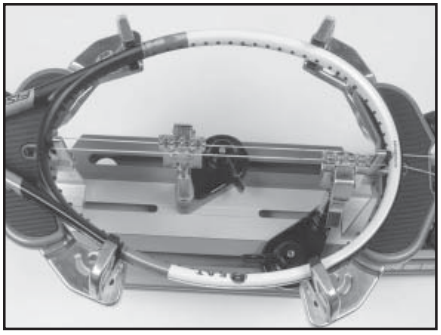
Secure one of the strings using a string clamp.



Pulling Tension

Wrap the loose section of string once around the roller guide and insert the string between the diamond dust coated string gripper plates. Pull the string perpendicular to the gripper plates while slowly rotating the tensioner crank clockwise until the brake lever pops out of the latching block. The string is now tensioned and can be clamped in place with the remaining fixed clamp.

Repeat the above steps until all main strings are installed. Tie off ends of main strings as per racquet manufacturers recommendations.

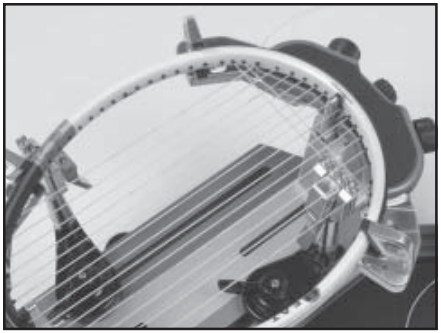


Clamping the First Main String

Secure the tensioned main string using the remaining fixed clamp. Repeat the procedure for all of the remaining main strings and tie off following the racquet manufacturers recommendations.

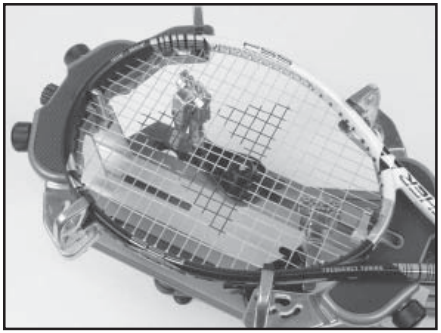
Follow the manufacturer's recommended stringing pattern for one or two piece stringing. This will determine the starting point for the cross strings. If applicable, tie the first cross string using an appropriate starting knot.

STRINGING THE FRAME



Weaving the Cross Strings

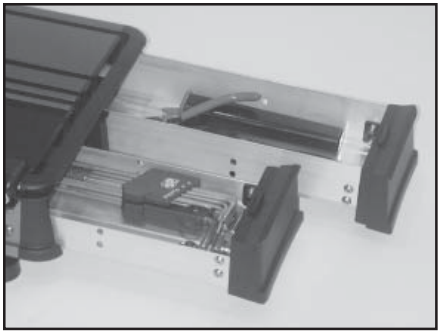
Weave the cross strings over and under the main strings being careful to alternate the weave direction of each consecutive cross string so as to be opposite of the previously installed cross string.



Completing the String Job

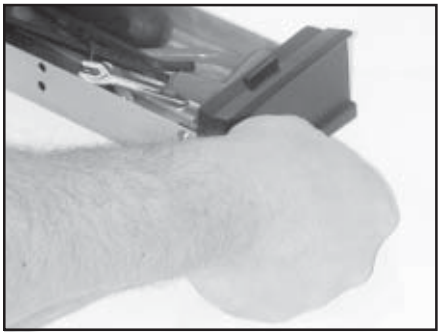
Once the final cross string is tensioned and clamped, tie off at the appropriate hole specified by the racquet manufacturer. Remove the frame from the mounting system by loosening the shoulder supports and frame supports.

ADDITIONAL FEATURES



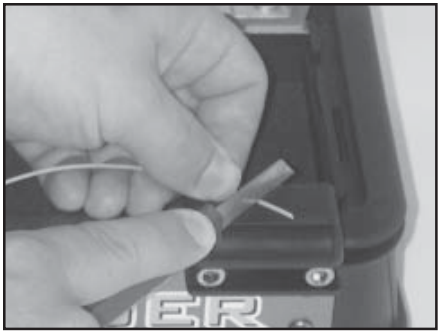
Storage Drawers

There are two storage drawers located in the base of the machine. The drawers open from the right end of the base and lock into the end cap with a spring loaded latch.



To open the drawers, reach under the right side end caps to find the the spring loaded latch handle. Pull the latch handle toward the outside of the end cap to release latch from the end cap and slide the drawer out. To close the drawer simply slide the drawer back inside the base and the latch with automatically lock into place.

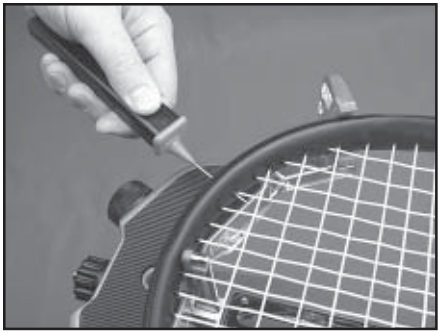
View from underside of end cap showing latch handle.



Cutting Block

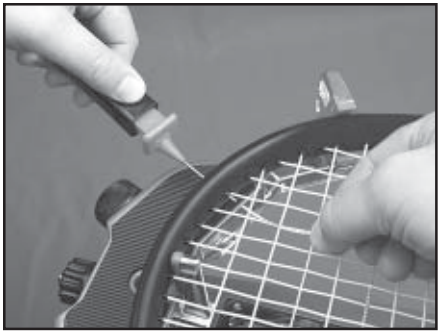
A cutting block is provided to provide a surface for cutting a point on the strings using a razor blade cutter.

PATHFINDER AWL

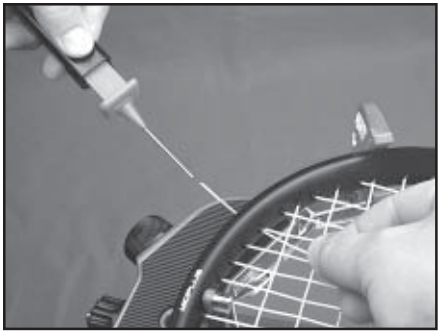


The stringing machine includes the Pathfinder stringing awl which creates a pathway between or around strings to make inserting a string through tight grommets easier and quicker.

Insert the awl through the grommet hole in the same manner as for traditional awls. The Pathfinder awl must be in the closed position before insertion.

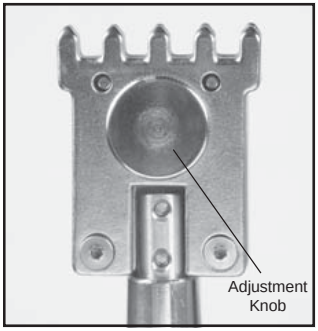


Once the awl is inserted, pull the handle of the awl outward while holding the tip section in place, leaving the outer sheath in the grommet hole.
Insert the end of the string into the center of the sheath.



While holding pressure on the string, slowly pull the sheath out of the grommet hole to leave the end of the string exposed.

MAINTENANCE and ADJUSTMENTS



Adjusting the String Clamp Jaw Spacing

The string clamps will need minor adjustments according to what string type, construction, and gauge you are using.

To adjust the gap (clamping pressure) between the clamp jaws, insert the string through the racquet as if you were beginning the main strings. Clamp the strings and pull tension. If the string slips through the jaws of the clamp, tighten the clamp by compressing the clamp jaws together by hand while turning the Adjustment Knob, in the clockwise direction. If the clamp leaves impressions or damages the string, it may be excessively tight and should be adjusted by turning the Adjustment Knob counter clockwise to open the gap between the jaws. The clamp jaws should be cleaned periodically to be free from dirt, oil, and any string coating for them to grip properly. Knife sharpening stones are excellent for removing build-up on the diamond coated surfaces and are available.

Note: The string clamps supplied with your stringing machine can accomodate tight string patterns such as badminton. Depending on the string pattern, the clamp may spread the strings slightly which will not compromise the quality of the string job. String clamps specifically designed for badminton racquets are also available.

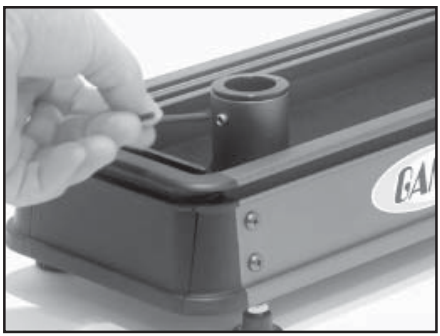
Closed Position

Open Position

String Clamp Base Adjustment

The string clamp bases do not require adjustment. The simple “Lever Bolt & Nut” design, provides maximum flexibility for providing clamping pressure to the turntable and running clearance for repositioning. Approximately 1/2 turn is all that is need to lock and release the clamp base from the turntable.

NOTE: Do not attempt to adjust the clamp with the attachement nut on the underside of the clamp base.

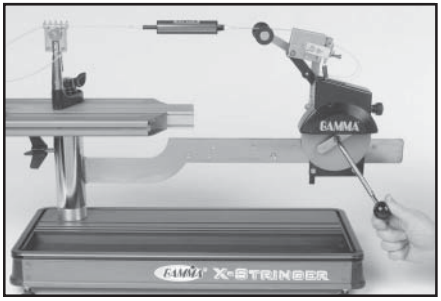


Turntable Bushing Adjustment

The turntable bushing is adjusted at the factory for optimum performance. After time and use, the turntable bushings may need minor adjustment. An adjustment is indicated when noticeable turntable looseness or wobble occurs while stringing.

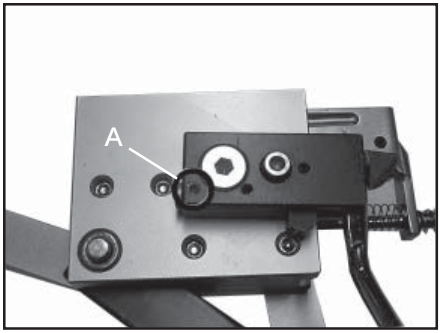
To adjust the fit between the turntable pin and the bushings, tighten the set screw at the top of the bushing using a 3mm hex wrench. Tighten until the turntable rotates smoothly without excessive free play.

MAINTENANCE and ADJUSTMENTS

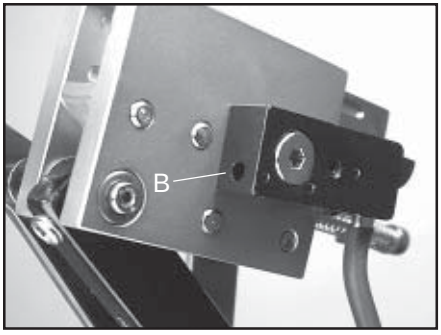


Tension Calibration Procedure

Step 1
Set the tension to 60 lbs. as indicated by the linear scale and rotary knob. Place the string on one end of a tension calibrator into a string clamp and secure. Place string located on the other end of the calibrator into the string tensioner and apply tension. If the brake lever releases before 60 lbs. or after 60 lbs., the tension head should be calibrated as follows.

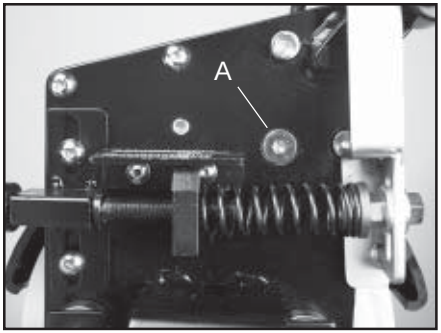


Step 2
Loosen the 1.5 mm locking set screw (A) located on the side of the latching block as shown. The set screw is used to hold the adjustment screw in place.



Step 3
If the lever releases before 60 lbs., using the supplied L-shaped hex wrench, turn the adjustment screw (B) located on the left side of the latch block counter-clockwise to increase the engagement of the brake release latch with the brake lever. Repeat step 1 and adjust until the correct tension is indicated on the calibrator.
If the tension indicated in step 1 is greater than 60 lbs., turn the adjustment screw clockwise to reduce the engagement of the brake release latch with the brake lever. Repeat step 1 and adjust until the correct tension is indicated on the calibrator.

MAINTENANCE and ADJUSTMENTS



A - Lock Bolt

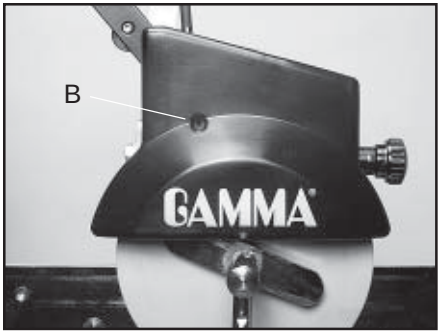
Adjusting the Tensioner Brake

Step 1

After stringing many racquets, the brake of the tensioner may need to be adjusted.

With the brake lever engaged, loosen the lock bolt located on the back side of the tensioner frame with the 4mm hex wrench.

Note: The lock bolt should only be loosened enough to be turned by hand and must not be removed completely.

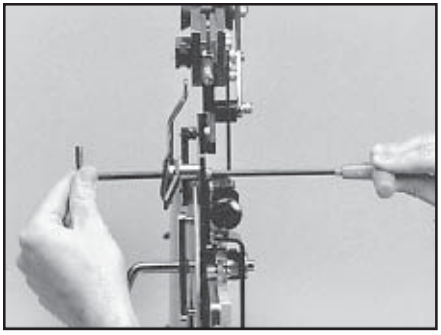


B - Brake Lever Adjustment Bolt

Adjusting the Tensioner Brake

Step 2

With the lock bolt loosened and the brake lever engaged in the latch, insert the 6 mm hex wrench through the hole in the tensioner cover and into the (B) brake lever adjusting bolt.



Adjusting the Tensioner Brake

Step 3

To tighten the braking mechanism, turn the brake lever adjusting bolt counter clockwise by about 1/8 turn. Retighten the lock bolt on the back side of the tensioner frame and check for brake tightness. The tensioner should move freely along the track with the brake lever engaged and should hold tension with the brake lever released. If more adjustment is needed, repeat steps above until properly adjusted.

Note: Cover Removed For Clarity

TROUBLESHOOTING TIPS

PROBLEM	SOLUTION
String slips in clamps.	- Adjust gap between jaws. - Clean clamp jaws.
String slips in gripper.	- Clean gripper jaws. - Adjust Gripper Jaw Stop Screw
String clamp base slips on turntable.	- Adjust Clamp Base Locking Nut.
Tensioner slips on Tensioner Bar after brake lever is released.	- Adjust tensioner brake lever - Clean tensioner brake disc
String tension too tight or too loose.	- Check tension using a tension calibrator and adjust machine calibration if necessary

CARE and CLEANING

With time and use, the clamping surfaces of your machine may become oily or dirty and result in string or clamp slippage while stringing. Periodic cleaning of the following parts is recommended.

String Clamps

Clean the inside gripping surfaces of the string clamp jaws by inserting a cloth or pipe cleaner soaked with isopropyl alcohol between the jaws and rub back and forth. If the build-up is excessive, dismantle the string clamp jaws to expose the gripping surfaces by removing the adjustment screw. Using a small nylon brush, (such as a toothbrush), scrub the inside surfaces until all debris is removed. Clean the jaws with isopropyl alcohol and re-assemble.

String Clamp Base

Clean the base of the clamps and the top of the turntable with isopropyl alcohol.

String Gripper

Follow the same procedure for cleaning the string clamps.

NOTES

PARTS LIST

PART #	DESCRIPTION
5	RUBBER FEET
6A	CAP SCREW - M8
8A	BUSHING SET SCREW
9	WASHER - M8
14	WASHER
21	FRAME SUPPORT SLIDE
MFSPP	BADMINTON ADAPTER
MFSPP	TENNIS ADAPTER
104	TENSIONER ASSEMBLY
105	RETAINER SCREW
106	TABLE BRAKE KNOB
111	TENSIONER BAR
MMSPP	SHOULDER PADS
140	MTNG. STAND TOP PLATE
141	MTNG. STAND PAD
142	SUPPORT ARM - LEFT
143	SUPPORT ARM - RIGHT
144	SUPPORT LOCK KNOB
145	ARM RETURN SPRING
146A	ARM ADJUSTMENT KNOB
147	ARM ADJUSTMENT SCREW
148	SHOULDER V-CLAMP

PART #	DESCRIPTION
MDCSC10	STRING CLAMP
259	SLIDE BRACKET
262	SUPP MOUNTING PLATE
263	SMALL DRAWER
265	SMALL DRAWER END CAP
269	BASE CLAMP
270	FRAME SUPP SLIDE KNOB
271	SUPP POST MOUNTING PL
272	BASE
273	TRAY PAD
274	CHOP BLOCK
275	LARGE DRAWER
276	LARGE DRAWER END CAP
277	BASE CORNER CAP
278	BASE CORNER CAP
282	TURNTABLE
283	END CAP
285	TT END CAP - RIGHT
286	TT END CAP - LEFT
287	BASE END CAP
288	BASE END CAP

TOOLS AND ACCESSORIES

70	HEX WRENCH - 5MM
MPSA	PATHFINDER AWL
MA	STRINGERS AWL
98A	10MM WRENCH
108	UTILITY KNIFE
109	NEEDLE NOSE PLIERS
251	9 PC. HEX WRENCH SET

PARTS DRAWING