

# GAMMA

## 6002 Es STRINGING MACHINE



### OWNER'S MANUAL

Issue 2 - Aug. 27, 1997

# **GAMMA**

## **6002 ES**

### **OWNER'S MANUAL**

#### **TABLE OF CONTENTS**

INSIDE FRONT COVER .....	WARRANTY
PAGE 1 .....	FEATURES
PAGE 2 .....	PARTS AND UNPACKING
PAGE 3 .....	ASSEMBLY INSTRUCTIONS
PAGE 8 .....	MOUNTING THE FRAME
PAGE 10 .....	STRINGING THE FRAME
PAGE 13 .....	PATHFINDER AWL
PAGE 14 .....	MAINTENANCE AND ADJUSTMENTS
PAGE 15 .....	TROUBLESHOOTING
PAGE 15 .....	CARE AND CLEANING
PAGE 16 .....	PART NUMBERS AND LISTING

#### **LIMITED WARRANTY**

GAMMA SPORTS ("GAMMA") warrants to the original purchaser that the GAMMA 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 electronic parts and string clamps), and for a period of one (1) year from the date of purchase for electronic 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.

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 by calling 1-800-333-0337. 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

## 6002 ES

### Key Product Features



1. Electric Constant Pull String Tensioner w/ Diamond Coated String Gripper
2. Large LED Readout
3. 10-89 lbs Tension Range in 0.5 lb increments
4. Two Tensioning Speeds (slow for aramid and metallic & fast for synthetic and gut)
5. 6 Point "Suspension" Mounting System (10 point support)
6. Dual Action, Swivel, Composite Coated Steel String Clamps w/ Diamond Coating
7. Full Fiberglass Cover w/ Integrated 70 sq in Tool Tray
8. Height Adjustable from 39" to 46" (can also be used on table top)
9. 110 V / 220 V Compatible

# GAMMA

## 6002ES

### Parts and Unpacking

#### Instructions for Unpacking and Preparing for Assembly

The 6002 Es is shipped in two cartons, a large carton for the stringing machine and accessories and a smaller carton for the post and base. Please save the cartons and packing materials for possible shipments in the future. Gamma Sports can not be responsible for machines which are not shipped in their original, undamaged packaging. The only tools you will need to assemble the 6002 Es is a screw driver. The balance of tools needed for assembly are provided with the machine. Due to the weight of the tensioner unit, you may need the assistance of someone to help lift the tensioner unit out of the carton.

Once the cartons are opened, remove all inner cartons and check to be sure that all parts are accounted for. **DO NOT REMOVE THE FOAM PACKING MATERIALS AROUND THE BASE OF THE TENSIONER UNIT AT THIS TIME. THIS PACKING MATERIAL SHOULD REMAIN IN PLACE TO PROTECT THE TENSIONER WHILE REMOVING IT FROM THE INNER CARTON.**

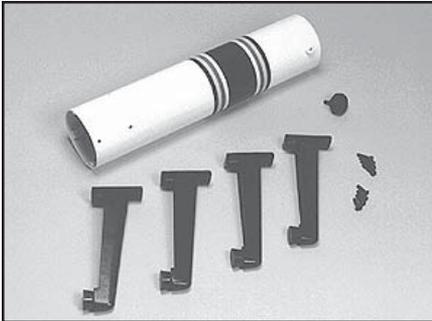
Small Post Carton Contains :

- (1) Lower Post
- (2) Upper Post with Flange
- (4) Legs
- (1) Winged Locking Knob Screw
- (4) M8 x 25 Flat Head Screws
- (4) M8 x 30 Cap Screws

Large master carton is a double carton with an inner carton containing :

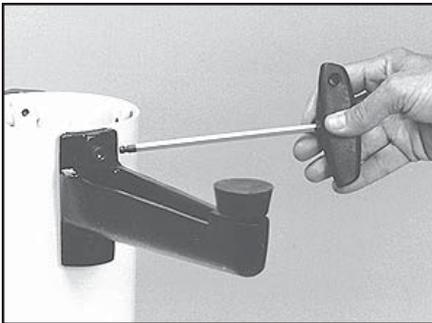
- (1) Tensioner Assembly with Turntable Installed (bolted to inner carton)
- (1) Power Cord
- (2) Suspension Mounting Stands w/ Side and Slide Support Fitted w/ Plastic Adapters
- (2) Fixed String Clamps w/ Bases, Slide Bushings, and Wing Nut Screws
- (2) Mounting Stand Locking Levers w/ Washers
- (2) Badminton Frame Support Slides w/ Plastic Adapters
- (1) Package of Spare plastic adapters for mounting system (contains 12 pcs)
- (4) Rubber Feet/ Screws
- (1) Tool Kit (contains side cutter, bent nose pliers, needle nose pliers)
- (1) Straight Stringers Awl
- (1) Pathfinder Specialty Awl
- (2) Composite Badminton Floating Clamps
- (1) 6 mm "T" Handle Hex Wrench
- (1) 5 mm "T" Handle Hex Wrench
- (1) 4 mm "T" Handle Hex Wrench
- (1) 2 mm "L" shaped Hex Wrench
- (1) 2.5 mm "L" shaped Hex Wrench
- (1) 3 mm "L" shaped Hex Wrench

# ASSEMBLY INSTRUCTIONS



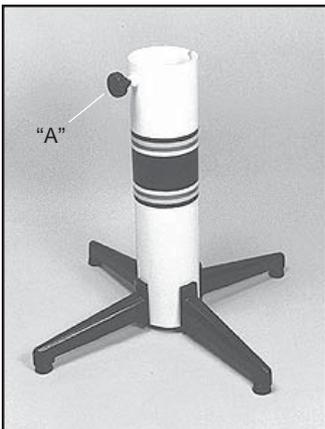
## Base Leg Assembly

The GAMMA 6002ES stringing machine uses a four leg base design. The legs must be assembled to the support post before use. Remove the lower column support, the upper column support, four (4) legs, four (4) socket head cap screws and four (4) flat head cap screws from the small shipping carton.



## Base Leg Assembly (Cont.)

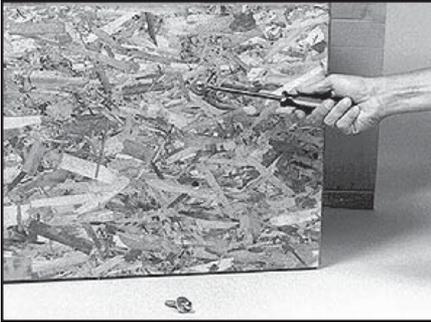
Align the holes in the leg flange with the matching holes in the lower column support post. Secure the leg with one FLAT HEAD cap screw through the upper hole, and one SOCKET HEAD cap screw through the bottom hole. Repeat this procedure for the three remaining legs.



## Base Leg Assembly (Cont.)

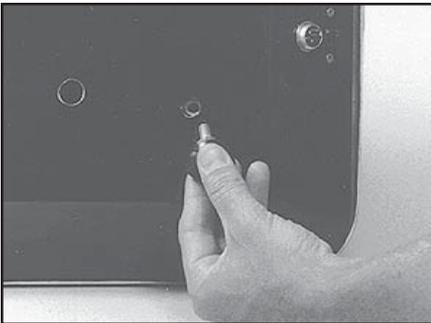
To complete the base stand, screw the height adjustment locking knob ("A") into the side of the support column. The locking knob should not protrude beyond the inside of the support column at this time.

# ASSEMBLY INSTRUCTIONS



## Unpacking the Tensioner

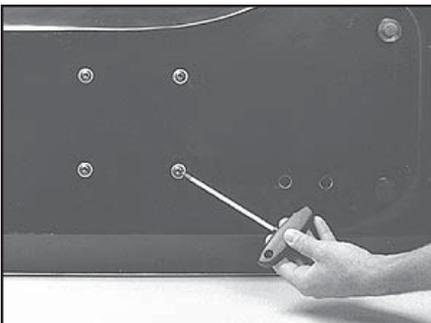
The tensioner assembly is packed and secured to the inner carton by two sheets of wood and four (4) bolts. With the foam packing still in place around the base of the tensioner assembly, remove the inner carton and lay it on its side on the floor. Remove the four (4) shipping bolts from the underside of the carton with a screw driver. Upright the carton on the floor and remove the tensioner assembly. Retain the bolts, wood and cartons for future shipment.



## Foot Installation

**CAUTION :** To maintain the alignment between the fiberglass covers and the frame, it is very important that the feet be installed before removing the four center screws that attach the tensioner assembly to the upper post flange.

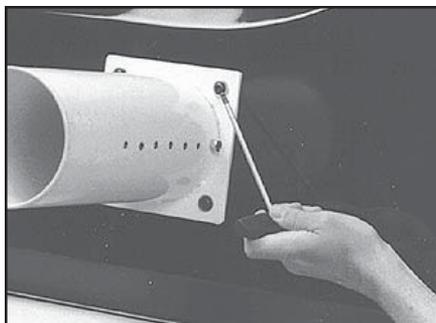
To install the feet, tilt the tensioner back on its side and screw the four feet into the holes at the corners of the base.



## Stand Upper Post Installation

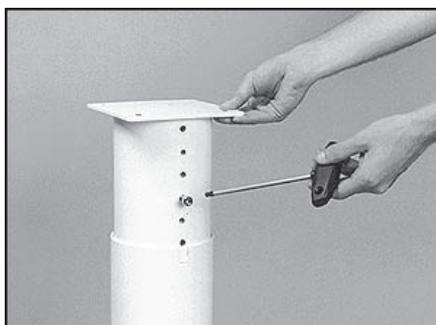
After installing the four corner feet, remove the four (4) button head cap screws and flat washers from the base of the tensioner.

# ASSEMBLY INSTRUCTIONS



## Stand Upper Post Installation (cont.)

With the height adjustment cap screw on the upper post facing the right side of the tensioner, align the four (4) holes in the upper post flange with the holes in the tensioner base. Secure the flange to the base with the four cap screws and flat washers.



## Height Adjustment

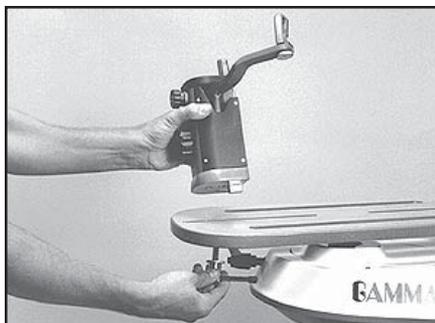
The turntable height of the Gamma 6002 ES is adjustable from 39" to 46". To change the height, remove the socket head cap screw from its current position and place it in the appropriate hole to set the desired height of the machine.



## Installing the Turntable

Insert the center post of the turntable into the bearings of the stringing machine base. Make sure that the turntable brake is not engaged before installing the turntable.

# ASSEMBLY INSTRUCTIONS



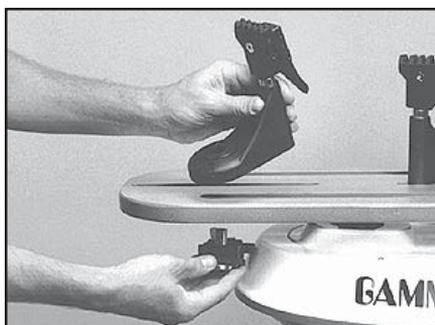
## Installing the Racquet Mounting System

Align the threaded hole in the bottom of the frame support post with the slot in the turntable. Screw the lever lock bolt with washer into the outermost hole located in the bottom of the support post and tighten gently. Position the washer with the rounded edge toward the turntable.

Repeat procedure for the support post on the opposite side of the turntable.

There are two holes located in the bottom of the support post. The inner hole is for use with super oversize racquets to provide additional separation space between the mounting arms.

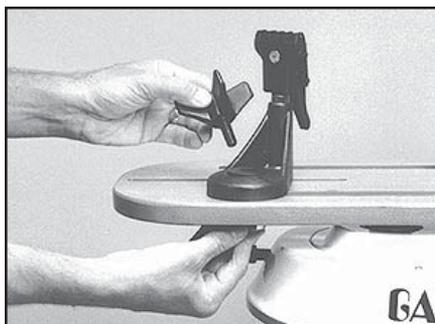
The outer holes should be used whenever possible provide maximum support for securing the support post to the turntable.



## Installing the Fixed Clamps

To install the clamps, remove the winged lock knob to separate the knob from the lower guide bushing. Be careful not to lose the radial thrust bearing components located in the center recess of the knob.

Align the clamp base with the clamp slot of the turntable base. Insert the clamp guide bushing into the clamp from the bottom of the turntable making sure to engage the guide with the clamp slot.



## Fixed Clamp Installation

Place the load bushing into the top of the clamp base mating it to the lower guide bushing. After checking that the thrust bearing is positioned correctly in the base of the winged lock knob, screw the knob into the base bushing until fully seated.

The post of the string clamp head 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.

# Connections & Controls

Refer to Figures 1 and 2 for power connection and control information.

**Before connecting to the power supply, check the voltage supply switch setting located on the side panel as shown in Figure 2. To change from 110 volts service to 220 volt service simply slide the switch fully to the right or to the left until "110V" or "220V" appears on the switch plate.**

To install the power cord, simply insert the female end of the power cord into the Power Cord Socket located on the side panel and plug the male end into a grounded power outlet.

When using extension cords, use grounded heavy duty extension cords rated for 15 AMP service.

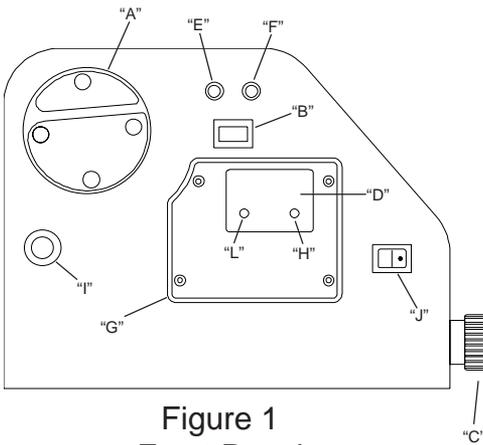


Figure 1  
Front Panel

## Front Panel Features

- "A" - Split Drum String Gripper
- "B" - Tensioning Button Switch
- "C" - Tension Adjustment Knob
- "D" - L.E.D. Tension Display
- "E" - Red LED
- "F" - Green LED
- "G" - L.E.D. Display Cover Plate
- "H" - High Tension Calibration Port
- "L" - Low Tension Calibration Port
- "I" - Gripper Reversing Switch
- "J" - Tensioner Speed Switch

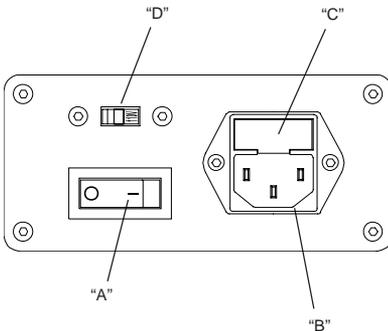
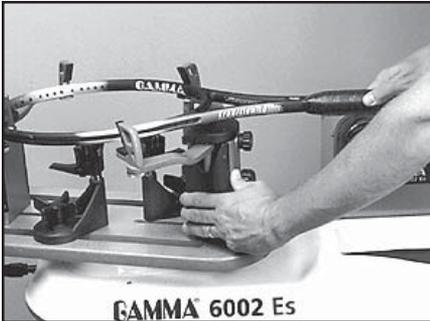


Figure 2  
Side Panel

## Side Panel Features

- "A" - Lighted On-Off Power Switch
- "B" - Power Cord Socket
- "C" - Sliding Fuse Holder w/ Spare Fuse
- "E" - 110V / 220V Switch

# MOUNTING THE FRAME

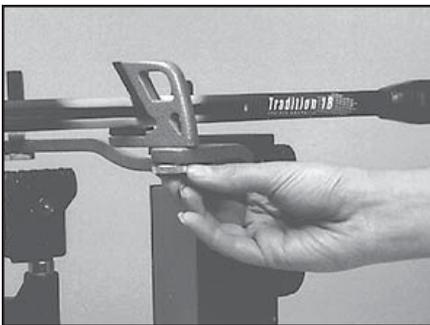


## Adjusting the Frame Support Posts

Place the racquet frame over the center support slide and onto the frame support. Loosen the lever lock bolt on one support post. Slide the post outward until the center support of the racquet support slide is positioned near the inside surface of the racquet frame. Securely tighten the lever lock bolt.

Adjust the opposite post using the same procedure.

Caution: To avoid racquet damage, the support slide should not contact the racquet prior to fixing the support posts.



## Shoulder Support Adjustment

The shoulder supports on the 6002 Es are adjustable to provide support to the racquet frame. Loosen the knurled knob at the bottom of the shoulder support and swivel the support so that the pads will contact the frame squarely when the arms are closed against the racquet. Should the shoulder supports block string holes, adjust the position of the racquet between the arms until the shoulder supports contact the racquet between grommet holes.

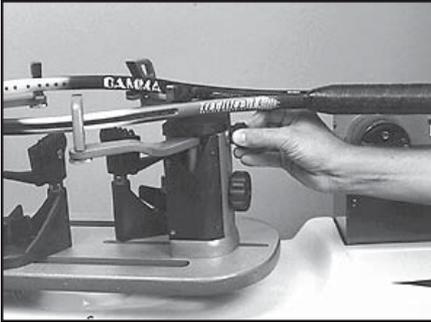


## Securing the Shoulder Supports

Secure the racquet frame with the shoulder supports by rotating the large adjustment knobs on the outside of the support post assemblies clockwise. Adjust the supports until firm contact is made between the shoulder supports and the frame.

**The tear drop shaped holes towards the back of the shoulder supports are handy for holding the loose end of the string while pulling the string through the racquet. Simply insert the loose end into the tear drop shaped holes and slide the string into the point of the hole.**

# MOUNTING THE FRAME

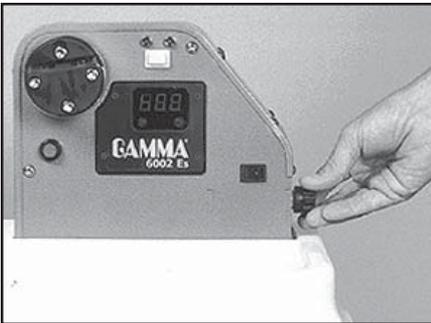


## Support Slide Adjustment

Once the frame support posts are secured, lightly tighten the support slides by turning the knobs on the outside of the slides clockwise. Adjust the slides in equal increments until slight resistance is felt.

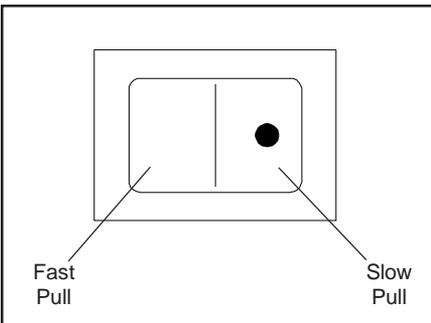
Apply a final adjustment to all racquet support points until the racquet is firmly secured in the mounting system.

Should the frame supports lose contact with the frame while stringing, they should be adjusted, as needed, to maintain contact with the frame.



## Setting Tension

The GAMMA 6002 ES stringing machine utilizes a rotary adjusting knob along with a digital L.E.D. display to indicate the set tension. To set the tension, rotate the adjustment knob clockwise to decrease the displayed tension, counter-clockwise to increase the displayed tension, until the desired tension is displayed on the digital display.



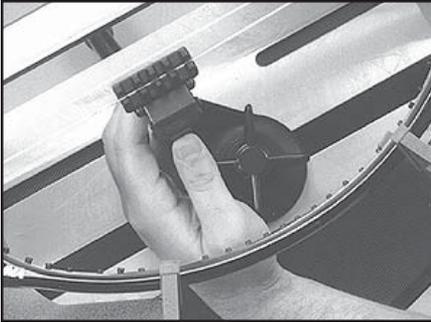
## Setting Tensioner Speed

To maintain consistency in stringing tension for all types of strings, the 6002 Es can be set to pull at a fast or slow tensioning speed.

When pulled at high speed, stiff Aramid fiber and Metallic strings will generally string up 4-5 lbs tighter on the 6002 Es than synthetic or natural gut strings. Therefore, when stringing with Aramid (Kevlar, Technora) hybrid strings or metallic strings, the tensioner speed switch, located on the side panel, should be set to the slow pull position.

which results in more accurate and consistent tensioning when using the stiffer aramid or metallic strings.

# STRINGING THE FRAME

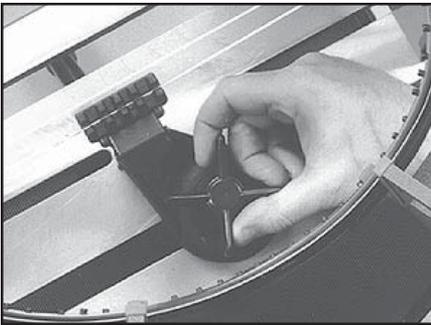


## Fixed Clamp Operation

The fixed clamps supplied with your GAMMA 6002 Es are of a dual action design. The string clamp and the clamp base operate independently of one another.

To clamp a string, lift the clamp head and place the string between the jaws. Depress the clamp head 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.



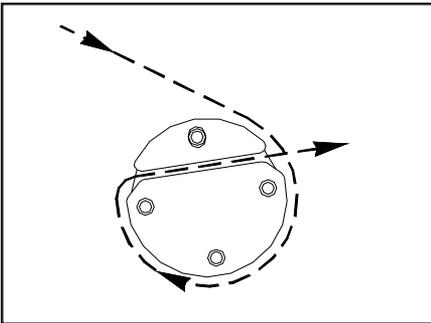
## Fixed Clamp Operation

Rotate the winged lock knob clockwise to secure the clamp base to the turntable.

Reverse the clamping procedure to unlock the string clamp.

The winged lock knob 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 about 1/2 to 3/4 quarters of a turn. Although when stringing at extremely high tensions, additional tightness

may be required. **Note: If the string slips in the string clamp while tensioning, adjust the gap between the clamp jaws as per the instructions on page 14.**

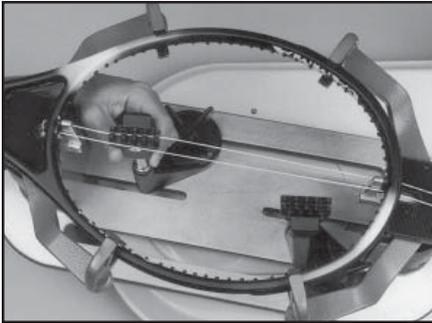


## String Gripper Operation

To insert the string in the split drum string gripper, wrap the free end of the string clockwise around the gripper drum and position the string between the gripper jaws as shown in the illustration.

The string must pass over the top half of the gripper before being placed between the diamond coated plates of the upper and lower gripper jaws. Excessive slack in the string should be removed before applying tension. As the drum turns and applies tension to the string, the upper jaw is forced down to clamp the string between the jaws.

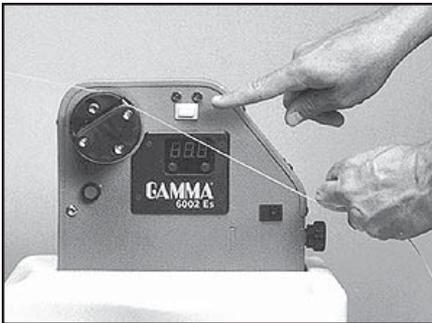
# STRINGING THE FRAME



## Clamping the First Main String

To begin stringing the main strings, insert the two ends of the string through the two center holes at the appropriate end of the frame and continue through the center holes on the opposite end of the racquet.

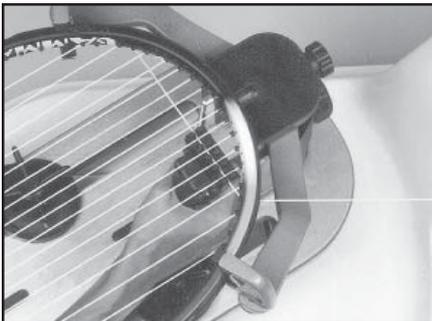
Secure one of the strings using a string clamp and insert the free end into the string gripper.



## Tensioning the First Main String

With the string properly inserted in the string gripper, and the tensioner speed selected, press the Tension Switch once and the string gripper will rotate and slowly apply tension to the string. When the set tension has been attained, the gripper will stop rotating and red LED will go out and the green LED turn on. As the tensioned string stretches, the gripper will rotate intermittently, to maintain the set tension.

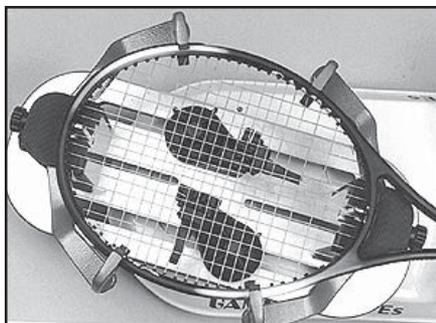
To release the string after clamping, press the tension switch and the gripper will rotate backwards to release the string. If the string gripper does not rotate back to release the string, press and hold the Gripper Reversing Switch, located on the end panel. Note : For the Gripper Returning Switch to function properly, the Tension Switch must be in the tension mode. Should the Gripper Reversing Switch not seem to function, press the Tension Switch once and press and hold the Gripper Reversing Switch once again.



## Tensioning the First Cross String

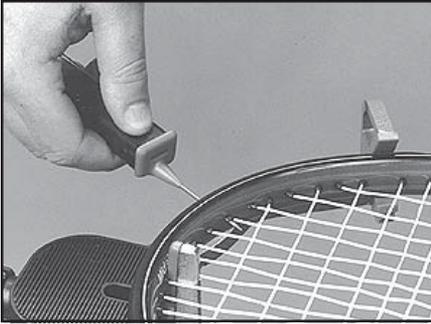
Weave the cross strings over and under the main strings being careful to alternate the weave direction of each consecutive cross string so as to be opposite of the previously installed cross string.

## STRINGING THE FRAME



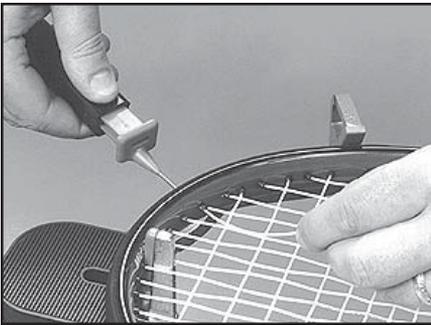
Remove the strung racquet by loosening the shoulder supports and support slides in small increments until the racquet is free from the mounting system.

# PATHFINDERAWLOPERATION



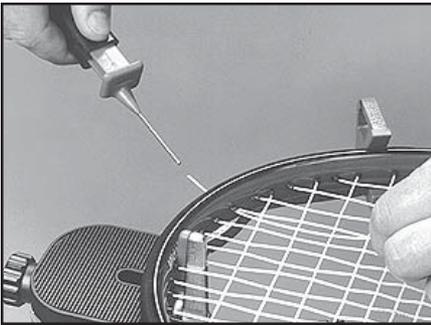
The Gamma 6002Es includes the new Pathfinder stringing awl which creates a pathway between or around strings to make inserting a string through tight gromets easier and quicker.

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.



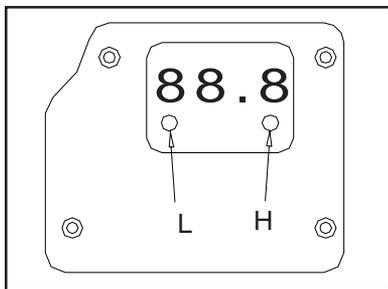
Once the awl is inserted, pull the handle of the awl outward while holding the tip section in place, leaving the outer sheath in the grommet hole.

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



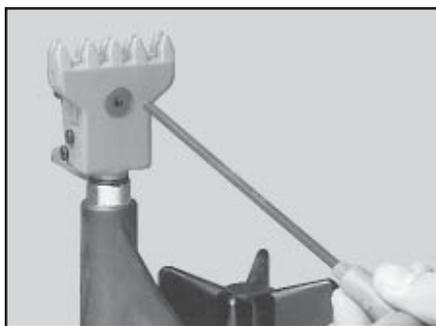
## Tension Calibration Procedure

If you suspect that your 6002Es is not pulling the correct tension, you should check the tension with a Gamma Tension Calibrator which provides a measurement of the actual pulling tension being applied by the machine.

With the machine set for the fast pulling speed, and the tension set at 20 lbs., place one end of a calibrator equipped with synthetic string into a string clamp. Place the opposite end into the string gripper and apply tension. If the measured tension is inaccurate, remove the 2 small caps

from the L.E.D. display cover plate cover. Rotate screw ("L") in small increments until the displayed tension matches the tension indicated on the calibrator. Set the machine tension to 80 lbs. and apply tension to the calibrator. If the measured tension is inaccurate, rotate screw ("H") in small increments until the displayed tension matches the tension indicated on the calibrator. Since adjustment of the "L" screw at 20 lbs can influence the tension at 80 lbs and visa versa, repeat these steps until the set tension matches the tension reading of the calibrator at both 20 and 80 lbs. Replace the 2 caps in the L.E.D. display cover plate.

Please note that there will be a range of tension from the maximum tension at which the tensioner stops pulling (high end of the range), to the minimum tension at which the tensioner starts pulling again (low end of the range). This difference between the high and low end of the range can vary from 2-4 lbs depending on the string used to calibrate the machine and the speed of the tensioner. For consistency, we recommend that the tension setting of the machine be calibrated as close as possible to the high end of the range, using the fast pulling speed and a synthetic string, which is the method used at the factory. Using this method will be the most consistent and will also insure that the racquet will not be over tensioned.



## Adjusting the String Clamps

The clamps provided with your stringing machine 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 turning the hex screw located in the fixed clamp jaw, opposite of the handle, 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 hex screw 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.

Note: The string clamps supplied with your Gamma stringing machine can accommodate 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.

# TROUBLESHOOTING TIPS

<u>PROBLEM</u>	<u>SOLUTION</u>
String slips in clamps	<ul style="list-style-type: none"><li>• Adjust gap between jaws</li><li>• Clean clamp jaws</li></ul>
String slips in string gripper	<ul style="list-style-type: none"><li>• Clean gripper jaws</li><li>• Make sure string is wrapped over upper gripper jaw before inserting between gripper jaw plates</li></ul>
String clamp slips on base	<ul style="list-style-type: none"><li>• Clean base of clamp and top of turntable</li></ul>
String clamp Lock knob is difficult to turn	<ul style="list-style-type: none"><li>• Check for proper position of thrust bearing in the base of the winged lock knob</li></ul>
String tension too tight or too loose	<ul style="list-style-type: none"><li>• Check tension using a tension calibrator and adjust machine calibration if necessary</li></ul>
Electrical system does not function	<ul style="list-style-type: none"><li>• Check power source</li><li>• Check power cord connection</li><li>• Check fuse</li><li>• Call Gamma Sports customer service</li></ul>

To check fuse, remove the power cord and pull the fuse holder straight out. Remove the fuse from the clips and examine it. If it is burned out, replace it with the spare fuse and replace the fuse holder in its socket. Supply power to the machine and check for proper operation. If problems persist, contact Gamma Sports Customer Service at 1-800-333-0337

## 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.

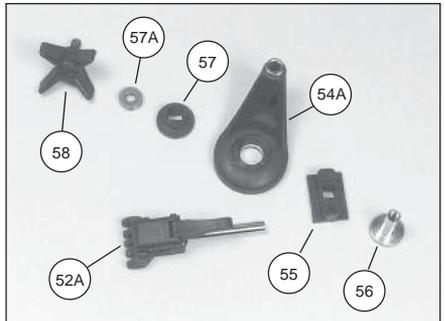
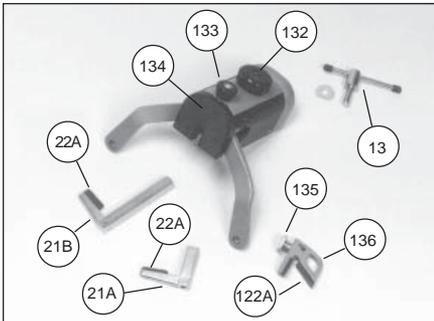
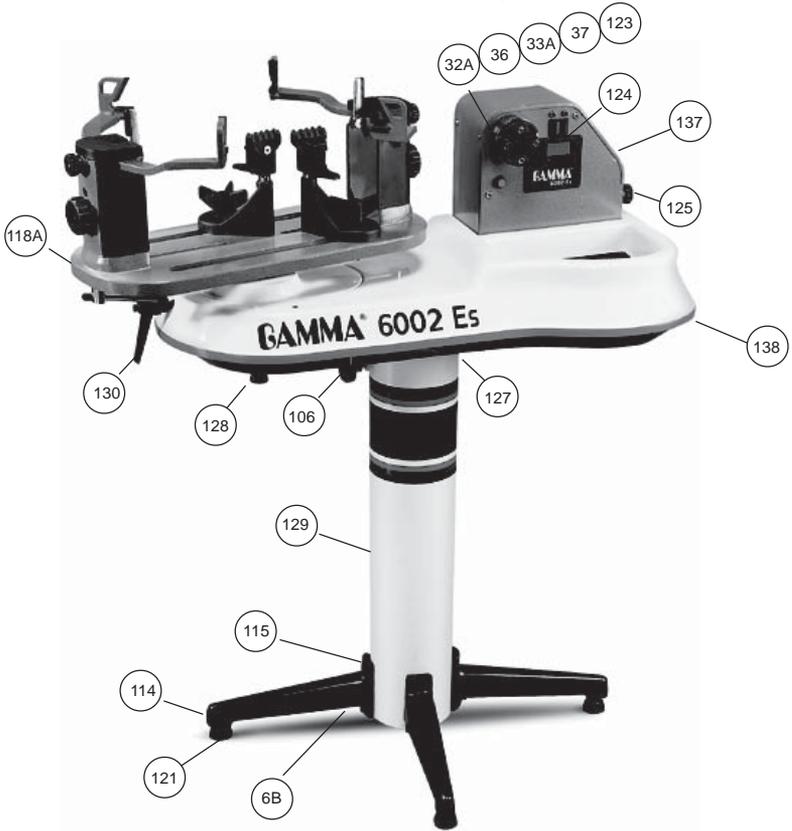
### **String Gripper**

Clean inner gripping surfaces with isopropyl alcohol soaked cloth or pipe cleaner.

# GAMMA

## 6002 ES

### Parts Summary



# GAMMA

## 6002 ES

### Parts Listing

Part #	Description
6B	Cap Screw - M8 x 30
13	Locking Lever
21A	Frame Support Slide SM Tennis
21B	Frame Support Slide SM Badminton
22A	Support Adaptors Black
32A	Upper Gripper Jaw Black
36	Gripper Jaw Spring
33A	Lower Gripper Jaw Black
37	Gripper Cap Screw Set
52A	Clamp Head Assembly Black
54A	Short Clamp Base Black
55	Guide Bushing
56	Guide Bushing Nut
57	Load Bushing
57A	Radial Thrust Bearing
58	Winged Knob
106	Wing Locking Knob Screw
114	Short Leg
115	Flat Head Cap Screw -M8 x 25
118A	Turntable SM
121	Leveling Foot
123	Gripper Drum Back Plate
124	LED Cover
125	Tension Adjustment Knob
127	Flanged Upper Support Column
128	FRP Base Foot
129	Lower Support Column
130	Brake Lever
132	Mounting Arm Adjustment Knob SM
133	Support Slide Adjustment Screw SM
134	Suspension Mounting Arms
135	Shoulder Support Adjustment Knob SM
136	Shoulder Support SM
137	6002 Es Tensioner Head
138	6002 Es Frame & Cover