



MOMENTUM ELS

STRINGING MACHINE



USER GUIDE

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FEATURES

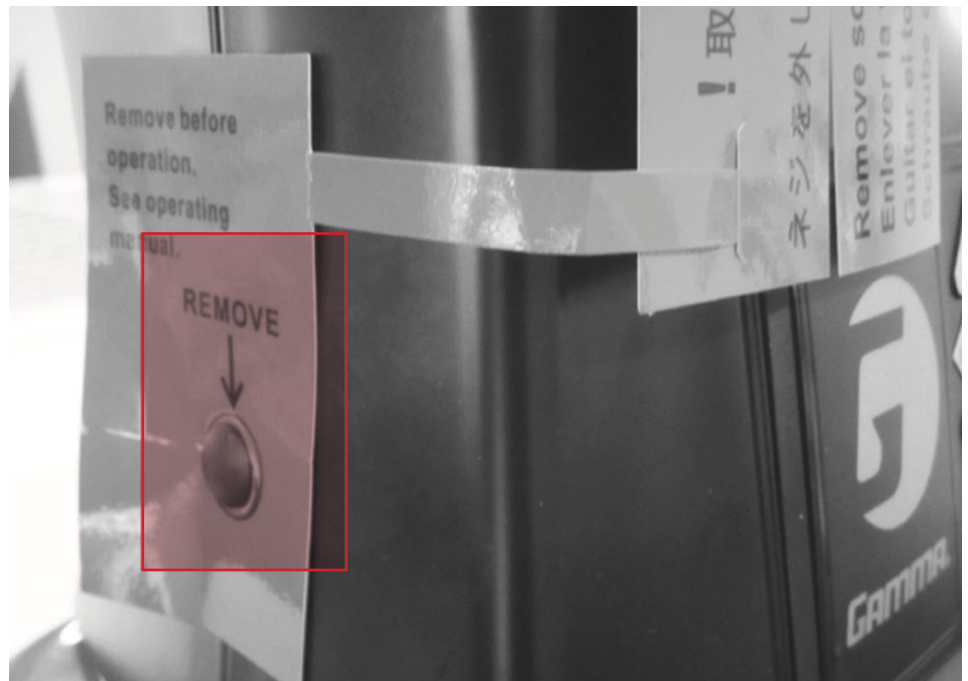


- Electric Constant Pull Tensioner with 11.0 to 90.0 lbs Tension Range
- Digital Tension Setting with Touch Screen Display
- Horizontal Parallel Jaw Milled Rotational Grippers Made From Durable Stainless Steel
- Professional Six Point “Quick Lock” Racquet Mounting System—Accommodates All Racquets Without Adapters
- Professional “Quick Action” Dual Action, Rotating, Metal Fixed String Clamps with Diamond Dust Coating
- High Strength Die Cast Aluminum Base with Durable Powder Coated Finish and Large Padded Tool Tray
- Convenient Foot Actuated Tensioner Switch (*Optional*)

ASSEMBLY INSTRUCTIONS

TRANSPORTATION SCREW

The machine has been shipped with a motor and load cell protection screw. Remove the screw before using the machine. Retain the screw for future shipment. Install the included rubber grommet into the hole.



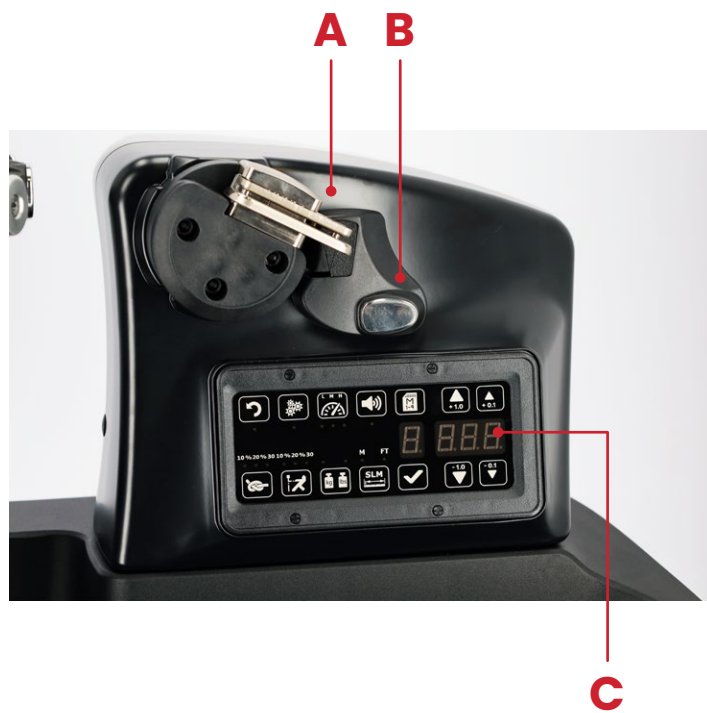
STRING CLAMP INSTALLATION

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.

POWER CONNECTION & CONTROLS

FRONT PANEL FEATURES

- A. String Gripper
- B. Tension Pad
- C. Touch Screen Tension Display



BACK PANEL FEATURES

- A. Lighted Power Switch
- B. Foot Pedal Switch Receptacle
- C. A/C Power Cord Socket
- D. String Length Meter (currently not available)



INSTALLING THE POWER CORD

Caution! Before connecting to the power supply, check the voltage source that the machine is being connected to. The acceptable range of input voltages for this machine is between 100 V and 240 V @ 50 to 60 Hz. If you have any questions regarding the input voltage supply for your area, please ask your electric utility company.

To install the power cord, insert the female end of the power cord into the AC Adapter and then insert the female end of the cord from the AC Adapter into the A/C Power Cord Socket "C" located on the back panel of the tensioner. Plug the male end of the power cord into a grounded power outlet. When using extension cords, use grounded heavy duty extension cords rated for 15 AMP service.

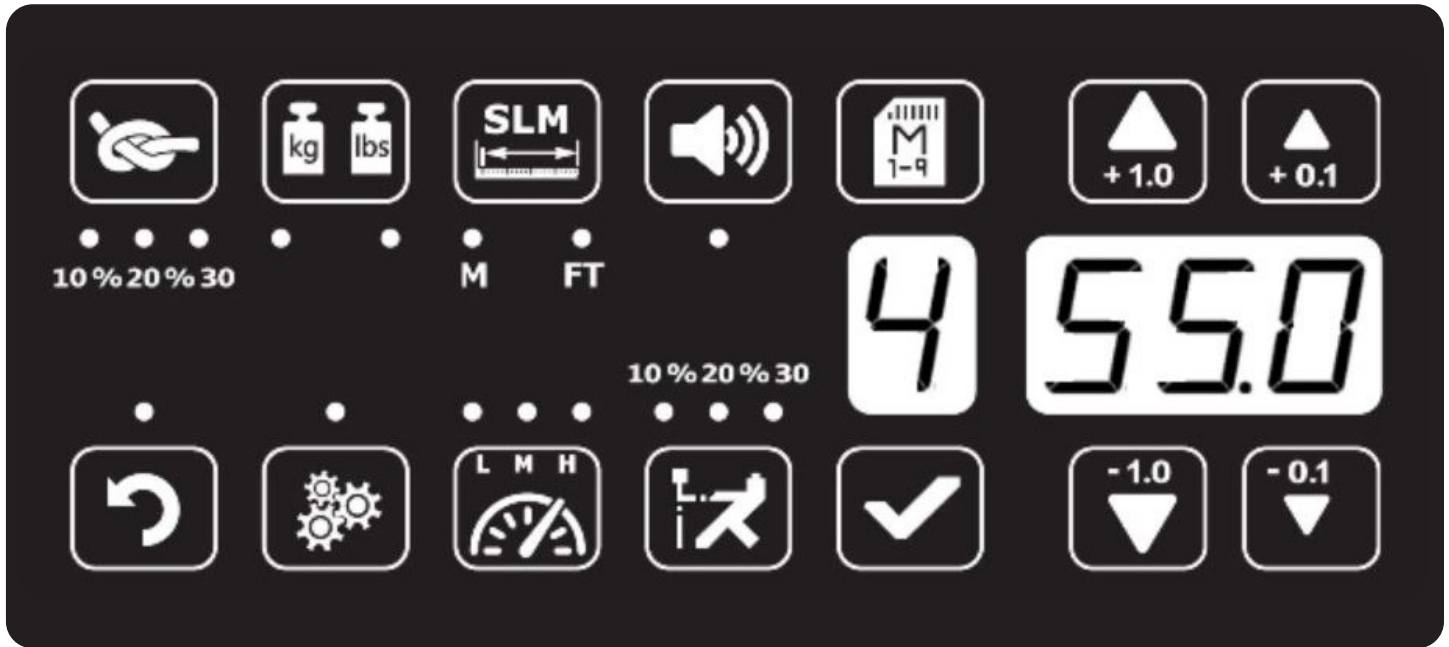
To connect the foot pedal switch, insert the male pin at the end of the foot pedal switch cord into the Foot Pedal Switch Receptacle "B" located on the back panel of the tensioner.

Switch on the machine by pressing the Lighted On-Off Power Switch on the back panel. At start-up, the LED will display a countdown from "9.0" to "0.0" while the machine performs a self diagnostics check at start-up.

WARNING!

FOR INDOOR USE ONLY. NEVER OPEN UNIT WITH POWER CONNECTED. CHILDREN SHOULD NEVER BE PERMITTED TO OPERATE THIS MACHINE WITHOUT ADULT SUPERVISION.

CONTROL PANEL FUNCTIONS



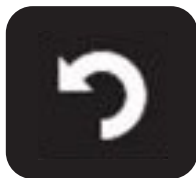
LEFT: SINGLE DIGIT MEMORY LED DISPLAY

**RIGHT: THREE DIGIT TENSION SETTING DISPLAY
or STRING LENGTH LED DISPLAY**



TENSION INDEX BUTTONS

Changes tension setting in +/- 1.0 or +/- 0.1 Lb or Kg increments. Holding the button down will scroll the tension setting values up or down. Tension settings entered with the tension index buttons are placed into temporary memory setting "0".



BACK BUTTON

Use the back button to exit settings at any time as well as the string length meter function.



MACHINE SETTINGS

This button allows access to several machine settings and features such as calibration, factory reset, and approximate number of racquets strung. To enter settings press and hold for 3 seconds, then use the up/down arrows to change between features.



LBS/KGS BUTTON

Changes tension display from Lbs to Kgs. Each press of the button toggles back and forth between Lbs and Kgs.



PRE-STRETCH FUNCTION

Pulls string 10% or 20% over the tension setting (up to 90 lbs/40.8 kgs), releases the string, and repulls to the tension setting. Each press of the button toggles between 10%, 20% or no pre-stretch.



MEMORY BUTTON

Indexes from 9 preset tension settings that can be stored in memory. Settings are retained even if machine is turned off. Each press of the button indexes to the next memory setting. Memory settings 1-9 must be entered using the keypad followed by pressing the "ENT" button.



ENTER BUTTON

Saves displayed tension for Memory setting - when tension is entered using the keypad display flashes until this button is pressed to save the setting. Also saves changes made in settings.



KNOT FUNCTION

Increases pulling tension by 10% over the setting value (max 90 lbs / 40.8 kgs) for one pull. During the pull the LED stays lit to indicate the Knot function is enabled.



SPEED BUTTON

Changes pulling speed of winder from Fast (default) to Medium to Slow. Slow speed is recommended for low stretch strings, such as Kevlar. Each press of the button toggles between Fast, Medium and Slow speeds.



STRING LENGTH METER BUTTON

Feature can be purchased separately from Gamma Sports.



SOUND ON/OFF

Turn the buzzer off by pressing this button.

MOUNTING THE FRAME

ADJUSTING THE FRAME SUPPORT POSTS

Use the latching Quick Lock mechanism to adjust the mounting towers between positions.

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



A **FOR SMALL FRAMES**
Move Quick Lock mechanism to **Inner Position**.

B **FOR STANDARD FRAMES**
Move Quick Lock mechanism to **Middle Position**.

C **FOR OVERSIZED FRAMES**
Move Quick Lock mechanism to **Outer Position**.

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.

SECURING THE FRAME SHOULDER CLAMPS

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 retightened.



STRINGING THE FRAME

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 the clamp base.



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 de- press 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.



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.



SETTING THE STRING TENSION

String tensions may be entered and stored into one of nine memory storage settings (See section on Control panel Functions and features) by using the tension index buttons. While tension setting is entered, the value displayed will be temporary until the "Enter" button is pressed to store it in one of the nine permanent memory settings.

Aramid fiber and metallic strings will generally string up tighter on the machine compared to synthetic or natural gut strings. Therefore, when stringing with Aramid (Kevlar, Technora) hybrid strings or metallic strings, we recommend setting tension 4-5 lbs. lower than you would normally use for synthetic or natural gut strings.

APPLYING TENSION

To apply tension, insert the string between the parallel gripper plates, and pull the string down and towards the string activation pad to apply tension.

Before applying tension, gently pull the string (down towards the activation pad) until all slack is removed and allow the gripper plates to close on the string.



Caution: never tension a string with your fingers between the string and the upper gripper jaw as serious injury could result if your finger is caught between the string and the upper jaw during tensioning. Push gripper reversing switch or any button in case of emergency.

To tension a string, touch the tension pad or the foot pedal. 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 the display will flash. As the tensioned string stretches, the gripper may rotate intermittently, maintaining the set tension.

To release the string after clamping, touch the tension pad or foot pedal. If the string gripper does not release the string, touch and hold the return button to release the string.

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 recommendation.



CLAMPING THE FIRST CROSS STRING

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.

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



PATHFINDER AWL

The machine includes the pathfinder stringing awl which creates a pathway between or around strings to make inserting a string through blocked 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. This leaves the outer sheath in the grommet hole. Insert the end of the string into the outer sheath.

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



TURNTABLE BRAKE

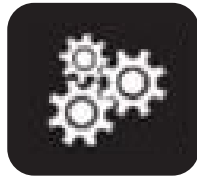
The turntable may be locked in any position. Rotate the lever to the right to lock the turntable and to the left to release the turntable.

BADMINTON SHOULDER SUPPORT PROTECTION PAD INSTALLATION

Slide the badminton shoulder support cover over the shoulder supports until it snaps securely in place. These parts are available if they become lost or damaged.

MAINTENANCE & ADJUSTMENTS

BUTTON QUICK REFERENCE



Settings



Enter



Back



Adjustment Arrows

TENSION CALIBRATION PROCEDURE

Each stringing machine has been checked and calibrated at the factory using accurate load sensing devices to ensure that the machine pulls at the correct tension. However, if you suspect that your machine may not be pulling at the correct tension you can check the pulling tension with a calibrator and make adjustments if needed.

Most tension calibrators (such as a Gamma Tension Calibrator) function by clamping off the string attached to one the end of the calibrator and applying tension to the string located on the opposite end of the calibrator. The tension measured by the calibrator will then display the tension being applied to the calibrator by the machine.

If the calibrator and tensioner do not match then you can adjust the tensioner as follows:

TENSION CALIBRATION PROCEDURE

CONT.



STEP 1: Press and hold the settings button for three seconds, the first setting displayed is F 1-C. This is calibration mode, press the enter button to begin.



STEP 2: Display will read C 22.0; the machine will start by pulling tension at 22 lbs (10kgs) Pull tension and adjust the display to match the calibrator reading using the up/down arrows. After adjusting the display press enter and release tension.

STEP 3: Repeat Step 2 at 44, 66, and 88 lbs. Following adjustment at the 88 lbs setting, calibration is now complete. To confirm calibration and finish press the enter button.

STEP 4: Press the settings button to return to the function list or press back to exit to stringing mode.

FACTORY RESET



In settings the first feature displayed is calibration, use the up arrow to find the factory reset function. To perform a factory reset simply press the enter button. Press settings to return to the settings list.

TOUCH PAD SENSITIVITY



This function adjusts the sensitivity of the tension activation pad. Hit enter and toggle from 0-7 where 0 is most sensitive and 7 is least sensitive. Hit enter to select and press the setting button to return to the settings list.

WARNING: Do not adjust the activation pad sensitivity if it works normally.

NOTE: If you experience issues with the touch pad and toggling the sensitivity on the machine display does not solve the issue, please contact Gamma Sports for adjustment procedures and next steps.

TOUCH SCREEN SENSITIVITY



This function adjusts the sensitivity of all buttons on the touch screen display. Options range from 0-7 with 0 being the most sensitive and 7 being the least sensitive. Press enter to view sensitivity options. Press enter again to select the desired setting. Press settings to return to the list.

Warning: Do not adjust touch display sensitivity unless the pre-selected sensitivity makes it difficult to use.

NUMBER OF RACQUETS STRUNG



This function will display the approximate number of racquets strung on your machine. Press enter to view and press settings to exit the function.

EXIT



The final function in the settings list can be used to exit settings and return to stringing mode. Press enter to exit.

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 squeezing 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 counterclockwise to open the gap between the jaws.

The clamp jaws should be cleaned periodically to be free from dirt, oil, and any string coating residue to grip properly. Knife sharpening stones are excellent for removing build-up on the diamond coated surfaces and are available.

QUICK ACTION CLAMP BASE REMOVAL

Quick Action clamp bases can be removed from the turntable for maintenance or cleaning by removing clamp stop located at the end of the slot in the turntable.

STEP 1: Remove the two screws holding the clamp stop in place from the underside of the turntable.

STEP 2: Lift the clamp stop out of the slot, slide the clamp base to the end of the slot and lift it out.

STEP 3: Replace the clamp base and clamp stop in reverse order.



TROUBLESHOOTING TIPS

PROBLEM	REMEDY
String Slips In Clamps	• Adjust gap between clamp jaws • Clean clamp jaws
String Slips In Gripper	• Clean gripper jaws • Make sure that the string is held at an angle after passing through the gripper jaws, allowing the grippers to close properly
Electrical System Does Not Function	• Check power source • Check power cord connections • Check internal wiring connections
String Tension Too Tight Or Too Loose	• Check tension using a tension calibrator, adjust machine calibration if necessary

ADDITIONAL PROBLEMS?

100% Human Customer Support Toll-free at (800)333-0337 Ext. 224

CARE & CLEANING

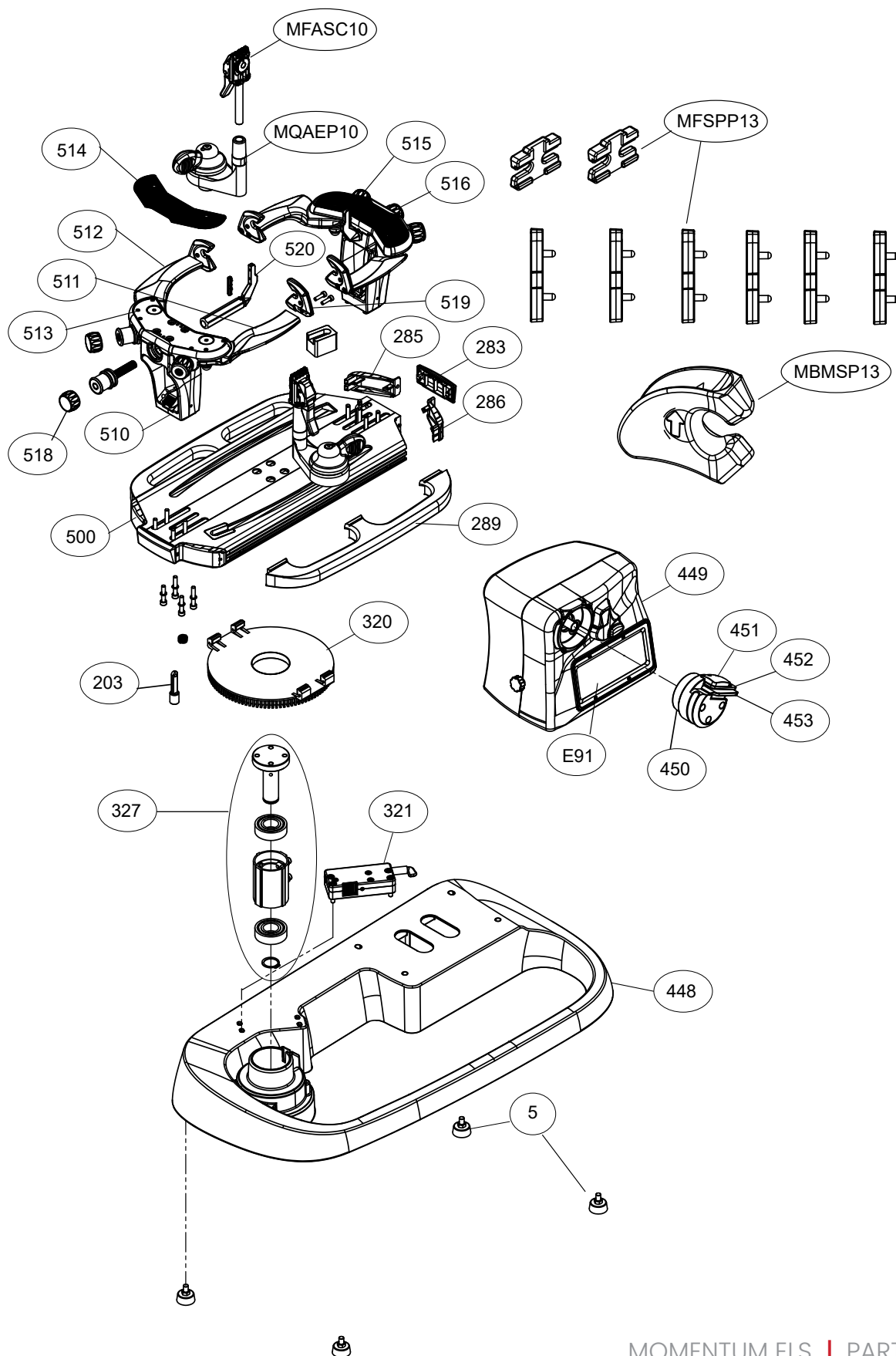
CLAMPS, BASE, & GRIPPER

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 String Clamps, String Clamp Base, and String Gripper is recommended.

Knife sharpening stones work well for cleaning the diamond coated string clamping surfaces. Cleaning with a solvent such as isopropyl alcohol and a mild abrasive tool such as a toothbrush also works well to remove oily or greasy build up.

LIMITED WARRANTY: GAMMA Sports (GAMMA) warrants to the original purchaser that the Momentum ELS 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 and for a period of one (1) year from the date of purchase for all 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 25, Quick Action Clamp Base adjustment, as described on page 26 and the cleaning procedures listed on page 28. 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.

PARTS LIST



PART NUMBER & DESCRIPTION

5	Rubber Foot
203	TT bolts
283	TT End Cap Center
285	TT End Cap Right
286	TT Enc Cap Left
289	TT Handles
320	Brake Ring
321	Brake Box
327	TT Pin
448	Momentum ELS Die Cast Base
449	Momentum ELS Tensioner
450	Rotational Horizontal Parallel Plate Drum
451	Horizontal Parrallel Plate Milled Housing
452	Horizontal Parallel Gripper Top Plate
453	Horizontal Parallel Gripper Bottom Plate
500	QL TT16 Beed Blast
510	A240 Mntg Stand
511	A240 Mntg Arm R
512	A240 Mntg Arm L
513	A240 Top Plate
514	A240 Top Plate/Arm pads
515	A240 Adj Knob & Screw
516	A240 Frame Slide Knob
518	Adj Knob Rubber Grip
519	A240/A600 Shldr V-Mnt (blk)
520	A240/A600 Frame Support
E91	Touch Screen Display
MFASC10	Slim Profile String Grippers
MQAEP10	Quick Action Base Clamp

REQUIRED TOOLS & ACCESSORIES

71	6mm T- Handle Hex Wrench
109	Needle Nosed Pliers
110	Bent Nose Pliers
167	Hex Wrench Set
171	Diagonal Cutters
E16	AC Power Cord
E23	AC Adapter
MA	Stringer Awl
MPSA	Pathfinder Awl
MFSP13	Frame Support Pad Set
MBMSP13	A240/A600 Badminton V-Mnt Covers

OPTIONAL TOOLS & ACCESSORIES

MMP1116	Foot Pedal Switch
MGEMC	Machine Cover
MPG	Starting Clamp
MPS	Cleaning Stone
MTC	Tension Calibrator



MOMENTUM ELS

STRINGING MACHINE

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