

Grizzly **Industrial, Inc.**®

MODEL H3099 DELUXE VIOLIN KIT OWNER'S MANUAL



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**WARNING: NO PORTION OF THIS MANUAL MAY BE REPRODUCED IN ANY SHAPE
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#DS5538 PRINTED IN JAPAN



WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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SECTION 1: SAFETY

WARNING

Always wear safety glasses or goggles when operating equipment. Everyday glasses or reading glasses are not safety glasses. Be certain the safety glasses you wear meet the appropriate standards of the American National Standards Institute (ANSI).

Because there are various ways to cut and join wood, you can make substitutions for the methods stated in this plan. We try to suggest the easiest methods possible. However, only you know your skills with each piece of machinery. Never compromise your safety by using a cutting method with which you are not comfortable. Instead, find an alternative approach that will yield the same result.

WARNING

These instructions assume that you are intimately familiar with the safe operation and use of woodworking machinery and woodworking tools, and understand the techniques used to reproduce this project. If you do not qualify for both of these criteria, **STOP building this project for your own safety.** Read and understand the owners manual for the machinery you intend to use, take a woodworking class or visit your local library for more information. Woodworking machinery and tools are inherently dangerous because they use sharp edges that can and will cause serious personal injury including amputation and death. Do not underestimate the ability of these tools and machinery to cause injury. Never operate any tool without all guards in place and always wear approved safety glasses. For your own safety, please heed this warning.



SECTION 2: INTRODUCTION

Foreword

We are proud to offer the Model H3099 Deluxe Violin Kit. This kit is part of a growing Grizzly family of fine woodworking products. When assembled according to the guidelines set forth in this manual, you can expect years of enjoyment from this violin.

The specifications, drawings, and photographs illustrated in this manual represent the Model H3099 when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly.

For your convenience, we always keep current Grizzly manuals available on our website at **www.grizzly.com**. Any updates to your machine will be reflected in these manuals as soon as they are complete. Visit our site often to check for the latest updates to this manual!



Contact Info

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
c/o Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

We stand behind our products. If you have any service questions or parts requests, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: <http://www.grizzly.com>



Components



Figure 1. Component layout.

REF	PART #	DESCRIPTION
1	PH3099001	Carved Top
2	PH3099002	Carved Back & Sides
3	PH3099003	Carved Neck
4	PH3099004	Fingerboard (Mounted To Neck)
5	PH3099005	Bass Bar (Not Shown)
6	PH3099006	Tuning Peg
7	PH3099007	Sound Post Setter
8	PH3099008	Nut (Mounted To Neck)
9	PH3099009	Bridge
10	PH3099010	Sound Post
11	PH3099011	Strings
12	PH3099012	Chin Rest With Bracket
13	PH3099013	End Pin
14	PH3099014	Purfling
15	PH3099015	Tailpiece With Tailgut
16	PH3099016	Tailpiece Saddle
17	PH3099017	Fine Tuner
18	PH3099018	Case (Not Shown)
19	PH3099019	Bow
20	PH3099020	Rosin



Supplies/Tools

The majority of the wooden components in this kit are fully machined from the factory and are ready for assembly. A small amount of drilling, sanding and light machining will need to be performed to complete the violin.

Recommended Tools:

- Small Hammer
- Coping Saw
- Assortment Of Files
- Assortment Of Chisels
- End-pin Reamer
- Spool Clamps
- Lightweight Saw
- $\frac{1}{16}$ " Drill Bit & Drill
- Purfling Cutter Or Rotary Tool
- Curved Scraping Tool
- Steel Ruler
- Tape Measure

Recommended Supplies:

- Wood Glue
- Violin Varnish
- Medium Drying Instant Adhesive
- Double-Sided Tape
- Rubber Bands
- Sandpaper: #150, #220, #320 Grits



Spool Clamps

Spool clamps are simple and inexpensive to make. Make 18 spool clamps using 1" diameter dowel pieces, $\frac{1}{4}$ "-20 x 3" bolts, and $\frac{1}{4}$ "-20 wing nuts (**Figure 2**).

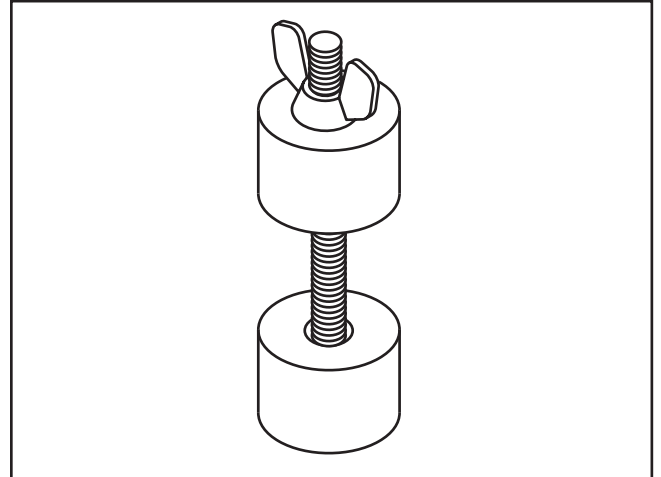


Figure 2. Spool clamp.



SECTION 3: ASSEMBLY

Purfling Inlay

The top and back violin pieces need to be routed to accept the purfling inlay. The use of a purfling inlay tool is highly recommended to obtain clean, professional looking results. Consult a musical instrument tool supplier for more information.

Figure 3 shows the purfling locations.

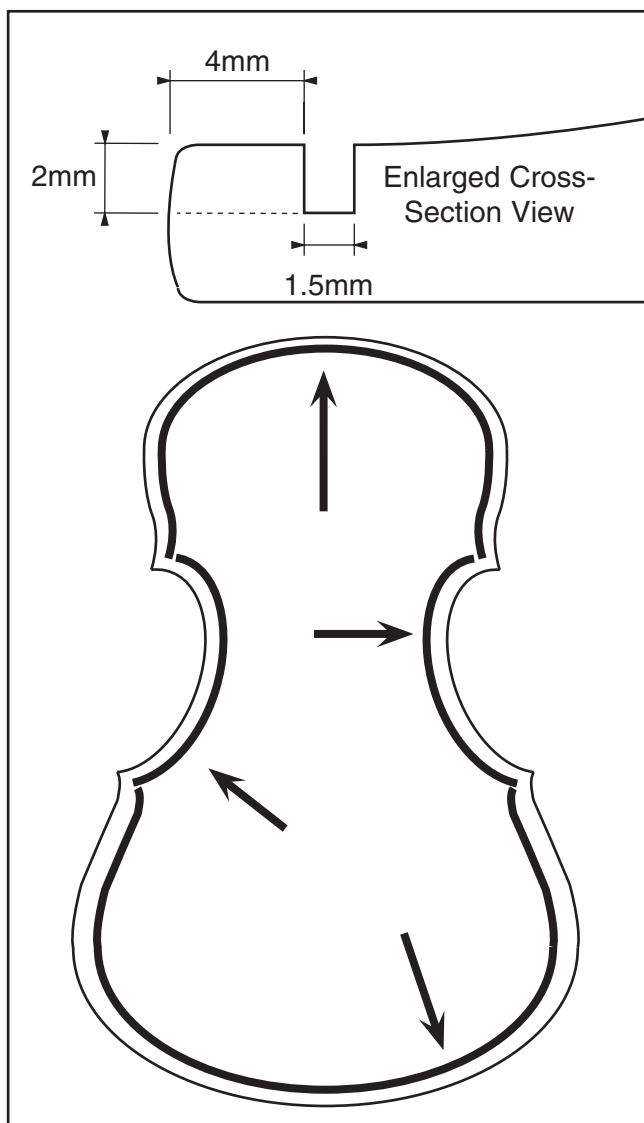


Figure 3. Purfling inlay locations.

To inlay the purfling:

1. Using a pencil or marking gauge, mark the locations where the purfling grooves need to be routed.
2. Using a sharp chisel or purfling inlay tool, rout out the grooves for the purfling inlay.
3. Cut and dry-fit the purfling inlay pieces. Note—*Wipe the purfling inlay pieces with a warm, damp cloth to help bend the pieces around tight curves. DO NOT submerge the purfling inlay pieces into water or they will delaminate.*
4. Using wood glue, secure the purfling inlay pieces into the grooves routed into the top and back pieces.
5. Once the glue has dried, sand and scrape the purfling smooth with the rest of the top and back pieces.
6. Using #220 grit sandpaper, final sand the entire violin body pieces. Be careful NOT to over-sand the corners or other delicate trim-work.



Bass Bar

To shape and attach the bass bar:

1. Dry fit the the bass bar on the back of the top piece, at the location shown in **Figure 4**. Note—*The thickest part of the bass bar is positioned towards the butt of the violin.*

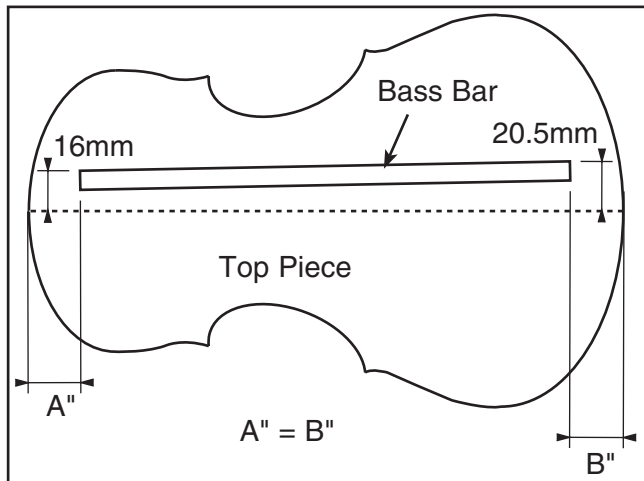


Figure 4. Bass bar location.

- If the bottom of the bass bar aligns correctly with the top piece, then proceed to the **step 3**.
 - If the back of the bass bar does not align correctly with the top piece, then proceed to the next step.
2. Tape a piece of #220 grit sandpaper to the bottom of the bass bar and lightly move it back and forth on the mounting location to close any gaps.
 3. Using several clamps, secure the bass bar to the violin top piece with wood glue. Continue when the assembly is dry.



Body

To attach the top piece to the violin body:

1. Using a steel ruler, measure the width of the side at several locations around the violin body.
 - If there are NO variations in measurements, then proceed to **step 3**.
 - If there are variations in measurements, then proceed to the next step.
2. Sand the top edge of the violin body on a piece of #150 grit sandpaper applied to a flat table surface. Note—*Repeat step 1 often.*
3. Using the spool clamps, dry-fit the top piece to the violin body to ensure there are no gaps.
4. Secure the top piece to the violin body with wood glue. Continue when the assembly is dry.



Neck To Body

There are several critical measurements that must be maintained when attaching the neck to the body. If these measurements are not maintained, the violin will not perform to its fullest potential. **Figure 5** and the bullets below summarize these measurements.

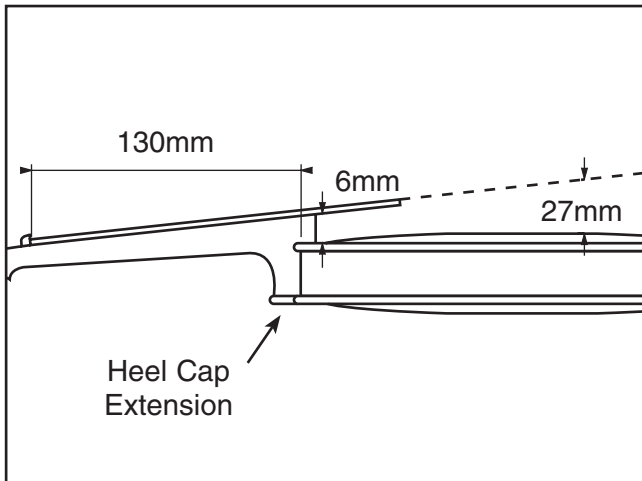


Figure 5. Critical neck measurements.

- The neck and fingerboard centerlines must align with the centerline of the body.
- The nut/fingerboard joint must be 130mm from the front edge of the violin body.
- The back of the fingerboard must be 6mm above the top of the violin body at the neck/body joint.
- The distance between the top of the violin body at the bridge location and the projected line from the top surface of the fingerboard must be 27mm.
- The neck to body joint must be tight and secure against the heel cap extension from the back violin piece.

To attach the neck to the body:

1. Using a pencil, mark the outline of the neck against the side of the violin body and the heel cap extension. Note—*The neck heel is probably longer than it needs to be. If so, carefully cut or file the heel at an angle to allow the above measurements to be maintained.*
2. Using a chisel or sharp knife, remove small amounts of material from the violin body (**Figure 6**). Removing too much material, or removing it too fast, could cause irreparable damage. Note—*The final depth of the mortise should be 5 to 6mm. Make sure the critical measurements are maintained first and foremost!*

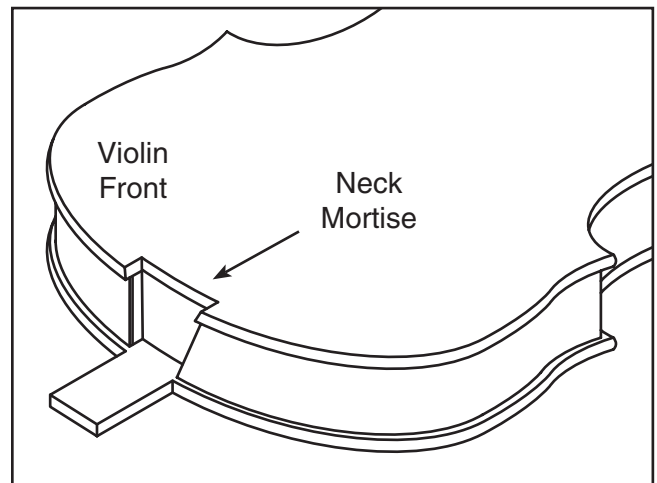


Figure 6. Neck mortise.

3. Dry-fit the neck to body joint. If the mortise was cut correctly, the neck will fit snugly into the body without being overly tight, and all the critical measurements will be met.
4. Using a c-clamp and a large rubber band or string, secure the neck to the body with wood glue. The c-clamp goes around the back of the heel cap extension and the top of the fingerboard. The rubber band or string goes around the neck and the butt of the violin. Note—*Verify all critical measurements.*
5. Once the assembly is dry, gently “break” the fingerboard away from the neck. The fingerboard must be removed before the finish can be applied to the violin.



Tailpiece Saddle

To install the tailpiece saddle:

1. Using a knife or chisel, cut a $\frac{3}{16}$ " wide X $1\frac{5}{8}$ " long X $\frac{1}{8}$ " deep mortise in the top piece, just above the end-pin hole.
2. Using a file or sandpaper, form a raised ridge along the center length of the tailpiece saddle. Note—*The ridge must be $\frac{3}{16}$ " above the violin top piece.*
3. Secure the tailpiece saddle into the violin top with wood glue.
4. Once the assembly is dry, use files and sandpaper to shape the tailpiece saddle edges flush with rest of the violin top (**Figure 7**).

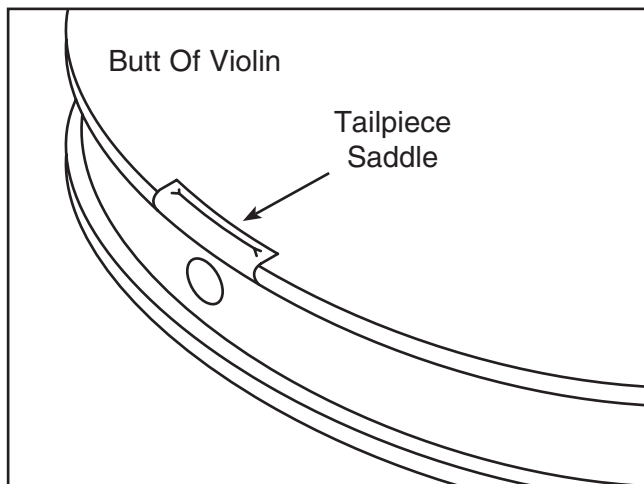


Figure 7. Installed tailpiece saddle.



End-Pin

To attach the end-pin:

1. Using a 7mm drill bit, drill out the hole for the end-pin.
2. Using a 1:30 ratio end-pin reamer, ream the hole to accept the end-pin. Note—*Remove the end-pin before continuing. Re-install after the finish has been applied to the violin.*



Finishing

Finishing Tips:

- **Always work in a well ventilated area when using finishing materials.**
- **Wear an ANSI-approved respirator mask and safety glasses when using finishing materials!**
- Fabricate hooks from wire hangers to suspend the violin components during the finishing process.
- Several thinner coats usually produce a nicer finish than one heavy coat. *Note—Always follow the finish manufacturer's instructions.*
- Dust particles suspended in the air will settle on wet finishes, resulting in less than satisfactory results. To avoid this problem:
 1. Leave the room where the finishing will take place completely undisturbed for 24 hours prior to applying the finish.
 2. Have the violin components positioned for the finish application upon entering the room.
 3. Avoid making unnecessary movements upon entering the finish room.
 4. Apply the finish to the desired violin parts and immediately leave the finish room.
 5. DO NOT return to the room until the specified drying time has elapsed.
- Always follow the finish manufacturer's instructions.



Peg Tuners

The violin peg tuners have been sized and the string holes have been drilled at the factory. The correct arrangement in the pegbox is shown in **Figure 8**. *Note—All of the peg tuners are identical.*

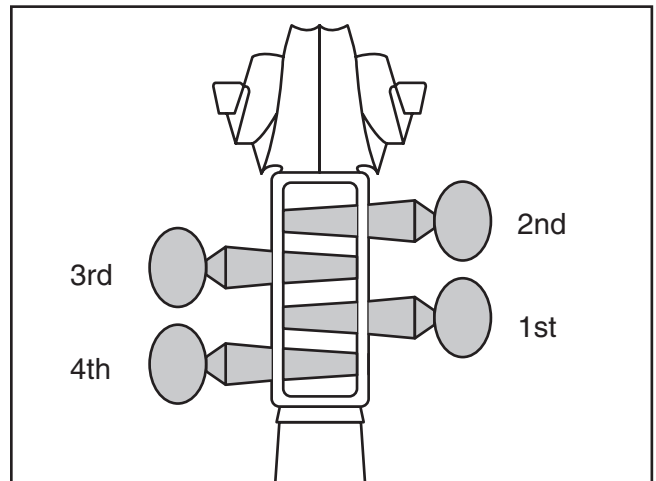


Figure 8. Peg tuner and string arrangement.



Bridge

To fit the bridge:

1. Place the bridge on the violin top, centered between the inside notches of the f-holes (**Figure 9**). Note—*When viewed from the side, the flat side of the bridge should face the butt of the violin and the tapered side should face the front (Figure 10).*

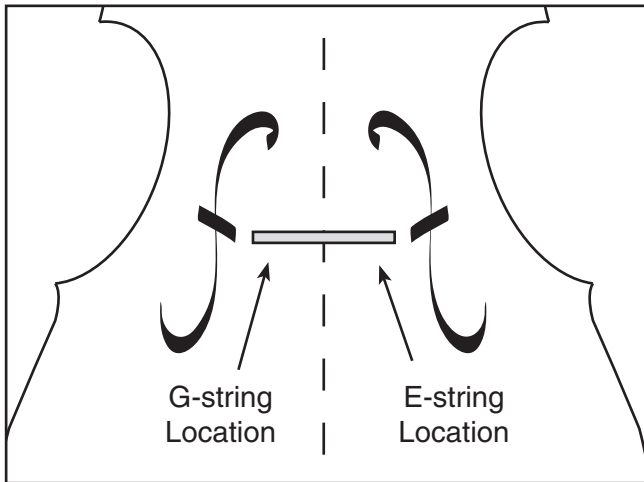


Figure 9. Bridge location.

2. Using a steel ruler, check the height of the bridge in relation to the top surface of the fingerboard. The E-string location on the bridge must be 2.5 to 3mm above the fingerboard. The G-string location on the bridge must be 4.5mm above the fingerboard.

— If both of these conditions are present, then continue with **step 4**.

— If either of these conditions are NOT present, then continue with the next step.

3. If the bridge only needs to be adjusted 1mm or less, tape a piece of #220 grit sandpaper to the bottom of the bridge and lightly move it back and forth on the mounting location. If the bridge needs to be adjusted more than 1mm, remove a small amount of material from both the top and bottom of the bridge.
4. Using sandpaper, reduce the thickness of the bridge until the top is 1.3mm thick and the base is 4mm thick (**Figure 10**).

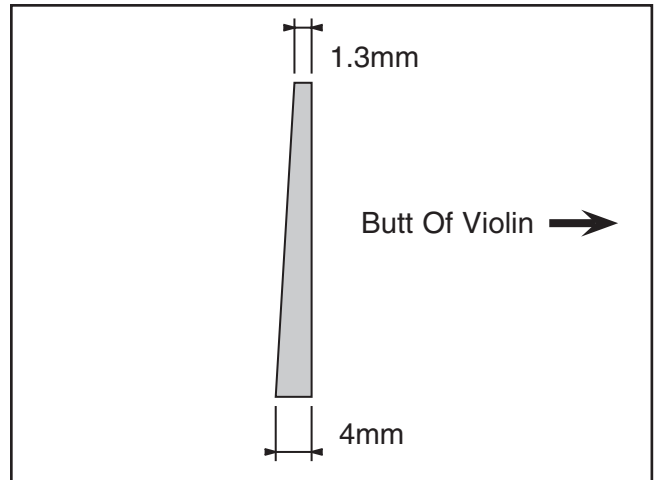


Figure 10. Correct bridge thickness (Cross-Section Side View)



Sound Post

The sound post placement greatly affect the overall volume and tone of the violin.

To install the sound post:

1. Stick the pointed end of the sound post setter into the sound post, about $\frac{2}{3}$ of the way to the top.
2. Carefully lower the sound post through the treble side f-hole. Note—*DO NOT use glue to secure the sound post.*
3. Place the sound post towards the center of the violin and then use the other end of the sound post setter to pull the sound post to its final position, 3 mm behind the location of the bridge treble foot (**Figure 11**). Note—*The end grain of the sound post must be perpendicular to the grain direction of the violin top piece.*

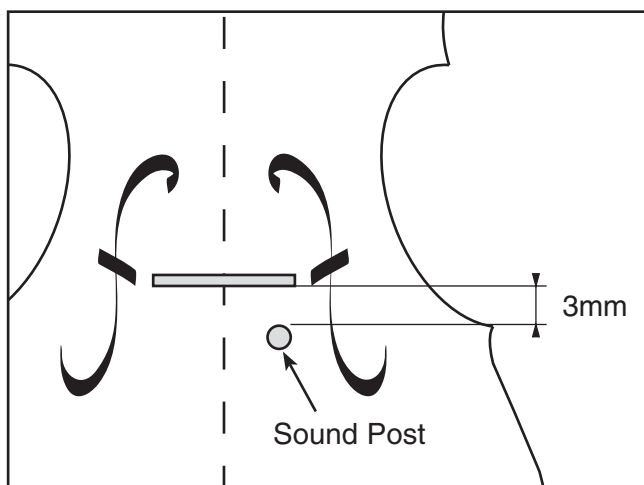


Figure 11. Sound post location.



Fingerboard

To re-attach the fingerboard to the neck:

1. Remove any dried glue from the mating surfaces of the fingerboard and neck.
2. Dry-fit the fingerboard and make sure the nut/fingerboard joint is 130mm from the edge of the violin top.
3. Using clamps, secure the fingerboard to the neck with wood glue. Continue when the assembly is dry.



String Slots

To make the string slots:

String spacing on the nut must be 16.3mm from center-to-center between the outside strings and 5.43mm from centers between the individual strings (**Figure 12**).

String spacing on the bridge must be 33.5mm from center-to-center between the outside strings and 11.3mm from centers between the individual strings (**Figure 12**).

The bottoms of the slots must be 0.3mm above the fingerboard surface plane and the width of the slots must be $\frac{1}{2}$ the diameter of each string (**Figure 12**). Begin making the slots with a sharp knife and finish them with files that match the diameters of the strings.



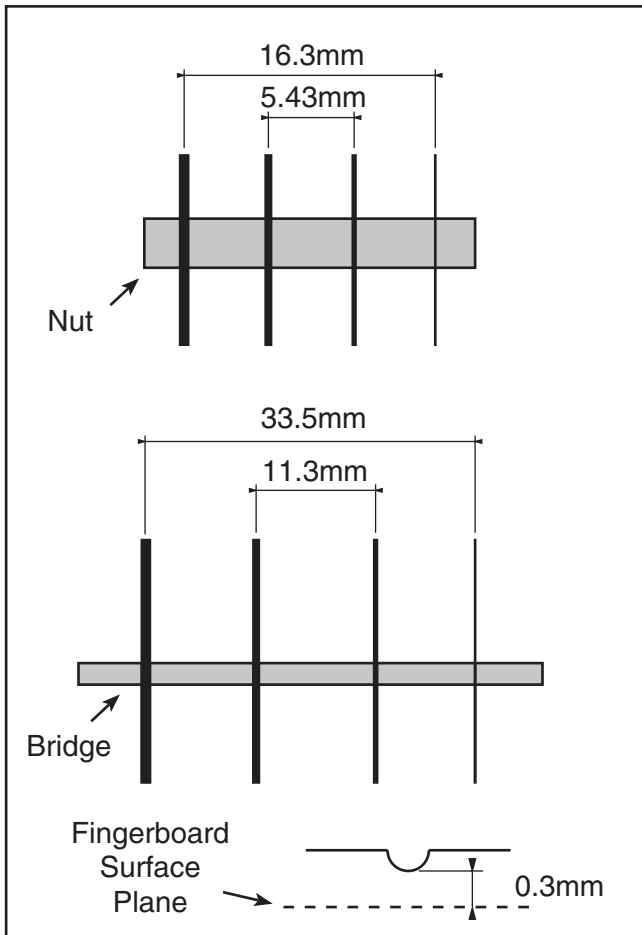


Figure 12. String slots.



Tailpiece

To install the tailpiece:

1. Insert the end-pin into the end-pin hole.
2. Remove one of the brass nuts from the tailgut and thread the tailgut through the tailpiece. Rethread the brass nut onto the tailgut.
3. Install the fine tuner to the tailpiece as shown in **Figure 13**.

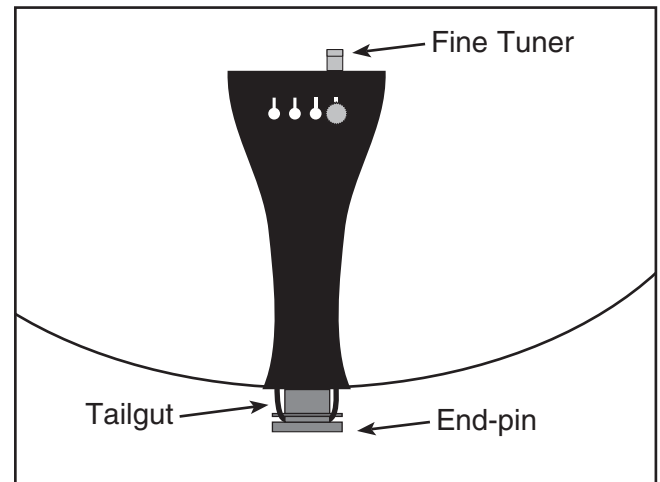


Figure 13. Tailpiece.

4. Slide the tailgut over the end-pin. Note—*The end of the tailpiece should align over the end of the top piece (Figure 13).*



Chin Rest

To install the chin rest:

1. Remove the two screws from the chin rest mounting bracket assembly, and thread them into the pre-drilled holes on the chin rest as shown in **Figure 14**.

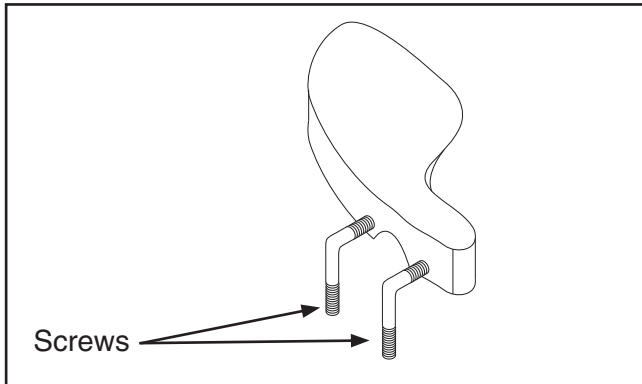


Figure 14. Screws installed onto chin rest.

2. Thread the two barrels attached to the bracket onto the screws mounted to the chin rest as shown in **Figure 15**.

Tip—Use a 1.5mm hex wrench to adjust the barrels.

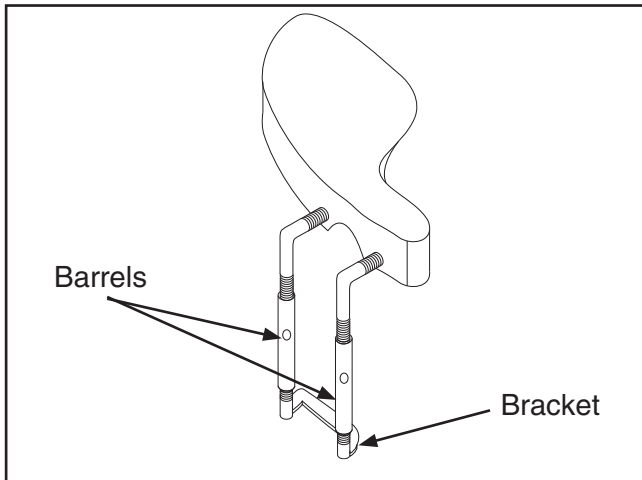


Figure 15. Bracket attached to screws and chin rest.

3. Place the chin rest bracket and chin rest over the tailpiece and end-pin (**Figure 16**) at the end of the violin body.

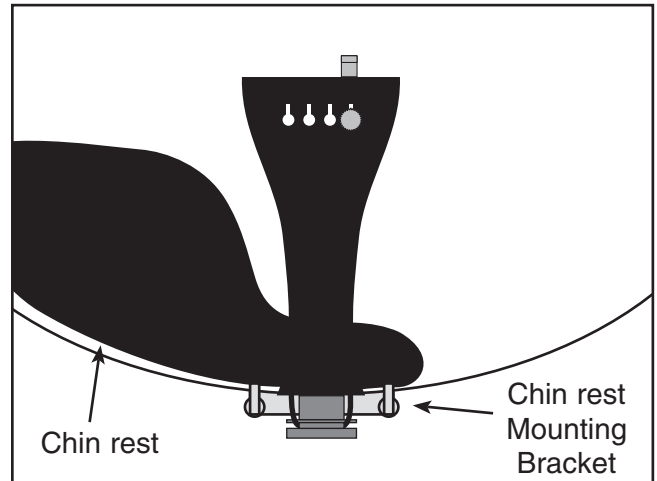


Figure 16. Chin rest placement.

4. Adjust the chin rest bracket assembly as needed so the chin rest fits snugly onto the violin.

Note—Over-tightening the bracket will damage the violin body.



Installing Strings

To install the strings:

1. Center the bridge between the inner two f-hole notches and string the violin to pitch.



SECTION 4: REFERENCE INFO

General

If you need parts or help in assembling your product, call the service department at (570) 546-9663. Trained service technicians will be glad to help you.

If you have any comments regarding this manual, please write to Grizzly at the address below:

Grizzly Industrial, Inc.
% Technical Documentation
P.O. Box 2069
Bellingham, WA 98227-2069

We recommend you keep a copy of our current catalog for complete information regarding Grizzly's warranty and return policy. If you need additional technical information relating to this product, or if you need general assistance or replacement parts, please contact the Service Department at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: <http://www.grizzly.com>.



Notes



Notes



Warranty & Returns

Grizzly Industrial, Inc. warrants every product it sells for a period of 1 year to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse; abuse; negligence; accidents; repairs or alterations; assembly, finishing or modification of kits; or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number," which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.





WARRANTY CARD

Name _____

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| <input type="checkbox"/> Model Airplane News | <input type="checkbox"/> Rifle | <input type="checkbox"/> Woodworker's Journal |
| <input type="checkbox"/> Modeltec | <input type="checkbox"/> Shop Notes | <input type="checkbox"/> Other: |
| <input type="checkbox"/> Old House Journal | <input type="checkbox"/> Shotgun News | |

3. What is your annual household income?

- \$20,000-\$29,000
- \$30,000-\$39,000
- \$40,000-\$49,000
- \$50,000-\$59,000
- \$60,000-\$69,000
- \$70,000+

4. What is your age group?

- 20-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70+

5. How long have you been a woodworker/metalworker?

- 0-2 Years
- 2-8 Years
- 8-20 Years
- 20+ Years

6. How many of your machines or tools are Grizzly?

- 0-2
- 3-5
- 6-9
- 10+

7. Do you think your machine represents a good value? Yes No

8. Would you recommend Grizzly Industrial to a friend? Yes No

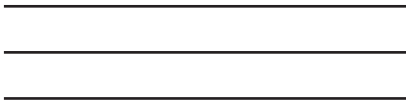
9. Would you allow us to use your name as a reference for Grizzly customers in your area?

Note: We never use names more than 3 times. Yes No

10. Comments: _____

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