

Explorer Guitar Kit Assembly Instructions



[WWW.www.byoguitar.com](http://www.byoguitar.com)



Find us on
Facebook

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.

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 manual. 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 familiar with the safe operation and use of woodworking machinery and woodworking tools, and understand the techniques used to assemble this project. If you do not qualify for both of these criteria, STOP building this project for your own safety. Read and understand the owner's 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.

Contents

Contents.....	- 2 -
1 Introduction	- 4 -
1.2 Material Check List.....	- 5 -
1.3 Additional tools/materials required:	- 8 -
2 Mockup and Fit Check (Figure 2.0)	- 1 -
2.1 Fit check the Neck to the Body	- 1 -
2.2 Checking the Pickups, Pickguard and Truss access cover	- 1 -
2.2.1 Mounting of Pickups & Pickguard (reference Figure 2.0)	- 1 -
2.2.2 Truss access cover (Figure 2.2.2-1)	- 2 -
2.3 Checking Electrical wiring and components	- 2 -
2.4 Check Bridge assembly (Figure 2.4-1)	- 2 -
2.5 Miscellaneous Fit Checks	- 3 -
2.5.1 Fit check of the back cavity Cover (Fig 2.5.1-1).....	- 3 -
2.5.2 Output Jack	- 3 -
2.5.3 Check Strap Pins.....	- 3 -
2.5.4 Check Tuner Alignment.....	- 3 -
3 Finish	- 1 -
3.1 Finish Application Steps	- 2 -
3.1.1 Solid Color finish:	- 2 -
3.1.2 Pigmented Translucent, Gel stain or alcohol dye finish:.....	- 2 -
3.1.3 Penetrating Stain or water based dye finish:.....	- 2 -
3.2 Explanation of Sequence Steps:.....	- 2 -
3.2.1 Sanding the Body and Neck	- 2 -
3.2.2 Applying Grain Filler.....	- 3 -
3.2.3 Applying Sanding Sealer	- 3 -
3.2.4 Solid Color Primer	- 3 -
3.2.5 Burst and Translucent finishes.....	- 4 -
3.2.6 Clear Top coats.....	- 4 -
3.2.7 Buff finish	- 4 -
4 Assembly	- 1 -

- 4.1 Installing the Neck.....- 2 -
 - 4.1.1 Neck Positioning: Neck Cavity Insertion- 2 -
 - 4.1.2 Neck Positioning: Centering.....- 2 -
 - 4.1.3 Neck positioning: neck angle- 3 -
 - 4.1.4 Neck Installation: gluing in place- 3 -
- 4.2 Installation of the Electronic Components- 4 -
 - 4.2.1 Installing the Wiring Harness- 4 -
 - 4.2.2 Install Neck Pickup- 5 -
 - 4.2.3 Install the Bridge pickup (Reference Figure 4.2).....- 5 -
 - 4.2.4 Selector Switch Wiring (Reference Figure 4.2)- 6 -
 - 4.2.5 Install the Pickguard and Selector Switch- 6 -
- 4.3 Installation of the Bridge Components- 7 -
 - 4.3.1 Installing the Bridge- 7 -
 - 4.3.2 Installing the Tailpiece- 7 -
- 4.4 Installing the Nut.....- 7 -
- 4.5 Installing the Tuners & Truss Rod Cover (Figure 4.5-1)- 8 -
 - 4.5.1 Installing the Tuners.....- 8 -
 - 4.5.2 Installing the Truss Rod Cover.....- 8 -
- 4.6 Install the Strings.....- 8 -
- 4.7 Installing the Strap Pins.....- 8 -
- 5 Initial setup- 1 -
 - 5.1 Adjust the Guitar Neck: Truss Rod- 2 -
 - 5.1.1 Check the Neck.....- 2 -
 - 5.1.2 Adjusting the Truss Rod- 2 -
 - 5.2 String Lubrication- 2 -
 - 5.3 Adjusting the Action.....- 3 -
 - 5.3.1 The Nut.....- 3 -
 - 5.3.2 Bridge Saddle Adjustment.....- 3 -
 - 5.4 Pickup Height (Figure 5.4).....- 4 -
 - 5.5 Intonation (Figure 5.5)- 4 -
 - 5.6 ...Other Hints- 5 -

1 Introduction

Thank you for purchasing a BYOGuitar.com guitar kit. This kit includes everything you need to build a complete custom guitar. In addition to the construction of your guitar, you will need to consider the finish – natural, solid color and possibly a design that will make your guitar unique. We suggest you do some research to determine your finish preferences. Procuring the required finishing materials,



TIP: Get some finishing ideas by visiting [BYOGuitar.com](http://www.byoguitar.com) and [BYO Guitar on Facebook](#)

(<http://www.byoguitar.com/gallery/index.html>)

especially if they have to be ordered, will allow expedite your guitar project.

We carry a full line of finishing products that give you the beautiful finish you are looking for, whether a clear natural finish or a bold, colorful finish. We also carry an instructional DVD made by Behlen that will give you step by step instructions to help you achieve the look you want for your custom guitar.

These instructions assume you are familiar with the anatomy of a guitar. Refer to Figure 1 for many of the terms used in the assembly of your guitar.

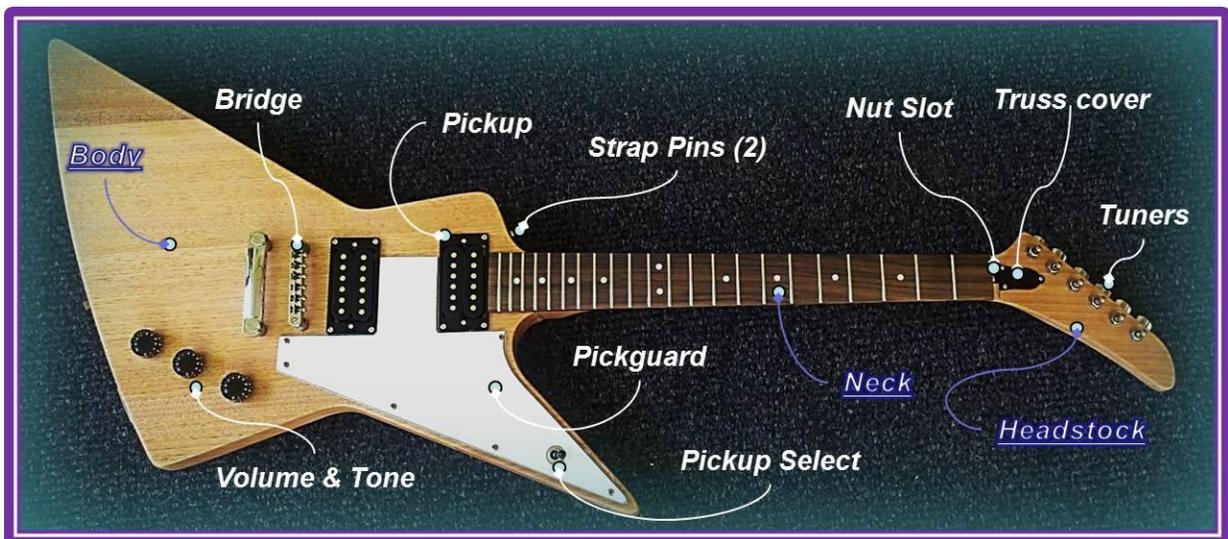


Fig 1 Major Components in Your Explorer Guitar Kit

1.2 Material Check List

In preparation for the building of your guitar, all required material should be checked both for type and quantity. Use the following check list to ensure all piece parts are included. If you customized your order (ex. different tuners), ensure that these parts are accounted for. Please contact BYOGuitar if there are any discrepancies.

Explorer Material List			
Item	Component	Quantity	Description
1		<ul style="list-style-type: none"> <input type="checkbox"/> 1 Explorer Body <input type="checkbox"/> 1 Explorer Neck <input type="checkbox"/> Miscellaneous materials (see below) 	BYO Explorer Guitar Kit
2		<ul style="list-style-type: none"> <input type="checkbox"/> 1 	Explorer Pickguard
3		<ul style="list-style-type: none"> <input type="checkbox"/> 2 black Alnico V pickups <input type="checkbox"/> 4 mounting screws <input type="checkbox"/> 4 springs 	Pickups

Introduction



4		☐ 20 screws ^{3/8"} + spare	Mounting screws for Pickguard & Back Plate
<div style="border: 1px solid black; background-color: yellow; padding: 5px; display: inline-block;"> TIP: use small interior packing box to inventory and organize piece parts </div>			
5		☐ Tune-o-matic bridge ☐ 2 posts	Explorer stop tail
6		☐ 1 harness w/ 3 potentiometers	Explorer Wiring harness
7		☐ 1 stop ☐ 2 posts	Bridge assembly
8		☐ 1 tone ☐ 2 volume	Explorer knobs
9		☐ 6 Tuning Pegs ☐ 6 Washers ☐ 6 Nuts ☐ 6 screws, 3/8"	Tuning Peg materials

Introduction



10		<ul style="list-style-type: none"> ☐ 1 plate ☐ 2 screws, xx" 	Electronics cover
11		<ul style="list-style-type: none"> ☐ Jack w/plate ☐ 4 mounting screws 	Output Jack assembly <i>(note: jack is prewired to harness)</i>
12		<ul style="list-style-type: none"> ☐ 2 Holders ☐ 2 plastic washers ☐ 2 screws, 1" 	Strap Holder materials
13		<ul style="list-style-type: none"> ☐ 1 String "Nut"/guide 	String Nut
14		<ul style="list-style-type: none"> ☐ 6 strings 	Strings
15		<ul style="list-style-type: none"> ☐ Output Cable ☐ 2 Allen wrenches 	Other
16		<ul style="list-style-type: none"> ☐ Pickup select 	Switch

Introduction



17		☐ Truss cover	Cover
----	---	---------------	-------

1.3 Additional tools/materials required:

Drill & drill bits	#1 & #2 Phillips screwdriver	Soldering iron/solder
Masking/painters tape	Finishing/painting material	Sand paper 220 & 320 grit
Guitar strap	Soap or candle	Feeler gauge
ruler	Wood glue	Clamps
Wrap (8") or straw	String or fishing line (36")	

Introduction



The remainder of the assembly instruction is divided into four sections:

Section 2 – Mockup & Fit check: in this section, all components will be checked for proper alignment and ensure that all holes have been drilled.

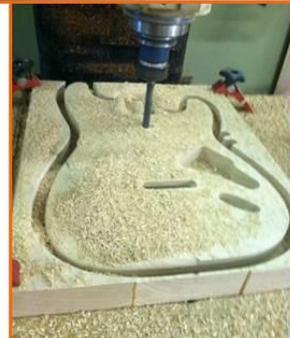
Section 3 – Finishing the Body and Neck: after fit check, the components are removed from the neck & body to allow the selected finish to be applied. This will allow you to customize your guitars' color(s). As the finishing will likely require several coats with sanding between each coat, ensure that the finish is completely dry.

Section 4 – Assembly: the final assembly is the next step - once the finish has been applied and completely dried. In this section, all of the components are installed, internal wiring connected and strings attached – your guitar will ready to go!

Section 5 – Setup: in this section, initial adjustments are made to your guitar, such as the height of the pickups.

Again, we thank you for your purchase of a BYO Guitar and we look forward to seeing pictures of your unique guitar! We also look forward to providing you with the guitar for your next project from our Custom Shop where you can select the wood for the body and neck as well as customizing all of the other components.

Let us know if your music, school, church or scouting organization would like to undertake a group project – BYO Guitar can supply multiple kits or custom guitars.



Some Ideas for Finishing Your Guitar and Examples of Our Custom Shop Products

Section 2 Contents

2 [Mockup and Fit Check \(Figure 2.0\)](#) - 1 -

 2.1 [Fit check the Neck to the Body](#) - 1 -

 2.2 [Checking the Pickups, Pickguard and Truss access cover](#) - 1 -

 2.2.1 [Mounting of Pickups & Pickguard \(reference Figure 2.0\)](#) - 1 -

 2.2.2 [Truss access cover \(Figure 2.2.2-1\)](#) - 2 -

 2.3 [Checking Electrical wiring and components](#) - 2 -

 2.4 [Check Bridge assembly \(Figure 2.4-1\)](#) - 2 -

 2.5 [Miscellaneous Fit Checks](#) - 3 -

 2.5.1 [Fit check of the back cavity Cover \(Fig 2.5.1-1\)](#) - 3 -

 2.5.2 [Output Jack](#) - 3 -

 2.5.3 [Check Strap Pins](#) - 3 -

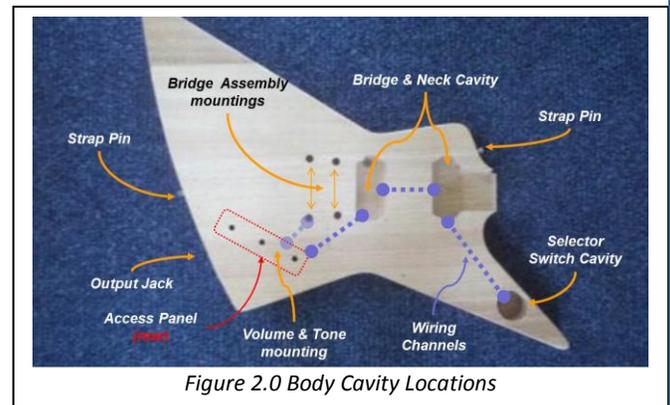
 2.5.4 [Check Tuner Alignment](#) - 3 -

2 Mockup and Fit Check (Figure 2.0)

The following steps will ensure that the base, neck, tuners, pickups, etc. are properly aligned, wired and that all screw holes have been drilled.

2.1 Fit check the Neck to the Body

Gently insert the Neck into the neck cavity on the Body – the fit should be snug to ensure proper alignment when these pieces are glued during assembly. If the pieces will not fit or are very tight, lightly sand the neck. If the neck is loose, please call BYO Guitar to resolve the issue.



2.2 Checking the Pickups, Pickguard and Truss access cover

2.2.1 Mounting of Pickups & Pickguard (reference Figure 2.0)

Mount the selector switch (Item # 16 on parts list) on the pickguard so that the switch action will be near horizontal when mounted on the body.

1. Position the bridge pickup (item #2 on parts list, with the “B” on it) in the Bridge cavity, temporarily running the wire through the tunnel to the Electronics cavity.
2. Position the Neck pickup (item #3 on parts list, with the “N” on it) in the neck cavity.

Section 2 – Mockup and Fit Check



3. Mount the pickguard so that it matches the contour of the body while aligning the pickups to be symmetrical with the pickguard. Realign as necessary – then mark the holes.
4. Pre-drill :
 - a. 2 holes for the pickguard;
 - b. 2 holes for each pick up;
5. Attach with supplied screws and recheck body & component alignment.
 - a. If the alignment is correct, pre-drill all remaining holes.
 - b. If further adjustment is required, repeat step #1-4 above.

2.2.2 Truss access cover (Figure 2.2.2-1)

1. Temporarily place the “nut” (Item # 13 on parts list) in place on the neck.
2. Align the plastic cover (Item # 17 on parts list) with the Truss access hole.
3. Mark and pre-drill the 3 holes.

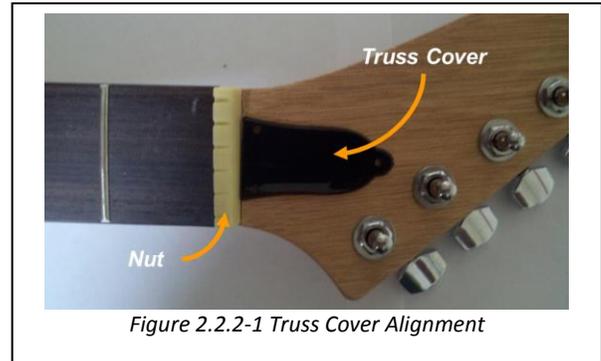


Figure 2.2.2-1 Truss Cover Alignment



CAUTION:
The headstock is thin – do not drill through!!

2.3 Checking Electrical wiring and components

Your Explorer guitar kit comes with a wiring harness that is ready for installation during assembly of your guitar (Section 4). Check the harness to ensure that all wiring remains solidly soldered to each component – re-solder as required (...if necessary, check Figure 4.2 for wiring color codes).

2.4 Check Bridge assembly (Figure 2.4-1)

The Explorer bridge assembly consists of a “Tune-o-matic” bridge and a “stop tail piece”, each with 2 posts (Items # 5 & 7 on parts list). Each post is press fit into the body at assembly - hole alignment will be validated during this step.

1. Partially insert (approximately 1/8”) the “tune-o-matic” inserts & posts into the holes closest to the neck – install bridge over the posts.
2. Before checking the stop tail piece, ensure that there is a hole between the lower post mounting hole and the electric cavity for grounding the bridge.



Figure 2.4-1 Bridge Assembly Alignment

Section 2 – Mockup and Fit Check



- Partially insert (approximately 1/8") the “stop tail piece” inserts & posts into the holes furthest from the neck – install (slide) the stop piece over the posts.



TIP... the holes may need to be widened with a peghead reamer or a round file. DO NOT widen the holes too much—the tuners should fit snug

Please call BYOGuitar if there are any issues with steps 1-3 above.

2.5 Miscellaneous Fit Checks

2.5.1 Fit check of the back cavity Cover (Fig 2.5.1-1)

Insert the black cover (item #10 on material list) into the back cavity of the body – the cover typically has a plastic protective film to avoid scratching. Pre-drill the 2 holes for assembly mounting.

2.5.2 Output Jack

Check for pre-drilled holes (4) for the Output Jack (material list #11), reference Figure 2.0.

- If the holes are pre-drilled, skip 2.5.3.
- Insert Output Jack plate (the jack is part of the pre-wired harness) in Jack Cavity (Fig 2.0).
- Mark the holes and drill starter holes with 1/16 drill bit.



Figure 2.5.1-1 Back Body Cover Alignment

2.5.3 Check Strap Pins

Check for pre-drilled holes for the Strap Pins (item 12 on the material list), reference Figure 2.0. If the holes are pre-drilled, skip to 2.5.4.

- Mark the rear Strap Pin hole so that it is approximately 7" from the bottom of the Body, and the forward Pin approximately 1" above the Neck cavity (see Figure 2.0).
- Drill starter holes with a 1/16 drill bit.

2.5.4 Check Tuner Alignment

Each tuner consists of the tuner, washer, and a threaded bushing. The tuners are attached to the headstock with a small wood screw that attaches between the tuners.

- Insert tuners, 6 each (item #9 on Material List), into the Neck Headstock. Ensure that the Tuner shafts are perpendicular to the Headstock (Fig.2.5.4).
- Check alignment of set screw holes and tuner base - if alignment is incorrect or holes are not drilled, mark hole locations and drill starter holes with 1/16 drill bit.

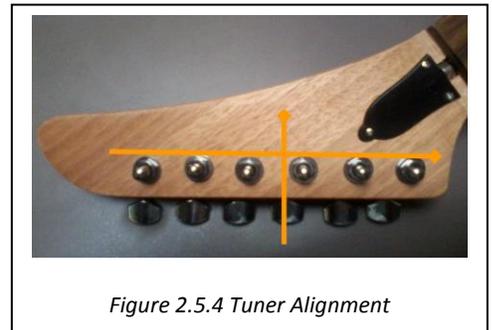


Figure 2.5.4 Tuner Alignment

Carefully disassemble the Mockup and move on to the next step: applying the finish to your guitar!

Section 3 Contents

- 3 [Finish](#) - 1 -
- 3.1 [Finish Application Steps](#) - 2 -
- 3.1.1 [Solid Color finish:](#) - 2 -
- 3.1.2 [Pigmented Translucent, Gel stain or alcohol dye finish:](#)..... - 2 -
- 3.1.3 [Penetrating Stain or water based dye finish:](#)..... - 2 -
- 3.2 [Explanation of Sequence Steps:](#)..... - 2 -
- 3.2.1 [Sanding the Body and Neck](#) - 2 -
- 3.2.2 [Applying Grain Filler](#)..... - 3 -
- 3.2.3 [Applying Sanding Sealer](#)..... - 3 -
- 3.2.4 [Solid Color Primer](#) - 3 -
- 3.2.5 [Burst and Translucent finishes](#)..... - 4 -
- 3.2.6 [Clear Top coats](#)..... - 4 -
- 3.2.7 [Buff finish](#) - 4 -

3 Finish

Before starting the finish make sure all holes are drilled for any remaining hardware (pickguard, jack plate, strap pins etc). This section will cover the application of several finish types, including;

- 1. Solid color
- 2. Pigmented translucent, gel stain or alcohol dye
- 3. Penetrating stain or water based dye

Caution: ... the neck is glued to the body of the Explorer guitar: ensure that mating surfaces are taped off to prevent the finish interfering with the adhesive qualities of the glue.

The guitar body was sanded at the factory and coated with one coat of sand and sealer. To get a good finish, the body should be sanded with a series of sandpaper grits up to #320 grit. Apply a solid color finish, a pigmented translucent finish (Bursts, toners, Blonde, Butterscotch Blonde etc), a gel based stain or an alcohol based dye finish over the sanding sealer. If you plan on using a penetrating stain or water based dye, the sanding sealer must be removed.

How you proceed will depend on the finish you would like on your guitar.

The following paragraphs outline several finishing processes, starting with the sequence for a finish type (paragraph 3.1) followed by detailed explanation of each sequence step (paragraph 3.2).

3.1 Finish Application Steps

3.1.1 Solid Color finish:

1. Sand the body and neck
2. Apply grain filler if desired.
3. Apply 2 coats of sand and sealer
4. Sand to 320 grit
5. Apply primer
6. Sand the primer
7. Apply color coats
8. Apply clear top coats
9. Buff finish

3.1.2 Pigmented Translucent, Gel stain or alcohol dye finish:

1. Sand the body and neck
2. Apply grain filler if desired.
3. Apply 2 coats of sand and sealer
4. Sand to 320 grit
5. Apply stain or dye
6. Apply clear top coats
7. Buff finish

3.1.3 Penetrating Stain or water based dye finish:

1. Sand the body and neck to bare wood
2. Apply grain filler if desired.
3. Apply stain or dye
4. Apply 2 coats of sand and sealer
5. Sand to 320 grit
6. Apply clear top coats
7. Buff finish



TIP... re-open any of the screw holes in the body. Use a toothpick or small drill held between your fingers to clean out any filler in the holes.

3.2 Explanation of Sequence Steps:

3.2.1 Sanding the Body and Neck

1. Wear a NIOSH-approved respirator and ANSI-approved safety glasses when sanding wood!
2. Before starting the finish on the neck mask off the surface of the fingerboard.

3. Use a flexible sanding block with #150 grit aluminum-oxide sanding paper to sand the guitar body until there is a consistent scratch pattern on the entire surface. Note: DO NOT round over the neck pocket or the body cavities. When hand sanding, always sand in the same direction as the wood grain.
4. Re-sand the entire guitar body and neck with #220 grit sanding paper and lightly round over the outside edges of the body.
5. Wipe the guitar body and neck with a damp cloth to “raise” the wood grain.
6. Wait until the wood is dry and re-sand with #220 grit sandpaper to sand the “raised” grain smooth.

(Note: On a maple fingerboard you can apply a clear finish to the entire neck and fingerboard. Apply several coats and remove buildup on the frets between coats. An easy way to remove the finish buildup on the frets is to take a nail and file a half round slot in the head about the same size as the frets. You can then use this to easily scrape any finish build up.

If the neck has a Rosewood or Ebony fingerboard, be sure to tape off the fingerboard before applying the finish. Behlen’s Fingerboard Oil is a great product for your fingerboard.)

3.2.2 Applying Grain Filler

Grain filler will fill in the grain and create flat surface. This is essential if you are trying to get a high gloss finish. Oil based grain filler is recommended. We recommend using Behlen PORE-O-PAC grain filler. For most finishes use natural colored filler. The dyes used in darker fillers may over time find their way through the color coat.

Apply the filler by wiping across the grain. You can use a course cloth or your fingers to wipe the grain in. After it has dried about ten to twenty minutes the excess can be removed with a cloth dampened with mineral sprits. After about an hour repeat the process and let dry overnight. If you have removed most of the excess with mineral spirits the remaining filler on the field of the wood can be sanded off (use #220 again) in a few minutes. It is also a good idea at this time to reopen any of the screw holes in the body. Use a toothpick or small drill held between your fingers to clean out any filler in the holes. The body is now ready for a sand and sealer coating.

3.2.3 Applying Sanding Sealer

Sand and sealer is used to give the final coat a level base. It is also helpful in filling scratches which are too deep to sand out. We recommend using Behlen Vinyl Sealer. This comes in aerosol cans and can easily be sprayed on.

3.2.4 Solid Color Primer

The last step before applying the color coats is to apply a white primer coat. We recommend using Ohio Valley Nitro Primer. The white background will also let you apply an opaque color coat with less paint. Spray on two coats. When dry you may notice that the surface feels rough. Sand off the roughness with #320 dry and respray. Sand again. If the surface now appears smooth and all grain is opaqued you are ready for the color coat.

3.2.5 Burst and Translucent finishes

Bursts and Translucent finishes can be applied using aerosol cans of lacquer toner. Ohio Valley Nitro and Behlen have a full line of Nitrocellulose Lacquer Toners to achieve these finishes.

3.2.6 Clear Top coats

Apply several thin coats of the finish, following the manufacturer's instructions. Multiple thin coats usually produce a better quality finish than one heavy coat. Dry sand the entire body with #400 grit wet dry sandpaper after at least three coats of finish have been applied. DO NOT sand through the finish, be careful on the edges. Use a tack cloth to remove sanding residue. Apply more finish, sanding between coats, until the finish is the desired thickness.

3.2.7 Buff finish

When the final coat has dried at least a week, preferably a month, remove the masking. Wet sand the finish using #600 grit wet/dry sandpaper with a sanding block, followed with #1000 grit wet/dry sandpaper. Use a clean, absorbent rag to remove excess water. Let the guitar dry completely, then use a tack cloth to remove all residue. Buff the finish by hand or with a buffer, starting with a medium polish and working up to a high gloss polish.

Note: If you use a buffing machine, be careful to avoid going through the finish, especially on the edges.

Section 4 Contents:

4 Assembly - 1 -

4.1 Installing the Neck..... - 2 -

4.1.1 Neck Positioning: Neck Cavity Insertion - 2 -

4.1.2 Neck Positioning: Centering..... - 2 -

4.1.3 Neck positioning: neck angle - 3 -

4.1.4 Neck Installation: gluing in place - 3 -

4.2 Installation of the Electronic Components - 4 -

4.2.1 Installing the Wiring Harness - 4 -

4.2.2 Install Neck Pickup - 5 -

4.2.3 Install the Bridge pickup (Reference Figure 4.2)..... - 5 -

4.2.4 Selector Switch Wiring (Reference Figure 4.2) - 6 -

4.2.5 Install the Pickguard and Selector Switch - 6 -

4.3 Installation of the Bridge Components - 7 -

4.3.1 Installing the Bridge - 7 -

4.3.2 Installing the Tailpiece - 7 -

4.4 Installing the Nut..... - 7 -

4.5 Installing the Tuners & Truss Rod Cover (Figure 4.5-1) - 8 -

4.5.1 Installing the Tuners..... - 8 -

4.5.2 Installing the Truss Rod Cover..... - 8 -

4.6 Install the Strings..... - 8 -

4.7 Installing the Strap Pins..... - 8 -

4 Assembly

After your finish has been applied and thoroughly dried, we can now assemble your guitar. In this section we will permanently install all of the components and solder the wiring for the bridge and neck



TIP... use a blanket or large towel on your work area to protect your guitars' finish

pickups. Remove all of the protective tape from neck and the neck cavity that you might have used during the Finishing process.

4.1 Installing the Neck

4.1.1 Neck Positioning: Neck Cavity Insertion

There are a few things to consider when installing a set neck. First is the position, “in and out”, of the neck in the body. Second, is the alignment of the neck with the center line of the body (Figure 4.1.1-1).

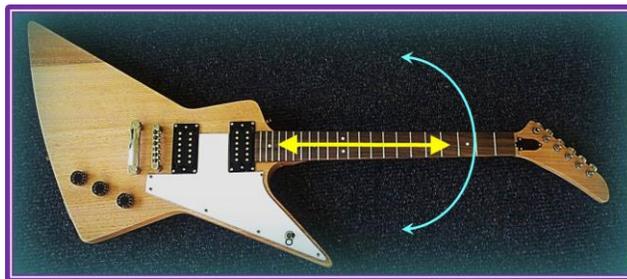


Figure 4.1.1-1

To determine the position of the neck when inserted into the body, it's important to understand where the neck should be located.

The distance from the nut (edge closest to the fingerboard) to the 12th fret is equal to the distance from the 12th fret to the bridge (Figure 4.1.1-2).

Use the scale length of the neck and the bridge location to determine the neck placement. **DO NOT simply position the neck so the heel of the neck is at the back of the pickup cavity.** Typically the neck doesn't reach the back of the cavity and should not be assumed to be the correct neck position.



Distance from Bridge to 12th fret = Distance from 12th fret to nut

Figure 4.1.1-2

When measuring from the 12th fret to the bridge, you want to measure to the saddle on the high E string. (Figure 4.1.1-3) If the bridge holes are drilled with compensation (usually the case on a tune-o-matic bridge) the saddle on the high E string will be closer to the nut than the saddle on the low E string.



Bridge Saddle, top view

Figure 4.1.1-3

To ensure proper alignment of the Neck pickup and the neck, temporarily place the neck pickup in the cavity and attach with 2 screws (Note: the neck might have to be started into the neck cavity before mounting the Neck pickup). When you have the neck located “in and out”, mark it with a pencil so you can position it correctly when it is glued and clamped.

Remove the Neck pickup.

4.1.2 Neck Positioning: Centering

The neck needs to be aligned with the center of



Figure 4.1.2-1 Explorer Neck Centering

the pickup cavities and bridge. This step is the same if you are installing a set neck or a bolt on neck. It's important to get the correct neck alignment, as incorrect alignment of the neck results in the E strings not running parallel to the edges of the fingerboard.

Clamp two straight boards to each side of the neck and use a ruler to align the neck with the center of the bridge (figure 4.1.2-1). If the bridge holes are already drilled, the center is known. If they haven't been drilled, align with the center of the pickup cavities. Once you have located the neck, make a mark on the heel of the bridge and pickup cavity so you align it when gluing and clamping.

4.1.3 Neck positioning: neck angle

The last thing to check is the neck angle (Figure 4.1.3-1). If the angle is not correct you won't be able to get the correct action. With the neck in the pocket, place a straight edge on the frets. Push the straight edge back until it's over the bridge. The straight edge should be just over the bridge (Figure 4.1.3-2).

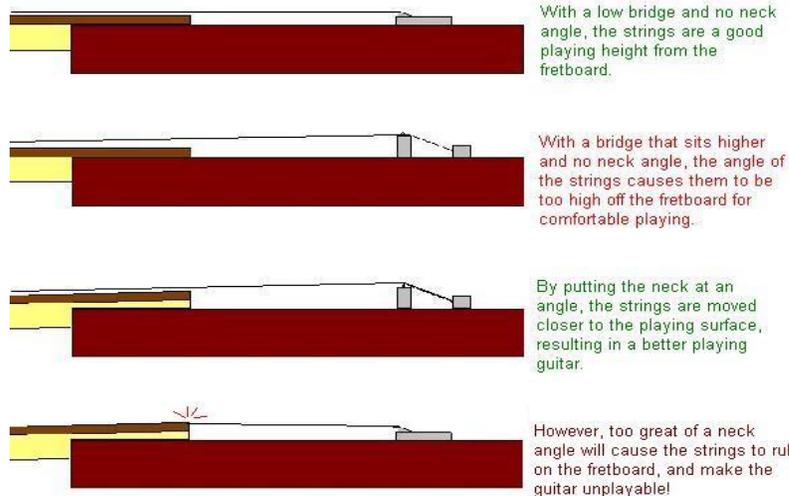


Figure 4.1.3-1 Understanding Neck Angle

4.1.4 Neck Installation: gluing in place

Now that the correct positioning and angle have been established for Neck, all that's left is to glue it in place. Use yellow wood glue, align the neck with the marks you've made, clamp in place and allow to dry. Caution should be used when considering the use of glues that expand as they dry (...such as Gorilla glue) as they might expand beyond the seam and damage the finish.

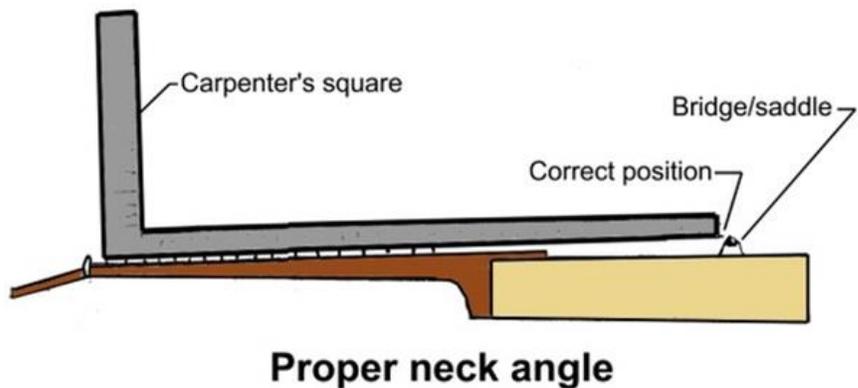


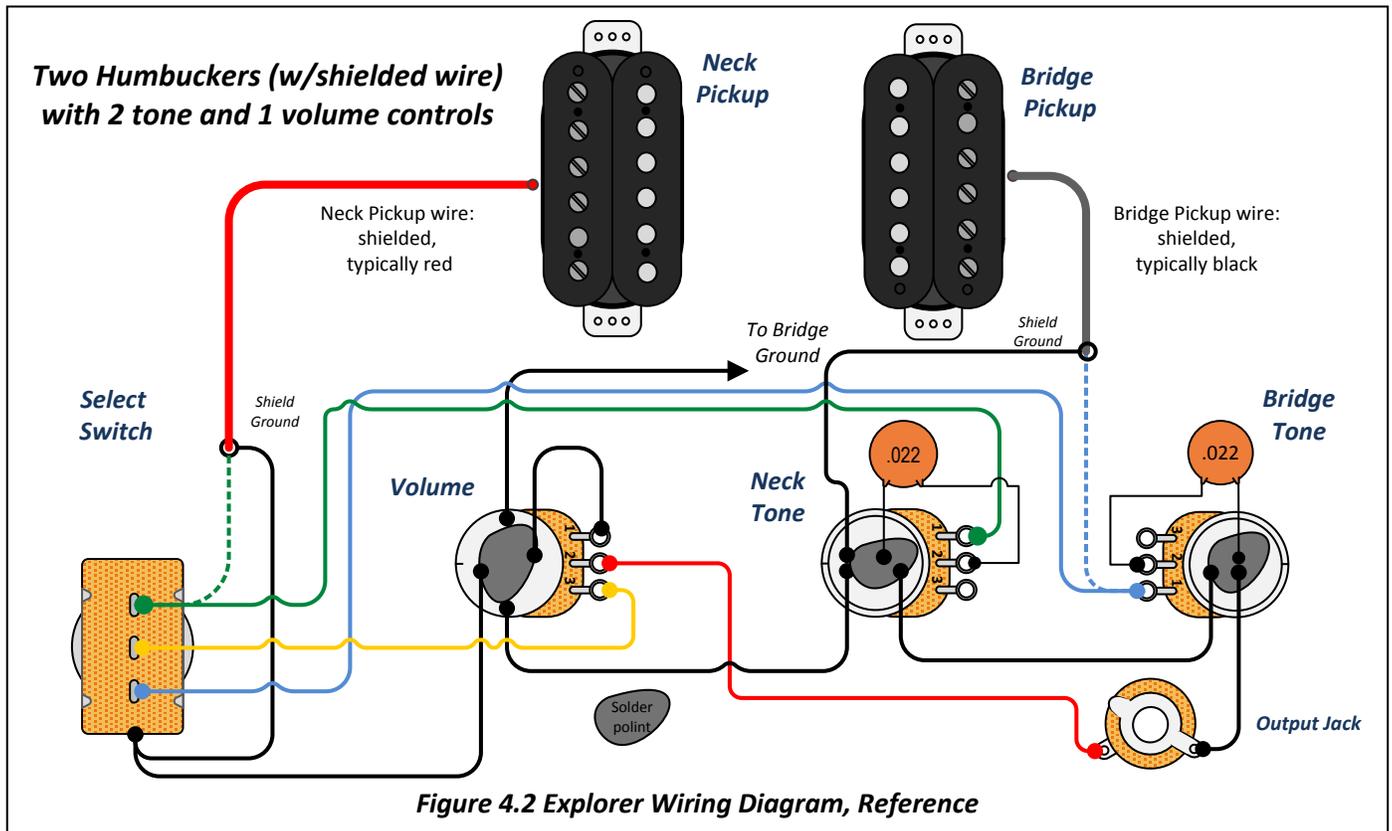
Figure 4.1.3-2 Neck Angle



Tip... You might also consider using painters tape on the finished portions of the neck and body to protect them from damage during the gluing process.

4.2 Installation of the Electronic Components

After ensuring that the gluing process in previous section is completely dry, you can install the wiring harness, volume & tone controls, selector switch, pickups, and output jack. The wiring harness, controls and output jack come assembled reducing your task to making the final connections between the selector switch & pickups. Wire strippers, solder, soldering iron and small needle nose pliers are required for this section. Figure 4.2 illustrates the harness and configuration of other components, and should be used for reference for this section.

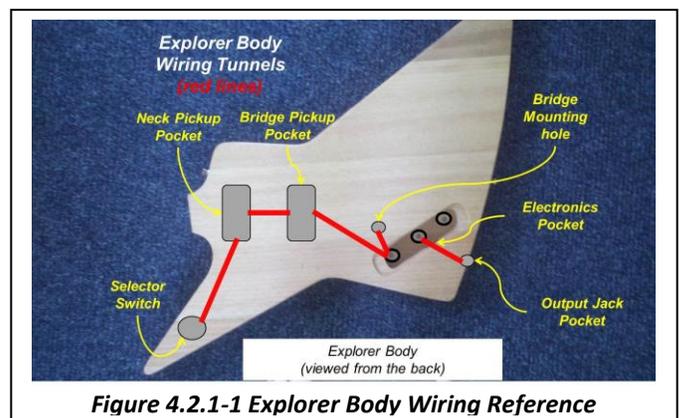


4.2.1 Installing the Wiring Harness

As noted, the wiring harness comes assembled and only requires to be run through various tunnels prior to being connected to other components. Figure 4.2.1-1 details the Body various tunnels (...from a back view). Before starting the installation, inspect all of the harness connections to ensure the integrity of the wiring.



Tip... tape the ends of the harness wires together so they will easily pass through the tunnels



Section 4 – Assembly



1. Carefully run the harness from the Electronic pocket to the Bridge pickup pocket.
2. Continue feeding the harness until the volume & tone controls are in the Electronics pocket.
 - a. Mount volume control first, ensuring that the bridge ground wire is inserted in the channel to the bridge mounting post – use supplied washer & nut, do not tighten.
 - b. Mount tone controls (2) - use supplied washer & nut, do not tighten.
 - c. Mount output jack plate with supplied screws (4).
 - d. Mount output jack after carefully inserting the jack through the tunnel to the jack plate - use supplied washer & nut – Figure 4.2.1-2.
 - e. Carefully tighten all controls in place – take care of your finish!
3. Complete the harness installation.
 - a. Run the harness from the bridge pocket to the neck pocket.
 - b. Run the harness from the neck pocket to the switch pocket.
4. Install the control knobs by turning all controls clock wise, then push on the control knobs with the same orientation of the number scale, then install Electronics cover with supplied screws.



Figure 4.2.1-2 Completed Electronics Installation

4.2.2 Install Neck Pickup

The pickups are installed as shown in Figure 4.2.2-1 where the Neck pickup has a smaller taper than the Bridge pickup. Also note that the pickups are mounted with the small dimension of the taper pointed toward the neck.



Figure 4.2.2-1 Completed Electronics Installation

1. Run the shielded pickup wire from the neck pocket to the switch pocket via the tunnel.
2. Mount the Neck pickup with 2 screws – do not tighten.

4.2.3 Install the Bridge pickup (Reference Figure 4.2)

1. Run the shielded pickup wire from the Bridge pocket to the electronics pocket via the tunnel. (Note: unlike the straight Neck pickup tunnel, the Bridge tunnel has a corner as well as other wires in place. Consider using something flexible yet strong (...ie a tie wrap, small straw) to first run some string or fishing line through the tunnel – then attach the pickup wire to the fishing line (...tape). Gently push the harness and pull the fishing line with the bridge pickup wire through the tunnel).
2. Mount the Bridge pickup with 2 screws – do not tighten.
3. Solder the Bridge pickup shield (ground) to the case of the center potentiometer.
4. Solder in the Bridge pickup to pin 1 of the potentiometer closest to the back of the body – there is a **blue** wire already connected to pin 1 (note: if the center conductor of the Bridge pickup

Section 4 – Assembly

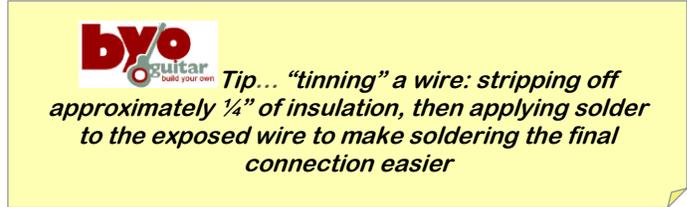


shielded wire does not reach the bridge tone control, solder an additional length of wire to the center conductor and cover with shrink sleeve or electrical tape).

4.2.4 Selector Switch Wiring (Reference Figure 4.2)

The Selector switch allows you to choose either the Bridge pickup, the Neck pickup or both for output to your amplifier.

1. **Bridge** input:
 - a. Trim & tin **blue** wire,
 - b. Solder to switch (check Fig. 4.2).
2. **Switch** output:
 - a. Trim & tin **yellow** wire,
 - b. Solder to switch (check Fig. 4.2).
3. **Ground:**
 - a. Trim & tin **black** wire (note: leave extra exposed wire for connecting Neck pickup shield ground),
 - b. Solder to switch case terminal.
4. **Neck** input:
 - a. Trim & tin **green** wire,
 - b. Trim & tin the Neck center conductor,
 - c. Solder both to switch (check Fig. 4.2).
5. **Neck shield/ground:**
 - a. Trim & tin Neck shield ground,
 - b. Solder to the switch case ground (...the same point as in step #3 above).



4.2.5 Install the Pickguard and Selector Switch

Now that all of the wiring is complete, the next step is to mount the Selector switch on the pickguard and mount the pickguard on the Body. Use caution when compressing the switch wires to fit into the Switch pocket to ensure no wires are broken. Before starting, ensure that the clear protective film is removed from the pickguard.

1. Mount the pickguard with 1 screw in a pickguard hole close to the back of the guitar, allowing the pickguard to pivot over the switch pocket – do not tighten.
2. Slide/pivot the pickguard to allow the insertion of the Selector switch into the pickguard – then insert and “snug up” the selector switch, leaving it loose enough to turn in the pickguard.
3. Pivot the pickguard so the selector switch is in the switch cavity – carefully compressing the wire as you ensure that the green wire is closest to the Neck. The switch action should be near parallel to the axis of the neck.
4. Tighten the switch in position.
5. Ensure the alignment of the Neck pickup, the Bridge pickup and the pickguard, then expose the double sided tape on the rear of the pickguard and attach to the Body with supplied screws.
6. Secure the Neck & Bridge pickups with supplied screws.

Section 4 – Assembly



4.3 Installation of the Bridge Components

The Explorer Bridge consists of 2 components:

1. the Bridge, and
2. the Tailpiece, each with unique mounting inserts.

Figure 4.3-1 shows each of the Bridge components and their orientation to the bridge pickup. The inserts are “press fit” into pre-drilled holes with the lower Tailpiece insert hole containing the ground wire from the Electronics pocket – ensure this wire is present and that the end is not tinned/soldered. The length of the ground wire into the mounting hole can be adjusted by gently pulling on the wire from inside the Electronics pocket.

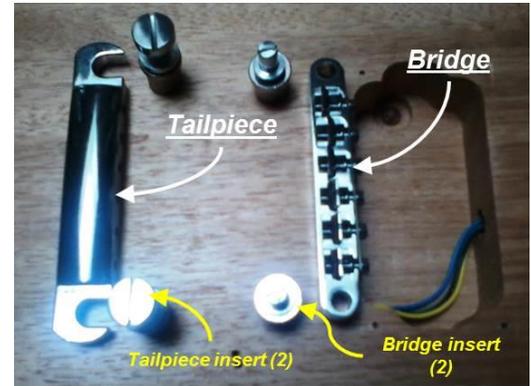


Figure 4.3-1 Explorer Bridge Components

4.3.1 Installing the Bridge

1. Remove Bridge adjustment screws from the Bridge inserts, then place the inserts into the holes.
2. Place the wooden block on an insert and lightly tap the insert down until it touches the top of the guitar body. Repeat for the other insert.
3. Thread the bridge adjustment screws into the inserts.
4. Place the bridge onto the adjustment screws with the individual string adjustment screws facing the neck (Figure 4.3-1).

4.3.2 Installing the Tailpiece

1. Remove the Tailpiece adjustment screws from the Tailpiece inserts, then place the inserts into the holes ensuring that the base ground wire will contact the insert.
2. Place the wooden block on each insert and lightly tap the insert down until it touches the top of the guitar body. Repeat for the other insert.
3. Thread the tailpiece adjustment screws into the inserts.
4. Slide the tailpiece onto the adjustment screws – hand tighten.

4.4 Installing the Nut

The nut holds the strings at the peghead the correct distance above the frets. It is not necessary to cut the string notches in the nut that comes with this kit.

1. Use a chisel or razor blade to scrape any finish out of the nut slot. DO NOT remove any wood from the nut slot.
2. Spread a thin layer of wood glue in the nut slot and center the nut in the nut slot.



TIP... wipe away the excess glue before it sets up - allow the glue to thoroughly dry

4.5 Installing the Tuners & Truss Rod Cover (Figure 4.5-1)

4.5.1 Installing the Tuners

Each tuner consists of the tuner, washer, and a threaded bushing. The tuners are attached to the headstock with $\frac{3}{8}$ " wood screws (refer to Section 2.5.4).

1. Place the six tuners into the holes on the back of the headstock.
2. Slide a washer over the tuner shaft and secure the threaded bushing onto the tuner.
3. Secure the machine heads to the guitar headstock with the supplied screws. Remove the protective film if necessary.



Figure 4.5-1 Tuners & Truss Cover

4.5.2 Installing the Truss Rod Cover

Install the Truss rod cover with the supplied screws.

4.6 Install the Strings

Like most projects, there often several tricks that will make the assembly easier and your guitar better. Properly stringing your guitar is just one of those tricks. Please review the following  video:

<http://www.youtube.com/watch?v=tlfP3v-bxwE>

Although the video addresses restringing a guitar, the principles and techniques will help you string your guitar – as well as provide a visual for the stringing of your guitar.

1. Carefully uncoil each of the strings (6), ensuring that the strings do not have a kink.
2. Run the low E string (largest diameter string) through the upper hole in the Tailpiece. Carefully seat the string ball in the Tailpiece.
3. Adjust the hole in the first tuner to be perpendicular to the neck.
4. Run the string upward over the Bridge saddle and through the hole in the tuner till snug on the neck; gently pull the string backward for a length of about 2 frets (check the video).
5. Run the string forward (toward the end of the headstock) wrapping the around the tuner and under the string; bend over the string (toward the end of the headstock).
6. Tighten the string down the tuner; when the string is snug against the 1st slot in the nut, trim the excess string.
7. Repeat steps 2-6 using the next smaller diameter string & the tuner.

4.7 Installing the Strap Pins

Secure each strap pins (2) in the pre-drilled holes with the supplied screws (2ea, 1").

Assembly of your Guitar is now complete – let's set it up!!

Section 5 Contents:

5 Initial setup - 1 -

5.1 Adjust the Guitar Neck: Truss Rod - 2 -

5.1.1 Check the Neck..... - 2 -

5.1.2 Adjusting the Truss Rod - 2 -

5.2 String Lubrication - 2 -

5.3 Adjusting the Action..... - 3 -

5.3.1 The Nut..... - 3 -

5.3.2 Bridge Saddle Adjustment..... - 3 -

5.4 Pickup Height (Figure 5.4) - 4 -

5.5 Intonation (Figure 5.5) - 4 -

5.6 ...Other Hints - 5 -

5 Initial setup

In this section, we will address the initial setup for:

1. Adjusting the Neck (Truss Rod);
2. Adjusting the String Action (string height);
3. Adjusting the Pickup heights;
4. Adjusting the Intonation.

These adjustments will provide preliminary settings from which you can fine tune the sounds to your individual playing style. As with previous sections,  references are included for additional clarification of specific adjustments.



reference...check out the following



references that can be helpful in tuning your guitar:

- ✓ **tone generator for tuning:** http://www.get-tuned.com/online_guitar_tuner.php & <http://www.guitarforbeginners.com/onlinetuner.html>
- ✓ **downloadable “musical instrument tuner” from PerfectPitch (<http://www.nch.com.au/tuner/>) that will allow visualization of string adjustments**

String up the guitar with your desired gauge of strings – check the tuning.

5.1 Adjust the Guitar Neck: Truss Rod

The first major procedure in the setup is adjusting the neck relief. Neck relief simply refers to how much the neck bows. The degree of bowing in the neck is a matter of personal preference and is correlated to your playing style.

5.1.1 Check the Neck

Get a ruler or straightedge that is at least as long as the neck, but not so long that it reaches all the way from the nut to the saddles. If you can't get one between these lengths, and are willing to sacrifice a ruler, get one that's too long and cut it to length.

Alternatively, you can just cut a little out of one edge so that you can still make full use of the other edge of the ruler. Now lay the edge of the ruler along the frets (don't rest it on top of the nut, saddles, pickups or pickup surrounds).

Using a feeler gauge or high resolution metal ruler, measure the string height (the gap between the ruler/string and the top of the fret) at about the 8th fret. The string height should be approximately 1/8" (0.012") - simply slide the feeler gauge into the gap to see if it is too big/small.

5.1.2 Adjusting the Truss Rod

Tightening the truss rod adjustment bolt will cause the neck to warp backward (too much and the strings will buzz on the frets), and loosening it will cause it to bow forward (giving more relief.).

CAUTION: If you find that the truss rod is very difficult to turn, then stop. It may be that there is a problem with the neck or the truss rod and you may damage the guitar by forcing it.

Sight down the edge of the fingerboard from behind the headstock, looking toward the body of the guitar.

1. If the neck is too concave (action too high), turn the truss rod nut clockwise to remove excess relief (only adjust ¼ turn at a time).
2. If the neck is too convex (strings too close to the fingerboard), turn the truss rod nut counter-clockwise to allow the string tension to pull more relief into the neck.
3. Check the tuning, then re-check the gap with the feeler gauge and re-adjust as needed.

5.2 String Lubrication

Lubricate the contact points of a string's travel to ensure tuning stability and reduce string breakage. Lubricate:

1. string/saddle contact points with a light machine oil (...such as 3-in-1 oil because it contains anti-rust and anti-corrosive properties) every time you change strings.



reference: ...check out the following



references for adjusting the Truss rod:

- ✓ <http://www.youtube.com/watch?v=PHHepmTX3So>
- ✓ <http://www.youtube.com/watch?v=4j3QryKIXrc>



TIP... do the neck adjustment in a series of intermediate steps and re-tune your guitar before each step – different tension on the strings changes the adjustment of the neck

2. string trees should also be lubricated; a small amount of lip balm applied with a toothpick works well.

5.3 Adjusting the Action

5.3.1 The Nut

Setting the string action that is right for you starts at the nut. The slots should already be close, but you might want to make some adjustments.




reference...check out the following references for adjusting the "Nut Action":

✓ <http://www.youtube.com/watch?v=zz9UKX2lcxw>

1. Push the sixth string down between the second and third fret. The space between the first fret and the bottom of the string should be about .006 or just about the thickness of two sheets of paper. If the gap is wider than .006" you should deepen the slot with a small needle file. **DO NOT FILE TOO DEEP!** Make sure when you file, the file is angled down toward the headstock. This will ensure the string sits on the edge of the nut closest to the fretboard.
2. Repeat the procedure for the remaining 5 strings.




TIP...check out the following references for adjusting the "Bridge Action Height":

✓ <http://www.youtube.com/watch?v=oWpnW8ICn-U>

5.3.2 Bridge Saddle Adjustment

This will adjust the height of the strings over the 12th fret. Minor adjustments are made by raising or lowering the bridge. This adjustment is a matter of personal preference. There should be a gradual increase in height from the first string to the sixth string.

The question here is how high to make the bridge. This is personal choice.



TIP... most factories set action at 3/32" to 7/64" on the bass E string at the 12th fret and 2/32" to 5/64" on the treble E.

Adjusting saddle height is very easy on the Explorer guitar. Since the bridge can only be adjusted at each end, there is no need to adjust each saddle individually.

1. Check and, if necessary, adjust the low (thick) E string height. Do this by adjusting the height of the bridge at the thick E string end. This is done by rotating the Bridge insert adjustment counter-clockwise to raise the bridge or clockwise to lower it. Adjust the height until string doesn't buzz on any fret from being too low, but low enough that you can play up and down the neck easily. There's usually a sweet spot where you can just start to detect some buzzing and you can leave it just a tiny bit higher than that. Be careful if you use a tool as it is easy to slip and damage the finish on your guitar.
2. Now do the exact same procedure for the high (thin) E string end of the bridge.

3. Play the guitar a little bit to see if any of the other strings are buzzing. If, say, the A string is still buzzing, then raise up the end of the bridge nearest to that string a little bit.

5.4 Pickup Height (Figure 5.4)

Each pickup is adjustable on the bass and treble sides. Finding the best combination of tone and volume will require some experimentation.

- 1 Bridge pickup:
 - 1.1 Press the 1st string onto the last fret and hold;
 - 1.2 Using a machinist ruler, measure the distance from the top of the pole to the bottom of the 1st string – note bass measurement;
 - 1.3 Repeat #1.1 & #1.2 on the 6th string – note the treble measurement;
- 2 Neck Pickup: repeat steps 1.1 through 1.3 (above) on the neck pickup, noting measured heights.

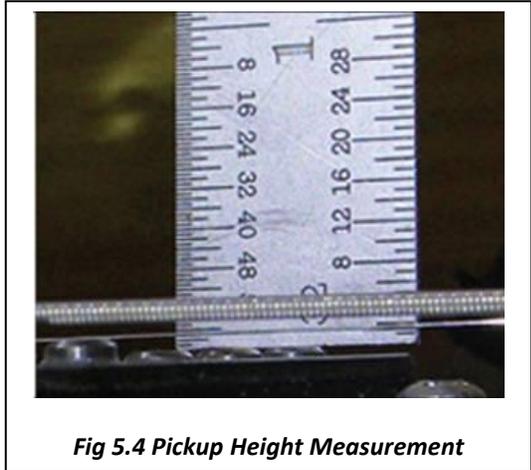


Fig 5.4 Pickup Height Measurement

Table 5.4 Pickup Height Guide		
Pickup	1 st String	6 th String
Bridge	2/64"	3/63"
Neck	3/64"	4/64"

Table 5.4 Bridge and Neck Pickup Heights

Using Table 5.4 as a reference, adjust the height of the pickups by turning the adjustment screws for the bridge, & neck pickups – recheck string heights after each adjustment.

5.5 Intonation (Figure 5.5)

Adjustments should be made after all of the above have been accomplished.

1. Set the pickup selector switch in the middle position.
2. Turn the volume & tone controls to maximum.
3. Check tuning. Check each string at the 12th fret, harmonic to fretted note (make sure you are depressing the string evenly to the fret, not the fingerboard).

reference...check out the following for adjusting Intonation:

✓ <http://www.youtube.com/watch?v=CqN7xJD1rdE>



Fig 5.5 Intonation Adjustment

Section 5 – Setting Up Your Guitar



4. If sharp, lengthen the string by adjusting the saddle back. If flat, shorten the string by moving the saddle forward.

5.6 ...Other Hints

There are a few other things that you can do to optimize your tuning stability:

1. Each time you play your guitar, before you do your final tuning, play for a few minutes to allow the strings to warm up. Metal expands when warm and contracts when cool. After you've played a few riffs, you can then do your final tuning;
2. Wipe the strings, neck and bridge with a lint-free cloth after playing;
3. When transporting or storing your guitar, even for short periods, avoid leaving it anywhere you wouldn't feel comfortable yourself.

Remember, guitars are tempered instruments! Re-tune, play and make further adjustments as needed.

We hope you have enjoyed building your guitar! If you have any questions along the way please email us at sales@BYOGuitar.com.

