Galibier Design

Mk I and Mk 1.5 Turntable Installation Manual

Covers Serac, Gavia and Stelvio with 2014 Motor Drive Update

(Updated – January, 2018)

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1 Introduction

A note about setup complexity:

The skill level required is considerably less than that required to set up a cartridge. You very likely will learn two new skills during this process:

- Installing the bearing.
- Installing the belt and setting its tension.

Pay close attention to these two sections and watch our website for videos which are soon to be released. Throughout this manual, we'll use the following conventions:

⚠ **Pay close attention to this step**

⚠ Indicates a helpful hint, tip or technique

Models covered:

This manual covers all three Mark-I Galibier turntable models which have an identical setup process:

- Serac
- Gavia
- Stelvio

Any of the three armboard variants can be fit to any model, and they are all covered.

Motor Drives:

Documentation (found in the appendix) refers to the 2014 motor drive update. Contact Galibier if you have questions about the legacy (2001-2013) drive system.

Versions:

The Mk-1.5 release is a cumulative update which consists of:

- the 2014 motor drive update
- Adoption of the sliding armboard with a fine adjustment feature for setting pivot-spindle distance. This replaces both versions of the pivoting armboards.
- An optional front pillar to protect the cantilever from accidents.

Packaging:

Turntables are packaged in 3 cartons, containing the following parts:

- The turntable base

- The platter
- All other components (armboards, tools, power supplies, etc.)

In North America, the cartons are shipped individually, whereas overseas deliveries are typically bundled into a crate.

2 Quick Start Guide

This quick start section may well be all that you need in order to install your turntable. Subsequent main sections provide more detail about each main step outlined here.

There are very few parts to manage, but you will quickly take up space in your listening room.

Begin by clearing a work area *before* laying out the parts according to the steps in this quick start guide.

Brief step descriptions are included here, but refer to the subsequent sections for details.

2.1 Prepare your work space

⚠ **Before you start, collect the following common household materials.** They are required for the *first step*:

- A soft surface (blanket, towel, etc.) to set the turntable base onto
- Paper towels
- Isopropyl (rubbing) alcohol

You will also need:

- Your cartridge setup tools
- A metric ruler. This is only necessary for Mk I (pivoting) armboards in order to set up the approximate pivot to spindle distance (to be fine-adujusted during cartridge alignment).

All other tools and materials are provided.

2.2 Organize the Components by Assembly Step

2.2.1 Prepare the turntable base:

This section involves:

- Uncoiling the ground wire
- Installing the tip toes
- Placing the turntable on your shelf
- Filling the bearing with oil
- Inserting the bearing spindle.

⚠ Pay close attention to the tips/hints in this step. Galibier's close tolerance bearing requires that you use these techniques.

⚠ Final seating of the bearing is performed in the next step, ***after*** the platter is installed.

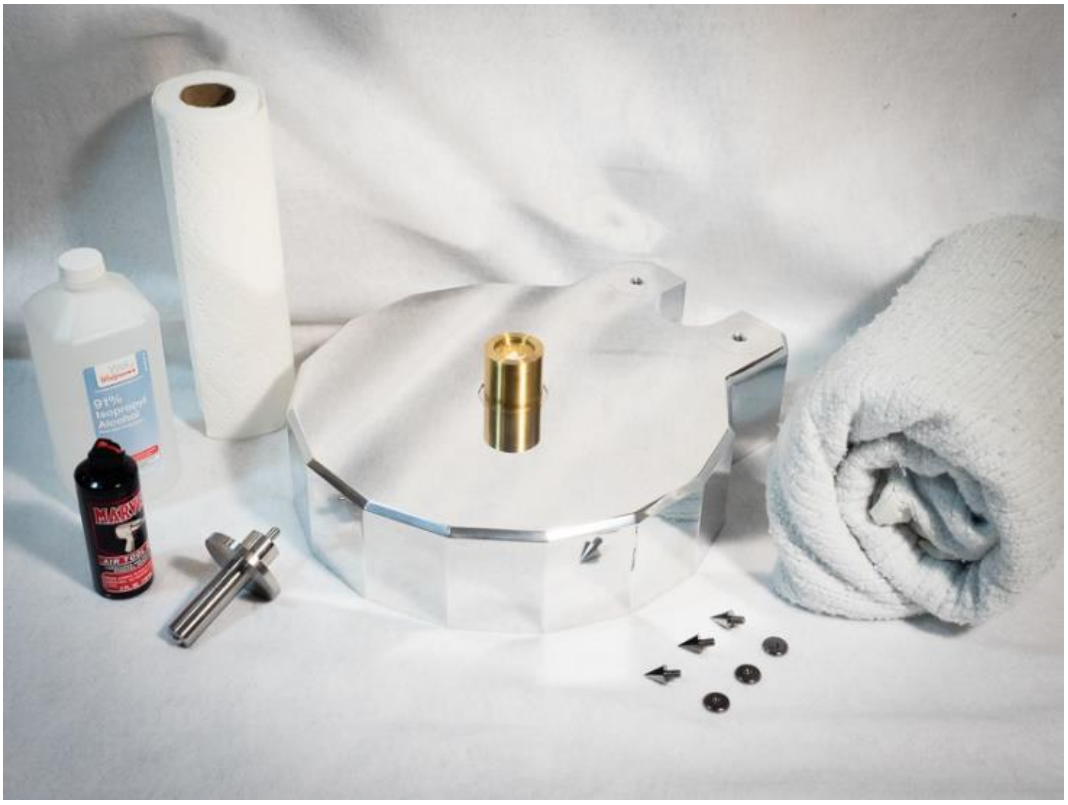
Parts & tools required for this Section:

Supplied:

- Turntable base (brass bearing body is already installed)
- Three tip toes and three shelf protection discs
- Stainless bearing spindle
- Bearing Oil

Not supplied:

- Blanket / towel to rest turntable base on
- Paper towels
- Isopropyl alcohol



2.2.2 Install the platter:

This section involves:

- Fitting the platter to the bearing spindle.
- Performing final seating of the bearing (time out for a break – let gravity do the work).

Parts & tools required for this Section:

- Platter. Note: removal strap is shown in photo below. It's not required for installation.

2.2.3 Position motor pod and Install the belt:

This step involves:

- Positioning the motor pod on the shelf
- Installing the belt.
- Adjusting the belt's tracking height.
- Performing preliminary belt tension setting.

⚠ **Please review the section in the Appendix on unpacking your motor pod. It contains important information about protecting your motor while unpacking.**

⚠ Pay close attention to the detailed instructions in this section. These operations are unique to Galibier.

Parts & tools required for this Section:

- Motor pod
- 3 tip toes (later version motor pods sit flat on the shelf with no tip toes)
- Drive belt
- Power Supply
- Power umbilical cord

2.2.4 Install the armboard (3 armboard models):

All Mk-I turntables (Serac, Gavia, Stelvio) can be fit with any of the three armboard models shown below.

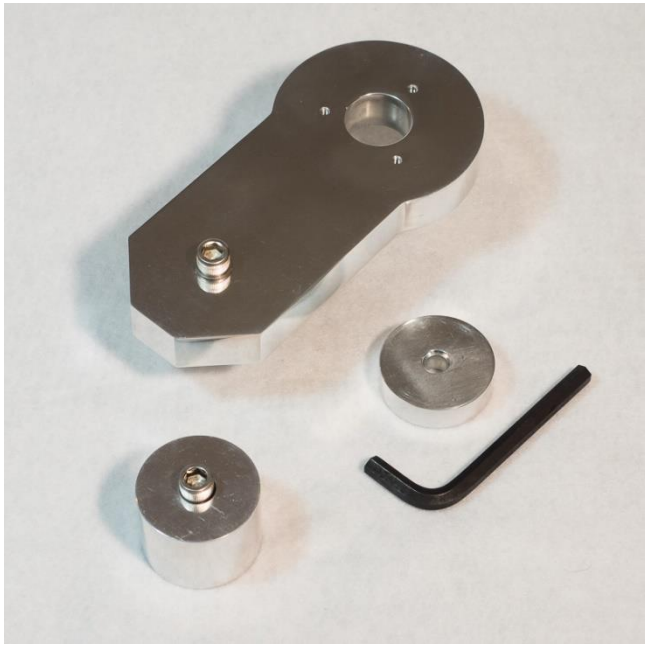
Both of the Mk-I pivoting armboards have a decorative front pillar fit to the second threaded hole on the arm mounting block.

Mk I – Standard Pivoting Armboard:

This step involves:

- Mounting the armboard
- Setting the approximate pivot-spindle distance (rotating the armboard to its approximate position).
- Mounting the decorative front pillar.

⚠ The precise pivot to spindle setting (rotation of the armboard) will be set during cartridge setup.



Parts & tools required for this section:

- 7/8” tall armboard
- 3/8” – 16 x 1.75” long stainless steel socket head pivot/fixing bolt
- 3/8” stainless washer
- 1/2” tall cylindrical spacer

- Front decorative cylindrical pillar (1.5” tall)
- 3/8" -16 x 1.75” long stainless steel socket head fixing bolt

- 5/16” “L-shaped” hex key

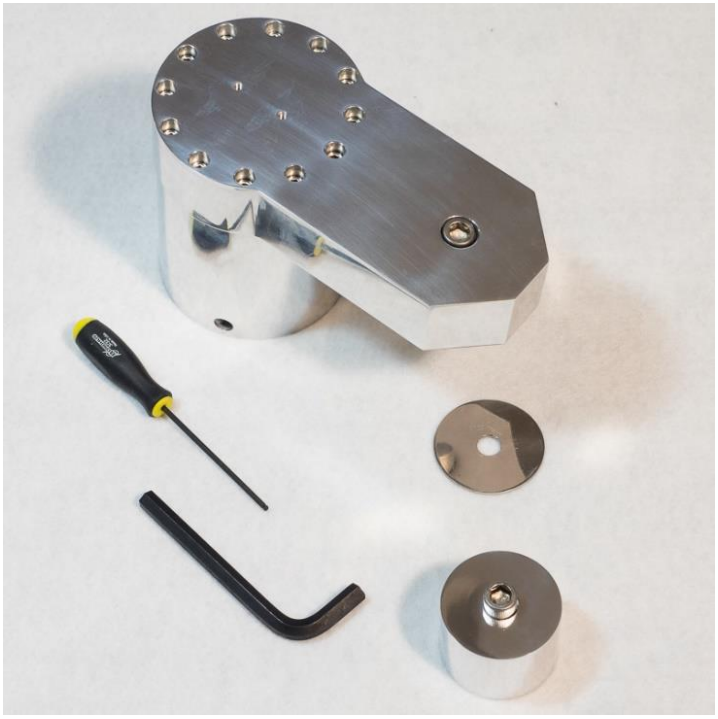
Mk-I Stelvio Pivoting Armboard:

This step is similar to the Mark-I standard armboard:

- Mounting the armboard
- Setting the approximate pivot-spindle distance (rotating the armboard to its approximate position).
- Mounting the decorative front pillar.

⚠ The precise pivot to spindle setting (rotation of the armboard) will be set during cartridge setup.

⚠ Later version Stelvio-I armboards have a pivot-spindle fine-adjust feature. The photo below shows the exit for the set crew (at the bottom of the damping cylinder). A 3/32” screwdriver handled hex driver is provided for making this adjustment.



Parts & tools required for this section:

- 1.500” tall armboard with integral damping cylinder
- 3/8"-16 x 1.75” long stainless steel socket head pivot/fixing bolt and washer
- 3/8” stainless flat washer
- Thin, stainless steel washer (2” diameter)

- Front decorative cylindrical pillar (1.5” tall)
- 3/8" -16 x 1.75” long stainless steel socket head fixing bolt

- 5/16” “L-shaped” hex key.
- 3/32” screwdriver handled hex driver for performing fine adjustment of pivot-spindle distance

Mk-1.5 Armboard Assembly – Sliding Armboard (fits all models: Serac, Gavia, Stelvio)

This step involves:

- Mounting the armboard

ℹ The pivot-spindle distance is set by the two nylon tipped set screws.

ℹ Precise adjustment is performed during the cartridge alignment process.

⚠ **Do not adjust these set screws at this point!** They have been preset at Galibier to locate your amboard in the middle of its adjustment range.

Parts & tools required for this Section:

- Armboard
- Two - 3/8 – 16 x 1.5” long stainless steel socket head fixing bolts
- Two - 3/8” stainless flat washers
- Two - stainless steel washers (2” diameter)
- 5/16” “L-shaped” hex key.
- 3/32” screwdriver handled hex driver for performing fine adjustment of pivot-spindle distance.

2.2.5 Install the tonearm

Parts & tools required for this section:

- Mounting tools provided by your tonearm manufacturer – typically hex keys, wrench, etc.

This step is product specific and documentation is the responsibility of your tonearm manufacturer.

Your armboard will be bored/drilled/tapped based your tonearm manufacturer's documentation.

2.2.6 Install and align your cartridge

Parts & tools required for this section:

- Your cartridge and your mounting and alignment tools
- Supplied cartridge protractor for your tonearm:

This step is product specific, but we'll cover the arc protractor in the details below.

We'll also cover how to fine tune your pivot-spindle distance for each of the three armboard types.

3 Step Detail - Prepare the Turntable Base

Parts & tools required for this Section:

- Blanket / towel
- Turntable base
- Three tip toes and three protective discs
- Stainless bearing spindle
- Bearing Oil
- Paper towels
- Isopropyl alcohol

3.1 Uncoil the Bearing Ground Wire / Install Tip Toes

Parts and tools for this step:

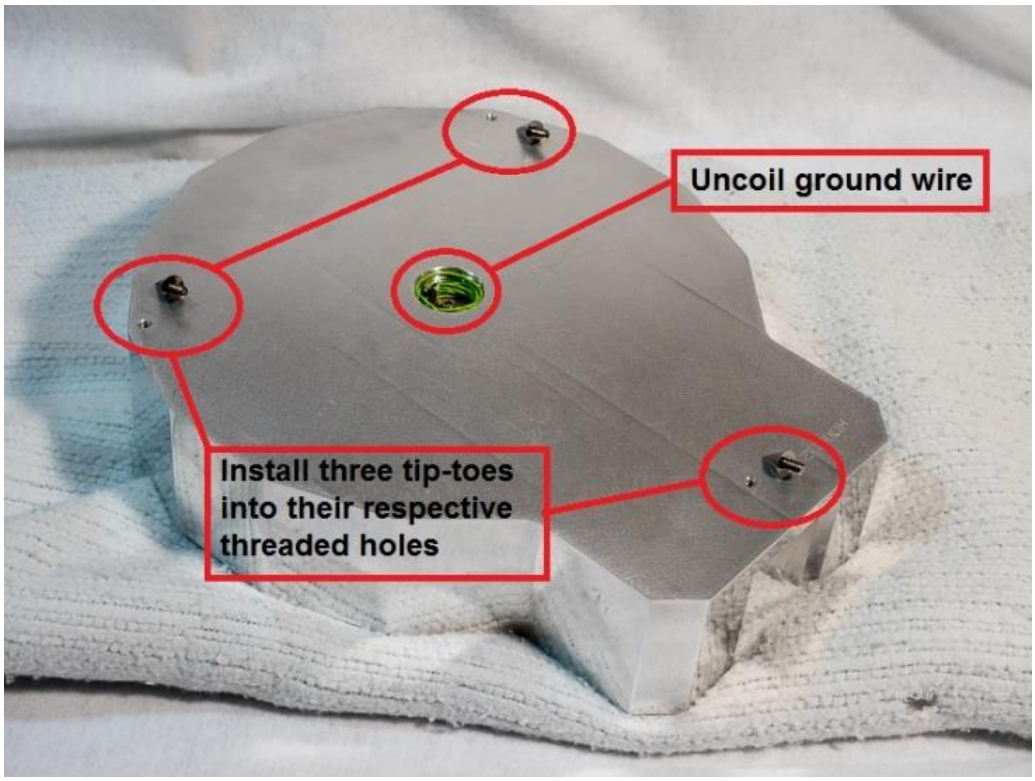
- Blanket / towel on which to rest turntable base.
- Turntable base.
- Three tip toes (set the protective discs aside for the next section).

1. Gently set your turntable base *upside down* on a soft surface that will *not scratch* the finish.

   The best material for this is a soft blanket folded multiple times to provide cushion for the brass bearing body.

2. Remove the tape covering the bearing hole and uncoil the static drain wire.

3. Thread the three tip toes onto the turntable base.



3.2 Place Base on Shelf

Parts and tools for this step:

- Three discs to protect turntable shelf from tip toes (optional, but recommended)

1. Turn the base over so it is facing “up” (normal orientation). Be watchful of the three tip toes.

2. Set the turntable into its approximate position on your turntable shelf. Feed the bearing ground wire toward the rear of the turntable.

3. Position the three protective discs underneath each of the tip toes. Make sure the points nest into the dimple in the discs. The discs work well even if your surface is hard and resistant to scratching.

   We recommend using the protective discs. We’ve found that they make it easier to adjust belt tension as will be described in the section on positioning the motor pod and fitting the belt.

3.3 Fill the bearing and Install the Bearing Spindle

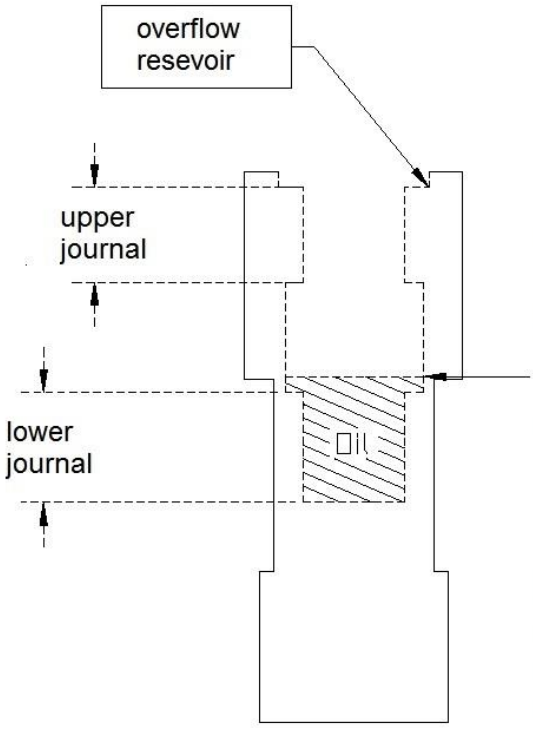
Parts and tools for this step:

- Stainless bearing spindle
- Bearing oil
- Paper towels
- Isopropyl alcohol

Fill the bearing and install the stainless spindle:

Your Galibier bearing is assembled to extremely close tolerances. This step, along with fitting the belt are likely two new skills you will be acquiring.

⚠ **Contact Galibier before proceeding if you have any questions**. This is a key step in the setup, performance, and long-term health of your turntable.



Step 1:

Fill bearing so oil is about 1/8" (3mm) above the ledge at the top of the lower journal.

Step 2:

Wipe and dry the upper bearing journal and stainless steel bearing shaft (shaft is not shown)

1. Add oil to the bearing. Fill it to barely cover the bottom ledge shown in the diagram.

This provides margin to prevent under-filling. Excess oil will collect in the upper reservoir. Having at least some oil in the upper reservoir is evidence that your bearing has sufficient oil. The reservoir does not need to be full to its top.

2. Moisten a paper towel with alcohol and ***wipe off all oil from:***

   a) The upper journal in the brass bearing housing (see diagram, above).

   b) The stainless bearing spindle

⚠ **Do not skip this step!** Wiping the above two parts dry is standard fitting procedure for close tolerance parts. This permits air to escape through the upper journal and oil in the lower chamber to replace it.

3. Insert the bearing spindle.

a) Start by holding the spindle as shown in the photo.

Because of the bearing's precision, it is impossible to visually keep the bearing spindle inline (parallel) with the bearing journal. The "wiggling" process is one of "feel" and holding the spindle at its bottom (as shown in the photo) provides the tactile feedback to simplify this operation.

b) Gently position ("wiggle") the bearing spindle until you feel it engage with the top of the bearing journal.

You'll feel the spindle "catch" or "stick" and then release as you get closer to engaging it. This is normal. Gently wiggle the bearing shaft until you feel it engage.

c) Press the bearing downward with a gentle force (about 5 Lbs. or 2-3 Kg.). Use the palm of your hand to press down.

⚠ **You should now feel *no catching or sticking* (metal on metal**). You should feel the resistance of the air escaping through the top bearing journal and you will feel/hear a slight metal on metal sound of the spindle passing through the journal.

⚠ **If you feel excessive resistance or "sticking", STOP**, remove the spindle and return to the previous step.

d) As you continue to press the spindle down, you will feel an increase in resistance when the spindle contacts the pool of oil at the bottom.

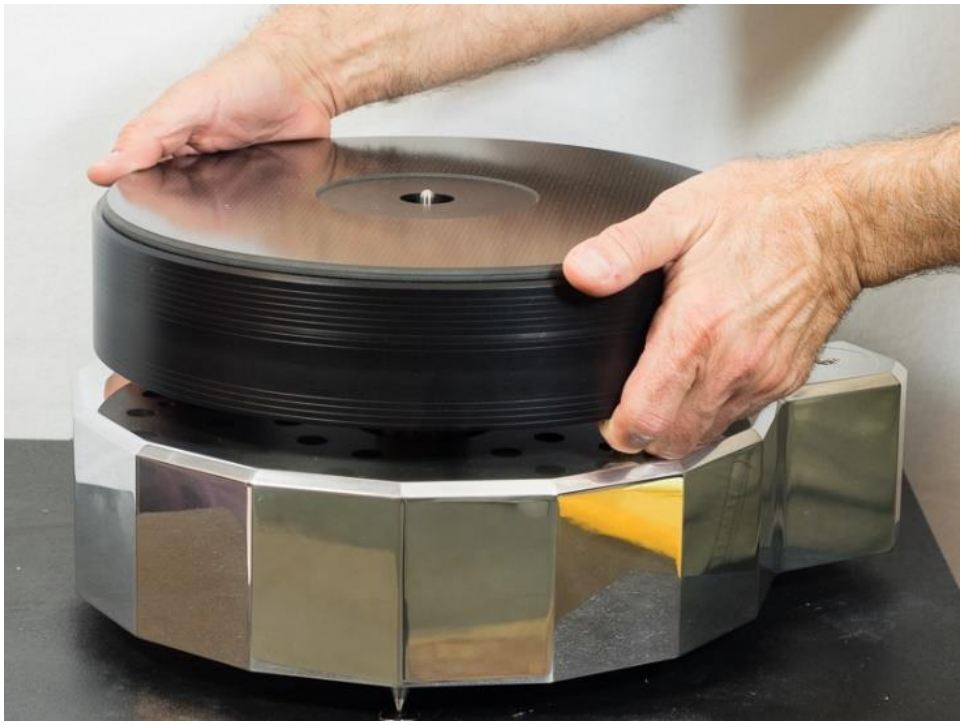
   You will see about ¾” / 19mm of space between the wide flange on the stainless spindle and the top of the brass bearing body.

   Press a bit more (1/16” / 1mm).to just barely engage the spindle into the lower journal. The increase in resistance is normal.

e) At this point, continue to the next step – installing the platter. This will complete the process of seating the bearing (it’s final ¾”/19mm of travel).

4 Step Detail - Install the Platter

Parts & tools required for this Section: Platter



Fit the platter onto the bearing spindle.

- Like the bearing spindle, the platter's mating to the bearing is a precision fit. Gently rock the platter to engage it with the bearing spindle. It should then drop into place.

1. Spin the platter a few times to begin the final bearing seating process.

   The bearing should fully seat on its own in 5-10 minutes. You do not have to manually spin the platter. Let gravity do the work. If it has not done so, this is likely because you have not wiped oil from the top bearing journal and the spindle in the previous step.

   When completely seated, the space between the bottom of the platter and the top of the turntable base will be approximately 1/8" (3mm).

5 Step Detail - Position Motor Pod and Install the Belt

Parts & tools required for this Section:

- Motor pod
- 3 tip toes (later model motor pods have an o-ring on the base and sit flat on the shelf)
- Drive belt
- Power Supply
- Power umbilical cord

This is new skill #2 (with the first one being installing the bearing). This step involves locating the motor pod on your shelf, positioning the belt so that it tracks on the motor pulley, and setting the belt tension

Take a moment to familiarize yourself with the switch layout and operation of the motor controller (refer to the Appendix).

The belt's overall rigidity is a key contributor to your Galibier's transient response, and why people comment that there's a rim drive like sense of rhythm. It is this same rigidity which makes this procedure a bit more involved than fitting a rubber belt.

⚠ **The first time you perform this operation, we recommend that do this ***before mounting your cartridge*****.**

The reason for this is that you will be positioning the belt height manually as well as setting the tension. There will be times when your hand will be in the area of the platter near the headshell. Since you're learning a new skill, we don't want you to be distracted by the presence of a fragile cantilever.

Step-1: Install the three tip toes on the base of the motor pod. If your motor pod has a rubber o-ring on its base, tip toes are not used.

Step-2: Position the Motor Pod close enough to the platter so you can easily fit the belt around the platter and motor pulley. Don't worry about being too close at this point. Refer to the photo in the next step.

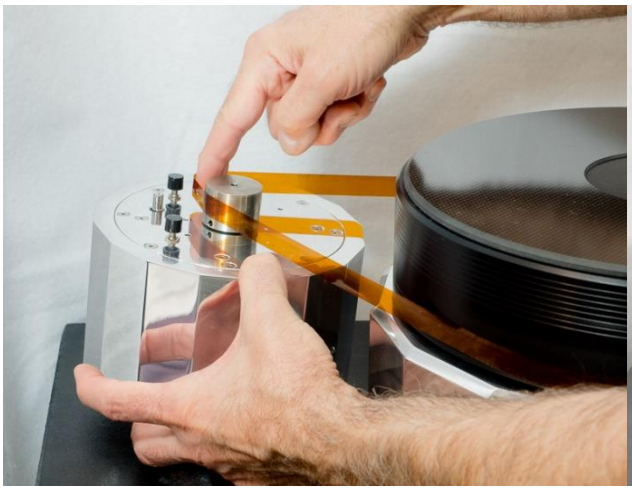
- For single arm turntables, place the motor pod near the left rear of your turntable stand.
- For double arm turntables, locate the motor pod at the left front.
- Face the DC power inlet and grounding lug toward the rear of the shelf.
- Plug the umbilical cord into the power supply, and feed the side with the small DC jack under the turntable base so that it reaches the rear of the motor pod.

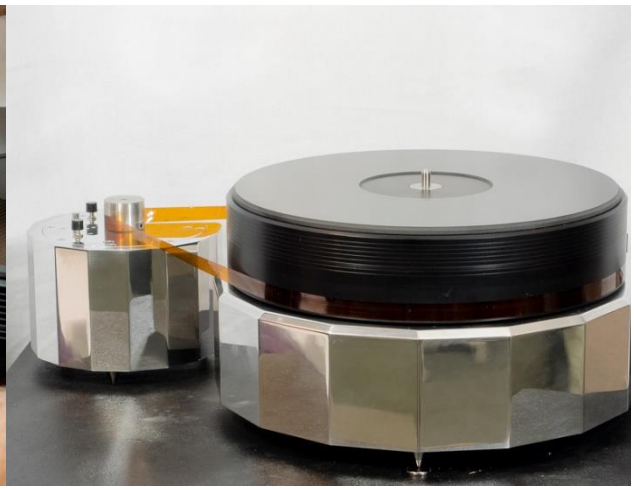
⚠ **Don't plug the umbilical cord into the motor pod yet. Do this when setting final belt tension.**

Step-3: Fit the belt around the platter and then around the pulley.

- You may find that tilting the motor pod toward the platter will help you slip the belt over the pulley (first photo).

- Note in the second photo how the belt is riding near the bottom of the platter. In steps 4-7, we'll be positioning the belt upwards as well as tensioning it.



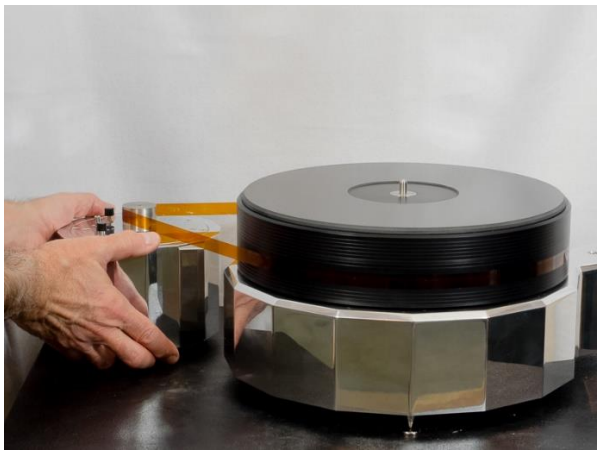


- Repeat the next four steps (4-7) to incrementally add tension to the belt and allow it to ride on the approximate centerline of the pulley.

Step 4: tension the belt by either "walking" the motor pod or moving the base:

- On motor pods with tip toes, you'll probably find it easier to "walk" the motor pod to adjust the belt tension (left photo, below). Note: motor pods with tip toes should not sit on protective discs. The pod will move too easily.

- With "flat riding" motor pods (o-ring on bottom of pod), you'll find it easier to move the turntable base as shown in the right photo, below. This is the reason we recommend locating protective discs under the tip toes of the turntable base – to allow you to slide the base easily. Don't worry, the base is too heavy to move in normal operation.



Step 5: position the belt along the platter's circumference at the approximate height of the pulley. Proceed around the perimeter of the platter to move the belt into position.

Step 6: Turn the platter by hand slowly.

The first time you do this, the belt will likely loosen as it positions itself and drop downwards.

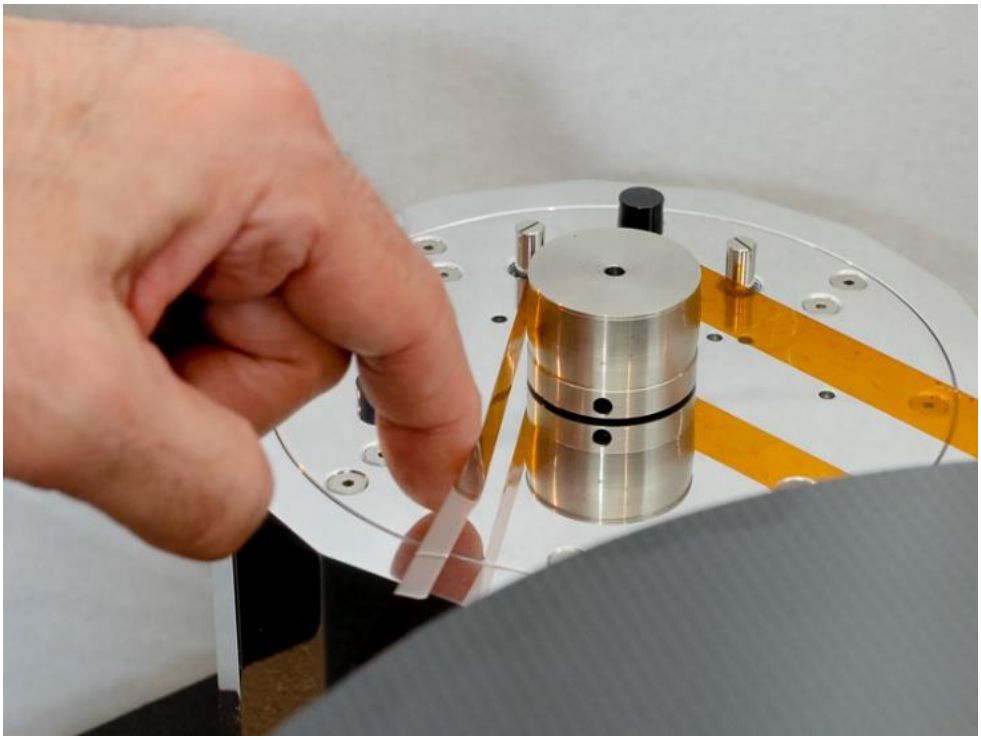
If it drops, return to step- 5 (reposition the belt upwards) and step-4 (add some tension to the belt).

After a few iterations, the belt should track near the center of the pulley.

Check by slowly rotating the platter - a quarter to half revolution to start, working your way up to several complete revolutions to verify that it's tracking correctly.

Step 7: Set/check the starting belt tension.

- It should take about an ounce of pressure with your finger to deflect the belt as shown.
- This does not have to be precise at this point. We'll tune the tension shortly (after powering up the turntable).



Step-8: run the motor/spin the platter

⚠ **Make sure the power supply is switched off before starting this step.**

a) Plug the DC connector into the rear of the Motor pod

b) Switch the power supply on.

c) You should see one green LED light on the motor pod top plate. The platter will not turn.

d) Turn on the motor by pressing the enable switch *while giving the platter a helping push start*. The "enable" switch is the on/off switch at the front of the control plate on the motor pod (see appendix)

- Both green LEDs should be light when you press the enable switch, and either the blue (33 rpm) or red (45 rpm) LED will light as well. The speed is selectable by the push switch located between the two LEDs.

- If the motor/platter doesn't turn, cycle the enable switch off and then on (refer to Appendix).

- The motor has plenty of torque to start the platter. We like making any machine's job as simple as possible. If you've ever driven a manual shift automobile, you can think of this "push start" as the equivalent of gently engaging your clutch. We've done this with every turntable we've ever used.

Step-9: set the final belt tension.

Setting final belt tension follows the same principle as setting cartridge tracking force: "just enough, but no more". We want to start with too much tension and reduce it until there's "just enough" tension.

a) Put your ear about 6 inches from the section of the belt which runs between the platter and the motor pod.

b) If the tension is too high, you should hear a belt resonance – a humming sound.

c) If you hear this humming sound, switch off the motor and move the motor pod slightly closer to the platter (1/16", or 1-2mm).

d) Power up again and listen.

e) Repeat this process until the hum is minimized (there will always be a slight bit of belt resonance).

6 Step Detail - Install the Armboard (all 3 models)

6.1 Parts & tools required for this Section: vary by model (see below)

The three armboard variations all work with your Mark-I turntable base, whether it's a Stelvio, Gavia or Serac:

- Mk-I Standard armboard (pivoting – uses one mounting bolt)
- Mk-I Stelvio armboard (pivoting – uses one mounting bolt)
- Mk 1.5 armboard (sliding – uses both bolts on turntable base)

6.2 Mk-I Standard Armboard

Parts & tools required for this Step:

- 7/8” tall armboard
- 3/8” – 16 x 1.75” long stainless steel socket head pivot/fixing bolt
- 3/8” stainless flat washer
- 1/2” tall cylindrical spacer
- 5/16” “L-shaped” hex key.
- Front decorative cylindrical pillar (1.5” tall)
- 3/8" -16 x 1.75” long stainless steel socket head fixing bolt

The Mk-I standard (pivoting) armboard mounts with a single fixing bolt.

a) Mount and orient (rotate) the armboard so that the pivot-spindle distance approximates your tonearm’s specification. There’s no need for precision at this point. You will fine tune this during the arm mounting and cartridge alignment process.

   Armboard parts sequence: 3/8” bolt → flat washer → armboard → ½” tall spacer → turntable base

b) Mount the decorative front pillar in the position shown in the photos below. The decorative front pillar mounts with only a bolt (no washer is used).

Turntable shown has cavity machined for Mk 1.5 armboard. Normally, a Mk I armboard would not be used if this cavity has been machined.

Orientation shown for a “short” pivot to spindle distance (i.e. 222mm)

Orientation shown for a “long” pivot to spindle distance (i.e. 300mm)

6.3 Mk-I Stelvio Armboard:

Parts & tools required for this Step:

- 1.500” tall armboard with integral damping cylinder
- 3/8"-16 x 1.75” long stainless steel socket head pivot/fixing bolt and flat washer
- 3/8” stainless flat washer
- Thin, polished stainless steel washer (2” diameter). Note: the Stelvio armboard is taller and this washer replaces the standard armboard’s ½” tall spacer
- 5/16” “L-shaped” hex key.
- Front decorative cylindrical pillar (1.5” tall)
- 3/8" -16 x 1.75” long stainless steel socket head fixing bolt

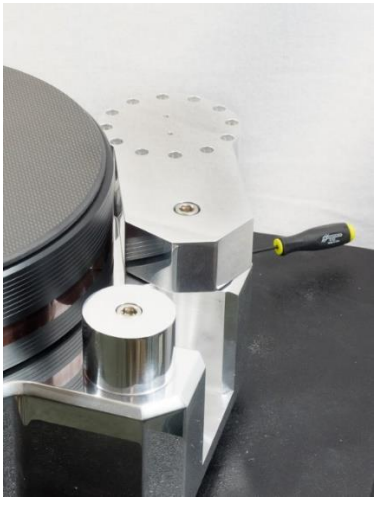
The Stelvio version of the pivoting armboard adds a damping cylinder and mounts like the standard Mark-I armboard with a single fixing bolt

Later version Stelvio-I armboards have a pivot-spindle fine-adjust feature. The hex screwdriver in the left photo below is used to make this adjustment. This will be covered in the cartridge adjustment section.

a) Mount and orient (rotate) the armboard so that the pivot-spindle distance approximates your tonearm’s specification. There’s no need for precision at this point. You will fine tune this during the arm mounting and cartridge alignment process.

   Armboard parts sequence: 3/8” bolt → flat washer → armboard → 2” diameter polished washer → turntable base

b) Mount the decorative front pillar in the position shown in the photos below. The decorative front pillar mounts only with a bolt (no washer is used).



Orientation shown for a “short” pivot to spindle distance (i.e. 222mm)

Orientation shown for a “long” pivot to spindle distance (i.e. 300mm)

6.4 Mk-1.5 Armboard

Parts & tools required for this Step:

- Armboard
- Two - 3/8 – 16 x 1.5” long stainless steel socket head fixing bolts
- Two - 3/8” stainless flat washers
- Two – polished stainless steel washers (2” diameter)
- 5/16” “L-shaped” hex key.
- 3/32” screwdriver handled hex driver for performing fine adjustment of pivot-spindle distance.

⚠ **Do not adjust the two nylon-tipped set screws in this step.**

They have been pre-set to locate the armboard in the middle of its .500” adjustment range.

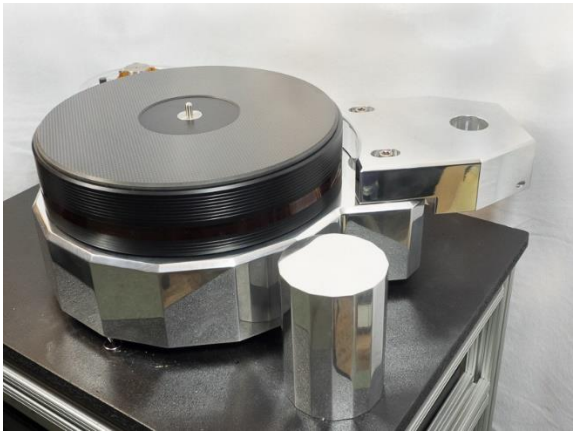
They will be fine-tuned as necessary during cartridge alignment.

a) Mount the armboard using the supplied mounting hardware:

Parts sequence (for each mounting bolt): 3/8” bolt → small washer → armboard → 2” diameter polished washer → turntable base.

b) Press the armboard against the turntable base, so the two set screw tips contact the base, and then tighten the two fixing bolts with the 5/16” hex key.

Armboard for short (9”) arms



Armboard for long (11”-12”) arms

7 Step Detail - Install the Tonearm

Note: your Galibier armboard has been bored/drilled for your tonearm. The steps below describe Galibier-specific procedures to install your tonearm and set the pivot to spindle distance which will be further refined during the cartridge alignment procedure.

7.1 Mk-I (pivoting) Armboards (both Standard and Stelvio versions)

Tools for this step:

- Metric ruler.
- 5/16" hex wrench (supplied) for armboard mounting / overhang adjustment

Some tonearms have a means of setting up the pivot to spindle distance to within a few thousandths of an inch. Three examples are:

- the Graham arms (with the alignment hole in its headshell)
- the Durand tonearms (aluminum pivot-spindle bar)
- the Kuzma 4Point (plastic distance jig).

For these tonearms, mount the tonearm to the armboard and rotate the orientation of the armboard to set the pivot-spindle using the distance with the jig as a guide. Then, tighten the armboard bolt.

For tonearms without a pivot-spindle jig, use a metric ruler to measure the distance between the record spindle and the tonearm bearing point. If you have a tool like the Feickert Protractor, then your starting point will be even more precisely set.

Hint: use the machine marks on the record spindle to assist you in viewing directly over the spindle center. You will most likely be within 1-2 mm which is sufficient, because the precise, final adjustment will be performed during the cartridge alignment phase.

Note that later generation Stelvio armboards have a small, nylon-tipped set screw projecting through the lower damping cylinder and facing the turntable base. This provides fine adjustment control for pivot to spindle distance for shorter tonearms (less than 250mm pivot-spindle). It will assist you in precisely setting the pivot to spindle distance during the cartridge alignment phase.

7.2 Mk 1.5 (sliding) Armboards

Tools for this step:

- 5/16" hex wrench.

These armboards are drilled for your tonearm, and the two fine-adjust pivot-spindle set screws are set at the factory to the midpoint of their ½" adjustment range.

⚠ ***Do not adjust these screws at this point***.

Mount the armboard using the supplied bolts and washers, ensuring that the two nylon-tipped set screws press against the turntable base.

8 Step Detail - Install and Align your Cartridge.

Materials for this step

- Tonearm (and any arm-specific tools supplied by your tonearm manufacturer)
- Cartridge
- Your cartridge mounting tools
- Masking tape – to prevent platter rotation during adjustment
- Arc protractor (supplied)

Standard cartridge mounting and alignment techniques apply.

The following describes Galibier's tonearm mounting architecture to assist you in setting the pivot-spindle distance.

Mk-I Standard Armboards:

Loosen the armboard mounting bolt to make fine adjustments to the pivot to spindle distance and then tighten the bolt.

You can set a starting point (to be fine-tuned when you use your protractor) by measuring with a ruler, or better yet a tool like the Feickert Protractor.

Mk-I Stelvio Armboards

These armboards adjust as the standard armboards do, but in later models, a nylon-tipped set screw is located in the base of the damping cylinder. This set screw allows you to use the supplied 3/32" hex driver to make fine adjustments to the pivot-spindle distance.

The adjustment range of the set screw covers tonearms of up to approximately 10" (250mm) effective length. For longer tonearms, adjustment is as for the standard armboard.

Use a ruler (or Feickert protractor) to set the starting pivot-spindle distance. This will be fine-tuned when you use your alignment protractor.

To *decrease* the pivot-spindle distance (closer to record spindle):

- Turn the set screw counterclockwise
- Loosen the armboard mounting bolt
- Push the armboard toward the turntable base so that the nylon tip of the set screw touches the turntable base
- Tighten the armboard mounting bolt *while holding the armboard in place* to ensure the set screw is still touching the turntable base.

To *increase* the pivot-spindle distance (further from record spindle):

- Loosen the armboard mounting bolt
- Turn the set screw clockwise (this pushes the armboard away from the base)
- While holding the armboard to ensure that the nylon tip is still pressed against the turntable base, tighten the armboard mounting bolt

Mk-1.5 Armboards

These armboards have a pair of pivot-spindle adjustment set screws, and the fine adjustment is available for all tonearm lengths. They also use a supplied 3/32" hex driver to perform these adjustments.

Use the same technique as for the Stelvio armboards, but tighten/loosen the set screws in equal amounts (i.e. ¼ turn of each set screw).

Note that for most tonearms, your armboard has been drilled on a CNC mill, but in all cases, the adjustment screws are pre-set to the correct distance (the middle of your armboard's adjustment range).

Note however, that most tonearm mounting holes have intentional play built into them, to allow for small pivot to spindle distance corrections to compensate for drilling errors.

Because of this, it's impossible for you to manually locate your tonearm's base plate in the center of its three oversized holes. You will have to make some fine adjustment to the pivot to spindle distance when aligning your cartridge. The fine adjustment screws will add precision to this correction process.

Also, pay attention to your tonearm manufacturer's instructions and tools – especially for tonearms with offset mounts like the Schroeder Reference series, Durand Talea, Kuzma 4Point, and Tri-Planar. Slight orientation changes (rotation) will change the pivot to spindle distance.

In any case, precise alignment can be performed during the cartridge mounting operation as follows:

To *decrease* the pivot-spindle distance (closer to record spindle):

- Turn the both set screws counterclockwise *in equal amounts*
- Loosen both armboard mounting bolts
- Push the armboard toward the turntable base so that the nylon tip of the set screws touch the turntable base
- Tighten both armboard mounting bolts while holding the armboard in place to ensure the set screws are both touching the turntable base.

To *increase* the pivot-spindle distance (further from record spindle):

- Loosen both armboard mounting bolts
- Turn both set screws clockwise *in equal amounts*
- While holding the armboard to ensure that both nylon tipped set screws are still touching still the turntable base, tighten both armboard mounting bolts

9 Troubleshooting

9.1 Motor Doesn't Turn

- Green LED (board power indicator) is lit.
- Front (green) power switch LED is lit.
- One of the two speed indicator LEDs (red or blue) is lt.

  Cycle the power switch off and on again. It's likely that you shut down the system by turning off the power supply, but not powering off the controller

9.2 Motor Doesn't' Turn (no LEDs are lit)

If you power up the power supply, and the green LED indicator at the rear of the controller doesn't light:

- Check the power supply for a blown fuse (replace as necessary)
- Check the power umbilical for loose connections at both ends

If the power supply is functional and the connection at both ends of the umbilical is tight, one of several other fuses may have blown.

- On motor pods originally equipped with legacy controllers, there is a standard fuse (1-1/4" glass) at the bottom of the central cavity. Lay the motor pod on its side to remove/inspect this fuse.

- On power supplies like the Tenma 72-8141 which use a cigarette lighter plug (power supply side of the cord), the plug has a built-in fuse. Remove the cap and check that fuse.

- Note that both of these fuses are unnecessary with the 2014 issued motor controller. If both of fuses are good (very likely), the board mounted fuse has possibly blown and needs replacing.

Fuse: Littlefuse (manufacturer's p/n 045302.5MR). Digikey p/n is F3343CT-ND. Available from other suppliers like Mouser, Newark Element 14, etc.

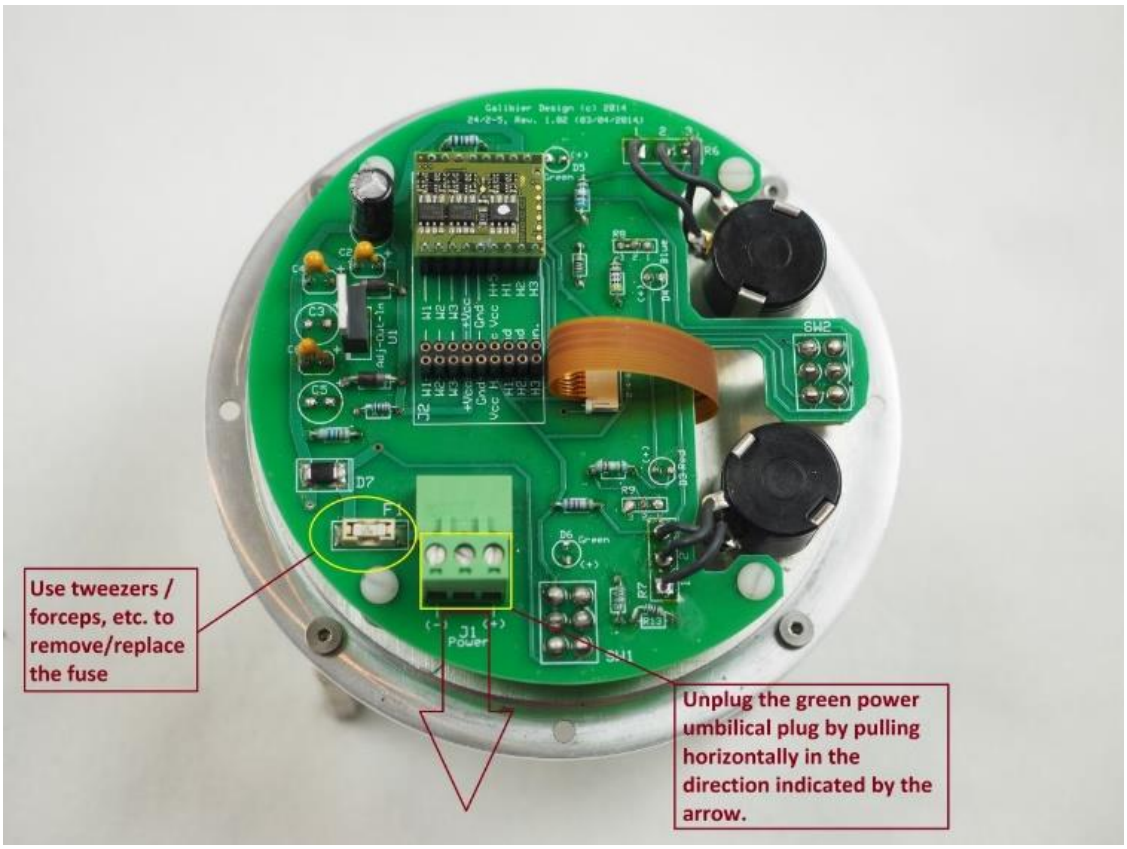
- Prepare a soft surface to rest the motor controller top plate on (i.e. a towel folded several times).

- Use a 5/64" hex key to remove the top plate from the motor pod (8 screws on the perimeter of the plate).

- Unplug the green power connector to free the board from the motor pod. Pull the plug horizontally to remove it. Refer to the photo below

- Set the top plate on the towel and use tweezers/forceps etc. to pull the fuse and replace it (refer to photo for location).

- Plug the green power connector into the board socket and screw the top plate back onto the motor pod.


Use tweezers / forceps, etc. to remove/replace the fuse
Unplug the green power umbilical plug by pulling horizontally in the direction indicated by the arrow.

10 Maintenance and Cleaning

10.1 Maintenance Schedule & Details

Frequency	Item	Details
3-6 months	Inspect/clean belt pulley and platter	Depends on environment (pollution, etc.)
3-5 years	Re-lubricate bearing	Depends on use: 2500 “run-time” hours

10.2 Cleaning the belt, pulley and platter

The Kapton belts supplied with new turntable builds are extremely robust, but like any material, they will pick up soot and dust over time, and more so in an urban environment.

To clean, remove the belt and wash under warm running water using a gentle dishwashing detergent like Dawn liquid. To “scrub”, run the belt between your thumb and forefinger with a “pulling motion”. Wipe dry and re-install per instructions above.

Kapton is conservatively rated at 500° F (260° C). The water will not be too hot.

Clean the drive pulley and platter surface, using a paper towel moistened with isopropyl alcohol.

⚠ **Do not drip cleaning fluids into the motor bearing**.

Mylar belts must be replaced when worn or dirty.

Fabric belts (originally supplied with the 2013 motor drive update) cannot be cleaned. We recommend replacement with Kapton belts when necessary, but for performance/sonics as well (before they require replacement).

10.3 Lubricating the bearing

We’ve inspected 8 year old turntables with heavy use and no bearing maintenance and their condition has been “like new”. We recommend however precautionary oil replacement every 2500 hours of run-time.

Remove the platter and stainless spindle, and use a rolled up piece of paper towel to remove the old oil. Mop up as much as possible and wipe down the stainless spindle.

A dark discoloration of the oil is normal and of no concern.

Follow the instructions above for re-filling the bearing, re-installing the spindle and platter.

10.4 Platter removal

The platter needs to be removed in order to access the bearing for periodic service (see maintenance schedule).

The provided nylon strap facilitates its removal. As with platter installation, a gentle rocking motion will help “free” the platter from the bearing spindle.

10.5 Cleaning

10.5.1 Aluminum parts (both anodized and polished)

Dampen either a micro-fiber cloth or a paper towel and use either window cleaner or alcohol & wipe surfaces.

Standard metal polishes work well, but require a bit of hand rubbing. If you choose to do this, install a stylus protector on your cartridge.

Notes:

A few legacy Galibiers had a bead blasted, textured anodized finish. Paper towels or cloth will leave a lint deposit on the surface. A microfiber cloth is recommended for these finishes.

- Take *care* around the *motor pulley* and *switches*.
- Do *not* exert unnecessary force on these components.
- Do *not* allow fluid to run into the motor pulley area or the motor shaft.

10.5.2 TPI Platter Surface

- Earlier Graphite, TPI platter surfaces are sensitive to solvents and fluids. If you have stained your surface, contact us for advice or refinishing options.

  Do not use any solvents, window cleaner, alcohol, etc. on this surface. It will smudge the lacquer.

- Later issue, carbon fiber TPI surfaces may be cleaned with window cleaner or alcohol.

10.5.3 Serac Platter (PVC)

Clean with a paper towel and window cleaner, alcohol, etc.

10.5.4 Serac (Painted Base)

Clean using a paper towel or soft cloth dampened in water.

11 Appendix

11.1 Unpacking your motor.

The following instructions are affixed to the box your motor pod is packed in.

This box contains your Motor Controller and Pod:

Your motor is a precision instrument.

The motor pod has been packed to protect the motor shaft and pulley from impacts from the both the side and the top.

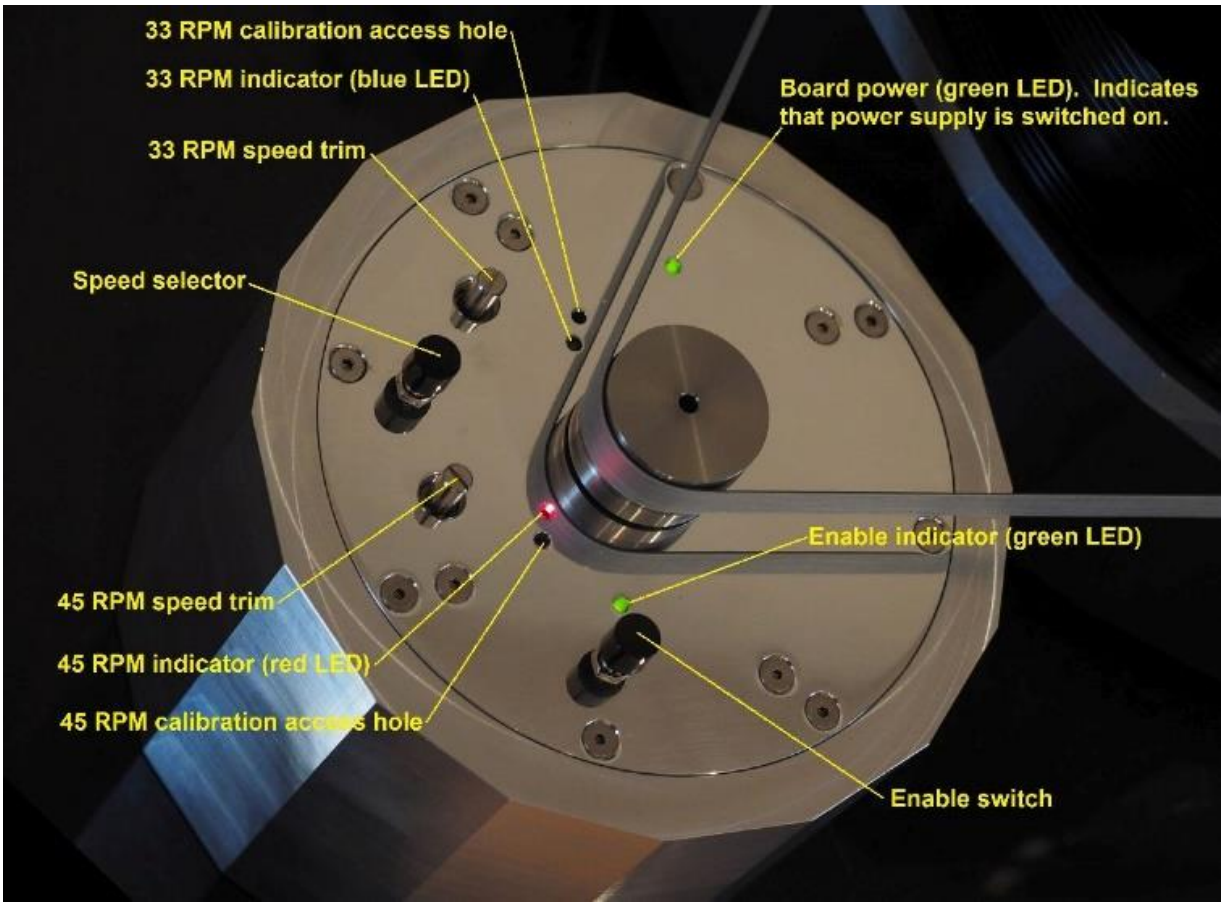
When unpacking, take care to *protect the motor shaft and pulley from side and top impacts*.

⚠ ***Do not rest the motor pod upside down* so as to put pressure on the shaft.**

Unpacking Method:

- Remove the motor pod and the plastic bag with the umbilical cord and tip toes. Set three of the tip toes aside (keep them handy).
- Rest the motor pod on the edge of a smooth work surface (table, desk etc.) so the plywood shipping base hangs over the edge.
- Unscrew the three shipping screws.
- Install the three tip toes into the holes where the shipping screws were inserted.

11.2 Motor Controls and Operation



Background

The new generation drive represents a considerable departure from the legacy drive:

- High torque, low RPM.
- Larger pulley for better belt traction. A large pulley would not be possible with a low torque motor.
- Closed loop operation for speed lock & long term speed stability.
- Works well with wall powered, DC linear power supply (battery may still be used).
- Specified with seamless (no splice) Kapton belt. Mylar may still be used (see drive belt support).
- Finer speed adjustment – set and forget.

Speed Lock

The drive requires 45 seconds to lock onto speed. This occurs upon powering up or when changing speed from 33 to 45 or vice versa.

Recommendation: leave your controller powered up throughout a listening session.

Comment: The high torque upon startup lends the impression that the motor is up to speed within 1-2 seconds. Full locking occurs however at 45 seconds. This minimizes the effect of the sensor circuit on speed stability at the “micro” level (below the threshold of perceived wow and flutter).

Operation

In addition to the speed lock characteristics noted above, the key operational differences you’ll note from the legacy drive are:

- Much more precise speed adjustment. This was accomplished by dedicating each switch position (trim pot) to a specific speed. The pots are no longer assignable to either speed.
- Separation of functionality into two switches – one to select speed and one to enable the controller.
- Revised power on/off sequence (see below).

Terminology

- Power switch: The switch on the external power supply (not applicable if you use a battery).
- Enable (on/off) switch: Sends power to the motor.

Power on Sequence

1. Turn on the power supply (power switch). Not applicable if you’re using a battery.
2. Turn on enable switch.

Note: If you reverse the sequence by turning on the enable switch before the power supply switch, the motor won’t turn on. This is normal. Turn the enable switch off and then on again to resume normal operation.

Power off Sequence

Turn off ***both*** the power supply (power switch) ***and*** the controller (enable switch). Order does not matter. If using a battery, then turn off the enable switch.

Note: if you power off the power supply but forget to turn off the enable switch, the controller will not send power to the motor the next time you power up. This is normal. To correct this, cycle the enable switch off and then on to resume normal operation.

11.3 Motor Drive Calibration

Your turntable motor is pre-calibrated at the factory and in normal use, should never require re-calibration.

Notes:

- this procedure is also documented on our support page: http://galibierdesign.com/support/drive-calibration/

- Refer to the photo in the previous section for location of the two calibration access holes.

Background

Since the initial release of this controller, we changed from the originally specified cloth belts to Kapton belts which perform similarly to Mylar but are much more robust and have a perfect splice.

Changing to Mylar (or Kapton) requires re-calibration of the controller due to the large difference in belt thickness, and this procedure was documented to facilitate re-calibration in the field. The cloth belts are .035″ thick and Mylar (and Kapton) is .002″ thick. Thinner belts require the motor to turn slightly faster in order to achieve 33 and 45 rpm.

This influence of belt thickness on the pulley to platter gear ratio is counterintuitive and this is somewhat obscure knowledge. For the purpose of calculating the gear ratio, the radii of the pulley and platter need to add approximately 1/2 of the belt's thickness (technically, it's the belt's neutral axis).

So, a small and equal change to both the pulley and platter's effective radius will have an effect on the platter speed, and this is the calibration we're making when we change belt types.

The new controller design has a much finer, more precise speed adjustment and this was accomplished by specifying lower values for the precision, 10-turn potentiometers (the main speed trim pots you're familiar with). This limits their adjustment range. To ensure a full range of adjustment, we added the blue trim/calibration pots (pictured above), and it is these pots which must be adjusted (re-calibrated).

These trim/calibration pots are accessed through the holes adjacent to the red and blue speed indicator LEDs (labeled in the photo above).

Controller Calibration Tools:

- A small, straight bladed jeweler's screwdriver – one with a blade that is about half the diameter of the access hole. This is a bit larger than screwdrivers that come with eyeglass repair kits, and smaller than the screwdrivers that come with ZYX and Benz cartridges.
- Your speed strobe of choice.
- A small flashlight.

Preparation:

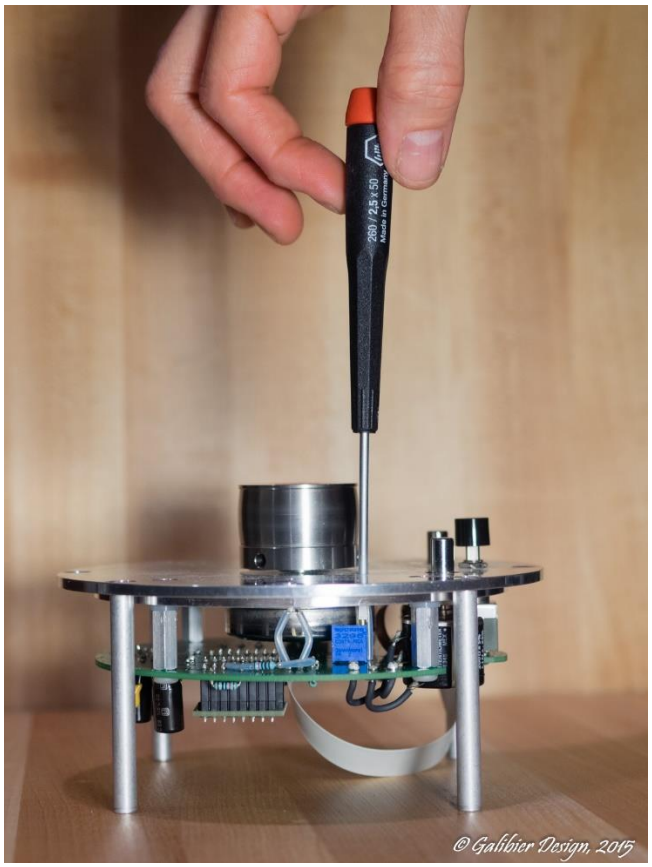
Overview: You will be installing the Mylar or Kapton belt and practicing engaging the screwdriver in the screw slot of the blue, trim/calibration pots:

1. Install the new belt and set its tension as you normally would.Remember that Mylar requires considerably less belt tension than the fabric belts.You will be returning to this lighter tension.
2. Let the belt "settle" into it's running position on the platter.Run the motor for a few minutes, turn it off, readjust belt tension and guide the belt onto the correct height on the platter as necessary – exactly as if you were initially installing/aligning any new belt.If you have any doubts, run the motor for 10-15 minutes. You're well familiar with a belt that's tracking correctly.
3. Set both of your main pots (the large ones with the protruding shafts that you're familiar with) to their middle position – 5 turns from either the clockwise or counterclockwise stop (10-turn pots).After calibration, you want to have an equal amount of upward and downward adjustability with your main adjuster pots.
4. Turn off the controller
5. Look at the photo below, and review the note at the end: "About the Calibration Pots and Engaging the Screwdriver"Familiarize yourself with the location and depth of the straight slotted screw head on the blue trim/calibration pots.Use a flashlight to look into the access hole.The screw should be in vertical alignment with the hole. If it's not, refer to the note at the end of this guide.Using the screwdriver, feel for when it engages the slot in the adjustment screw (see photo). It takes a bit of a delicate touch.Use your fingertips for sensitivity and use the weight of the screwdriver to fall into the slot (don't push on the screwdriver!).

Calibration Procedure:

Start by calibrating 33 rpm (the speed linked to the blue LED) and repeat these steps to adjust the 45 rpm speed (the red LED).

Note: the controller in the photo below has been removed from the motor pod to show the screwdriver engaging in the calibration pot. You do not have to remove the controller from your motor pod.



1. Place your speed strobe on the platter.
2. Turn on your controller and let the speed stabilize (wait 45 seconds).
3. Turn on your speed strobe. You should observe that the turntable is running slow.
4. If the screwdriver isn't engaged in the slot of the screw in the calibration pot, do so now (remember – "light touch"). The screwdriver will likely remain engaged in the slot if you let go of the screwdriver.
5. Start by turning the screwdriver 3 turns clockwise (these are 25 turn pots) and observe the speed. The controller will take some time to lock speed.
6. Continue adjusting slower (counterclockwise) or faster (clockwise) until you are very close to speed. Use the "regular" pots to perform the fine adjustment. You shouldn't have to turn the large pots more than half a turn if you've taken a bit of time with the screwdriver and the calibration pots.

About the Calibration Pots and Engaging the Screwdriver

Note in the photo how the pot is standing on its narrow edge. There's a tendency for it to tilt or wiggle a bit, and more so if you force the screwdriver into the screw slot. This is the reason for the "light touch". The pots are quite robust, but we never encourage torturing any component unnecessarily.

If the the screw isn't in vertical alignment with the access hole, It will be difficult to engage the screwdriver in the screw slot.

- If you have difficulty, view the screw head through the access hole with your flashlight. Observe its orientation and use the screwdriver to tilt the pot into alignment.

- You may need the next size smaller screwdriver from the one you're using to adjust with which is why we've shown two screwdrivers in the photo above.