

Premier FT-4

T O N E A R M

Mounting and Operating Instructions

Drilling the Holes for the VTA-16 Mounting Base

Note: If your turntable was purchased with a mounting board predrilled for the FT-4, start with section 10.

Equipment needed to mark and drill holes: 2 needles at least 2" long, high-quality metal metric ruler, sharp pencil, tape, scissors, file, drill or drill press, and drill bits— $\frac{5}{32}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ ", $1\frac{1}{2}$ ".

1. Unfold and flatten template sheet. Cut out arm-mounting template and base template along dotted lines. Note die-cut spindle hole on arm mounting template. Pin-point holes have also been made at pivot point A and index point B.

2. Place the mounting template on the spindle. When marking the centers of the holes on the tonearm mounting board, it is important to keep the template straight and parallel to the platter.

3. Rotate template on spindle to find the correct hole-drilling location. Although the hole can be located anywhere on the mounting arc (and still maintain the correct 221.7 mm spindle-to-pivot mounting distance), please take extreme care to be certain that the counterweight, anti-skate platform, and fingerlift clear the side and back of the dust cover. Some dust covers slope inward and have less clearance as the height above the mounting surface increases. The position of the tonearm on the template is identical to the position the tonearm will have when mounted. If possible, the template should be positioned in such a way that the arm tube is parallel to the right edge of the turntable.

Note: If your mounting board is made of very hard material, (i.e., metal), it may be difficult to mark the mounting board with a needle. In the following steps you may substitute a small drill bit for a needle when marking the mounting board.

4. Push a needle through the template at pivot point A. The needle should be kept perpendicular to the template and pushed down until it contacts and marks the mounting board below. Keep the needle in place at pivot point A and push a second needle through the template at index point B. Remove the template from the turntable. With a pencil and straight edge, draw a line between the two marks that you have made on the mounting board. Also label points A and B. Because the paper's accuracy can be affected by environmental conditions, double check by using a metal ruler to measure the 221.7 mm distance between the center of the spindle and the needle mark at pivot point A. If adjustment of the position of point A is necessary, the new A should be placed on (or just beyond) the line that was drawn on the mounting board. The exact position of index Point B is not critical, so no check measurement is necessary. If the mounting board on your turntable is removable

then remove it at this time.

5. Now push a needle through the mounting base template at point C. Push the needle down until approximately $\frac{1}{2}$ " of the needle protrudes through the bottom of the template. Place the template, with the needle in place, over the mounting board. Adjust the position of the template so that the point of the needle seats in the mark for point A on the mounting board. Hold the needle in place at point A. Slide the template down the shaft of the needle until it contacts the mounting board and rotate the template until the index line on the template is aligned with the pencil line that was drawn on the mounting board. Use tape to hold the template in position. With a needle, mark the centers of holes D1, D2, D3, E, and F. Remove the mounting base template from the mounting board. With a pencil, carefully label the marks you have made on the mounting board so that they correspond with the points on the template that was just removed.

6. Drill three $\frac{5}{32}$ " holes through the mounting board at points D1, D2, and D3. These holes are intended to be slightly larger than the bolts that go through them to allow fine adjustment of the mounting base position.

7. Drill a $\frac{3}{4}$ " hole through the mounting board at point E.

8. Drill a $\frac{1}{2}$ " hole through the mounting board at point F.

9. Drill a $1\frac{1}{2}$ " hole through the mounting board at point C. Use a file to remove burrs from around all the holes after drilling so that the mounting base will sit level on the mounting board.

Mounting the Tonearm

10. Position the mounting base (part #15) over the cut-out area on the mounting board so that the circular cut-away on the top of the base faces forward.

11. The phillips head screws are provided for use with thin mounting boards, and the longer allen head screws are used for thicker mounting boards. Longer screws are available. Insert the appropriate screws from the top. Mount washers and nuts from the bottom. Finger-tighten the nuts. Install the mounting board on the turntable.

12. Before the tonearm can be inserted into the mounting base, the brass locking piston (which is located inside the center hole) must be retracted. With your finger or a pencil, press the locking piston back toward the VTA locking set screw. If the locking piston still protrudes into the center hole, rotate the VTA locking set screw a half turn or more counterclockwise to allow the piston to be pushed further back.

13. Place the tonearm into the mounting base, letting it slide down as far as it will go. Tighten the VTA locking screw (part #13). The position of the mounting board may be different from when it was marked for drilling (especially pre-drilled mounting boards). Measure the horizontal distance between the center of the spindle and pivot-point (the center of the damping adjustment knob (part #7)) of the FT-4. Adjust the position of the base until this distance is 221.7 mm. Tighten the two accessible base mounting nuts to fix the

position of the mounting base. Recheck spindle-to-pivot distance to be sure that the mounting base did not move when the mounting nuts were tightened. Loosen the VTA locking set screw and remove the tonearm from the mounting base. Now firmly tighten all three base mounting nuts.

14. Use of the finger lift is optional. If used, it should be placed on top of the headshell and secured in place with the cartridge mounting hardware. Whenever possible, the stylus guard should be kept on the cartridge to protect the fragile stylus assembly. Loosely mount the phono cartridge to the headshell and attach the tonearm wires to the phono cartridge. The cartridge wires are marked with the standard color code: Red (R+), Green (R-), White (L+), Blue (L-).

15. Position the elevation collar (part #11) so that the attached elevation screw (part #14) points down and over the threaded hole in the mounting base. Use the elevation adjustment tool to screw the elevation screw into the hole in the mounting base. Continue turning the elevation screw clockwise until the bottom of the elevation collar is approximately 10 mm from the top surface of the mounting base. Align the main (16 mm) hole in the elevation collar with the center hole in the mounting base. Insert the tonearm pillar through the elevation collar and into the mounting base. Rotate the tonearm in the hole until the chrome cue cylinder lines up with the circular cutaway on the mounting base. Adjust the height of the tonearm so that the arm tube will be parallel to the platter when the stylus is on a record. Tighten the VTA locking set screw on the mounting base to secure the tonearm in the proper position. Tighten the elevation collar lock screw (part #12).

16. Plug the five-pin female connector of the PIB interface box into the bottom of the tonearm. It is preferable to mount (with the supplied screws) the PIB box onto the back of the turntable. The connectors on the box should point to the left rear corner of the turntable as viewed from the front. Alternatively, the box can be mounted to the surface that the turntable sits upon. After the PIB has been secured in place, plug a set of your favorite RCA-RCA interconnect cables into the PIB. Plug the other end into your preamp phono or step-up device input. Connect one end of a ground wire to the ground post on the PIB and the other to the chassis or ground post of your preamp or step-up device.

Tonearm Adjustment and Operation

NOTE: If your turntable has not been leveled previously, level it now.

17. Tracking force: Twist the counterweight (part #17) onto the back of the tonearm. For cartridges weight up to 8 grams, only the main counterweight is necessary. For cartridges between 8 and 14 grams, the accessory counterweight should be fastened to the back of the main counterweight. Be sure the accessory counterweight rests firmly against the back of the main counterweight disk, and secure with the set screw. Set anti-skate force to zero by turning the knob (part #8) completely counterclockwise. Remove the stylus guard from the phono cartridge. Unlock the arm rest. Ignoring the calibrations on the tracking force indicator dial (part #16), roughly balance the tonearm by moving the counterweight backward or forward until the arm "floats" parallel to the platter. The tracking

force indicator dial has two scales, the outer scale is calibrated for use when both the main and accessory counterweights are used. Rotate just the tracking force indicator dial (not the counterweight) until the 0 lines up with the white line on the counterweight support shaft. Grasp the entire counterweight; rotate it and the indicator ring counterclockwise until the 1 gram mark on the appropriate scale lines up with the white line. To avoid cartridge damage use one gram tracking force for setting alignment and increase to the recommended tracking force for playback.

18. Horizontal alignment: Using a high quality alignment protractor, such as the Dennesen Soundtracktor, adjust the cartridge overhang (17.3 mm) and horizontal tracking angle (23.0). Tighten the cartridge mounting screws.

19. Azimuth: Azimuth is correct when the center axis of the stylus is perpendicular to the record surface and both sides of the stylus have equal contact surfaces with the record groove walls. A correctly manufactured cartridge has the center axis of the stylus perpendicular to the top mounting surface of the cartridge body. Therefore, azimuth is correct when the headshell is parallel to the plane of the record. Placing a compact mirror flat in the middle of the record groove area of the platter, and aligning the cartridge/headshell parallel to its reflection when viewed straight-on allows a close approximation. However, because the stylus is such a small dimension, precise alignment is only obtained by equalizing channel crosstalk. This requires special equipment and test records. Please consult your audio specialist. If azimuth adjustment is necessary, return the tonearm to the arm rest and lock in place. With one hand, insert the small (1.5 mm) hex key into the headshell lock set screw (part #20). Hold the rear part of the headshell with the other hand. Loosen the headshell lock set screw by turning it clockwise (as viewed from above). It should need at most a quarter turn. Rotate the headshell to correct for the observed azimuth error. Be sure the back surface of the headshell is contacting the end of the arm tube; then tighten the headshell lock set screw by turning it counterclockwise (as viewed from above).

Caution: Do not overtighten the headshell lock set screw. Because the large contact area of the headshell inside the arm tube assures rigid mechanical coupling, overtightening this screw can damage the mechanical integrity of the tonearm. Tighten only until you feel a springy resistance from the hex wrench. Do not twist the headshell without holding the arm tube as this will stress the bearings. Recheck the azimuth and readjust if necessary. Recheck cartridge overhang and horizontal tracking angle with an alignment protractor and adjust it as necessary.

20. Anti-Skate: The friction of the stylus tracing a modulated record groove produces a force pulling the stylus away from the pivot point and because of the offset angle and overhang of the cartridge mounting geometry there is an additional vector pulling the tonearm toward the center of the record. Anti-skate is applied to compensate for this vector force and keep the stylus tracking both sides of the record groove equally. Carefully rebalance the tonearm as described in step 17 and set the tracking force per cartridge manufacturer's recommendation. Rotate the anti-skate knob clockwise until the indicated anti-skate force equals the cartridge's

tracking force. The skating force is dynamic and changes with the amount of modulation of the record groove. Therefore, calibrating with a test record will lead to improper adjustment. Fine adjustments of the anti-skate force can be made later by listening for fine detail and proper sound stage width and depth.

21. VTA/SRA alignment: The VTA-16 mounting base was designed specifically for ease of adjustment of the tonearm height, which is sometimes erroneously called VTA (vertical tracking angle) adjustment. When adjusting the tonearm height one is actually trying to optimize the SRA (stylus rake angle). The SRA of the reproduction stylus on your cartridge should match the SRA of the cutting stylus on the mastering lathe on which your record was cut. To avoid confusion we will refer to tonearm height adjustment as VTA adjustment. The best way to find the correct VTA is by listening. Listen for a focused image and proper placement of instruments in space. Unfortunately, record manufacturers do not adhere to a standard for the angle of the cutting stylus on record lathes. Therefore, the proper angle of the reproduction stylus will vary from record to record. The type of stylus on your cartridge will determine its sensitivity to proper VTA adjustment. A cartridge with a conical stylus will work well over a wide range of vertical tracking angles and is therefore relatively insensitive to adjustment. Cartridges using line contact, micro ridge, or van den Hul styli are extremely sensitive to proper adjustment of the VTA and will often perform poorly if not adjusted correctly. However, these line contact styli are capable of extracting the best reproduction of music from your records.

With the above parameters optimally set, use the cartridge for at least 45 minutes before attempting to optimize the VTA. This allows the cantilever damping material to come up to operating temperature and the suspension to settle into its operating equilibrium. Then listen to music chosen for this task and get a sonic fix on the projected image. The best recordings for optimizing VTA are simple two-microphone recordings of acoustic music in real space. These recordings display good spatial characteristics with well defined soundstage and hall ambience information. Raise or lower the tonearm pivot in 5 mm increments and compare to the sound stage previously heard. With the above guidelines you will detect slight changes in the musical picture and with progressively smaller movements you can zero in on an approximate arm height setting. Do not expect drastic changes until you come within about 2 mm of the correct pivot height.

CAUTION! If care is taken, on certain turntables the VTA can be adjusted while the record is playing. However, the VTA locking set screw on the mounting base should only be loosened or tightened when the stylus is off the record. Users must determine if they can adjust the VTA during play with their turntables. Sumiko, Inc. will not be responsible for styli or cantilevers damaged by users making VTA adjustments during play. Adjustment of the VTA during play is useful only if your turntable is located at your listening position or if it can be adjusted by an assistant while you listen to the results. (Note: Using a spouse or friend to help you set the VTA while you listen can jeopardize your relationship with that person.) If you can not be in a position to accurately judge the results of your

adjustments, to assure the safety of your stylus and cantilever, always make VTA adjustments with the stylus off the record.

The VTA is adjusted by using the elevation adjustment tool. Cue stylus off of the record or lock the tonearm on the arm rest. To unlock the arm pillar, insert the end of the elevation adjustment tool into the VTA locking set screw on the mounting base and rotate the tool 1/4 turn counterclockwise. Remove the elevation tool from the VTA locking set screw and insert it into the top of the elevation screw. Rotating the elevation screw counterclockwise will raise the rear of the tonearm. If you are going to adjust the VTA while playing, cue the stylus to the record now and, using the elevation adjustment tool, rotate the elevation screw until the correct VTA is obtained. Cue the tonearm off of the record and lock the arm pillar into the mounting base by tightening the VTA locking set screw.

The VTA adjustment system works best when the elevation collar is close to the mounting base (within 10 mm). Gross adjustment of the VTA should be made by loosening both the VTA locking set screw and the elevation collar lock screw and then moving the arm pillar up or down as necessary. When the tonearm is set at the center of adjustment range for the records in your collection, the bottom of the elevation collar should be between 5 and 10 mm above the top surface of the mounting base.

Variable Fluid Damping

The Premier FT-4 tonearm can be used with or without viscous damping in both the horizontal and vertical axis. The damping is used to keep the amplitude of the arm/cartridge resonance within acceptable limits. The resonance frequency should be high enough to avoid overreaction to record warps, but not so high that it exaggerates bass response. We recommend that the fluid damping be used with cartridges that have very low (less than 10×10^{-6} cm/dyne) or very high (greater than 18×10^{-6} cm/dyne) dynamic compliance.

The knob on the top of the tonearm adjusts the amount of damping by moving a piston into or out of the reservoir that holds the damping fluid. The reservoir is located on top of the bearing housing, which shields the bearings from contamination if the fluid is accidentally spilled on the housing. Gently turn the knob clockwise to increase damping action, counterclockwise to decrease damping action.

To install damping fluid, cut the tip off the fluid vial and carefully add no more than 6 drops of oil into the opening in the top of the damping knob. More than 6 drops will not increase the damping action and will cause the fluid to spill out onto the top of the bearing housing. If this occurs, the excess fluid can be removed with a cotton swab. Additional seepage may occur over time, and should also be removed.

Important Note: When preparing the FT-4 for shipment or service, the damping fluid must be removed to prevent it from spilling onto the tonearm. To remove the fluid, loosen the set screw (located on the back side of the bracket that holds the damping adjustment knob) by turning it counterclockwise, and lift the damping knob out of the bracket. Use the fluid vial as an eyedropper and remove the

fluid from the reservoir. Any remaining fluid should be removed with a cotton swab. Also clean the damping knob. Alcohol may be used as a solvent to remove damping fluid from the tonearm. When reinstalling the damping knob, properly align the set screw with the thread in the plastic knob before tightening, or deformation will result.

Replacement fluid is available at a nominal price.

Bearings

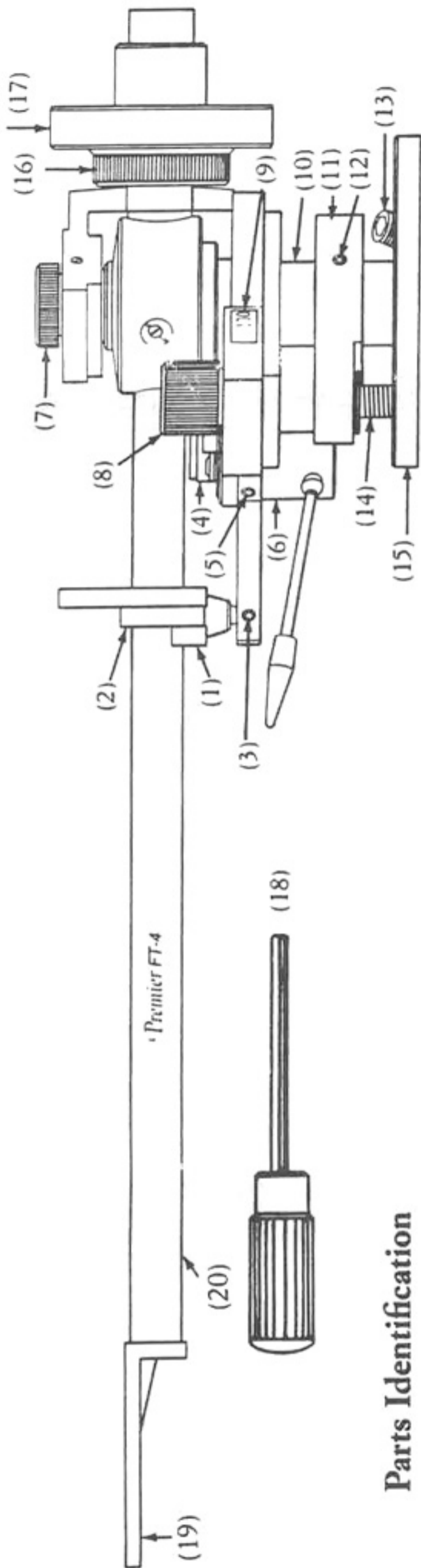
Each Premier FT-4 tonearm undergoes careful quality control, both at the factory and at Sumiko's Berkeley, California headquarters. Among our Quality Assurance procedures are inspection of bearings for freedom of movement and lack of play. Please do not attempt to make bearing adjustment yourself as this may permanently damage the bearings and will void your warranty. Should repairs or adjustments be necessary, please contact your dealer or Sumiko, Inc.

Specifications

Overall length	305 mm
Effective length (pivot to stylus)	239 mm
Overhang	17.3 mm
Offset angle	23.0
Mounting distance (record center to pivot point)	221.7 mm
Maximum backswing	64 mm
Cartridge weight range: Standard counterweight	up to 8 grams
With extra weight	8-14 grams

Warranty

This product is warranted to be free from defects in material and workmanship for a period of one year after delivery to the original purchaser, provided the registration card supplied with the product is completed and returned to the manufacturer within fifteen (15) days of the purchase. Our obligation under this warranty is limited to repairing or replacing any component of the product which our examination shall disclose to be defective in material or workmanship under normal conditions of use. This warranty shall not apply to products that have been abused, modified, disassembled or repaired by others than the manufacturer. Products to be covered by this warranty must be returned to the factory service department or to our designated service center with all transportation and insurance charges prepaid. This warranty is in lieu of all other warranties, expressed or implied, and all other obligations on our part, and we neither assume, nor authorize any other person to assume for us, any other liability in connection with the sale, repair, or return of any product.



Parts Identification

- | | | | |
|------|----------------------------------|------|-----------------------------|
| (1) | arm rest | (11) | elevation collar |
| (2) | arm rest lock | (12) | elevation collar lock screw |
| (3) | arm rest height adjustment screw | (13) | VTA locking set screw |
| (4) | cue platform | (14) | elevation screw |
| (5) | cue height adjustment screw | (15) | mounting base |
| (6) | cue cylinder | (16) | stylus force indicator dial |
| (7) | damping adjustment knob | (17) | counter weight |
| (8) | anti-skate adjustment knob | (18) | elevation adjustment tool |
| (9) | serial number | (19) | headshell |
| (10) | tone arm pillar | (20) | headshell lock set screw |