

# VPI Scout 21 Turntable Manual



## Setup and Instruction Manual



VPI Industries, Inc., 77 Cliffwood Ave. #5D, Cliffwood, NJ 07721

<http://www.vpiindustries.com>

# Scout 21 21 Turntable Packing List

Serial #: \_\_\_\_\_

|                        |  |
|------------------------|--|
| Turntable Platter      |  |
| Motor Pod Assembly     |  |
| Record Clamp           |  |
| Scout 21 Chassis       |  |
| Stylus Force Gauge     |  |
| Cartridge Hardware     |  |
| Drive Belt             |  |
| Power Cord (115V Only) |  |
| JMW 9 Alignment Jig    |  |
| JMW Tonearm            |  |

Built by: \_\_\_\_\_

Date: \_\_\_\_\_

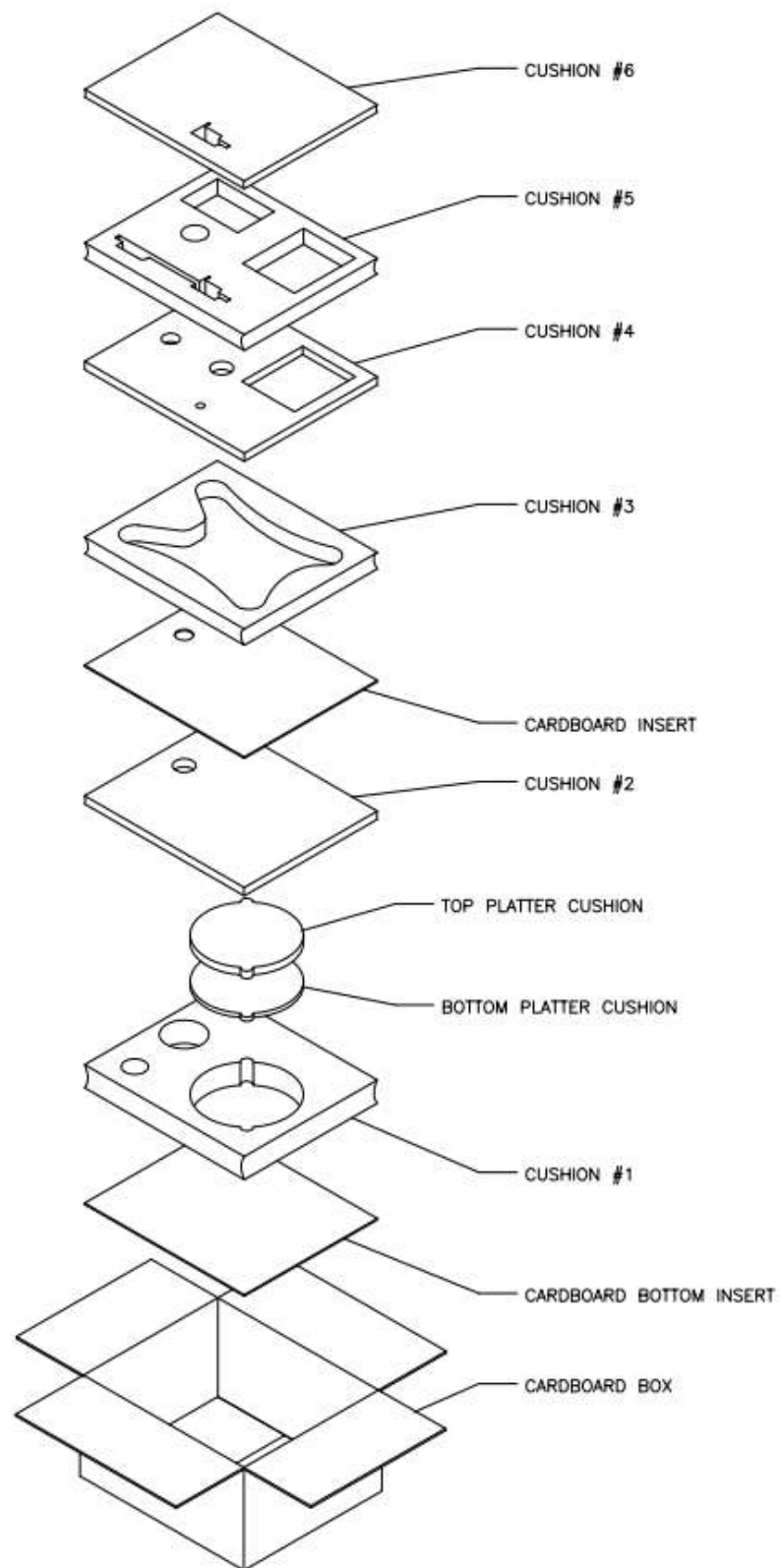
Tested by: \_\_\_\_\_

Date: \_\_\_\_\_

Packaged by: \_\_\_\_\_

Date: \_\_\_\_\_

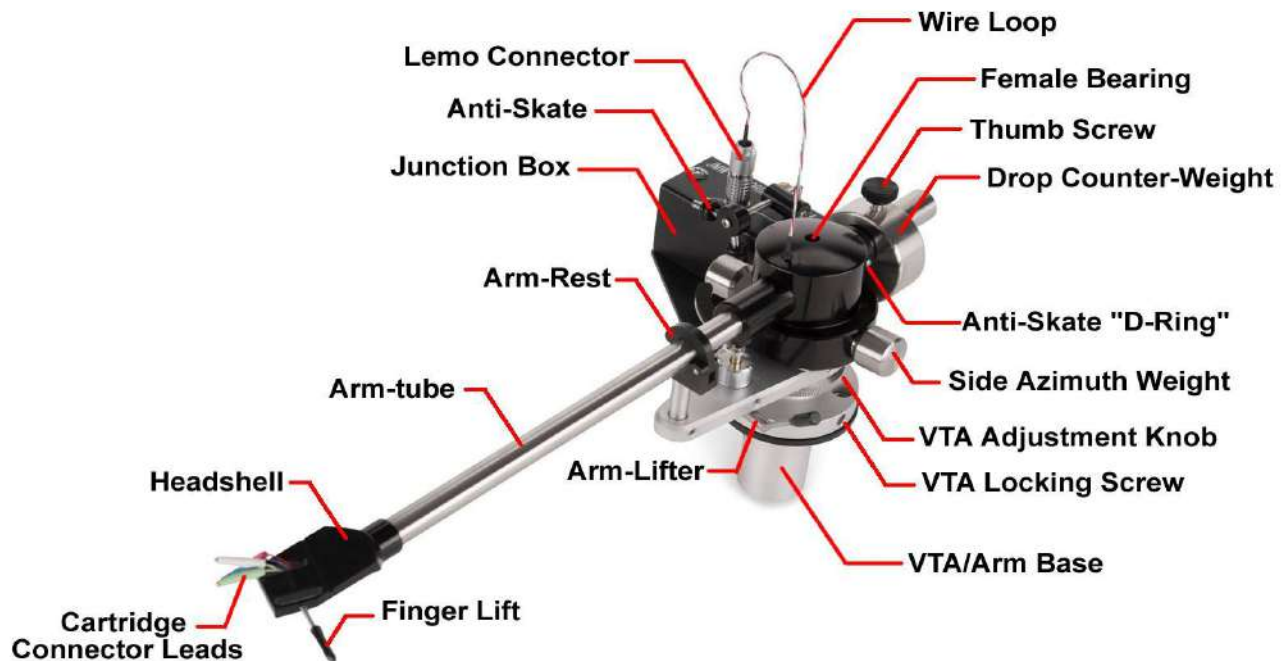
## Packaging and Repackaging Diagram



## Turntable Anatomy



## Tonearm Anatomy



## Important: Read Before Proceeding!

- Read and follow the Safety Instructions below.

Save all packing materials. The Scout 21 should only be moved or shipped in its original packaging to reduce the risk of damage in transit.

The Scout 21 should be placed on a flat, level surface during setup and final installation.

### 1. Safety Instructions



**Follow the instructions below to reduce risk of electrical hazard or injury.**

- 1.1 To avoid electrical shock, do not open the motor housing when it is turned on/plugged in.
- 1.2 If the power cord provided with the Scout 21 does not reach an outlet, use a grounded extension cord.
- 1.3 To avoid electrical shock, always plug the Scout 21 motor into a grounded outlet.
- 1.4 Do not expose the Scout 21 to rain, excessive moisture, or a romantic bath.
- 1.5 Do not touch the male pivot point of the tonearm assembly. It is sharp!



**Follow the instructions below to avoid damage to the Scout 21**

### 2. Minimum Specifications

- Wow and flutter: .08% WRMS
- Speed Accuracy: .08%
- Rumble: >78db down
- Overall Dimensions 19" L x 15" W x 8 ½" H
- Footprint is 18 ½" L x 14 ½" W
- 32 lbs. weight
- Platter run out \_ +/- .001 inch.

### 3. Unpacking the Box

The turntable and tonearm are packed very carefully to avoid damage during shipping. It is important you save the packing materials and box to use for shipping or moving the Scout 21.

- 3.1 Remove the 2 foam side pieces and foam block in the center.
- 3.2 Make space for the Scout 21 and remove the chassis from the box. Put the chassis down on a solid surface.



**The warranty does not take effect until the warranty is returned by e-mail at the end of the manual.**

- 3.3 Remove and set aside the items in the next layer:
  - Alignment Jig.

- Record clamp.
  - Power cord. (only in 110V countries)
  - Bag containing screwdrivers and screws for mounting the cartridge.
  - Digital stylus force gauge
- 3.4 Remove the pieces of foam covering the tonearm, then carefully remove the tonearm and set it down in a safe place. Use caution with the tonearm's delicate wires and Lemo connector.
- 3.5 Remove the turntable platter and motor. Be very careful not to hit or damage the motor pulley. It measured +/- .0005" when it was tested at the factory.

## 4. Setting up the Scout 21

*(Note: Set-up videos are available on our website)*

- 4.1 The Scout 21 must be placed on a flat, level surface. This will make setup easy, provide better sound quality, and put less strain on the main bearing.
- 4.2 Place the turntable chassis on your shelf or stand where it will be used, with the round cutout on the left. The cutout will be where you will place your motor-pod. The better isolation you provide the Scout, the better it will sound. We recommend a 1 to 3-inch-thick maple shelf sitting on rubber isolator feet for this purpose.
- 4.3 For Standard Scout 21: Remove the turntable platter and place the platter on the tapered spindle. The platter bearing is lubricated; no additional lubrication is needed for at least one year. When you lubricate the bearing place 3 drops of 40 weight motor oil in the spindle hole.
- 4.4 ***For Scout 21 with Upgraded Platter: Remove the tape from the spindle hole on the turntable platter and place the platter on the spindle. The platter bearing is lubricated; no additional lubrication is needed for at least one year. When you lubricate remove the platter and place a blob of Super Lube (PTFE Teflon lube) directly on the ball, gravity will move it down to lube the shaft.***
- 4.5 Be careful doing 5.4, the bearing is the heart of the turntable.
- 4.6 Connect the power cord to the motor, then place the motor, with the power cord at the rear, next to the square cutout of the turntable chassis.
- 4.7 Lift the chassis and place it over the power cord. The motor should extend approximately .25 inch from the left side of the turntable chassis.
- 4.8 Place the drive belt around the platter and around the pulley on the motor. The belt does not have to be level on the platter. It will self-level when the platter starts rotating.
- 4.9 For 33 RPM operation, place the belt on the upper part of the pulley. For 45 RPM operation, place the belt on the lower, wider part of the pulley. The center groove in each diameter is the correct speed. The VPI Analogue Drive System speed controller provides the ultimate speed accuracy and best sound. Check with your dealer about availability.
- 4.10 Verify the turntable is level by using a 9 or 12-inch bubble level front-to-back and side-to-side on the platter. If it is not level, rotate the Delrin isolation feet up or down. If you must turn the Scout 21 feet more than three full turns, level the shelf or platform the table sits on first.

## 5. Installing and Aligning the Cartridge

- 5.1 For cartridges with pass-through mounting holes, use the hardware supplied with the cartridge and follow the alignment procedure carefully (Denon, Miyajima, etc.)

For all cartridges using 2.5mm standard metric mounting threads use the supplied Allen head screws and the 5/64" Allen wrench. Be sure to use washers under the screw heads.

- 5.2 The tonearm wires are color-coded as follows:

Red \_ right hot  
Green \_ right ground  
White or Black \_ left hot  
Blue \_ left ground.

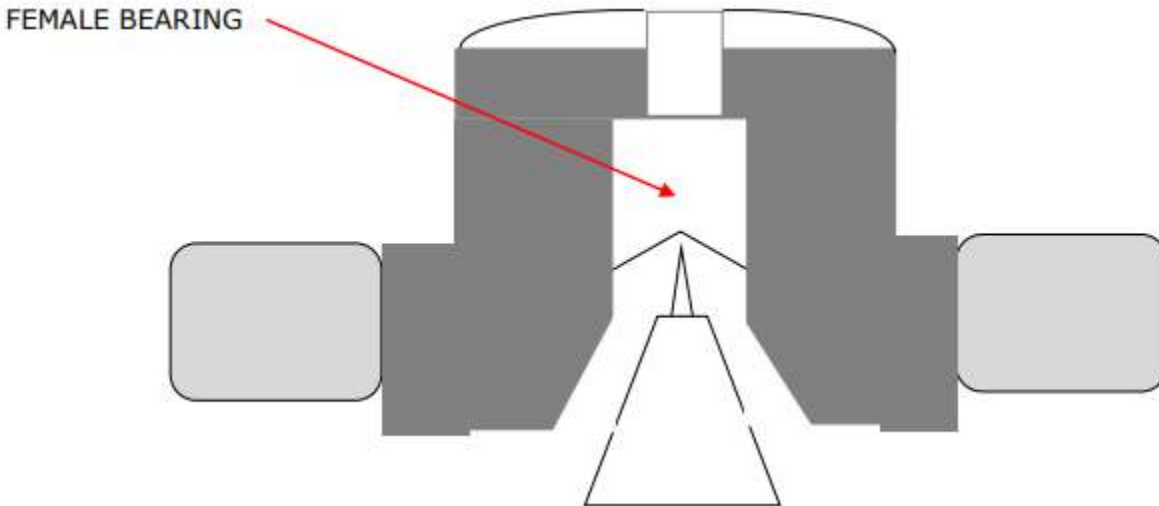
**If your phono section inverts phase, the hot color becomes the ground color.**

- 5.3 Using tweezers or fine-tipped pliers, grip the center of the red wire's connector \_ **not** the wire itself \_ and push it onto the cartridge's right hot terminal pin. Connect the remaining connectors in the same way. To avoid damage to the cartridge, do not push the connectors all the way on.
- 5.4 Place the Alignment Jig on the spindle with the V-groove against the base of the male bearing shaft. Tighten the screws of the jig so it fits snugly against the male bearing shaft and over the record spindle. The jig is adjustable and automatically corrects for alignment when you put it in the position shown in the picture below.



- 5.5 Place the arm tube assembly on the male pivot point, using caution with the 4-color wire and Lemo connector. Set the arm in its rest. If the cartridge has a guard, remove it.

**MAKE SURE THE MALE POINT IS IN THE CENTER OF THE FEMALE CUP, IT SHOULD FEEL SOLID BUT YOU SHOULD BE ABLE TO SLIDE IT SIDEWAYS AND THE ARM RAISES AS YOU GO FROM THE CENTER TO THE SIDES OF THE FEMALE BEARING. IT IS AN INVERTED CONE.**



- 5.6 Line up the red dot on the Lemo connector with the red dot on the receptacle on the junction box. The Lemo connector can plug in only one way and should not be forced.

#### Ground Connection

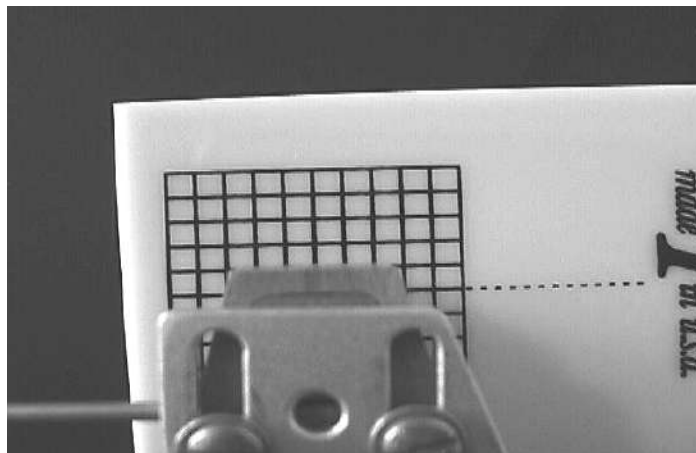


#### RCA Connection

- 5.7 Swing the tonearm over the jig so the stylus is as close as possible to the dot in the center of the grid. Set the counterweight for enough downward force to keep the stylus from moving when resting on the jig.
- 5.8 Look down at the cartridge and align it between the lines of the grid. You should have the diamond stylus on the white dot and the cantilever lined up with the lines on the grid. **Use a flashlight to look from the front and line up the cantilever with the grid lines. That is the only alignment that matters, the cantilever lined up with the white lines and the diamond on the white dot. The angle of the cartridge is irrelevant.**
- 5.9 Adjust the cartridge mounting screws and the counterweight as needed until the cartridge is centered between the grid lines and the stylus is resting on the dot of the grid. The picture below shows the setup, the jig is in white for clarity, yours is black.



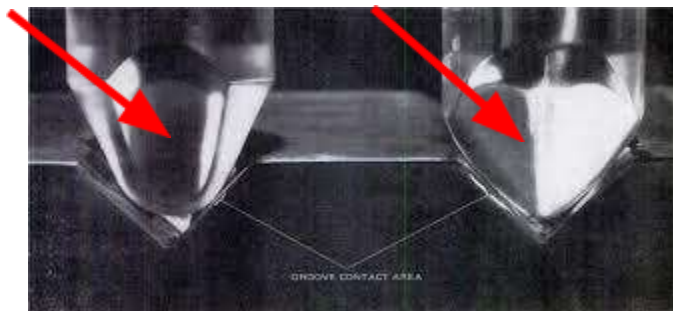
- 5.10 When the cartridge is properly positioned, tighten the cartridge mounting screws and remove the alignment jig. Do not make them overly tight, the Scout arm is self-damping and you can damage the surface by over tightening.



VIEW OF CONICAL AND LINE CONTACT STYLI AND WHY ALIGNMENT MATTERS MORE WITH THE LINE CONTACT.

CONICAL

LINE CONTACT



MicroLine™



Linear Contact



Elliptical



Conical

**For more detailed information on setup visit this link:**

[http://www.theaudiobeat.com/vpi\\_ms/cartridge\\_setup\\_2.htm](http://www.theaudiobeat.com/vpi_ms/cartridge_setup_2.htm)

## **6. Setting the Anti-Skating – Two Solutions**

- 6.1 Anti-skating is one of the least understood forces acting on a tonearm. Skating force is created by friction between the stylus and the record, causing a force vector in a direction towards the center of the record when the headshell of the tonearm has an offset angle. Putting a stylus down on a flat, groove less record will cause the arm to move toward the

center of the record. Arm manufacturers have tried to compensate for this force, but that is impossible because the force is constantly changing as the music and velocity change.

- 6.2 VPI has conducted careful listening tests and determined that every tonearm we tried sounded better with its mechanical anti-skating disabled and the tracking force very slightly increased.
- 6.3 VPI has a unique solution to anti-skating: the coiled wire of the Scout arm acts as a spring and pushes the arm back without affecting the sound quality. You now have the option of installing a mechanical anti-skate for those that want it.



**If you try adjusting the anti-skate with a groove less record, you will ruin the twist in the tonearm wire and void your warranty. Do this with the mechanical anti-skate if you want that much anti-skate.**

- 6.4 If you need additional anti-skate go to the mechanical anti-skate we supply in the photo.



## 7 Setting Tracking Force (VTF) and Tonearm Height (VTA)

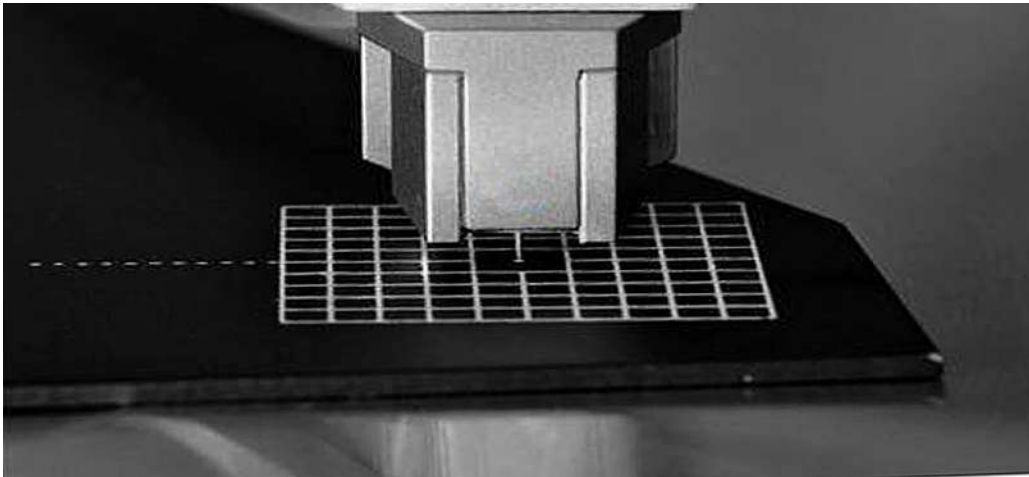
- 7.1 Tracking force is adjusted by moving the tonearm counterweight forward and back on its shaft. If your cartridge is heavy and the counterweight is all the way back, you can order a heavier weight from your dealer.
- 7.2 The Scout 21 Tonearm does not have a built-in tracking force gauge. We recommend that you use a digital gauge. Place the gauge on the platter (no record) and adjust the counterweight for very little tracking force.
- 7.3 You must adjust the arm height, loosen the setscrews on right and rear of the round silver base using the 5/64 Allen wrench supplied and turn the adjustment wheel above the base. When the arm is parallel to the platter and the cartridge on the gauge lightly tighten the screws.
- 7.4 **If you do not make the arm parallel when on the gauge you will be between .2 to .4 grams light or heavy when you are on the record. THIS IS VERY IMPORTANT!!**
- 7.5 Follow the gauge instructions and set the tracking force according to the cartridge manufacturer's recommendation. We recommend always going to the high side of tracking

force. High frequency vibrations on a light-tracking cartridge can cause more damage to the grooves of a record than running a cartridge at a heavy setting.

- 7.6 Put a record on the platter and lower the arm using the adjustment in 8.4 so it is parallel to the record. Now you will be tracking at the force you set and not a lighter or heavier force. You can adjust VTA later on a personal basis but always begin with the tonearm parallel to the record.

## 8 Setting the Azimuth

- 8.1 Set a fireplace match or coffee stirrer (something light and about 6" long) into the groove behind the mounting screws on the tonearm headshell.



- 8.2 If it is not level, use the supplied Allen wrench to loosen the setscrew on the counterweight and rotate the counterweight around the shaft until the headshell is parallel to the record. Be careful not to change the tracking force setting.
- 8.3 If you prefer you can rotate the azimuth ring to set azimuth instead of rotating the counterweight.
- 8.4 Azimuth is the vertical orientation of the diamond stylus in the groove, if it is off the sound will be tilted to the left or right channel and the balance will be off. Spending a little time on this is well worth it because when it is right the focus on the music becomes laser like.



## 9 Playing Records

- 9.1 Before playing a record, make sure that all of the tonearm screws are tight.

- 9.2 Place the black washer on the platter, then the record, then the record clamp. Always turn off the turntable before installing the record clamp.



Rubber Washer

- 9.3 Press the power button on the motor. Sit down and enjoy listening to your records!

## 10 General Use

- 10.1 Allow at least 20 hours of break-in time.
- 10.2 The motor will make some low-level noise. This will not get into the system. The motor and bearings will become quieter as you use your Scout 21. Place the motor on a mouse pad for better isolation.
- 10.3 If you notice hum in the system, remove the turntable to phono section interconnects and replace them with very cheap, standard VCR interconnects. These are well shielded and should eliminate the hum. If the hum goes away, get quality, well shielded interconnects.
- 10.4 After at least one year of use the platter bearing should be given 3 drops of 40 weight motor oil and motor will need to be lubricated with 1 drop of 40-weight motor oil below the black drive pulley and right on the brass piece.
- 10.5 You can experiment with mats but you need to adjust the VTA setting when doing this.

## Additional Items Available from Your Dealer

- The VPI Analogue Drive System power supply provides a major increase in musicality by feeding the synchronous motor in your table a perfectly stable wave form at the frequency you choose. The ADS lets you change speed electronically.
- Prime aluminum platter

### Possible Problems:

- **Noise in the system, a hum or buzz:**
  - The answer is to ground the motor and system properly. A line filter that floats the grounds will not allow proper grounding of the phono system, the phono system must be grounded!!!!!! Phono is not like CD and if this is your first table or your return to vinyl after a decade or so you must remember that phono amplification can be 1000 times higher than CD or streaming so any noise that gets into the system will be

amplified much, much more. Kill the noise with proper grounding and your system will sound much better.

- **A pop on motor turn on or turn off:**

- In some systems the phono section is not well shielded and will pick up the EMF created by the switch opening to turn off the turntable. If your system is like that you can get into the habit of muting (the preferred method as you should really do that anyways) or you can experiment with capacitors across the on-off switch. We supply the table with a .001 microfarad cap, you can change it to a .01 microfarad cap and it may eliminate or lower the problem to a tolerable level. BTW, judicious grounding will many times solve this problem also.

- **Trembling of tonearm when playing records:**

- You have a uni-pivot tonearm, it sits on one point and is constantly moving with the record grooves; spiraling in and out as the record center changes and moving up and down with minute warps. It is perfectly normal and inaudible.

- **Sibilance and distortion in both channels:**

- Azimuth not set correctly or diamond stylus misaligned on cartridge. This is usually a setup or cartridge issue, not a tonearm issue. It can also be caused by a tracking force that is too light even if it reads correctly. Tracking force needed is determined by the temperature in the room, below 70 degrees requires greater tracking force. We have found almost all cartridges work and sound best at 72 degrees.
- A 60 watt light put above a turntable in a cold room will heat up the cartridge just enough to make it much more compliant and track better.
- Before going crazy try a slightly higher tracking force, it usually solves all the problems and zero in on the azimuth adjustment.
- Another possibility is probably not as bad as the next photo but will definitely cause distortion and sibilance even in small amounts.

- **Distortion in left channel:**

- Too much anti-skate.

- **Distortion in right channel:**

- Too little anti-skate.

- **Noise at startup:**

- We used to ship all tables pre 9-11 with talc powder in the bag with the belt. After 9-11 and the Anthrax scares we discontinued this. If you get a screeching sound on startup just powder the drive belt and you will be fine.

- **Motor overheating:**

- It is perfectly normal for your 300 RPM AC motor to rise in temperature by 20 to 30 degrees, your motor is running properly. Too hot to touch is a motor running at too high a voltage and you should check your line input, it may be above 117 volts. If it is, a Variac (voltage variable transformer) or the SDS power supply will solve the problem.



## **VPI Industries, Inc. Limited Warranty**

VPI Industries, Inc. (VPI) warrants this unit against defects in materials and/or workmanship for five (5) years from the date of purchase by the original retail purchaser. VPI's sole obligation under this warranty is limited to the repair or replacement, at VPI's option, of any part(s) found to be defective. VPI's obligation to repair or replace defective parts is the purchaser's sole and exclusive remedy, and VPI shall not be liable for any direct or indirect injury and/or property damage arising out of the use of the product or defect in or failure of the product.

This warranty does not extend to any unit whose serial number has been defaced or altered. Any product that VPI determines causes a defect or malfunction due to incorrect installation, modification, misuse, or servicing by the purchaser, or service technician not authorized by VPI to perform such service will not be warranted. This warranty does not cover trivial or cosmetic defects that do not impair the unit's normal function.

VPI reserves the right to make changes in this product without assuming any obligation to install such change in any product previously manufactured. This warranty to repair or replace defective parts is in lieu of all other express or implied warranties of merchantability or fitness for a particular purpose. There are not warranties that extend beyond the description herein.

Some states do not allow exclusion of implied warranties or limitation of incidental or consequential damages, so the above exclusion or limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

Register your Product Online: <http://vpiindustries.com/warranty/>



### **NOTES:**