

# VPI Prime 21 Turntable Manual



## Setup and Instruction Manual



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<http://www.vpiindustries.com>

# Prime 21 Turntable Packing List

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

Prime 21 Chassis	
Stainless Steel/Delrin Clamp	
Stylus Force Gauge / Azimuth Rod Kit	
Motor Assembly	
Finger Lift	
Counter Weight	
Flash Drive	
Drive Belt	
Power Cord (Market specific)	
Alignment Jig	
Platter	
3D Tonearm	
Isolation Feet	

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

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

Packed by: \_\_\_\_\_

## **Important: Read Before Proceeding!**

- Read and follow the
- Safety Instructions below.
- Save all packing materials. The Prime 21 should only be moved or shipped in its original packaging to reduce the risk of damage in transit.
- The Prime 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.

## **Safety Instructions**



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

- To avoid electrical shock, do not open the motor housing.
- If the power cord provided with the Prime 21 does not reach an outlet, use a heavy-duty, grounded extension cord.
- To avoid electrical shock, always plug the Prime 21 into a grounded outlet.
- Do not expose the Prime 21 to rain or excessive moisture.

## **Minimum Specifications**

- Wow and flutter:  $>.1\%$
- Rumble:  $>85\text{db}$  down
- Speed Accuracy:  $>.03\%$
- Total shipping weight — 54 pounds.
- Platter run out —  $\pm .001$  inch.

## Unpacking the Box

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

- Carefully remove the tonearm watching for the delicate wiring with Lemo connector
- Remove and set aside these items:
  - Alignment Jig.
  - Record clamp.
  - Power cord.
  - Stylus force gauge
  - Tools
  - Prime 21 isolation feet
- Make space for the Prime 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 card is returned online as given at the end of the manual.**

- Remove the Prime 21 motor and place it in the Prime 21 cutout to the left. Be very careful not to hit or damage the motor pulley. It measured +/- .0005" when it was tested at the factory. Try not to disturb it at all.
- Remove the turntable platter and peel the tape of the bearing hole. Carefully lower the platter on to the Prime 21 spindle, (there is a black cap on the spindle – remove it). The platter is lubricated with PTFE grease and needs no maintenance for at least two years.

## Setting up the Prime 21

The Prime 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.

- Place the turntable chassis, with the motor cutout on the left, on the shelf or stand where it will be used. The better isolation you provide the Prime 21, the better it will sound. We highly recommend a 1 to 3-inch-thick maple shelf sitting on rubber isolator feet for this purpose.
- Connect the power cord to the motor, put the belt around the motor pulley and platter, spin the platter by hand and the belt will self-level.
- 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 centre groove in each diameter is the correct speed. The optional VPI Analog Drive System (ADS) speed controller is an accessory that provides the ultimate speed accuracy and improved sound. Check with your dealer about availability.
- Verify the turntable is level by using a 9 or 12-inch spirit level front-to-back and side-to-side on the platter. If it is not level, rotate the feet up or down. If there is a need to turn the Prime 21 feet more than three full turns, level the shelf or platform the table sits on first.

- The Prime 21 comes with 4 HW-40 Isolation feet that can be easily adjusted by turning clockwise to raise or counter-clockwise to lower the height of your turntable.



## Installing and Aligning the Cartridge

- For cartridges with threaded mounting holes, use the screws supplied by the cartridge manufacturer. Other screws may not fit properly and may cause damage to the threads and cartridge.
- To avoid damage to the 3D tonearm, use the provided finger lift which also serves as a washer supplied by VPI under the screw heads and do not tighten the screws too tight.
- For cartridges with pass-through mounting holes, use the hardware supplied with the tonearm. Be sure to use washers under the screw heads.
- The tonearm wires are colour-coded as follows:

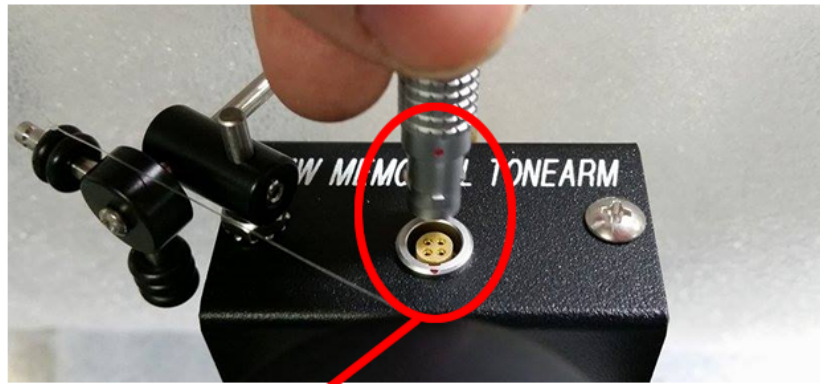
Red tag right hot/+  
 Green tag right ground/-  
 White or Black tag left hot/+  
 Blue tag left ground/-

**If your phono section inverts phase, the hot colour becomes the ground colour. In this case please seek support from you VPI retailer**

- Using tweezers or fine-tipped pliers, grip the centre of the red wire's connector tag **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.
- Place the Alignment Jig on the spindle with the V-groove against the base of the arm bearing shaft. Tighten the screws of the jig so it fits snugly against the bearing shaft and over the record spindle.

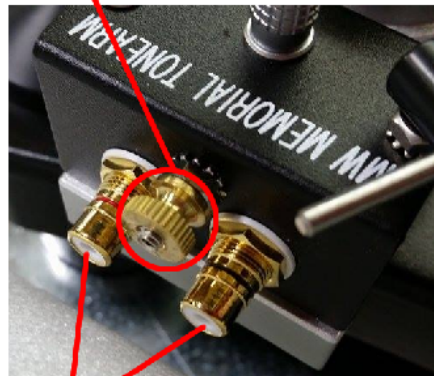
The arm should be placed in the arm rest when you are not playing a record!

- 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.



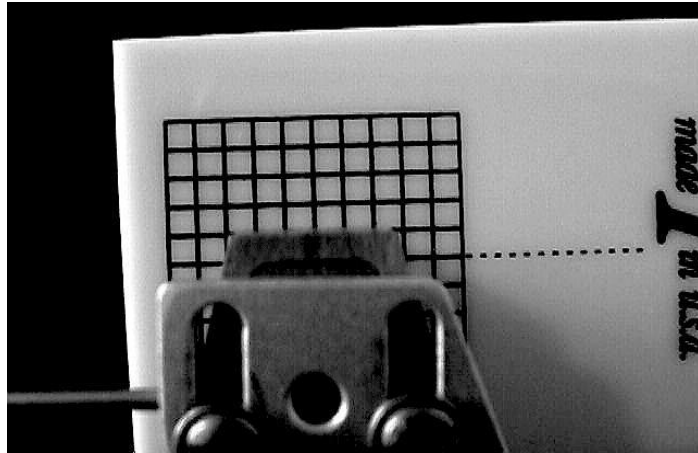
**Line up the red dot on your lemo and the red dot on your junction box when connecting your tonearm.**

Ground Connection



RCA Connection

- Swing the tonearm over the jig so the stylus is as close as possible to the dot in the centre of the grid. Set the counterweight for enough downward force to keep the stylus from moving when resting on the jig.
- 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 (torch) 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.
- Adjust the cartridge mounting screws and the counterweight as needed until the cartridge is centred 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.
- When the cartridge is properly positioned, tighten the cartridge mounting screws and remove the alignment jig. Do not make them overly tight, the 3D 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

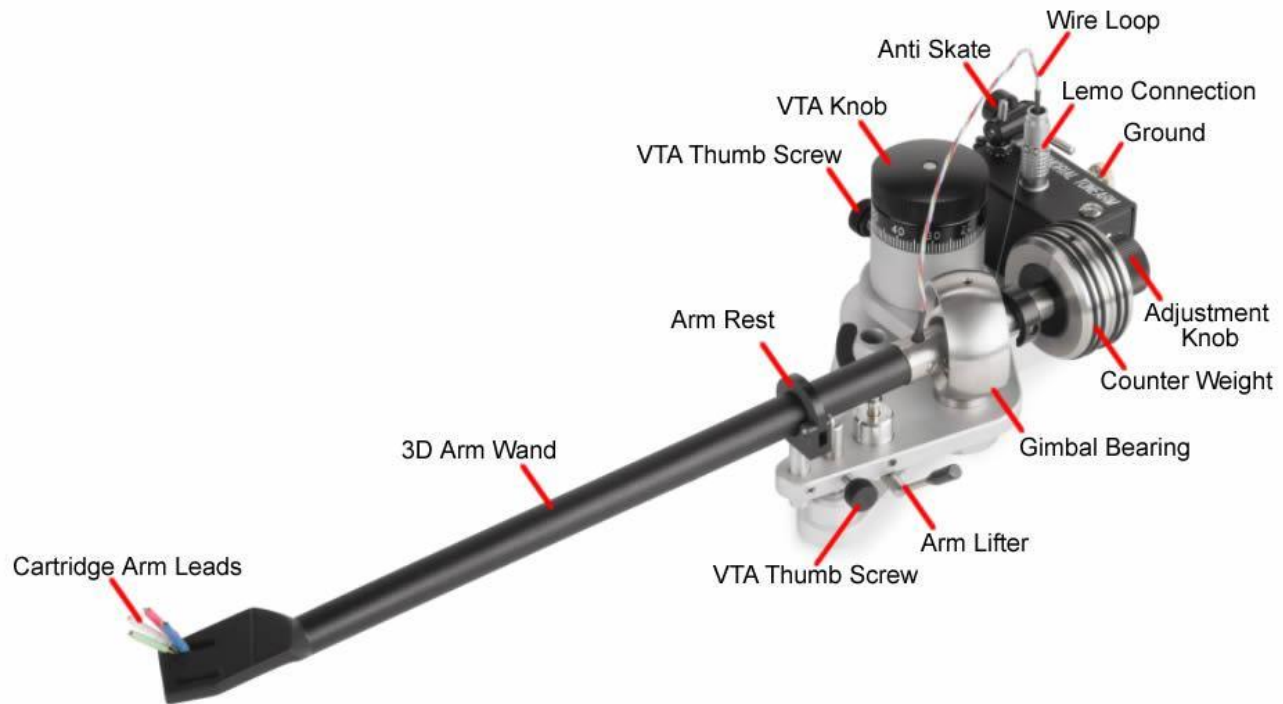


Elliptical



Conical

## Setting the Tracking Force and Tonearm Height



Tracking force is adjusted by turning the adjustment knob left or right to move the counter weight. If your cartridge is overly heavy and the counterweight is all the way back, you can order a heavier weight from your dealer. Half way back is fine as is the middle third of the stub.

The Gimbal Tonearm does not have a built-in tracking force gauge but we have supplied you with a quality digital tracking force gauge if we did not mount a cartridge for you.

- Place the gauge on the platter (no record).
- Loosen the two black thumb screws in the base of the tonearm and raise the arm so it looks parallel to the platter when it is on the stylus force gauge. When the arm is at the desired height, lightly tighten the thumbscrews.
- **If you do not make the arm parallel when doing this, you will be between .2 to .4 grams light or heavy when you are on the record.**
- 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. We usually recommend .1 gram higher than the max tracking force if you are not using anti-skate (recommended way of setting). This does not apply to Lyra cartridges that sound best at 1.73 to 1.76 grams tracking force with or without anti-skate.
- Put a record on the platter and using the VTA tower lower the arm so it is parallel to the record. Now you will be tracking at the force you set and not a lighter force.

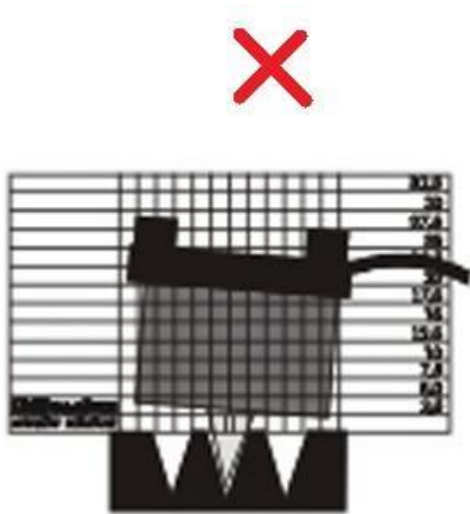




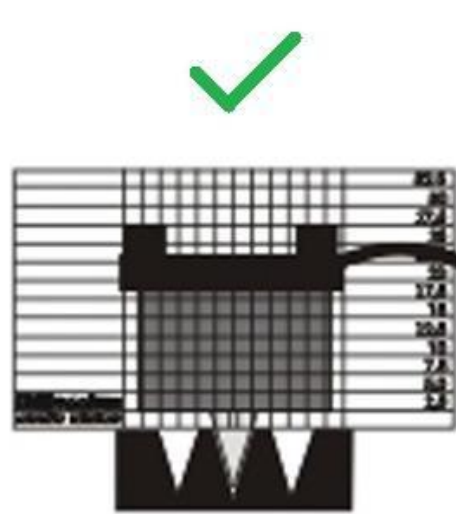
Pivot to spindle: 258 - mm  
Effective length: 273.4 - mm  
Overhang: 15.4 - mm  
Offset angle: 19.98 - degrees  
Average RMS distortion: 0.31%

## Setting the Azimuth

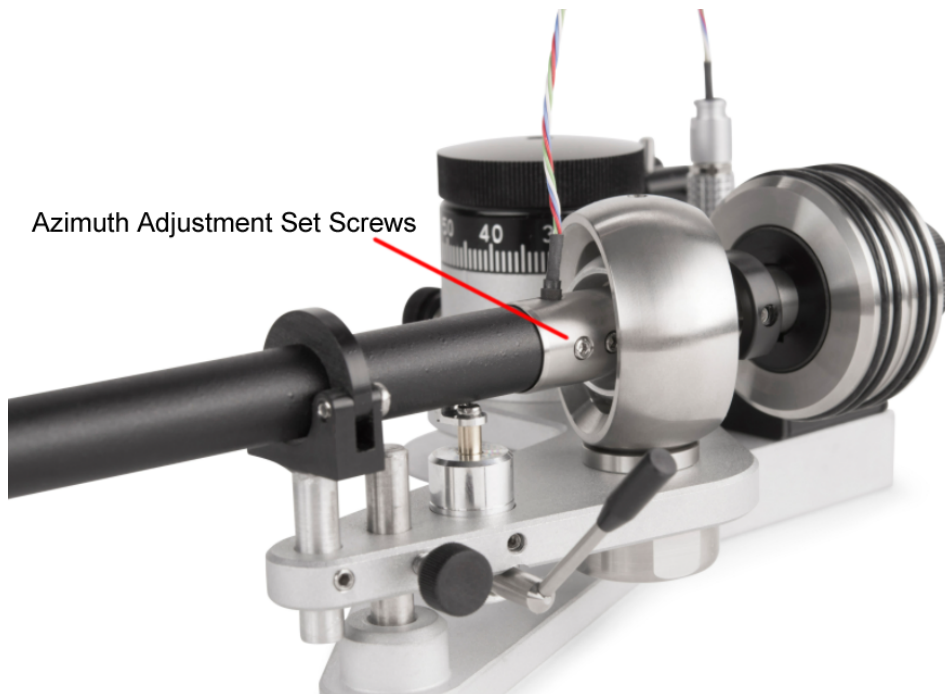
- Using the supplied aluminium rod placed into the groove behind the mounting screws on the tonearm headshell.
- Azimuth is factory set to be level but you can adjust the arm wand by loosening the Azimuth Set Screws on the side of the arm and slightly turn the wand.



Your azimuth should not look like this



It should look like this



## Setting the Anti-Skating – Two Solutions

- VPI does not support the need to have anti-skate but does respect the customer's interest in having it enabled. Therefore, we provide a mechanism for anti-skate and the option of engaging it.

- For normal music listening all the anti-skate you need will be supplied by the lead out wire of the tonearm to junction box unless you are using test records and measuring sine waves. For music listening the push back of the wire is ideal for anti-skate.
- We supply mechanical anti-skate for those who require 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.**

## Playing Records

- Before playing a record, make sure that both of the tonearm VTA thumbscrews are slightly tight.
- 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

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

## General Use

- Allow at least 20 hours of break-in time.
- 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 Prime 21. Place the motor on a mouse pad for better isolation if this bothers you.

- If you notice hum in the system, remove the turntable to phono section interconnects and replace them with very cheap, standard interconnects. These are well shielded and should eliminate the hum. If the hum goes away, get quality, well shielded interconnects.
- After at least one year of use the platter bearing should be re-lubed with PTFE super grease. The 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.
- You can experiment with mats but you need to adjust the VTA setting when doing this.

## Additional Items Available from Your Dealer

- Prime 21 Plus which would include the VPI Weis Line by Nordost and Shyla MC Cartridge
- VPI Analog Drive System
- Periphery Ring



## 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 a CD player 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 1,000 times higher than CD or streaming so any noise that gets into the system will be amplified much more. Kill the noise with proper grounding and your system will sound 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) 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 to lower the problem to a tolerable level. A judicious grounding will many times solve this problem also.

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

- You have a Gimbal tonearm, it sits on 4 bearings and is constantly moving with the record grooves; spiralling in and out as the record centre 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 (31 Deg Celsius) requires greater tracking force. We have found almost all cartridges work and sound best at 72 degrees (30 Deg Celsius).
- A small light (not cold LED) 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:**

- If you get a screeching sound on startup, simply powder the drive belt with talc powder and the noise will dissipate.

## **United states ONLY**

**(For all other countries please consult you retailer or local distributor for terms and conditions of warranty)**

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

VPI Industries, Inc. (VPI) warrants this unit against defects in materials and/or workmanship for three (3) 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/>

