



Well Tempered Lab

INSTRUCTION MANUAL

Royale 400

Preliminary

The Well Tempered Lab Royale 400 turntable / 16" LTD 400 tonearm combination is the result of a continuous search for genuine refinement and significant improvement in the playback of analog records. It encapsulates all of the Well Tempered Lab principles we believe necessary to achieve this goal and features that are not purely cosmetic but contain all the knowledge we have gleaned after countless hours of research and development.

Before embarking on the relatively simple process of assembling the Royale 400 turntable / 16" LTD 400 tonearm, please take the time to fully read these instructions and follow the steps within. The old adage of "if all else fails read the instruction manual" needs to be applied from the onset. Well Tempered Lab cannot be held responsible for consequences resulting from the failure to comprehend these instructions. If in doubt always consult with your dealer.

Well Tempered Lab's policy is the continuous improvements of its products. We therefore reserve the right of departure from illustration or specification that this might occasion.

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Unpacking the Royale 400

We recommend the use of the white gloves provided when handling the plinth and platter assemblies.

Take care that none of the fluids contaminate the finished surfaces of your Royale 400.

The Royale 400 packaging has been designed to protect it from the hazards of shipping. It is advisable to save it for further use.

Important: Never place a Well Tempered Lab turntable in direct sunlight. Not only will it have detrimental effects on your valuable recordings, it will impair the mechanical integrity and performance of your turntable.

Assembly

For ease of assembly we recommend a flat work surface, such as a table or bench. All necessary tools have been provided.

Note: Instructions for installing the LTD 400 tonearm are contained with the tonearm package.

Optional: Well Tempered Lab recommend that the Royale 400 plinth using the adjustable isolation feet be installed with the front feet 2mm to 3mm high than the rear. This causes the platter to “fall” against the triangle bearing. Under test, Well Tempered Lab have discovered that this has a small but not insignificant improvement on Wow and Flutter and is the reason for moving the Royale 400 motor directly behind the platter.

Installing the Platter

Please ensure that the point of the triangle hold in the upper teflon bearing is correctly orientated to the motor pulley. See Fig (1). If necessary consult your dealer.

Fill the bearing with synthetic oil supplied to a level of approx. 5mm (1/4”) above the bottom Teflon bearing, this is not critical. Do not overfill. Over-filling the bearing will cause the oil to overflow the bearing housing when the platter spindle is lowered into the bearing housing. Gently lower platter into bearing. See Fig (1) - (2). It is most important that spindle is located correctly in the centre of the lower thrust bearing. Failure to locate the pivot point of the spindle correctly will cause the platter to rotate abnormally. The spindle has been designed to protrude through the platter to provide a central lifting point that enables the user to easily achieve this.

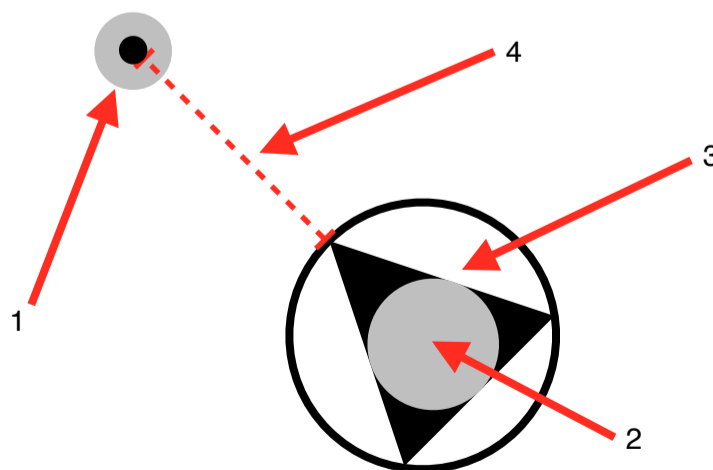
Important: The unique design of the zero clearance Well Tempered Lab top bearing allows the spindle to be virtually free standing. It is perfectly normal for the platter to tilt away from the motor when the belt has not been installed.

Should there be any necessity to replace the bearing oil, any synthetic motor oil of any brand within a viscosity range of 5W-50 is acceptable.

Note: The zero clearance Well Tempered Lab bearing can rotate for hours without oil. If you wish, you can complete other adjustments before applying the bearing oil. See Fig (2).

1. Motor
2. Spindle
3. Upper Teflon Bearing
4. Align corner of Upper Teflon Bearing to Motor

Fig (1)



Birdseye view of the Royale 400 Turntable Bearing. (Not to scale)

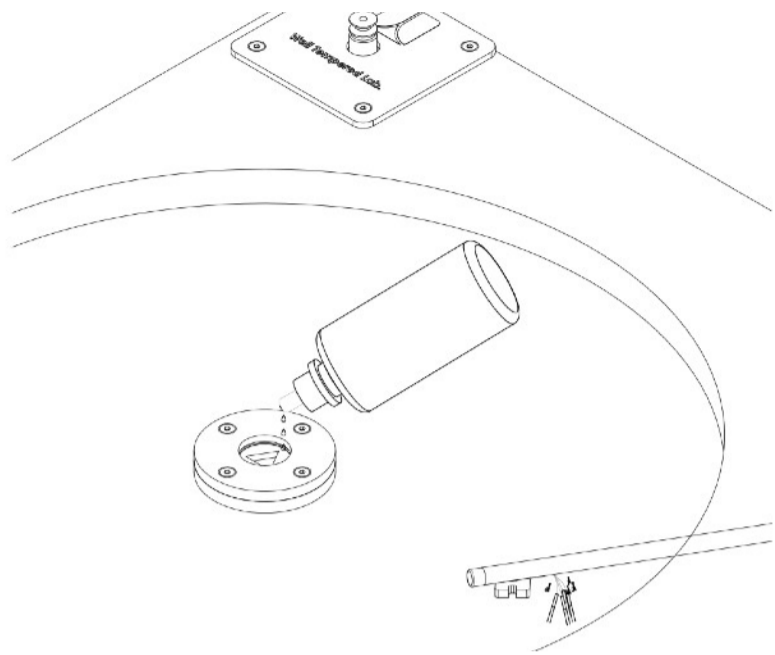


Fig (2)

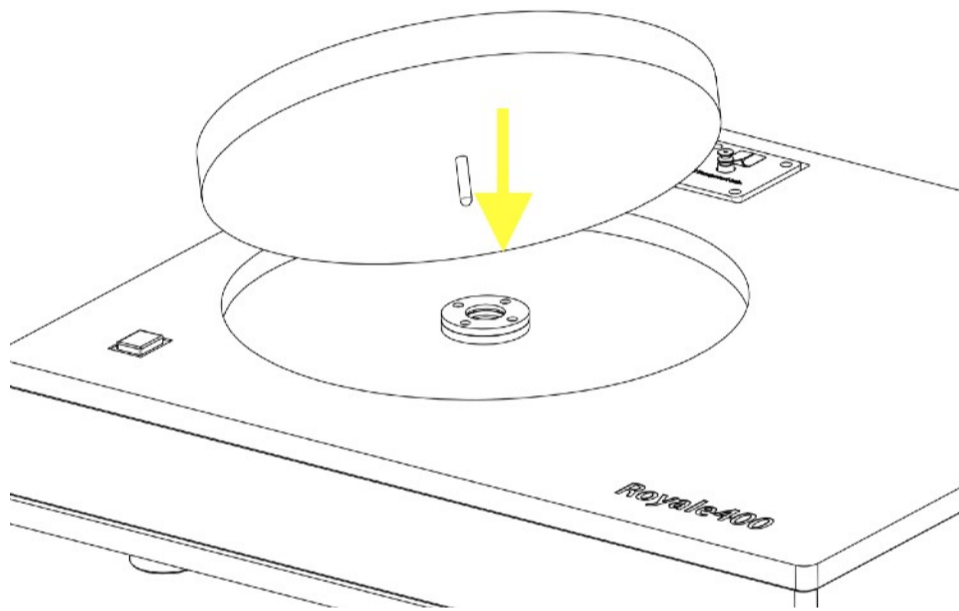


Fig (3)

Installing the Belt

Start with the belt around the motor pulley, take care the other end clears the centre spindle and rotate the platter, the belt will track around the platter. See Fig (4). Well Tempered Lab belts if dropped are easily misplaced, we give you two but suggest you place the belt on something dark to make it easily seen.

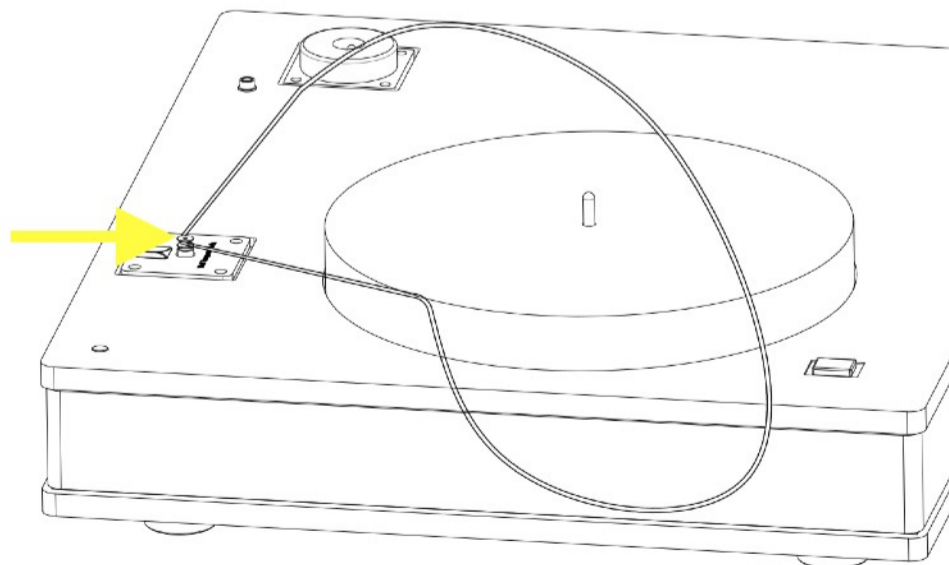


Fig (4)

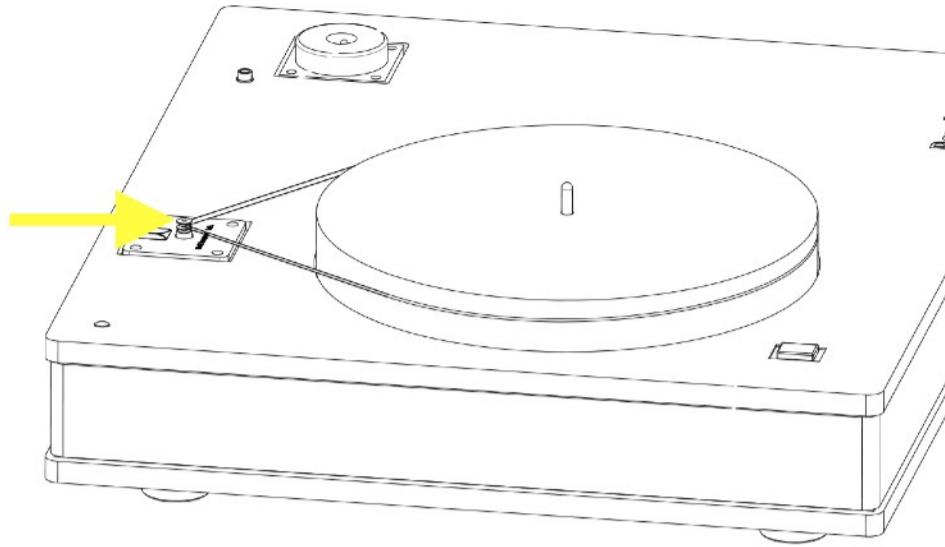


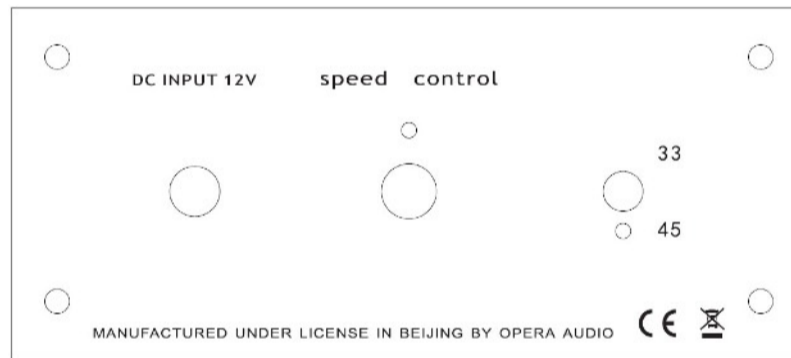
Fig (5)

Rear controls

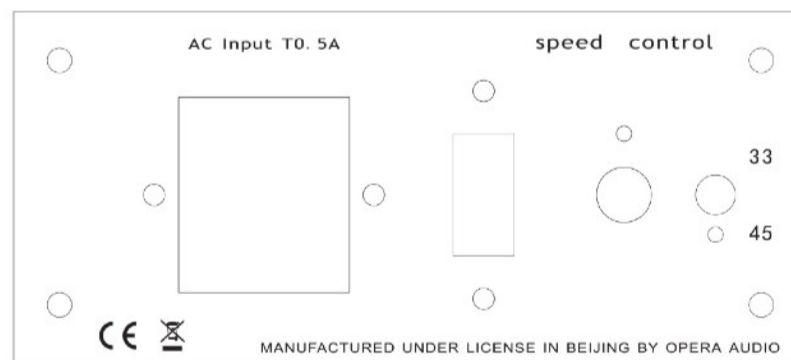
The Royale 400 features electronic speed control. Although factory set, it can be adjusted by using the necessary strobe equipment by rotating the knob to adjust to the required speed.

The Royale 400 also features a 33 1/3 RPM to 45 RPM switch function which is operated when the belt is on the 33 1/3 position on the stepped motor pulley.

Note: Some early versions of Royale 400 were 120/240VAC. Current models are 12VDC.



12VDC



120/240VAC

Fig (6)

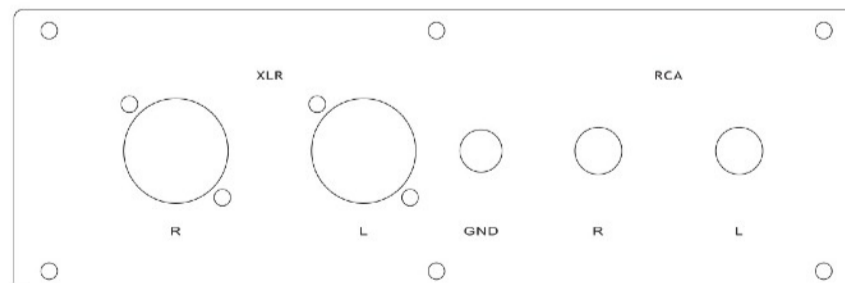
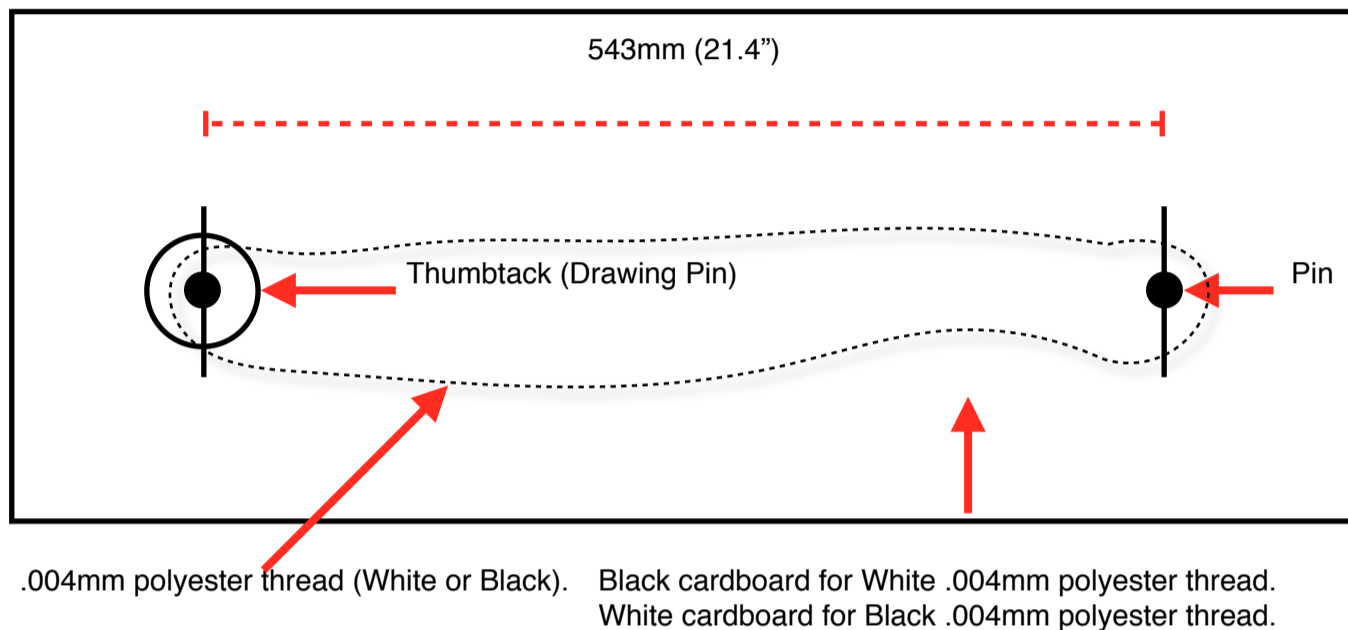


Fig (7)

Making a Belt

Loop a long length of .004mm polyester thread around the thumbtack. Tie a simple double overhand knot around the pin. Remove the pin and tighten the knot. Cut off excess leaving 10mm (minimum) tails.



Troubleshooting

1. In the unlikely event that you wish to remove the Royale 400 tonearm, the golf ball can be lifted clear of the fluid, and left to drain. Surplus fluids may then be wiped from the golf ball with a paper towel.

2. Rubbing alcohol of 70% or above proof will remove all traces of fluid. All paper towels must be immediately discarded in a suitable receptacle. We also have it on good authority that Vodka of the highest proof can be pressed into service if rubbing alcohol is unavailable. Our chief designer also uses Ronsonol brand cigarette lighter fluid with excellent results. This is also known in some countries as white spirits or white gas. We suggest you first try cleaning fluid with caution and on the underside of the plinth. The Well Tempered Lab can bear no responsibility for damage caused by cleaning fluid.

3. Well Tempered Lab belts are easily lost. We recommend placing or hanging on a dark background, when not on the turntable.

4. For cartridges without threaded fixing holes we find it most convenient to attach the cartridge to the head shell in the slot closest to the platter. The other screw with the optional finger lift attached can then be passed through the head shell and remaining cartridge hole. A small "popsicle" stick or similar with a piece of double backed sticky tape on the end is invaluable. Just place the remaining cartridge nut on the tape at the end of the stick under the protruding screw and tighten.

Note: Some cartridges may necessitate the shortening of the Nylon bridle that suspends the Golf Ball. This can easily be achieved by the removal of one of the small plastic tubes that the Nylon passes through. Removal of this tube will allow excess nylon to be pulled through the tube when the correct height is obtained the tube can be re-inserted and the excess Nylon removed with a sharp craft knife. See Fig (7).

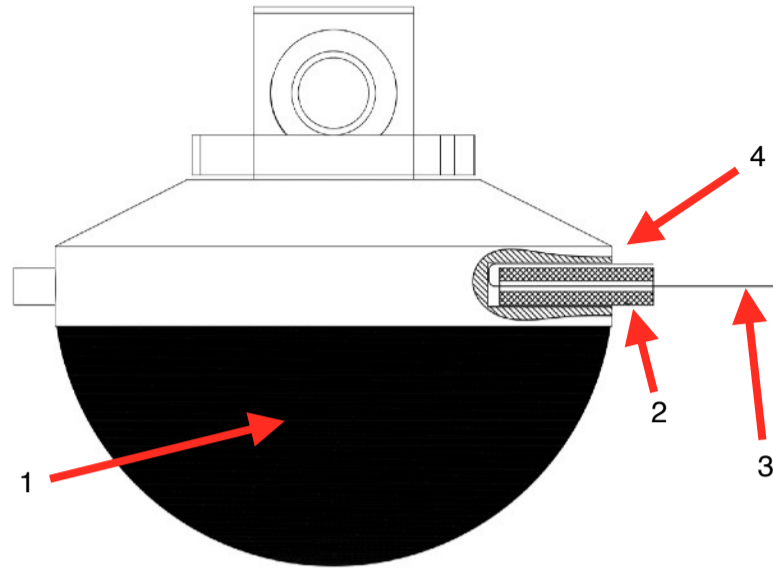


Fig (8)

1. Golf Ball
2. Tube
3. Nylon
4. Trim excess

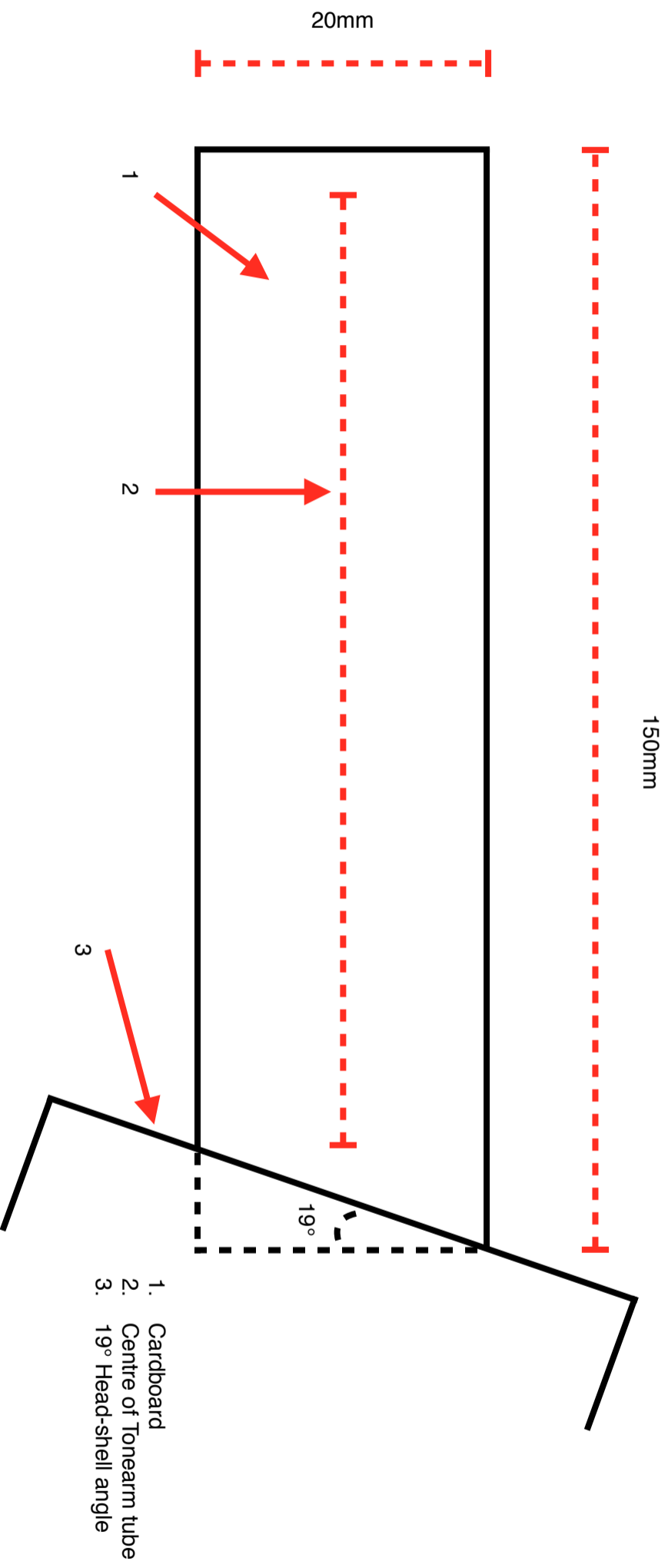
5. The Royale 400 motor has bearing tolerances that cause it to be noisy without the load of the belt and platter. It is sometimes possible during transit for the motor to shift within the isolating rubber mounting and vibrate against the motor mounting cover. This is easily remedied by gently moving the motor clear of the mounting cover plate.

6. If the platter rotates abnormally, please refer to page 3 "Installing the Platter" to centre the spindle.

7. **Important:** For optimum performance Well Tempered turntables require to operate on a flat and level surface.

8. When moving or shipping the turntable, we recommend the removal of the platter from the bearing assembly. Care must be taken as there will be a small amount of oil residue on the spindle. Care must also be taken to ensure the turntable remains level at all times to avoid spillage of fluids.

Head-shell Alignment Guide for Well Tempered Lab Turntables



Note: The Head-shell is factory fixed in position. Well Tempered Lab unequivocally reiterate that it should not be moved.

Heavy handed mounting of the cartridge may result in moving the head shell. In which case place the above guide with centre line parallel to tone arm tube and align head shell to 19° angle.

It will be necessary to gently but firmly retighten the small screw fixing the head-shell to the tonearm. **Do not over-tighten this screw.**

Specifications

- Platter
Acrylic Matte Black finish
- Platter mat
Anti-static Foam
- Plinth
Multi-layer plywood central layer with Anodised aluminium top/bottom layers and adjustable custom made isolation feet.
- Motor
Servo Controlled 12VDC completely decoupled from plinth.
- Voltage
The Royale 400 is shipped with the voltage for your country.
- Drive
.004mm Polyester thread
- Tonearm
Arm tube: 16" Aluminium arm tube with internal damping Symmetrex configuration
Azimuth Adjustment: Stainless steel collar
Suspension: Polyester thread providing anti-skate
Damping: Silicone fluid 100,000 cSt viscosity
- Dimensions (H x W x D)
250 x 635 x 555 mm, 470 x 845 x 765 mm (Shipping)
- Weight
50 kg, 62 kg (Shipping)

Warranty & Service

Valid on completion of warranty card and confirmed date of purchase. Details can be registered at www.welltemperedlab.net/welltemperedlab/contact/ or mailed to: Well Tempered Lab, P.O. Box 2650, Christchurch, New Zealand.

This Well Tempered Lab product is warranted against defects in material and workmanship for one year from date of purchase.

This warranty does not cover normal wear and tear and is void if the Well Tempered product has been subject to mis-use, accident or negligence or if it has been tampered with or modified in anyway. Spillage of any fluids supplied by the Well Tempered Lab is not covered within the scope of this warranty.

Warranty is restricted to the territory in which the product was purchased. Our distributors and dealers are under contractual obligation to service under warranty products only sold through them. They are entitled to make a non refundable charge for service to products purchased outside the territory if required.

Claims Under This Warranty

The product should be returned to the dealer or nearest Well Tempered distributor, complete with warranty card and confirmed date of purchase. **Note:** special care is required with the fluids and the Well Tempered Lab and its agents can bear no responsibility for spillage or damage caused by incorrect handling and packaging of the fluids.

The European Waste Electrical and Electronic Directive

This product can be recycled. Products bearing this symbol must NOT be thrown away with normal household waste. At the end of the product's life, take it to a collection point designated for recycling of electrical and electronic devices. Find out more about return and collection points through your local authority.

The European Waste Electrical and Electronic (WEEE) Directive was implemented to dramatically reduce the amount of waste going to landfills, there by reducing the environmental impact on the planet and on human health. Please act responsibly by recycling used products. If this product is still useable, consider giving it away or selling it.



Well Tempered Lab

Registration Card

Name	_____
Address	_____ _____ _____
City	_____
State	Post Code (Zip) _____
Country	_____
Phone	Email _____
Model	Serial No. _____
Dealer	_____
	Date of Purchase _____