

DIY TURNTABLE PROJECT

By Nandor Szabo



Disclaimer

This project was done by a very talented diyer in Hungary. His English is far better than my Hungarian and I agreed to assist in presenting his work for him. I had no part in the project and am only like an editor. *Bruce Heran*

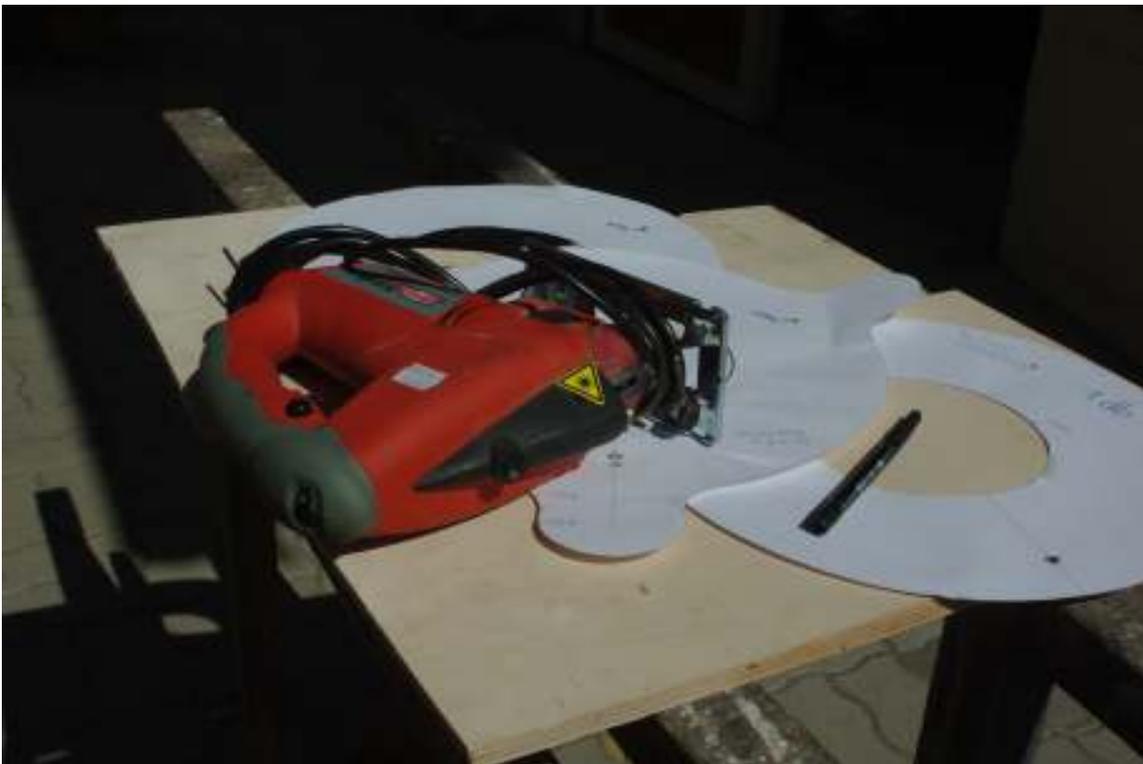
The project started out as a need for a turntable. Nandor acquired a Dual 701 direct drive turntable as the starting point for the project. He needed to make a base and tone arm for it. The general sequence is covered by the photographs that follow.

The choice of the Dual 701 is a good one as the motor is a DC servo controlled one that is known as a direct drive type. This means the motor is actually part of the rotating assembly. This is unlike both idler wheel and belt drive types. The discussion of the relative merits of each type is up to the end user and will not be part of this project. The advantage though in using the Dual 701 is that it is a rather vibration and noise free assembly and can be directly mounted to the same board as the tone arm. This is in fact how the original turntables are constructed. This simplifies the process considerably. The tone arm was built from local materials with the assistance of a local machine shop. It was constructed from the drawings in the patent (only the first page is attached) by Schroder for a String Suspension Magnetically Stabilized Pick Up Arm. The type of arm is unlike most arms in that there are no fixed pivot points or bearings. The tone arm

tube, cartridge and counterweights are suspended on a mono filament thread and supported by high strength magnets. The goal of this design is low friction.



The first photo shows the templates used to cut the plywood sections for the finished base.



Additional photo of the templates and a section of the plywood.



Source of the idea to use plywood laminations to build a turntable base



Additional photo showing how the concept base was constructed



Drilling holes to secure the laminations together



One of three bolts that secure the laminations



Another view of the bolts – three at approximately equal spacing. These bolts were used to hold the laminations together for sanding. The photo is after the sanding was done and laminations were stained.



The type of sander used to smooth the cut out laminations



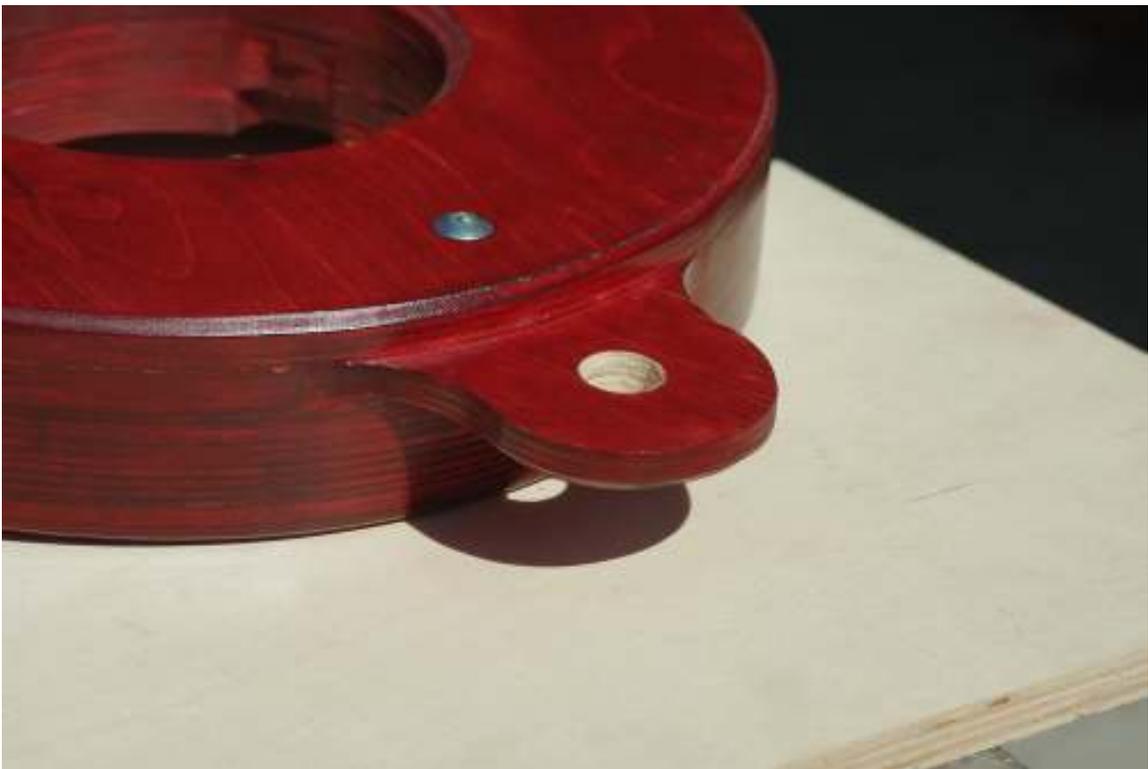
Adhesive used to hold the finished laminations together after being sanded. Staining was actually accomplished after this step.



Method for making the circular slot for the mounting feet



How the center hole for the mounting feet adjusting parts was made



A bottom view of the mounting foot support (holes and slot are on the otherside)



Photo of an adjustable mounting foot



Photo of the sleeve for a mounting foot



Mounting foot sleeve shown attached to the top surface of the support



Source of the mounting feet supports – a cosmetic tube cut to size



“O” ring before being placed in the slot



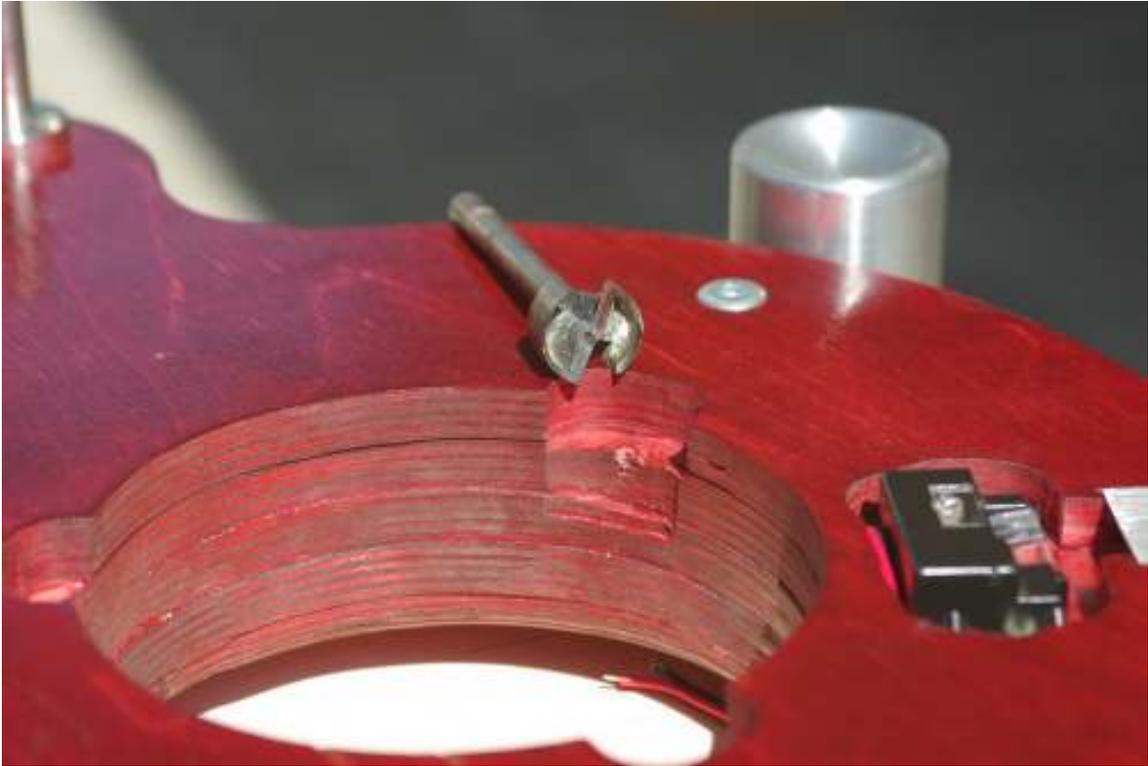
“O” ring in place in the slot



Mounting foot inserted in the support sleeve



Cover in place over the support sleeve assembly



How the motor mount holes were made. The strobe/speed indicator is on the right.



The Dual 701 motor assembly. Control circuitry is contained in the base of the motor.



Bottom view of the Dual 701 platter. Note the strobe marks that are used with the speed/strobe assembly to indicate and verify the speed.



Completed base



Detail for the speed/strobe indicator placement.



Source of the center weight to hold records securely on the platter (a door stop)



The door stop disassembled



Finished weight



Completed and assembled turntable (less the tone arm)



Photo showing rear area of the tone arm



Cartridge mounting detail



Photo of the rear of the tone arm



Side view of the tone arm and mount detail. Note the air gap between the arm and base



Top view of turntable with arm installed and leveling (bubble) indicator



The final product - turntable and tone arm

The project took several months to complete. Three months were spent on the tone arm alone. As noted in the beginning of the article the choice of the motor assembly was key to success in this project. The motor is quiet, vibration free and fully adjustable for speed. Other motor assemblies may work but it is likely that most will require some sort of isolation to keep noise and vibration levels low. The tone arm is a potentially a very difficult part of the project. It requires precision machining of parts and for many diyers it might be better to acquire a premium arm already assembled.



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(12) **United States Patent**
Schröder

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(45) **Date of Patent:** Aug. 1, 2006

(54) **SPRING-SUSPENSION MAGNETICALLY STABILIZED PICK-UP ARM**

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(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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G1B 7/085 (2006.01)

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(58) **Field of Classification Search** 720/683,
720/672; 369/255, 231, 247.1, 244.1, 246
See application file for complete search history.

(56) **References Cited**

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(57) **ABSTRACT**

The invention relates to a pick-up arm system for the reproduction or replay of records comprising a pick-up arm chassis and a pick-up arm tube. The torsion element suspension of the pick-up arm is axially stabilized by means of cylindrical permanent magnets which are arranged in a vertical direction and have opposite polarities, said elements forming a rotating bearing or a pivot. According to the invention, the torsion element runs in a congruent manner with respect to the vertical axis of rotation through the horizontal point of rotation of the receiving element for the tube of the pick-up arm. The lower part of the torsion element is connected to a permanent magnet which is connected to the receiving element for the pick-up arm or tube and the upper part of the torsion element is fixated attached to the upper chassis of the pick-up arm. A second permanent magnet or otherwise attached of opposite polarity is fixated in the lower chassis of the pick-up arm in a perpendicular position below said permanent magnet.

24 Claims, 3 Drawing Sheets

