

LOVE IS IN THE AIR

# BERGMANN GALDER

I have known this Danish turntable since 3 years ago at an analog audio shop (called Suan Siang) here in Bangkok. The model that imported was Magne. I impressed so much about this turntable. It looked great, clean, cool, modernize and hi technology. The highlight features of this brand is air bearing technology. It have air bearing at platter, linear air bearing tonearm. We ever found this feature in only super hi-end turntable such as Walker audio, Micro Seiki RX5000, 8000 or Tech Das air force series. But Bergmann, the Magne, is the air bearing turntable at affordable price for vinyl fanatics. It also have a very smart and modern looking which is match with the philosophy of the company : Less is more.

The “less is more” concept of Bergmann, in my opinion, is to design of air bearing technology. They make the complicated mechanism to be simplicity and user-friendly. In fact I intended to review the Magne but there was an accident in some parts . The Galder , which was just arrived at the show room (Soundbox Thailand), was there and ready for me to test. So I decided to asked for review this cuties instead and it came to my listening room on the next weekend. I feel very lucky to got Galder for review, may be the very first full review of Galder in the world.

## Galder turntable

Bergmann named their products according to the Nordics myth. The Galder mean the chant or magic that could call the wind of storm. The dimension of Galder look quite different from other models of Bergmann. Galder look much more “square” than other previous models (Magne , Sindre). The size and dimension in depth and width look much more square and feel more suitable to the modern hifi shelves. The most important thing about the physical property of Galder is the weight. It is a very heavy turntable (38 kg) and you need at least 2 persons to lift it up and installed to the rack or shelf.

Lets explor the Galder from the bottom up. The feet and weight bearing of turntable is supported with the contact points of ceramic ball. So the contact points is minimized and help reduce the vibration from the floor to the system. There is a ring with a small hole that you can adjust the height of the 3 feets to make the plinth absolutely level.



As other kind of turntable , the absolute level of the plinth is the must in setting up process. The plinth of Galder is made of solid , heavy aluminum . Galder look diffent from othe models in the plinth is divided in 2 parts , the platter on the left and the motor housing plus controller on the right side. The benefit is the driving motor is separated from the plinth which make the the vibration from the motor less and less. Motor and pulley was intstall on the right side and fixed to the upper plinth. The lower plinth , which is supported both platter and motor , did not make any contact with the motor. This is the smart way that Bergmann design on Galder to make minimum vibration from the motor to platter . The controller buttons are on the right side. The lower “big” buttons is activation of speed 33 or 45 rpm. The upper “smaller” buttons are for speed fine tuning. The special feature of Galder that not found in other models is it could installed more tonearms (up to 3) on the plinth. It have 3 screw pods that could open and fitted with customized armboard adaptors.





The main platter bearing is inverted type but did not have any ball or sapphire bearing ball as other turntables because this is air bearing platter, no physical contact on the end of bearing shaft. Bergmann recommend to lubricate small amount of lubricant at the bearing shaft is enough. The critical thing about this setup process is we have to clean the plinth and the lower surface of the platter, any residues would make noise or interfere with the platter spinning. We have to intermittently clean the oil residue to make sure that platter would run smooth and air film work fine.



The heavy main platter also made from sold aluminum weight 11.8 kg. It is not easy to lift and put it in the platter position on the plinth so the manufacturer do a 2 screws for lifting the platter and put in proper place. Other components are the black acrylic mat and disc clamp. I do recommend to use Bergmann clamp than other heavy clamp that would compromise the air bearing film underneath. The vacuum hold down mechanism is an option but I don't know how much do we have to paid for.



Another important part is this huge black box 15 kg. This is the air supply for both platter and linear tonearm plus the electrical supply for motor. The white cylinder is air filter and there is another pod for vacuum hold down pump. The pump is very silent. I put it just next to my listening chair without any interference noise from it.



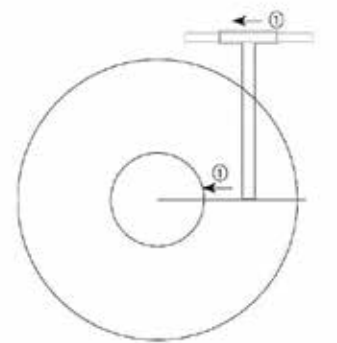
The rear side of Galder, from the right, is the input of air flow and also the port to supply the Odin arm. We can adjust flow to the platter and arm with a small screw via the 2 pods. Insufficient flow cause linear arm and platter spinning problems but too much flow will make noise.



Rear side on the left is the power controller and motor supply connection. There are 3 position of power button. Upper position will automatic switch system off in 3 hours. Mid position will "always on" and the lower position will power off within 30 minutes. The air supply will auto shut down in 2 minutes after platter stopped and will be activated again by pushing on any speed buttons.

### Odin tone arm

This is the new model of Bergmann air bearing tonearm. It differ from other models that have 2 pillars to support the air pipe. The arm tube material made from aluminum with damping material to reduce resonance. Effective arm mass is 14 gram. We could adjust all cartridge setup parameter on this arm except antiskating (which don't have that force in linear arm system).



The practical points in air-bearing linear arm setup are ....

1. Cartridge to use. Lower weight cartridges are more suitable for air bearing arm than heavy cart. In order to make sure that the arm tube would run smoothly from the outer to inner-most of the record groove, the light-weight moving component



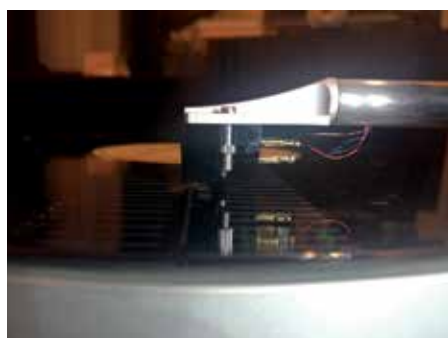
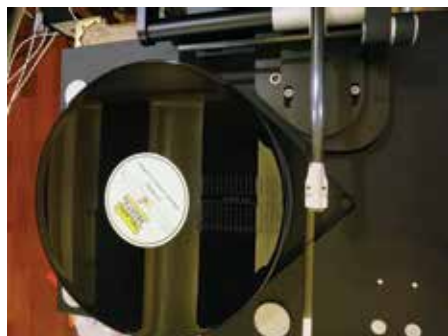
(arm tube plus cart weight) would be better than heavy one. From my experience , my recommendation for cartridge weight should not more than 10 gram.

2. the Tracking force setup. I use the upper limit of the recommended VTF (Zyx R100 : 1.9 gram , Benz micro SL wood 1.85 gm , EMT TSD15-N 2.4 gm).

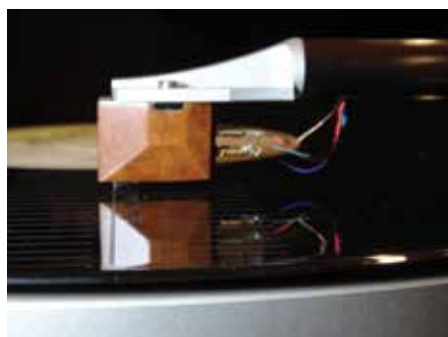
3. Zero offset angle . There are no offset angle for linear arm system . The cartridge (and cantilever) have to run parallel to the record groove. We have to align the cantilever (also the cartridge body) perpendicular to the straight line from spindle to the motor.

4. Zero overhang. In pivot arm system we have to setup the overhang according to arm specification but in linear arm it has to be zero. Cartridge stylus have to adhere the spindle-motor straight line from outer to inner most distance. I use the Telarc Omnidisc side A for linear arm setup.

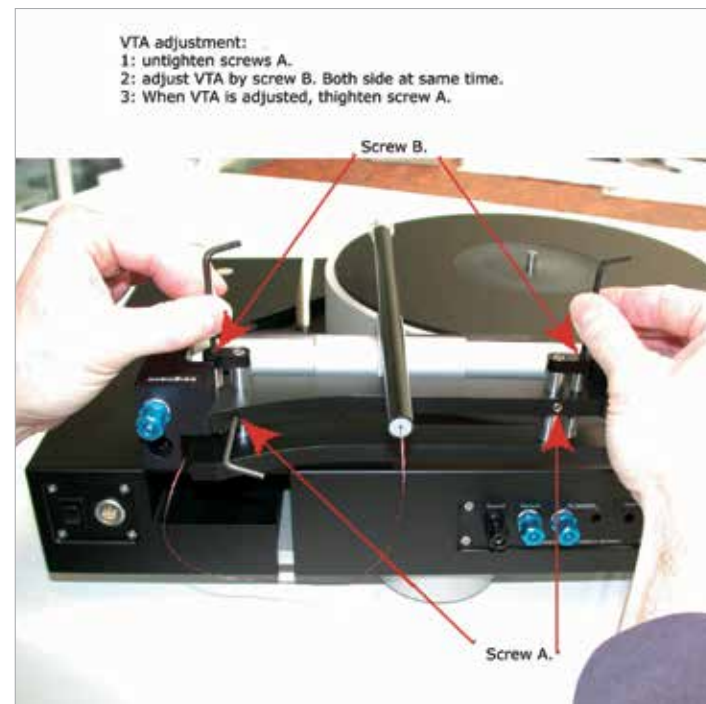
5. VTA , Azimuth adjustment . We could finely adjust the arm height by rotate the hex screw pod as shown in picture below.



slightly deficit stylus distance.



perfectly zero overhang alignment.



Firstly we have to loosen the screws A and use another size of hex screw to adjust the arm height both end at screw position B.



loosen the screw A.



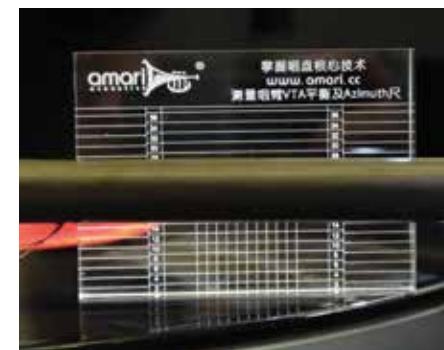
raise of lower the arm at screw B.

According to the independent height adjustment of the air pipe pillar , we could ....

- Adjust the VTA if we raise or lower the height in the same distance.
- Adjust the air pipe to tilt toward or away from the spindle center.
- In case of more the different height level both side , the azimuth would changed.

In the ideal condition , we should adjust the level of air pipe to be parallel to the platter as much as possible. Someone use the small spirit level to check but it is very crude in my opinion. The best way is we have to set the arm tube to be "zero tracking force" or balance the arm tube first , then adjust the pillar height both side to make the arm tube float in the center (not sway toward or away from the neutral position).

There is also some great tool to check the arm tube . I borrow Amari guage from my close friend to check the VTA and azimuth of cartridge set-up. Here are some pictures :-



A little bit lower the VTA position from nominal .



Azimuth checking , seems that we have to raise the left side pillar a little bit.

#### On test

Please accept my apologize for quite long introduction and setup process. I think we should pay more attention in setup process in hi end turntable to get best result. The associated equipments that I use for audition were :

- MC cartridges : Zyx R100 , Benz micro SL wood , EMT TSD15-N
- EMT 930 ST with TSD 15 SFL cartridge for comparison.
- Western electric 618B , P&C 618B step-up transformer
- Keen audio phono II phono stage (a master piece of the DIY guru of Thai audiophile)
- Line pre amp interstage with RE084 Telefunken tubes (Keen audio) , Luxman A3500 power amplifier
- WE 16 A horn system (4 way configuration with Goto and YL acoustics compression drivers)

The setup process is the same as other turntables, leveling is the must from ground to top. The ceramic feet help minimize contact points and reduce vibration from the floor up to system. We could adjust the level by using small stick to rotate the ring of all 3 feet to level the plinth.



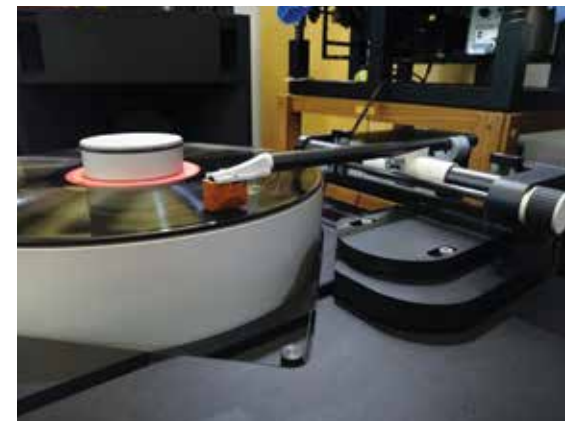
After level the plinth, we install small amount of lubricant at bearing shaft and put the main platter on. Bergmann recommend to use 2 screws to lift the heavy platter and removed it after everything in place. Be sure that the contact surface of lower platter and plinth are cleaned and no residual particles underneath.



The most critical setup process is cartridge-arm alignment. I started with, light weight 5 gram, Zyx R100 low MC which beould suitable with linear air bearing arm. I just made some crude setup to check the overall sound of the system

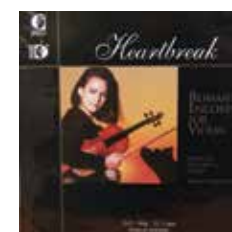
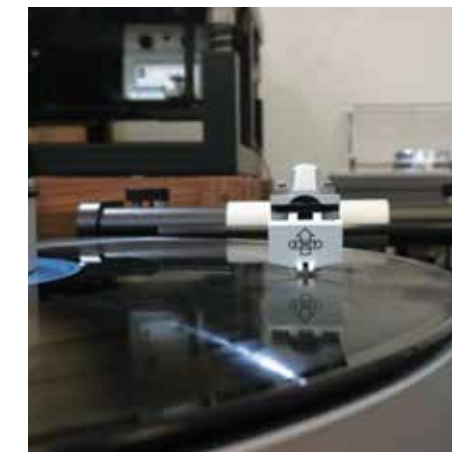
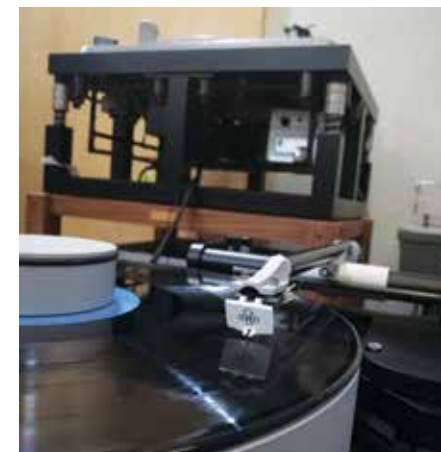
first, then will focus in each setup detail. With the tracking force at 1.9 gram, Zyx could track all from outermost to innermost groove without skip or distortion. I could not achieve the "zero overhang" even I sliding the arm base toward centerline. There still be about 1-2 mm gap to reach the reference zero overhang line. By the way, the overall sound from Zyx is warm, relax, smooth with detail. Because Zyx did not met my setup requirement, I changed to another cartridge.

The second cartridge that I tested was Benz micro SL wood, weight 9 gram with VTF 1.85 gram. There was no problem in setting the tracking force. Odin counterweight could handle the 9 gram cart with 1.85 gm tracking force. But at this time, my Benz micro got skip tracking error from the middle to inner portion of the record groove. I have checked all setup parameter and now find the reason. The damping cantilever of my Benz micro seems to worn due to aged (5 years running). The cantilever was deviation to the left when I dropped on record surface (while the body was absolutely parallel to the arm tube and headshell). I thought that problems came from aged and long standing used with the pivot tonearm. Then I looked for another cartridge in my stock to test Galder.



I had another sealed cartridge in my cabinet, EMT TSD 15-N. It is ideal for me to test Galder+Odin because very light in weight, great sound and I could compare the sound of Galder with my EMT 930 ST (plus original metal frame and inverter power supply: DU937). And finally I used this emt cart to test Galder for 2 weeks.

In order to show the full potential of Galder+Odin, I do setup-to-die-for process of my naked emt cart with Odin arm. The result is very impressive to me. I do convert the analog signals from phono stage to do direct 1:1 cd recording with my Tascam CD RW 901 mk2 and then extracted the wav file to share with you. You could download and listen to the sound of emt cart plus Galder and may compare with the sound of your analog setup if you have the same vinyl LP with me. Here is the download link of my 14 tracks here: <https://drive.google.com/open?id=0Bx-ouBUA6uiSpOGJ3bjN4eDhNaVk>



The first thing that I evaluated the turntable is the mid range frequency. I use this album of Ellisa Lee Koljonen: Heartbreak from Dorian records. She did wonderful recording here virtuoso violin solo (accompany with piano) on famous classical showpieces. You can feel she standing quite up front and the pianist play behind her. You could hear and follow the midrange tone of her violin and continue to the very high frequency note. The music and sound is uncompressed, open, full and bold. You could easily hear the harmonic of the lower piano key on the last note of Nocturne in C sharp minor.



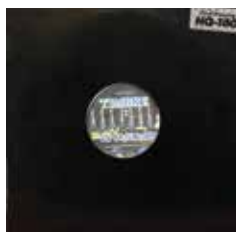
The second LP that I choose to test is "the Dali LP". A very carefully selected songs from Danish speakers company. I do recommend this album to my friends because of very good in sonic and music. Siciliano in G minor by Jacques Loussier trio is a very useful track to test the analog playback system. On Galder you could hear every deep acoustic bass note. All the frequency spectrum from hi hat to double bass string presented in front of me. I could easily hear the recording hall ambient in the far back of my listening room. In the track 2 side B, Misa Criolla, is definitely the best demonstration track. Galder show me deep, clean bass drum at starting with decay to the back make me thrill. Three dimensional soundfield come to my room!



For the vocal presentation I choose this great album: Ray Charles and Betty Carter (Analogue Production AAPP385). On side B track 1 "Baby, it's cold outside", the voice of Ray and Betty was so real. You could easily detect how he breath, the voice from his throat, air flow from her lips. Sound stage extended from Ray Charles at far left to Betty at far right. Galder made me really enjoy and much more deep in music of Ray Charles.



So many vinyl LPs more than shown in pictures above. One of my rare and favorite vinyl is "Timbre" from Treasure Island Sound (a small audiophile vinyl company from Hong Kong). The last track of side B represent the introduction of the history of violin that they recorded to this album. I used this track to check the vocal presentation of playback system. Galder showed me well defined, focus, full of the voice plus demonstration of Strad violin. You could hear from the track 14 of my downloaded files on my google drive.



On the end of my test, I invited my senior editor and the Bergmann importer (Soundbox Thailand) for audition his Galder and comment. I think it would be great that the importer could hear how we test their products by themselves. We tested, critical listening the sound between Galder and my reference deck – EMT930. Both deck sound great. The rhythm, pace of music and tonal balance quite the same (with the same cartridge – emt tsd15) but Galder shown us more detail in both upper and lower frequency (on Hank Mobley – Soul Station LP). Another superiority of Galder was a deadly silence background. Very quiet and low noise floor. That is from a very well air bearing design.

#### In summary

I enjoyed my life and music with Galder turntable for almost a month. It is a very well engineer turntable. Solid, fresh, big and bold sound. Could it be an ideal turntable?

The strength points of Bergmann Galder are:

- Very modern design, clean, smart, high score WAF (wife acceptance factor).
- Solid construction. High precision machine.
- Steady, reliable, quietness air pumping system.
- Ease to setup with very good sound.

#### The downside and limitation of my test are:

- High price. The turntable plus arm cost us about 33,000 us dollar. But if we compare with the competitors that have same features (air bearing arm and platter), Galder may be the cheapest deck in this group.
- Cartridges that I use for test. We should try it with other various weight of cartridges around 8-10 gram weight. The importer said he got a very good result with some Decca/London cartridges.
- The cosmetic of the arm. I hope Bergmann would launch the carbon fiber arm tube for Odin. Another feature that I request is Digital read-out meter for VTA adjustment.