INSTRUCTION MANUAL

KUZMA XL AIR KIT for STABI XL DC Turntable

S/N:…….....

Air pressure:.....

2019-10

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1.0.0.0. GENERAL:

1.1.0.0. PRODUCT REGISTRATION AND WARRANTY:
Kuzma products have a non transferable 2 year limited warranty on parts and labour.

1.2.0.0. TECHNICAL DATA:

Mass (total w/o PS and compressor) :	120 kg
Bronze platter- lower	22 kg
Air pressure	4 bars
Dimension-compressor:	180x410x430 mm
Compressor mass:	20 kg
Mains:	110V or 240 V, 50/60Hz (factory set)

1.3.0.0. SAFTEY PRECAUTIONS:
Electrical connection to the compressor from the mains comes via supplied cable. Please keep compressor away from moisture and be careful not to damage the mains cable. Keep it dry in a ventilated place above freezing temperatures. See page 6.

1.4.0.0. PACKING:
Be aware that the box is very heavy and that the centre of gravity might not be in the middle of the box. Inside are cutouts in the packaging blocks of firm foam for various parts of the kit. Some parts are very heavy, so handle with care while lifting from the boxes and placing them on the assembly surface.

BOX :
2 pcs internal boxes A+B
1 set Double PVC bottles
1 set Silver filters with stands
Box A:
Bronze platter, base with air bearing, brass tonearm tower plate, Allen key 6 mm, 2 sets of 4 mm black tubes (21+ 4 m), 1 pvc bottle of isopropyl alcohol.
Box B:
Compressor, oil, air intake filter, compressor manual

Fig. 1. XL AIR kit parts without compressor and silver filters

2.0.0.0. DESCRIPTION:

The XL Air turntable uses an air bearing instead of a coventional bearing which allows improvement of two important parameters in turntable design. Air bearings have almost zero friction and thus no vibration in the bearing itself, so no noise reaches the cartridge. The second advantage of a properly designed air bearing (not simply floating on an air cushion) is a higher load. Adding an additional 22 kg bronze platter increases the rotational mass of both platters to 44 kg, making it more immune to cartridge drag which slows down any platter regardless of mass and drive.
Conversion into an XL AIR version is simple but requires some technical skill. Using a high pressure air supply (4 bars) requires you to follow the instruction manual until you become familiar with what is required.
The air bearing actually consists of two bearing surfaces. The top surface carries the vertical load while the cylindrical hole carries the horiontal load. The air bearing surfaces are made from porous carbon which has milions of small holes to let air pressure out. This creates more uniform pressure inside the bearing's gap thus making the air bearing stiffer with zero movements.

2.1.0.0. MODIFICATION:

This can only be done on an XL DC turntable. If you have XL, XL2 or XL4 version you would need first to covert your turntable into XL DC version(AC motors in older versions will just not be able to rotate such a heavy mass turntable).
The upper part of the base is replaced with a new upper base which holds the air bearing. The new subplatter with the air bearing shaft will support both platters.
The bronze platter (22 kg) fits on the new subplatter and supports the existing platter. The mat height is now 40 mm above the supporting shelf. For this reason the tonearm tower also needs to be raised with an additional tower support brass plate. Fig.1.
An air compressor supplies air pressure flow to the air bearing base.

2.2.0.0. AIR PRESSURE SUPPLY:
This consists of the compressor, silver filters and tubes.

2.2.1.0. Air pressure line
NOTE: The air supply line is under high pressure 4-8 bar so do not disassemble any parts under pressure. Turn off the compressor and release pressure from the air supply line.

Pressurised air flow comes from the compressor via the black PVC tube to the silver filters. From the silver filters the air flow goes via a black PVC tube to the base with the air bearing (turntable). The air bearing requires clean air to function properly. Air contains dust particles, water and oil moisture and these are removed using filters along the air supply line.

2.2.2.0. Compressor
This creates pressurised air flow (up to 8 bars). Position the compressor in a suitable place with its own mains outlet. It generates heat and requires natural ventilation to cool down.
The compressor has 3 filters built in. The first filter is an air inlet to filter dust, the second filter is below the pressure regulator and the third filter collects condensation from the compressor's reservoir. The compressor's automatic system removes all this debris via three tubes into double PVC bottles. Fig. 7.

2.2.3.0. Silver filters
These filters remove the final fine dust and moisture from the air flow just prior to the air bearing.Fig.6&11..

3.0.0.0. STABI XL DC MODIFICATION:

3.1.0.0. AIR BEARING BASE FITTING:

NOTE: Some parts are very heavy, so be careful when handling!
NOTE: Choose a suitable supporting table which can hold over 120 kg kg without warping. If you are using more than one tonearm tower be sure that the support can handle the extra mass.
NOTE: While the parts are packed in plastic bags for protection, these are not intended to be strong enough to lift or carry the contents.

3.1.1.0. Removing parts:

Remove tonearm tower and protect your cartridge. Remove platter, belt, subplatter and motor tower. Clean all the oil around the shaft area. Mark current base and motor tower position. Fig. 2. See XL DC manual for details.

3.1.2.0. Replacing the upper base with the air bearing base:

Four screws underneath hold together the upper and lower base. Carefully position the base slightly over the edge of table to expose one screw at a time. Release all 4 screws using Allen key 6 mm. Then remove one screw at a time. Remove the upper base with ruby shaft from the lower base. Fig. 5.

Fig. 2. Base with ruby shaft

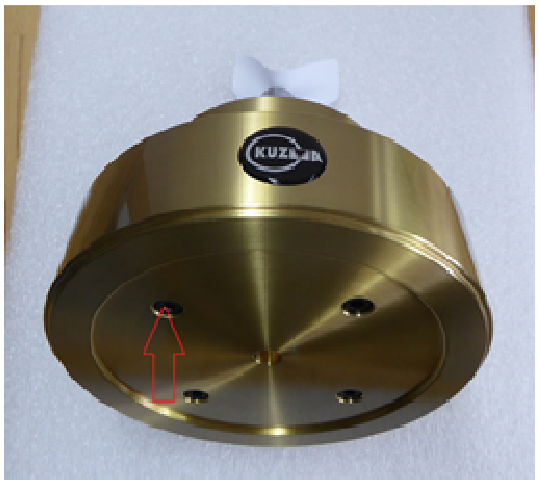

Fig. 3. Base –underneath are 4 screws

Locate the new upper base with air bearing (Fig. 4.) and position it over the lower base (Fig. 5.). See that the air indicator is in the front position. Insert one screw at a time and fix them gently. Only after you fit all 4 screws secure them firmly.

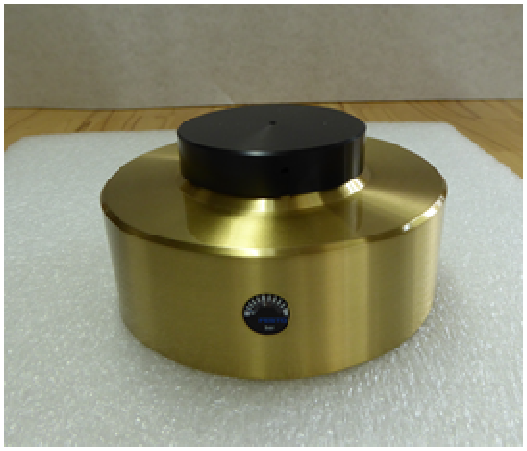

Fig. 4. Upper base- air bearing covered

Fig. 5. Complete base over the table edge

3.1.3.0. Base with fitted air bearing
Position base back in the same position as was before.

Fig. 6. Base with air bearing-for now ignore silver filters

NOTE: Before you proceed further with motor tower or platters you need to set up the air supply first!

4.0.0.0. AIR SUPPLY SET UP:

4.1.0.0. COMPRESSOR:

NOTE: Do not tilt compressor with oil inside!
NOTE: Do not switch on the compressor before filling with oil and connecting the air intake filter. Also ensure that all air supply tubes are connected.
NOTE: The compressor has a safety valve and overheating protection!
NOTE: Do not position it in a small non ventilated space!
NOTE: The compressor is factory set up to a max pressure of 8 bar (120 psi) higher than quoted in the Compressor Instruction Manual. (See label at the side of the cover!)

NOTE: Everything is set and checked by Kuzma Ltd. The only item to be added is **compressor's oil** and **air intake filter.** If the compressor is in an upright position, it can be moved safely.

Open the box and lift up the compressor by the handle. It is a heavy item. Remove the plastic bag. Inside the box is the instruction manual for the compressor (no need to check it), a bottle with oil, and double PVC drain bottles. In a small bag inside the compressor housing are the air intake filter and PVC nozzle with tube for pouring oil into the compressor. Remove the two pieces of cardboard wedged between compressor head and housing. Fig. 7.
The compressor should not be transported with oil inside unless you can guarantee that it will be in a vertical position at all times.
Position the compressor on a hard surface with plenty of air for ventilation! Do not position it in a closed space, in direct sun or in temperatures below freezing. The compressor must be connected to the mains voltage.

4.1.1.0. Oil

Remove the small plastic cap from the metal input tube. Fig. 8.a. Fix the nozzle with clear tube onto the oil bottle.
Remove the plastic cup from metal tube. Fig. 9. Put the clear tube from oil bottle into the metal tube at the side. Gently squeeze all the oil into the compressor. Wipe any spillage of oil. Cover the tube with plastic cap.

Fig. 7. Compressor with Double PVC drain bottles

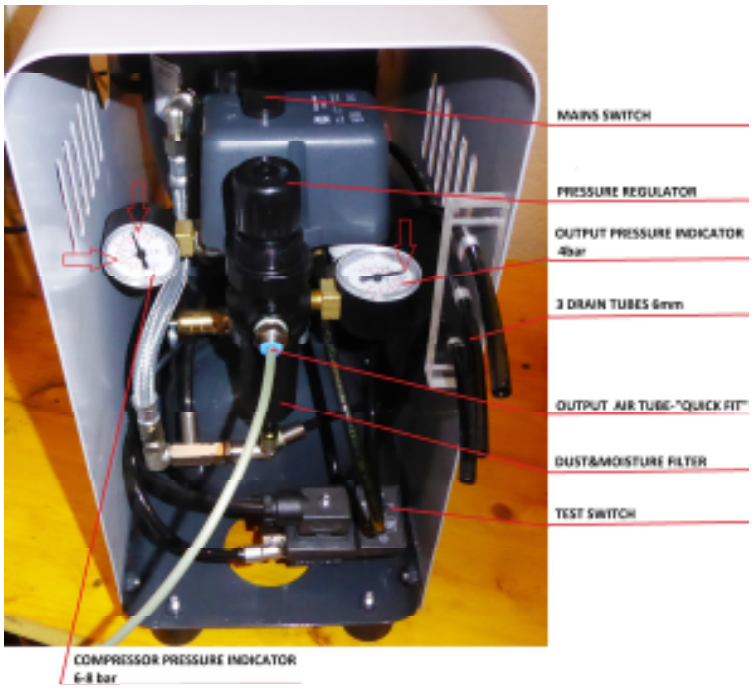

Fig. 8. Compressor parts- front

Fig. 8.a. Compressor-rear

Fig. 9. Oil filling from side of the compressor

Fig. 10. Double PVC bottles

At the rear of the compressor (or at the side) is a glass bubble which will show the correct level of oil, which is half the bubble. (Correct level is shown only if compressor has not been working for at least an hour) Fig. 8.a

Fix the air intake filter onto the metal tube at the rear of compressor. Fig. 8.a

Locate the double PVC bottles which have three black 'quick fit' fittings on the top. There are three black tubes (6 mm in diameter), which drain moisture from various parts of the compressor (pressure regulator filter, cylinder, reservoir,). Pull them out of the compressor and insert into the top of the Quick fitting on the bottle. Fig. 10. Position them near the compressor.

When you first turn the compressor ON it will take a little longer to fill the compressor's reservoir from zero to 8 bars (4-5 minutes). The compressor must be connected to the air supply tube with the valve closed otherwise air will freely flow out and compressor can not build up pressure.

NOTE: Oil should last for at least 5 years of normal use and should be replaced when it is very dark - almost black in colour. Check oil level when the compressor is in the cool-rest position for 2 hours.

NOTE: Check water condensation occasionally, 1-3 months approx in double PVC bottles.

NOTE: For extra details consult original instructions supplied with the compressor.

4.2.0.0. SILVER FILTERS:

NOTE: Keep the silver filters in an upright position. They might leak otherwise.

NOTE: Keep valve closed between compressor and silver filters until pressure is raised in the compressor.Fig.13.

NOTE: Keep valve closed between silver filters and turntable.

NOTE: Open the same valve to put pressure into the silver filters. This will seal the drain system.

The silver filters which are positioned near the turntable in their own stands have an automatic drainage system (it will collect very little moisture).

Fig. 11. Silver filters- see arrow for airflow

4.2.1.0. Sealing silver filters

The silver filters must be connected with both PVC tubes between compressor and turntable.
Filters are sealed only when air pressure is inside them.

4.3.0.0. AIR TUBE CONNECTIONS:

4.3.1.0. Compressor to silver filters

The silver filters should be positioned near the turntable in their own stands.
Choose the longer piece of black tube (21m- with the valve nearer to the compressor) and connect the compressor output to the silver filters input. Fig. 8.

4.3.2.0. Silver filters to air bearing base

Choose the shorter piece of tube (4m) and connect the silver filters output to the turntable's input. Fig. 12.

Fig. 12. Tube from filters to airbearing

Fig. 13. Valve in closed position

4.4.0.0. AIR PRESSURE SET UP:
NOTE: All tubes must be connected. Keep both valves on air tubes in the closed position. Fig. 13.
4.4.1.0. Compressor
Plug the compressor into the mains. The main switch is under the cover on the top. It has two positions. When the main switch is turned ON, pressure will start to build up (working time) and this will be shown on the pressure gauge on the left side of the compressor. This will show the air pressure in the reservoir. It should rise and reach 8-8.5 bars (110-120 psi) in about 4-5 minutes then the compressor will stop (cooling time). The right hand pressure gauge shows output pressure. It should rise and then show constant pressure at around 4 bars (60-65 psi). Leave it permanently turned ON. When the air supply is closed at the turntable's end valve, the compressor will go on standby.
The knob on top of the pressure regulator is for readjusting the output pressure. To readjust, it must first be pulled up. Fig. 8. Output pressure is set up in factory to 4 bar.

4.4.1.1. Compressor working cycle when air flow is open:
The working time (heating time) of the compressor is around 90-120 seconds while building up pressure from 6 to 8 bars. When pressure reaches 8 bars, the compressor switches off (cooling time). When the air flow is in use, pressure will slowly drop. When the pressure in the compressor drops to 6 bars it will switch on again and pressure will build up to 8 bars. The cooling time should be at least the same time as the heating time. This allows the compressor's head to cool down. It is good to monitor the working cycle occasionally!

4.4.1.2. If the working time is longer then 3-4 minutes and cooling time shorter than 1 minute, then stop using the compressor and check maintenance, "troubleshooting" pages or FAQ (web)!
First check for leaks. A longer working time will cause the compressor to overheat and can damage it.

NOTE: When you close the air flow on the valve at the turntable end then the compressor will go on stand- by. But it might switch on every few hours to build up lost pressure. Also you will hear 2-3 second long burst of air leak caused by the timer on "the test switch" releasing moisture from the compressor every few hours.
NOTE: If you switch off the compressor completely, the air pressure will drop in 12-24 hours. Then start set up air supply as for the first time.

4.4.2.0. Silver filters
When full air pressure is reached in the compressor for the first time (the compressor stops working in about 4-5 minutes) open the valve on the tube before the silver filters and the air pressure will flow into the silver filters which will seal the automatic drain systems in these filters. Fig.11.
Check if it is sealed properly by listening, there should be no hissing noises.

4.4.3.0. Air bearing
IMPORTANT:
Do not assemble or operate air bearing without air pressure flow!

NOTE: Do not insert subplatter into airbearing without air pressure in the air bearing

Open the valve behind the turntable (Fig.12& 14.). The front pressure indicator on the base will show a similar level of air pressure (3,5 - 4 bar) as on the right hand pressure indicator on the compressor. Fig .15. If not, check for leaks (hiss noise) at silver filters or at compressor. Check if the valve on the longer PVC tube is in the open position.

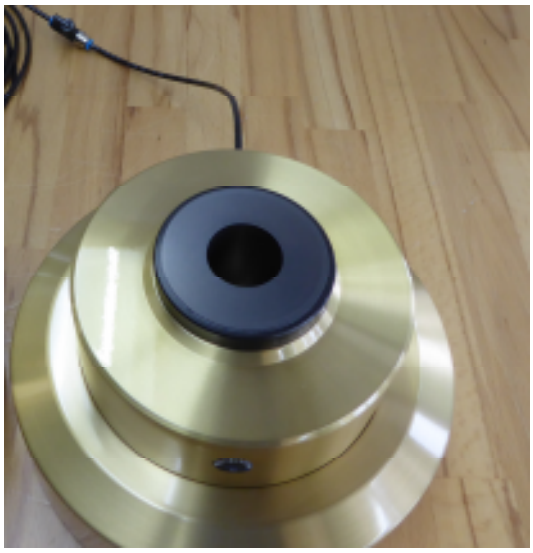

Fig. 14. Base with airbearing

Fig. 15. Air pressure indicator

5.0.0.0. PLATTERS SET UP:

5.1.0.0. AIR BEARING SET UP:

5.1.1.0. Inserting the subplatter into the air bearing

IMPORTANT:
Do not assemble or operate air bearing without air pressure flow!

NOTE: Before inserting the subplatter with shaft into the air bearing be sure that it is clean and that the indicator shows pressure at 3,5- 4 bar. If lower, readjust the pressure regulator on compressor!

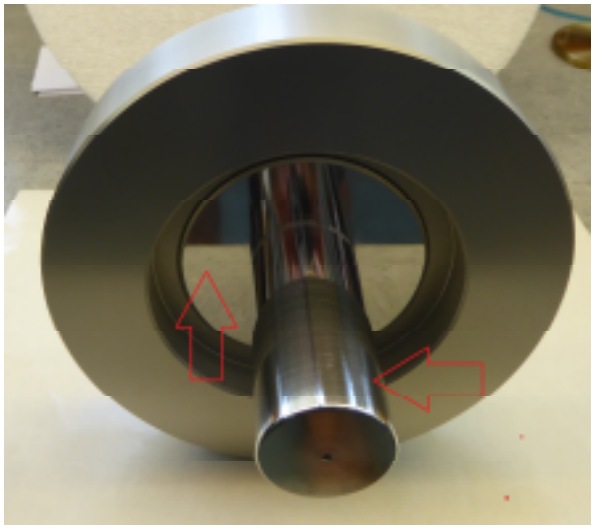

Fig. 16. Subplatter-arrows indicating bearin surfaces

Fig. 16a. Base with subplatter

Fig. 17. Air flow- open

Remove the black cap from the top of the air bearing. Fig.6. Carefully lower subplatter into air bearing. Gently rotate subplatter - try it back and forth few times. It should move freely and smoothly. If not, then lift up the subplatter, check for particles and clean shaft and air bearing with isoproply alcohol while the air flow is on. Just squirt some from the bottle supplied and wait to dry.

5.2.0.0. MOTOR TOWER AND BELT:
NOTE: If needed consult XL DC manual

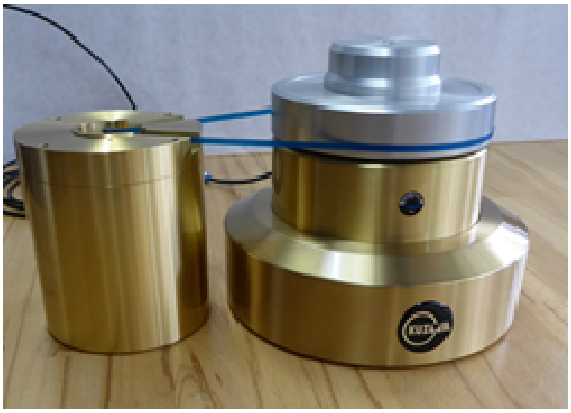

Fig. 18. Motor tower and belt fitted

5.2.1.0. Motor tower
Position the motor tower back close to the base as before, no need to be precise yet (the actual distance from the centre the platter to the centre of the motor tower is 191 mm). Fit the belt around the motor pulley and over the subplatter. Rotate subplatter by hand to position the belt iat the correct height. Connect XLR cable from PS to motor tower.

5.3.0.0. TESTING:

5.3.1.0. Subplatter and air bearing testing:
IMPORTANT:
Do not assemble or operate air bearing without air pressure flow!
NOTE: Do not close air flow till subplatter is at full rest.

Test subplatter rotation with PS on and leave it running for 5-10 minutes. Fig. 18. Remove belt and check if the subplatter rotates smoothly again without the belt. If not then lift up the subplatter check for particles and clean shaft and air bearing with isoproply alcohol while the air flow is on. Again test subplatter rotation with the belt fitted by turning power supply on and leave it running for 5 minutes. If not again remove belt and check if subplatter rotates smoothly without belt. If a problem persists contact dealer or us.

5.3.2.0. Platters testing – prior fitting platters on subplatter with air bearing.
NOTE: Both platters are very heavy. Handle with care.It is a job for **4 hands and 4 eyes.**
NOTE: First test how the top platter fits on the bronze platter without subplatter. Fig. 19&20.

This will get you acustomed to fitting platters before you place them on the subplatter for the first time. The platters are very heavy and a bit of a practise will avoid unnecessary force being put on air bearing.

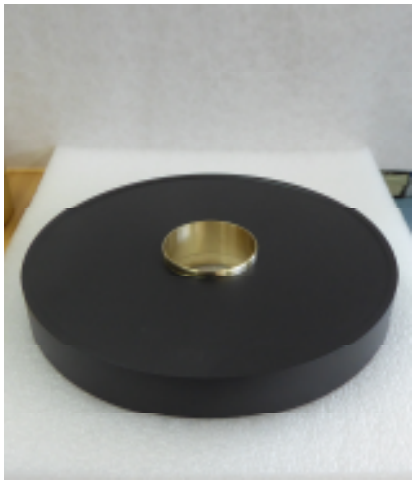

Fig. 19. Bronze platter

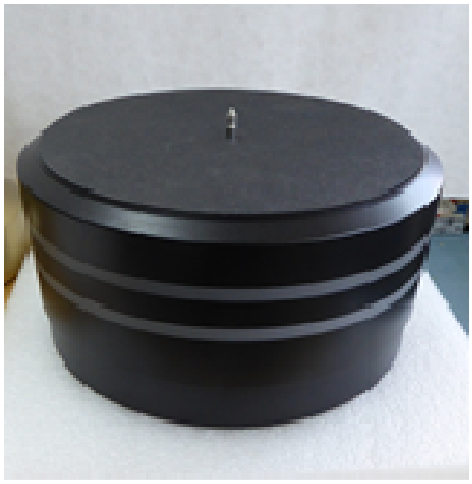

Fig. 20. Top platter fitted on top of the bronze platter

Place the bronze platter on a clean table (load will be 50 kg) with foam from box. Fig 19. This is best is done by 4 hands and 4 eyes. Then position the top platter above the bronze platter, center it above the lip while keeping it parallel. Then gently lower the top platter . There is a tight fit. If you have a problem fitting it be sure that is parallel and check if there are any particles obstructing fitting. If sucessful, lift it up and remove platter. If you have any problems contact us or dealer.

5.4.0.0. PLATTERS FITTING ON SUBPLATTER:
IMPORTANT:
Do not assemble or operate air bearing without air pressure flow!
NOTE: Have you tested the platter's fit as 5.4.2.0.

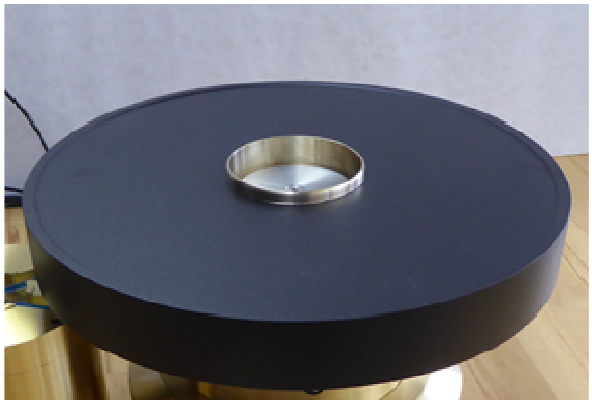

Fig. 21. Bronze platter on the subplatter

Fig. 22. Fully assembled platters

5.4.1.0. Bronze platter on subplatter
Hold the bronze platter above the subplatter. This is best done by 4 hands and 4 eyes. Center the bronze platter above the subplatter while keeping it parallel, then gently lower it on the subplatter. Fig. 21. Check below for fit on subplatter. If a problem occurs stop and if you can, lift it up and check platter fitting- see page 13 (5.4.0.0..)
If you suddenly hear or feel noise or vibration do not be alarmed! This is resonance's noise in the air bearing prior to full loading. Ignore it.

5.4.2.0. Top platter on bronze platter
Hold the top platter above the bronze platter. Center it above the lip on the bronze platter while keeping it parallel. Then gently lower it, center it on the lip of the bronze platter. Fig. 22. If a problem occurs stop and try again. Ignore the resonance noise- it should stop now with the increased platter mass.
If not check that the pressure is not too high or too low- see front page.

NOTE: You can close the valve at the turntable, only if the platter is not rotating at all! The compressor will go on standby. Every few hours or so air release noises can be heard and the compressor will switch on a few times per day when the compressor is resting in the standby position.

5.5.0.0. MOTOR TOWER TO TOP PLATTER DISTANCE:

Check the position and distance of the motor tower . The gap betwen motor tower and base should be 23 mm.

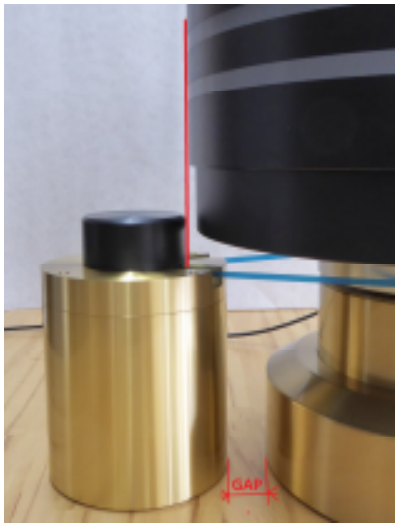

Fig. 23. PVC Motor positioner

Fit the black PVC motor positioner on the top of the motor tower - see Fig. 23. Slowly move the motor tower until the motor positioner is in the line of the outer edge of the top platter and then take off the positioner. Rotate the motor tower to ensure that the belt is not touching the grooves in the motor tower. Fig. 18.

5.6.0.0. PLATTER ROTATION:

IMPORTANT:

Do not assemble or operate air bearing without air pressure flow!

NOTE: Always open the air valve and then start platter rotation!

NOTE: Check if the air indicator shows 3,5 - 4 bar.

NOTE: Always wait till platter comes to a complete stop before closing the air valve!

On PS choose 33 SPEED button and start platter's rotation. The platter should reach 33rpm in about 15 - 20 seconds. Run the platter for 5 min before stopping it. Do not stop platter rotation with the hands. Repeat the process 2 - 3 times.

If it takes longer, e.g. over 30 - 40 seconds- see 'Trouble shooting'- slow start.

If everything works OK you can replace the motor cover onto the motor tower and secure it with two screws.

6.0.0.0. MAINTENANCE:

6.1.0.0. AIR SUPPLY:

NOTE: If you go away for a long period of time, switch off the mains switch at compressor.
NOTE: Check our web site at FAQ, regarding air supply issues for Air Line tonearm.

6.1.1.0. Compressor

When air is consumed, the compressor works automatically i.e. ON-OFF, approximately every 2 minutes and then rests for about 2 minutes (working- cooling cycle). When it stops you will hear the noise of air being released from the reservoir a 1-2 seconds burst into PVC bottles (see TEST switch).
The automatic drainage system works every few hours (you can also test this by pressing TEST switch: Fig.4. when a 1 - 2 seconds long burst of air will rush into PVC bottles). This is normal.

6.1.2.0. Double PVC drain bottles

The amount of water & brown oil released depends on the working hours of the compressor and the humidity of the air. Water will be collected in the double PVC bottles. Air pressure will push liquid from the first into the second bottle. When the second bottle is half full, unscrew it and empty it.
With normal use check this every few months. If the air supply is used every day and humidity is high, (over 70%) then monthly checking is recommended. In the compressor manual, working conditions are described for compressors used all day, every day, and all the time in industry, where conditions are much more demanding.

6.1.3.0. Silver filters

From the silver filters, small amounts of water might drain into the supporting stands. Lift up the filters and empty the liquid.

6.1.4.0. Air bearing and subplatter shaft

Clean all surfaces in the airbearing with a soft clean cloth and a few drops of isoproply alochol while air is flowing. It will bubble and evaporate. Wait till it dries before starting assembly. Perform every 3-4 years.

7.0.0.0. TROUBLESHOOTING:

IMPORTANT:
Do not assemble or operate air bearing without air pressure flow!

7.1.0.0. PLATTER NOT ROTATING:
NOTE: check compressor and motor power supply.

7.1.1.0. Check pressure level at the base indicator or air flow. If no air pressure- check air supply.
If yes, then try to rotate platter with hand. If platter rotates, check PS.

7.2.0.0. VERY LOW OR NO AIR PRESSURE:
Compressor cannot generate enough pressure, or runs for longer than normal:

7.2.1.0. Check that the silver filters drainage system is sealed, as described at build up of the pressure.

7.2.2.0. Check tubes and connections, silver filters, and the compressor. Listen for air leaks- hissing.

7.2.3.0. Check the compresor working cycle when the platter is rotating. The compressor should take two minutes to build up pressure from 6 to 8- 8.5 bar. It should then cool down for 2 minutes. If the working cycle is longer or the cooling shorter, there is a leak in the system or a damaged compressor.

7.2.4.0. Checking working cycle when air is closed at the turntable. See if the pressure builds in the compressor into normal cycle from 6 to 8 bars in less then 2 minutes. Then open the valve on the turntable and the working cycle should be around 2 minutes. If it is longer than 3 minutes, then there is a leak in the system. The working pressure should be 3,5-4,0 bar. If it is higher readjust.

7.2.5.0. Checking compressor:

7.2.5.1. Close the pressure regulator valve to zero output (lift up black knob and rotate ACW showing 0 bar) and see if the pressure builds up to 8 bars on the left side of the pressure indicator and the compressor switches off after aprox. 2 minutes. If not, then the problem is in the compressor. If the pressure build up is normal, then readjust working pressure back .

7.2.5.2. When the turntable is not operating (valve on the arm closed and arm meter shows no pressure) the compressor will be on standby and it will switch on occasionally (2-4 times per day). This also means that there is no leak in the system. If it is switching on every hour or so, there is a leak in the system and the working cycle might be too long.

7.2.5.3. Compressor does not start:
Check the mains electricity. Compressor was overheated and overheating protection switches it off. Overheating protection needs replacing by service.

7.3.0.0. PLATTER SLOW START
NOTE: Check motor and belt position and air pressure.
If it takes a long time and air pressure is normal let platter rotate for 10-15 minutes and check again. If the problem persists you would need to take off the platter, bronze platter, belt and lift up the subplatter and clean all surfaces with a clean cloth and isoproply alochol while the air is flowing. When everything is dry assemble it back.

8.0.0.0. TRANSPORTATION:

All parts are heavy and can be easily damaged by sliding around a transport vehicle. Repacking in original cutouts and boxes is, therefore, recommended.

8.1.0.0. TURNTABLE PARTS:
IMPORTANT:
Do not assemble or operate air bearing without air pressure flow!
NOTE: Remove both platters and subplatter with air pressure ON!

Return all parts into original boxes. Prior to turning off air supply remove both platters and subplatter.
Dismantle platters, remove belt from motor and disconnect all cables.From base remove subplatter and protect the top of the air bearing with cup. Remove the arm from the tonearm tower.

8.2.0.0. AIR SUPPLY:

8.2.1.0. Compressor
Turn off the compressor and release air pressure. Remove black tube (quick fit) and Double PVC bottles.
If you can ensure the compressor will be in an upright position at all times it is not necessary to remove the oil. If, however, there is a possibility that it may be tilted or turned upside down then the **oil must be removed**!

8.2.2.0. Oil removal from compressor
First ensure that there is no pressure in the compressor and that it is disconnected from the mains. Wait at least 2 hours for compressor to cool down. Remove the metal cover and then loosen the screw holding the rubber seal on top of the compressor head and lift off the cover. Pour away oil and return the head cover and fix the screw. Ensure that the sealing ring is correctly positioned.
More info is in the compressor instruction manual. Use original packing and fit parts into appropriate slots.

8.2.3.0. Silver filters
Air pressure must be OFF and then disconnect air tubes,

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