

DSS - Covering letter for repair

As a disproportionate number of DSS have been repaired lately because of a broken drive coil wire, we shall in this letter shortly repeat the procedure for change of sapphire, as we take it, that some of the cutterheads have been damaged because of uncorrect handling during the change of sapphire. Users are therefore asked to read through the procedure, as essential stages may have been forgotten in the daily routine.

The procedure is made for a right handed user. In case of a left handed user, right and left should be exchanged in the text.

- 1) The DSS is mounted in the suspension of the microscope so that it is fixed and both hands are set free for change of sapphire. Any movement of the bridge during the change can now be seen in the microscope.
- 2) The nail of left hand's thumb is placed on the cover around the sapphire bridge and the screw in the left side of the bridge. As the cover is mounted on the house it makes a firm base. The height of the screw is designed to be flush with the cover, so that a firm pressure with a nail (straight edge) will secure the screw in relation to the house of the cutterhead. When the screw is fixed, the drive system is fixed too. The nail works as a pressure reliever.
- 3) The crowbar, held in right hand, is then to be led under the collar of the sapphire cone. The leading in is to take place parallel with the sapphire bridge from right.

DO NOT TURN THE CONE, as it results in overloading of the flexible joints.

- 4) The crowbar is pressed slowly downwards concurrently with the nail of left hand's thumb holds in reverse direction. The bridge will move downwards, so that it gets into contact with a stop block immediately under the bridge. The bridge will then be firmly fixed between two points and a continued downward movement of the crowbar will disengage the used sapphire. As the bridge was fixed, there has not been any inadmissible tension in the spring suspension for the moving system.
- 5) Left hand can now be raised.
- 6) The new sapphire is placed in the cone, and this is placed in the hole in the bridge, but is not pressed down.
- 7) The sapphire orientation tool is placed around the sapphire, so that the slit on the underside engage in one of the slits in the cone.

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- 8) By a slight turn the sapphire is now aligned so that the mirror is parallel with the bridge. As it is a question of a turn, it is important that the sapphire and the cone are not pressed in the bridge. This would result in inadmissible stress on the flexible joints.
- 9) The aligned sapphire should now be pressed firmly with the spade perpendicular to the bridge. The direction of motion should follow the direction of motion for the moving systems, i.e. the same direction as the edge of the house of the cutterhead indicates. By this press the bridge will be led down to a stop immediately under the sapphire. The force will then be transferred directly to the house of the cutterhead and will therefore not damage the flexible parts.

Summary:

3 golden rules for change of sapphire:

1. Never to turn a sapphire, which is firmly fixed - it would damage the flexible joints.
2. Always to hold in reverse direction with a nail on removal of sapphire - if not the drive coil wires are broken.
3. Always to press only perpendicular down on the middle of the bridge on mounting of sapphire - this is where the stop block is situated.

CHECK LIST FOR THE ADJUSTMENT OF FEEDBACK LEVEL

ortofon

1. Input level - minimum
2. Pick-up level - minimum
3. Equaliser - 0 = neutral
4. Feedback level - minimum
5. Monitor level - maximum
6. Test on (button) - light on
7. Light on, feedback - not light on, pick-up
8. Light on, cutter off - not light on, cutter on
9. Power limiter on (button) - light
10. Connect DL 791 dummy load
11. Cutter on (button) - light on
12. Adjust temperature to show 25° Centigrade
13. Push Cut Out Check on GO 741
14. Adjust Cut Out Level, so that the cutter head switches over from ON to OFF at approx. 150° Centigrade
15. Repeat the points 10, 13 and 14 until the adjustment is in order
16. Connect a tone generator 5 kHz. By -30 dBu the potentiometer can be turned fully on
17. Adjust the monitor level to an easily legible value
18. Turn on slowly the feedback level. At the beginning the monitor increases (approx. 1 dB) and then falls. In case of a phase error oscillation will arise. In that event, turn down immediately.
19. At a correct phasing the feedback level is adjusted at approx. 11 dB. This means that the level of the monitor has become 11 dB lower
20. The frequency is changed to 20 kHz. Now, there will be a rise of 0 - 1 dB compared with the 5 kHz on the monitor
21. If the rise does not take place, or it is too high, return to 5 kHz. Adjust the feedback level once again, so that point 20 fits. At an increased feedback level, the monitor level falls at 5 kHz and at the same time increases at 20 kHz.
22. Cutter off (button) - light on
23. Disconnect DL 791
24. Connect cutter head
25. Repeat 12 - 21 with the cutter head

4th July, 1979
FN/KH

Total harmonic distortion + hum for GO 741 No. M1 left + M2 right
 Measuring bridge B and K type 1607
 Generator B and K type 1027

Function select	Linear	A-weighted	Distortion %
50 Hz	-60/-62 dBu	-76/-78 dBu	0.016/0.013
100 -	-63/-62 -	-76/-75 -	0.016/0.018
1 kHz	-63/-59 -	-72/-71 -	0.025/0.028
10 - test	-60/-58 -	-69/-67 -	0.036/0.045
20 - -	-57/-56 -	-62/-60 -	0.08/0.1
10 - RIAA	-58/-55 -	-64/-62 -	0.063/0.08
	Left/right	Left/right	

1. Measured through amplifier, cutterhead and monitor amp.
2. Cutter DSS 732 No. 533. Distortion is the same for 731 head
3. Input signal: -20 dBu 77.5 mV RMS
4. Monitor output: 0 dBu 0.775 V RMS
5. Potentiometers in and out = max.
6. Noise level excl. hum: -64 dBu
- 6a. Noise level incl. hum: -63 dBu
7. Signal/noise ratio with line level +6 dBu cutting : 5 cm/sec at 1 kHz; is ≥ 80 dB A-weighted

TR/KH
 6.7.1979

INTERMODULATION DISTORTION FOR GO 741 + DSS 731 (or 732)

Measuring conditions

Signal on "Line In" of GO 741

Measured at "Monitor Output" of GO 741

Measured with RIAA Recording and Reproducing Characteristics

The Input and Output potentiometers were fully open

Cutter damping adjusted to 1 dB peak at 20 kHz

Level

Monitor output 928 mV (3.1 cm/s, 1 kHz)

Monitor gain 30 dB

	1 harm.	2 harm.	3 harm.
100 Hz : 1000 Hz 4:1	0.019%	0.049%	0.006%
500 Hz : 5000 Hz 4:1	0.040%	0.055%	<0.004%
1000 Hz : 10 kHz 4:1	0.059%	0.069%	<0.004%
2000 Hz : 20 kHz 4:1	0.095%	0.093%	0.005%

Instruments

Brüel & Kjær 2010

- - 1902

- - 2305

- - 2425

- - 1027

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10th September, 1979