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ENGINEERING BULLETIN

RE: Letter dated 5.Feb.1979 in response to G-7905 of 30.1.79
concerning problems with alignment of VMS-80 at Sterling Sound.

"Translation"

1. As a basic alignment for the VMS 80 we selected a groove width of 40 μm (1.6 mil) and a land of 5 μm (0.2 mil). This is made possible by the fact that the VMS 80 control system works in both lateral and vertical mode from the zero point and is not, as is the case in the VMS 70, equipped with a threshold. This results in an optical impression regarding the mean groove width for small modulation levels which is proper. In the VMS 70 there appears to be wasted space at high levels due to the non-linear behavior of the control system, but this is really caused by too thin spots of the heavily modulated groove. This thin spots do not occur with the VMS 80, and therefore you may use this 40/5 alignment. (*Lue: and should be used. That brings something!)
2. The use of "0" alignment of the ST0 for both Vert and Lat is fine. Land Economy switch may be in positions A, B, or C if you have time/side problems without having any effect on the basic alignment in static mode. This produces a relatively minor risk of overcutting in the lateral mode.
3. Our level alignment was meant as follows:
 $OVU = 1.228V = +4 \text{ dB(m)} = 5 \text{ cm/s}$ peak recorded velocity in each channel at 1 kHz.
 For a level of +6VU ($=+10 \text{ dB(m)}$) and a test frequency of 100 Hz, this means a peak recorded velocity of 2.213 cm/s in one channel. This is equivalent to an amplitude of 35.2 μm . In the Vert and Lat plane there is a vector of 24.9 μm , i.e. for an unmodulated groove width of 40 μm and a land width of 5 μm you must add $4 \times 24.9 \text{ } \mu\text{m}$ space requirement and the LPI meter on the BE should read 144.6 μm (5.7 mil). The recorded test tone may be checked in the microscope; it should have a peak/peak amplitude of 99.6 μm (3.9 mil) for the above modulation.

Should you still find overcuts, check the following:

- a. ☒ Polarity (test tape with sine² pulse).
- b. Frequency response and absolute level of SAL/SX tolerance = $\pm 0.2 \text{ dB}$!
- c. ☒ Be accurate regarding the preview distance (should be exactly one half turntable revolution ($13\frac{1}{2}''$ at 15 ips & $33\frac{1}{3} \text{ rpm}$)).
4. For frequencies below 40 Hz there is a recording error caused by the well known suspension resonance of 29 Hz (cross-talk into the vertical channel), which is not taken note of by the modulation actually cut. This behavior must also exist in the VMS 70, and is dependent on the dash pot damping adjustment.
5. ☒ Sending new air cushion.
6. RE: carriage return problem. Loosen the bearing plates at the left and right end of the lead screw. Run the carriage fully to the left end and tighten this bearing plate, making sure it is in the middle of its vertical and lateral play. Do the same with the right end bearing plate with carriage at right end. Future machines will have these plates fixed in position by rolled pins.

/s/ Achim Beyer (Lue)

	VU	PEAK	DBM
DIN 0 NAB +4	+4	-2	+8

DIN +2 NAB +6	+6	0	+10
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WAY 1 DIN 0 NAB +4	-6	0	+10	NEED TO BOOST 12L
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plan DIN level

set peak to 0 by raising PU +2

+10 DBM

set center freq by setting RV to +6

	VU	PK	DIN	PK
+4 VU	-2 Peak	+8 dBm	0	-6
+8 VU	+2 Peak	+12 dBm	+4	-2
+16 VU	0 peak	+10 dBm	+2	-4

Feb 2/79 SFT

Lutzendorf says probably DIN level. @ 0 peak.

8 cm = +4 VU = +4 NAB = 0 peak.

8 cm = -2 peak +4 NAB = +6 VU.

+4 VU = -2 peak 0 NAB = +2 VU ~~7" 16" 6" 10"~~

~~16" 10"~~

↑
NG

↑
NG

VMS70

3- 2 1/2 mil groove
some waste
mostly OK.

VMS70 wins
by .62"

+ 15 VU

very deep to 3 mil approx.
lots of waste space.

VMS70 wins
by .11"

+ 5 VU

some kissing (barely) but
generally wasting space
groove deepens to 2.5+ mil

VMS80 wins
by .22"

+ 8 VU

OK deeper than 70
some kissing but only
in sections.

tones

Setup

+6

looks like it's working
properly always 2 mil / 1/2 mil

-18

overcut slightly mid Hz
not quite enough depth control
goes to 1.5 mil approx.

Set to -16

Feb 2 set to +8

4 dB above

$$\begin{array}{r} 3.2 \\ 1.6 \\ \hline 4.8 \\ 1.26 \\ \hline 6 \text{ MILS.} \end{array} \quad .00$$

100 Hz if 8 cm / ch.

peak 0 = 8 cm on disk 6 MILS.