VLBA ACQUISITION MEMO #305

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

HAYSTACK OBSERVATORY

WESTFORD, MASSACHUSETTS 01886

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Telephone: 508-692-4764
Fax: 617-981-0590

To: VLBA Data Acquisition Group

From: Alan E.E. Rogers

Subject: Head flying: Expected changes with head wear

The expression for the change in tape slope due to the build-up of pressure before the corner of the step given in Equation (3) of VLBA Acquisition Memo #264 needs to be modified slightly for the case of a long "pocket" adjacent to the headstep. In this case Equation (3) becomes

$$\alpha \sim \left[\frac{6\mu V}{T\phi^2}\right]\left(Ln(1+\frac{B\phi}{z}) + c/z\right)$$

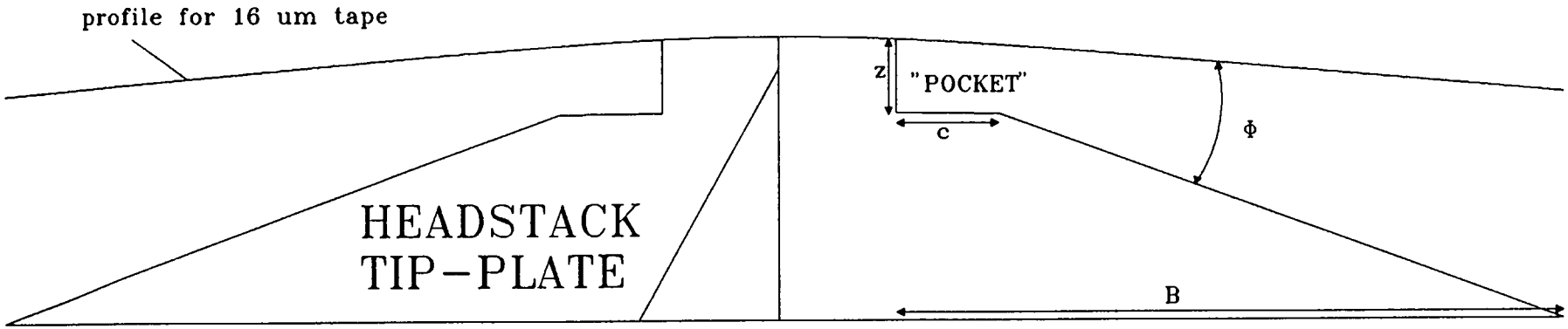
where ϕ = headstep approach angle (~15° in new headstacks)

z = headstep height (40-80 μm depending on wear)

B = length of headstep approach (~1000 μm)

c = length of pocket (~200 μm)

and the geometry is illustrated in figure 1. The angle α increases by a factor of 1.8 as the head wears down from z~80 μm to z~40 μm. This produces a small drop in the flying threshold - that is, a worn head will fly more easily. The effect, however, is quite small (see Figure 1 of VLBA Acquisition Memo #282. With the 15° angle, the unworn heads are expected to follow curve *C* degrading to a curve midway between *B* and *C* as the heads wear down.) as an approximately four fold reduction in α was made by increasing the approach angle from 5° to 15°. [Recent headstacks manufactured by Metrum (-3 on part #) have the larger angle and a formal change in specification has been made.]



Note: Approach angle Φ has been increased from 5 to 15 deg.

Drawing is approximately to scale ⟷ 100 um

Figure 1. Geometry of head-to-tape contact