

# VLBA ACQUISITION MEMO #301

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

HAYSTACK OBSERVATORY

WESTFORD, MASSACHUSETTS 01886

6 March 1992

Telephone: 508-692-4764

Fax: 617-981-0590

To: VLBA Data Acquisition Group  
From: Alan E.E. Rogers, Ken M. Wilson, Hans F. Hinteregger  
Subject: Mechanical upgrade steps

Following the upgrade described in VLBA Acquisition Memo #290, we list the steps:

- 1] Install new precision plate (may already be present in some transports).
  - a) Remove the head assembly - put it aside in a safe place.
  - b) Disconnect the cables and vacuum hoses going to the precision plate assembly and capstan motor.
  - c) Remove the capstan motor - 3 large bolts.
  - d) Remove the precision plate - 3 large bolts.
  - e) Install the new plate (bare plate with nothing attached).
  - f) Measure the reel table locations with a 2' straight edge, single-flange reel, shim stock and/or depth micrometer - adjust by shimming out. (Figure 1 is a blank worksheet for readings and notes.) Make sure flange and precision plate are in the same plane with no significant tilt of the reel table.
  - g) Transfer the parts from the old plate to the new plate.  
  
I/O rollers need 3 mil shim under each roller. I/O rollers must be new fixed type (not adjustable type).
- 2] Install new "E"-casting
  - a) Loosen the holding screws for alumina hard point plates.
  - b) Install E-casting. Make sure it is sitting firmly against the precision plate before tightening down.
  - c) Loosely tighten the screws which go into the backing plates (these hold the hard point plates).

- d) Measure depth of E-casting with micrometer depth gauge and compare it with Figure 2.
- e) Install half-moon loading blocks.
- 3] Install I/O roller sleeves  
Make sure the flange is on the outside. Tighten the Allen head retaining screw.
- 4] Install new front door  
Put on the front door - tighten hinges (they will be adjusted later).
- 5] Install dummy headstack post  
(See VLBA Acquisition Memo #220)
- 6] Install new septum on headblock assembly and reinstall headblock assembly  
(See VLBA Acquisition Memo #294)
- 7] Adjustments and tests
  - a) Reconnect the cables, hoses, etc. Power-up and load tape.
  - b) Set vacuum to 10". Loosen the door hinges. Push firmly on the region of the front door near the hinges in a direction to help the vacuum close the door. Tighten the hinge plate screws near the hinge.
  - c) Check the reel servo adjustment. Make sure the windows are clean (see VLBA Acquisition Memo #267). See the attached extracts from the Metrum transport manual - with some changes in the values.
  - d) Run the tape and check -
    - 1) that the tape edge is not touching the precision plate or entrance to the front door. (i.e., the edges should only touch the reel flanges, I/O flanges, edge guiding points (inside vacuum columns), and front door at turn-around.);
    - 2) check that the tape runs over the I/O rollers without any problems (like folding or damaging the tape);
    - 3) use a penlight to inspect the tape path. Hold the light to view the separation between the tape edge and the precision plate in the capstan, headblock, idler roller area. Have someone change the tape direction while observing the separation to check for large forward/reverse differences (a fine check will be done later via cal. procedure).
- 8] Calibration and pre-tests  
Perform recorder calibration and pre-tests (see VLBA Acquisition Memo #151). This may be done remotely from the AOC.

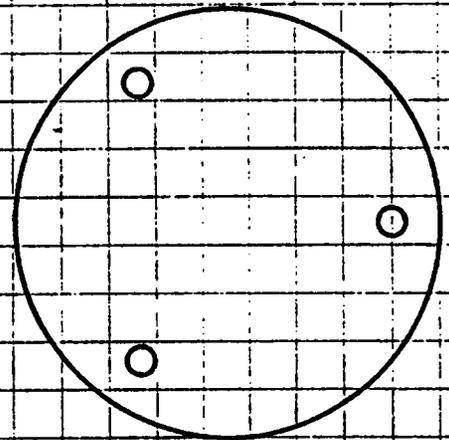
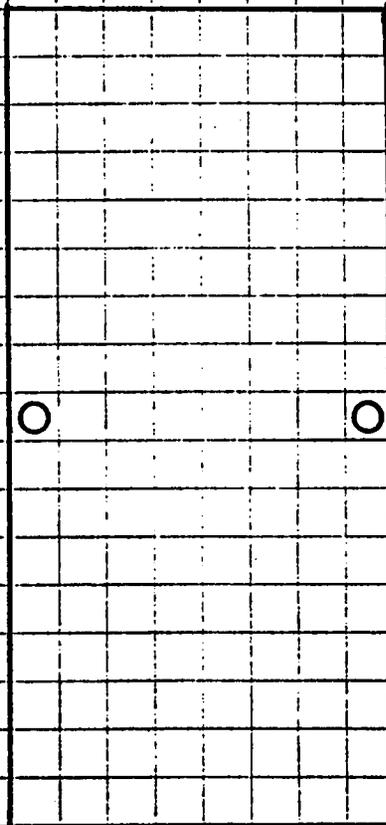
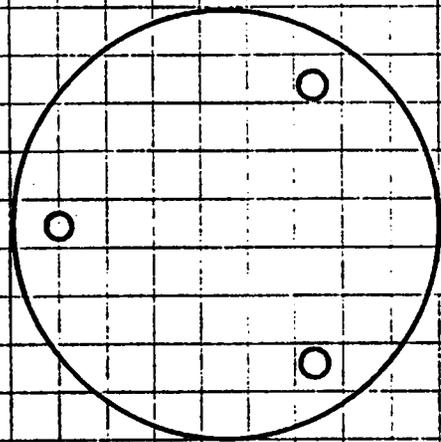
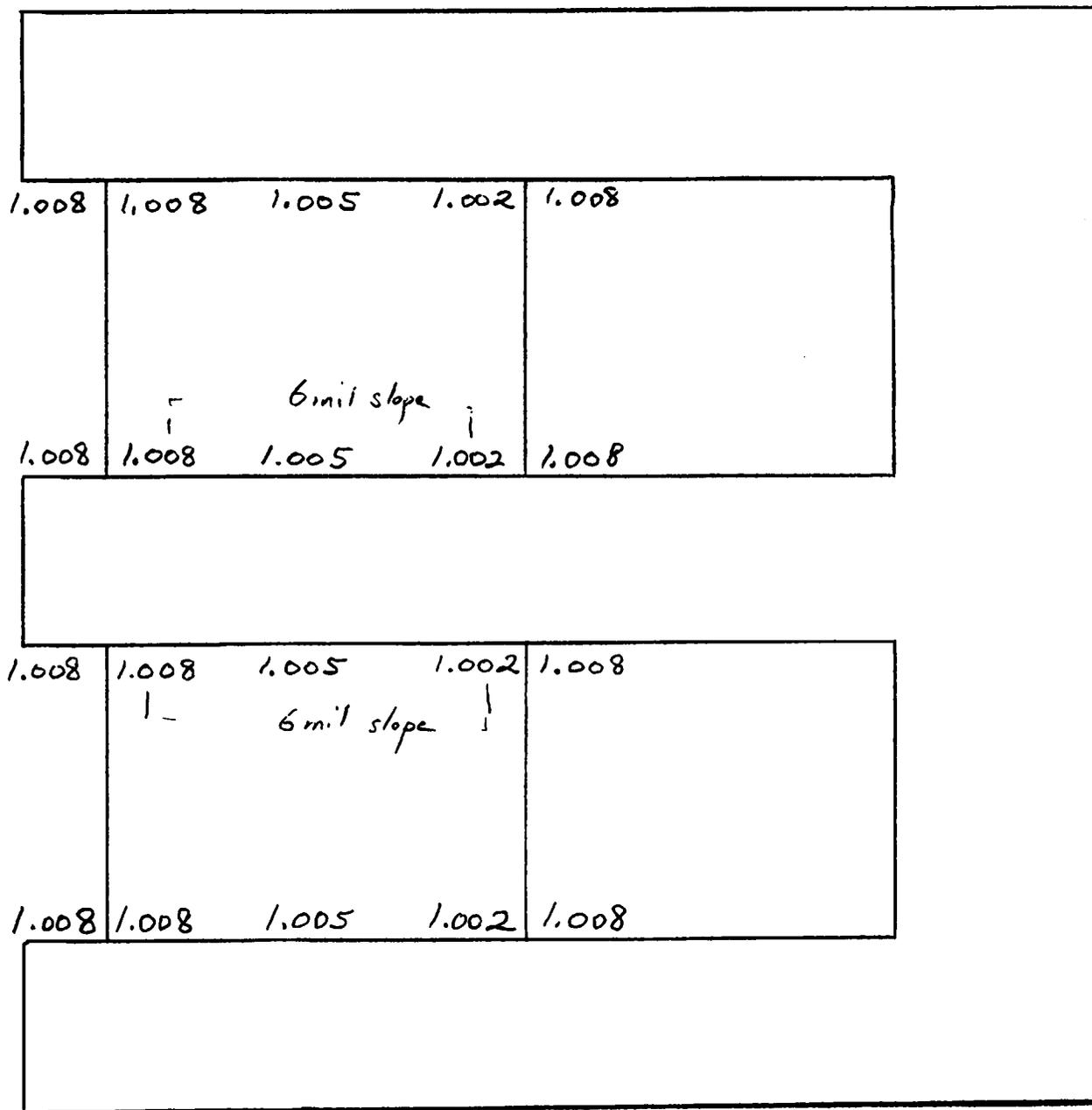


Figure 1.



Notes:

- 1] All measurements shall be within  $\pm 3$  mils
- 2] Slope across alumina hard plates should be in center  $6 \pm 2$  mils
- 3] If there are errors try re-torquing the plate screws -

Fig. 2. Revised

## E. TAPE SENSORS

The supply and takeup tape sensors in the vacuum columns each have two adjustments: gain and symmetry. The procedures in the following paragraphs explain how to make these adjustments. Figure 5-4 locates the adjustments and test points on the transport.

### 1. Preliminary Procedures

- a. Mount a tape and set load.
- b. Adjust the vacuum to 10" of water.
- c. Connect digital voltmeter between (bottom wht blu lead) and (ground) Black lead for the takeup sensor, or between (top wht blu lead) and black lead (ground for the supply sensor. (See Figure 5-4)

### 2. Adjustment

- a. Observe voltmeter while manually rotating the appropriate reel to move tape completely into; then out of the column.
- b. Repeat step a and adjust R7 to obtain a voltage difference of 1.6 ( $\pm 0.05$ ) Vdc between the highest and lowest readings.
- c. Repeat step a and adjust R3 to obtain a voltage reading of +0.8 ( $\pm 0.05$ ) when tape is completely into the column, and a voltage reading of -0.8 ( $\pm 0.05$ ) Vdc when tape is out of column.

#### NOTE

Repeat steps b and c until desired setting is obtained.

- d. Repeat procedure for takeup sensor.
- e. Remove the DVM.

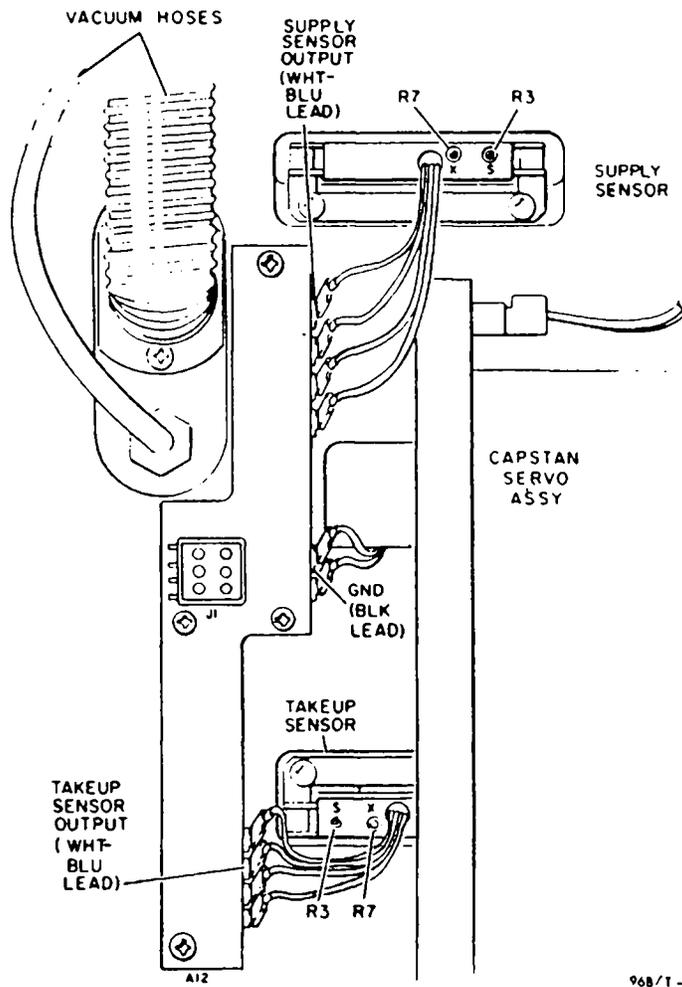


Figure 5-4. Tape Sensor Adjustment