



TENTEL HPG-C INSTRUCTIONS AND "STANDARDS"

The Tentel HPG-C head protrusion and eccentricity gauge has a special "self aligning" patented probe design that allows accurate head protrusion readings on virtually any 1" video recorder. Make certain that all components of the universal mounting system are tight; and extremely close readings will result. The HPG-C readings have been compared with a \$300,000 Zeiss X-Y-Z computerized co-ordinate measuring machine and have been determined to be extremely accurate.

HEAD PROTRUSION STANDARDS:

The following head protrusion "standards" are quoted from their sources:

- S.M.P.T.E.** ANSI V98.18M-1983 American National Standard. Paragraph 5.2 "Each tip projection shall be $0.06+0.03\text{mm}$," (30 to 90 microns, .0012" to .0036") "measured from the outer surface of the upper drum to the end of the pole tip".
- S.M.P.T.E.** R.P. 121--1983 Recommended practice. When dropout measurement are conducted, the pole tip protrusion of the video recorder/reproducer shall be as follows: Pole Tip Type "C" 60+10 micrometers (50 to 70 microns).
- Specifications per **Hitachi** Engineering: Protrusion should be 70 to 75 microns when new, replace when worn to 45 microns.
- Specifications per **Ampex** Engineering: Protrusion should be approximately $2.8\pm.8$ mils (.002 to .0036) Note: The entrance and exit guide locations are very important for "interchange" and the "trick" of moving the guides to maintain the "dropout time" should Not be performed. The guide heights and angles are set very accurately at the factory and should not be changed to "correct" a worn head condition. (This is true for any brand of S.M.P.T.E. Type "C" recorder.)
- Specifications per **Sony** BVH2500 manual paragraph 3-5-B; "If the head projection is less than 50 microns, we recommend to replace the upper drum."

ECCENTRICITY STANDARDS

When setting eccentricity, (the amount of "out of roundness" or "amount off center" of the upper scanner drum; it is best to obtain the minimum number. The normal standard is an eccentricity reading less than or equal to 3 microns.

INSTRUCTIONS FOR TENTEL HPG-C HEAD PROTRUSION AND ECCENTRICITY GAUGE

1. Carefully clean video drum and heads.
2. Check performance of heads by recording and playing back a signal.
3. Refer to Fig. A and determine mounting location for HPG-C (normal or adapter).
Normal (8-32) Ampex VPR 1, 2, 2B, 3, 80
Small Adapter (6-32) Ampex VPR 20
Medium Adapter (4-.7) Sony BVH500, 1100, 2000 series
Large Adapter (8-1.2) Hitachi HR-200, 200B, 200E
4. If an adapter is used, screw adapter firmly into mounting hole, using screw driver. (Do not force! Both English and metric threads are used, adapter should screw in easily using finger pressure, then tighten with large blade screw driver.)
5. Screw "normal" 8-32 screw (part of universal arm) directly into Ampex 8-32 mounting hole or into adapter (if required).
6. Refer to Fig. B; Universal arm should be positioned so that 1/4" hole in outer end is approximately 3-1/2" (9cm.) from outer surface of video drum. (Tighten screw using firm finger pressure on "T" handle. (Do NOT use wrench or pliers.)
7. Use brush (supplied) to vigorously "clean" plastic "E" probe of indicator;(tip picks up aluminum oxide during use).
8. Mount HPG-C indicator into dovetail mount and tighten with lock nut.
9. Rotate video drum so that head tips are NOT in area where indicator tip will initially contact drum.
10. Place 1/4" pin of horizontal mount into 1/4" hole in universal arm. With horizontal positioning shaft pointing toward center of video drum, tighten locking nut on end of universal arm.
11. Make coarse adjustment of horizontal shaft so that indicator foot is within 1/16" of drum, and gauge is perpendicular to drum (See Fig. C).
12. Using slip clutch on indicator probe, align probe tip body to be parallel with video drum. (See Fig D.)

13. Using the vertical positioning shaft (and/or indicator dovetail) position in or out so that end of "E" tip is approximately 1/4" above gap between upper and lower drums, and probe tip is tangent to the video drum. (See Fig.E)

14. Decide what measurement is desired: Sync heads, video heads, or eccentricity. The vertical position must be modified for each of the 3 measurements. Use the vertical micrometer adjustment to position the center of the lower end of the "E" (See label with arrow on side of indicator probe body), with sync, video or upper drum as desired.

15. Use the horizontal micrometer adjustment to engage the "E" tip against the video drum, moving the indicator pointer from the "REST ZONE" into the "PRELOAD ZONE".

16. CAUTION: Rotate drum and check alignment of desired head with center of the lower end of the "E" tip. With "E" tip NOT in contact with a head tip, make final adjustment with vertical micrometer as required, it may be necessary to readjust the horizontal micrometer to bring the pointer into the "PRELOAD ZONE".

17. Rotate video drum in one direction approximately 1/2" revolution, note "base circle" dimension just prior to a head tip contacting the "E" probe. Determine the maximum indicator reading when engaged with video head tip; subtract "base circle" to obtain the head protrusion measurement. When measuring eccentricity, entire motion of pointer can be used, however, the pointer must move within the 0 to 25 micron "Eccentricity" section for calibrated eccentricity measurements.

18. CAUTION: Three heads (video or sync) can be measured with each set up. Make certain the probe is NOT on or in line with a head tip when the vertical micrometer adjustment is used to reposition the probe into alignment for the second set of head tips.

19. It may be necessary to perform a slight horizontal micrometer readjustment to return the pointer into the "PRELOAD ZONE" after adjustment of the vertical position.

20. It is best to write down the "base dimension" and the "head tip" dimension to help eliminate math errors when computing head tip protrusions.

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