

**AMPEX****PROFESSIONAL  
AUDIO DIVISION****FIELD ENGINEERING BULLETIN**60838  
REF. NO. BD-8205-01B  
MODEL ATR-100  
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SUPERSEDES 60825  
DATE OF ISSUE 6/82TITLE: ATR-100 USING TIME CODE  
\* (Revised - wrong part number)

AMPEX PROVIDES PRODUCT IMPROVEMENT AND UPDATE INFORMATION THROUGH FIELD ENGINEERING BULLETINS FOR ALL AUDIO-VIDEO PRODUCTS TO ITS CUSTOMERS WORLD-WIDE. THIS SERVICE REFLECTS AMPEX'S POLICY OF AFTER SALES SUPPORT TO ENSURE THAT MAXIMUM PERFORMANCE AND RELIABILITY IS REALIZED BY OUR USERS.

I. APPLICABILITY

All ATR-100's

II. PURPOSE

To increase the bandwidth of an Audio channel so as to be able to read time code in fast wind modes.

III. DISCUSSION

The ATR-100 will read time code satisfactory at normal speeds, with no modification to the normal equalization. If however, it is desired to read code during fast wind modes, the Audio channel chosen must be "widebanded".

There are two levels of widebanding.

A. The first method, which only involves resetting equalizers and a change of one component value, permits recording of motion direction invariant code, and reproduction of code at up to 30 times real time speed for 15 in/s recordings, and approximately 20-25 times real time for 7.5 in/s recordings. Recordings made at 30 in/s can be adequately reproduced up to full wind speeds. This method does not permit using the sel sync mode for high speed code reading.

B. The second method involves changing a number of components on the Main Audio Board, part number 4050754, and also readjustments as in A. above. With this second method it becomes possible to read a 15 in/s recording, in either "repro" or "sel sync" at up to 45 x real time. This is typically faster than the normal fastwind speeds on an ATR-100. A 7.5 in/s recording may run at up to 40 x real time, but 35 x is recommended as an upper limit.

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Parts required for this update may be purchased through Ampex. Installation assistance can be obtained through your local Ampex regional office at current Ampex Field Engineering rates.

<u>Qty</u>	<u>Description</u>	<u>Part number</u>
3	3K, 1/4w, 5% Resistor	066-667
1	22K, 1/4w, 5% Resistor	066-712
1	1K, 1/4w, 5% Resistor	066-665
2	5pf, $\pm 1/2$ pf Mica Capacitor	034-156*
1	2200uh, 10% Inductor	540-068

**V. PROCEDURE****METHOD 1.**

- A. Select normal speed jumpering on padnet.
- B. Set S1 on the padnet so that S1-3 and S1-6 are "ON" and S1-1, S1-2, S1-4 and S1-5 are "OFF".
- C. Turn both high speed and low speed REC.equalizers fully CCW.
- D. Put both high speed and low speed reproduce HF equalizers fully CCW.
- E. Set both high speed and low speed reproduce LF equalizers fully CCW.
- F. On the Main Audio Board, locate and remove C9. Replace with a 5pf  $\pm 1/2$ pf Mica Capacitor (Ampex part number 034-156).

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- G. If a flux loop is available, connect it to a square wave generator set to 10 KHz. Clip it to the reproduce head and with the appropriate Audio Board Assembly on an extender, adjust R34 on the Main Audio Board to produce minimum ringing and overshoot (this adjustment is also correct for normal usage). If an Ampex flux loop equalizer amplifier is being used, set the HF transition to "0," LF transition to " $\infty$ " and the SGR to the position appropriate to the transport speed.
- H. When used in editing systems that shuttle tape with the lifters in; it is recommended that the scrape flutter idler on the head assembly be either removed or backed out of contact with the tape. Failure to do this may considerably shorten the life of the idler.

## METHOD 2.

- A. On the Main Audio Board to be modified. part number 4050754, remove and/or replace the components noted below:
1. R35 was 100 ohms. Remove.
  2. R36 was 15K ohm. Replace with 3K ohm, 1/4w, 5%, Ampex part number 066-667.
  3. R31 was 1K ohm. Replace with 3K ohm, 1/4w, 5%, Ampex part number 066-667.
  4. R9 was 59K ohm. Replace with 22K ohm, 1/4w, 5%, Ampex part number 066-712.
  5. L1 was 4700uH. Replace with 2200uH, 10%, Ampex part number 540-068.
  6. C3 was 270pf. Replace with 1K ohm, 1/4w, 5%, Ampex part number 066-665.
  7. C9 was 39pf. Replace with 5pf  $\pm$  1/2pf, Ampex part number 034-156.
  8. R38 was 100 ohm. Remove.

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V. PROCEDURE-cont.

9. C29 was 820pf. Remove.
  10. R33 was 27K ohm. Replace with 3K ohm, 1/4w, 5%, Ampex part number 066-667.
- B. Perform steps A, B, and C, PROCEDURE METHOD 1, then procede as follows:
1. Turn R34 fully CW.
  2. Turn reproduce high speed and low speed LF equalizers fully CW.
  3. Connect a flux loop to reproduce head and with 3K Hz square wave drive, adjust high speed high frequency reproduce equalizer for "flat top" square wave system output.
  4. Repeat for lower speed with low speed high frequency reproduce equalizer.
- C. Make a short test recording using an appropriate code generator, rewind tape and then manually move the tape in both forward and reverse directions. The waveform of the reproduced signals should be essentially similar, (i.e. a time reversed signal with no amplitude differences). If desired, the record equalizer may be used to improve the amplitude response for 7.5 in/s recordings, but care must be taken to ensure that no amplitude changes occur with motion reversal.
- D. To minimize crosstalk into audio tracks from time code; the record and reproduce gains on the time code track should be adjusted to record the time code at 10 to 15 dB below normal operating level.
- E. When used in editing systems that shuttle tape with the lifters in it is recommended that the scrape flutter idler on the head assembly be either removed or backed out of contact with the tape. Failure to do this may considerably shorten the life of the idler.