Film-Tech

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Dolby Laboratories Inc

Field Bulletin No. 149 - May 1986

MODIFICATIONS TO DOLBY MAGNETIC PRE-AMP UNIT (MPU)

- ☐ Modification Urgent
- ☒ Modification Recommended
- ☐ Modification Required if Problem is Present
- ☐ Modification for Special Applications

Background: Over the last 10 years, the technical quality of film sound has improved significantly. 70mm magnetic stripe in particular has changed in both quality and characteristics. These changes have been made possible by better and more consistent striping and recording, higher output oxides, and selection and standardization of more suitable frequency response characteristics. In addition, many theatres are now using improved sendust heads, which further affect playback characteristics.

Problem: Certain Dolby magnetic pre-amplifier modules (Cat. No. 92, Rev. 4; board will be marked 92-4) were designed with previous magnetic stripe characteristics in mind. Under some circumstances the range of user adjustments on the card may not be sufficient to match the pre-amplifier to the characteristics of recent and current 70mm films.

Dolby magnetic pre-amplifier modules Cat. No. 92-3 should not require the modifications described in this bulletin. If Cat. No. 92-2 pre-amplifier modules exhibit the symptoms described below, please contact our office for further instruction.

Symptoms:

(a) When playing a current pink noise test film, the pre-amplifier mid- and high-frequency control cannot be adjusted to achieve a flat frequency response;

(b) When playing a current Dolby tone test film, the pre-amplifier gain cannot be lowered sufficiently to get the tone to read correctly on the Dolby level meter.

Remedy: This Engineering Field Bulletin describes simple component changes which will correct the problems outlined above. After these modifications, the pre-amplifier will have sufficient range to take account of both old and new 70mm magnetic film characteristics.

Equipment Needed:

- 70mm pink noise test film (see note in box)
- Dolby level test film (see note in box)
- Real time analyzer
- Dual trace scope

Dolby

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Although 70mm magnetic sound-tracks are much more consistent today than was the case some years ago, there is still some variation from film to film. Consequently, film distributors usually include pink noise and Dolby level test material which has been sounded at the same time and is therefore identical with the release print itself. 70mm films are released on different print film stocks; the varying thickness of different materials may significantly affect playback characteristics.

Dolby Laboratories provides 70mm pink noise and Dolby level test films which are recorded to current standards, but these should be used only for preliminary alignment.

Warning: Do *not* attempt the following procedures until you have both proper equipment and test film. *Read the instructions thoroughly*. If you have any questions, contact Dolby Laboratories in San Francisco (415-558-0200) or London (01-720-1111).

Procedure:

1. **Heads:** If the head is worn, it should be replaced, as otherwise any high-frequency adjustment to the pre-amplifier will be erroneous.

   REMOVE ANY HEAD-LOADING RESISTORS THAT MAY BE PRESENT.

2. **MPU Backplane:** Check solder links on the MPU backplane. If possible, set the links for high gain; this setting provides better immunity to hum fields near the MPU frame.

3. **CP200:** Check CP200 gain headers on the Cat. No. 201. These headers should either be set at the 100 mV position or be modified as described in Dolby Field Bulletin #144 (enclosed). In no case with the MPU should these headers be set at the 1-volt position, as this is outside the operating range of the MPU, and may cause oscillation. The 1-volt position is intended solely for use with high-output preamps not of Dolby manufacture.

   CP100: The magnetic format module will be either a Cat. No. 84 or a Cat. No. 135. The Cat. No. 84 always allows sufficient range to reach Dolby level, but the Cat. No. 135 may not. If possible, a Cat. No. 135 should be replaced with a Cat. No. 84. If this is not practical, you may need to change to the low gain link setting on the MPU backplane.

4. **MPU Module Modification:** Adjusting the Cat. No. 92-4. (Note: the module will be labeled Cat. No. 92-4)

   DO NOT MODIFY CAT.NO. 92-2'S OR 92-3'S. CALL DOLBY LABORATORIES FOR FURTHER INSTRUCTIONS.

   a. Set all Cat. No. 92-4's as follows:
      Gain pot - minimum gain
      Low-frequency pot - in mid position
      Mid-frequency pot - mid position
      High-frequency trim pot - minimum boost.

b. Place Center/Surround Cat. No. 92-4 on MPU extender card. Connect real time analyzer (RTA) to Center channel. Connect dual trace scope to Center and to Left Extra channel.

c. Run loop of pink noise.

d. Adjust the mechanical alignment of the head for best results. First, optimize the height (lateral tracking) for the greatest electrical output. Next, adjust the azimuth (and if the mounting permits, the zenith) to achieve the maximum high frequency response. You will probably observe a bump at 12 kHz.

Check the high frequency response on all remaining channels. They should exhibit similar response.

e. Remove Cat 92-4 from extender card.Locate and remove capacitors C-104 and C-204 (see Fig. 1).

Replace Cat. No. 92-4 and check frequency response on center and surround channels. You should now have sufficient adjustment range to achieve a flat frequency response to 16 kHz.

Remove capacitors C-104 and C-204 from the remaining 70mm Cat. No. 92-4's. Adjust each channel for flat freqency response. Each channel should yield a similar response.

5. **ONLY if there is still** a slight peaked response at 12 kHz, solder a shorting strap onto the pre-amplifier as shown in Figure 1. If you have this problem on the first channel you examine, you will probably have to add the shorting strap to all the other channels as well.

6. Run Dolby level test film. Adjust gain controls for Dolby level.

Completion: When all modifications are completed, place a modification sticker on the top of the transformer on each circuit board.

If you have any questions about this field bulletin, please call Sam Chavez or George Douglas at Dolby Laboratories, San Francisco 415-558-0200, David Watts or Dion Hansen in London, 01-720-1111.

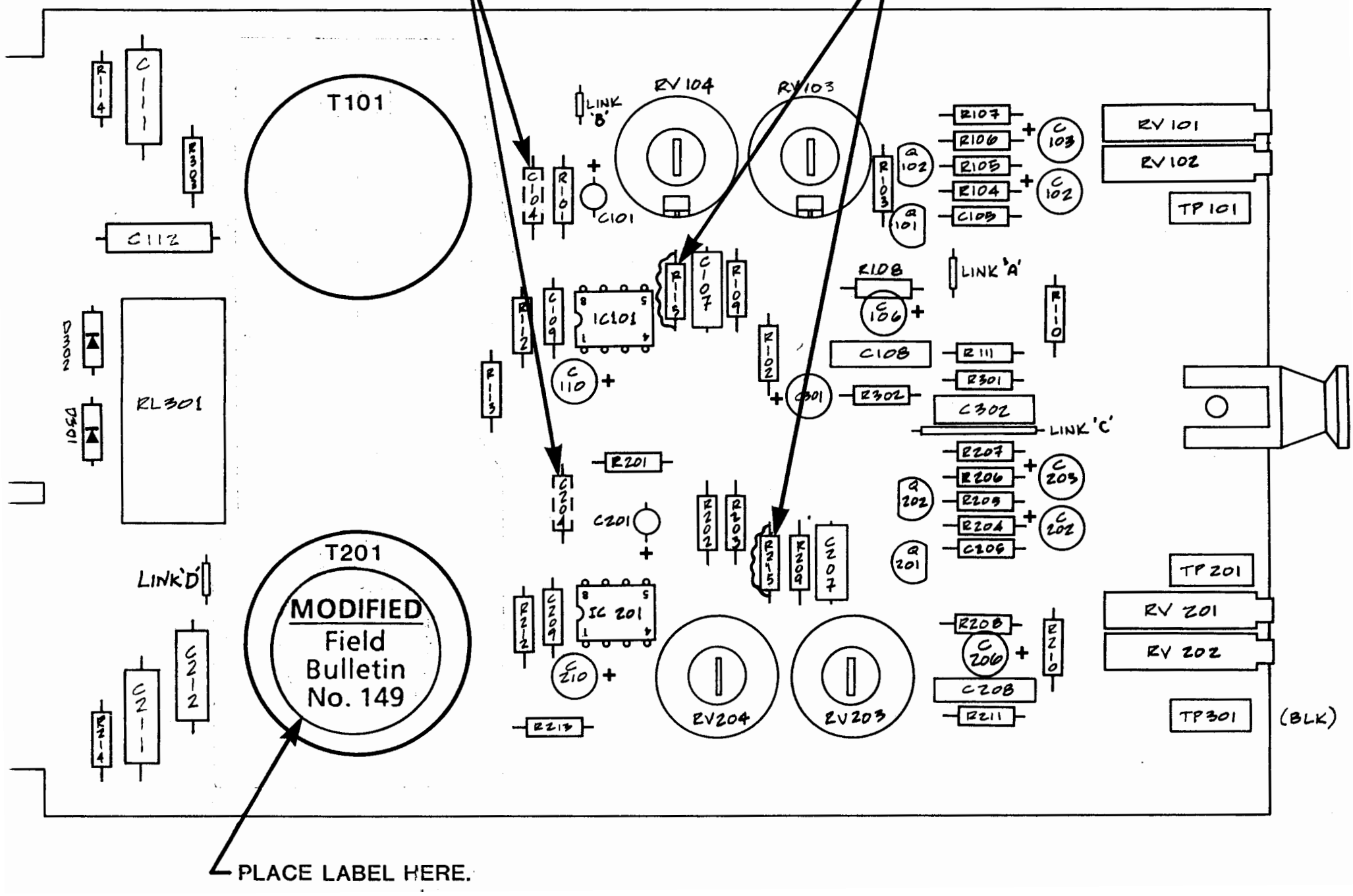
Modifications carried out correctly according to this bulletin will NOT void any Dolby Laboratories warranty which may be in effect.

Encl. (2)
- Modification stickers
- Engineering Field Bulletin No. 144

PLEASE READ TEXT BEFORE PERFORMING MODIFICATIONS.

STEP 4e
REMOVE C104 & C204.

STEP 5
SHORT OUT R115 & R215
USING WIRE JUMPERS.



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