

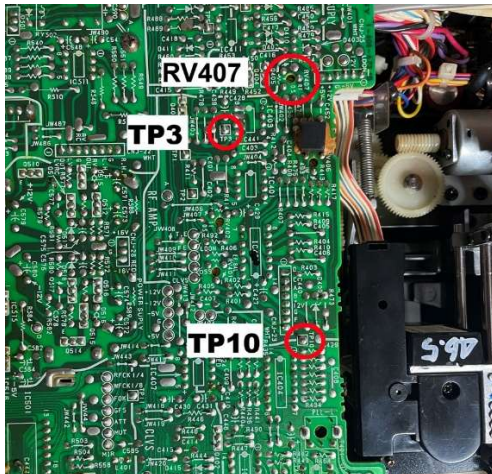
Section header

This guide shows how to perform the following test and calibration procedures:

- RF Offset adjustment x
- Tracking offset adjustment x
- Focus bias adjustment x
- Tracking Bias
- DC Offset

RF Offset adjustment

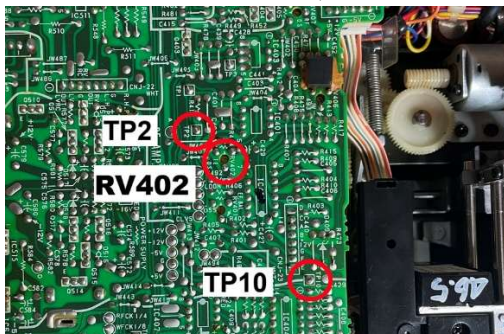
1. Turn player upside down and remove bottom panel to reveal the audio board.
2. Locate TP3 and TP10, as well as RV407 (circled)



3. Connect a DVM to TP3 (+) and TP10 (-)
4. Adjust RV407 to read 1.35V +/- 0.1v

Tracking Offset adjustment

1. Turn player upside down and remove bottom panel to reveal the audio board.
2. Locate TP2 and TP10, as well as RV402 (circled)



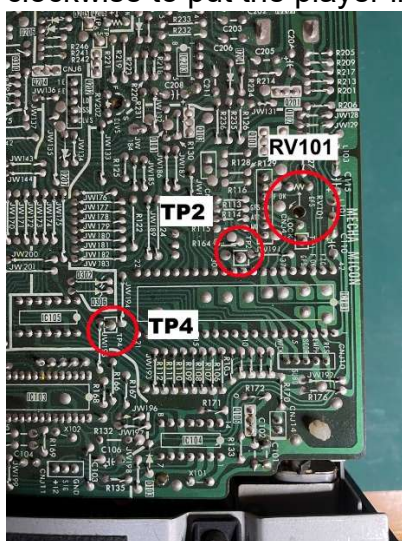
3. Connect a DVM to TP2 (+) and TP10 (-)
4. Adjust RV402 to read 0V +/- 0.1v

Tracking Bias adjustment

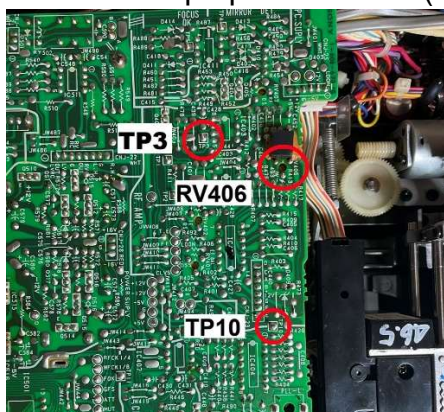
Line out audio DC offset adjustment

Focus Bias adjustment

1. Remove the top and bottom panels
2. With the player the correct way up enter a CD and switch off
3. On the servo board, join TP2 and TP4 together and rotate RV101 fully clockwise to put the player in adjustment mode (circled)



4. Turn player on its left side to reveal the audio board.
5. Connect scope probe to TP3 (+) and TP10 (-) on the audio board (circled)



6. Press play to start CD
7. Set the oscilloscope to:
 - 200mV per division
 - 250ns Sec per division
 - Display Persist – set to 5 seconds
 - Display Contrast – set to 35%

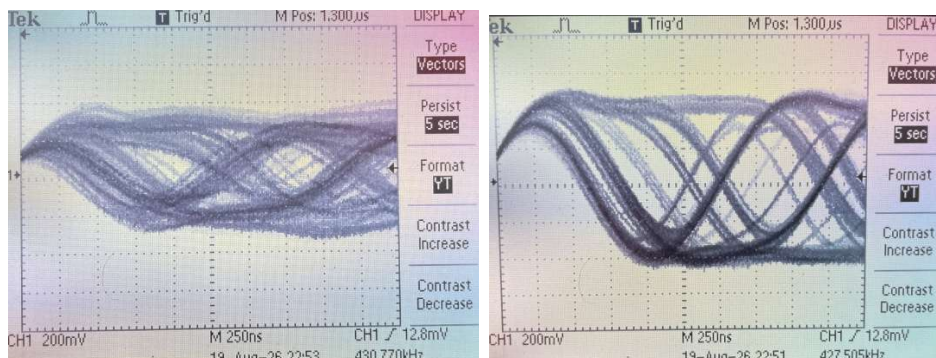
8. Adjust RV406 to obtain the best eye pattern.

NOTE: The player is in adjustment mode so will not start playing the disc.

The player will cycle through a section of the disc repeatedly taking about 35 seconds to complete one cycle. During this time a waveform will develop ideally consisting of lots of triangles in the sinewave form. The more distinct and consistent those triangles, the better. This is called an RF eye pattern.

Getting this waveform on a digital scope is difficult because an analogue scope uses phosphors that permit the signal to persist a short time. A digital scope can emulate this though, and the following procedure can be used.

The eye pattern is made up of what appear to be a series of out of phase sinewaves. Initially start by adjusting RV406 anti clockwise until the collection of sinewaves become a mess (left image), then rotate clockwise until you see there are fewer sinewaves visible. As you turn RV406, it will seem like these out of phase sinewaves will coalesce in to fewer bigger sinewaves (right hand image)



You will also notice that the waveform's PP voltage increases, but if you go too far clockwise, it will start decreasing before the sinewaves start getting out of phase again. Adjust RV406 so the sinewaves are as coalesced as possible while the PP voltage of the waveform is at its maximum.

9. When you've completed, stop the CD
10. Rotate RV101 on the Servo board fully anticlockwise
11. Disconnect the link between TP2 and TP4 on the Servo board

A completed eye pattern:

