

DU MONT

First with the Finest in Television

ALIGNMENT PROCEDURE

for

TELESET MODELS

RA-103D

RA-104A

RA-110A

Rumson

Hastings

Westwood

Sheffield Wellington Fairfield

Canterbury

ALLEN B. DU MONT LABORATORIES, INC.

TELESET SERVICE CONTROL DEPT.

MARKET STREET, EAST PATERSON, NEW JERSEY

NOT TO BE REPRODUCED WITHOUT THE CON-
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ALIGNMENT PROCEDURE

The alignment of a Television receiver is a procedure that must be followed very carefully in order that the end result is comparable to that obtained when aligned at the factory.

Before attempting to align, the serviceman must be sure that alignment is required.

If there is any doubt in the serviceman's mind regarding the need for alignment, a quick check can be made by viewing the overall response of the video IF strip. This is accomplished by performing step No. 6 in the alignment procedure.

EQUIPMENT NEEDED

Sweep Generator

This generator should be capable of putting out a band of frequencies from about 20 to 30 megacycles. Some means for identifying the frequency of various parts of the response curve must be available. To effect this, the sweep generator must either have an internal marker circuit or an external RF generator to perform the same function, will have to be used.

In the alignment table under the heading "Type of Input Signal Required," the description "Wobulated and unmodulated RF" means that both the sweep generator output (wobulator) and the unmodulated RF generator are to be fed into the point designated. It should be understood that both these units will have to be used if the sweep generator does not have an internal marker generator.

If, however, the sweep generator has an internal marker generator only the output from this one unit need be fed into the designated point.

Oscillograph

An oscillograph is used as a means of visually indicating the response of the stage or stages under observation.

GENERAL INFORMATION

All of this equipment must be securely grounded to the receiver being aligned. This grounding can be accomplished by using a metal top bench, preferably copper. If such a bench is not available, these units should be bonded together by the use of heavy metal braid between the chassis. Ordinary wire is not enough to effectively place all units at the same potential.

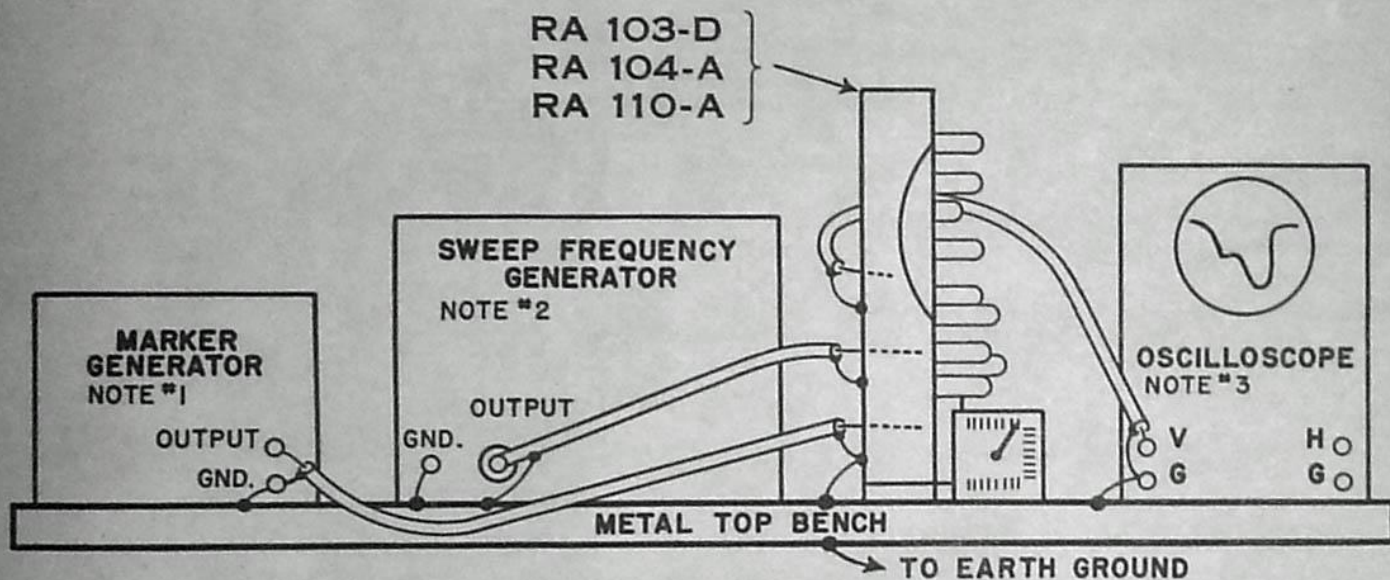
Once the equipment is set in place, the generators and receiver should be allowed to run at least 15 minutes before starting to align.

Additional equipment necessary for alignment is what is referred to as a 6AK5 adapter tube. This is simply a 6AK5 with a fine wire soldered to pin No. 1. It may be necessary to fasten this wire to the side of the tube with scotch tape to prevent it from shorting against the bottom of the shield. This tube is used to permit feeding the generator output into the grid of the mixer stage without disturbing the Inputuner.

In the procedure, reference is made to the use of a "Probe Detector." This device is merely a crystal rectifier with the necessary filter. Its purpose is to permit the observation of the response of a single stage when viewed ahead of the video detector.

ALIGNMENT SET-UP

1. Keep all coax cables as short and as well shielded as possible.
2. Ground metal bench to a good earth ground.
3. To test set-up feed signal into grid of mixer thru a 100 mmf condenser. If placing hand on any chassis or adding additional grounds at any point affects waveform or if Teleset has a tendency to oscillate, grounding must be added until these effects disappear.



NOTES:

1. Unmodulated and amplitude modulated RF should cover 20 to 30 mc range. Also 4.5 mc. Not necessary if marker is built into sweep frequency generator.
2. Should have center frequency range from 20 to 30 mc. Sweep should be adjustable up to 6 mc at least.
3. We recommend use of internal saw-tooth sweep. Waveforms shown were taken using this sweep. External sweep from sweep frequency generator may be used if preferred.

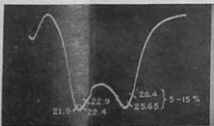
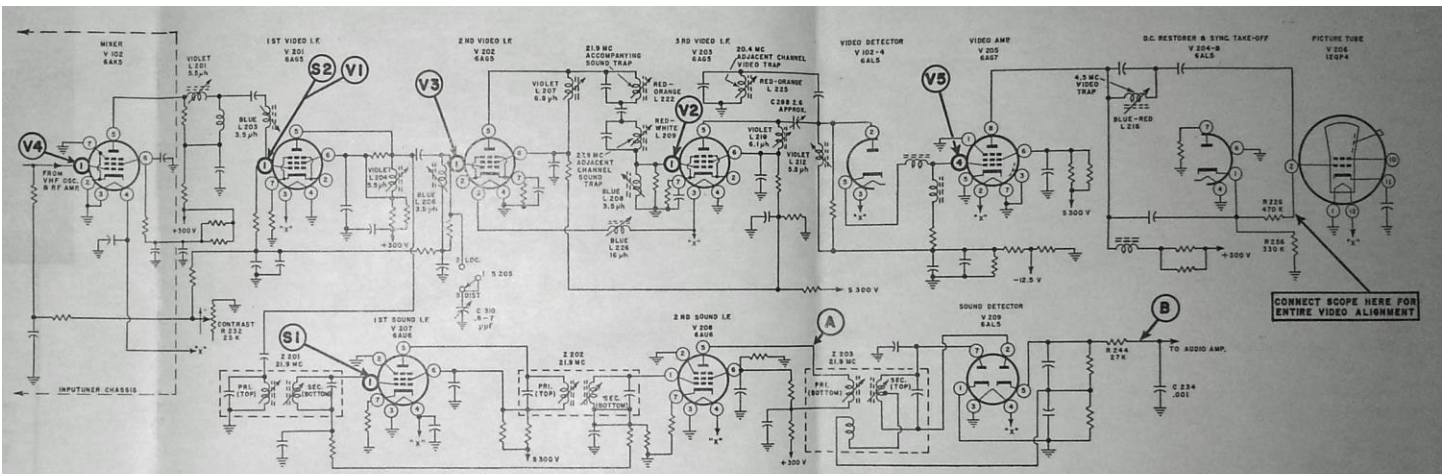


Fig. 1



Fig. 2

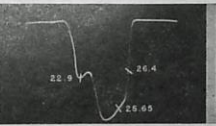


Fig. 3

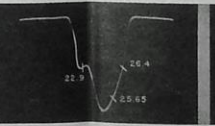


Fig. 4

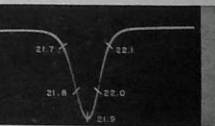


Fig. 5

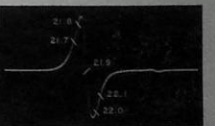
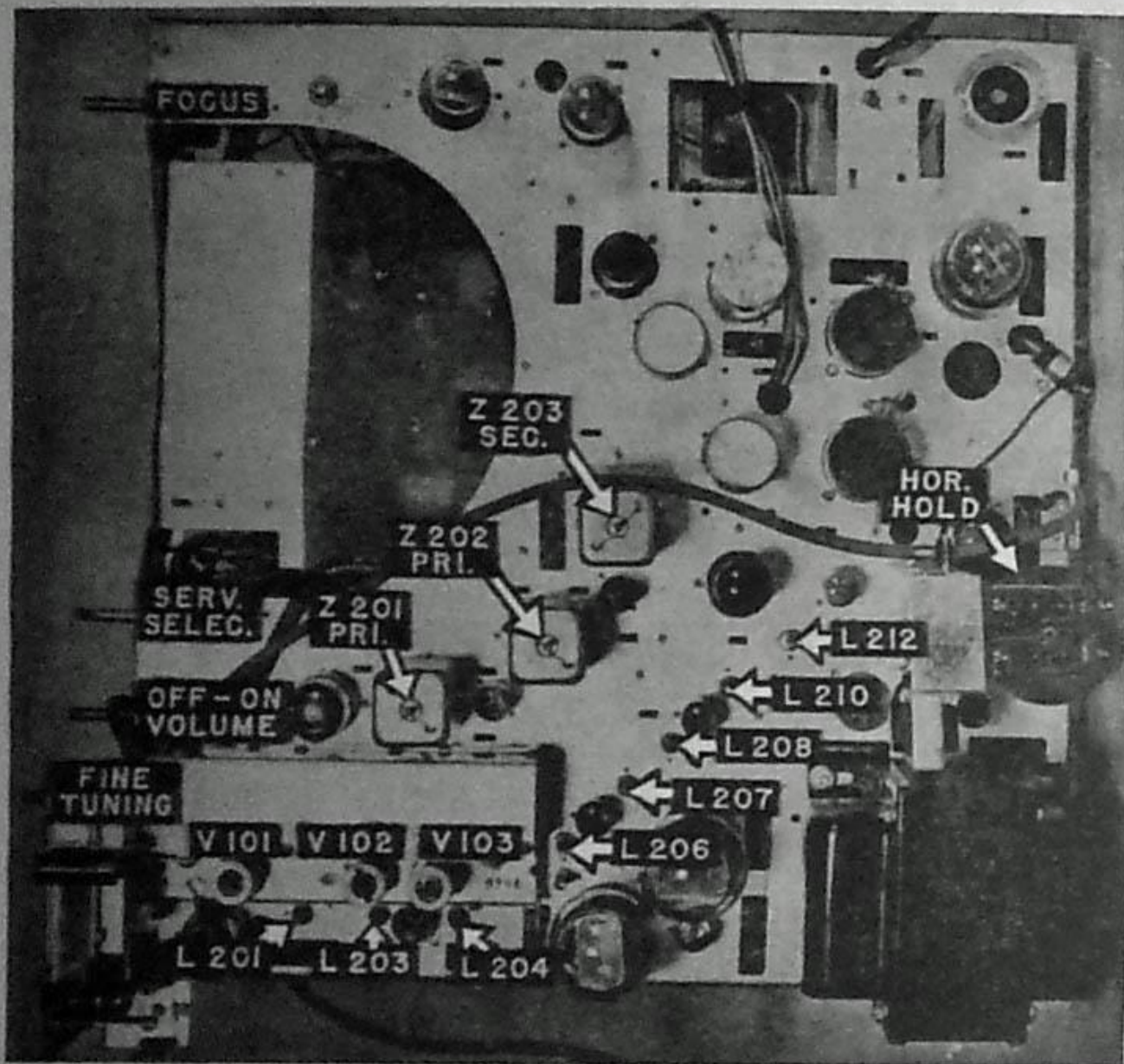


Fig. 6



ALIGNMENT OF TELESETS WITH LOCAL DISTANCE SWITCH

With L-D switch in L position and the shunt capacitor set at approximately $\frac{1}{2}$ of its total capacity, the receiver should be aligned using the normal alignment procedure. After set has been aligned place local-distance switch in distance position and turn contrast full on. Tune set to a very weak test pattern. Adjust L206 for maximum signal. Now place L-D switch in L position, tune set to a strong test pattern and adjust C310 for best picture quality. No other adjustment should have to be made.

VIDEO IF ALIGNMENT TABLE (RA-103D)

Notes:

1. Remove 6AB4 oscillator V103 and 6J6 RF amplifier V101 from Inputuner before attempting to align set.
2. Place tuner at extreme high end of range.
3. Set R-232 to give -5V from center arm to ground on VTVM unless otherwise noted.

Step No.	To Adjust	Type of input signal required	Connect generator at point number	Scope thru crystal probe or direct	Remarks
1	L222 Z201 (top)	21.9 mc with 400 cycles AM	V1	Direct	Tune for minimum signal on scope.
2	L225	20.4 mc with 400 cycles AM	V1	Direct	Tune for minimum signal on scope.
3	L212 L210 C288	Wobulated and unmodulated RF 6 mc sweep Set center frequency at about 25 mc	V2	Direct	Short L209 out. Contrast control off. L212 tunes left side of curve. L210 tunes right side of curve. C288 affects band-width. Peaks should be even. Carrier must not exceed 15% down from right peak. See Fig. 1.
4	L208 L207 L209	Wobulated and unmodulated RF	V3	Direct	L208 positions center peak. L207 affects shoulder amplitude. L209 positions carrier on right shoulder. See Fig. 2.
5	L206 L204	Wobulated and unmodulated RF	V1	Direct	Use 100 mmf in series with generator. See Fig. 3.
6	L203 L201 L204 L206	Wobulated and unmodulated RF	V4 use 6AK5 with lead attached.	Direct	Use 100 mmf in series with generator. 22.9 mc marker slightly inside low frequency peak. 26.4 mc 50% down. See Fig. 4. If peak at 22.9 mc cannot be obtained, re-adjust L-208 slightly to get dashed curve of Fig. 2.
7	L216	4.5 mc with 400 cycles AM	V5	Probe detector	Tune for minimum signal on scope.

SOUND IF ALIGNMENT TABLE

1	Z202	Wobulated and unmodulated RF 500KC sweep Set center frequency at about 22 mc	S1	Probe detector at point A	Tune Z202 for maximum amplitude and symmetry. Primary (top) affects frequency. Secondary affects symmetry and amplitude. See Fig. 5.
2	Z201	Wobulated and unmodulated RF 500KC sweep	S2	Probe detector at point A	Tune secondary (bottom) Z201 and Z202 for symmetry. Then primary (top) Z202 for frequency. See Fig. 5.
3	Z203	21.9 mc with 400 cycles modulation	S2	Direct at point B	Detune top Z203, tune bottom for maximum, then tune top for sharp minimum on scope.
4	Z203	Wobulated and unmodulated RF 500KC sweep	S2	Direct at point B	If necessary, tune bottom for symmetry of curve.

