INSTALLATION, TEST, AND SERVICE INSTRUCTIONS
for
TYPES IT-26R AND IT-39R CUSTOM CHASSIS GROUP
"CENTURY" TELERECEIVER MODEL 326
IT-40R AND IT-42R PICTURE UNITS

Reference: Schematic of Circuit E-350

I. Equipment and Signal Required

a. 20,000 ohms-per-volt voltmeter, such as Simpson Type 260.
b. Video test pattern signal, RMA standard, approximately 1 V peak to peak, sync negative.
c. Audio signal: approximately zero db at 500 ohms unbalanced.

Note: The last two items are signals as provided by Type IT-35R

II. General Description of Circuit

a. Video

The video signal from the control unit is brought into the video-sweep chassis through the four pin connector, J 1. R1 serves to terminate the video line, if desired, at its characteristic impedance, 75 ohms. R2 is the auxiliary contrast control, used when multiple viewing units are employed with a single control unit. V1 and V2 form a two-stage video amplifier with approximately 4 1/2 mc. bandpass. The output of this amplifier is fed to the grid of the noise clipper, V3, and its automatic bias rectifier, CR1. The noise clipper output is coupled to the grid of the cathode-ray tube, V5. A portion of the signal is picked off and fed into the DC restorer, one-half V4, which serves to provide a constant DC reference potential at the video black level.

b. Sync Clip

The signal from the noise clipper is also fed into the sync clipper which is the other half of V4. This acts to separate the sync pulses from the video signal. From the sync clipper, the sync pulses are fed through a two-stage sync amplifier, V7, which, acting as a plate limiting amplifier clips both sides of sync signal, giving clean and noise-free sync pulses.

c. Horizontal Deflection

The output of the sync amplifier is fed to both the vertical and the horizontal deflection systems. It is coupled into the horizontal through C18. A "flywheel" or A.F.C. sync system is used for the horizontal oscillator. This consists of V10, which acts as a stable electron coupled oscillator; V9, a reactance-type frequency control on the oscillator; and V8, a discriminator to compare the incoming sync pulse rate with the oscillator frequency. Winding ABC or T1 is the oscillator winding of the horizontal oscillator transformer and is the discriminator section of the transformer. The incoming sync pulses, coupled into the center tap of the discriminator winding of T1 through C18, are compared with the sine wave, which is inductively coupled from the oscillator winding. Any phase difference between the sync pulses and the sinewave will generate a DC voltage positive or negative with respect to ground, depending upon the sign of the angle of difference which will appear at pin 5. This DC voltage is fed to the grid of V9 through an appropriate filter network and causes sufficient change in reactance to correct the phase difference.

V10 oscillates very strongly; the wave form at the plate approximates a square wave. This square wave is differentiated by means of C29 and R47 and fed into the grid of the first half of V11. The time constant of the coupling network C30 and R48 is such that this triode conducts only on the extreme positive peak of the differentiated wave form fed into its grid. During the short period of conduction, C31, the charging capacitor, is discharged; during the non-conduction period, C31 is recharged through R49 and R50, the charging resistors, thus generating a sawtooth wave. R51 and R52 add an over-shoot to the sawtooth wave thus generated. This "peaked" sawtooth wave is fed to the grids of V12 and V13 connected in parallel, acting as horizontal output amplifiers, The horizontal output amplifiers are coupled through T2 to the horizontal winding of the deflection yoke L5; V16 and R67 act as dampers to prevent inductive ringing of the horizontal output transformer and yoke winding. The current through the damping network is coupled through a delay network, consisting of C40, L7, and C41, into the primary of the horizontal output transformer, thereby providing an effective boost in B+ potential to the output amplifiers V12 and V13.

d. Vertical Deflection

From the sync amplifier, V7, the sync signal is also fed into the vertical sync amplifier, one half of V11, through the first integrating network, R68, C42, R69, and C43. This integrating network forms a single pulse from the serrated vertical sync pulses. The vertical sync amplifier serves to invert the integrated vertical pulses in order to properly trigger the vertical blocking tube oscillator, which is one-half of V17. The grid pulse from the BTO is coupled to the grid of the vertical saw generator, which is the other half of V17. R76, R77, and C50 are the saw-generating network, C50 being discharged through the second half of V17 by the BTO pulse, and recharging through R76 and R77 during the cut-off period. This circuit generates a peaked sawtooth wave, synchronized to the vertical sync pulses. This wave is fed to both grids of V18, both halves of which are connected in parallel, which is the vertical output amplifier. The output of this amplifier is coupled to the vertical winding of yoke L5 through the vertical output transformer T4.

e. Power Supply

The power for the video-sweep chassis is supplied by two low-voltage supplies operating from a single power transformer, T6,/V19, and V20 are low voltage rectifiers, the DC output of which is filtered and used to supply B+ potential for the entire video-sweep and audio chassis. The filament requirements for the video-sweep chassis are provided by T5 which is mounted on the video-sweep chassis itself. The accelerating potential for the cathode-ray tube, V5, is provided by rectifying the flyback pulses from the primary of the horizontal output transformer, T2, in a voltage double circuit using rectifier tubes V14, and V15. This circuit provides approximately 14KV at 500 microamperes.

K1 is the control relay, which is actuated by a control voltage derived from the Control unit. This relay operates from 6V A.C. and serves to turn the Picture Unit on from the Control Unit location.

f. Audio Amplifier, IT-39R

The audio amplifier is a two-stage single-ended amplifier operating from a terminated input and provides approximately 3 watts of audio power to the loudspeaker, LS-1. Since audio amplifier circuits are well standardized and generally understood, no detailed description of the circuit will be given.

III. Adjustment

a. Video - Single and multiple picture units.

The only adjustments which need to be made to the video or cathode-ray tube circuits at the time of installation are adjustments of the auxiliary contrast control R2, the focus control R83, and the brightness control R23. If a single picture unit is being operated from the control unit the terminating resistor R1, should be left across the video input and the contrast control set at maximun (i.e., full clockwise). If two or more picture units are being operated from a single control unit, all but the farthest picture unit should have the video line terminating resister, R1, clipped out. The individual picture unit Contrast Control, with a signal applied, should be set so that each picture unit provides the optimum picture for its individual ambient light conditions. The Brightness Control should be set so that, with no signal applied, the raster or pattern of lines on the face of the cathode-ray tube just disappears. Then, with a picture of normal contrast, the set should be checked to make sure that no vertical retrace lines show in the picture. If any are visible, the Bright ness Control should be adjusted so that the individual lines are crisp and clearly defined in the center area of the picture. The Drive Control, R22, should not be touched unless a new cathode-ray tube is installed; in this case, the drive control should be adjusted with no video signal applied so that a potential of 45V, between the grid and cathode of the cathode-ray tube will just "cut-off" the tube.
Note: This voltage may be measured with a 20,000 ohm-per-volt voltmeter between ground and the arm of the Brightness Control, R23.

b. Horizontal Adjustments

The horizontal adjustments for size, peaking, linearity and position should be made only with a test pattern. The adjustments for hold and phasing may be made with any signal or picture. The horizontal hold or frequency control is a knurled knob, located on top of T1. This control and the phasing control, which is found on the opposite end of T1 inside the chassis, are interdependent; i.e., adjustment to one may necessitate readjustment of the other. The horizontal hold control should be adjusted so that the picture is stationary. For proper adjustment, the control should be turned counterclockwise until the picture tears out and then rotated clockwise slowly until the picture looks back in. The control should then be given about 1/8 turn farther clockwise. The phasing control should be set with the contrast reduced so that only a faint picture appears, and the brightness control turned up so that the blanking and sync pulse may be clearly seen. The phasing should then be adjusted so that a space of approximately 1/50 picture width remains between the edge of the picture and the edge of the raster on the right hand side of the screen (as viewed from the front). It may be necessary to reduce the horizontal amplitude and to deposition the picture to the left in order to view the right edge of the raster and make this adjustment. The horizontal size, R49, and the horizontal peaking, R52, are interdependent, and together with the horizontal linearity of the picture. The horizontal size control should be advanced to give its maximum picture size, care being taken not to run the output amplifier into overload. This overload condition is noticeable by compression of the center of the picture, with little further increase in overall size. Fine adjustment of the size may then be made by the horizontal peaking control. The horizontal linearity control, L7, is a factory setting and should need no readjustment. It affects the linearity of the center of the picture and is not critical. The horizontal positioning, R66 should be adjusted so that the picture centers in the mask or frame.

c. Vertical Adjustments

The vertical hold control, R73, serves to adjust the frequency of the vertical oscillator so that it is locked in with the incoming signal. It should be adjusted so that the separate horizontal lines of the picture are evenly spaced and no black spaces show between them. The vertical linearity control, R80, affects chiefly the top half of the picture. With a test pattern on the screen, the vertical size, R76, and vertical linearity should be adjusted so that the picture fills the frame and so that the circles of the test pattern are round. The vertical positioning control, as in the horizontal, should be set so that the picture is centered in the mask.

d. Audio

If a single picture unit is used, the audio line terminating resistor P84, should be left across the audio input terminals. If two or more picture units are used with a single control unit, all but the farthest picture unit from the control should have the terminating resistor clipped out.

ASSEMBLY AND OPERATION INSTRUCTIONS

IT-35R Control and IT-26R Picture Unit for Custom Installation

1. Description

The IT-35R Control Chassis is a self-contained television tuning unit covering all the television channels. It includes a tuning section, video and audio IF amplifiers and detectors, cathode follower outputs for both sound and video, and a power supply. The antenna input impedance is 300 ohms, balanced; the video output impedance is 72 ohms, unbalanced, and the audio output impedance is 500 ohms, unbalanced.

The IT-26R Picture Unit is a two-chassis group, including a video-sweep chassis, and a power supply chassis. An audio amplifier chassis, Type IT-39R, is an optional accessory to the 26R Picture Unit. These chassis provide additional video amplification, vertical and horizontal sweeps, accelerating potential, and audio amplification. This unit is relay controlled from the control chassis.

2. Assembly

The IT-35R Control Chassis is connected to the IT-26R Picture Unit by a group of three cables: 2 72 ohm co-ax for video, a parallel pair cable for control, and a shielded cable for audio. The video and control are brought out through a four-pin connector on the back of the chassis. The two widely-spaced pins in line vertically on the right facing the rear of the chasis are in the video; the bottom one is ground, and should be connected to the shield of the co-ax, and the upper one to the center conductor. The two closely spaced pins on the left are the 6V control potential, the upper one of which is grounded. Polarity of control potential is unimportant. The audio is brought out by means of a shielded single-pin phono-type connector, the shell of which connects to the shield of the audio cable and the center contact to the center audio conductor. The antenna connection is made to a two-pin connector on a bracket above the chassis at the rear. Any standard 300 ohm folded dipole and reflector antenna may be used; stacked arrays may be necessary in low signal areas.

The cable connections from the control chassis to the picture unit are made by means of two plus: a four-pin plug for the video and control on the video-sweep chassis, and a single-contact plug for the audio on the audio amplifier chassis. The video and control plug is connected exactly the same as the corresponding plug on the the audio amplifier. The center conductor of the audio cable should be connected to the single pin and the shield to the shell of the plug.

The IT-26R and IT-39R chassis are interconnected by means of a cable with octal connectors, a yoke assembly, and a speaker assembly. The cable plugs into the octal sockets on the video-sweep chassis, and the IT-39R Audio Amplifier. The cable from the audio amplifier should be plugged into the octal connector on the power supply chassis. The speaker assembly plugs into a 3-pin connector on the amplifier chassis located between the audio output and filament transformer. The yoke and focus coil assembly plugs into a 5-pin socket on the video-sweep chassis. The cathode-ray tube socket is attached by a cable to the video sweep chassis. The green lead in this cable should be run free in air, and not cabled in or dressed close to metal. It may be run near wood or other dilectric. The accelerating potential for the cathode-ray tube is supplied by the red high-voltage lead coming from the high-voltage protective cover on the video-sweep chassis.

If it is not desired to use the Type IT-39R Audio Amplifier chassis, the octal cable connector may be plugged directly into the power supply; suitable connection must, of course, be made from the audio cable to whatever audio amplifier is used.

3. Mounting

The control chassis may be mounted in any position. The chassis should be secured in place by means of four 1/4-20 screws or bolts of sufficient length to just pass through the mounting feet; further extension of the mounting screws may cause internal short circuits and mechanical injury to components. It is necessary to provide adequate ventilation for both top and bottom of the chassis. The bottom cover plate must be used to insure proper alignment of all circuits in the control unit.

The video-sweep, audio, and power supply chassis should be mounted with the tubes up or sideways, not down. External mounting flanges with mounting holes are provided on these chassis for mounting by means of slotted cleats or hold-down screws. As with the control chassis, adequate ventilation must be provided for both top and bottom of each chassis.

The cathode-ray tube must be supported by a cradle at the face, and a suitable support, back on the funnel. Felt, rubber, or other suitable padding should be used between the supports and the tube. The neck must never be used to support the tube. The yoke should be mounted on the neck against the funnel so that it may be adjusted along the axis of the cathode-ray tube, and so that angular adjustment may be made for framing the picture. It may be supported by the tube neck; however, suitable clamping means must be provided so that it does not shift its position once set. The focus coil must be mounted separately, behind the yoke, so that it does not rest on the neck of the tube. It should be mounted with the gap toward the face of the tube.

4. Operation

The operating controls are all on the front of the IT-35R Control Chassis. From left to right, facing the front of the chassis, they are: Contrast, Station Selector and Fine Tuning, and On-Off/Volume.

To put the set into operation, the On-Off/Volume control should be turned clockwise about one-quarter turn. This turns on the power to the control chassis, actuates the control relay in the picture unit, and advances the volume control so that the sound may be heard.

About a minute should be allowed for warm-up. The station selector (the large, outer knob) should then be rotated until the desired channel number on the dial is directly above the knob. The fine tuning (the small inner knob) should then be adjusted until the sound is heard clearly and without distortion. If the sound is weak or cannot be heard, the contrast control knob should be advanced until the sound is audible.

After the fine tuning adjustment has been made, the contrast control should be adjusted until a clear picture is obtained. Too much contrast is evidenced by glaring whites and highlights, and a horizontal "pull" or distortion of the picture. Too little contrast gives a grey, dim picture. The audio volume should be adjusted to suit the preference of the viewer.

To turn off the set, the Off-On/Volume control should be rotated counterclockwise until a click is heard. This removes power from all chassis, and no other switching is necessary.

5. Adjustments

Adjustments and service instructions for the IT-26R may be found in Specification S-1032.

The adjustment and alignment instructions for the IT-35R Control Unit may be found in Specification S-1030.

6. Miscellaneous

The accelerating potential supplied by the video sweep circuit is approximately 14 kilovolts. This may be increased for use with a 20BP4, if desired, by connecting the lead to the plate of the first 1B3/8016 from terminal 2 to terminal 3 of the horizontal output transformer. The 6BG6 plates should be left connected to terminal 2. This connection will supply approximately 17 kilovolts.

INSTALLATION AND SERVICE INSTRUCTIONS
Type IT-35R Control Unit

REFERENCE: Schematic D-328

INTRODUCTION:

The Type IT-35R Control Unit is a self-contained television tuning unit covering all television channels. It is intended for use with any of the various I.T.I. picture units to provide remotely controlled single or mutliple picture television receiver installations with high-quality performance and simplicity of operation. The IT-35R is the successor to the IT-1R Control Unit and features improved performance with smaller size and power consumption.

GENERAL SPECIFICATIONS:

1. Frequency Range: All twelve commercial television channels are tuned by means of a capacitor type tuning assembly.

2. Tube Complement:

6J6	RF Amplifier
6J6	Mixer
6J6	Local Oscillator
(4)6AG5	Video IF Amplifiers

(2)	6BA6	Sound IF Amplifiers
	6AU6	Sound Limiter
	6AL5	Sound Discriminator
	12AU7	Audio Output
	6AQ5	Video Output
	5Y3	Rectifier

3. Antenna Input Impedance: 300 ohms balanced.
4. Video Output: 2 V peak to peak sync negative for distribution with 75 ohm coax.
5. Sound Output: 500 ohms unbalanced for distribution in shielded cable or parallel pair. Maximum level +db. above .001 watt.
6. Control Voltage: 6.3 V AC at 1 ampere for operation of remote control relays in picture units.
7. Sensitivity: When used with any I.T.I. picture unit, satisfactory picture and sound performance may be expected with 50 uv. input signal under conditions of low man-made noise and interference.
8. Operating Controls:
   A. Contrast
   B. Sound-Volume and Power Switch.
   C. Channel Selector.
   D. Fine Tuning.

   These controls are the only operating controls when the IT-35R is used in conjunction with an I.T.I. picture unit.
9. Metal cabinet finished in hammer-tone brown with rear-illuminated lucite front panel.
10. Clearance Dimensions:
    16" wide.
    13" deep.
    8 1/4" high overall.
11. Weight: 30 lbs.
12. Power consumption: 75 watts.

CIRCUIT DESCRIPTION:

The IT-35R Control Unit employs a capacitor-tuned channel selector with 300 ohm balanced antenna input. All twelve commercial television channels are covered. Sound tuning is accomplished by means of an oscillator vernier control mounted coaxially with the channel selector switch. A four-stage stagger-tuned video IF using 6AG5 tubes operates a 1N34 detector. The detector output drives a 6AQ5 cathode-follower video output stage. The sound IF consists of two 6BA6 amplifier stages, one 6AU6 limiter, and one 6AL5 discriminator stage. A 12AU7 serves as a sound amplifier and cathode-follower output. The video and sound output and the control voltage are brought out to connectors at the rear of the unit.

INSTALLATION :

Mounting

The IT-35R Control Unit should be mounted wherever most convenient for the operation of its controls. When enclosing the control unit in special cabinets care must be taken to provide adequate ventilation. No limitations exist on the distance separating the control unit and the picture units it is to control; however, the control unit operator should have an unobstructed view of at least one picture unit.

Antenna

The antenna installation for the control unit should follow standard practice for 300 ohm input receivers. The parallel pair 300 ohm tape is connected to the antenna input at the rear of the control unit with the two-prong plug supplied. In most cases a conventional dipole and reflector antenna will provide proper signals for the operation of the unit. In fringe areas more elaborate arrays and special attention to height and location of the antenna and transmission line is necessary.

Video Connections

Video output from the control unit is carried to the picture units by RG-59/U coaxial cable. Connections are made to the four-prong plug at the rear of the control unit as indicated on the component diagram attached to the back panel. Connection to the picture unit should be in accordance with the instructions for the particular type of picture unit employed. With picture units having both sync positive and sync negative inputs, sync negative input is used. In all cases where a single picture unit is used the coaxial cable is terminated withaa 75 ohm non-inductive resistor at the picture unit. Where multiple picture units are employed the unit farthest from the control unit is terminated.

Sound Connections

The television sound signal is wired from the single-pin connector at the rear of the control unit to the audio amplifier in the picture unit by means of POSJ parallel pair cable or shielded single-conductor cable. If the run between the control unit and the picture unit is less than 20' POSJ will generally be satisfactory. For longer runs shielded microphone cable or RG-59/U coax is recommended in order to minimize stray signal pick-up.

Control Voltage Connections

6.3 V AC control voltage is available at the four-prong output connector and should be connected to the picture unit control terminals with POSJ cable.

INSTALLATION ADJUSTMENTS:

To put the set into operation, the Sound-Volume On-Off control is rotated clockwise about one-quarter turn. This applies power to the control unit and actuates the control relay in the picture unit while advancing the Volume Control so that sound may be heard. After warm-up, the Channel Selector may be rotated to select the desired station. The Fine Tuning knob (small inner knob) should then be adjusted until the sound is heard clearly and without distortion. After the fine tuning adjustment has been made, the Contrast Control is adjusted until a clear picture is obtained on the picture unit. Too much contrast is evidenced by glaring whites or highlights, and a horizontal "pull" or distortion in the picture. Too low a contrast setting gives a dim, grey picture.

For viewer adjustments see the applicable installation and service instructions for the viewer type employed. Auxiliary contrast and sound-volume controls in the viewer should be operated at as low a level as practical to allow the highest signal level in the interconnecting cables. The contrast and volume controls on the control unit should be almost fully advanced when proper operation is obtained with the weakest signal to be received.

SERVICE DATA:

Should trouble develop in the IT-35R Control Unit it may be serviced by means of standard service techniques using the schematic diagram D-328. The RF tuner unit is factory pre-aligned and should require no service other than tube replacement.

IF Alignment

Equipment Required

Signal Generator, 20-30 mc.
Sweep Generator, 20-30 mc.
Oscilloscope.
Multimeter, 20,000 ohms/volt.

Video IF

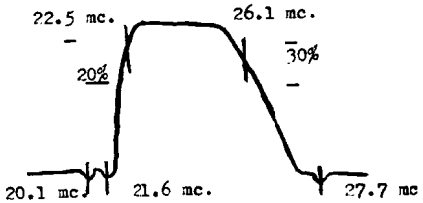
Connects scope to Video output (Pin 2, V8). Connect a modulated signal generator, decoupled with 1000 µµf., to center section of tuner, 2 plate stator (mixer grid). Set tuner on low band, and remove oscillator. Set arm of contrast control potentiometer (R62) to -3.5 volts.

In the order given below set the various tuned IF components:

Coil	Frequency	Response
1. L2A	27.1 mc.	Maximum
2. L23	23.3 mc.	Maximum
3. T2, Bottom Slug	21.7 mc.	Maximum
4. T1, Bottom Slug	25.4 mc.	Maximum
5. T1, Top Slug	27.7 mc.	Minimum
6. T2, Top Slug	20.1 mc.	Minimum
7. L23	21.3 mc.	Minimum
8. T3	21.6 mc.	Minimum

In all cases use the lowest signal input that will give useable output so that limiting does not occur. Remove signal generator and insert sweep generator at same point, sweep set to C.F. of 23.5 mc., 8 mc. width. Tune L16 and L17 for flat-topped pass as shown in Figure 1, and IF alignment is complete.

Sensitivity check: With contrast control set for maximum gain and channel selector on Channel 2, not more than 150 microvolts input to mixer grid at 26.1 mc. should produce 1 volt d.c. across detector load, R42.



Sound IF

Connect scope at junction of R55 and C66. Insert Sweep generator at Pin 1, V11, center frequency 21.6 mc., sweep width 500 KC. Set top slug T6 and bottom slug T6 for balanced discriminator pass at 21.6 mc. Move sweep generator to Pin 1, V10. Set bottom and top slugs of T5 for maximum balanced discriminator pass. Move sweep generator to Pin 1, V9. Set bottom and top slugs of T4 for maximum balanced discriminator pass.

Sensitivity check: With Contrast Control set for maximum gain and channel selector set on Channel 2, not more than 1500 microvolts at mixer grid at 21.6 mc. should cause one volt of d.c. to be developed across R50, limiter grid resistor.

The following additions and circuit changes shall be made to D-328 to bring it into accordance with current production:
Add C85, 1000 µµf. capacitor, from junction of R55 and C66 to ground. Disconnect R57 and pin 6 of V13 from B+. Show R64 10 K, 1 W resistor from B+ to junction of R57 and pin 6 of V13 and at this junction show C86, 20 µf., 250 V electrolytic capacitor to ground with the positive side of C86 at the junction and the negative side to ground.

Century Teleceiver Model 326
Industrial Teleceiver Type IT-40R
Industrial Teleceiver Type IT-42R
Custom Chassis Group Type IT-26R, IT-35R, IT-39R, IT-46R

ADDENDA - SERVICE MANUAL

Since printing, the following changes and revisions have been made in the designs covered by this manual. Please revise your manual accordingly.

IT-26R

1. The Power Supply chassis of the IT-26R has been assigned Type Number IT-46R.
2. On Schematic E-350:

Circuit Symbol	Old Value	New Value
R54	1 meg., 1/2 W.	180 K, 1/2 W.
C62	100 uuf.	270 uuf.

3. On Schematic E-350, plug J2 should have Pins 2 and 3 reversed.
4. On late production, Horizontal Width control L6 is eliminated.
5. On late production of IT-40R 20" Viewer, C36 is connected to Ground rather than to Terminal 4 of T2.

IT-35R

On Schematic D-328:

Circuit Symbol	Old Value	New Value
R55	22 K, 1/2 W.	68 K, 1/2 W.

The following changes are incorporated in late production:

1. Insert 10 K, 1 W between B+ and junction of R57 and Pine 6 of V13, 12AU7.
2. Bypass Pin 6 of V13, 12AU7, with 20 uf., 250 V electrolytic capacitor.
3. Bypass Pin 3 of V13, 12AU7, with 25 uf., 50 V electrolytic capacitor.
4. Add 1000 uuf., 500 V capacitor from junction of R55 and C66 to ground.

A phono input on the rear chassis apron has been added to late production. Rotating the contrast control to the extreme counter-clockwise position actuates a switch which disconnects the television audio and connects the Volume Control circuit to the Phono-input jack.

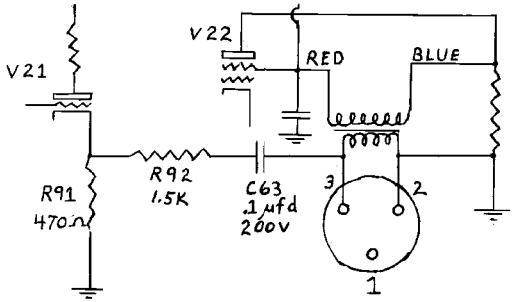
On late production, a 115 V AC outlet for phono motor use has been added to the rear chassis apron.

SUBJECT: Change in tone compensation on the IT-35R control and IT-39R audio amplifier.

The following changes have been made to improve the low-frequency response of the IT-35R and IT-39R combination:

a. On the IT-35R, schematic D-328, resistor R55 is changed from 22K, 1/2 W to 68K, 1/2 W.

B. On the IT-39R, schematic E-350, additions have been made as below:



SUBJECT: Increase of audio gain and reduction of hum possiblility on IT-35R control chassis.

To increase audio gain and reduce the possibility of hum to heater-to-cathode leakage, a 25 uuf., 50 V electrolytic capacitor, C-87, is to be placed in parallel with resistor R-58.

The addition of this capacitor C-87 will have to be made on schematic D-328.

SUBJECT: Increase in horizontal size and improvement of sync on IT-26R chassis.

It has been found desirable to delete the horizontal width coil L-6 when more horizontal size is required.

C-62 has been changed from 100 uuf. to 270 uuf. to improve the sync.

These changes are to be made on schematic E-350.

SUBJECT: Change in value of vertical size potentiometer and resistor R-17 on IT-26R chassis.

The value of the vertical size potentiometer has been changed from 200 K to 500 K to insure greater range.

R-17 has been changed from 1 meg. to 470 K to improve sync.

These changes are to be made on schematic E-350.

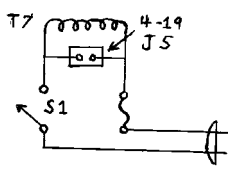
SUBJECT: Change of antenna connection on IT-35R control.

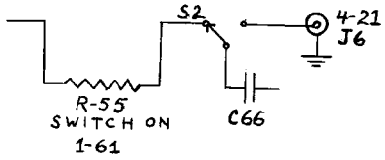
The antenna connector & plug have been discontinued on the IT-35R control chassis. A 2-terminal board will be used on future production.

SUBJECT: Addition of A.C. outlet 4-19 and Phono Jack 4-21 to IR-35R control units.

On all future models of IT-35R controls, line voltage A C outlet and a phono input jack will be provided.

Schematic D-328 should be revised as below to incorporate these changes.





SUBJECT: Improvements in IT-26R sweep chassis used in IT-40R, IT-42R, 326, Custom Chassis Group.

REFERENCE: Schematic E-350

The following changes have been made in the IT-26R sweep chassis to improve performance.

1. Vertical Hold Improvement

   Upper end of R73 Vertical Hold Pot. returned to ground instead of B+, R74 changed from 2.7 megohm to 470 K, 1 W.
2. Interlace Improvement

   R70, grid resistor of Vertical Sync Amp. changed from 1 meg. to 47 K, 1/2 W.
3. Horizontal Sync Pull

   In sets where "pull" occurs at the top of the vertical wedge, a reduction of R18 from value in set to a minimum of 8.2 K, 1/2 W improves this condition. Also changing V7 (6SN7) Sync Amp. tube sometimes improves this condition..

Units using the IT-26R chassis shipped after August 1, 1949 incorporate these improvements. Field changes are recommended only where difficulty has been experienced.

SUBJECT: Improvement in video response in IT-35R control.

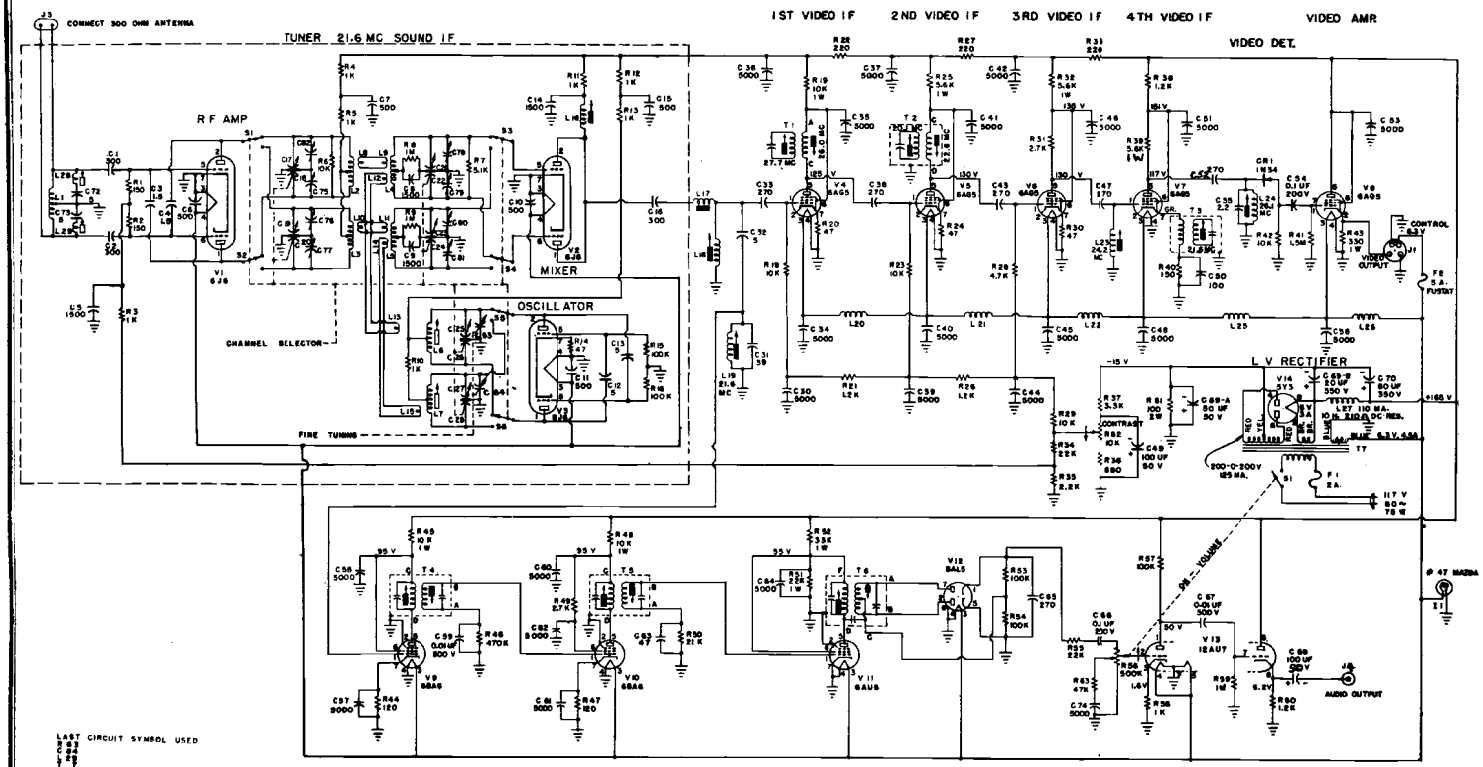
REFERENCE: Schematic D-328

The following change results in a marked improvement in high frequency response:

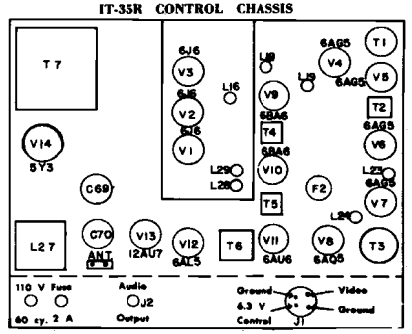
a/ Change R42 (detector load) from 10K 1/2 W to 3.9K 1/2 W Part No. 2-7.

b/ Insert in series with R42, peaking inductor, 470 microhenry, Part No. 21A-260-5.

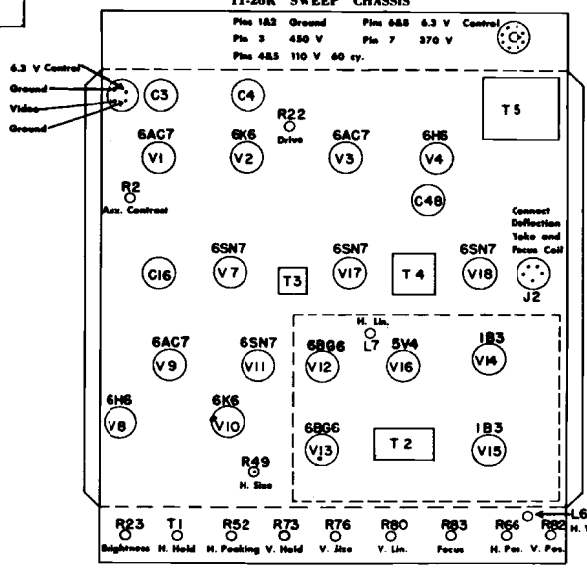
This change is advised in the field whenever improvement in video response is desired. All IT-35R units shipped after August 5, 1949, incorporate this change.



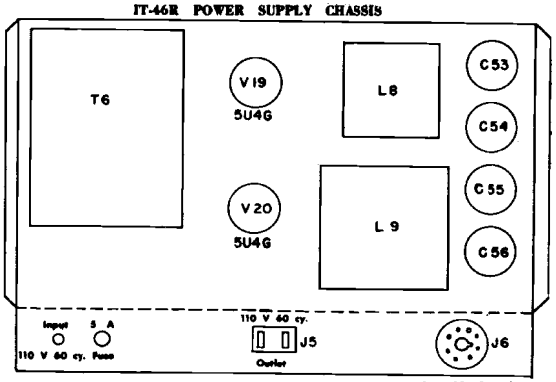
IT-35R CONTROL CHASSIS



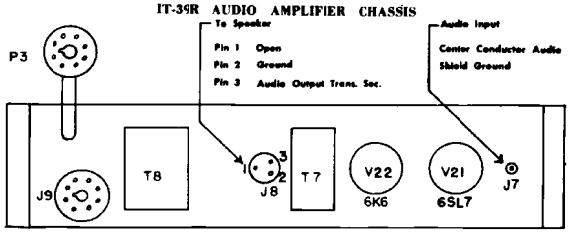
IT-26R SWEEP CHASSIS



IT-46R POWER SUPPLY CHASSIS



IT-35R AUDIO AMPLIFIER CHASSIS



NOTES:-
1. UNLESS OTHERWISE SPECIFIED:- CAPACITOR VALUES ARE IN MICRO-MICROFARADS, RESISTOR VALUES ARE IN OHMS AND RESISTORS ARE 1/2 WATT COMPOSITION, TOL ± 10 %.
2. ABBREVIATIONS:- K = 1,000 OHMS, M = 1,000,000 OHMS, ELECTROLYTIC CAPACITORS BEAR ±
3. VOLTAGES WERE MEASURED TO CHASSIS WITH A 20,000 OHMS PER VOLT METER WITH CONTRAST SET TO - 3.5 V.
4. THIS DWG. SUPERSEDES D-328 ISSUE 1 AND ALL PRELIMINARY IT-35R SCHEMATICS
5. ARROWS ON POTENTIOMETERS INDICATE CLOCKWISE ROTATION

MODELS IT-26R, IT-39R