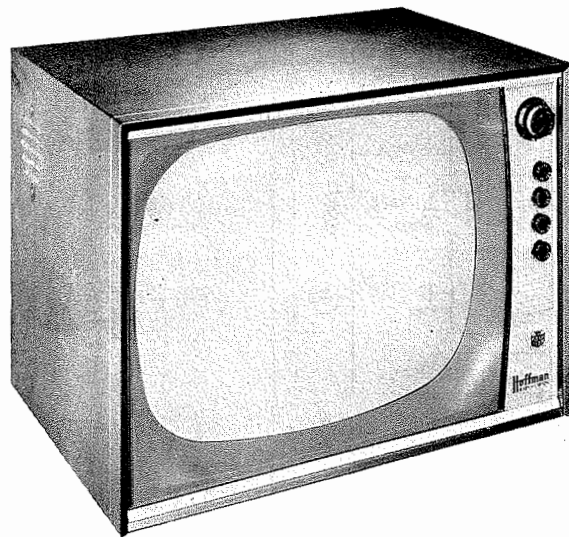




DISASSEMBLY INSTRUCTIONS

- CHASSIS REMOVAL**
- 1. Remove 7 push-on type control knobs from front panel of cabinet.
  - 2. Remove 8 metal screws. Remove rear cover.
  - 3. Remove picture tube socket, H. V. lead, yoke plug and speaker leads.
  - 4. Remove 2 chassis bolts and 2 metal screws holding rear chassis bracket. Remove chassis.
  - 5. Remove 2 speaker nuts. Remove speaker.



MODEL	CHASSIS
K1024-U .....	319-U

SERVICING IN THE FIELD

**TUNER OSCILLATOR ADJUSTMENTS**

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the left of the Channel Selector Shaft.

**PICTURE TUBE SAFETY GLASS CLEANING**

Remove 4 metal screws holding metal molding at top edge of the safety glass. Remove molding and safety glass. Use extreme caution when removing safety glass.

**SERVICE ADJUSTMENT LOCATION**

See Tube Placement Chart on Page 5.

**HORIZONTAL OSCILLATOR FIELD ADJUSTMENT**

Adjustment of the horizontal oscillator circuit may be made from the rear panel of the chassis. Adjust the horizontal frequency slug of L12 until the picture synchronizes horizontally.

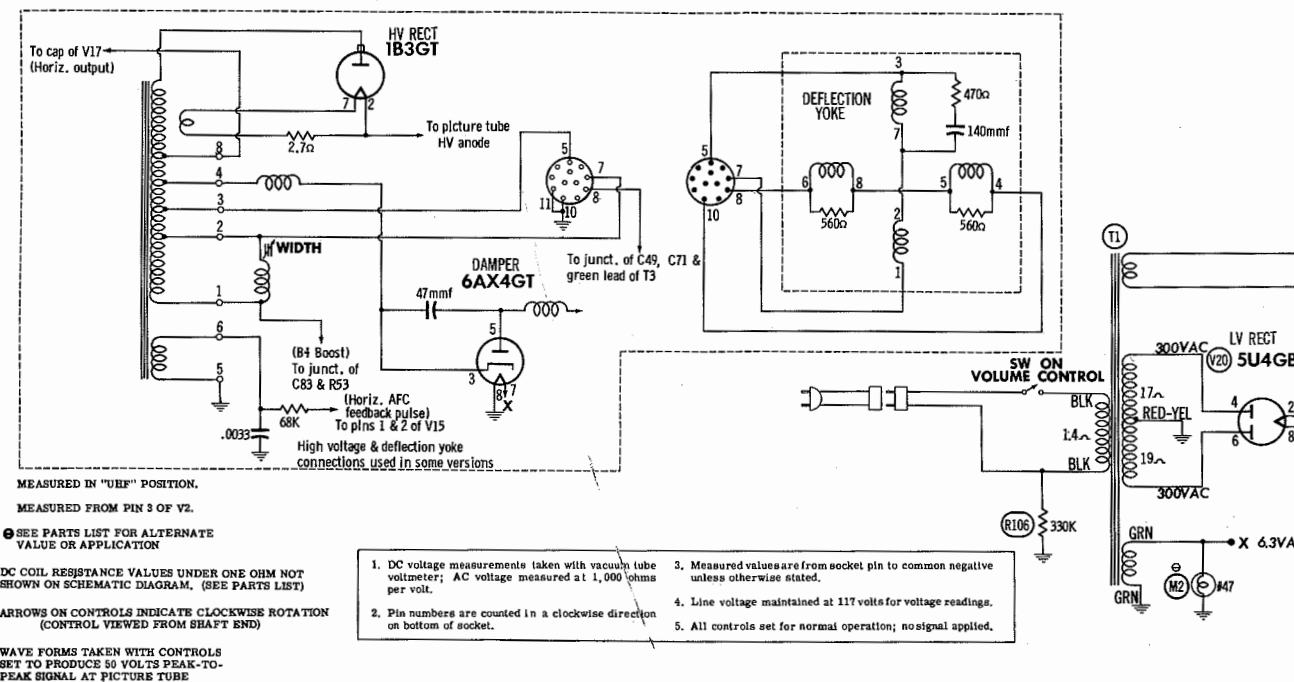
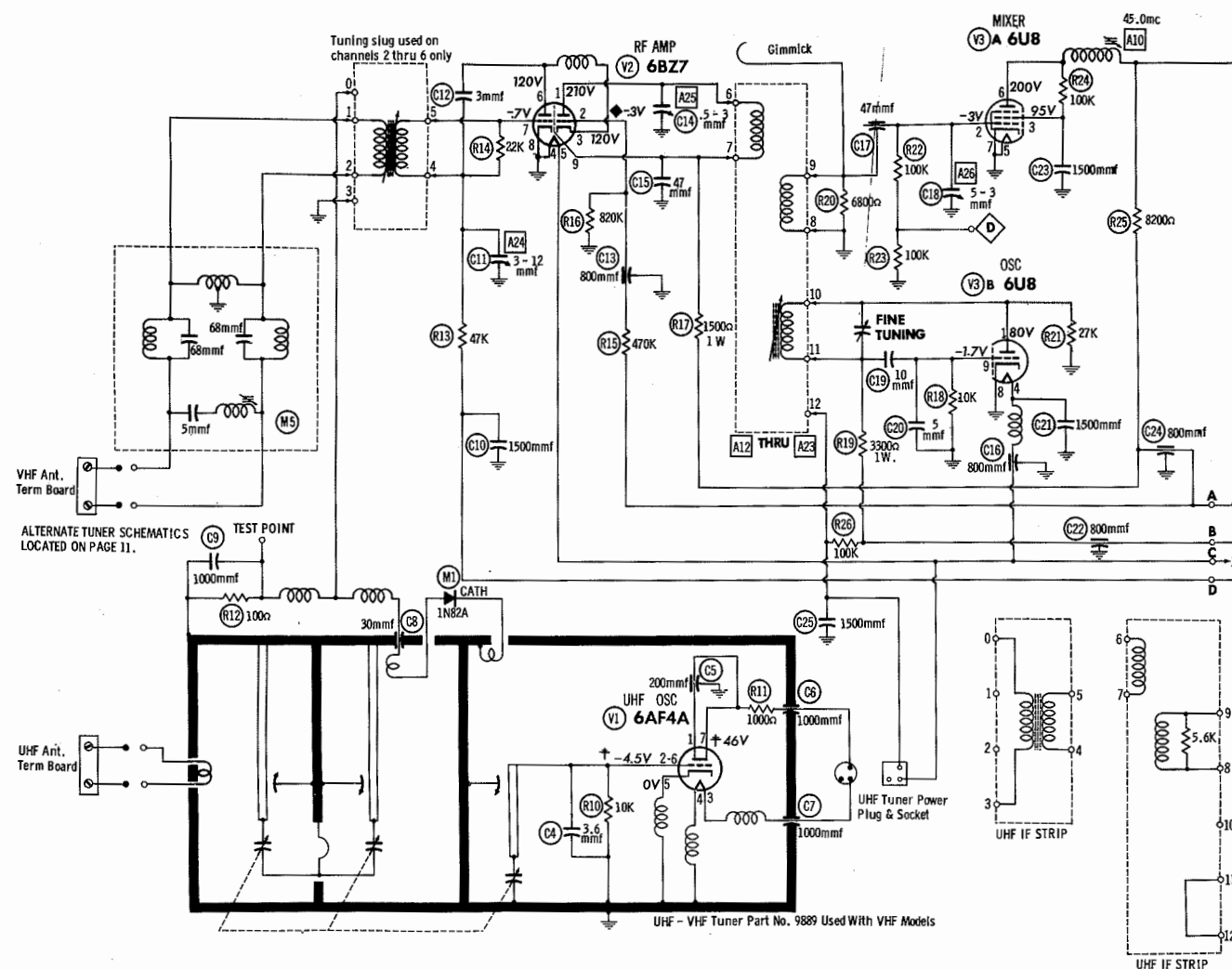
**SOUND IF DETECTOR BUZZ ADJUSTMENT**

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L11) located on top of the chassis.

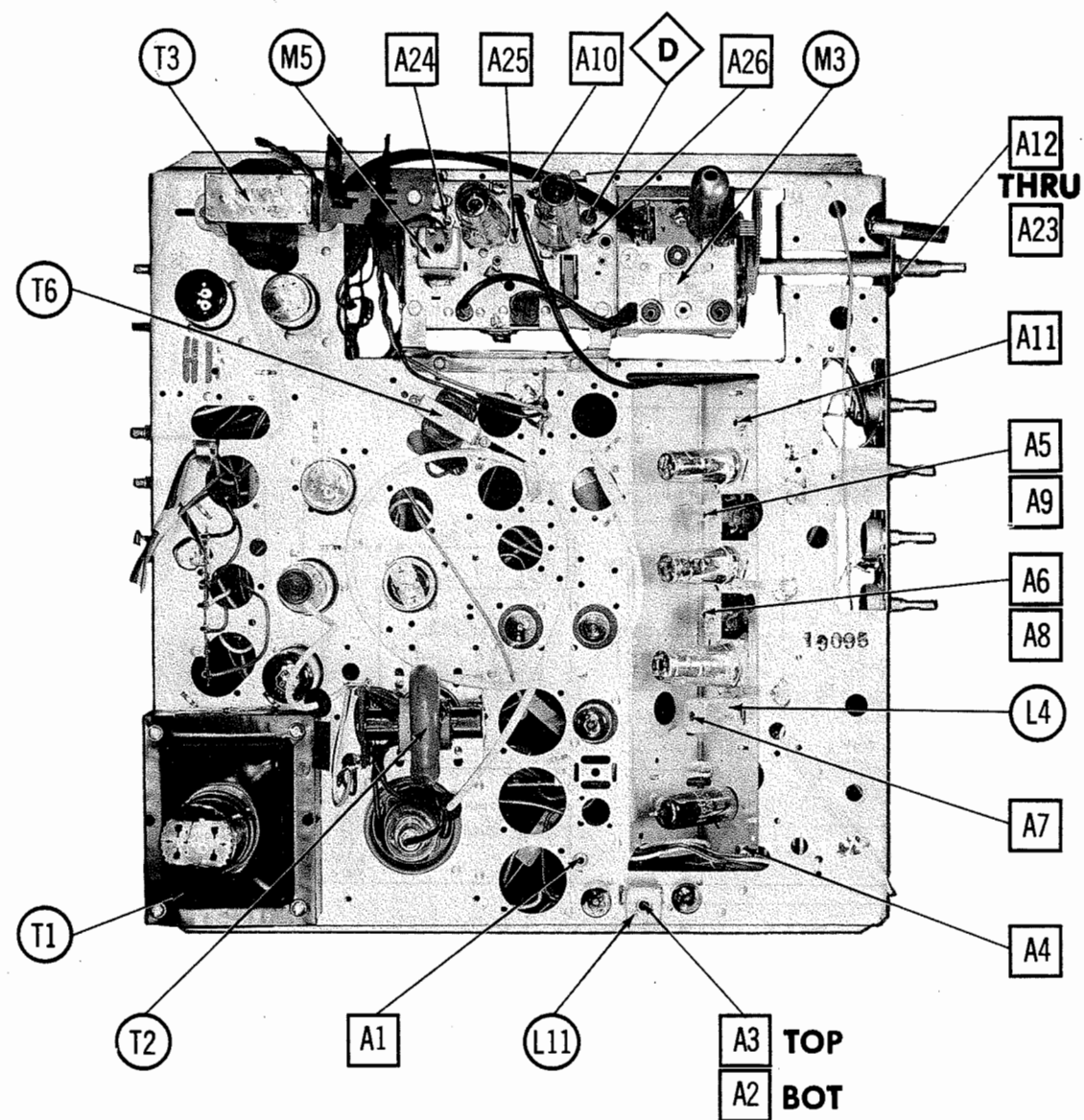
**CENTERING**

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

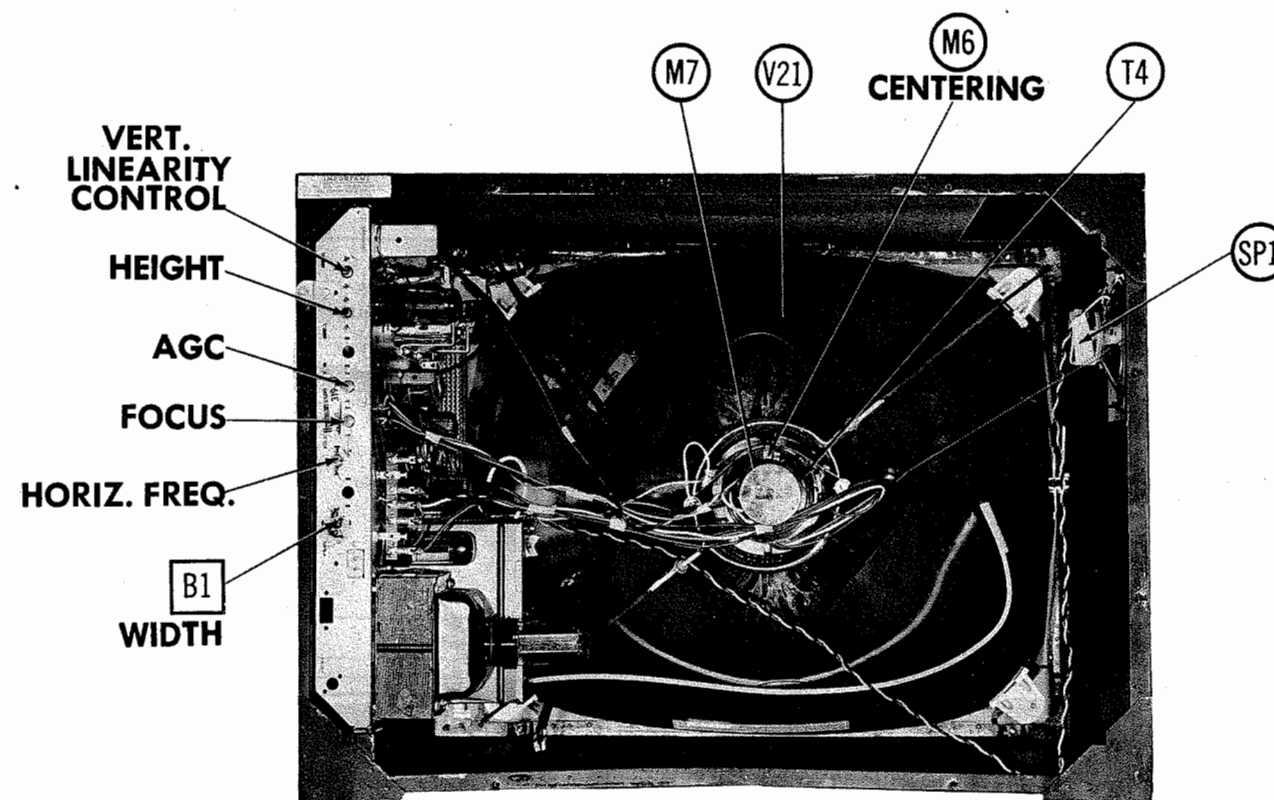
OFFMAN MODELS B1011, -U, B1024, -U, B1031, -U, B1041, -U, B3001, -U, B3021, -U, B3054, -U, K1011, -U, K1024, -U, M1011, -U, M1024, -U, M1031, -U, M1041, -U, M3001, -U, M3021, -U, M3054, -U, P1031, -U, P1041, -U, P3001, -U, P3021, -U, P3054, -U, W1031, -U, W1041, -U, W3001, -U, W3021, -U, W3054, -U (Ch. 316, -U, 318, -U, 319, -U)



A PHOTOFACT STANDARD NOTATION SCHEMATIC  
© Howard W. Sams & Co., Inc. 1956



CHASSIS TOP VIEW

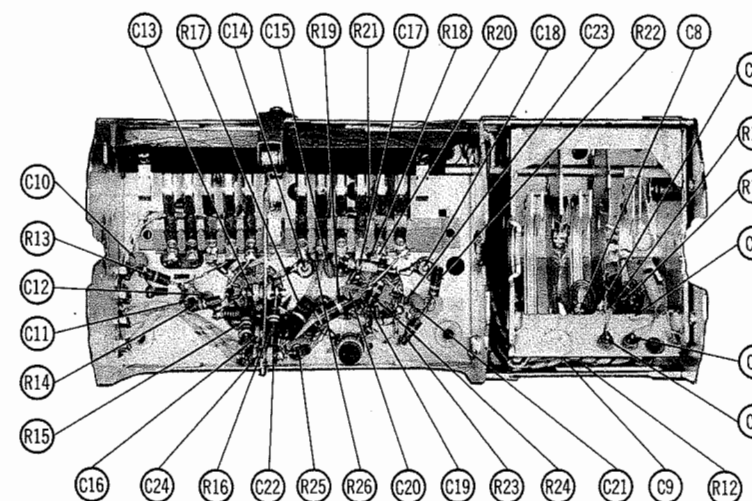


CABINET-REAR VIEW

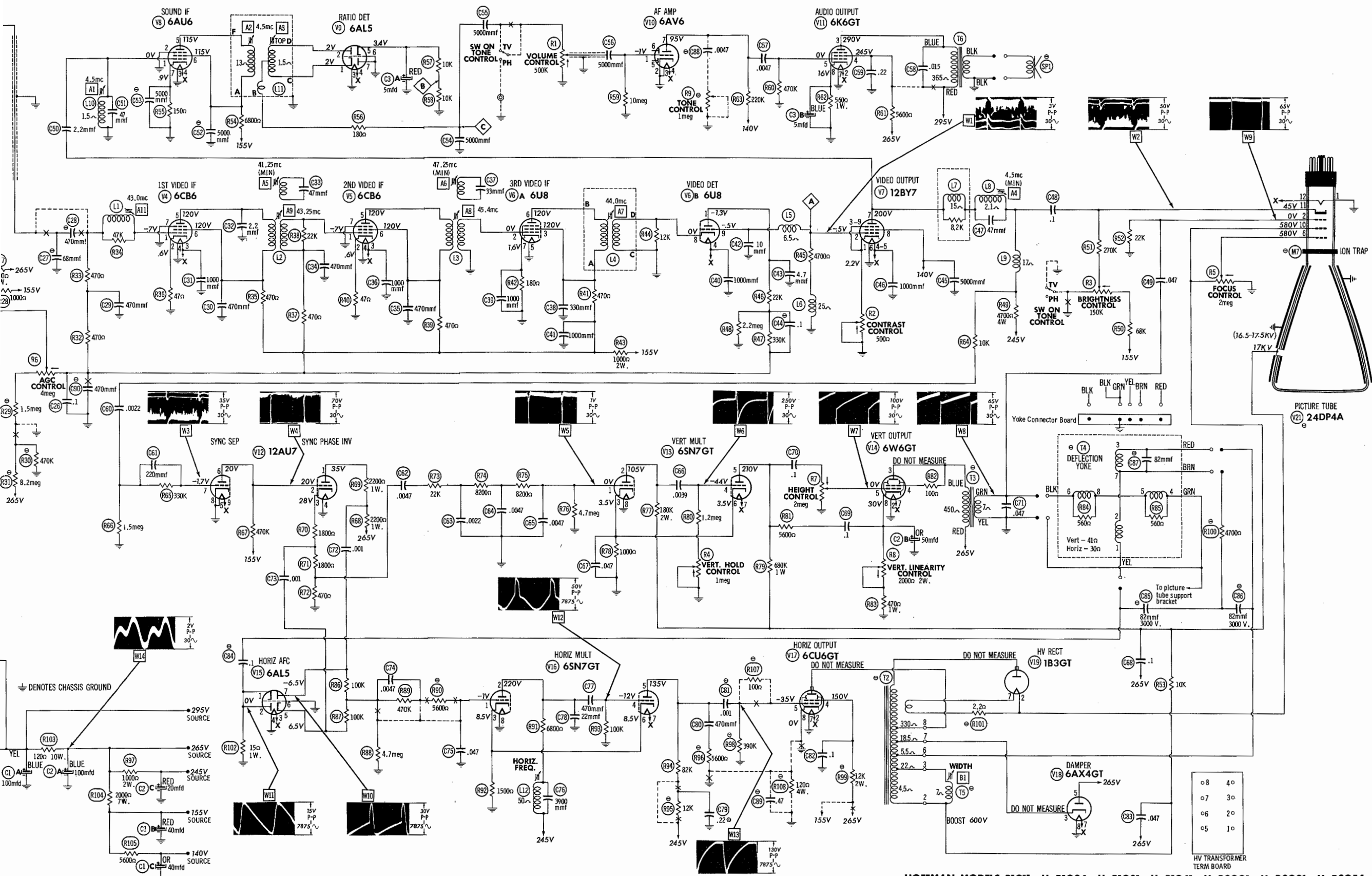
### HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

**HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS**  
Turn the set on and tune in a TV station, preferably with a test pattern. Adjust the horizontal frequency slug of L12 until the picture synchronizes horizontally.

Switch off channel and back again. The picture should remain in sync. Adjust horizontal width slug (B1) for picture SLIGHTLY wider than necessary to fill picture mask horizontally.



RF TUNER BOTTOM VIEW



HOFFMAN MODELS B1011, -U, B1024, -U, B1031, -U, B1041, -U, B3001, -U, B3021, -U, B3054, -U, K1011, -U, K1024, -U, M1011, -U, M1024, -U, M1031, -U, M1041, -U, M3001, -U, M3021, -U, M3054, -U, P1011, -U, P1024, -U, P1031, -U, P1041, -U, P3001, -U, P3021, -U, P3054, -U, W1011, -U, W1041, -U, W3001, -U, W3021, -U, W3054, -U (Ch. 316, -U, 318, -U, 319, -U)

HOFFMAN MODELS B1011, -U, B1024, -U, B1031, -U, B1041, -U, B3001, -U, B3021, -U, B3054, -U, K1011, -U, K1024, -U, M1011, -U, M1024, -U, M1031, -U, M1041, -U, M3001, -U, M3021, -U, M3054, -U, P1011, -U, P1024, -U, P1031, -U, P1041, -U, P3001, -U, P3021, -U, P3054, -U, W1011, -U, W1041, -U, W3001, -U, W3021, -U, W3054, -U (Ch. 316, -U, 318, -U, 319, -U)



## MISCELLANEOUS

\* Alternate part numbers 9861 and 9858



VHF Tuner Part No. 9855 Used With Chassis 316, and 319

## ALTERNATE TUNER SCHEMATIC



VHF Tuner Part No. 9889 Used With Chassis 318.

## ALTERNATE TUNER SCHEMATIC

### SET 328 FOLDER 6

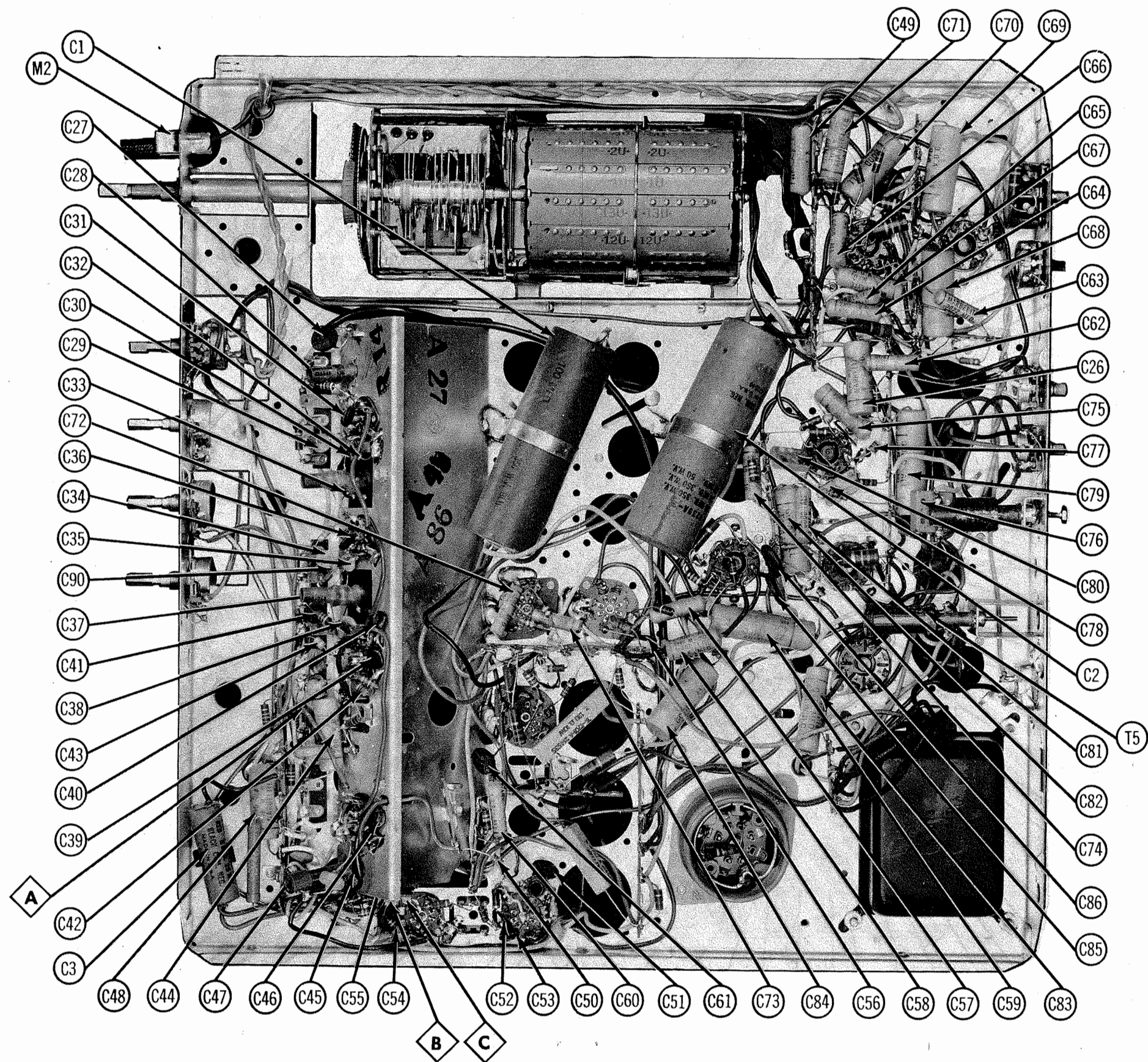
HOPFMAN MODELS B1011, -U, B1024, -U, B1031, -U, B1041, -U, B3001, -U, B3021, -U, B3034  
-U, B1011, -U, K1024, -U, M1011, -U, M1024, -U, M1031, -U, M1041, -U, M3001, -U, M3021,  
-U, M3034, -U, P1031, -U, P1041, -U, P3001, -U, P3021, -U, P3034, -U, W1001, -U, W1041,  
-U, W3001, -U, W3021, -U, W3034, -U (Ch. 316, -U, 318, -U, 319, -U)

- ① Used In Chassis 318, -U, and 319, -U.
- ② Used In Chassis 318, -U only.
- ③ Alternate Hoffman part number.
- ④ Use 8 to 1 turns ratio.
- ⑤ Drill new mounting hole(s).
- ⑥ Includes capacitor C87, resistors R84 and R85 (Also R100 in 99785 Yoke).
- ⑦ Connect horizontal yoke damping network across terminals #3 and #7.
- ⑧ Use original horizontal yoke damping network if necessary.
- ⑨ Enlarge mounting hole.
- ⑩ Use terminals #1 and #2.
- ⑪ Use red and blue terminals.

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		HOFFMAN PART No.	SYLVANIA PART No.	
M1	1N82A		1N82 or 1N82A	UHF Mixer (Clip in)

Note 1. Some versions use a 330KQ  $\frac{1}{2}$ W resistor in this application.  
 Note 2. Chassis 318 uses a 470Q  $\frac{1}{2}$ W resistor in this application and is part of Deflection Yoke T4.  
 Note 3. In Chassis 318 a 12KQ  $\frac{1}{2}$ W resistor is used in this application.  
 Note 4. In Chassis 318 a 330KQ  $\frac{1}{2}$ W resistor is used in this application.  
 Note 5. In Chassis 318 a 470QW  $\frac{1}{2}$ W resistor is used in this application.  
 Note 6. In Chassis 318 a 2.7Q  $\frac{1}{2}$ W (2W) resistor is used in this application.  
 Note 7. Not used in Chassis 318.  
 Note 8. Not used in some versions.  
 Note 9. Used in Chassis 318.





HOFFMAN MODELS B1011, -U, B1024, -U, B1031, -U, B1041, -U, B3001, -U, B3021, -U, B3054, -U, K1011, -U, K1024, -U, M1011, -U, M1024, -U, M1031, -U, M1041, -U, M3001, -U, M3021, -U, M3054, -U, P1031, -U, P1041, -U, P3001, -U, P3021, -U, P3054, -U, W1031, -U, W1041, -U, W3001, -U, W3021, -U, W3054, -U (Ch. 316, -U, 318, -U, 319, -U)

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

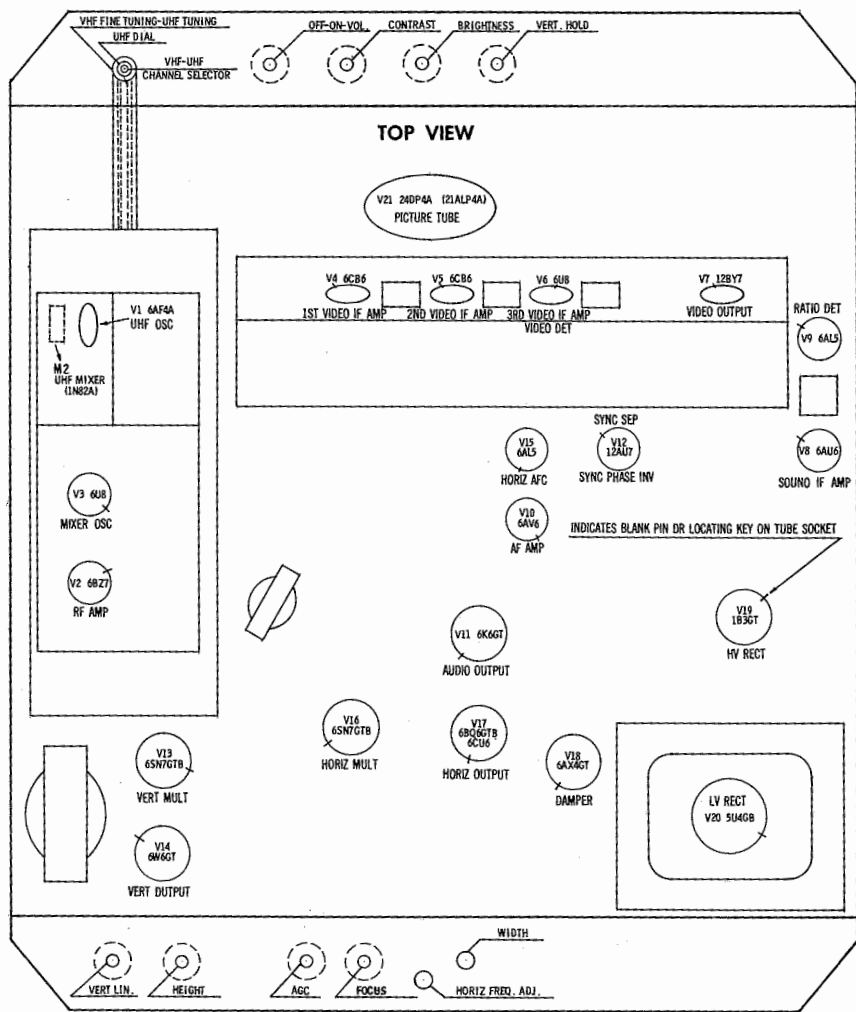






ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9	
V1	6AF4A	*† 7K	10K	.1Ω	0Ω	0Ω	10K	*† 7K			
V2	6BZ7	† 3.4K	300K	INF	0Ω	.1Ω	INF	1.7Meg	0Ω	† 3.4K	
V3	6U8	† 5.5K	200K	† 100K	.1Ω	0Ω	† 10K	0Ω	0Ω	10K	
V4	6CB6	1.5Meg	47Ω	.1Ω	0Ω	† 3.5K	† 3.5K	0Ω			
V5	6CB6	1.5Meg	47Ω	.1Ω	0Ω	† 3.5K	† 3.5K	0Ω			
V6	6U8	1.5Meg	.1Ω	† 3.5K	.1Ω	0Ω	† 3.5K	180Ω	.1Ω	4.7K	
V7	12BY7	160Ω	4.7K	160Ω	.1Ω	.1Ω	0Ω	† 5.5K	† 7.5K	160Ω	
V8	6AU6	1.5Ω	0Ω	0Ω	.1Ω	† 9K	† 9K	150Ω			
V9	6AL5	INF	INF	0Ω	.1Ω	20K	0Ω	0Ω			
V10	6AV6	10Meg	0Ω	0Ω	.1Ω	NC	NC	† 220K			
V11	6K6GT	NC	.1Ω	† 365Ω	† 5.7K	470K	TP	0Ω	560Ω		
V12	12AU7	† 4.5K	† 470K	4K	0Ω	0Ω	† 470K	1.8Meg	0Ω	.1Ω	
V13	6SN7GT	4.7Meg	† 180K	1K	1.3Meg	† 680K	1K	.1Ω	0Ω		
V14	6W6GT	NC	0Ω	† 600Ω	† 700Ω	1.3Meg	NC	.1Ω	1K		
V15	6AL5	15Ω	15Ω	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg			
V16	6SN7GT	5Meg	† 8K	1.5K	100K	† 95K	1.5K	.1Ω	0Ω		
V17	6CU6GT	NC	.1Ω	NC	† 12K	390K	NC	0Ω	0Ω	TOP CAP † 18.5Ω	
V18	6AX4GT	NC	NC	2Meg	TP	† 120Ω	NC	.1Ω	0Ω		
V19	1B3GT	PINS 1-8				HAVE	INF	RESISTANCE			TOP CAP † 350Ω
V20	5U4GB	INF	25K	INF	17Ω	INF	19Ω	INF	25K		
V21	24DP4A	0Ω	22K	PIN 6 † 10K	PIN 10 † 10K	PIN 11 † 300K	PIN 12 .1Ω				

## TUBE PLACEMENT CHART



## TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

## POWER SUPPLY FAILURE

No raster, no sound - V20

### LOSS OF PICTURE OR SOUND

No pic, no sound, has raster - V3, V4, V5, V6, V7 (V1 UHF only)  
No pic, no sound, has snow - V2, V3, V4  
No pic, has sound, has raster - V7, V21  
Has pic, no sound - V8, V9, V10, V11

## SYNC FAILURE

No vert. sync - V12, V13  
No horiz. sync - V12, V15, V16  
No vert. or horiz. sync - V12

## SWEEP FAILURE

No raster, has sound - V16, V17, V18, V19, V21  
No vertical deflection - V13, V14  
Poor vert. linearity or foldover - V13, V14  
Poor horiz. linearity or foldover - V16, V17, V18  
Narrow picture - V16, V17, V18, V19, V20  
Vert. off freq. - V12, V13  
Horiz. off freq. - V12, V15, V16

HOFFMAN MODELS B101, -U, B1024, -U, B1031, -U, B1041, -U, B3001, -U, B3021, -U, B3054  
 -U, K1011, -U, K1024, -U, M1011, -U, M1024, -U, M1031, -U, M1041, -U, M3001, -U, M3021,  
 -U, M3034, -U, P1031, -U, P1041, -U, P3001, -U, P3021, -U, P3054, -U, W1031, -U, W1041,  
 -U, W3001, -U, W3021, -U, W3034, -U (Ch. 316, -U, 318, -U, 319, -U)

## ALIGNMENT INSTRUCTIONS

### ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Switch the tuner between any two channels so that the detent roller sets on one of the high points of the drum disc. This will disable the local oscillator and reduce the possibility of erroneous indications. Do not remove V16 to eliminate the high voltage shock hazard.

#### SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1. .005MFD	High side to point $\Delta$ . Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru 10K to point $\Delta$ . Common to chassis.	A1, A2	Attenuate signal level to obtain 5 volts on VTVM. Adjust for maximum deflection.
2. "	"	"	"	DC probe to point $\Delta$ . Common to chassis.	A3	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 1 and 2 until readings do not change.

#### SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. .005MFD	High side to point $\Delta$ . Low side to chassis.	4.5MC (450KC Swp.)	4.5MC	Any	Vert. amp. thru 10K to point $\Delta$ . Low side to chassis.	A1, A2	Disconnect stabilizing capacitor C3A. Adjust A1 and A2 for curve of maximum amplitude and symmetry similar to Fig. 1.
2. "	"	"	"	"	Vert. amp. thru 10K to point $\Delta$ . Low side to chassis.	A3	Reconnect stabilizing capacitor C3A. Adjust so that 4.5MC occurs at crossover lines as in Fig. 2. SLIGHTLY retouch A2 for maximum amplitude and straightness of crossover lines.

#### 4.5MC TRAP ALIGNMENT

Turn the contrast control fully clockwise.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3. .005MFD	High side to point $\Delta$ . Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to pin 11 of picture tube thru detector (Fig. 3). Common to chassis.	A4	Adjust for MINIMUM deflection.

#### VIDEO IF ALIGNMENT

Turn the contrast control fully clockwise. Connect the negative lead of a 3 volt battery to the ungrounded side of C43. Connect the positive lead to chassis. Attenuate generator output as low as possible to obtain readings.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4. Direct	High side to ungrounded tube shield floating over converter tube (V3). Low side to chassis.	41.25MC (Unmod.)	Between any two channels	DC probe to point $\Delta$ . Common to chassis.	A5	Adjust for MINIMUM deflection.
5. "	"	47.25MC	"	"	A6	"
6. "	"	44.0MC	"	"	A7	Adjust for maximum deflection.
7. "	"	45.4MC	"	"	A8	"
8. "	"	43.25MC	"	"	A9	"
9. "	"	43.0MC	"	"	A10	Adjust A10 for MINIMUM deflection.
10. "	"	43.0MC	"	"	A11	Adjust for maximum deflection.
11. "	"	45.0MC	"	"	A10	Readjust A10 for maximum deflection. Repeat steps 4 thru 11 until readings do not change.

#### OVERALL VIDEO IF RESPONSE CHECK

Connect a .001MFD capacitor across the vertical input terminal on scope. Connect bias as under "Video IF Alignment." Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12. Direct	High side to ungrounded tube shield floating over converter tube. Low side to chassis.	43.5MC (10MC Swp.)	41.25MC 42.5MC 45.75MC 47.25MC	Set channel selector between any two channels	Vert. amp. thru 10K to point $\Delta$ . Low side to chassis.		Check for response curve similar to Fig. 4. Use high scope gain and sweep generator output. Remove bias battery to view trap markers. If necessary, retouch A7 thru A11 for desired response. Bandpass should be approximately 3.25MC. Adjust A8 to place 45.75MC at 50% on response curve. Adjust A9 to place 42.5MC at 50% on low frequency side of response curve. Adjust A7 to eliminate tilt on response curve. If necessary, SLIGHTLY retouch A5 and A6 to place 41.25MC and 45.75MC markers in trap notch as in Fig. 4.

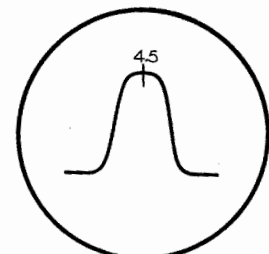


FIG. 1

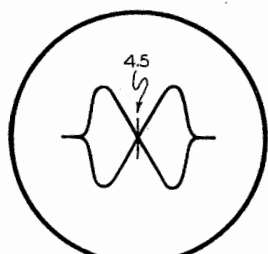


FIG. 2

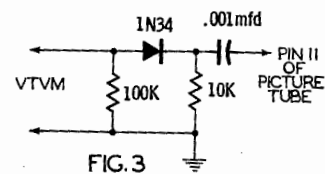


FIG. 3

## ALIGNMENT INSTRUCTIONS (cont)

### VHF OSCILLATOR ALIGNMENT

Leave bias connected as under "Video IF Alignment."

The channel oscillator adjustment screws are reached through a hole just to the left of the channel selector switch shaft. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13. Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp.) 207MC (10MC Swp.) 201MC (10MC Swp.) 195MC (10MC Swp.) 189MC (10MC Swp.) 183MC (10MC Swp.) 177MC (10MC Swp.) 85MC (10MC Swp.) 79MC (10MC Swp.) 69MC (10MC Swp.) 63MC (10MC Swp.) 57MC (10MC Swp.)	211.25MC 215.75MC 209.75MC 203.75MC 197.75MC 191.75MC 185.75MC 179.75MC 83.25MC 77.25MC 71.75MC 65.75MC 59.75MC	13 12 11 10 9 8 7 6 5 4 3 2	Vert. amp. thru 10K to point $\Delta$ . Low side to chassis.	A12 A13 A14 A15 A16 A17 A18 A19 A20 A21 A22 A23	Adjust to place sound marker in trap notch as shown in Fig. 5. Video marker should be at 50%.

### VHF RF AND MIXER ALIGNMENT

Leave bias connected as under "Video IF Alignment."

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14. Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	207MC (10MC Swp.)	205.25MC 209.75MC	12	Vert. amp. thru 10K to point $\Delta$ . Low side to chassis.	A24, A25, A26	Adjust for response curve similar to Fig. 6 with markers above 90%.
15. "	"	213MC (10MC Swp.) 207MC (10MC Swp.) 201MC (10MC Swp.) 195MC (10MC Swp.) 189MC (10MC Swp.) 183MC (10MC Swp.) 177MC (10MC Swp.) 85MC (10MC Swp.) 79MC (10MC Swp.) 69MC (10MC Swp.) 63MC (10MC Swp.) 57MC (10MC Swp.)	211.25MC 215.75MC 209.75MC 203.75MC 197.75MC 191.75MC 185.75MC 179.75MC 83.25MC 77.25MC 71.75MC 65.75MC 59.75MC	13 12 11 10 9 8 7 6 5 4 3 2	"		If markers fall below 70% on any one channel, make compromise adjustments of A24, A25, and A26 with channel selector set to that channel. Check all other channels to see that they have not been seriously affected.

### 43.5MC TRAP ALIGNMENT

Adjust the 43.5MC trap adjustment A27 for MINIMUM interference on channel 2.

### UHF TUNER ALIGNMENT

The UHF portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

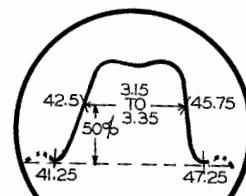


FIG. 4

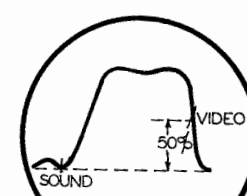


FIG. 5

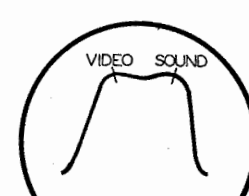


FIG. 6

HOTMAN MODELS B101, -U, B102, -U, B103, -U, B104, -U, B105, -U, B106, -U, B107, -U, B108, -U, B109, -U, B110, -U, B111, -U, B112, -U, B113, -U, B114, -U, B115, -U, B116, -U, B117, -U, B118, -U, B119, -U, B120, -U, B121, -U, B122, -U, B123, -U, B124, -U, B125, -U, B126, -U, B127, -U, B128, -U, B129, -U, B130, -U, B131, -U, B132, -U, B133, -U, B134, -U, B135, -U, B136, -U, B137, -U, B138, -U, B139, -U, B140, -U, B141, -U, B142, -U, B143, -U, B144, -U, B145, -U, B146, -U, B147, -U, B148, -U, B149, -U, B150, -U, B151, -U, B152, -U, B153, -U, B154, -U, B155, -U, B156, -U, B157, -U, B158, -U, B159, -U, B160, -U, B161, -U, B162, -U, B163, -U, B164, -U, B165, -U, B166, -U, B167, -U, B168, -U, B169, -U, B170, -U, B171, -U, B172, -U, B173, -U, B174, -U, B175, -U, B176, -U, B177, -U, B178, -U, B179, -U, B180, -U, B181, -U, B182, -U, B183, -U, B184, -U, B185, -U, B186, -U, B187, -U, B188, -U, B189, -U, B190, -U, B191, -U, B192, -U, B193, -U, B194, -U, B195, -U, B196, -U, B197, -U, B198, -U, B199, -U, B200, -U, B201, -U, B202, -U, B203, -U, B204, -U, B205, -U, B206, -U, B207, -U, B208, -U, B209, -U, B210, -U, B211, -U, B212, -U, B213, -U, B214, -U, B215, -U, B216, -U, B217, -U, B218, -U, B219, -U, B220, -U, B221, -U, B222, -U, B223, -U, B224, -U, B225, -U, B226, -U, B227, -U, B228, -U, B229, -U, B230, -U, B231, -U, B232, -U, B233, -U, B234, -U, B235, -U, B236, -U, B237, -U, B238, -U, B239, -U, B240, -U, B241, -U, B242, -U, B243, -U, B244, -U, B245, -U, B246, -U, B247, -U, B248, -U, B249, -U, B250, -U, B251, -U, B252, -U, B253, -U, B254, -U, B255, -U, B256, -U, B257, -U, B258, -U, B259, -U, B260, -U, B261, -U, B262, -U, B263, -U, B264, -U, B265, -U, B266, -U, B267, -U, B268, -U, B269, -U, B270, -U, B271, -U, B272, -U, B273, -U, B274, -U, B275, -U, B276, -U, B277, -U, B278, -U, B279, -U, B280, -U, B281, -U, B282, -U, B283, -U, B284, -U, B285, -U, B286, -U, B287, -U, B288, -U, B289, -U, B290, -U, B291, -U, B292, -U, B293, -U, B294, -U, B295, -U, B296, -U, B297, -U, B298, -U, B299, -U, B300, -U, B301, -U, B302, -U, B303, -U, B304, -U, B305, -U, B306, -U, B307, -U, B308, -U, B309, -U, B310, -U, B311, -U, B312, -U, B313, -U, B314, -U, B315, -U, B316, -U, B317, -U, B318, -U, B319, -U, B320, -U, B321, -U, B322, -U, B323, -U, B324, -U, B325, -U, B326, -U, B327, -U, B328, -U, B329, -U, B330, -U, B331, -U, B332, -U, B333, -U, B334, -U, B335, -U, B336, -U, B337, -U, B338, -U, B339, -U, B340, -U, B341, -U, B342, -U, B343, -U, B344, -U, B345, -U, B346, -U, B347, -U, B348, -U, B349, -U, B350, -U, B351, -U, B352, -U, B353, -U, B354, -U, B355, -U, B356, -U, B357, -U, B358, -U, B359, -U, B360, -U, B361, -U, B362, -U, B363, -U, B364, -U, B365, -U, B366, -U, B367, -U, B368, -U, B369, -U, B370, -U, B371, -U, B372, -U, B373, -U, B374, -U, B375, -U, B376, -U, B377, -U, B378, -U, B379, -U, B380, -U, B381, -U, B382, -U, B383, -U, B384, -U, B385, -U, B386, -U, B387, -U, B388, -U, B389, -U, B390, -U, B391, -U, B392, -U, B393, -U, B394, -U, B395, -U, B396, -U, B397, -U, B398, -U, B399, -U, B400, -U, B401, -U, B402, -U, B403, -U, B404, -U, B405, -U, B406, -U, B407, -U, B408, -U, B409, -U, B410, -U, B411, -U, B412, -U, B413, -U, B414, -U, B415, -U, B416, -U, B417, -U, B418, -U, B419, -U, B420, -U, B421, -U, B422, -U, B423, -U, B424, -U, B425, -U, B426, -U, B427, -U, B428, -U, B429, -U, B430, -U, B431, -U, B432, -U, B433, -U, B434, -U, B435, -U, B436, -U, B437, -U, B438, -U, B439, -U, B440, -U, B441, -U, B442, -U, B443, -U, B444, -U, B445, -U, B446, -U, B447, -U, B448, -U, B449, -U, B450, -U, B451, -U, B452, -U, B453, -U, B454, -U, B455, -U, B456, -U, B457, -U, B458, -U, B459, -U, B460, -U, B461, -U, B462, -U, B463, -U, B464, -U, B465, -U, B466, -U, B467, -U, B468, -U, B469, -U, B470, -U, B471, -U, B472, -U, B473, -U, B474, -U, B475, -U, B476, -U, B477, -U, B478, -U, B479, -U, B480, -U, B481, -U, B482, -U, B483, -U, B484, -U, B485, -U, B486, -U, B487, -U, B488, -U, B489, -U, B490, -U, B491, -U, B492, -U, B493, -U, B494, -U, B495, -U, B496, -U, B497, -U, B498, -U, B499, -U, B500, -U, B501, -U, B502, -U, B503, -U, B504, -U, B505, -U, B506, -U, B507, -U, B508, -U, B509, -U, B510, -U, B511, -U, B512, -U, B513, -U, B514, -U, B515, -U, B516, -U, B517, -U, B518, -U, B519, -U, B520, -U, B521, -U, B522, -U, B523, -U, B524, -U, B525, -U, B526, -U, B527, -U, B528, -U, B529, -U, B530, -U, B531, -U, B532, -U, B533, -U, B534, -U, B535, -U, B536, -U, B537, -U, B538, -U, B539, -U, B540, -U, B541, -U, B542, -U, B543, -U, B544, -U, B545, -U, B546, -U, B547, -U, B548, -U, B549, -U, B550, -U, B551, -U, B552, -U, B553, -U, B554, -U, B555, -U, B556, -U, B557, -U, B558, -U, B559, -U, B560, -U, B561, -U, B562, -U, B563, -U, B564, -U, B565, -U, B566, -U, B567, -U, B568, -U, B569, -U, B570, -U, B571, -U, B572, -U, B573, -U, B574, -U, B575, -U, B576, -U, B577, -U, B578, -U, B579, -U, B580, -U, B581, -U, B582, -U, B583, -U, B584, -U, B585, -U, B586, -U, B587, -U, B588, -U, B589, -U, B590, -U, B591, -U, B592, -U, B593, -U, B594, -U, B595, -U, B596, -U, B597, -U, B598, -U, B599, -U, B600, -U, B601, -U, B602, -U, B603, -U, B604, -U, B605, -U, B606, -U, B607, -U, B608, -U, B609, -U, B610, -U, B611, -U, B612, -U, B613, -U, B614, -U, B615, -U, B616, -U, B617, -U, B618, -U, B619, -U, B620, -U, B621, -U, B622, -U, B623, -U, B624, -U, B625, -U, B626, -U, B627, -U, B628, -U, B629, -U, B630, -U, B631, -U, B632, -U, B633, -U, B634, -U, B635, -U, B636, -U, B637, -U, B638, -U, B639, -U, B640, -U, B641, -U, B642, -U, B643, -U, B644, -U, B645, -U, B646, -U, B647, -U, B648, -U, B649, -U, B650, -U, B651, -U, B652, -U, B653, -U, B654, -U, B655, -U, B656, -U, B657, -U, B658, -U, B659, -U, B660, -U, B661, -U, B662, -U, B663, -U, B664, -U, B665, -U, B666, -U, B667, -U, B668, -U, B669, -U, B670, -U, B671, -U, B672, -U, B673, -U, B674, -U, B675, -U, B676, -U, B677, -U, B678, -U, B679, -U, B680, -U, B681, -U, B682, -U, B683, -U, B684, -U, B685, -U, B686, -U, B687, -U, B688, -U, B689, -U, B690, -U, B691, -U, B692, -U, B693, -U, B694, -U, B695, -U, B696, -U, B697, -U, B698, -U, B699, -U, B700, -U, B701, -U, B702, -U, B703, -U, B704, -U, B705, -U, B706, -U, B707, -U, B708, -U, B709, -U, B710, -U, B711, -U, B712, -U, B713, -U, B714, -U, B715, -U, B716, -U, B717, -U, B718, -U, B719, -U, B720, -U, B721, -U, B722, -U, B723, -U, B724, -U, B725, -U, B726, -U, B727, -U, B728, -U, B729, -U, B730, -U, B731, -U, B732, -U, B733, -U, B734, -U, B735, -U, B736, -U, B737, -U, B738, -U, B739, -U, B740, -U, B741, -U, B742, -U, B743, -U, B744, -U, B745, -U, B746, -U, B747, -U, B748, -U, B749, -U, B750, -U, B751, -U, B752, -U, B753, -U, B754, -U, B755, -U, B756, -U, B757, -U, B758, -U, B759, -U, B760, -U, B761, -U, B762, -U, B763, -U, B764, -U, B765, -U, B766, -U, B767, -U, B768, -U, B769, -U, B770, -U, B771, -U, B772, -U, B773, -U, B774, -U, B775, -U, B776, -U, B777, -U, B778, -U, B779, -U, B780, -U, B781, -U, B782, -U, B783, -U, B784, -U, B785, -U, B786, -U, B787, -U, B788, -U, B789, -U, B790, -U, B791, -U, B792, -U, B793, -U, B794, -U, B795, -U, B796, -U, B797, -U, B798, -U, B799, -U, B800, -U, B801, -U, B802, -U, B803, -U, B804, -U, B805, -U, B806, -U, B807, -U, B808, -U, B809, -U, B810, -U, B811, -U, B812, -U, B813, -U, B814, -U, B815, -U, B816, -U, B817, -U, B818, -U, B819, -U, B820, -U, B821, -U, B822, -U, B823, -U, B824, -U, B825, -U, B826, -U, B827, -U, B828, -U, B829, -U, B830, -U, B831, -U, B832, -U, B833, -U, B834, -U, B835, -U, B836, -U, B837, -U, B838, -U, B839, -U, B840, -U, B841, -U, B842, -U, B843, -U, B844, -U, B845, -U, B846, -U, B847, -U, B848, -U, B849, -U, B850, -U, B851, -U, B852, -U, B853, -U, B854, -U, B855, -U, B856, -U, B857, -U, B858, -U, B859, -U, B860, -U, B861, -U, B862, -U, B863, -U, B864, -U, B865, -U, B866, -U, B867, -U, B868, -U, B869, -U, B870, -U, B871, -U, B872, -U, B873, -U, B874, -U, B875, -U, B876, -U, B877, -U, B878, -U, B879, -U, B880, -U, B881, -U, B882, -U, B883, -U, B884, -U, B885, -U, B886, -U, B887, -U, B888, -U, B889, -U, B890, -U, B891, -U, B892, -U, B893, -U, B894, -U, B895, -U, B896, -U, B897, -U, B898, -U, B899, -U, B900, -U, B901, -U, B902, -U, B903, -U, B904, -U, B905, -U, B906, -U, B907, -U, B908, -U, B909, -U, B910, -U, B911, -U, B912, -U, B913, -U, B914, -U, B915, -U, B916, -U, B917, -U, B918, -U, B919, -U, B920, -U, B921, -U, B922, -U, B923, -U, B924, -U, B925, -U, B926, -U, B927, -U, B928, -U, B929, -U, B930, -U, B931, -U, B932, -U, B933, -U, B934, -U, B935, -U, B936, -U, B937, -U, B938, -U, B939, -U, B940, -U, B941, -U, B942, -U, B943, -U, B944, -U, B945, -U, B946, -U, B947, -U, B948, -U, B949, -U, B950, -U, B951, -U, B952, -U, B953, -U, B954, -U, B955, -U, B956, -U, B957, -U, B958, -U, B959, -U, B960, -U, B961, -U, B962, -U, B963, -U, B964, -U, B965, -U, B966, -U, B967, -U, B968, -U, B969, -U, B970, -U, B971, -U, B972, -U, B973, -U, B974, -U, B975, -U, B976, -U, B977, -U, B978, -U, B979, -U, B980, -U, B981, -U, B982, -U, B983, -U, B984, -U, B985, -U, B986, -U, B987, -U, B988