

H.G.Cisin's

Vol. 6

TV PORTABLES

TV TROUBLE TRACER

FIND IT
AND FIX IT

50¢

PLUS NEW 1957 RCA MODELS

TV TROUBLE TRACER

SYMPTOM-CAUSE-REMEDY Instruction Charts

Combined with New Copyrighted

"TROUBLE INDICATING" TUBE LOCATION GUIDES

Trouble	Page	Trouble	Page
Absent picture, absent sound	41	Jittery	27
Absent picture, normal sound	41	Light horizontal streaks	27
Absent, horizontal sloping lines	13	Meshed diagonal or vertical lines	43
Actors have short legs and long necks	36	across picture	40
Alternate dark and light horizontal bars	40	Momentary reduction in size	27
Bright horizontal line instead of picture	9	Moves up and down	45
Bright spot after turning set off	26	Normal picture, sound weak or absent	45
Bright vertical line instead of picture	11	Off center horizontally	21
Brightness reduced	34	Off center vertically	19
Brown or yellow spot	39	Pie-crust edges	44
Circles egg shaped in horizontal direction	42	Pulls horizontally	7
Circles egg shaped in vertical direction	36	Reduced brightness	40
Darkened	32	Reduced height and width	40
Dark horizontal streaks	43 & 27	Reflections	45
Diagonal lines across picture	43	Return traces unduly noticeable	25
Dwarfed	37 & 40	Reversed picture	30
Enlarged abnormally	34	Right portion on left side	28
Flashes, intermittent	27	Rolls vertically	17
Folded over at both sides	38	Shading poor	32
Folded over at left side	24	Shadow at corner	23
Ghosts	45	Side edges wavy	15
Height insufficient	29	Snow	42
Herringbone effect	44	Sound weak or absent, picture normal	45
Horizontal bars, alternately dark and light	40	Streaks, intermittent	27
Horizontally off center	21	Tears, pulls or weaves horizontally	7
Horizontal picture lines wavy	31	Tears vertically	27
Horizontally squeezed or stretched	42	Top and bottom parts of picture interchanged	39
Horizontal sloping lines	13	Unstable	27
Interference	43	Vertical dark faint line at left	33
Intermittently smaller	43	Vertically jittery	27
Intermittent streaks and flashes	43	Vertically off center	19
Insufficient height	29	Vertically squeezed or stretched	36
Insufficient width	35	Vertical ripple or wrinkle	25
Ion spot	39	Wavy at sides	15
		Weaves horizontally	7
		Width insufficient	35
		Width excessive	34

HOW TO USE TV TROUBLE TRACER INSTRUCTION CHARTS:
OBSERVE PICTURE -- LISTEN TO SOUND
SWITCH CHANNEL SELECTOR TO AN UNUSED CHANNEL AND
OBSERVE BRIGHT AREA
THEN CONSULT ABOVE LIST

All Rights Reserved

This book, or any parts thereof, may not be reproduced in any form without written permission from the author

TV TROUBLE TRACER, VOL. 6

By H.G.Cisin, Consulting Engineer

PORTABLE TV EDITION (Admiral to Zenith)
PLUS 1957 RCA TV MODELS (Including Portables)

It is possible to work wonders with these new copyrighted "TROUBLE INDICATING" Guides. All tubes on these guides are plainly marked with a letter which indicates the actual effect each tube has on the performance of the television set.

For example, a tube which affects the picture is marked "P". One which affects sound is marked "S". If a tube affects both picture and sound, it is marked "PS".

The following table shows how the various tubes in a television set are designated on the newly devised "TROUBLE INDICATING" TUBE LOCATION GUIDES:

Picture -----	P
Sound -----	S
Picture and sound -----	PS
Bright area -----	B
Horizontal movement -----	H
Vertical movement -----	V
Horizontal and vertical movement -----	HV
Horizontal movement and bright area -----	BH
Picture, sound and bright area	D
Background -----	G
Focus -----	F
Contrast -----	C

Certain tubes which function to supply suitable operating voltages to the various tubes in the set, are so important that if they are removed or become defective, they

will cause the entire set to go dead. Such tubes are designated in the "TROUBLE INDICATING" TUBE LOCATION GUIDES by the letter "D".

The letter "D" is also used to mark a fuse which would cause set to become inoperative if it blows out. An asterisk (*) near a tube on the tube location guide indicates the presence of very high voltage. If the proper precautions are observed, it is not dangerous to handle these tubes.

It is readily apparent that every tube has a definite job to perform. When a tube becomes weak or fails to operate, that job is no longer handled properly and you SEE and/or HEAR the difference. For example, if one of the tubes affecting sound only should become defective, the picture and the bright area will remain normal, but the sound will become weak, or may disappear entirely. To remedy the trouble, simply refer to the "TROUBLE INDICATING" TUBE LOCATION GUIDE for that particular television model and take out the tubes marked "S". Test these tubes and replace the defective tube with new one.

Of course, if you take more than one tube out of its socket

at the same time, you must be careful to put the tubes back in exactly the same socket from which they were removed. An easy way to do this is to mark each tube and its respective socket with a distinctive number. Thus, the first tube removed and its socket should be marked with the number "1", the second tube and its socket with the number "2", and so on. A piece of chalk or crayon is suitable for this job.

Each tube has a type designation such as 6AU6, 6AL5, 6AG5, etc. This designation is generally marked on the tube itself. It is important because it enables you to buy a new tube when necessary which has the same electrical properties as the defective tube which you wish to replace. For this reason, the type designation is given on the "TROUBLE INDICATING" TUBE LOCATION GUIDE, along with the letter which symbolizes the job being done by the tube.

For the purpose of simplification, the letters "G" and "GT" have been omitted from the type designations. However, in the case of the newer tubes having suffixes such as "GA", "GTA", "GTB" etc., these have been included in the type designations. In purchasing a tube to replace defective one in the TV set it is of the utmost importance that the replacement has the identical type designation as the one which has been removed. Thus, a 6SN7GTA tube should be replaced by one with this exact designation, not simply by a 6SN7GT tube.

When using "TROUBLE INDICATING"

TUBE LOCATION GUIDES, you will observe that the front of each model is plainly marked. In most instances top views are shown. Certain tubes have more than one effect on the performance of the set. This is especially the case where one tube contains the equivalent of several tubes. Thus it is possible for a tube to affect picture, sound, and background in which case the tube would be marked "PSG", or a tube might affect both horizontal movement and bright area, in which case it would be marked "BH". The order in which the letters are combined has no significance.

On the following pages you will find "TROUBLE INDICATING TUBE LOCATION GUIDES" covering many of the new portable TV models of various makers from Admiral to Zenith. At the time this volume went to press several additional portables had been announced, but charts were not available. Hence, if you do not find the model TV set you require in the following list, be sure to refer to page 5, which tells how you can obtain it.

It should be noted that many of the newer sets use selenium rectifiers which if defective will result in a "dead" set. In many sets a fuse or fusible resistor is used to protect the selenium rectifier. In such sets, the first step is to check fuse or resistor. Sets with heaters in series may become dead due to an open heater in a single tube or to an open protective resistor in series in the heater circuit.

INDEX

ADMIRAL - Page 8 - Guide

14UY3B, C, D	(2)
14YP3B, BK, C, D	(2)
T140	(1)
T141	(1)
T142	(1)
T143	(1)
T144AL	(1)
T145AL	(1)
T171	(1)
T172AL	(1)
T173AL	(1)
T1010	(1)
T1011AL	(1)
T1012AL	(1)
T1013AL	(1)
TS140	(2)
TS141	(2)
TS142	(2)
TS143	(2)
TS144AL	(2)
TS145AL	(2)
TS171	(2)
TS172AL	(2)
TS173AL	(2)
TS1010	(2)
TS1011AL	(2)
TS1012AL	(2)

AIRLINE - Page 8

GSL-4013A	-----
GSL-4014A	-----
GSL-4015A	-----
GSL-4018A	-----
GSL-4113A	-----
GSL-4114A	-----
GSL-4115A	-----
GSL-4118A	-----

CROSLLEY - Page 8

AC-10B	-----
AC-M	-----
AH-10B	-----
AT-B	-----
AT-M	-----
AT-70B, M, W	-----
AT-71B, M, W	-----
J-17TABH	-----
J-17TABU	-----
J-17TAMH	-----
J-17TAMU	-----
J-17TAWH	-----
J-17TAWU	-----
J-21CABH	-----
J-21CABU	-----
J-21CAMH	-----
J-21CAMU	-----
J-21RABH	-----
J-21RABU	-----
J-21RAMH	-----
J-21RAMU	-----
J-21TABH	-----
J-21TABU	-----
J-21TAMH	-----
J-21TAMU	-----
J-21TAWH	-----

CROSLLEY - Page 8 - Guide (Cont'd)

J-21TAWU	-----
481	-----
482	-----
483	-----
484	-----
487	-----

DUMONT - Page 10

RA-392	-----
RA-393	-----
Sportsman Portable	---

EMERSON - Page 14

1030D	-----
1032D	-----
1058D	-----
1060D, F	-----
1062D, F, H	-----
1064D	-----
120220D	-----
120239D	-----
120239F	-----
120251D	-----
120254D	-----

GENERAL ELECTRIC - Page 10

14T007	----- (1)
14T008	----- (1)
14T009	----- (1)
14T010	----- (1)
14T011	----- (1)
14T012	----- (1)
14T014	----- (1)
9T001	----- (2)
9T002	----- (2)
17T025	----- (3)
17T026	----- (3)
M Line Portable	----- (1)
MM Series	----- (3)
T Line Portable	----- (2)

HOFFMAN - Page 12

326	-----
326U	-----
1144 Series	-----
PG-1144	-----
PT-1144	-----
SG-1144	-----
SG-1144U	-----

HOTPOINT - Pages 10 & 12

9S101	----- (3)
9S102	----- (3)
14S201	----- (1)
14S202	----- (1)
14S203	----- (1)
17S301	----- (2)
17S302	----- (2)
HS-Q56	----- (1)
HS-T56	----- (3)
MM Line	----- (2)

MOTOROLA - Page 12 Guide

14P3	-----
14P4	-----
14P5	-----
TS423	-----
TS423A-00 through	-----
TS423A-12	-----

OLYMPIC - Page 14

CT	-----
CU	-----
CW	-----
CX	-----

PHILCO - Page 14

7E10, U	-----
7E11, U	-----
E2002C	-----
E2004F, G, SP	-----
UE2002C	-----
UE2004F, G, SP	-----

RCA - Guide# in Parenthesis

	Page	16	18	20	22
--	------	----	----	----	----

8PT7010	-- (1)-----
8PT7011	-- (1)-----
8PT7012	-- (1)-----
8PT7014	-- (1)-----
8PT7030, T	-- (1)-----
8PT7031, T	-- (1)-----
8PT7032, T	-- (1)-----
8PT7034, T	-- (1)-----
14S7052, U	----- (3)---
14S7062, U	----- (3)---
14S7063, U	----- (3)---
14S7069, U	----- (3)---
14S7070, G, U	----- (3)---
14S7071, G, GU	----- (3)---
14S7072, G, U	----- (3)---
14S7073, G, U	----- (3)---
14S7074, G, U, -79, G, U-	----- (3)---
17PT6962, U	----- (4)---
17S6022, K, KU, U	----- (4)---
17S6025, K, KU, U	----- (4)---
17S6026, K	----- (4)---
17S6027, K, KU, U	----- (4)---
17S6032, U	----- (4)---
17S6042, U	----- (4)---
17S6044, U	----- (4)---
17S7090, U	----- (2)---
17S7092, U	----- (2)---
17S7093, U	----- (2)---
17S7099, U	----- (2)---
17S8022	----- (4)---
21D7174, U	----- (8)---
21D7175, U	----- (8)---
21D7176, U	----- (8)---
21D7177, U	----- (8)---
21D7215, U	----- (8)---
21D7216, U	----- (8)---
21D7217, U	----- (8)---
21D7235, U	----- (8)---
21D7237, U	----- (8)---
21D7425, U	----- (9)---
21D7427, U	----- (9)---
21D7445, U	----- (9)---

RCA (Continued)
 Guide # in Parenthesis
 Page - 16 18 20 22

RCA (Continued)
 Guide # in Parenthesis
 Page - 16 18 20 22

RCA (Continued)
 Guide # in Parenthesis
 Page - 16 18 20 22

21D7446, U	----- (9)	24T7272, U	----- (8)	Personal	-- (1) -----
21D7447, U	----- (9)	24T7275, U	----- (8)	Reaburn	----- (9)
21D7479, U	----- (9)	24T7277, U	----- (8)	Ramstead	----- (9)
21D7485, U	----- (9)	KCS94, A	----- (4)	Somerton	----- (9)
21D7487, U	----- (9)	KCS95, A, B, C	----- (5)	Sportster	----- (3)
21D7488, U	----- (9)	KCS98, A, C	----- (6)	Stylist	----- (3)
21D7505, U	----- (9)	KCS98E, F	----- (6)	Thrifton	----- (4)
21D7506, U	----- (9)	KCS100, B, D	(1) -----	Tilden	----- (4)
21D7507, U	----- (9)	KCS100K	--- (1) -----	Towne	----- (5)
21S632, U	----- (5)	KCS101, A	----- (7)	Wayfarer	----- (3)
21S6052, U	----- (5)	KCS102, B, D	----- (3)	Whitman	----- (9)
21S6053, U	----- (5)	KCS103, A, B	----- (8)		
21S6055, U	----- (5)	KCS103C, D	----- (8)		
21S6057, U	----- (5)	KCS103R, T, N, P	----- (8)	SETCHELL-CARLSON	- Page 14
21T7639, U	----- (7)	KCS104A	----- (9)		
21T7112, U	----- (6)	KCS104AA	----- (10)	P61	-----
21T7113, U	----- (6)	KCS104AB	----- (10)	C-100	-----
21T7117, U	----- (6)	KCS104AC, AD	----- (10)		
21T7152, U	----- (6)	KCS104AE, AF	----- (10)	SYLVANIA	- Page 18
21T7153, U	----- (6)	KCS104B, C	----- (9)		
21T7157, U	----- (6)	KCS104D, E	----- (9)	1-525-1	-----
21T7355, U	----- (6)	KCS104F, H	----- (9)	1-525-2	-----
21T7357, U	----- (6)	KCS104J, K, L	----- (9)	14P101	-----
21T7375, G	----- (6)	5377	----- (2)	14P201	-----
21T7377, G	----- (6)	5378	----- (2)		
21T7385, U	----- (9)			TRUESTONE	- Page 18
21T7386, U	----- (9)	Adair	----- (6)		
21T7387, U	----- (9)	Allen	----- (8)	2D3770C	-----
21T7388, U	----- (9)	Ardmore	----- (8)	2D3775C	-----
21T7415, U	----- (9)	Bailey	----- (8)		
21T7416, U	----- (9)	Bellamy	----- (4)	ZENITH	- Page 18
21T7417, U	----- (9)	Brady	----- (4)		
24D7295, U	----- (8)	Brantley	----- (10)	16220	----- (2)
24D7296, U	----- (8)	Chatsworth	----- (10)	16221	----- (2)
24D7297, U	----- (8)	Dixon	----- (6)	16225	----- (1)
24D7315, U	----- (8)	Easton	----- (6)	Z1510L	----- (1)
24D7317, U	----- (8)	Edgemont	----- (8)	Z1511B	----- (1)
24D7545, U	----- (10)	Ellsworth	----- (10)	Z1512J	----- (1)
24D7547, U	----- (10)	Endicott	----- (10)		
24D7566, U	----- (10)	Enfield	----- (9)		
24D7568, U	----- (10)	Ensign	----- (2)		
24D7587, U	----- (10)	Farrington	----- (10)		
24D7705, U	----- (10)	Fenway	----- (9)		
24D7706, U	----- (10)	Ferndale	----- (4)		
24D7708, U	----- (10)	Glenolden	----- (8)		
24D7726, U	----- (10)	Markham	----- (9)		
24D7728, U	----- (10)	Oakmont	----- (8)		



If the Trouble Indicating Tube Location Guide for the TV Portable you are repairing is not listed in the above index, you can obtain a separate copyrighted chart (not a book) for this desired model, similar to the guides in this book, by writing to Harry G. Cisin, Publisher, Amagansett, N.Y., giving make and model number of set and including tube layout, stamped self-addressed envelope, plus 50¢ to cover cost. Send chassis number if available. Chassis number is necessary for Magnavox sets. Do not send serial number, except in case of Muntz sets. If manufacturer's tube layout is not available, make a rough layout showing approximate position and type designation of each tube.

If you do not find the RCA model you require in the above index, you will find practically all older models in the RCA TV TUBE LOCATION GUIDE book described on the inside back cover. Guides of RCA TV models produced since the publication of this book, as well as of all other TV models, may be obtained as described in the preceding paragraph, provided make and model number of set are given and a rough layout, stamped self-addressed envelope and 50¢ to cover cost, are included.

If you are unable to obtain a schematic diagram of any radio or TV set, old or new, we will supply such diagrams for \$2 per diagram, or if unobtainable, will refund money.

If personal consultation service is desired in connection with any unusual difficulty experienced with a particular model TV or radio receiver, we will furnish a written opinion for \$5 per receiver.

FUNCTIONAL CLASSIFICATION
OF 600-MA SERIES STRING TUBES WITH
CONTROLLED WARM-UP TIME

<u>UHF OSCILLATOR (PS)</u>	<u>AUDIO AMPLIFIER (S)</u>	<u>VERTICAL OSCILLATOR (V)</u>
2AF4 2AF4A	3BN6 3DT6 5T8 6BV8 6CN7	6AUB (Triode) 6BABA (Triode) 6BH8 (Triode Section) 6CG7 6CM7 (Section 1) 6SN7GTB 7AU7
<u>VHF R.F. AMPLIFIER (PS)</u>	<u>AUDIO OUTPUT (S)</u>	<u>VERTICAL OUTPUT (V)</u>
2BN4 4BC8 4BQ7A 4BZ7 5BK7A 3BZ6 3CB6 3CE5	5AQ5 5V6GT 12BK5 12C5 12CA5 12L6GT 12W6GT	5AQ5 5V6GT 6CM7 (Section 2) 6S4A 6SN7GTB 7AU7 12B4A 12BH7A 12W6GT
<u>VHF OSCILLATOR (PS)</u>	<u>AGC (Automatic Gain Control) (C)</u>	<u>HORIZONTAL REACTANCE TUBE (H)</u>
2BN4 5CL8 5J6 5X8 (Triode Section) 6CL8	3AU6 3BU8 5U8 (Pentode Section)	6CN7
<u>VHF MIXER (PS)</u>	<u>SYNC AMPLIFIER (HV)</u>	<u>HORIZONTAL OSCILLATOR (H)</u>
5CL8 5J6 5X8 (Pentode Section) 6CL8	5U8 (Triode Section) 6AUB (Triode Section) 6AW8A (Triode Section) 6BABA (Triode Section) 6BH8 (Triode Section) 6CG7 6SN7GTB 6BV8 7AU7	6AUB (Triode Section) 6BABA (Triode Section) 6BH8 (Triode Section) 6CG7 6SN7GTB 7AU7 12BH7A
<u>VIDEO I.F. AMPLIFIER (PS)</u>	<u>SYNC SEPARATOR OR CLIPPER (HV)</u>	<u>HORIZONTAL OUTPUT (BH*)</u>
3AU6 3BC5 3BZ6 3CB6 3CE5	3BY6 3CS6 5U8 (Triode Section) 6AUB (Triode Section) 6AW8A (Triode Section) 6BABA (Triode Section) 6BH8 (Triode Section) 6BV8 6CG7 6SN7GTB 7AU7	12AV5GA 12BQ6GA 12CU6 12DQ6 25CD6GB
<u>VIDEO DETECTOR (PS)</u>	<u>SYNC INVERTER (HV)</u>	<u>DAMPER (BH)</u>
3AL5	5U8 (Triode Section) 6AUB (Triode Section) 6AW8A (Triode Section) 6BABA (Triode Section) 6BH8 (Triode Section) 6BV8 6CG7 6SN7GTB 7AU7	12AX4GTA 19AU4GTA
<u>VIDEO AMPLIFIER (PS or P)</u>	<u>HORIZONTAL CONTROL TUBE (H)</u>	
6AUB 6AW8A 6BABA 6BH8 12BY7A	3AL5 6BV8 6CN7	
<u>SOUND I.F. AMPLIFIER (S)</u>		
3AU6 5U8 (Pentode Section)		
<u>SOUND I.F. LIMITER (S)</u>		
3AU6 3BN6 3DT6		
<u>SOUND DETECTOR (DISCRIMINATOR) (S)</u>		
3AL5 3BN6 3DT6 5T8 6BV8		

TV TROUBLE NO. 1

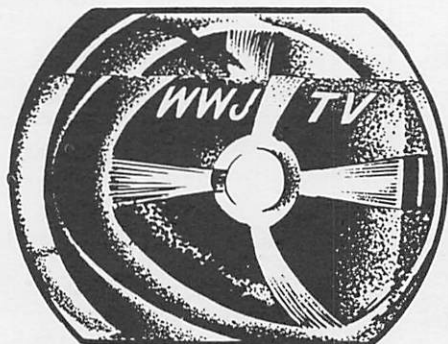
"Find It & Fix It"

SYMPTOM

Picture - Tears, pulls or weaves horizontally.

Bright Area - Normal.

Sound - Normal



CAUSE

Misadjusted horizontal hold, linearity or drive controls, defective video amplifier tube(s) or defective d.c. restorer tube(s). If bright area also shows horizontal pulling and weaving (with set tuned to unused channel) trouble may also be due to misadjusted ion trap, focus coil or defective yoke or to stray magnetic field near picture tube due to badly positioned speaker.

REMEDY

Readjust horizontal hold, linearity and drive controls.

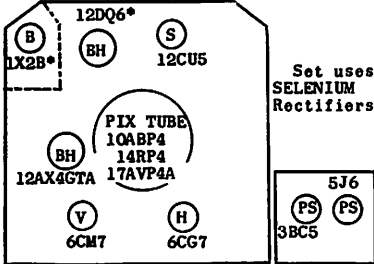
Replace video amplifier tube(s). Often used tubes are: 12BY7, 6AW8, 6A05, 12BY7A, 6CB6, 6AH6, 6AC6, 12AT7, 12AU7, 12BH7, 6AU8. Video amplifier tubes are marked "P" or "PS" on "TROUBLE INDICATING" TUBE LOCATION GUIDES

Replace d.c. restorer tube. Often used tubes are 6AL5 and 12AU7. These are seldom used on newer sets. They are marked "G" on TUBE LOCATION GUIDES.

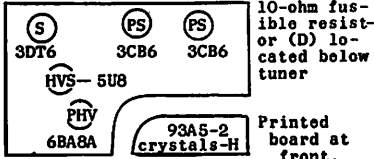
Check adjustment of ion trap, focus coil, deflection yoke. Check positioning of speaker.

TV PORTABLES

Heaters in single series string

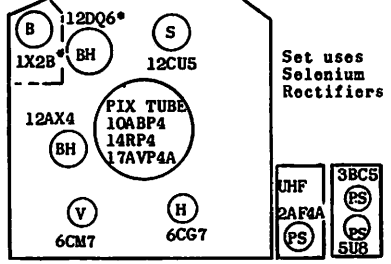


Set uses SELENIUM Rectifiers

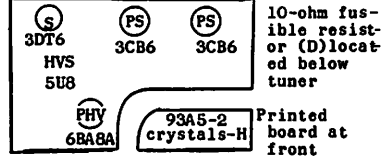


ADMIRAL (1)

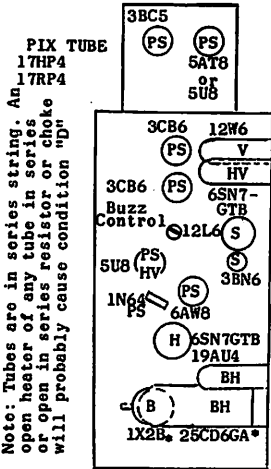
HEATERS in single series string



Set uses Selenium Rectifiers



ADMIRAL (2)

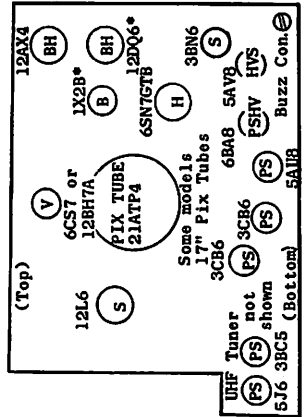


Note: Tubes are in series string. An open heater of any tube in series or open in series resistor or choke will probably cause condition "D"

(Front)
Set uses selenium rectifiers. Failure of these or of protective fuse resistor will cause condition "D"

AIRLINE

Heaters in single series circuit
Set uses Selenium rectifiers



CROSELY

- | | | | | |
|---------------------|----|-----------------------------------|--------------|--------------------------|
| Picture ----- | P | Horizontal Movement ----- | H | Pix, S'nd & Br. Area - D |
| Sound ----- | S | Vertical Movement ----- | V | Background ----- G |
| Picture & Sound --- | PS | Horizontal & Vertical Movement -- | HV or VH | Focus ----- F |
| Bright Area ----- | B | Horiz. Movement & Br. Area ----- | BH or HB | Contrast ----- C |
| | | High Voltage Warning ----- | (*) Asterisk | |

TV TROUBLE NO. 2

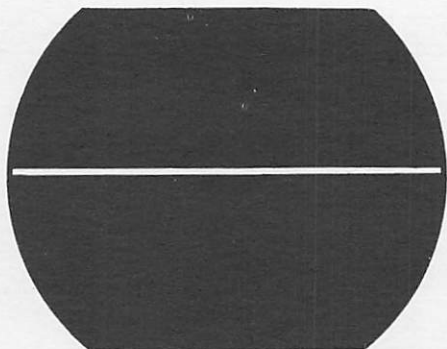
"Find It & Fix It "

SYMPTOM

Picture - Absent, bright horizontal line.

Bright Area - Absent, except for bright horizontal line.

Sound - Normal.



CAUSE

No vertical deflection. May be caused by defective vertical oscillator or defective vertical output tube. Could also be due to open circuit in vertical deflection coil, or in vertical output transformer secondary.

REMEDY

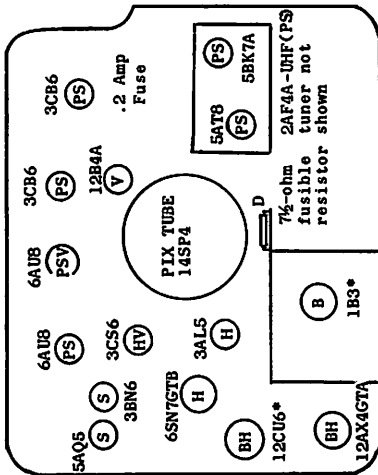
Replace vertical oscillator tube. Often used types are: 12BH7, 12BH7A, 6C4, 6BH8, 6CS7, 12AU7, 12AU7A, 6SN7, 6SN7GTA or GTB, 7AU7, 12SN7, 6SL7.

Replace vertical output tube. Often used types are: 6S4, 6S4A, 12BH7, 6CM6, 12AU7, 12AU7A, 6AQ5, 6BL7, 25L6, 5V6, 6AH4, 6CS7, 12W6, 12B4A, 10DE7.

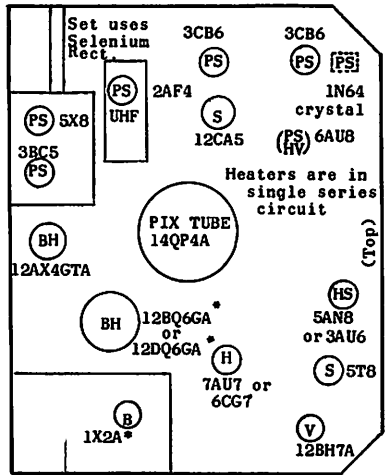
Vertical oscillator and vertical output tubes are marked "V" on "TROUBLE INDICATING" TUBE LOCATION GUIDES.

For additional often used types refer to table on page 6.

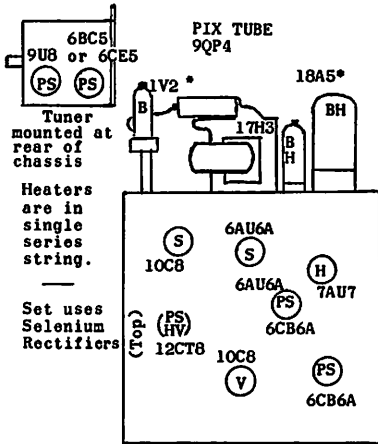
TV PORTABLES



DUMONT

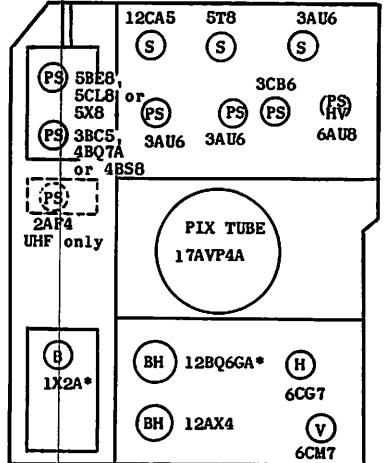


GENERAL ELECTRIC (1)



GENERAL ELECTRIC (2)-HOTPOINT (3)

Heaters in series string-Selenium Rect.



GENERAL ELECTRIC (3)

- | | | |
|---------------------|---|----------------------------|
| Picture ----- | P Horizontal Movement ----- | H Pix, S'nd & Br. Area - D |
| Sound ----- | S Vertical Movement ----- | Background ----- G |
| Picture & Sound --- | PS Horizontal & Vertical Movement -- | Focus ----- F |
| Bright Area ----- | B Horiz. Movement & Br. Area ----- | Contrast ----- C |
| | High Voltage Warning ----- (*) Asterisk | |

TV TROUBLE NO. 3

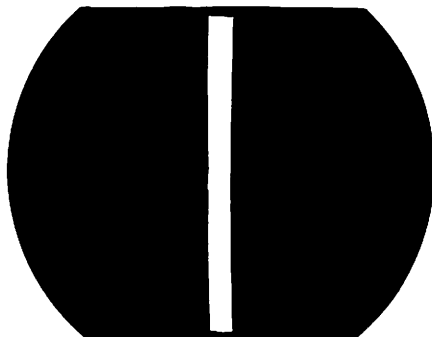
"Find It & Fix It "

SYMPTOM

Picture - Absent.

Bright Area - Thin bright vertical line.

Sound - Normal.



CAUSE

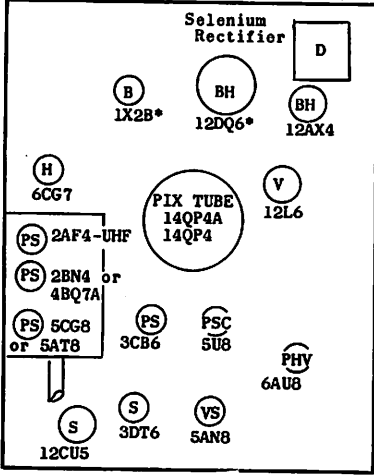
No horizontal deflection, due to an open circuit in one or both horizontal deflection coils.

REMEDY

Check horizontal deflection coils and replace if necessary.

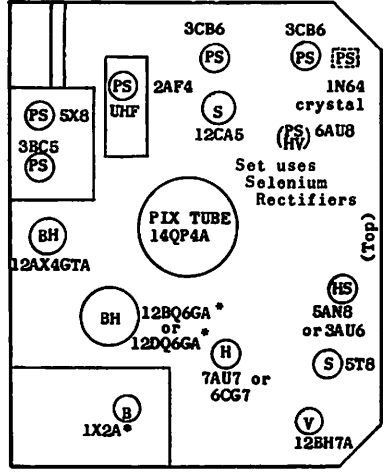
TV PORTABLES

Heaters in single series circuit



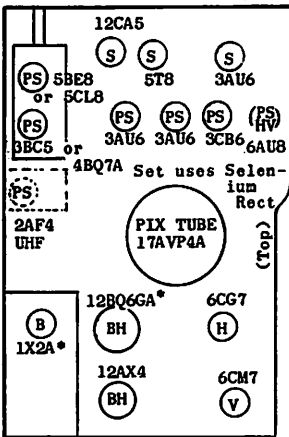
HOFFMANN

Heaters in single series string



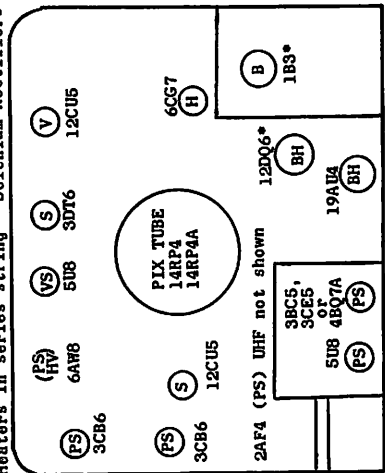
HOTPOINT (1)

Heaters in series string



HOTPOINT (2)

Heaters in series string - Selenium Rectifiers



MOTOROLA

Picture ----- P Horizontal Movement ----- H Pix, S'nd & Br. Area - D
 Sound ----- S Vertical Movement ----- V Background ----- G
 Picture & Sound --- PS Horizontal & Vertical Movement -- HV or VH Focus ----- F
 Bright Area ----- B Horiz. Movement & Br. Area ----- BH or HB Contrast ----- C
 High Voltage Warning ----- (*) Asterisk

TV TROUBLE NO. 4

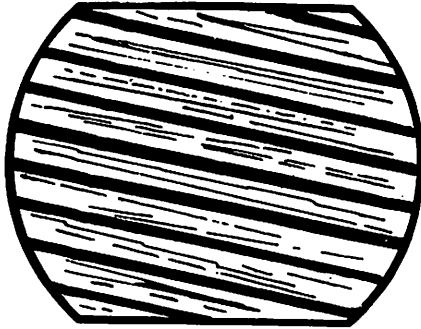
"Find It & Fix It "

SYMPTOM

Picture - Absent. Horizontal sloping lines.

Bright Area - Normal except when tuned to station, then horizontal sloping lines.

Sound - Normal.



CAUSE

This trouble is caused by defective timing in the horizontal deflection circuit. It may be caused by a defective tube in the horizontal sync circuit, a defective horizontal oscillator tube, misadjusted or defective horizontal hold control or defective tubes in the AFC (automatic frequency control) system.

REMEDY

Readjust horizontal hold control.

Replace sync circuit tubes. Often used tubes are: 6SN7GT, 6SN7GTA, 12SN7, 6SN7GTB, 7AU7, 12AU7, 6BY6, 6AW8, 6CG7, 6CS6, 6AN8, 6BK7A, 6BN6.

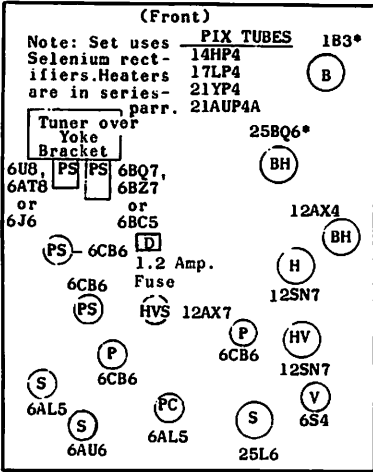
Replace horizontal oscillator tube. Often used tubes are 6SN7GT, 6SN7GTA, 12AU7, 12AU7A, 7AU7, 6AU7, 6AU7A, 6SN7GTB, 12AT7.

Replace horizontal AFC tube. Often used tubes are 6AL5, 5U8, 12SN7, 6SL7, 6SN7GT, 6SN7GTA, 6SN7GTB.

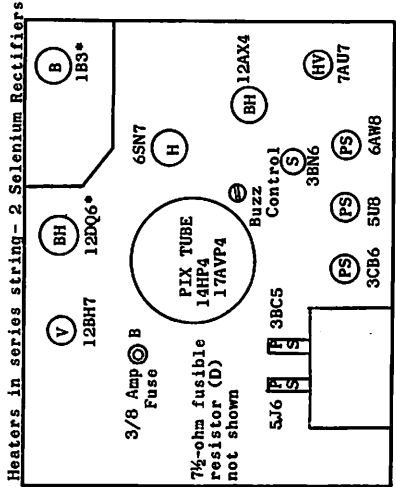
Sync circuit tubes are marked "HV", horizontal oscillator tube and horizontal AFC tube are marked "H" on copyrighted "TROUBLE INDICATING" TUBE LOCATION GUIDES.

Other often used sync circuit tubes are: 4BU8, 5AV8, 6BA8, 6AU8 and 12CT8.
Also refer to table of tube functions on page 6.

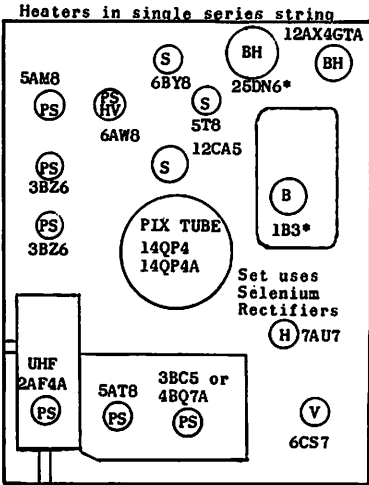
TV PORTABLES



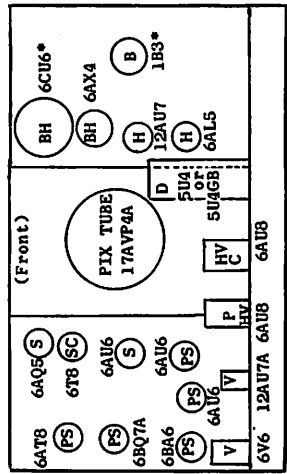
EMERSON



OLYMPIC



PHILCO



SETCHELL-CARLSON

- | | | | |
|---------------------|-----------------------------------|----------|--------------------------|
| Picture ----- | P Horizontal Movement | H | Fix, S'nd & Br. Area - D |
| Sound ----- | S Vertical Movement | V | Background ----- G |
| Picture & Sound --- | PS Horizontal & Vertical Movement | HV or VH | Focus ----- F |
| Bright Area ----- | B Horiz. Movement & Br. Area | BH or HB | Contrast ----- C |
- High Voltage Warning ----- (*) Asterisk

TV TROUBLE NO. 5

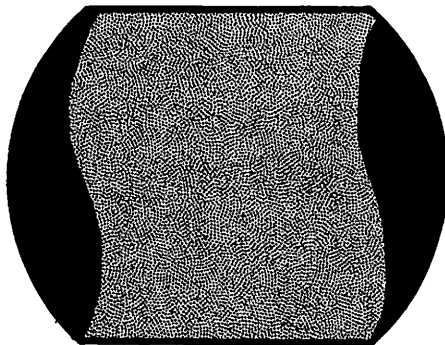
"Find It & Fix It "

SYMPTOM

Picture - Side edges wavy or "S" shaped.

Bright Area - Side edges wavy or "S" shaped.

Sound - Normal.



CAUSE

60 cycle hum in horizontal deflection circuit which may be due to defective tubes in this circuit. Tubes may test O.K. on mutual conductance tester or on emission test, but must be tested specifically for "heater-cathode leakage."

REMEDY

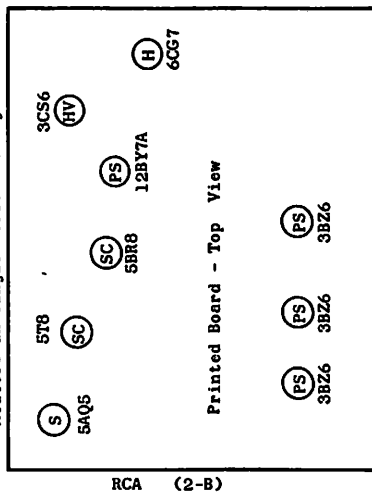
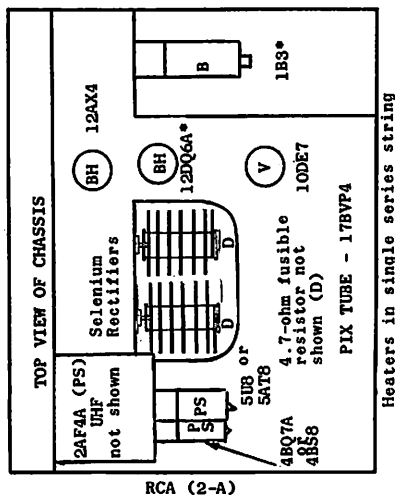
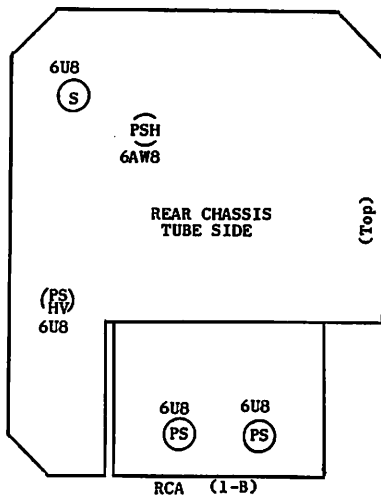
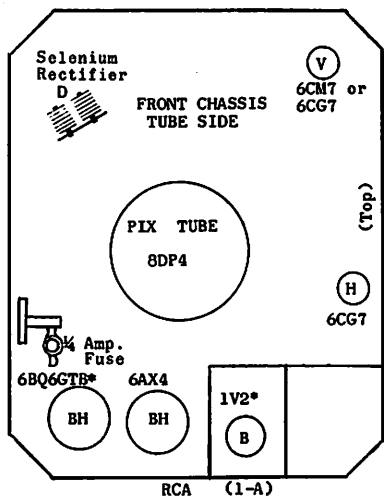
Replace horizontal deflection tubes. These include: Horizontal oscillator tubes such as 6SN7GT, 6SN7GTA, 6SN7GTB, 6AU7, 6AU7A, 12AU7, 12AU7A, 12AT7, 7AU7 and horizontal output tubes. Often used horizontal output tubes are: 6CD6, 6CU6, 6DQ6, 12CU6, 12DQ6, 25BQ6, 6BQ6, 6AU5.

Horizontal oscillator tubes are all marked "H" on special "TROUBLE INDICATING" TUBE LOCATION GUIDES.

Horizontal output tubes are distinguished from other "H" tubes since they are marked "BH" and are followed by an asterisk (*). This calls attention to the fact that special high voltage precautions must be observed while replacing or handling them.

Additional often used horizontal output tubes are 6DQ6A, 12BQ6GTB, 17DQ6, 18A5, 25CD6GA and 25DN6. Also refer to list on page 6.

TV PORTABLES



Picture ----- P Horizontal Movement ----- H Pix, S'nd & Br. Area - D
 Sound ----- S Vertical Movement ----- V Background ----- G
 Picture & Sound --- PS Horizontal & Vertical Movement -- HV or VH Focus ----- F
 Bright Area ----- B Horiz. Movement & Br. Area ----- BH or HB Contrast ----- C
 High Voltage Warning ----- (*) Asterisk

TV TROUBLE NO. 6

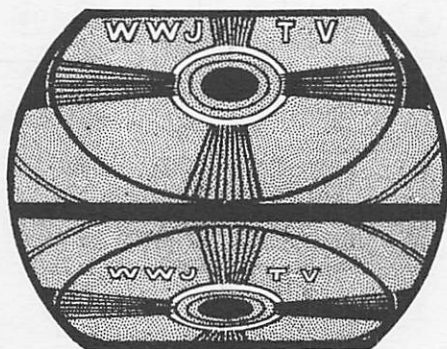
"Find It & Fix It "

SYMPTOM

Picture - Rolls vertically.

Bright Area - Normal.

Sound - Normal.



CAUSE

Defective sync tubes or sync circuit.

Defective vertical oscillator tube.

REMEDY

Replace sync tubes. Often used types are 6SN7, 12SN7, 7AU7, 12AU7, 12AU7A, 6BY7, 6AW8, 6CG7, 6CS6, 6AN8, 6BL7, 6BK7A, 6BN6, 4BU8, 5AV8, 6BA8, 12CT8.

Replace vertical oscillator tube. Often used types are 12BH7, 12BH7A, 6C4, 6BH8, 6CS7, 12AU7, 12AU7A, 6SN7GT, 6SN7GTA, 6SN7GTB, 7AU7, 12SN7, 6SL7, 6CG7. Also, refer to list of often used tubes on page 6.

Sync tubes are marked "HV" and vertical oscillator tubes are marked "V" on copyrighted "TROUBLE INDICATING" TUBE LOCATION GUIDES.

TV TROUBLE NO. 7

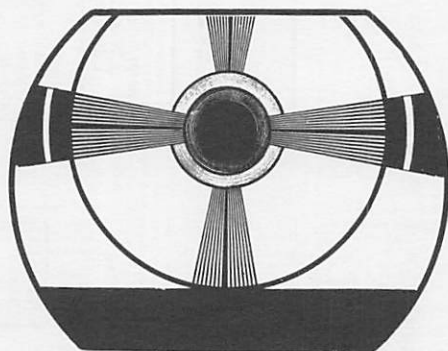
"Find It & Fix It "

SYMPTOM

Picture - Not centered vertically.

Bright Area - Not centered vertically.

Sound - Normal.



CAUSE

Misadjusted vertical centering control.

Misadjustment of mechanical centering devices.

REMEDY

Readjust vertical centering control, if one is provided. Some sets have no centering control, but depend on adjustment of focus coil. Others depend on correct adjustment of height and linearity controls combined with correct positioning on neck of tube. Still others use a separate centering plate mounted on the focus magnet. A locking lever on this plate must be loosened before centering. Sidewise adjustment moves the picture up and down. In some sets centering is accomplished by rotating the centering magnet adjusting rings located on the back of the deflection yoke.

TV TROUBLE NO. 8

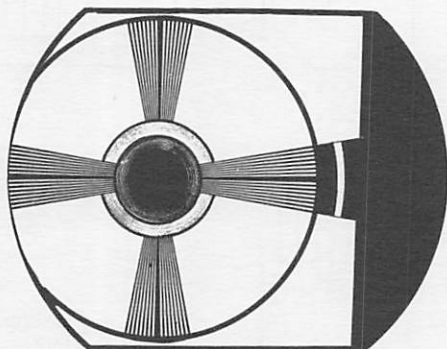
"Find It & Fix It"

SYMPTOM

Picture - Off center horizontally.

Bright Area - Off center horizontally.

Sound - Normal.



CAUSE

Misadjusted horizontal centering control.

Misadjusted or weak centering magnet.

Misadjusted focus device.

REMEDY

Readjust centering control.

If set uses centering magnet, readjust position of centering magnet or if necessary, replace magnet. After centering readjust ion trap.

In sets which center picture by positioning of focus coils, readjust focus coil. Where electrostatic focusing is employed, center by changing position of centering magnet, adjusting field to required strength.

TV TROUBLE NO. 9

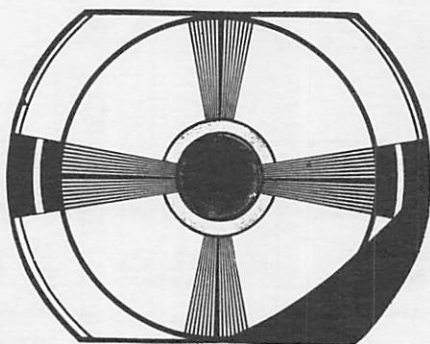
"Find It & Fix It "

SYMPTOM

Picture - Shadow at corner.

Bright Area - Shadow at corner.

Sound - Normal.



CAUSE

Misadjusted or defective ion trap.

Deflection yoke not concentric with neck of tube.

Deflection yoke not close enough to bell of tube.

Focus assembly not concentric with neck of tube.

REMEDY

Readjust ion trap moving it slightly backward and forward and at same time rotating it slightly.

Readjust deflection yoke to make it concentric with neck of tube. Try moving yoke closer to bell of tube.

Readjust focus assembly so that it is concentric with neck of tube.

TV TROUBLE NO. 10

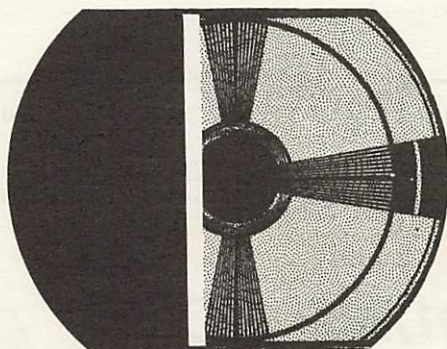
"Find It & Fix It "

SYMPTOM

Picture - Folded over at left side.

Bright Area - Folded over at left side.

Sound - Normal.



CAUSE

Defective damper tube.

Defective horizontal oscillator tube.

Improper adjustment of horizontal AFC or sync discriminator

REMEDY

Replace damper tube. Often used types are 12AX4GT, 12AX4GTA, 5AU4, 25AX4, 6AU4, 25W4, 6W4, 6AX4, 19AU4GTA.

Replace horizontal oscillator tube. Often used types are 6SN7GT, 12AU7, 12AU7A, 7AU7, 6SN7GT, 6SN7GTA, 6SN7GTB, 6AU7, 6AU7A, 12AT7.

Readjust AFC control in accordance with set manufacturers directions.

Damper tubes are marked "BH" and horizontal oscillator tubes are marked "H" ON COPYRIGHTED "TROUBLE INDICATING" TUBE LOCATION GUIDES.

For additional often used horizontal oscillator tubes refer to page 6.

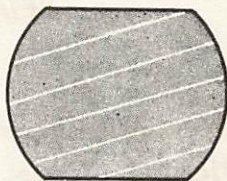
TV TROUBLE NO. 11

SYMPTOM

Picture - Return traces unduly noticeable.

Bright Area - Normal.

Sound - Normal.



CAUSE

May result from incorrectly adjusted contrast and brightness controls.

May be due to improperly adjusted ion trap.

REMEDY

Try to blank out return lines by readjusting contrast and brightness controls.

Try readjusting ion trap. Do this by moving trap slightly backward and forward and at same time, rotate clockwise and counter-clockwise.

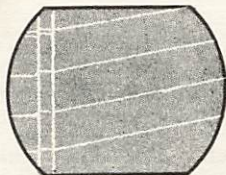
TV TROUBLE NO. 12

SYMPTOM

Picture - Vertical ripple or wrinkle, changing only when volume control adjustment is changed.

Bright Area - Vertical ripple or wrinkle, changing only when volume control adjustment is changed.

Sound - Normal.



CAUSE

Defective (microphonic) tube in video amplifier which vibrates in time with speaker.

Loud speaker leads too close to video amplifier or picture tube lead.

REMEDY

Replace video amplifier tubes. Often used tubes are: 12BY7, 6AW8, 6AQ5, 12BY7A, 6CB6, 6AH6, 6AC6, 12AT7, 12AU7, 12BH7, 6AU8.

Video amplifier tubes are marked "P" or "PS" on "TROUBLE INDICATING TUBE LOCATION GUIDES."

Move loud speaker leads to new position.

TV TROUBLE NO. 13

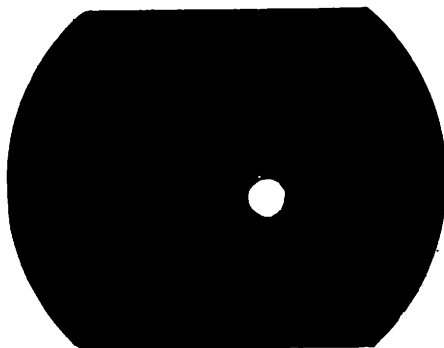
"Find It & Fix It "

SYMPTOM

Picture - Bright spot on screen after turning set off.

Bright Area - Normal with picture tuned out.

Sound - Normal.



CAUSE

High voltage filter condensers hold charge after set is turned off. Trouble is in the design of many sets. This bright spot may cause injury to picture tube.

REMEDY

In many sets, this afterglow may be eliminated by turning brightness control full on, an instant before set is turned off.

In some sets, a slight readjustment of the ion trap will remedy or lessen this trouble.

TV TROUBLE NO. 14

SYMPTOM

Picture - Thin dark and/or light horizontal streaks.

Bright Area - Thin dark and/or light horizontal streaks.

Sound - Normal.



CAUSE

Automobile or other ignition interference.

REMEDY

Relocate antenna away from road or source of trouble.

Use a shielded (coaxial) lead-in, in place of flat "twin-lead" type.

TV TROUBLE NO. 15

SYMPTOM

Picture - Moves up and down vertically, sometimes tears vertically. (Vertically jittery).

Bright Area - Normal.

Sound - Normal.



CAUSE

Vertical hold control misadjusted.

Defective vertical oscillator.

REMEDY

Readjust vertical hold control.

Replace vertical oscillator. Often used types are 6SN7 or 6SN7GT, 6C4 12AU7, 12SN7GT, 6J5GT. Vertical oscillator tubes are marked "V" on special copyrighted "TROUBLE INDICATING" TUBE LOCATION GUIDE.

Additional often used vertical oscillator tubes are 6AU8 (triode sect.), 6BA8A (Triode sect), 6BH8 (triode sect.), 6CG7, 6CM7 (sect.1), 6SN7GTB, 7AU7.

TV TROUBLE NO. 16

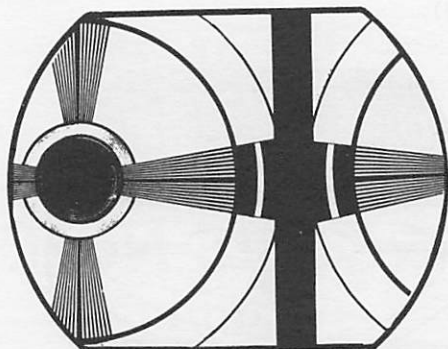
"Find It & Fix It "

SYMPTOM

Picture - Right portion on left side.

Bright Area - Normal.

Sound - Normal.



CAUSE

Misadjusted AFC or horizontal discriminator control.

Misadjusted horizontal hold control.

Defective tubes in horizontal AFC (automatic frequency control) system.

REMEDY

Readjust horizontal automatic frequency control system.

Readjust horizontal hold control.

Replace horizontal AFC tubes. Often used types are 6AL5, 6AC7, 6SN7, 12SN7, 6SL7, 5U8, 6SN7GTA, 6SN7GTB. These tubes are marked "H" on "TROUBLE INDICATING" TUBE LOCATION GUIDES. Other often used AFC tubes are 3AL5, 6BV8 and 6CN7.

TV TROUBLE NO. 17

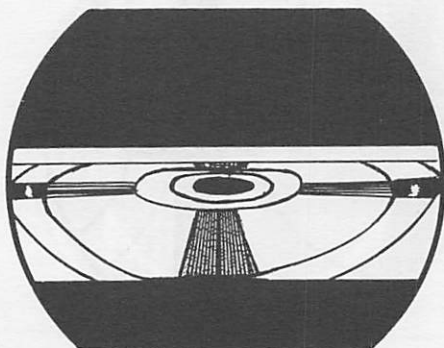
"Find It & Fix It"

SYMPTOM

Picture - Height insufficient to fill screen between top and bottom.

Bright Area - Same fault as picture.

Sound - Normal.



CAUSE

Misadjusted height and vertical linearity controls.

Weak vertical output tube.

Weak vertical oscillator or oscillator-discharge tube.

REMEDY

Readjust height control. This may necessitate readjustment of vertical linearity control to preserve correct picture proportions.

Replace vertical output tube. Often used types are: 6S4, 6S4A, 12BH7, 6CM6, 12AU7, 12AU7A, 6AQ5, 6BL7, 25L6, 5V6, 6AH4, 6CS7, 12W6, 12B4A.

Replace vertical oscillator tube. Often used types are: 12BH7, 12BH7A, 6C4, 6BH8, 6CS7, 12AU7, 12AU7A, 6SN7GT, 6TA or 6TB, 7AU7, 12SN7, 6SL7.

All tubes used in vertical sweep circuits are marked "V" on "TROUBLE INDICATING" TUBE LOCATION GUIDES.

For additional often used vertical output tubes and vertical oscillator tubes, see page 6.

TV TROUBLE NO. 18

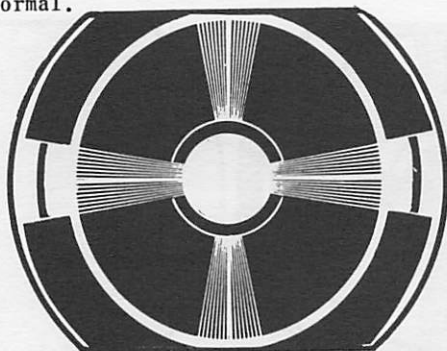
"Find It & Fix It "

SYMPTOM

Picture - Reversed or negative picture.

Bright Area - Normal with picture tuned out.

Sound - Normal.



CAUSE

- Defective AGC (Automatic gain control) tube
- Defective I.F. video amplifier tube.
- Defective video detector.
- Misadjusted contrast control.
- Defective video amplifier tube or tubes.

If only on one channel, this trouble may be due to excessively strong signal on that channel.

REMEDY

- Replace AGC tube. Often used types are: 6AU6, 12C5, 6AL5, 12AT7, 6AH6, 12BZ7. Only one section of double function tube used for AGC. Marked "C" on GUIDES.
- Replace video I.F. Tubes. Often used types: 3CB6, 4BC8, 3BZ6, 6CB6, 6BZ6, 6AU6, 6BA6, 5U8 (one sect.), 5AM8 (one sect.), 3CF6, 6AM8 (one sect).
- Replace video detector. Often used types: 5U8, 5AM8, 6AM8, 5AV8 (one sect), 3AL5, 6AL5, 12AL5. Crystal video det. used in some sets such as 1N64.
- Replace video amplifier tube. Often used types: 6AW8, 12BY7A, 6BK5, 6AU8, 6AU6, 6AN8, 6AQ5, 5AQ5, 6AH6.

All above mentioned tubes are marked "P" or "PS" on "TROUBLE INDICATING" TUBE LOCATION GUIDES. If reversed picture appears on one channel only, try indoor antenna. Readjust contrast control if necessary.

Additional often used AGC tubes, coded "C" on Guides are 3AU6, 3BU6 and 5U8.

TV TROUBLE NO. 19

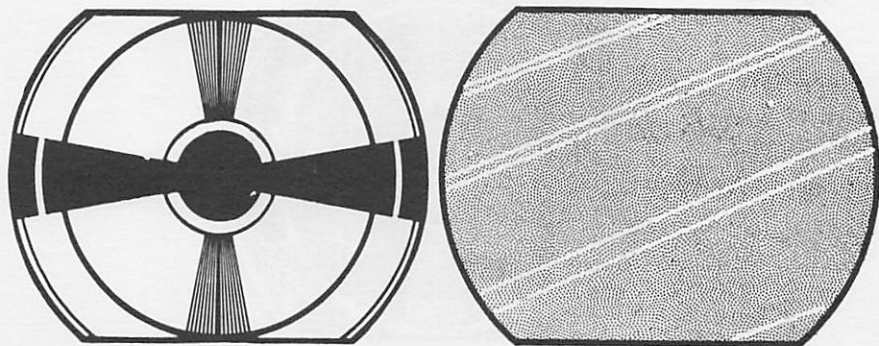
"Find It & Fix It "

SYMPTOM

Picture - Horizontal lines throughout picture are noticeably wavy.

Bright Area - Return traces are unequally spaced.

Sound - Normal.



CAUSE

In some cases, this trouble may be due to a misadjustment of vertical hold control, particularly if this control is set too close to the point where picture starts to roll downward.

Where trouble occurs on only one channel, the fault is with the broadcast transmitter rather than with the TV set.

REMEDY

Readjust vertical hold control.

TV TROUBLE NO. 20

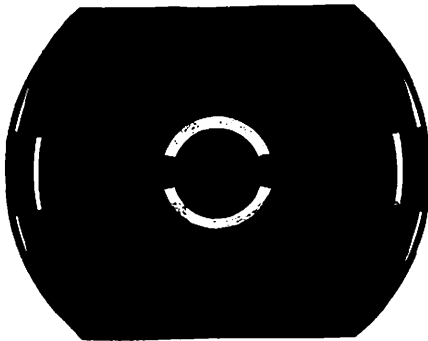
"Find It & Fix It "

SYMPTOM

Picture - Darkened, shading poor.

Bright Area - Normal with picture tuned out.

Sound - Normal.



CAUSE

Poor shading generally indicates trouble in contrast control circuits. There is also the possibility that focus is defective.

Trouble may be due to misadjusted or defective contrast control, to defective AGC (automatic gain control) tube, to incorrect adjustment of bias, to misadjusted or defective focus control or to defective focus rectifier tube. Latter tube is used only in sets employing electrostatic focusing.

REMEDY

Change setting of contrast control. If set has threshold adjustment of bias, readjust this control.

Replace AGC tube. Often used tubes are: 6AU6, 12C5, 6AL5, 12AT7, 6AH6, 12BZ7. AGC tubes are marked "C" on "TROUBLE INDICATING" TUBE LOCATION GUIDES. Other AGC tubes are 3AU6, 3BU8, 5U8 (Pentode Section)

Readjust focus control.

If set uses focus rectifier tube, change this tube. Tube sometimes used is 5642. It is marked "F" on "TROUBLE INDICATING" TUBE LOCATION GUIDES.

TV TROUBLE NO. 21

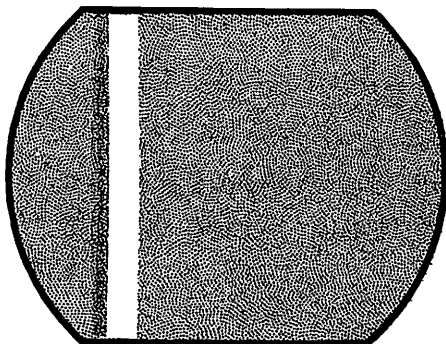
"Find It & Fix It "

SYMPTOM

Picture - Vertical dark faint lines or line at left, often followed by bright area.

Bright Area - Vertical dark faint lines or line at left side of area, often followed by bright space.

Sound - Normal.



CAUSE

Interference due to oscillations set up in horizontal output tube picked by tuner.

REMEDY

Tune to high frequency channel, turn contrast control clockwise as far as possible and replace horizontal output tube. Often used types are: 6CD6, 6CU6, 6DQ6, 12CU6, 12DQ6, 25BQ6, 6BQ6, 6AU5, 6BG6, 19BG6.

Horizontal output tubes are marked "BH" on "TROUBLE INDICATING" GUIDES. They are also marked with an asterisk (*) to indicate the necessity of special precautions when changing them.

In some cases a small magnet fastened to the side of the horizontal output tube will eliminate this trouble.

See page 6 for additional often used horizontal output tubes.

TV TROUBLE NO. 22

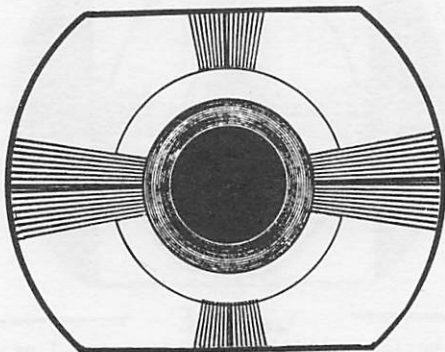
"Find It & Fix It"

SYMPTOM

Picture - Expanded or abnormally enlarged and accompanied by loss of brightness.

Bright Area - Expanded or abnormally enlarged and accompanied by loss of brightness.

Sound - Normal.



CAUSE

Reduction of high voltage applied to picture tube anode, often caused by defective high voltage rectifier tube or defective damper tube.

REMEDY

Replace high voltage rectifier tube. Often used tubes: 1B3GT, 8016, 1X2B, 1X2A, 1X2, 1V2. High voltage rectifier tubes are marked "B" on "TROUBLE INDICATING" TUBE LOCATION GUIDES. An asterisk (*) also marks such tubes, to indicate the fact that special care must be observed when they are replaced.

Replace damper tube. Often used types are 12AX4GT, 12AX4GTA, 6AU4, 5AU4, 25AX4, 5V4G, 6W4GT, 6AS7G. Damper tubes are marked "BH" on "TROUBLE INDICATING" TUBE LOCATION GUIDES.

TV TROUBLE NO. 23

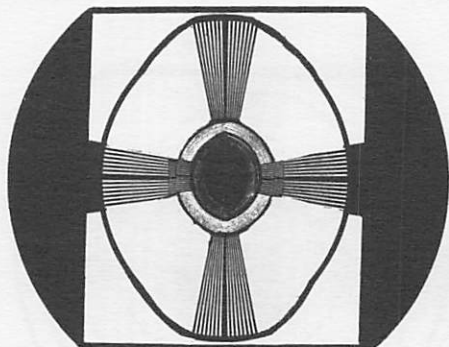
"Find It & Fix It"

SYMPTOM

Picture - Width insufficient to fill screen.

Bright Area - Width insufficient to fill screen.

Sound - Normal.



CAUSE

Misadjusted width, horizontal drive or horizontal linearity controls.
Defective horizontal output tube.
Defective horizontal discharge section of horizontal oscillator tube.
Defective damper tube.

REMEDY

Readjust width control. Slightly readjust horizontal drive control. If necessary, readjust horizontal linearity control. Alternate readjustments of drive and linearity controls may be necessary.

Replace horizontal output tube. Often used types are 6CD6, 6CU6, 6DQ6, 6BQ6, 12CU6, 12DQ6, 25BQ6, 6BQ6, 6AU5, 6BG6, 6AV5. Horizontal output tubes are marked "H" and also have an asterisk (*) mark to indicate need for special precautions when making replacements. These marks are used on the special "TROUBLE INDICATING" TUBE LOCATION GUIDES.

Replace horizontal discharge tube. This is generally combined in same envelope with horizontal oscillator. Often used types are 6SN7GT, GTA, or GTB, 12AU7, 12AU7A, 6AU7, 6AU7A, 7AU7, 12AT7. Marked "H" on GUIDES.

Replace damper tube. Often used types: 12AX4GT, 12AX4GTA, 25AX4, 6AU4, 5AU4, 5V4, 6W4GT, 6AS7G. Damper tubes are marked "BH" on "TROUBLE INDICATING" TUBE LOCATION GUIDES.

See page 6 for additional often used H and BH tubes.

TV TROUBLE NO. 24

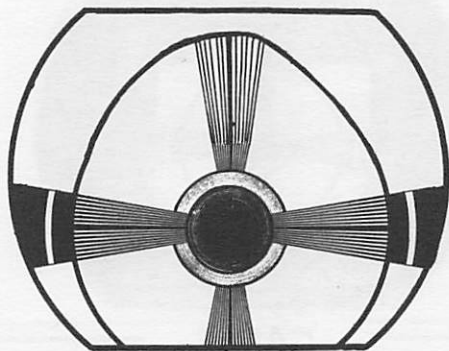
"Find It & Fix It"

SYMPTOM

Picture - Actors appear to have short legs and long necks.

Bright Area - Normal.

Sound - Normal.



CAUSE

Misadjusted vertical linearity control and/or height control.

Defective vertical oscillator or vertical output tube.

REMEDY

Try alternate readjustments of height and vertical linearity controls.

Replace vertical oscillator tube. Often used types are: 12BH7, 12BH7A, 6C4, 6BH8, 6CS7, 12AU7, 12AU7A, 6SN7, 6SN7GTA or GTB, 7Au7, 12SN7, 6SL7.

Replace vertical output tube. Often used types are: 6S4, 6S4A, 12BH7, 6CM6, 12AU7, 12AU7A, 6AQ5, 6BL7, 26L6, 5V6, 6AH4, 6CS7, 12W6, 12B4A.

Vertical oscillator and vertical output tubes are marked "V" on "TROUBLE INDICATING" TUBE LOCATION GUIDES. See page 6 for additional often used "V" tubes.

TV TROUBLE NO. 25

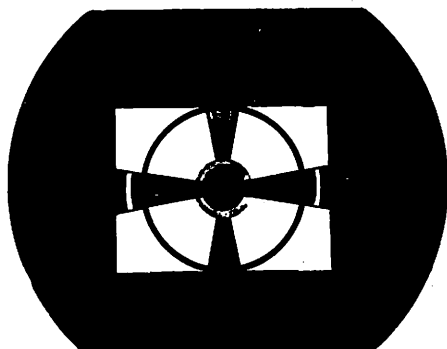
"Find It & Fix It"

SYMPTOM

Picture - Dwarfed horizontally and vertically.

Bright Area - Dwarfed horizontally and vertically.

Sound - Normal.



CAUSE

Excessive high voltage.

Improper yoke placement.

REMEDY

Replace high voltage rectifier tube. Often used types are 1B3GT, 1X2B, 1X2A, 1V2. These tubes are marked "B" on "TROUBLE INDICATING" GUIDES. They are also marked with an asterisk (*) to indicate need for special precautions when they are being changed.

Replace damper tube. Often used types are: 12AX4GT, 12AX4GTA, 5AU4, 25AX4, 6AU4, 25W4, 6W4, 6AX4. They are marked "BH" on "TROUBLE INDICATING" GUIDES.

Replace horizontal output tube. Often used types are: 6CD6, 6CU6, 6BG6, 6DQ6, 12CU6, 12DQ6, 25BQ6, 6BQ6, 6AU5, 19BG6. These tubes are marked "BH" on "TROUBLE INDICATING" GUIDES and in addition are marked with an asterisk (*) to indicate need for special handling precautions.

Move deflection yoke closer to bell (flare) of picture tube.

See page 6 for additional often used BH tubes.

TV TROUBLE NO. 26

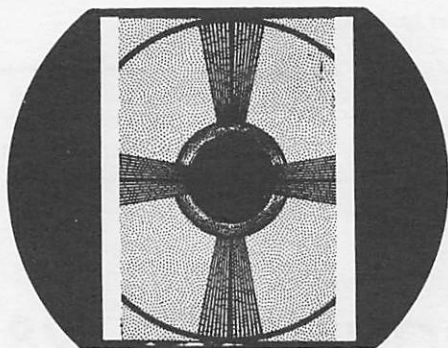
"Find It & Fix It"

SYMPTOM

Picture - Folded over at both sides.

Bright Area - Folded over at both sides.

Sound - Normal.



CAUSE

Defective damper tube.

Defective horizontal output tube.

Defective horizontal oscillator tube.

REMEDY

Replace damper tube. Often used types are: 12AX4GT, 12AX4GTA, 5AU4, 25AX4, 6AU4, 24W4, 6AX4, 6AS7, 5V4. Damper tubes are marked "BH" on "TROUBLE INDICATING" TUBE LOCATION GUIDES.

Replace horizontal output tube. Often used types are 6CD6, 6CU6, 6BG6, 6DQ6, 12CU6, 12DQ6, 25BQ6, 6BQ6, 6AU5, 19BG6. Horizontal output tubes are distinguished from damper tubes by the fact that the marking "BH" is followed by an asterisk (*) which indicates the need for special precautions when making replacements.

Replace horizontal oscillator. Often used types are 6SN7GT, 6SN7GTA, GTB, 12AU7, 12AU7A, 7AU7, 6AU7, 6AU7A, 12AT7. Horizontal oscillator tubes are marked "H" on "TROUBLE INDICATING" LOCATION GUIDES.

See page 6 for additional often used BH and H tubes.

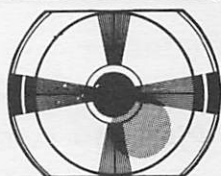
TV TROUBLE NO. 27

SYMPTOM

Picture - Brown or yellowish spot. (Ion spot)

Bright Area - Brown or yellowish spot.
(Ion spot)

Sound - Normal.



CAUSE

A burnt spot in fluorescent coating within tube due to lack of ion trap, weak ion trap, improperly adjusted ion trap.

REMEDY

If spot is only slightly noticeable, check ion trap adjustment. Make sure correct ion trap is used. Do not turn brightness control too far clockwise while adjusting ion trap. If spot is badly burned, picture tube must be replaced.

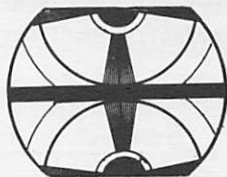
TV TROUBLE NO. 28

SYMPTOM

Picture - Top and bottom portions of picture
interchanged.

Bright Area - Normal.

Sound - Normal.



CAUSE

Misadjusted vertical hold control.

REMEDY

Readjust vertical hold control.

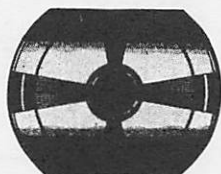
TV TROUBLE NO. 29

SYMPTOM

Picture - Alternate dark and light horizontal bars.

Bright Area - Alternate dark and light horizontal bars.

Sound - Hum.



CAUSE

Defective tubes in low voltage power supply.

REMEDY

Replace tubes marked "D" in "TROUBLE INDICATING" TUBE LOCATION GUIDES.

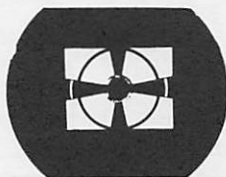
TV TROUBLE NO. 30

SYMPTOM

Picture - Reduced height and width and/or reduced brightness.

Bright Area - Same defect as picture.

Sound - Weak or absent.



CAUSE

Insufficient low voltage caused either by defective tubes in low voltage power supply, or by low line voltage.

REMEDY

Change tubes marked "D" in "TROUBLE INDICATING" TUBE LOCATION GUIDES.
Have electric company check voltage of power supply.

TV TROUBLE NO. 31

SYMPTOM

Picture - Absent.
Bright Area - Absent.
Sound - Normal.



CAUSE

Due either to misadjustments or high voltage failure.

REMEDY

Turn brightness control to full clockwise position. Check adjustment of ion trap, moving trap slowly backward and forward along neck of tube and at same time turning it slightly clockwise and counter-clockwise. Replace tubes marked "B," "BH" and, finally, replace "H" tubes as shown on "TROUBLE INDICATING" TUBE LOCATION GUIDES.

TV TROUBLE NO. 32

SYMPTOM

Picture - Absent.
Bright Area - Absent.
Sound - Absent.



CAUSE

Broken wire at power cord or plug. Plug not fully inserted in outlet. House fuse blown. "On-off" switch defective. Interlock switch at back of set not properly in place. Blown fuse in TV set. In "combination" set, switch not turned to "TV" position. Controls on set not correctly adjusted. Tubes in set power supply burnt out.

REMEDY

Check power supply cord and plug. Check fuses and switches. Turn Brightness (Brilliance) control and volume control fully clockwise. Replace tubes marked "D" on "TROUBLE INDICATING" TUBE LOCATION GUIDES.

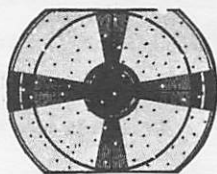
TV TROUBLE NO. 33

SYMPTOM

Picture - Snow.

Bright Area - Normal.

Sound - Weak.



CAUSE

Faulty antenna system or weak tubes (Snow on all channels).

Weak incoming signal (Snow on some channels, but not all).

REMEDY

Inspect antenna system for broken antenna arm or open circuit in lead-in. Change all tubes marked "P" and "PS" on "TROUBLE INDICATING" TUBE LOCATION GUIDE. If snow is due to weak incoming signal, use booster, change direction of antenna or install an improved fringe area antenna.

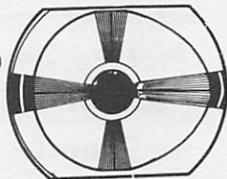
TV TROUBLE NO. 34

SYMPTOM

Picture - Horizontally squeezed or stretched. Circles egg-shaped in horizontal direction

Bright Area - Normal.

Sound - Normal.



CAUSE

Misadjusted controls. Faulty damper tube.

REMEDY

Readjust horizontal drive, width control and horizontal linearity control watching station pattern until true circle is obtained.

Replace tube marked "BH" on "TROUBLE INDICATING" TUBE LOCATION GUIDE.

DO NOT replace "BH" tube marked with asterisk.

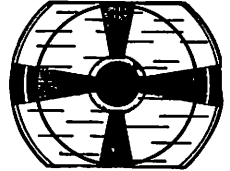
TV TROUBLE NO. 35

SYMPTOM

Picture - Intermittent streaks and flashes.

Bright Area - Intermittent streaks.

Sound - Noisy.



CAUSE

Poorly soldered lead-in wire or other defect in antenna system. Could also be caused by electric razors, fluorescent lights, home electrical appliances, noisy motors.

REMEDY

Inspect entire antenna system from roof installation to set. Check for offending devices by process of elimination, first turning off fluorescent light, then motors, etc.

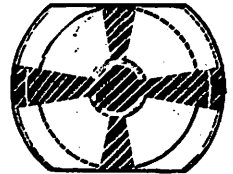
TV TROUBLE NO. 36

SYMPTOM

Picture - Thin weaving meshed diagonal or vertical lines across picture.

Bright Area - Normal.

Sound - Normal.



CAUSE

Interference, often from neighboring sets. In some cases due to FM interference.

REMEDY

Try relocating or rotating antenna or increase antenna height. FM interference may be eliminated by installation of commercial FM wave trap.

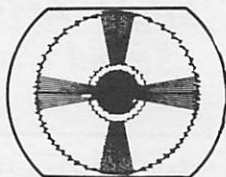
TV TROUBLE NO. 37

SYMPTOM

Picture - Pie-crust edges.

Bright Area - Pie-crust edges.

Sound - Noisy, crackling, snapping, frying.



CAUSE

Arc-over at high voltage supply. (corona discharge)

REMEDY

Spray with anti-corona lacquer.

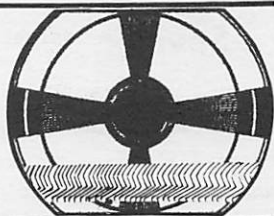
TV TROUBLE NO. 38

SYMPTOM

Picture - Herringbone effect.

Bright Area - Herringbone effect.

Sound - Normal.



CAUSE

Interference from diathermy or X-ray apparatus.

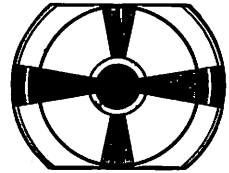
REMEDY

Filtering and shielding of offending apparatus is best remedy.

TV TROUBLE NO. 39

SYMPTOM

Picture - Normal
Bright Area - Normal.
Sound - Weak or absent.



CAUSE

Defective tubes in sound section.

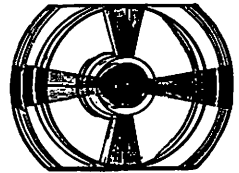
REMEDY

Replace all tubes marked "S" in "TROUBLE INDICATING" TUBE LOCATION GUIDES

TV TROUBLE NO. 40

SYMPTOM

Picture - Ghosts, multiple images, reflections.
Bright Area - Normal
Sound - Normal.



CAUSE

Generally due to reflections from surrounding buildings, but in some cases where ghost is very close to desired signal, it may be caused by use of incorrect lead-in.

REMEDY

If due to reflection, try rotating or relocating antenna. Use a more highly directive antenna. If caused by incorrect lead in, make sure you use 300-ohm lead-in, if antenna supplied is 300-ohm type.

LEARN MORE! EARN MORE!

WITH H. G. CISIN'S TV SERVICE BOOKS

TV CONSULTANT

NEW! Easy way to solve toughest TV troubles. New rapid methods of pin-pointing faults. New alignment methods shown by pictures, diagrams and easy to follow directions. **TV CONSULTANT** tells exactly **WHAT TO DO** and **HOW TO DO IT**. UHF section includes conversion, installation and servicing. Lists instruments needed for servicing **COLOR TV**. Practical pointers on use of TV Test Instruments. 300 pix, raster and sound symptoms. Detailed directions tell **WHERE** and **HOW** to find faulty parts. Over **135 RAPID CHECKS** including many using picture tube as trouble locator. Over 125 illustrations of scope wave-forms, diagrams, station patterns showing various defects — make TV servicing a pleasure. **NO MATH, NO THEORY — NO FORMULAS** — just practical servicing information covering all types of TV sets.



TV Serviceman's Silent Partner—
No. L1.....\$2

SHOOT TV & RADIO TROUBLE FAST!



NEW! Rapid Trouble Shooting of **AC-DC RADIO** sets combined with new edition of **Rapid TV Trouble Shooting Method**. Locates radio and TV faults in record-breaking time, regardless of make or model. Also contains a section on **PRINTED CIRCUIT SERVICING OF VITAL INTEREST TO ALL SERVICEMEN**. Written in response to the requests of many radio-TV servicemen, this is the only book which combines both TV and radio trouble tracing. Mr. Cisin, the author, is the inventor of AC-DC radios.

Quickest Radio & TV Trouble
Shooter—No. T2.....\$1.50



TV DOCTOR

How to Diagnose and Remedy TV Troubles; Copyrighted Trouble Location Guide; Useful Info About TV Sets; Easy TV Trouble Checks; UHF Installation and Servicing; Antenna Know-How; Practical Servicing Hints; Color TV for Beginners; Trouble Due to Defective Tubes; How to Read Schematic Diagrams. Many practical hints for prospective TV servicemen.

Beginner's Best Buy—No. D5.....\$1

Speed Servicing System

NEW 1957 TV TUBE LOCATOR—VOL. 2

Contains **TROUBLE INDICATING TUBE LOCATION GUIDES** for thousands of latest TV models including all most popular makes from Admiral to Zenith. Tells which tubes to replace to cure every trouble due to tube defects. Shows exact locations and gives types of all tubes. Lists over 135 common TV troubles, giving clear



directions for locating defective tubes causing each fault.

TV TUBE LOCATOR—Vol. 1 contains over 3000 most popular TV models covering 1947 to 1953 sets.

These two books are a "must" for every TV service bench. A storehouse of TV tube servicing information.

VOL. 2—No. K2.....\$1.50 VOL. 1—No. K1.....\$1

TV & RADIO TUBE SUBSTITUTION GUIDE



1st Section gives tube replacements for TV sets, radios and other electronic devices. All suggested replacements **FIT SAME SOCKET** and require **NO CHANGES** in wiring. 2nd Section contains complete data on TV **PICTURE TUBE** replacements, many directly — others with only slight changes. Substitution is emphasized rather than conversion.

Substitute with Certainty
No. S1.....50¢

TV TUBE LOCATION GUIDES



Complete compilation to date of **ADMIRAL & RCA TV TROUBLE INDICATING TUBE LOCATION GUIDES**. **ADMIRAL** book contains over 1150 models—earliest to 1956. Includes profusely illustrated section showing how each tube trouble affects picture. **RCA BOOK** cover 1947 to 1955 models. Each guide shows positions of all tubes and by a copyrighted method indicates effect of each tube on operation of TV set.



Admiral Guides No. M1 - RCA Guides No. A1
Each Volume.....\$1

ABC OF COLOR TV



Takes mystery out of Color TV. Explains this fascinating new TV development in simple down-to-earth manner. Covers basic color principles, color signal, transmission, color TV reception, plus practical pointers on color pix tubes, tests, etc.

COLOR TV SIMPLIFIED—
No. R1.....\$1

TV TROUBLE TRACER



Each vol. has different Trouble Indicating Tube Location Guides of hundreds of popular TV models. Each has over 700 illustr. & Guides. 40 most common pix troubles illustrated. Vol. 1 (No. TT1) older models Vol. 2 (No. TT2) '52-'53 sets Vol. 3 (No. TT3) '53-'54 sets Vol. 4 (No. TT4) '54-'55 models Vol. 5 (No. TT5) '55-'56 models

FIND IT & FIX IT—
EACH VOL.....50¢

TV PIX GUIDE



Set. 1 is a fully illustrated Guide to oft-recurring picture faults. Causes and cures explained. Copyrighted Illustrated Chart tells where troubles start in typical TV set. Illustrations show resulting faulty TV pictures. Set. 2 explains hundreds of TV terms in non-technical language.

PIX SHOW FAULTS—
No. G1.....\$1

RAPID TV TROUBLE SHOOTING METHOD



This unique TV servicing method has helped thousands to become expert TV diagnosticians. Step-by-step directions show how and where to find faulty parts.

EASY TO USE—No. T1.....\$1

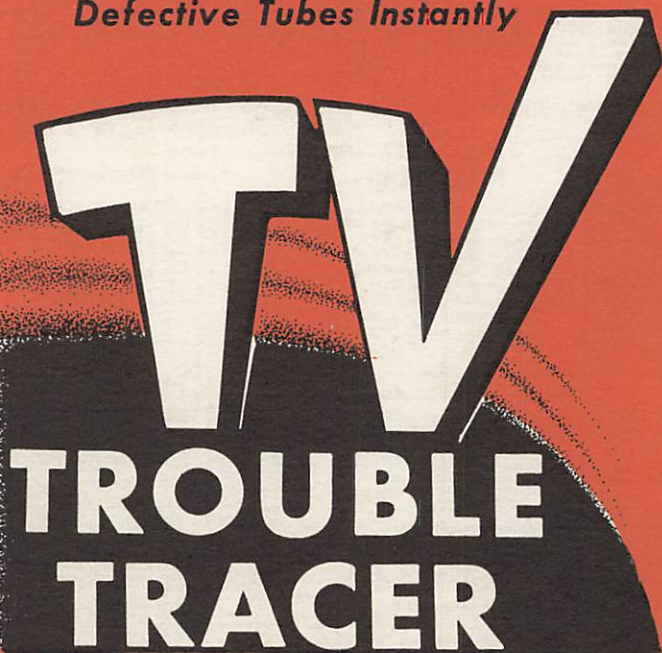
HARRY G. CISIN, Publisher
Amagansett, N. Y.

LEARN MORE! EARN MORE!

WITH H. G. CISIN'S TV SERVICE BOOKS

70 Common Troubles
TRACED TO SOURCE & CURED

AMAZING
METHOD LOCATES
Defective Tubes Instantly



TV
TROUBLE
TRACER

NEW TROUBLE - INDICATING
TUBE LOCATION GUIDES
of TV Portables - Admiral to Zenith
Plus New 1957 RCA Models

Published by
HARRY G. DISIN
AMAGANSETT,
NEW YORK