

If you do not have a tube layout chart, mark the tubes in a convenient manner so that they can be returned to their original sockets.



Some tubes may be covered by small, round metal covers called tube shields. To remove most tube shields, simply press down and twist slightly, then lift up. Other tube shields fit tight around the tube and remove with the tube. Another type you may encounter telescope. Simply press down on the shield and the tube is then within reach.



3.

...testing tubes on the self-service tube tester.

Each tester varies somewhat in operation and design, simply follow the instructions designated on the tester panel, allow the tube to warm up. Then observe the meter and short lights. This handy service will quickly evaluate the condition of your tubes. You will find a complete stock of nationally advertised replacement tubes on hand at all U-Test-M tester locations.



NOTE: DO NOT attempt to test more than one tube at a time or you will get false readings.

4.

...After you have tested the suspected tubes and replaced any if needed, check to see that you haven't accidentally pulled any wires loose, see that all tubes that require a wire and cap on top of the tubes have these caps back in place. Also be sure that all tube shields have been put back on the tubes that need them.

Keep this fact in mind—Although some tubes may appear alike physically, their inside connections may be completely different and damage to other components may result if installed in the wrong sockets.

Now, replace the back cover, taking care to seat the interlock switch properly so contact is made, and last, see that the antenna connections are securely fastened and not touching (shorted across) or broken. Move the set back to its original position, turn it on, and enjoy your favorite program.

**YOU'RE ON THE WAY ...
TO BECOMING AN EXPERT ...
THANKS TO u-test-m**

These 32 pages
might well be one
of the most important
books you ever read

if you want to save more
important money than
ever before on ...

Color TV

→ TV Trouble Finding
→ Home and Car Radio
→ Stereo & Record Players

THE '64 EDITION GIVES YOU ...

the "inside track" on all television troubles, not just tubes, and you, the average TV set owner, can spot and fix all common troubles on black and white and color TV, too. This book gives it to you easy without benefit of previous experience or electronics schooling...just follow the simple, specific directions, and you have it "whipped!"

*the Trouble-Tracer
TV Dial*

is a "big boon" to experts and amateurs alike for quick spotting of 25 basic TV troubles...a great companion with the TV trouble-tracer book.



only 39c

49c in Canada



only 39c

49c in Canada

FREE

**u-test-m
TUBE TROUBLE
SHOOTING
TIPS**

TAKE ONE!

*see how easily
anyone can
check tubes!*

1.

NO DOUBT you are aware of the fact that weak, shorted, or dead tubes register different effects on the face of the picture tube screen, or affect the sound or possibly both picture and sound. Therefore, if you know which tubes to test, most TV troubles can be corrected by testing 3 or 4 tubes.

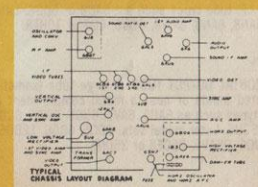
...a close visual inspection may prove to be a valuable short cut in repairing the set. Take a few screws out of the top section of the back cover so the tubes can be viewed with the power on. "TOUCH NOTHING INSIDE." Look for unlighted tubes, tubes that flash internally or those that have a deep purple glow. Make a mental note of their location as you will want to check these tubes first.



Tubes may be weak or shorted even though they may be lighted or appear normal. Test them to be sure.

2.

...consult your tube layout chart, this information enables you to quickly locate and test suspected tubes.



Most TV sets have tube layout charts glued to the back cover or inside the cabinet. This chart provides the tube type numbers, their function and their position on the chassis.

FOLLOW THESE ABC'S...

A

TEST OSCILLATOR-MIXER. Tube located on the tuner behind the channel selector dial. Some sets the tuner is mounted separately or beneath the chassis—look for tube types such as: 6J6, 6U8, 6X8, 12AJ7, 12AT7, 12AZ7 or 12AT7. Later model sets 5B6, 5BR8, 5C6, 5CL6, 5CL8, 5J6, 5U8, 6AT8, 6BR8, 6C6, 6C8, 6CQ8, 6EA8, 6FG7 or 7HG8.

TEST RF AMPLIFIER TUBE. Located on the tuner with the OSCILLATOR-MIXER tube. Tube types such as: 6AG5, 6AK5, 6BC5, 6BK7, 6BQ7, 6BZ7 or 6CB6. Later model sets: 2BN4, 2CY5, 2FH5, 2GK5, 3CB6, 3CY5, 3EA6, 3GK5, 4BQ7, 4CB6, 4BS8, 4BZ7, 4GK5, 5BK7, 5CY5, 6BN4, 6BC8, 6BZ8, 6ER5, 6ES5, 6ES8, 6FH5, 6Q5, 6FY6, 6GK5, 6SF5, X-155 or NUVIEWER (6CW4).

B

TEST PICTURE I.F. TUBES. Two, three or four miniature tubes that run in a line across the width or the length of the chassis. Look for tube types 6AU6, 6BZ6, 6BC5, 6CB6 or 6DE6. Later model sets 3AU6, 3BZ6, 3CB6, 4AU6, 5B8, 5EW6, 5GM6, 6AN8, 6AW8, 6CF6, 6DK6, 6DT6, 6EH7, 6EJ7, 6EW6 or 6GM6. Some sets use a video detector tube such as 3AL5, 5AM8, 6AL5, 6AM8, 6AN8, 12AU7 or 12AT7. Located behind the last picture I.F. tube.

C

TEST VIDEO AMPLIFIER OR VIDEO OUTPUT TUBE. (Some sets use both.) Tube types such as: 6AC7, 6AG7, 6AH6, 6CL6, 6AQ5, 12AT7, 12AU7, 12BH7 or 12BY7. Later model sets: 6AM8, 6AM9, 6AN8, 6AW8, 6BA8, 6AU8, 6CX8, 6GK6, 6GN8, 8AW8 or 10HF8.

D

TEST SOUND (Audio) OUTPUT TUBE. Located close to the point the speaker wires enter the chassis. Tube types such as: 6AQ5, 6AS5, 6BF5, 6K6, 6V6, 6W6, 6Y6 or 25L6. Later model sets: 5AQ5, 5AS8, 6BQ5, 6DG6, 12BK5, 12C5, 12ED5, 12L6, 12CA5 or 25BK5.

NOTE: Some sets use the sound output tube as part of the power supply as well as to operate the speaker.

E

The following sound tubes are generally located close to the sound output tube. Test sound amplifier tubes such as: 6AT6, 6AV6, 6J5, 6SN7 or 6SQ7. Later models 3AV6, 5AS8 or 6AM8.

Test sound detector tubes (Ratio Detector) types such as: 6AL5, 6BN6 or 6T8. Later model sets 3AL5, 3BN6, 4DT6, 5T8 or 6GX6.

Test sound I.F. tube types such as: 6AU6 or 6CB6. Later model sets 5U8, 5AN8, 6AN8, 6AW8, 6EW6, 6U8 or 10HF8.

F

TEST HORIZONTAL OUTPUT TUBE: A large tube (sometimes two tubes) located inside or near a metal compartment 6" to 8" high. Tube types such as 6AU5, 6AV5, 6BQ6, 6CQ6, 6CU6, 25BQ6 or 25CQ6. Later model sets: 6DQ5, 6DQ6, 12BQ6, 12DQ6, 17CQ6, 17DQ6, 25AV5, 25CQ6 or 25DN6.



FOR
BASIC
TROUBLE
DETECTION

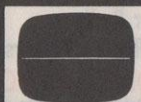
IT'S
EASY
THE
u-test-m
WAY!



SNOWY SCREEN
WEAK OR NO SOUND
SEE SECTION...A



SCREEN LIGHTED
NORMAL OR NO SOUND
SEE SECTIONS...A, B, C & D



THIN LINE
SOUND OK
SEE SECTION...K



PICTURE FOLDOVER
SOUND OK
SEE SECTION...K



DIAGONAL LINES
SOUND OK
SEE SECTIONS...N, H & L



NORMAL PICTURE
NO. WEAK OR DISTORTED SOUND
SEE SECTIONS...D & E



NO PICTURE (NO LIGHT)
SOUND OK
SEE SECTIONS...N, F, G, H, M & J



SNOWY PICTURE
SOUND OK
SEE SECTION...A



WEAK PICTURE
(LACKS CONTRAST) SOUND OK
SEE SECTIONS...A, B & C



LACKS HEIGHT
SOUND OK
SEE SECTION...K



FLOP OVER
SOUND OK
SEE SECTIONS...K & L



PICTURE BENDS
SOUND OK
SEE SECTIONS...N, H & L



PICTURE LACKS WIDTH
SOUND OK
SEE SECTIONS...N, F, G, H & J



NO PICTURE (NO LIGHT)
NO SOUND
SEE SECTIONS...J & D

CERTIFIED
QUALITY

BROUGHT TO YOU BY U-TEST-M
--the pioneer and leader in the
self-service tube tester field.

u-test-m

G

TEST DAMPER TUBE. Located next to the horizontal output tube. Tube types such as 5V4, 6AX4, 6BY5, 6W4, 12AX4 or 25W4. Later model sets: 6AU4, 17AX4, 17AU4 or 19AU4. Also test or substitute a new fuse (if used) generally located close to this tube.

H

TEST HORIZONTAL OSCILLATOR TUBE. Inside or near a metal compartment 6" to 8" high. Tube types such as: 6SN7, 12AT7, 12AU7 or 12SN7. Later model sets 6CG7, 6DR7, 6EA8, 6FQ7, 6GH8, 7AU7, 8CG7, 8FQ7 or 9AU7.

NOTE: If this tube is replaced, it may be necessary to reset the horizontal oscillator adjustment. Turn adjustment slowly until lines broaden and picture forms.

I

Test High Voltage Rectifier Tube or Tubes inside the metal compartment. Tube types such as 1AX2, 1B3, 1J3, 1K3, 1S2, 1X2 or 3A3.

J

TEST LOW VOLTAGE RECTIFIER TUBE. A large tube (sometimes two) near the power transformer. Tube types such as 3D4, 5AS4, 5AX4, 5D4, 5Y3 or 5U4. Check low voltage fuse (if used) located near the power transformer or below the chassis.

NOTE: Some sets do not use this tube, therefore, this signifies a series filament set. (If one tube burns out, several or all tubes are affected.) Test all tubes in the set.

K

TEST VERTICAL OSCILLATOR TUBE. This tube follows no specific pattern. Look for tube types such as: 6C4, 6J5, 6SN7, 6U8, 12AU7 or 12SN7.

TEST VERTICAL OUTPUT TUBE. Such as: 6AH4, 6AQ5, 6K6, 6S4, 6V6, 6W6, 12L6, 12R5, 12B4 or 12DB5.

NOTE: Some sets have the vertical oscillator and output tube combined into one tube such as 5B8, 6BL7, 6BX7, 6CM7, 6CS7, 6CU8, 6DE7, 6DR7, 6EA7, 6EM5, 6EM7, 6EW7, 6FD7, 10DE7, 10EM7, 13DE7 or 13EM7.

L

TEST ALL SYNCHRONIZING TUBES. NOTE: one-half section of other tubes are often used, they follow no specific pattern. Look for tube types such as: 6SL7, 6SN7, 6U8, 6X8, 12AT7, 12AU7, 12AV7 or 12SN7. Later model sets: 3CS8, 4GS8, 5AN8, 5B8, 5U8, 6AN8, 6AM8, 6AW8, 6BA8, 6BY6, 6BY8, 6CM7, 6CS6, 6GH8, 6GN8, 6JE8, 6SH8, 6U8, 6X8 or 6AW8.

M

Some RCA models use tube type 6AC7 or 6AG7 for the video output tube. If so, test it as in some instances this tube affects the picture tube.

N

When testing tubes inside the metal compartment, do not touch below or around the base (the pin connections) of tube types such as: 1AX2, 1B3, 1J3, 1K3, 1S2, 1X2 or 3A3. To remove this tube, pull the cap and wire at the top off, place finger around the glass envelope and pull up in a circular motion. BE SURE POWER IS OFF.

Some tubes may be covered by small, round metal covers called tube shields. To remove most tube shields, simply press down and twist slightly, then lift up. Other tube shields fit tight around the tube and remove with the tube. Another type you may encounter telescope. Simply press down on the shield and the tube is then within reach.



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and finally

...After you have tested the suspected tubes and replaced any if needed, check to see that you haven't accidentally pulled any wires loose, see that all tubes that require a wire and cap on top of the tubes have these caps back in place. Also be sure that all tube shields have been put back on the tubes that need them.

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The "Do-It-Yourself"

TV TROUBLE-SHOOTERS GUIDE



- TV Trouble Finder
- Trouble-Shooting Color TV
- Home & Car Radio
- Stereo & Record Players

'63 EDITION

This booklet shows you—the average television set owner—how to find and fix all of the common TV troubles caused by defective tubes. It also tells you how to cure other TV troubles not directly caused by defective or faulty tubes. No schooling in electronics or previous experience in TV Trouble-Shooting is necessary, to follow the simple, specific directions given in this booklet.

The trouble-finder section will save you many times over the price of this booklet. The trouble-finder is entirely new and different. It not only lists the remedies, but also pin-points tubes, fuses and adjustments in their position on the chassis.

50¢

60¢ in Canada



Dial and Pin-Point Your TV Troubles



Discover how easily this fascinating dial locates defective tubes, fuses and adjustments in their position on the chassis.

Only 39¢

49¢ in Canada

FREE...Take One

u-test-m

Trouble-Shooting Tips...

No doubt you are aware of the fact that weak, shorted, or dead tubes register different effects on the face of the picture tube screen, or affect the sound or possibly both picture and sound. Therefore, if you know which tubes to test, most TV troubles can be corrected by testing 3 or 4 tubes.

first

...a close visual inspection may prove to be a valuable short cut in repairing the set. Take a few screws out of the top section of the back cover so the tubes can be viewed with the power on.

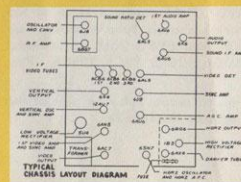
"TOUCH NOTHING INSIDE." Look for unlighted tubes, tubes that flash internally or those that have a deep purple glow. Make a mental note of their location as you will want to check these tubes first.

Tubes may be weak or shorted even though they may be lighted or appear normal. Test them to be sure.



next

...consult your tube layout chart, this information enables you to quickly locate and test suspected tubes.



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SPERRY ENTERPRISES INC.
BOX 3236, LINCOLN, NEBR.

1

TEST OSCILLATOR-MIXER. Tube located on the tuner behind the channel selector dial. Some sets the tuner is mounted separately or beneath the chassis—look for tube types such as: 6J6, 6U8, 6X8, 12AJ7, 12AT7, 12AZ7 or 12AT7. Later model sets 5BE6, 5BR8, 5CG8, 5CL6, 5CL8, 5J6, 5U8, 6AT8, 6BR8, 6CG8, 6CJ8, 6CQ8, 6EA8, 6FG7 or 7HG8.

TEST RF AMPLIFIER TUBE. Located on the tuner with the OSCILLATOR-MIXER tube. Tube types such as: 6AG5, 6AK5, 6BC5, 6BK7, 6BQ7, 6BZ7 or 6CB6. Later model sets: 2BN4, 2CY5, 2FH5, 2GK5, 3CB6, 3CY5, 3EA6, 3GK5, 4BQ7, 4CB6, 4BS8, 4BZ7, 4GK5, 5BK7, 5CY5, 6BN4, 6BC8, 6BZ8, 6ER5, 6ES5, 6ES8, 6FH5, 6FQ5, 6FY6, 6GK5, 6SF5, X-155 or NU-VISTER (6CW4).

2

TEST PICTURE I.F. TUBES. Two, three or four miniature tubes that run in a line across the width or the length of the chassis. Look for tube types 6AU6, 6BZ6, 6BC5, 6CB6 or 6DE6. Later model sets 3AU6, 3BZ6, 3CB6, 4AU6, 5B8, 5EW6, 5GM6, 6AN8, 6AW8, 6CF6, 6DK6, 6DT6, 6EH7, 6EJ7, 6EW6 or 6GM6. Some sets use a video detector tube such as 3AL5, 5AM8, 6AL5, 6AN8, 6AU7 or 12AT7. Located behind the last picture I.F. tube.

3

TEST VIDEO AMPLIFIER OR VIDEO OUTPUT TUBE. (Some sets use both.) Tube types such as: 6AC7, 6AG7, 6AH6, 6CL6, 6AQ5, 12AT7, 12AU7, 12BH7 or 12BY7. Later model sets: 5AM8, 6AM8, 6AN8, 6AW8, 6BA8, 6AU8, 6CX8, 6GK6, 6GN8, 8AW8 or 10HF8.

4

TEST SOUND (Audio) OUTPUT TUBE. Located close to the point the speaker wires enter the chassis. Tube types such as: 6AQ5, 6AS5, 6BF5, 6K6, 6V6, 6W6, 6Y6 or 25L6. Later model sets: 5AQ5, 5AS8, 6BQ5, 6DG6, 12BK5, 12C5, 12ED5, 12L6, 12CA5 or 25BK5.

NOTE: Some sets use the sound output tube as part of the power supply as well as to operate the speaker.

5

The following sound tubes are generally located close to the sound output tube. Test sound amplifier tubes such as: 6AT6, 6AV6, 6J5, 6SN7 or 6SQ7. Later models 3AV6, 5AS8 or 6AM8.

Test sound detector tubes (Ratio Detector) types such as: 6AL5, 6BN6 or 6T8. Later model sets 3AL5, 3BN6, 4DT6, 5T8 or 6GX6.

Test sound I.F. tube types such as: 6AU6 or 6CB6. Later model sets 5U8, 5AN8, 6AN8, 6AW8, 6EW6, 6U8 or 10HF8.

6

TEST HORIZONTAL OUTPUT TUBE. A large tube (sometimes two tubes) located inside or near a metal compartment 6" to 8" high. Tube types such as 6AU5, 6AV5, 6BG6, 6BQ6, 6CD6, 6CU6, 25BQ6 or 25CU6. Later model sets: 6DQ5, 6DQ6, 12BQ6, 12DQ6, 17CQ6, 17DQ6, 25AV5, 25CE6 or 25DN6.



SNOWY SCREEN
WEAK OR NO SOUND
SEE SECTION 1



SCREEN LIGHTED
NORMAL OR NO SOUND
SEE SECTION 1, 2, 3 & 4



THIN LINE
SOUND OK
SEE SECTION 11



PICTURE FOLDOVER
SOUND OK
SEE SECTION 11



DIAGONAL LINES
SOUND OK
SEE SECTIONS 14, 8 & 12



NORMAL PICTURE
NO, WEAK OR DISTORTED SOUND
SEE SECTIONS 4 & 5



NO PICTURE (NO LIGHT)
SOUND OK
SEE SECTIONS 14, 6, 7, 8, 13 & 10



SNOWY PICTURE
SOUND OK
SEE SECTION 1



WEAK PICTURE
(LACKS CONTRAST) SOUND OK
SEE SECTIONS 1, 2 & 3



LACKS HEIGHT
SOUND OK
SEE SECTION 11



FLOP OVER
SOUND OK
SEE SECTIONS 11 & 12



PICTURE BENDS
SOUND OK
SEE SECTIONS 14, 8 & 12



PICTURE LACKS WIDTH
SOUND OK
SEE SECTIONS 14, 6, 7, 8 & 10



NO PICTURE (NO LIGHT)
NO SOUND
SEE SECTIONS 10 & 4

7

TEST DAMPER TUBE. Located next to the horizontal output tube. Tube types such as 5V4, 6AX4, 6BY5, 6W4, 12AX4 or 25W4. Later model sets: 6AU4, 17AX4, 17AU4 or 19AU4. Also test or substitute a new fuse (if used) generally located close to this tube.

8

TEST HORIZONTAL OSCILLATOR TUBE. Inside or near a metal compartment 6" to 8" high. Tube types such as: 6SN7, 12AT7, 12AU7 or 12SN7. Later model sets 6CG7, 6DR7, 6EA8, 6FQ7, 6GH8, 7AU7, 8CG7, 8FQ7 or 9AU7.

NOTE: If this tube is replaced, it may be necessary to reset the horizontal oscillator adjustment. Turn adjustment slowly until lines broaden and picture forms.

9

Test High Voltage Rectifier Tube or Tubes inside the metal compartment. Tube types such as 1AX2, 1B3, 1J3, 1K3, 1S2, 1X2 or 3A3.

10

TEST LOW VOLTAGE RECTIFIER TUBE. A large tube (sometimes two) near the power transformer. Tube types such as 3DG4, 5AS4, 5AX4, 5DJ4, 5Y3 or 5U4. Check low voltage fuse (if used) located near the power transformer or below the chassis.

NOTE: Some sets do not use this tube, therefore, this signifies a series filament set. (If one tube burns out, several or all tubes are affected.) Test all tubes in the set.

11

TEST VERTICAL OSCILLATOR TUBE. This tube follows no specific pattern. Look for tube types such as: 6C4, 6J5, 6SN7, 6U8, 12AU7 or 12SN7.

TEST VERTICAL OUTPUT TUBE. Such as: 6AH4, 6AQ5, 6K6, 6S4, 6V6, 6W6, 12L6, 12R5, 12B4 or 12DB5.

NOTE: Some sets have the vertical oscillator and output tube combined into one tube such as 5B8, 6BL7, 6BX7, 6CM7, 6CS7, 6CU8, 6DE7, 6DR7, 6EA7, 6EM5, 6EM7, 6EW7, 6FD7, 10DE7, 10EM7, 13DE7 or 13EM7.

12

TEST ALL SYNCHRONIZER TUBES. NOTE: one-half section of other tubes are often used, they follow no specific pattern. Look for tube types such as: 6SL7, 6SN7, 6U8, 6X8, 12AT7, 12AU7, 12AV7 or 12SN7. Later model sets: 3GS8, 4GS8, 5AN8, 5B8, 5U8, 6AN8, 6AM8, 6AW8, 6BA8, 6BY6, 6BY8, 6CM7, 6CS6, 6GH8, 6GN8, 6JE8, 6SH8, 6U8, 6X8 or 6AW8.

13

Some RCA models use tube type 6AC7 or 6AG7 for the video output tube. If so, test it as in some instances this tube affects the picture tube.

14

When testing tubes inside the metal compartment, do not touch below or around the base (the pin connections) of tube types such as: 1AX2, 1B3, 1J3, 1K3, 1S2, 1X2 or 3A3. To remove this tube, pull the cap and wire at the top off, place finger around the glass envelope and pull up in a circular motion. BE SURE POWER IS OFF.