CHAPTER 3

OPERATOR'S MAINTENANCE

32. General

The following is a list of maintenance duties normally performed by the operator of Test Set, Electron Tube TV–2(*)/U. These procedures do not require special tools or test equipment.

a. Preventive maintenance (par. 33).
b. Visual inspection (par. 34).
c. Operational check (par. 35*b*).
d. Replacement of defective lamps (par. 39*b*).
e. Replacement of defective fuses (par. 39*a*).
f. Checking cable connection.
g. Replacement of defective electron tubes (pars. 36 and 37).

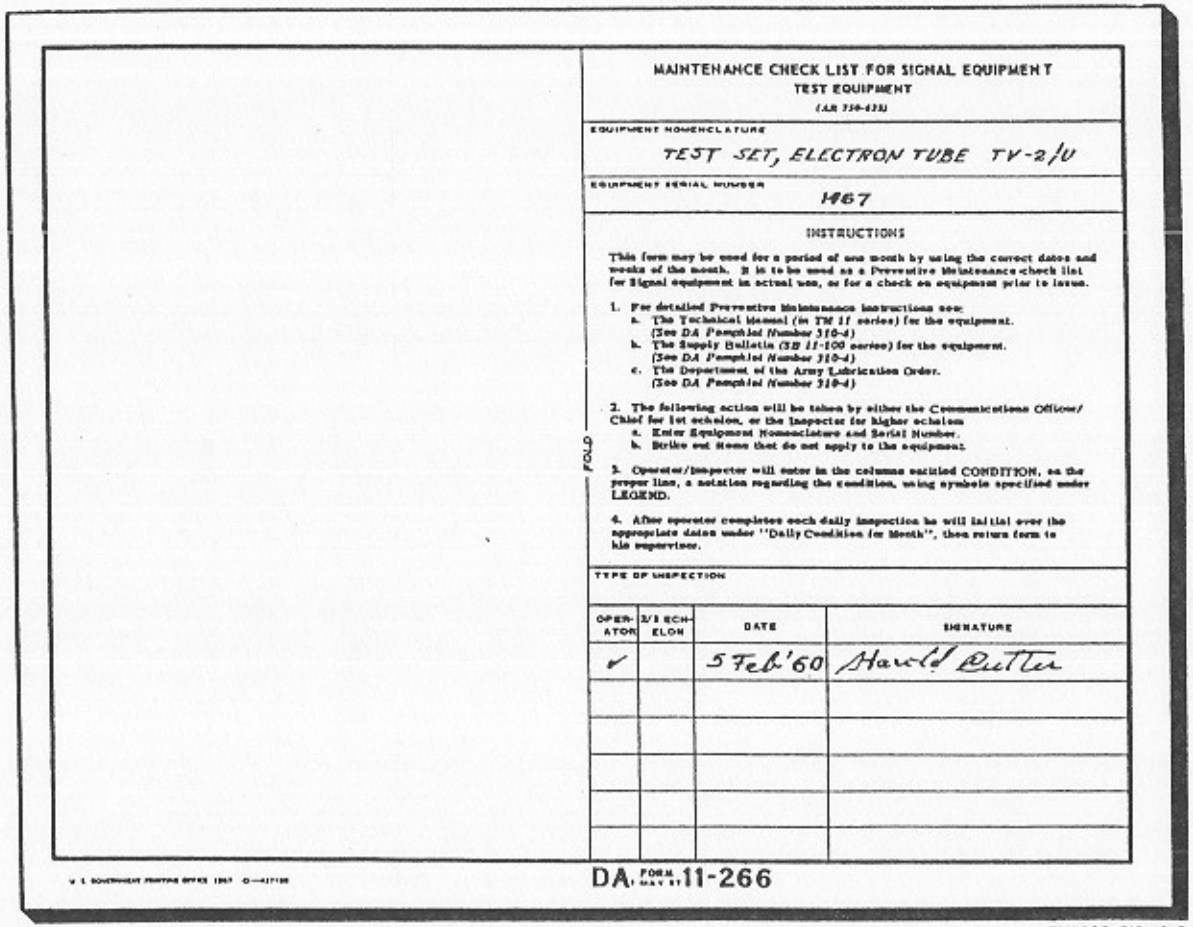
33. Preventive Maintenance

a. DA Form 11–266. DA Form 11–266 (figs. 6 and 7) is a preventive maintenance checklist to be used by the operator. Items not applicable to the tube tester are lined out in figure 7. References in the ITEM block in figure 7 are to paragraphs that contain additional maintenance information pertinent to the particular item. Instructions for the use of the form appear on the form.

b. Items. The information shown below supplements DA Form 11–266. The item numbers correspond to the ITEM numbers on the form.

Item	Maintenance procedures
1	Use a clean cloth to remove dust, dirt, moisture, and grease from the case and front panel. If necessary, wet the cloth with Cleaning Compound (Federal stock No. 7930–395–9542) and then wipe the parts with a dry, clean cloth.
3	All control knobs should work smoothly, be tight on the shafts, and should not bind. Tighten all loose knobs and be sure that the knobs do not rub against the panel.
5	Repair any cuts in the power cord insulation by covering them with rubber tape and then with friction tape.

Warning: **Cleaning compound is flammable and its fumes are toxic. Do not use near a flame; provide adequate ventilation.**



MAINTENANCE CHECK LIST FOR SIGNAL EQUIPMENT
TEST EQUIPMENT
(AR 750-625)

EQUIPMENT NOMENCLATURE: TEST SET, ELECTRON TUBE TV-2/U

EQUIPMENT SERIAL NUMBER: 1467

INSTRUCTIONS

This form may be used for a period of one month by using the correct dates and weeks of the month. It is to be used as a Preventive Maintenance check list for Signal equipment in actual use, as for a check on equipment prior to issue.

1. For detailed Preventive Maintenance instructions see:
   a. The Technical Manual (in TM 11 series) for the equipment. (See DA Pamphlet Number 310-4)
   b. The Supply Bulletin (SB 11-100 series) for the equipment. (See DA Pamphlet Number 310-4)
   c. The Department of the Army Lubrication Order. (See DA Pamphlet Number 310-4)

2. The following action will be taken by either the Communications Officer/Chief for 1st echelon, or the Inspector for higher echelons
   a. Enter Equipment Nomenclature and Serial Number.
   b. Strike out items that do not apply to the equipment.

3. Operator/Inspector will enter in the columns entitled CONDITION, on the proper line, a notation regarding the condition, using symbols specified under LEGEND.

4. After operator completes each daily inspection he will initial over the appropriate dates under "Daily Condition for Month", then return form to his supervisor.

FOLD

TYPE OF INSPECTION

OPERATOR	2/3 ECHELON	DATE	SIGNATURE
✓		5 Feb'60	Harold Butler

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DA FORM MAY 51 11-266

TM6625-316-12-8

Figure 6. DA Form 11–266, pages 1 and 4.

LEGEND for marking conditions:
Satisfactory, ✓
Adjustment, Repair or Replacement required, X
Defect corrected, (X).

DAILY CONDITION FOR MONTH OF FEBRUARY 1960

NO.	DAILY ITEM	1ST	2D	3D	4TH	5TH	1ST 2D 3D ECH
1	CLEAN DIRT AND MOISTURE FROM EXPOSED SURFACES OF [illegible] METER WINDOWS, ETC PARA 33	✓	✓	✓	✓	✓	✓ ✓ ✓ ✓
2	INSPECT FOR LOOSENESS OF EXTERIOR ITEMS SUCH AS SWITCHES, KNOBS, [illegible] AND PILOT LIGHTS. PARA 33	✓	✓	✓	✓	✓	✓ ✓ ✓ ✓
3	INSPECT CONTROLS FOR BINDING, SCRAPING. TAP CONTROLS LIGHTLY FOR CUT-OUT DUE TO LOOSE CONTACTS.	✓	✓	✓	✓	✓	✓ ✓ ✓ ✓
4	DURING OPERATION BE ALERT FOR ANY UNUSUAL PERFORMANCE OR CONDITION	✓	✓	✓	✓	✓	✓ ✓ ✓ ✓

NO.	WEEKLY	1ST	2D	3D	4TH	5TH	1ST 2D 3D ECH
9	INSPECT CORDS, [illegible] FOR BREAKS, CUTS, KINKS, DETERIORATION, STRAIN AND FRAYING PARA 33	✓					
5	[illegible]						
7	HAND CHECK FOR LOOSENESS OF EXTERIOR ITEMS SUCH AS HANDLES, LATCHES, HINGES.	✓					
6	[illegible]						
8	[illegible]						
10	INSPECT EXPOSED METAL SURFACES FOR RUST AND CORROSION.	✓					
11	INSPECT METERS FOR DAMAGED GLASS AND CASES.	X					

NO.	ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
12	[illegible]	
13	[illegible]	
14	[illegible]	

NO.	ADDITIONAL ITEMS FOR 2D AND 3D ECHELON INSPECTIONS	CONDITION
16	[illegible]	
19	[illegible]	
17	[illegible]	
18	[illegible]	
20	[illegible]	
21	[illegible]	
22	[illegible]	
23	[illegible]	
24	[illegible]	
25	[illegible]	

IF DEFICIENCIES NOTED ARE NOT CORRECTED DURING THE INSPECTION, INDICATE ACTION TAKEN FOR CORRECTION (Continue on page 4, if more space is needed)

ITEM 11: METER GLASS CRACKED. REPORTED TO HIGHER ECHELON MAINTENANCE FOR REPLACEMENT.

3 3

TM6625-316-12-7

Figure 7. DA Form 11–266, pages 2 and 3 (as used by operator).

34. Visual Inspection

a. When the equipment fails to perform properly, turn off the power and check for the conditions listed below. *Do not check any item with the power on.*

(1) Worn, broken, or disconnected power cord or connector.

(2) Improperly connected electrical clips.

(3) Burned-out or improperly seated fuses.

(4) Defective or loose switch knobs. Operate the switches to be sure there is a definite stop at each position indicated on the panel.

(5) Loose control knobs. Check the knobs by hand.

(6) Improperly seated indicator lamps.

b. If the above checks do not locate the trouble, proceed to the operational checklist (par. 35).

35. Operational Checklist

a. General. The operational checklist provides a procedure for systematically checking equipment performance. All corrective measures that the operator can perform are given in the *Corrective measures* column. When using the checklist, start at step 1 and follow each step in order. If the corrective measures indicated do not repair the equipment, troubleshooting is required by higher echelon. Note on the repair tag how the equipment performed and the corrective measures taken. Perform the steps in *b* below.

b. Operational Checklist.

Action	Normal Indication	Corrective measure
Set the ON-OFF switch to ON	PILOT lamp lights	Replace PILOT lamp (par. 39*b*). Replace fuses F1 and F2 (par. 39*a*). Higher echelon repair required.
Set FILAMENT RANGE switch to several voltages and adjust FILAMENT fine control for each of the voltages selected.	Pointer of FILAMENT VOLTS meter first indicates approximate voltage selected, and then indicates exact voltage selected.	Higher echelon repair required.
Set GM-SIGNAL RANGE switch to each position and adjust SIGNAL-V.R. fine control for each position.	Pointer of SIGNAL meter can be adjusted to redline for each position of range switch.	Higher echelon repair required.
Set the ON-OFF switch to OFF	PILOT lamp goes out	Higher echelon repair required.
Set all switches to positions specified on tube test data roll chart for available tube known to be in good condition, insert tube in appropriate tube socket, and set the ON-OFF switch to ON.	PILOT lamp lights	Higher echelon repair required.
Set SHORT TEST switch to V position and depress PRESS TO TEST P1 switch.	FIL. CONT. SHORT lamp lights	Replace FIL. CONT. SHORT lamp (par. 39*b*). Higher echelon repair required.
Adjust FILAMENT fine control	FILAMENT VOLTS meter indicates exact voltage selected.	Higher echelon repair required.
Set PLATE-SCREEN RANGE switch to position specified for tube on tube test data roll chart and adjust PLATE and SCREEN fine controls.	PLATE and SCREEN VOLTS meter indicates exact voltage indicated for tube on tube test data roll chart.	Replace tubes V1 and V3 (pars. 36 and 37). Higher echelon repair required.
Set BIAS RANGE switch to position specified for tube on tube test data roll chart, and adjust BIAS fine control.	GRID BIAS VOLTS meter indicates exact voltage indicated for tube on tube test data roll chart.	Replace tube V2 (pars. 36 and 37). Higher echelon repair required.

Set quality SHUNT control to position indicated for tube on tube test data roll chart, and set GM-SIGNAL RANGE switch to position F.		
Depress PRESS TO TEST P4 switch to locking position.	Pointer of PERCENT QUALITY meter may deflect slightly.	
Adjust GM CENTERING control	PERCENT QUALITY meter indicates exactly zero.	Higher echelon repair required.
Release PRESS TO TEST P4 switch	PERCENT QUALITY meter remains on zero.	Higher echelon repair required.
Set GM-SIGNAL RANGE switch to position specified for tube on tube test data roll chart.	Pointer of PERCENT QUALITY meter deflects.	Higher echelon repair required.
Adjust SIGNAL-V.R. fine control	Pointer of SIGNAL meter adjusts exactly to redline.	Higher echelon repair required.
Depress the appropriate PRESS TO TEST switch to locking position and read percent quality of tube on PERCENT QUALITY meter.	PERCENT QUALITY meter indication is above minimum requirement of tube as specified on tube test data roll chart.	Higher echelon repair required.

36. Removal and Replacement of Chassis

a. Removal.

(1) Unsnap the latches and open the cover of the tube tester.

(2) Remove the 14 screws that secure the front panel to the case.

(3) Lift the panel and the chassis from the case by the handles mounted on the panel.

(4) Slowly lift the tube tester case upward until it is clear of the chassis.

b. Replacement.

(1) Position the tube tester case so that the handle is forward.

(2) Carefully lower the tube tester into the case. Be sure that no wires are caught between the front panel and the edge of the case.

(3) Replace the screws that secure the front panel to the case.

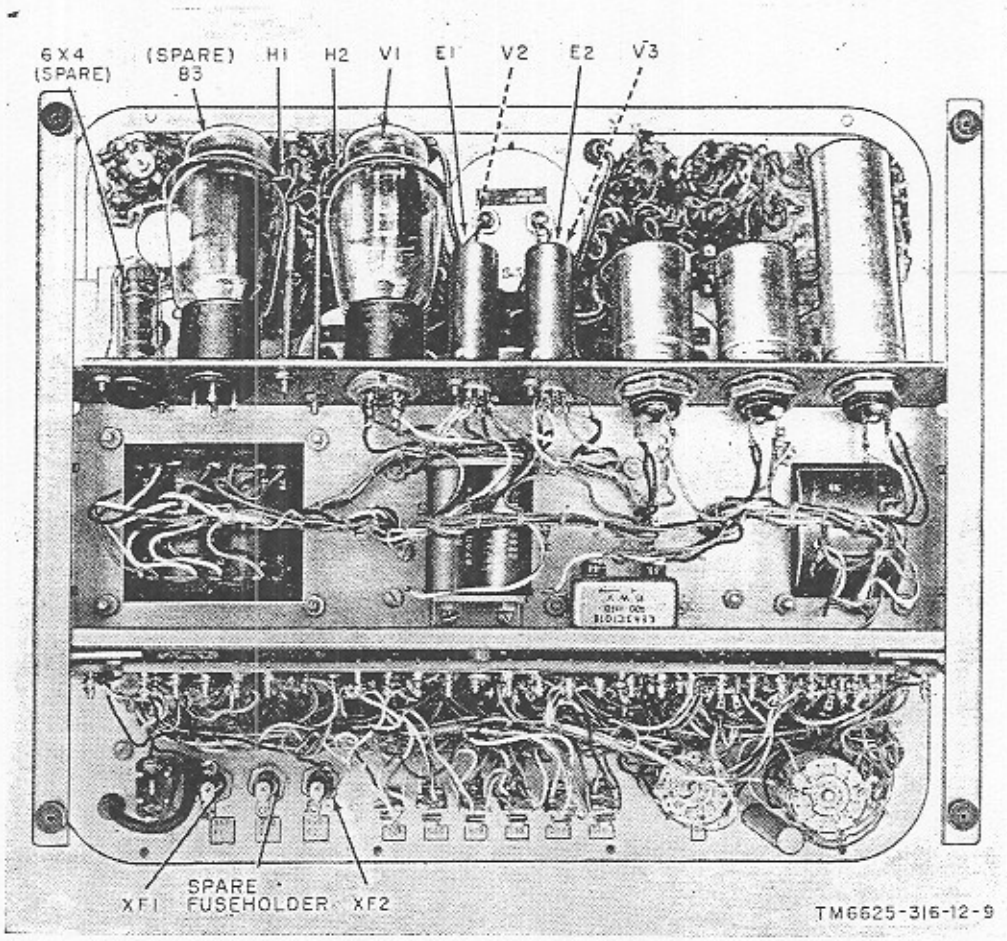

Figure 8. Test Set, Electron Tube TV–2(*)/U, rear view of chassis.

37. Tube Replacement

(fig. 8)

When trouble occurs, check the power cord connection and the control settings before removing any tubes. If tube failure is suspected, use the tube substitution method (*a* below) to check the tubes.

Caution: **Do not rock or rotate a tube when removing it from a socket; pull it straight out with a tube puller.**

a. Tube Substitution Method. Replace a suspected tube (*b* below) with a new tube. If the equipment still does not work, remove the new tube and put back the original tube. Repeat this procedure with each suspected tube until the defective tube is located.

b. Replacing Tubes in Test Set, Electron Tube TV–2(*)/U. Check the tubes in the tube tester as follows:

(1) Remove the chassis from the case (par. 36).

(2) Remove the shields of the 6X4 or 6X4W tubes (V2 and V3) by pressing down on the shield and rotating counterclockwise until it is released.

(3) Release the retainer of the 83 tube (V1) by pressing down on the spring which engages the threaded portion of the supporting stud; remove the retainer from the tube.

(4) Use a tube puller to remove the tube. If a tube puller is not available, allow the tube to cool, and then grasp it, and pull the tube straight up.

(5) If a tube marking has become illegible, label the tube as soon as it is removed.

(6) Replace the tube (*a* above) with one of the running spares.

(7) Set the tube (or a replacement) in the socket and secure it (by replacing tube retainer or shield).

(8) Replace the chassis in the case (par. 36*b*).

38. Preferred-Type Tubes

A preferred-type electron tube, type 6X4W, has been developed as a direct replacement for nonpreferred-type 6X4. The 6X4W tube is used in the power supply. When replacement of a 6X4 type tube is necessary, replace it with a 6X4W type tube. Do not substitute a 6X4 tube for a 6X4W tube.

39. Replacement of Fuses and Lamps

The two fuses (F1 and F2) and the two glowlamps (11C and 12C) are removable from the front panel of the tube tester.

a. Replacement of Fuses. Fuses F1 and F2 are 3-ampere, 250-volt, ¼- by 1¼-inch, cartridge-type fuses (fig. 5). To remove a fuse, press the fuseholder cap and turn it counterclockwise. Remove the cap, and then remove the fuse from its holder.

***Caution:* The fuses are rated at 3 amperes each. When replacing a fuse, be careful to use a fuse of the same rating.**

b. Replacement of Lamps. Lamps 11C and 12C are glowlamps (fig. 1) with miniature-bayonet bases. To remove a glowlamp, unscrew the indicator light lens, press the lamp inward and rotate it counterclockwise, and withdraw the glowlamp from its socket.