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HANDBOOK OF OPERATING INSTRUCTIONS

FOR

RADIO SET SCR-720-A and RADIO SET SCR-720-B

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UNSATISFACTORY REPORT

FOR U. S. ARMY AIR FORCE PERSONNEL:

In the event of malfunctioning, unsatisfactory design, or unsatisfactory installation of any of the component units of this equipment, or if the material contained in this book is considered inadequate or erroneous, an Unsatisfactory Report, AAF Form No. 54, or a report in similar form, shall be submitted in accordance with the provisions of Army Air Force Regulation No. 15-54, listing:

1. Station and organization.
2. Nameplate data (type number or complete nomenclature if nameplate is not attached to the equipment).
3. Date and nature of failure.
4. Airplane model and serial number.
5. Remedy used or proposed to prevent recurrence.
6. Handbook errors or inadequacies, if applicable.

FOR U. S. NAVY PERSONNEL:

Report of failure of any part of this equipment during its guaranteed life shall be made on Form N. Aer. 4112, "Report of Unsatisfactory or Defective Material," or a report in similar form, and forwarded in accordance with the latest instructions of the Bureau of Aeronautics. In addition to other distribution required, one copy shall be furnished to the inspector of Naval Material (location to be specified) and the Bureau of Ships. Such reports of failure shall include:

1. Reporting activity.
2. Nameplate data.
3. Date placed in service.
4. Part which failed.
5. Nature and cause of failure.
6. Replacement needed (yes-no).
7. Remedy used or proposed to prevent recurrence.

FOR BRITISH PERSONNEL:

Form 1022 procedure shall be used when reporting failure of radio equipment.

DESTRUCTION OF ABANDONED MATERIEL IN THE COMBAT ZONE

In case it should become necessary to prevent the capture of this equipment and when ordered to do so,

DESTROY IT SO THAT NO PART OF IT CAN BE SALVAGED, RECOGNIZED OR USED BY THE ENEMY. BURN ALL PAPERS AND BOOKS.

MEANS:—

1. Explosives, when provided.
2. Hammers, axes, sledges or whatever heavy object is readily available.
3. Burning by means of incendiaries such as gasoline, oil, paper or wood.
4. Grenades and shots from available arms.
5. Where possible, and when time permits, bury all debris or dispose of it in streams or other bodies of water.

PROCEDURE:—

1. Obliterate all identifying marks. Destroy nameplates and circuit labels.
2. Demolish all panels, castings, switch- and instrument-boards.
3. Destroy all controls, switches, relays, connections and meters.
4. Rip out all wiring in electrical equipment. Smash gas, oil and water cooling systems in gas-engine generators, etc.
5. Smash every electrical or mechanical part whether rotating, moving or fixed.
6. Break up all operating instruments such as keys, phones, microphones, etc.
7. Destroy all classes of carrying cases, straps, containers, etc.

SAFETY NOTICE

OPERATION OF THIS EQUIPMENT INVOLVES THE USE OF HIGH VOLTAGES WHICH ARE DANGEROUS TO LIFE. ADEQUATE SAFETY MEASURES HAVE BEEN TAKEN TO INSURE SAFETY TO OPERATING PERSONNEL. THE FOLLOWING RULES MUST BE OBSERVED IN ORDER TO TAKE FULL ADVANTAGE OF THESE PRECAUTIONARY MEASURES:

1. DO NOT DISCONNECT ANY CABLES OR MAKE ANY ADJUSTMENT UNLESS ALL SWITCHES ARE OFF.

2. FOLLOW THE PROPER STARTING SEQUENCE AT ALL TIMES.

3. DO NOT REMOVE ANY UNIT FROM ITS CASE FOR ANY REASON WHATSOEVER WHEN POWER IS TURNED ON. ALL INTERNAL ADJUSTMENTS REQUIRE USE OF SPECIAL TEST EQUIPMENT AND SUCH ADJUSTMENTS MUST BE PERFORMED BY A SPECIALLY TRAINED SERVICE MAN.

4. READ AND UNDERSTAND ALL OF THE INSTRUCTIONS BEFORE ATTEMPTING OPERATION OF THIS EQUIPMENT.

FIRST AID

PERSONNEL ENGAGED IN THE INSTALLATION, OPERATION AND MAINTENANCE OF THIS EQUIPMENT OR SIMILAR EQUIPMENT ARE URGED TO BECOME FAMILIAR WITH THE FOLLOWING RULES, BOTH *IN THEORY AND IN THE PRACTICAL APPLICATION THEREOF.* IT IS THE DUTY OF EVERY RADIOMAN TO BE PREPARED TO GIVE ADEQUATE FIRST AID AND THEREBY PREVENT AVOIDABLE LOSS OF LIFE. YOUR OWN LIFE MAY DEPEND ON THIS.

Do These Three Things First in Any Emergency Requiring First Aid

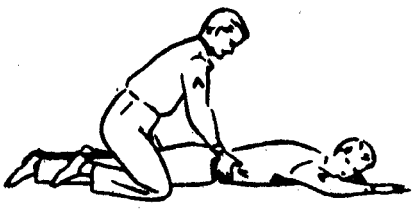
1. Send for a doctor or carry the victim to a doctor.
2. Keep victim warm and quiet and flat on his back.
3. If breathing has stopped, apply artificial respiration. Stop all serious bleeding.

When, from any cause whatever, breathing has stopped, apply artificial respiration immediately and continue WITHOUT STOPPING until normal breathing returns, or a doctor pronounces the victim dead. SPEED IN BEGINNING ARTIFICIAL RESPIRATION IS ESSENTAL.

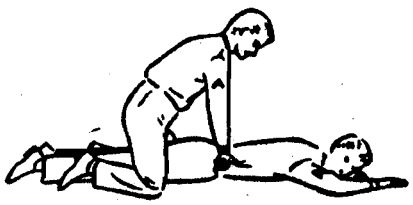
The Prone Pressure Method of Artificial Respiration

If Due to Electric Shock

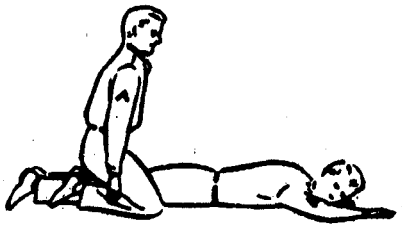
1. PROTECT YOURSELF with DRY insulating material.
2. BREAK THE CIRCUIT by opening the power switch or pulling the victim free of the live conductor. DON'T TOUCH THE VICTIM WITH YOUR BARE HANDS UNTIL THE CIRCUIT IS BROKEN.
3. SPREAD DRY BLANKET ON THE GROUND, and roll victim to center of blanket with his arms extended over his head, so that he lies FACE DOWN on blanket.
4. BEND ONE OF THE VICTIM'S ARMS at the elbow and rest victim's cheek on the back of his hand.
5. REMOVE FALSE TEETH, gum, candy, tobacco, food, etc. from victim's mouth.
6. LOOSEN ALL TIGHT CLOTHING, as belts or collars.
7. COVER VICTIM LOOSELY by wrapping the ends of the blanket around him.
8. STRADDLE VICTIM across thighs.
9. PLACE THE PALMS OF YOUR HANDS ON VICTIM'S BACK so that the little fingers of each hand just touch the victim's lowest ribs.



(1) Straddle victim across thighs. Place the palms of your hands on the victim's back so that the little fingers of each hand just touch the victim's lowest ribs.



(2) Keep your arms stiff and straight and swing your body forward, allowing your weight to bear down on victim. DO NOT PUSH OR USE FORCE.



(3) Swing back at once to relieve pressure, and then continue the rhythmic application of alternate pressure and release.

Blanket is not shown in above drawings for the sake of clarity.

10. KEEP YOUR ARMS STIFF AND STRAIGHT and swing your body forward, allowing your weight to bear down on the victim.
11. DO NOT PUSH OR USE FORCE.
12. SWING BACK AT ONCE TO RELIEVE PRESSURE.
13. REPEAT Number 10.
14. REPEAT Number 12.
15. CONTINUE as above, maintaining a steady rhythm until victim regains consciousness or is pronounced dead by a doctor.
16. CONTINUE ARTIFICIAL RESPIRATION even after victim begins to breathe, and until he becomes conscious.
17. IF BREATHING STOPS AGAIN, continue artificial respiration at once.
18. DO NOT GIVE UP HOPE of reviving the victim. Four hours or more of continuous application of artificial respiration may be required before consciousness returns.
19. NEVER TRY TO FORCE LIQUIDS down an unconscious person's throat. He will drown.
20. ALWAYS WAIT UNTIL CONSCIOUSNESS RETURNS before administering liquid stimulants.
21. RECOMMENDED STIMULANTS ARE: Hot, black coffee. Strong, hot tea. Aromatic spirits of ammonia, one teaspoonful to a glass of water.
22. GIVE ONLY ONE STIMULANT, which should be sipped slowly.
23. ALCOHOLIC DRINKS are not recommended, unless absolutely nothing else is available.
24. WHEN VICTIM HAS RETURNED TO CONSCIOUSNESS, allow him to lie quietly where he is for at least one hour, taking care that he is well covered and free from worry.
25. IF POSSIBLE, CARRY, OR HAVE HIM CARRIED TO A DOCTOR.

WOUNDS

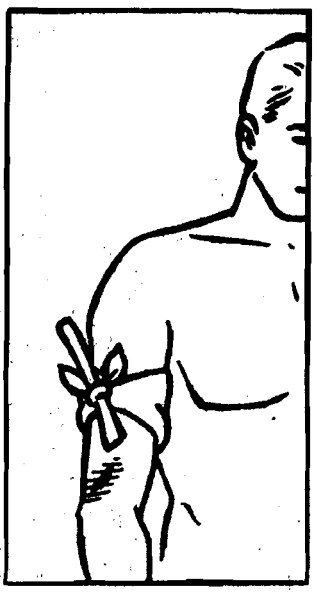
Neglected wounds can have serious consequences. Any break in the skin is a wound. Paint small cuts and scratches immediately with TINCTURE OF IODINE. Deep cuts and wounds should be KEPT CLEAN but DO NOT use Tincture of Iodine on them. Washing AROUND and AWAY FROM the wound with ordinary soap and water, if no other antiseptic is available, is recommended. Other antiseptics for use on deep wounds are: Violet gentian, Potassium permanganate, Tincture of Merthiolate, or ordinary baking soda and water. Cover the wound with a sterile gauze dressing and hold in place with adhesive tape or a strip of gauze.

In cases of serious bleeding, when an artery has been cut, firm pressure is necessary to stop the flow of blood. Arterial bleeding is BRIGHT RED and comes from the wound in SPURTS, with each beat of the heart. Bleeding from a vein is DARK RED and flows steadily. Pressure is not often needed for venous bleeding.

Pressure is applied ABOVE the wound, or between the WOUND AND THE HEART, to stop ARTERIAL BLEEDING. Pressure is applied BELOW the wound, or AWAY FROM THE HEART to stop VENOUS BLEEDING.

Pressure is best applied and maintained by means of a TOURNIQUET.

A TOURNIQUET is a strip of cloth, bandage, or other material, tied ABOVE the wound. Tie a simple, double knot in the cloth and place a strong stick or other rigid member in the loop thus made, then tighten the knot by pulling the ends of the cloth.



Tourniquet in position ABOVE wound.

With the rigid member thus held firmly in place, twist it, until the bleeding stops.

DO NOT maintain such pressure longer than 15 minutes at a time.

IF BLEEDING CONTINUES after loosening tourniquet, allow the blood to flow for about 30 to 60 seconds and then re-apply pressure. Continue until bleeding stops.

AFTER BLEEDING HAS STOPPED, the wound should be carefully covered with a sterile dressing. DO NOT TOUCH WOUND OR DRESSING WITH DIRTY HANDS.

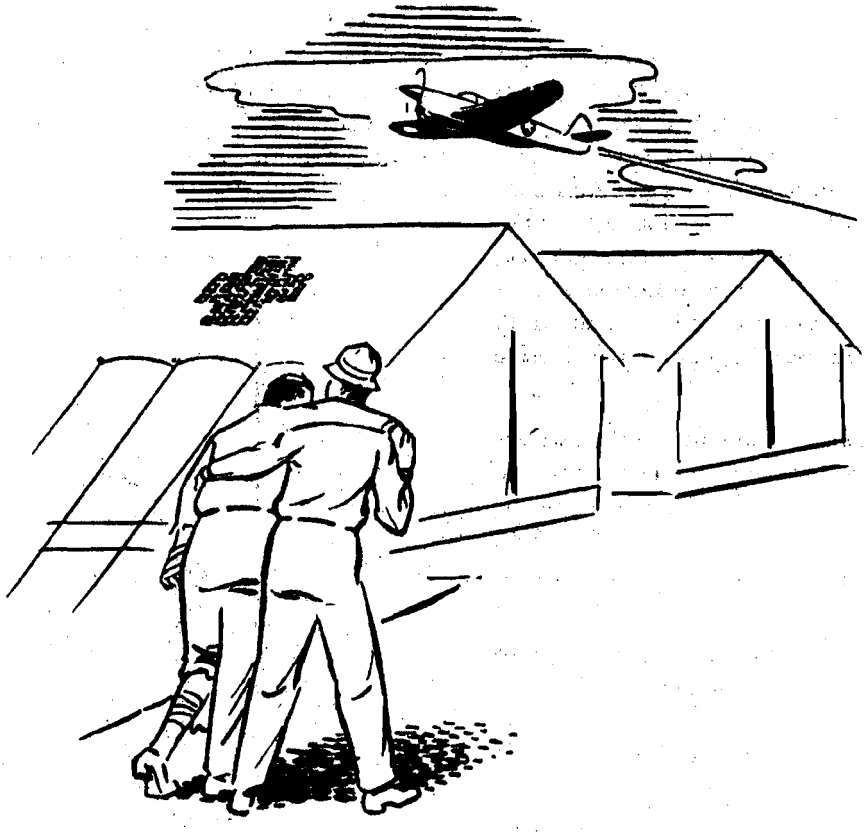
Keep the victim LYING FLAT ON HIS BACK, AND WELL COVERED. DO NOT LET HIM SEE HIS WOUND. Divert his thoughts from himself.

Obtain the services of a DOCTOR AS SOON AS POSSIBLE.

BURNS

Burns, whether caused by contact with high voltage electrical equipment, fire, or friction, require immediate attention.

1. Apply AT ONCE any one of the following:
   a. Tannic acid jelly.
   b. Butesin picrate.
   c. Paste made with baking soda and water.
   d. Very strong, cool tea.
2. Applications should be LIBERAL and the burned area covered with STERILE GAUZE.
3. If clothing sticks to the burned area, DO NOT ATTEMPT TO REMOVE IT. Treat burn as above.
4. Keep the victim WELL COVERED and LYING FLAT ON HIS BACK. Soothe and reassure him.
5. Obtain the services of a DOCTOR AS SOON AS POSSIBLE.



Always obtain the services of a doctor as quickly as possible.

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OPERATING INSTRUCTIONS

RADIO SET SCR-720-A
and
RADIO SET SCR-720-B

SPECIAL NOTICE

Though the only difference between Radio Set SCR-720-A and Radio Set SCR-720-B is in the power supplied, the instructions as given in this book apply equally well to both radio sets. An exception to this, however, is found in that the fuses which are described as being located in the inverter unit of Radio Set SCR-720-A are located in the power equipment unit of Radio Set SCR-720-B.

Radio Set SCR-720-A, used chiefly in American installations, has an inverter unit (Inverter Unit PE-218-A, PE-218-B or Inverter Unit PE-118-A) which operates from the 27.5 d-c volt supply of the airplane.

Power Equipment PE-158, a component of Radio Set SCR-720-B, consists of an auto-transformer, relays and fuses. This connects to the 80-volt 800-cycle a-c system of airplanes containing this system and steps up the voltage to the required 115 volts for Radio Set SCR-720-B. Radio Set SCR-720-B is used chiefly by the British.

In some British installations only the operator's indicator (Indicator BC-1151-A) is used. On this type of installation it is necessary to disregard the instructions on adjusting the pilot's indicator (Indicator BC-1152-A).

SECTION I
DESCRIPTION

1. GENERAL.

a. It is assumed that the operator is thoroughly familiar with the tactical use of this equipment. The following instructions are to familiarize the operator with the manual operation of the equipment in order that he may make the fullest use of its tactical applications.

b. The life expectancy and proper performance of Radio Set SCR-720-A will be determined primarily by its treatment in the hands of the operator. Therefore, the instructions contained herein should be followed rigorously to insure optimum performance under tactical application.

c. Any deviations from normal performance of Radio Set SCR-720-A should be called to the attention of the specially trained radio maintenance crew immediately.

2. COMPONENT UNITS.

The operator normally will be concerned only with controls on the following units: Control Box BC-1150-A, Figure 1; Synchronizer BC-1148-A, Figure 2; Indicator BC-1151-A (Operator's), Figure 3; and Indicator BC-1152-A (Pilot's), Figure 4.

SECTION II
INSTALLATION AND ADJUSTMENTS

3. GENERAL.

The distribution of the various units of Radio Set SCR-720-A will depend on the type of aircraft. Those units with which the operator is most concerned are compactly arranged at his station to facilitate operational efficiency under normal conditions. The location of the various other units of Radio Set SCR-720-A will be evident to operators who have had specific instructions with this set.

4. POWER SUPPLY.

The electrical energy required for operation of Radio Set SCR-720-A is supplied by the aircraft 24-28-volt d-c system. An inverter is used to supply alternating current for operation of the equipment. The d-c voltage of the aircraft system will vary between 24 and 28 volts, depending on the condition of the ship's batteries and the current output of the ship's regular charging generator. If the d-c voltage of the airplane system is low, the airplane regulator system should be checked and reset by assigned aircraft maintenance personnel. The a-c output of the inverter unit is regulated to a constant value by circuits contained within Inverter Unit PE-218-A, PE-218-B or PE-118-A.

5. INTER-UNIT CONNECTIONS.

a. The necessary connections between units are carried through flexible cables. Some of the cable ends terminate in plug and socket connectors, while others are fastened permanently to a particular unit. It is the operator's duty to check the condition of all cable connectors except those terminating in the nose of the aircraft before each flight and tighten the locking rings if necessary. It is particularly important to check the cable connections to Radio Frequency Unit BC-1091-A.

b. Radio Set SCR-720-A is connected to the aircraft 24-28-volt d-c system by a flexible cable from the regular aircraft junction box to Inverter Unit PE-218-A, PE-218-B or PE-118-A. Provisions are made through an auxiliary junction box for connecting a portable d-c generator to this cable during operation on the ground (see Paragraph 8).

6. COMPONENT UNITS—GENERAL.

a. All the units, with the exception of the antenna, are inclosed in dust covers for protection of the equipment and to prevent the operator from coming in contact with the high-voltage circuits. All dust covers, except the one for the inverter unit and Junction Box JB-98-A (Power) will be removed only by the specially trained radio maintenance crew. The cover for the inverter unit is removable after disengaging the snap fasteners. Do not attempt this procedure unless the POWER OFF button has been depressed and the inverter is not running. Replacement fuses for the inverter unit and Junction Box JB-98-A (Power) are located on the back of the removable cover.

b. Many of the units are provided with shock mountings to protect the internal circuits. Any defects or loosening of the mounting should be called to the attention of the radio maintenance crew.

7. ADJUSTMENT.

Radio Set SCR-720-A will be tested and adjusted at regular intervals by the specially trained radio maintenance crew using test equipment provided for the purpose. All adjustments that are to be made by the operator will be described under Section III, Operation, and no others should be attempted except under emergency conditions when the services of the radio maintenance crew are not available.

SECTION III
OPERATION

8. GENERAL.

a. The operation of this equipment draws a large amount of current from the aircraft supply system. Therefore, the equipment should not be operated unless the aircraft engines are turning up to normal speed. Operation of this equipment, when the aircraft engines are not turning up to normal speed, will discharge the batteries in a very short time. There should be no occasion for the operator to start this equipment on the ground. However, if this should be necessary, proper instructions for accomplishing this without damage to the airplane system can be obtained from the radio maintenance crew.

b. Operational performance of this equipment is obtained when the supply voltage is between 24 and 28 volts. The aircraft crew chief should be notified if this voltage is not obtained during normal flights or if the supply voltage runs consistently low as stated in Paragraph 4, Section II.

c. System operation described as follows presupposes that preflight adjustments of all screwdriver potentiometer controls are such as to give optimum screen indications. If the pattern is not sharp and the screen indications are not proper, after the procedure of Paragraph 9, this section, has been completely carried out, additional adjustments may be necessary. Except under emergency conditions, these should be attempted only by the radio maintenance crew, since this requires special adjusting technique.

9. PROCEDURE FOR PLACING EQUIPMENT IN OPERATION.

NOTE

The procedure indicated in *a* to *o*, inclusive, (see below) place the system in a known non-operative condition from which it may be put into operation safely by the procedure outlined in *p* to *gg*, inclusive.

a. Check that the TRANSMITTER switch (4) is off by pushing the OFF button. See Figure 1.

b. Check that the ANTENNA ROTATION switch (6) is in the OFF position.

c. Check that the POWER switch (2) is off by pushing the OFF button.

d. Turn the TILT LIMITS dial (7) to the second position from the left.

e. Check that the RCVR GAIN control (10) is in the extreme counterclockwise position. See Figure 2.

f. Turn the RANGE STATUTE MILES switch (14) to the extreme right-hand position.

g. Turn the AFC switch (13) to the OFF position.

h. Turn the RADAR-BEACON switch (12) to the RADAR position.

i. Turn the RANGE LIGHT INTENS control (11) to its extreme counterclockwise position.

j. Turn the RANGE MARKER INTENS control (15) to its extreme counterclockwise position.

k. Turn the SCALE ILLUM control (18) to its extreme counterclockwise position. See Figure 3.

l. Turn the INTENS control (17) to its extreme counterclockwise position.

m. Turn the INTENS control (19) to its extreme counterclockwise position.

n. Turn the SCALE ILLUM control (21) to its extreme counterclockwise position. See Figure 4.

o. Turn the INTENS control (22) to its extreme counterclockwise position.

p. Push the ON button (1) of the POWER switch. See Figure 1.

q. Check that the maximum crystal current as read on the meter (23) of Figure 1 is between 0.6 milliamperes and 1.5 milliamperes by rotating the RCVR FREQ control (8) of Figure 2. Be sure the entire control range of three complete turns has been covered by this adjustment. Leave the control in the position for maximum current.

r. Flip the ANTENNA ROTATION switch (6) of Figure 1 in the ON position. The antenna should turn at a relatively low rate of speed.

s. *Momentarily* turn the INTENS control (17) of Figure 3 as nearly full clockwise as necessary to determine whether a small spot of light travels across the screen (24) in the direction from left to right. It may be necessary to adjust the V CENTR control of Figure 3 to bring this spot of light to the visible portion of the screen. Return the control *immediately* to its full counterclockwise position. If no spot appears, the high-voltage rectifier which supplies the indicators and the "keep alive"

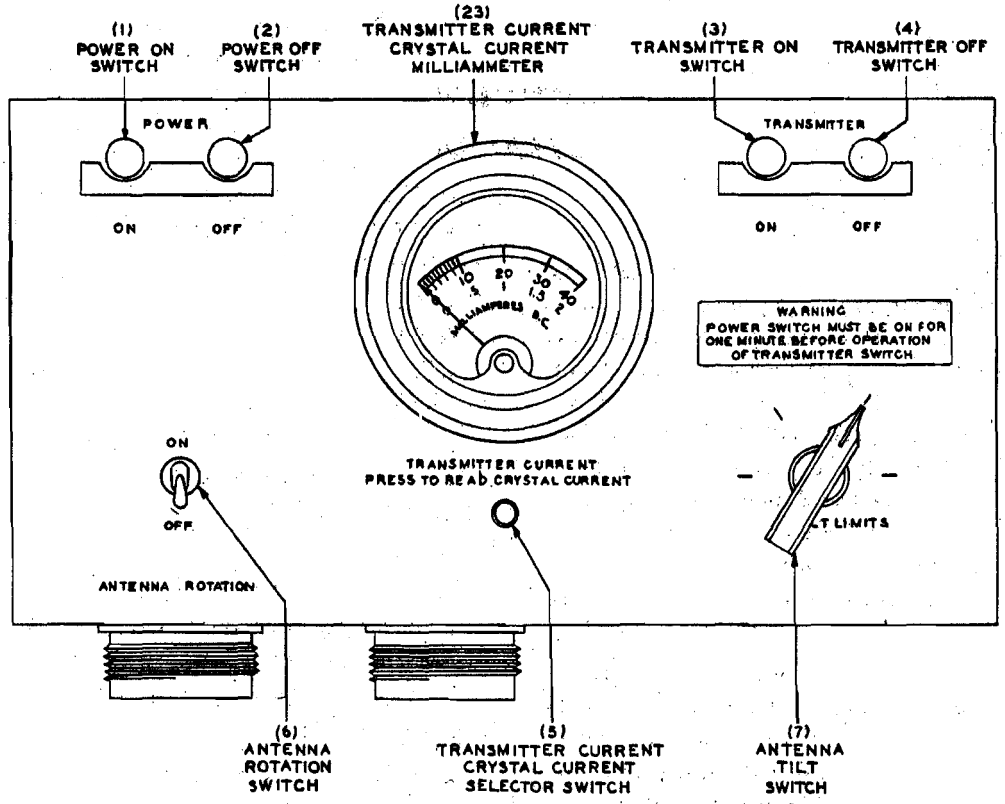


Figure 1—Panel of Control Box BC-1150-A

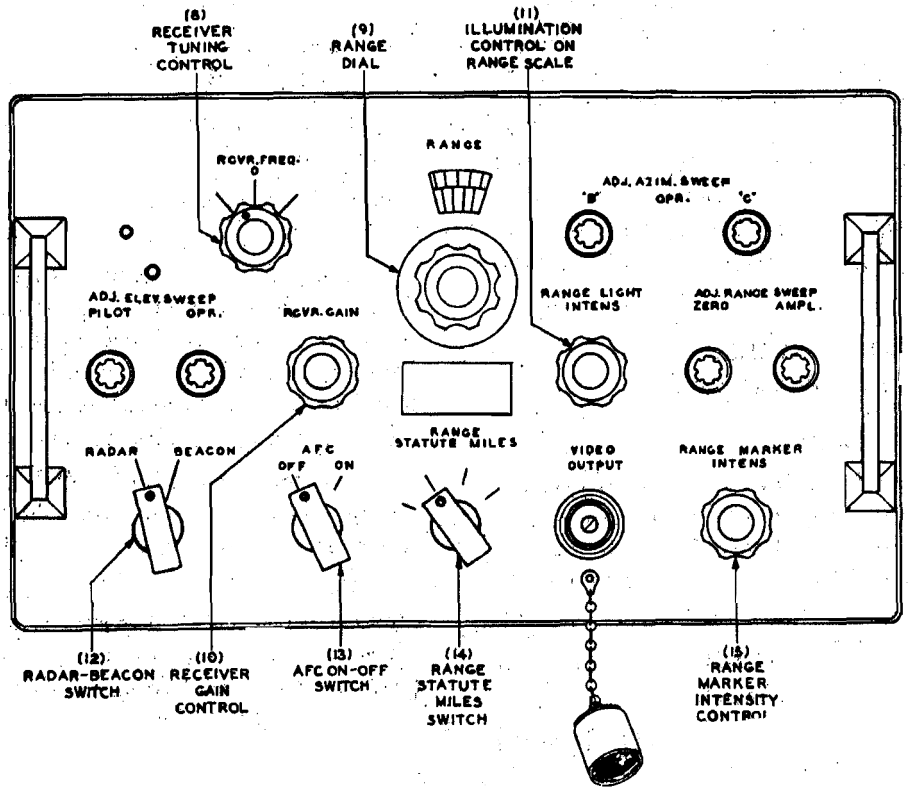


Figure 2—Panel of Synchronizer BC-1148-A

may not be working in which case the transmitter should not be turned on. Consult the radio maintenance crew.

NOTES

If the transmitter is turned on with no "keep alive" voltage, the crystal will be destroyed.

If the transmitter is turned on with the INTENS control full *clockwise*, the indicator screen will be damaged. See Paragraph 11.*d*.

t. Turn the RANGE STATUTE MILES switch (14) of Figure 2 to the third position from the extreme left-hand position. The antenna should turn at a relatively high rate of speed.

u. After the inverter has been on for two minutes, push the ON button (3) of the TRANSMITTER switch to turn on the transmitter. See Figure 1. The meter (23) should indicate approximately 17 milliamperes. Should the meter indication be in excess of 20 milliamperes, turn the transmitter OFF by pushing the OFF button (4) of the TRANSMITTER switch and consult the radio maintenance crew.

v. Turn the INTENS control (19) and the FOCUS control (20) of Figure 3 slowly clockwise to obtain a satisfactory sweep indication on the adjoining indicator screen.

w. Turn the RCVR GAIN control (10) of Figure 2

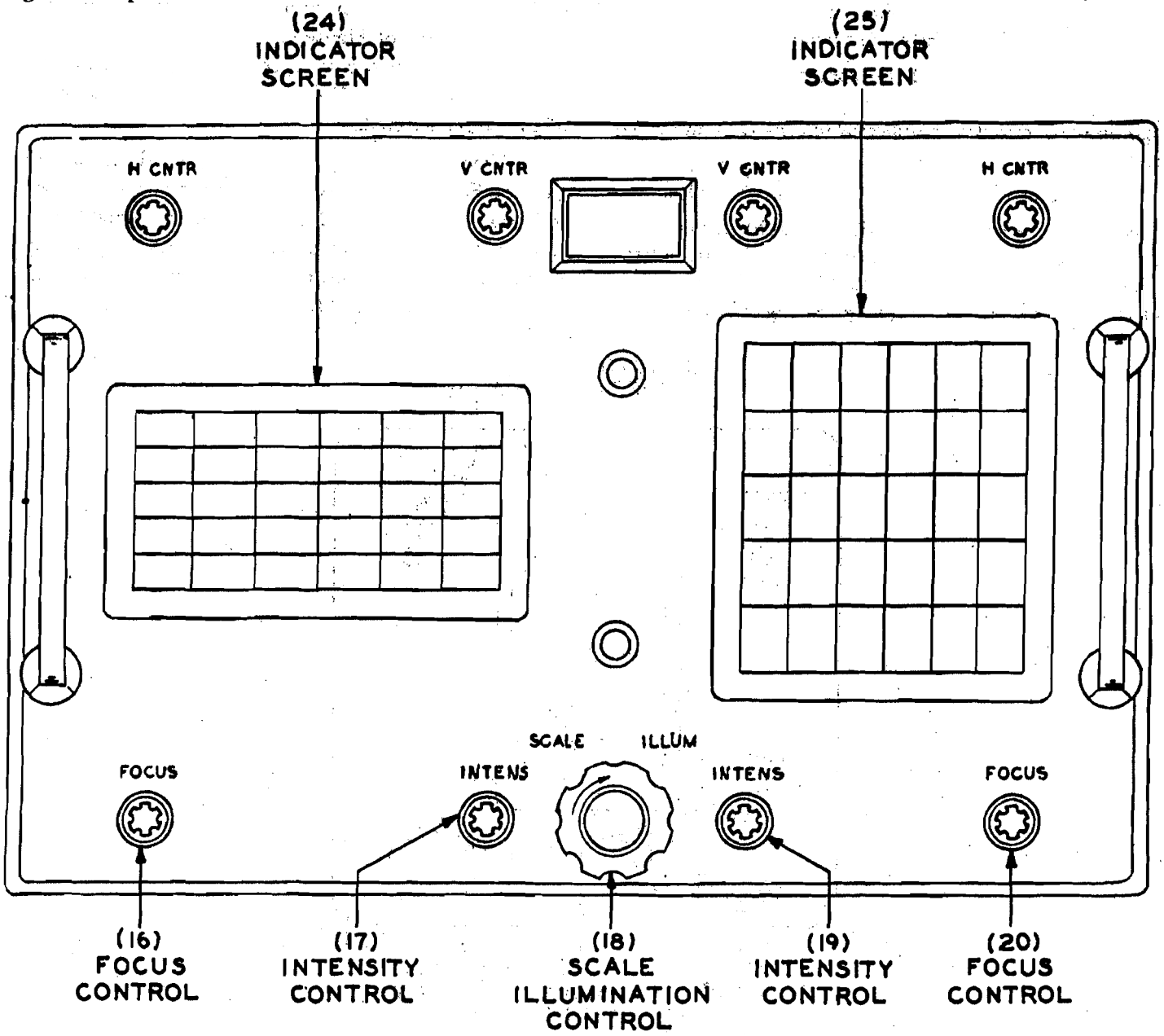


Figure 3—Indicator BC-1151-A (Operator's)

slowly clockwise and slightly adjust the RCVR FREQ control (8) to obtain a sharp pattern on the indicator screen (25) of Figure 3. This assumes the aircraft is in a favorable position for echoes. The RCVR GAIN control should not be too far clockwise otherwise receiver overloading will occur. The RCVR FREQ adjustment should be fairly critical. Minor readjustments indicated in *v* may be necessary for optimum results. At this point it may be necessary to slightly adjust the V CENTR control of the indicator screen (25) so the transmitted pulse coincides with the 0 point of the scale.

x. Turn the INTENS control (22) and the FOCUS control (23) of Figure 4 slowly clockwise to obtain a satisfactory pattern on the pilot's indicator screen (26). In addition, check that the proper lamp (27) is lit.

y. Turn the SCALE ILLUM controls, (18) of Figure 3 and (21) of Figure 4, to suitably illuminate the scale markings associated with indicator screens (25) and (26) respectively.

z. Turn the AFC switch (13) of Figure 2 to ON.

aa. Turn the RANGE STATUTE MILES switch (14) of Figure 2 to the second position from the extreme left. The pattern on indicator screen (25) of Figure 3 will expand due to the smaller range setting while that on indicator screen (26) of Figure 4 will disappear due to a change in the functioning of the oscilloscope. It probably will be necessary to readjust the V CENTR control on the indicator screen after this operation, so that the transmitted pulse will coincide with the 0 point of the scale. In addition, check that the proper lamp (27) is lit.

bb. Select a suitable target in the upper portion of the indicator screen (25) of Figure 3. Set the RANGE dial (9) of Figure 2 to correspond approximately to the lower extremity of the target. Turn the RANGE LIGHT INTENS control (11) of Figure 2 slowly clockwise to suitably illuminate the range scale and turn the RANGE MARKER INTENS control (15) clockwise until a moderately bright range line appears on the indicator screen (25) of Figure 3. Adjust the RANGE dial (9) of Figure 2, if necessary, to make the range line on the indicator screen (25) tangent to the lower extremity of the target selected.

cc. Check that the target selected on the indicator screen (26) of Figure 3 appears in the proper position on the indicator screen (26) of Figure 4. Obtain a suitable pattern on the indicator screen (24) of Figure 3 by slowly turning the INTENS control (17) clockwise and adjusting the FOCUS control (16) for a sharp pattern.

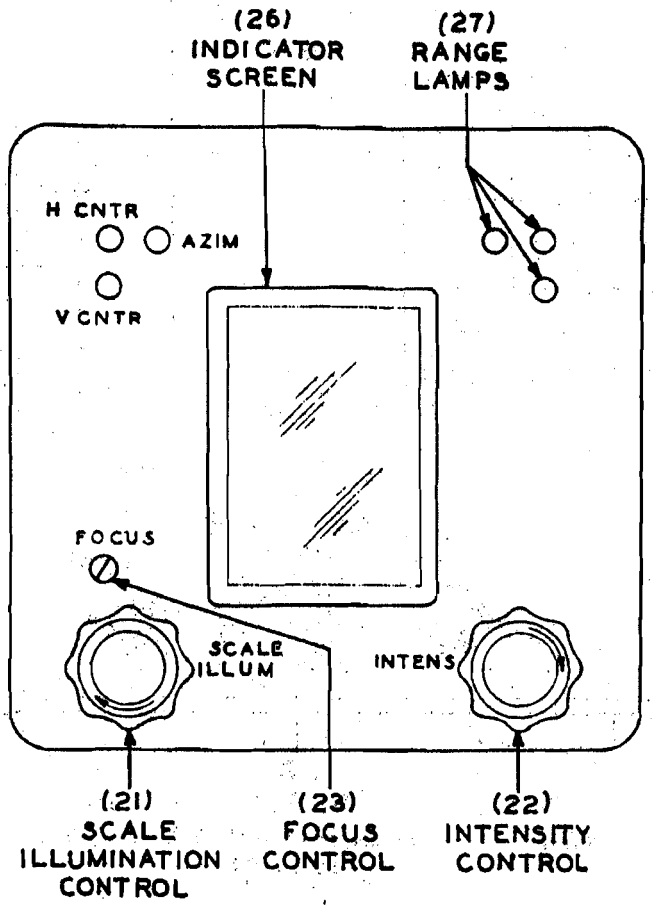


Figure 4—Indicator BC-1152-A (Pilot's)

dd. Turn the AFC switch (13) of Figure 2 to OFF and readjust the RCVR FREQ control (8) for a sharp pattern on the indicator screen (25) of Figure 3. Return the AFC switch (13) of Figure 2 to ON.

NOTE

With proper pre-flight adjustments by the radio maintenance crew, it should be possible to turn the AFC switch (13) of Figure 2 from ON to OFF and vice versa with no discernible change in the image. If the image with the AFC switch ON is unsatisfactory, the system should be placed under control of manual tuning by setting the AFC switch (13) on OFF and the radio maintenance crew should be consulted as soon as practicable.

ee. If beacon service is desired, set the RADAR-BEACON switch (12) of Figure 2 in the BEACON position.

NOTE

It may be necessary to readjust the RCVR FREQ control (8) for optimum results. The transmitter current should read approximately 12 milliamperes in beacon service. Care should be taken to adjust the RCVR FREQ control to tune the receiver on beacon transmitter pulses from the housing station and NOT on beacon echo pulses from the radar transmitter.

ff. With proper pre-flight adjustments by the radio maintenance crew, adjustments of the following controls should be unnecessary:

ADJ AZIM SWEEP OPR B ADJ AZIM SWEEP OPR C ADJ ELEV SWEEP PILOT ADJ ELEV SWEEP OPR ADJ RANGE SWEEP ZERO ADJ RANGE SWEEP AMPL	Figure 2
H CNTR (Type C indicator) V CNTR H CNTR (Type B indicator)	Figure 3
H CNTR V CNTR AZIM	Figure 4

If these controls need adjustment, consult the radio maintenance crew.

gg. The TILT LIMITS switch (7) of Figure 1 may now be positioned for any choice of four antenna tilts.

10. PROCEDURE FOR TURNING THE EQUIPMENT OFF.

a. Turn the RCVR GAIN control (10) of Figure 2 to the extreme counterclockwise position.

b. Stop antenna rotation by placing the ANTENNA ROTATION switch (6) of Figure 1 in the OFF position.

c. Turn transmitter off by pushing the OFF button on the TRANSMITTER switch (4) of Figure 1.

d. Stop the inverter and place the entire equipment out of operation by pushing the OFF button of the POWER switch (2) of Figure 1.

11. PRECAUTIONS DURING OPERATION.

a. Do not hold the TRANSMITTER button in the ON position more than 3 or 4 seconds if the transmitter will not stay on.

b. Turn off the equipment immediately if any abnormal operation is observed.

c. Do not remove the connectors from any unit unless all switches are in the OFF position.

d. Keep the average intensity on both indicators as low as possible for satisfactory performance. Intense *stationary* spots on the indicator screen will burn the material on the face of the cathode-ray tube.

e. If the aircraft power supply system should fail during operation, turn off the equipment immediately, using the procedure of Paragraph 10, this section. After the trouble has been remedied, the equipment may again be put into operation by the procedure of Paragraph 9. In this event it will generally be unnecessary to carry out all steps in the procedure.

f. Do not attempt adjustments of any of the controls specified in Paragraph 9.*ff*. These adjustments require special testing technique and should be carried out only by the radio maintenance crew.

SECTION IV
SERVICING

12. GENERAL.

Many causes of faulty operation may be traced directly to loose connections. A routine inspection of all cable connectors should be made. Special emphasis is made with regard to the high-voltage plugs. These connectors must be tightly screwed together and kept clean, particularly the adjoining rubber faces of the plugs and jacks. Should such a connector fail it will be charred by the arc and cannot be used again. TURN OFF ALL SWITCHES BEFORE CHANGING CONNECTORS.

13. FUSES.

The various units are fused in Junction Box JB-98-A of Figure 5. Spare fuses are provided in the removable cover of this unit. The spare supply should be kept complete at all times and replacements must be of the correct size and ampere rating for proper protection. *The equipment must be off when making replacements.* The radio maintenance crew should be notified of all blown and replaced fuses.

14. INDICATOR BC-1151-A.

a. NO INDICATION ON SCREEN.—RCVR GAIN control (10) of Figure 2 may be set too low. INTENS control (19) of Figure 3 may be set too low. Fuse 1108 (32) in Junction Box JB-98-A of Figure 5 may be open.

b. SWEEP LINE DOES NOT MOVE ACROSS INDICATOR SCREEN WHEN "ANTENNA ROTATION" SWITCH (6) OF FIGURE 1 IS IN THE "ON" POSITION.—Replace fuse 1101 (28) in Junction Box JB-98-A of Figure 5. If the antenna rotates but the sweep remains stationary, the azimuth potentiometer circuit is probably at fault. Replace fuse 1113 (37) in Junction Box JB-98-A of Figure 5. If this does not clear up the difficulty, the radio maintenance crew should be consulted.

c. TYPE C INDICATOR PICTURE DOES NOT CORRELATE WITH "TILT LIMITS" SWITCH SETTING.—Microswitches on the antenna may have failed. There may be improper antenna connections. Consult the radio maintenance crew.

d. INDICATIONS FADE ABRUPTLY DURING NORMAL OPERATION.—Check transmitter current. Check crystal current.

e. INDICATIONS FADE GRADUALLY.—If operating manually, that is, without AFC, retune receiver with RCVR FREQ control (8) of Figure 2 and re-check occasionally during operations. Check crystal current.

If operating with AFC, change to operation without AFC and retune for maximum indication. Consult the radio maintenance crew as soon as practicable.

f. INDICATIONS OBSCURED BY HIGH BACKGROUND INTENSITY.—Decrease intensity by adjusting INTENS control (19) of Figure 3. Readjust RCVR GAIN control (10) of Figure 2 for maximum contrast.

15. INDICATOR BC-1152-A.

a. GENERAL.—This indicator operates like indicator (25) of Figure 3 on some settings of the RADAR-BEACON switch (12) and of the RANGE STATUTE MILES switch (14) of Figure 2; on other settings, the indicator operates like indicator (24) of Figure 3.

b. TROUBLES.—See Paragraph 14, this section.

16. RADIO FREQUENCY UNIT BC-1091-A.

a. TRANSMITTER DOES NOT OPERATE. NO TRANSMITTER CURRENT INDICATED ON METER (23) OF FIGURE 1.—Replace fuses 1106 and 1111, (30) and (35) respectively, in Junction Box JB-98-A (Power) of Figure 5.

b. TRANSMITTER GOES ON MOMENTARILY AND THEN SHUTS DOWN.—Turn off transmitter, wait one minute and then turn on transmitter again. If transmitter does not stay on, *do not attempt further operation* of the equipment but consult radio maintenance crew.

c. TRANSMITTER CURRENT LOW.—Check the airplane power supply. Note generator voltage.

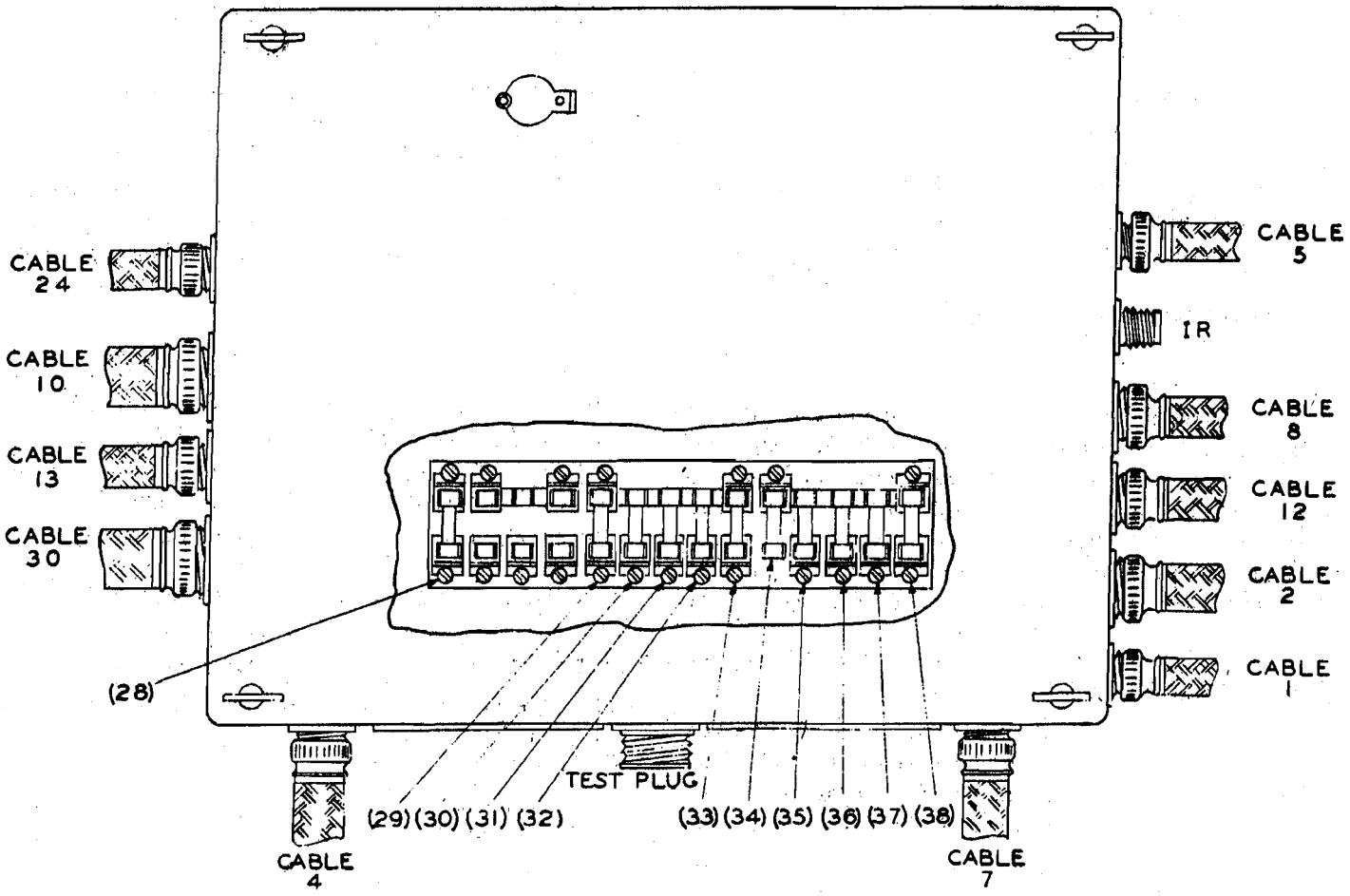
17. ANTENNA EQUIPMENT RC-94-C.

a. ANTENNA DOES NOT OPERATE.—Replace fuse 1101 (28) in Junction Box JB-98-A (Power) of Figure 5.

b. ANTENNA DOES NOT TILT AS DESIRED.—See Paragraph 14.*c.*, this section.

18. INVERTER UNIT PE-218-A, PE-218-B OR PE-118-A.

INVERTER WILL NOT START.—Remove the housing cover on the inverter unit and replace the 10-ampere fuse.



(28)	1101	60A		ANTENNA AZIMUTH MOTOR
(29)	1105	2A	115V.	RECTIFIER RA-90-A
(30)	1106	15A	115V.	RADIO MODULATOR BC-1142-A & RADIO FREQUENCY UNIT BC-1091-A
(31)	1107	5A	115V.	TEST SET
(32)	1108	5A	115V.	RECTIFIER RA-88-A & SYNCHRONIZER BC-1148-A
(33)	1109	10A	115V.	EXTERNAL EQUIPMENT
(34)	1110	5A	24V.	CONTROL CIRCUITS IN SYNCHRONIZER BC-1148-A & CONTROL BOX BC-1150-A
(35)	1111	15A	24V.	RADIO MODULATOR BC-1142-A & RADIO FREQUENCY UNIT BC-1091-A
(36)	1112	15A	24V.	TEST SET
(37)	1113	15A	24V.	ANTENNA (AZIM. & ELE POTS.)
(38)	1114	5A	24V.	SPARE

Figure 5—Junction Box JB-98-A