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WAR DEPARTMENT

U. S. Dept. of Army

TECHNICAL MANUAL

DETECTOR SETS SCR-625-A, SCR-625-B, SCR-625-C, SCR-625-D, AND SCR-625-E (ANTI TANK MINE, PORTABLE) AND DETECTOR, ANTI TANK MINE, PORTABLE, M-1

April 6, 1943

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WAR DEPARTMENT

Washington, April 6, 1943

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DESTRUCTION NOTICE

WHY.—To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN.—Ordered by your commander, or when you are in immediate danger of capture.

HOW.—1. Smash.—Use sledges, axes, hand-axes, pick-axes, hammers, crowbars, heavy tools, trucks, tanks, etc.

2. Cut.—Use axes, hand-axes, machete, etc.

3. Burn.—Use gasoline, kerosene, alcohol, oil, flame-throwers, incendiary grenades, etc.

4. Explosives.—Use firearms, grenades, TNT, etc.

5. Disposal.—Bury broken pieces in slit trenches, fox-holes, other holes. Throw in streams, scatter.

6. USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.

WHAT.—1. Smash.—Search Coil C-446-(*): break disc and destroy enclosed coils.

Control Box BC-1140-(*): meter, compensator coils, casting, extension rod.

Amplifier BC-1141-(*): all tubes, batteries, resistors, capacitors, sockets, cables, jack, chassis, case.

Resonator M-356-(*): Receiver R-14, housing, cable, plug.

Handle M-350-(*): bakelite tubing.

2. Cut.—All cords, wires, tubing, bags, covers.

3. Burn.—Pile up and burn all broken pieces, chests, bags, covers, wires, cords, circuit diagrams, instruction books.

4. Explosives.—Use any explosives on parts not smashed.

5. Disposal.—Bury all broken pieces.

SAFETY NOTICE

The voltages used in this set are not high enough to be injurious.

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Fig. 1 Detector Set SCR-625-(*), In Use With Bag BG-151-(*)

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Section I

DESCRIPTION

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General	1
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1. General.—

Purpose.—Detector Set SCR-625-(*) is a portable device capable of detecting all types of metals. It is used to locate buried masses of metals such as anti-tank mines.

b. Application.—Buried metallic objects such as anti-tank mines are indicated by both audible and visual means. An increase in the volume of the 1000-cycle note in Resonator M-356-(*) indicates the presence of a metal object. The meter in the control box indicates the presence of metal by a deflection of the needle on the meter.

c. Range and scope.—Detector Set SCR-625-(*) will detect the standard American anti-tank mine at a distance of 24 inches and the reading will be "6" on the meter. Detection of the mine is possible at greater distances but the indications are correspondingly reduced. When operating this detector over certain types of soil, it is important that the same operating distance above ground be maintained. However, in dry, sandy soil, it will be found that there is little or no ground effect, and the distance between the search-coil disc and the ground is not so important. The detector set also may be used to locate mines that are planted in either fresh or salt water. When the detector set is used over water, the search-coil disc should be floated on the surface of the water or slightly submerged. This search-coil is waterproof and the only precautions necessary are to wipe it dry before replacing it in Chest CH-156-(*). Some types of soil contain slightly magnetic rocks. These produce deflections of the output meter and a sound in the resonator similar to those caused by metal objects except that the indications are usually weaker than would be caused by an anti-tank mine at the same distance. Granite,

(*) Detector Sets SCR-625-A, B, C, D, E, and Detector, Anti Tank Mine, M-1, and their components are essentially similar and throughout this book the suffix letters are replaced by the symbol indicated. Where differences exist, each unit is separately described.

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quartz, and most common rocks are inert, that is to say they produce no indications. Certain types of ore-bearing rocks produce very distinct indications. Large magnetic rocks and groups of small magnetic rocks produce indications which are not definitely confined to a particular point over the ground.

d. When more than one detector is operated in the same area, a minimum distance of from 25 to 40 feet should be maintained between the detectors. The minimum distance from each other at which detectors may be operated depends, to a great extent, upon the skill of the operator, and only can be determined by experience.

2. List of Components.—

Quantity	*Article*	*Size*	*Weight*
1 ea.	Amplifier BC-1141-(*)	14" x 6" x 5"	5 lb.
1 ea.	Bag BG-151-(*)	16" x 7" x 6"	1 lb. 8 oz.
2 ea.	Battery BA-30, not installed	1¼" Dia. x 2½"	3 oz. (ea.)
1 ea.	Battery BA-38, not installed	11½" x 1¼" x 1¼"	1 lb.
1 ea.	Chest CH-156-(*)	28¼" x 8¼" x 15"	23 lb.
1 ea.	Control Box BC-1140-(*)	7" x 7" x 5"	3 lb.
1 ea.	Handle M-350-(*)	1⅛" dia. x 28½"	12 oz.
2 ea.	Resonator M-356-(*), 1 in use—1 spare	3" dia. x 3"	3 oz. (ea.)
1 ea.	Search Coil C-446-(*)	13" dia. x 1"	3 lb.
2 ea.	Technical Manual TM 11-1122	5½" x 8½" x ¼"	4 oz. (ea.)
1 ea.	Tube, type 1G6GT, Installed	1½" dia. x 3"	1 oz.
2 ea.	Tube VT-146 (IN5GT), Installed	1½" dia. x 3½"	1 oz. (ea.)
1 ea.	Strap ST-56 (when issued)		Total 38.5 libs.† (packed for Transport)

†Total, less Chest CH-156-(*), = 15 lbs.

3. Power Source.—

The power source of the equipment consist of three batteries contained in the battery compartment in the amplifier. The power circuit is designed so that power-supplies for the filaments of the tubes in the oscillator, and amplifier are independent of each other. Two Batteries BA-30 (flashlight cells) are used as filament power supplies. Each battery supplies the proper filament voltage to each filament circuit. Battery BA-38 supplies

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all the necessary power other than the filament supply. The batteries are held securely by spring type contacts in the battery compartment of the amplifier unit. (Fig. 10.)

4. Description of Main Components.—

Detector Set SCR-625-(*) (fig. 3) is comprised of the following:

a. The exploring-rod assembly consisting of the Search Coil C-446-(*), Control Box BC-1140-(*), and Handle M-350-(*). Control Box BC-1140-(*) contains the visual indicating meter, test button, two compensator knobs, coarse compensator and an ON-OFF switch. (Fig. 5.)

b. Amplifier BC-1141-(*) containing the battery compartment and the amplifier chassis. (See figs. 10 to 13 incl.) The chassis is mounted to the case by means of a hinge, and is held in the housing by means of a locking screw. This provides a convenient method for the removal of the unit for the replacement of tubes. The housing is weatherproof and sealed by a gasket lining the inside top surface. All cables from Amplifier BC-1141-(*) are waterproofed.

c. Resonator M-356-(*) (fig. 7) consisting of Receiver R-14 mounted in a metal case and equipped with a strap having a dot fastener which is used to fasten the resonator to the strap of the amplifier Bag BG-151-(*) or the haversack. (See fig. 1.) Headset HS-30-(*) with Cord CD-604 may be used in place of the resonator with amplifiers that are equipped with Jack JK-26.

d. Chest CH-156-(*) is a carrying case constructed of wood. It is used to transport and store the equipment when not in use. The complete detector set, including tubes, batteries and technical manuals, fits into this case. The chest has fittings in which components of the detector set are placed. (See fig. 4.)

e. Strap ST-56 (fig. 6) may be issued with this equipment. It is a supporting strap designed to relieve arm strain. One end of the strap hooks over the rod in front and to the left of Control Box BC-1140-(*). The other end fastens with a slide-on buckle to the front harness strap of the bag or haversack. A buckle permits strap length adjustment.

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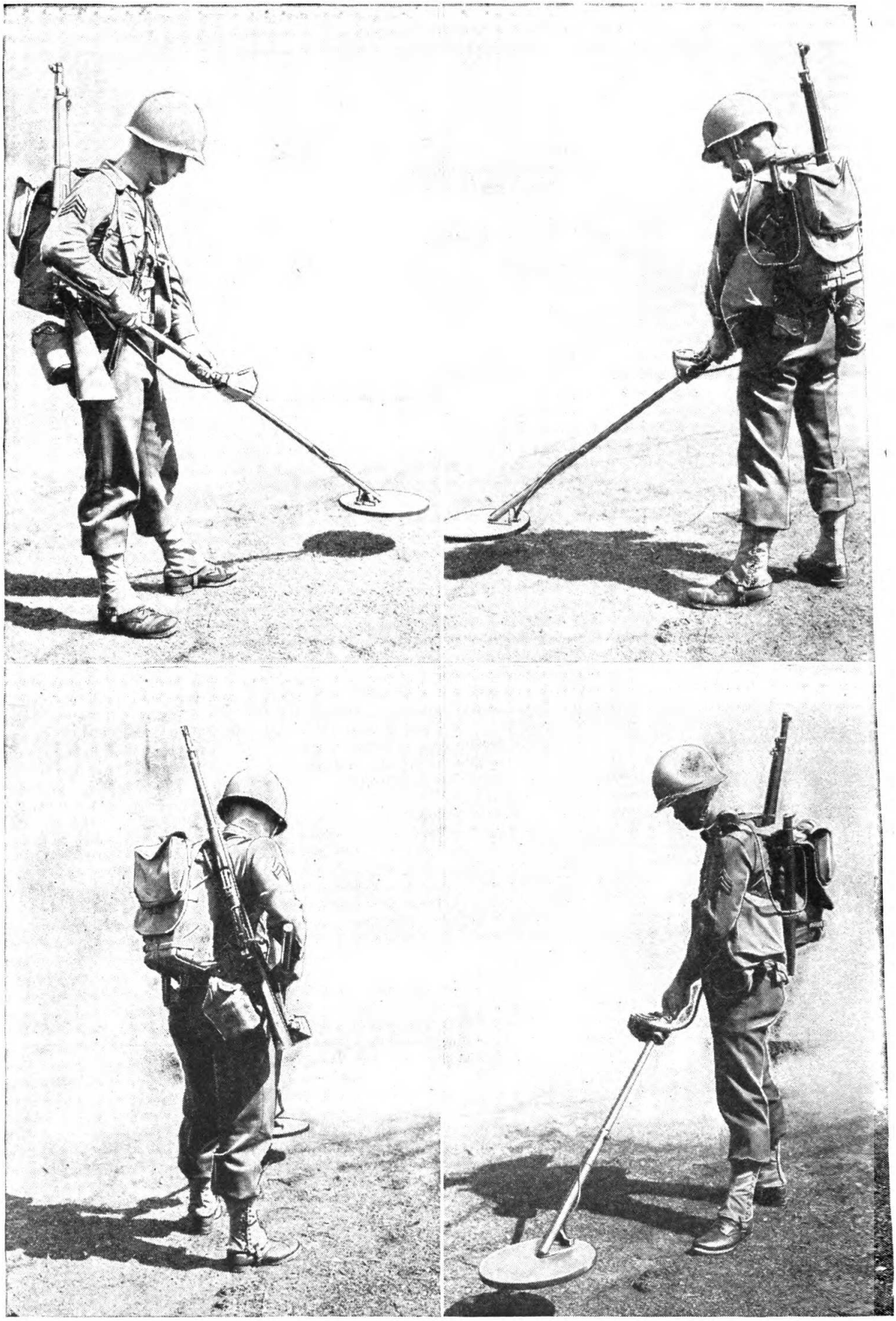


Fig. 2 Detector Set SCR-625-(*), In Use With Infantry Stripped Pack

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Section II

INSTALLATION AND OPERATION

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Amplifier carried in bag provided with unit	9
Amplifier carried in standard infantry stripped pack	10
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Replacements	14

5. Initial Assembly Procedure.—

All component parts of the equipment are held securely in Chest CH-156-(*) by locking devices to prevent damage during transportation. To remove the equipment, first disengage these locking devices.

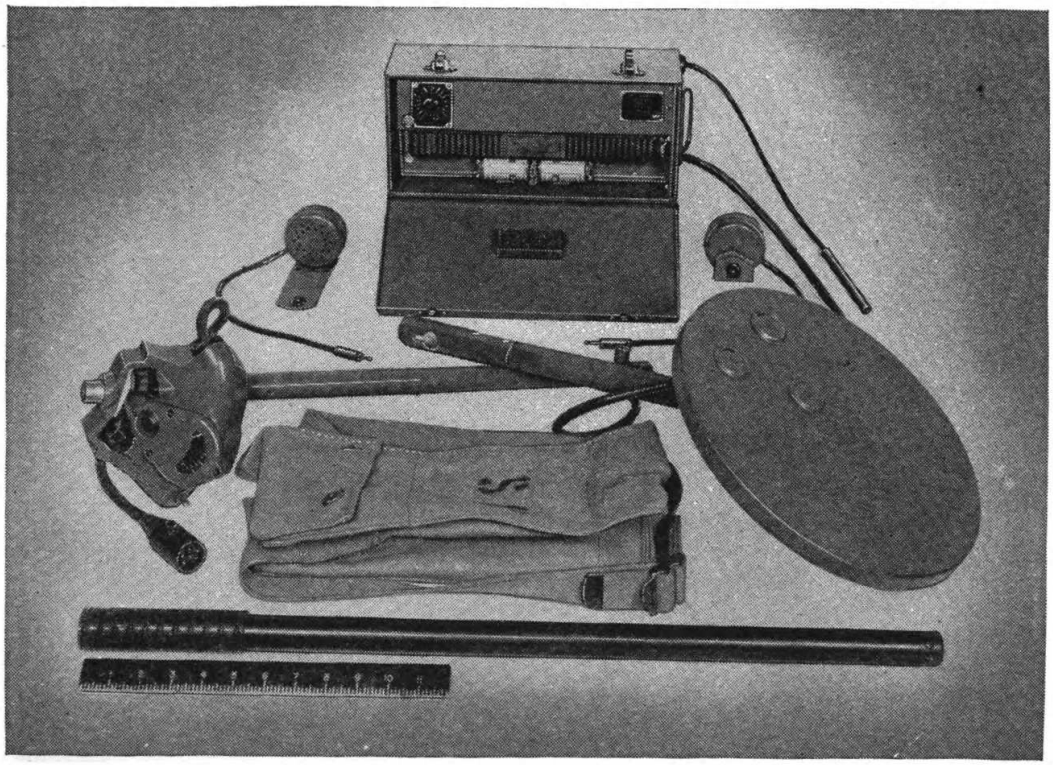


Fig. 3 Detector Set SCR-625-(*), Components

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6. Preparation for Use.—

To assemble the detector.—a. Place the Chest CH-156-(*) on a flat surface and open the cover.

b. Grasp Search Coil C-446-(*) in one hand and Control Box BC-1140-(*) in the other. Then remove them from the chest together. **The two assemblies are connected permanently by a flexible rubber-covered cable, and must be handled as one unit.**

c. Rigid attachment of the search coil to the control box assembly (see fig. 5) is made by means of a bayonet joint and a thumb nut (66c).



Fig. 4 Detector Set SCR-625-(*), Packed in Chest CH-156-(*)

To complete the joint:

(1) Grasp the upper end of the search-coil support with one hand and the extension of the control-box assembly with the other.

(2) Insert the thumb nut on the control-box extension in the hole in the bayonet joint. Check to see that the cable is not

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twisted, and that it passes *over* the search-coil support (see fig. 1).

d. Remove Handle M-350-(*) from the bottom of the carrying case.

e. Screw the handle into the control box.

f. Search Coil C-446-(*), Control Box BC-1140-(*), and Handle M-350-(*) form a rigid exploring-rod assembly. (See fig. 18.)

g. Remove Bag BG-151-(*) containing Amplifier BC-1141-(*) from the chest and place it near the exploring-rod assembly.

h. Carefully connect the cable from the control box to the large cable from the amplifier by meshing the 6-conductor rubber connectors using the two rubber stubs on the connectors, for alignment. DO NOT TWIST THE CONNECTORS.

i. Remove one Resonator M-356-(*) from the chest and connect it to the amplifier by inserting Plug PL-54 into Jack JK-26. Some units are equipped with 2-prong connectors. Mesh the two connectors and tighten the coupling ring.

j. This operation completes the assembly of the exploring rod, the amplifier, and the resonator. The relative positions of the assembled parts are illustrated in figure 18.

7. Preliminary Adjustment.—

To initially adjust the controls.—a. Remove Amplifier BC-1141-(*) from Bag BG-151-(*), and open the latched cover of the amplifier housing, with the cover towards the operator, exposing the components illustrated in figure 10, Hold the exploring-rod assembly with the search-coil disc in the air as high above ground, and as far away from metallic masses as possible.

b. Turn on the detector by means of the ON-OFF switch on the upper right-hand side of the control box.

c. Turn the battery compensator on the amplifier panel to the right, until the deflection of the output meter in the control box is nearly "6". A tone should now be heard in the resonator.

d. Alternately adjust the left and right control knobs on the control box, until the deflection of the output meter is least. The sound in the resonator decreases as the deflection of the output meter decreases. This may be used as an additional check.

e. Turn the battery compensator to the right, until the deflec-

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tion of the output meter in the control box is again nearly "6". Repeat the adjustment in 7*d*.

f. Press the test-switch button (fig. 14) located below the output meter. The detector is properly balanced when the output meter reading is "6."

Note.—If the reading is lower than "6," turn the battery compensator to the right, and repeat adjustment 7*d*. If the reading is higher than "6," turn the battery compensator to the left until the meter reads "6."

g. Close and latch the amplifier housing, and replace the amplifier in the bag. (See par. 9.)

h. Turn off the detector by means of the ON-OFF switch on the upper right-hand side of the control box.

Note.—If the detector has been idle for some time, repeat the preliminary adjustment, 7a, to 7f. before using.

8. Battery Check.—

a. To check the batteries.—(1) the batteries employed in this equipment consist of one Battery BA-38 ("B" supply), and two Batteries BA-30 ("A" supply).

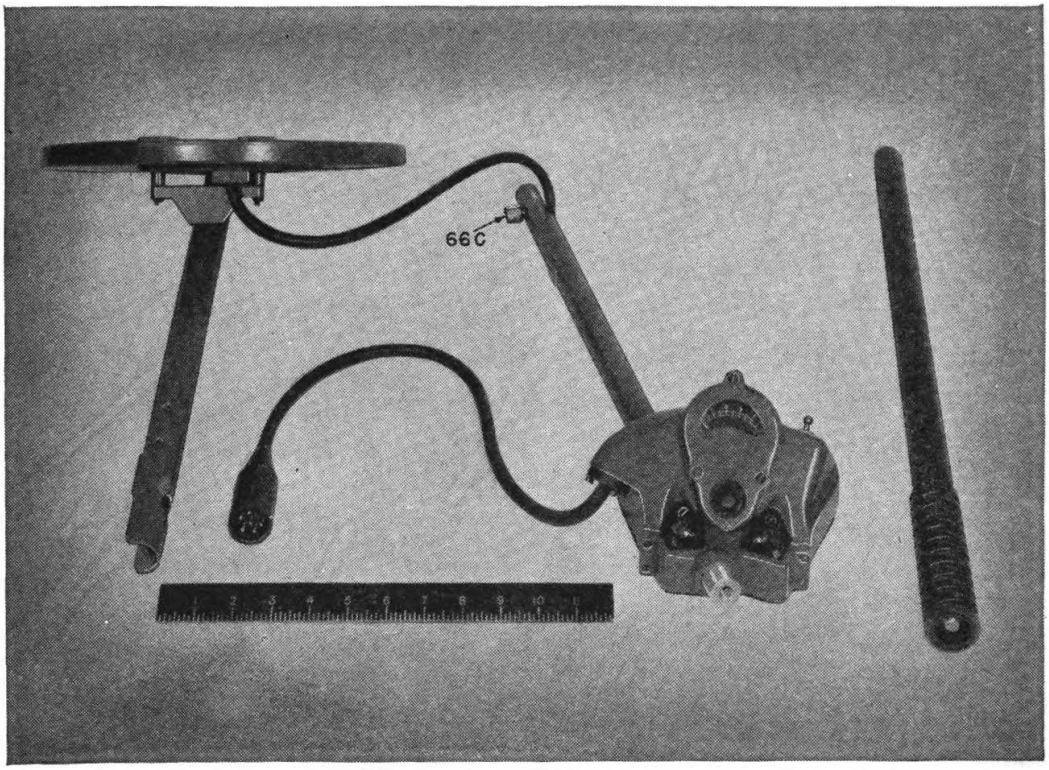


Fig. 5 Exploring Rod Assembly

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(2) Using the switch on the control box turn on the detector.

(3) Adjust the detector as in paragraph 7*a* to 7*e*.

(4) Press the test button located below the output meter. Adjust battery compensator until output meter reads exactly "6."

(5) If the battery compensator must be advanced beyond three-quarters of full scale (2 o'clock), replace the batteries.

(6) Check new batteries by repeating paragraph 8*a* (3) and (4).

(7) Turn off the detector using the switch on the control box.

b. Some models of Detector Set SCR-625-(*) are provided with a voltmeter to read the voltages of the batteries. The following procedure will be used on units having a voltmeter.

(1) Remove the amplifier from the bag and open the latched cover of the battery compartment of the amplifier housing, exposing the components illustrated in figure 11.

(2) Turn on the detector by means of the ON-OFF switch on the upper right-hand side of the control box.

Note.—The detector must be ON to check the batteries correctly.

(3) Turn the BATTERY VOLTAGE switch to A1, A2, and B consecutively, operate the PRESS-FOR-VOLTAGE button, and read the voltmeter on the panel for each of the switch positions.

(4) If the meter reading for either A1 or A2 pcsition of the switch is less than 1.1 volt, replace the defective battery with a spare battery from the compartment in the cover of the chest.

(5) Check to see that the new battery gives a satisfactory reading.

Note.—New "A" batteries should give reading of 1.5 *volts.*

(6) If the reading for the "B" position is less than 0.7 (70 volts), replace Battery BA-38 with the spare battery from the compartment in the cover of the chest.

(7) Check to see that the new battery gives a satisfactory reading.

Note.—New "B" batteries should read 1.0 (100 *volts*) *or better.*

(8) Turn off detector by means of the ON-OFF switch.

9. Amplifier Carried in Bag Provided With Unit.—

To replace Amplifier BC-1141-(*) *in Bag BG*-151-(*).—

a. Place amplifier with the hinged cover away from the padded back of the bag and with cables at the top.

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Fig. 6 Strap ST-56, In Use

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b. Close the inner flap of the bag leaving the resonator and amplifier cables extending from the front of the bag.

c. Close the top flap and snap the two dot fasteners, making certain that the resonator and amplifier cables are between the fasteners.

d. Sling the bag over the shoulder and arrange it for greatest ease in carrying. Place the strap of the resonator under the shoulder strap of the bag, with the small resonator openings toward the operator's ear.

e. Snap the fastener of the resonator strap.

10. Amplifier Carried in Standard Infantry Stripped Pack.—

Amplifier BC-1141-(*) may be carried in a standard infantry stripped pack. The pack is made up as prescribed using the shelter half as padding for the amplifier case.

a. Place the amplifier on the shelter half with the cables at the top and the cover away from the operator's back. Place the tent pole, rope, and pegs at one side of the amplifier case.

b. Close the flaps, allowing the resonator cable to emerge at the operators left shoulder, and the amplifier cable at the operator's right shoulder.

c. Place the strap of the resonator under the left shoulder strap of the haversack with the small resonator openings near the operator's ear.

d. Snap the fastener of the resonator strap.

e. Poke excess resonator cable under the flaps of the haversack.

11. Operating Procedure.—

a. To adjust the detector for operation.—(1) Turn on the detector by means of the ON-OFF switch, on the upper right side of the control box.

(2) Grasp the bakelite grip on the handle of the exploring-rod assembly with the left hand, and the midpoint of the handle with the right hand, supporting the upper portion under the right forearm. (Fig. 1.) *Note*: If Strap ST-56 (fig. 6) is issued use it as outlined in paragraph 4*e*.

(3) Hold the search-coil disc horizontal and about 9 inches above a portion of ground known to contain no metal.

(4) Alternately adjust the left and right-hand control knobs with the thumb of the left hand for a minimum deflection of the output meter in the control box. The sound in the resona-

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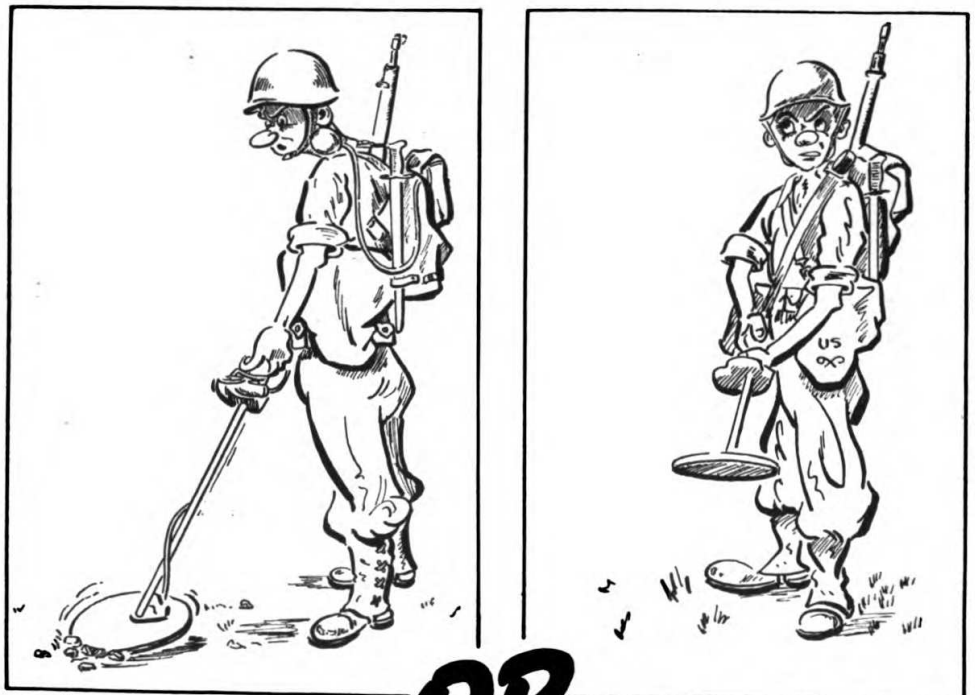
tor is at a minimum at the same time. Use that as an additional check.

(5) When this adjustment is properly completed, the detector is satisfactorily balanced. Check this balance regularly during operation. It will be found that the right-hand control will require a minimum of readjustment.

(6) Press the test switch button. A deflection of the output meter to "6," and a corresponding increase in the sound of the resonator will show that the detector is in operating condition.

b. To search an area for metallic objects.—(1) Move the search coil slowly from side to side, at the same height at which the detector was balanced, over a portion of ground. A louder tone in the resonator and a deflection of the output meter, as the search coil is moved over some particular spot on the ground, indicates a buried metal object.

(2) *To locate the exact position of buried metal.*—(*a*) When the meter needle jumps and you hear an increase in the volume of sound in the resonator, sweep the search coil from side to side, noting the point of greatest intensity.



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(*b*) At this point move the search coil forward and backward, and again note the point of greatest intensity.

(*c*) The buried metal will then be directly beneath the center of the search coil.

(3) When the search coil can be moved horizontally over the ground without an increase in sound from the resonator, or without an increase in deflection of the output meter, the ground contains no metal near the surface at that point.



Fig. 7 Resonator M-356-(*), Showing Receiver R-14

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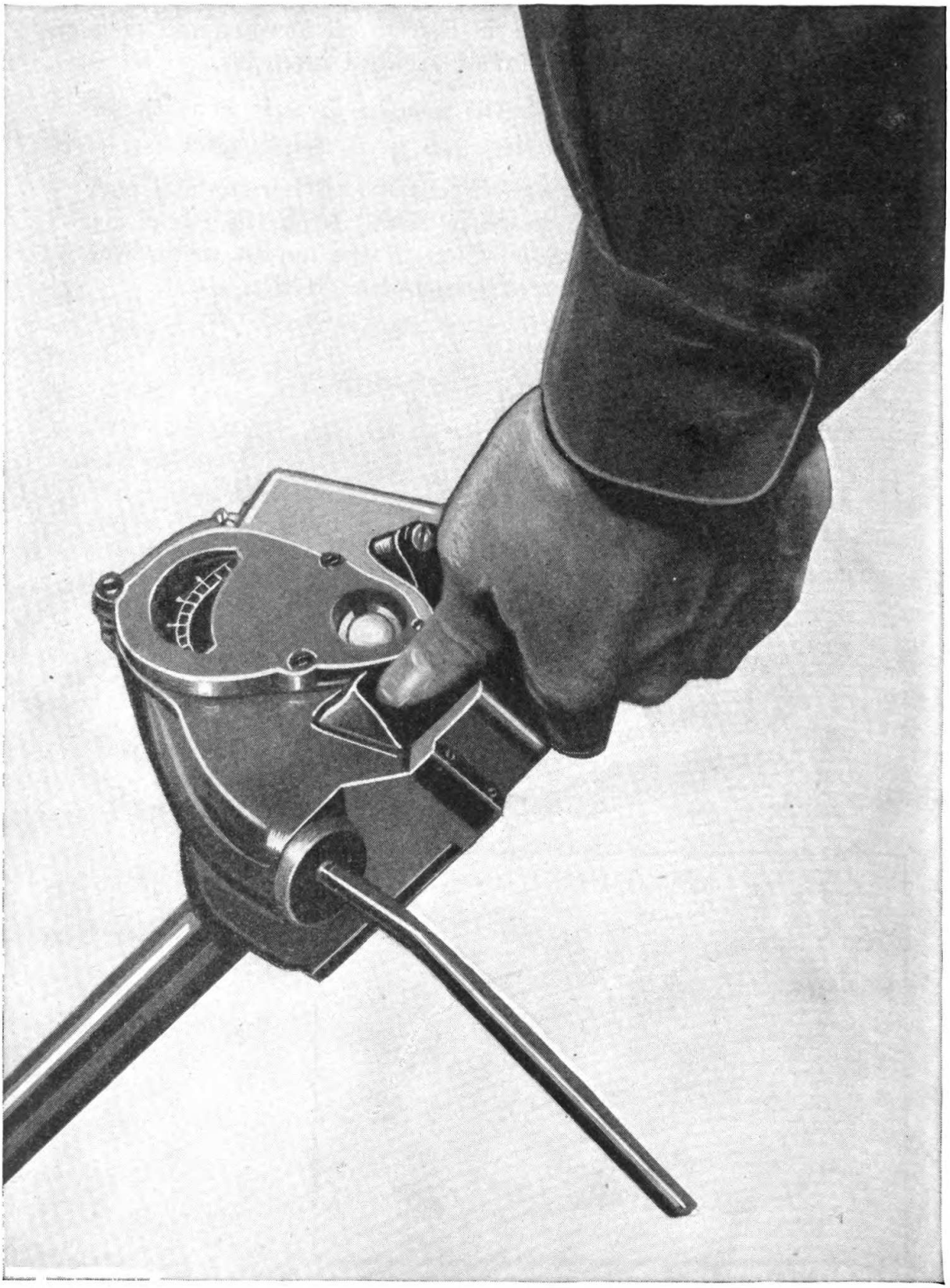


Fig. 8 Control Box BC-1140-(*)

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c. Certain types of ground will give false indication if the search-coil disc is not carried at a uniform height above the surface. When false indications are encountered, go over the area again, but be sure that the search coil is carried at a uniform height above the surface, and follow the contours of the ground as much as possible.

Note.—ALWAYS TURN THE DETECTOR OFF WHEN NOT IN USE.

12. Repacking.—

a. To replace in the chest.—(1) Disconnect the resonator by pulling the plug out of the jack. For detectors equipped with 2-pronged connectors, loosen the coupling ring and disconnect.

(2) Remove the resonator from the strap of the bag or haversack. Place it on the parallel bars of the resonator mounting, located in the bottom of the chest, snap the fastener and fasten the resonator cable in the clip on the inside front of the chest.

(3) Unscrew the handle from the control box.

(4) Place the handle diagonally in the bottom of the chest inserting the upper end in the socket located in the left front corner. Turn the holding clamp over the bakelite grip at the other end to secure the handle in place.

(5) Disconnect the control box cable from the amplifier cable.

b. To replace the amplifier unit.—(1) Place the amplifier in its bag with the padding against the backwall and to the left end of the chest, and with the cables toward the center.

(2) Coil the amplifier cable, and fasten the plug in the large clip on the inside front of the chest.

(3) Fasten the resonator cable in the small clip on the left side of the resonator mounting.

(4) Coil the bag strap, and place it beneath the rear supporting block of the search coil. *Note.*—When Strap ST-56 is provided, coil it with the bag strap.

c. To replace the search coil and control box.—(1) Place the search coil and control-box assemblies in front of the chest with the search-coil disc to the right.

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(2) Disconnect the search-coil assembly and the control-box assembly by loosening the thumb nut and disengaging the bayonet joint.

(3) Turn the control-box assembly upside down and insert the bayonet section in the socket in the right front corner of the case, and place the stub on the control box in the groove in the left front corner.

(4) Fasten the control-box cable in the large clip in the center of the chest.

(5) Turn the search-coil assembly upside down, insert the bayonet section in the socket on the left of the chest, and place the disc on its supporting blocks on the front and back of the chest.

d. Check to see that all of the parts are in their proper places, and that the technical manuals are packed with the unit. FASTEN ALL LOCKING DEVICES AND THEN CLOSE THE COVER CAREFULLY.

13. Precautions.—

General care of Detector Set SCR-625-(*).—*a.* Whenever the unit has been operated in damp or rainy weather or in water and gets wet, always wipe all parts dry before replacing them in the chest.

b. The detector set is a sensitive instrument, therefore avoid unnecessary rough handling. Take care not to force any joints or threaded parts when assembling and disassembling.

14. Replacements.—

a. The two resonators furnished with the detector set may be interchanged.

b. In replacing the batteries, first remove Battery BA-38 to facilitate the removal of the two Batteries BA-30.

c. To locate and replace defective tubes.—(1) Place the amplifier with the cover opened toward you.

(2) Loosen the large locking screw in the lower left-hand corner of the amplifier panel chassis.

(3) Raise the amplifier chassis out of its case by swinging it to the right on its hinge. The tubes are now accessible for replacement.

(4) Interchange the tubes one at a time with one of the spare tubes carried in the spare parts compartment of the chest.

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Check the detector for operation after each tube change until the defective tube is located.

(5) Replace the amplifier chassis and tighten its locking screw.

Section III

FUNCTIONING OF PARTS

	Paragraph
Theory of operation	15
Functioning of amplifier	16
Functioning of oscillator	17
Functioning of resonator	18
Functioning of visual indicator	19

15. Theory of Operation.—

Detector Set SCR-625-(*) operates on the principle of a balanced mutual inductance bridge as shown in figure 9.

a. Three of the inductances contained in search-coil 22, (fig. 16) constitute the main component of the bridge.

b. Inductances L2 and L4 are connected to a source of sine-wave voltage. This voltage at a frequency of 1,000 cycles per second is generated by a push-pull oscillator circuit (fig. 16).

c. The inductance L3 is connected to a tuned two-stage audio amplifier the output voltage of which is applied to a resonator (23) and an 0-1 milli-ampere rectifier-type meter (24).

d. Inductances L2 and L4 are connected in series so that their fields oppose and the combined mutual inductance with respect to coil L3 is approximately zero. A complete balance is accomplished by the use of tuned compensator coils (29, 30 and 31) contained in the control box. When the mutual inductance between two tranmitting coils (L2 and L4) and the receiving coil (L3) is zero, there will be no signal voltage at the input of the amplifier. The presence of metal in the field of these coils changes their mutual inductance, and a signal voltage is induced in the receiving coil (L3). The receiving coil (L3) is coupled to the input of the amplifier and all increased signal voltage is supplied to the resonator (23) and to the indicating meter (24).

e. The *reactive* balance of the bridge is accomplished by the adjustment of two controls. One of these controls (31) provides coarse compensation. The other is used as a fine control after the coarse compensation has been approximated. The balance is

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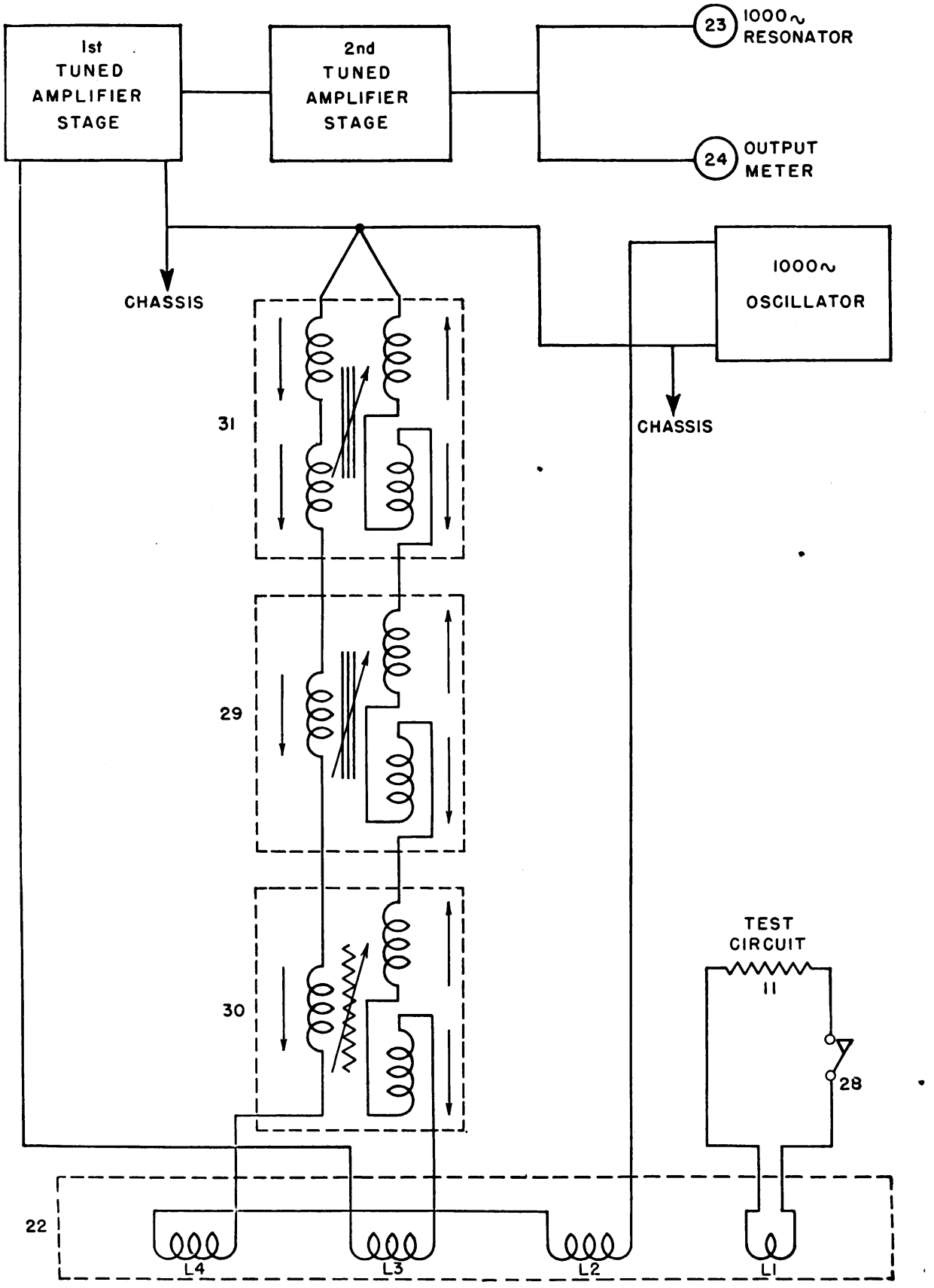


Fig. 9 Detector Set SCR-625-(*) Functional Diagram

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accomplished by the adjustment of the coupling between the primary and the properly phased secondary of coils 29 and 31, respectively, by means of *iron* cores.

f. The *resistive* balance of the bridge is accomplished by the adjustment of the coupling between the primary and the properly phased secondary of coil 30 by means of a *brass* core.

g. The test circuit, consisting of one turn of wire (L1) contained in the search-coil assembly, a resistor (11) and a test-switch button (28) in the control box are used as a reference circuit in adjusting the battery compensator (12) (fig. 16). When the test-switch button (28) is closed a partial shorting of test coil L1 results, upsetting the resistive and reactive balance between the transmitter coils (L2 and L4) and the receiver coil (L3). The signal appearing at the output of the amplifier when this test circuit is used, is about the same as would be produced by an anti-tank mine eight inches in diameter, the center of which is located 24 inches from the search-coil center. The deflection on the visual output meter for this condition is "6."

16. Functioning of Amplifier.—

a. The voltage produced in the receiving coil (L3) is applied to the grid of tube 21-1 (fig. 16), through transformer 1, the secondary of which is tuned to 1,000 cycles by capacitor 13.

b. The plate circuit of tube 21-1 is tuned to 1,000 cycles by means of choke 2 and trimmer 15.

c. The signal voltage developed is coupled to tube 21-2 through coupling capacitor 14-1.

d. Negative grid bias voltage for tubes 21-1 and 21-2 is derived from the voltage drop across potentiometer 12 in series with the negative side of the "B" supply circuit. The voltage is then applied through resistors 10-2 and 10-1, which serve to decouple the stages in conjunction with the by-pass capacitors 19-1 and 19-3.

e. The plate of tube 21-2 is coupled to the resonator (23) and the output meter (24) through transformer 3.

17. Functioning of Oscillator.—

a. The oscillator circuit comprises tube 20, transformer 4 in push-pull arrangement, and their associated parts (fig. 16).

b. The frequency of oscillation is controlled by the inductance of the plate and grid windings of transformer 4 and the capacity of capacitors 17 and 14-2.

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18. Functioning of Resonator.—

a. Audible indication of the presence of metal is given by acoustic resonator 23. This is an earphone (23A) encased in a housing.

b. The acoustic selectivity of the resonator housing (23B and 23C) produces an amplified 1,000 cycle note.

19. Functioning of Visual Indicator.—

The visual indicator (24) is a full-wave rectifier-type 0-1 milliammeter with pole pieces so shaped that logarithmic relationship exists between the voltage applied to the meter and the needle deflection obtained. (See fig. 21.) The meter is connected in series with capacitor 19-7 and across the output transformer 3. In detector sets using half wave rectifier meters, capacitor 19-7 is not used.

Section IV

MAINTENANCE

	Paragraph
Trouble location and remedy	20
Test of Resonator M-356-(*)	21
Test of Resonator M-356-(*) without instruments	22
Test of Search Coil C-446-(*)	23
Amplifier BC-1141-(*) inoperative	24
Removal of parts	25
Alignment procedure	26

NOTE:—If you have replaced the entire search coil assembly; including Control Box BC-1140-(*) and:—

a. The needle of the meter in the control box reads higher than normal.

And at the same time the audio output of the resonator is lower than normal:—

It means that the meter in the new control box is of the full-wave rectifier type. Proceed as follows:—

See figure 16, locate capacitor 19-7. (On some circuit labels it is shown as C-14. In some detector sets the capacitor is shorted out. In some the capacitor is not included.) Cut the jumper. Or obtain a capacitor of the correct type as given in the Table of Replaceable Parts and connect it into the circuit.

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b. If you find that the replacement assembly does not seem to function properly, look for the following:—
If the jumper, shorting out capacitor 19-7, has been cut or removed and the meter needle in the control box does not deflect, it means that the replacement search-coil assembly contains a meter that is of the half-wave rectifier type. In that case short capacitor 19-7 out of the circuit by means of a jumper. *But Don't remove it from the set.*

20. Trouble Location and Remedy.—

If the detector set should fail to function properly, proceed as follows:

a. Detector completely inoperative.—(1) Check batteries with Test Set I-56-(*) for proper voltage. Battery BA-38 should read a minimum of 70 volts. Batteries BA-30 should have a minimum voltage of 1.1 volts. If batteries are below these minimum values, replace them.

(2) If a test set is not available, check the batteries by substitution. Replace the batteries one at a time, starting with Battery BA-38, and observe whether set operates with replacement.

(3) Check battery contacts for proper fit. Batteries should fit tightly between the contacts, and contacts should be bright and clean.

(4) If repairs cannot be made to the contact assemblies, it will be necessary to replace them.

21. Test of Resonator M-356.(*).—

a. Disconnect the resonator cable, detaching the resonator.

b. Remove the spare resonator from the bottom of the chest by unsnapping the dot fastener.

c. Connect the spare resonator to the resonator cable, and check the detector for restored operation.

d. If a spare resonator is not available, the resonator may be tested with an ohmmeter. Touch the leads from the ohmmeter across the resonator plug. The reading of the meter should be approximately 1,000 ohms, for a good resonator.

e. If there is no continuity reading, inspect the connections of the cable for breaks. Check to see that the screws holding the lugs in Plug PL-54 (when used) are tight.

f. If these tests fail to locate the trouble, dismantle the resonator case for further inspection as follows:

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(1) Remove the two screws on the rim of the resonator case and the screw on the flat bracket.

(2) Carefully pry the two halves of the case apart with a screw driver inserted in the hole that the cable runs through, taking care not to damage cable wires.

(3) Inspect the terminals on the bakelite case of Receiver R-14 (23A) for loose, broken, or corroded connections.

(4) Test the receiver (fig. 7) with an ohmmeter, and if open-circuited, replace it.

22. Test of Resonator M-356-(*) Without Instruments.—

If no instruments are available, test the resonator for continuity with a Battery BA-30. If a click is heard when the battery circuit is completed, the resonator is satisfactory. The absence of these clicks indicate an open circuit, and that the resonator should be tested according to paragraph 21*f*.

23. Test of Search Coil C-446-(*).—

To determine whether the search-coil is open-circuited.—a. After opening the amplifier, unsolder the wires from the search-coil cable (25) at their respective terminals on the cable mounting strip (fig. 17), and mark the conductors and the corresponding lugs on the terminal strip.

b. Connect the 6th terminal (counting from left to right) to terminal 1.

c. If this connection causes no deflection of the meter or sound in the resonator, check the amplifier according to paragraph 24. If there is a deflection or sound, it will be an indication that the amplifier and oscillator are functioning properly, and the trouble is in the exploring-rod assembly. It is now necessary to locate the trouble in either the control box, search-coil, or cabling.

d. To test receiver loop and its compensating coil windings, hold the bare end of the No. 5 wire against the 1st terminal, and the No. 6 wire against the 6th terminal. Proper continuity of the receiver loop and the secondary windings of the compensator coils will be indicated by a tone in the resonator, and a deflection of the output meter. A defect will give no indication.

e. To test the oscillator loop and its compensating coil windings, resolder the No. 1 wire to the 1st terminal, and touch the No. 2 wire to the 6th terminal. A tone in the resonator and a

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deflection of the output meter will indicate proper continuity of the oscillator loop and primary winding of the compensating coils. A defect will give no indication. These tests will serve to localize the trouble as to the receiver loop circuit or the oscillator loop circuit.

f. If the trouble cannot be isolated by following the preceding instruction, then invert the control box, and remove the bottom plate. *DON'T DAMAGE THE GASKET.*

g. Detach the three screws from the back of the control box, pull up the coarse adjustment coil until it is vertical.

h. If an ohmmeter is available, take readings across the coils and loops according to the resistance and continuity table.

i. If any coil or loop appears to be open, replace it.

j. If an ohmmeter is not available, connect two long wires to the 1st and 6th terminals (counting from left to right) of the cable mounting strip. Turn on the detector set.

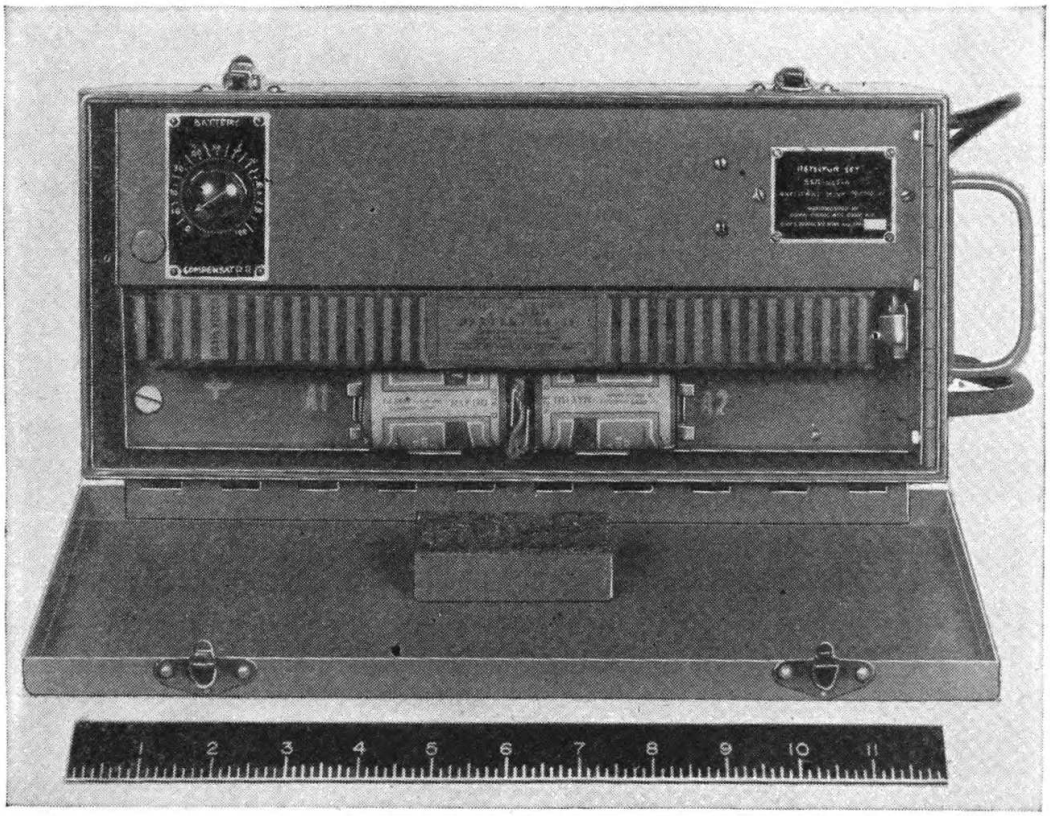


Fig. 10 Amplifier BC-1141-(*), Open, Showing Panel Without Meter

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k. Touch the other ends of these wires to the various coils in the same manner as test leads of an ohmmeter.

l. A tone in the resonator and a deflection of the output meter will indicate proper continuity of the coils and loops.

RESISTANCE AND CONTINUITY TABLE

Make resistance and continuity tests with the batteries removed. This will prevent voltage building up across resistors and capacitors. Any voltages set up in the unit may cause serious errors in reading the ohmmeter ranges, and they may damage the test instrument.

Ohmmeter readings will be most accurate when taken on the upper half of the scale. Meter readings within 30% of the tabulated values will, in most cases, indicate correct operation of the device.

Before measuring, the battery compensator (12) should be turned to the left, and all cables disconnected.

Article	*Point to Point*		*Reading*	*Probable Cause of Incorrect Reading*
Transformer 1	2	3	2.25	Open or shorted transformer
	5	7	1350	Open or shorted transformer
Choke 2	1	2	2150	Open or shorted transformer
Transformer 3	2	4	73	Open or shorted transformer
	5	7	1365	Open or shorted transformer
Transformer 4	1	2	1.42	Open or shorted transformer
	3	4	237	Open or shorted transformer
	4	5	237	Open or shorted transformer
	6	7	375	Open or shorted transformer
	7	8	375	Open or shorted transformer
Capacitor 18	Red Wire	Black Wire		Shorted capacitor
Potentiometer 12	Yellow Wire	Black Wire	750	Open control
Coil 29	1	2	0	Open coil winding
	3	4	.1	Open coil winding
Coil 30	1	2	.25	Open coil winding
	3	4	.5	Open coil winding
Coil 31	3	4	.45	Open coil winding
	6	7	2 5	Open coil winding
	1	5	24.0	Defective search coil
	9	10	20.0	Defective search coil
Switch 28	1	2	0	Defective search coil

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24. Amplifier BC-1141-(*) Inoperative.—

Amplifier trouble may be localized into two sections, either the tuned oscillator circuit or the amplifier circuit. To determine which is inoperative, proceed as follows:

a. To test the oscillator circuit.—Connect a resonator between terminal 1 (counting from left to right) of terminal strip 59, (figure 17), and terminal 2. A 1,000-cycle note in the resonator will indicate that the oscillator is functioning, and that the trouble is in the amplifier circuit. No tone in the resonator will indicate that the oscillator is not functioning. One of the following troubles will usually be the cause of no oscillation:

(1) Defective tube (20) (fig. 16).
(2) Broken wiring or loose connection.
(3) Defective transformer 4.

b. To test amplifier circuit.—Use a Battery BA-30, and connect its terminals *momentarily* to terminals 5 and 6 (counting from the left) of terminal strip 59, (figure 17). A deflection of the output meter will indicate proper functioning of the amplifier.

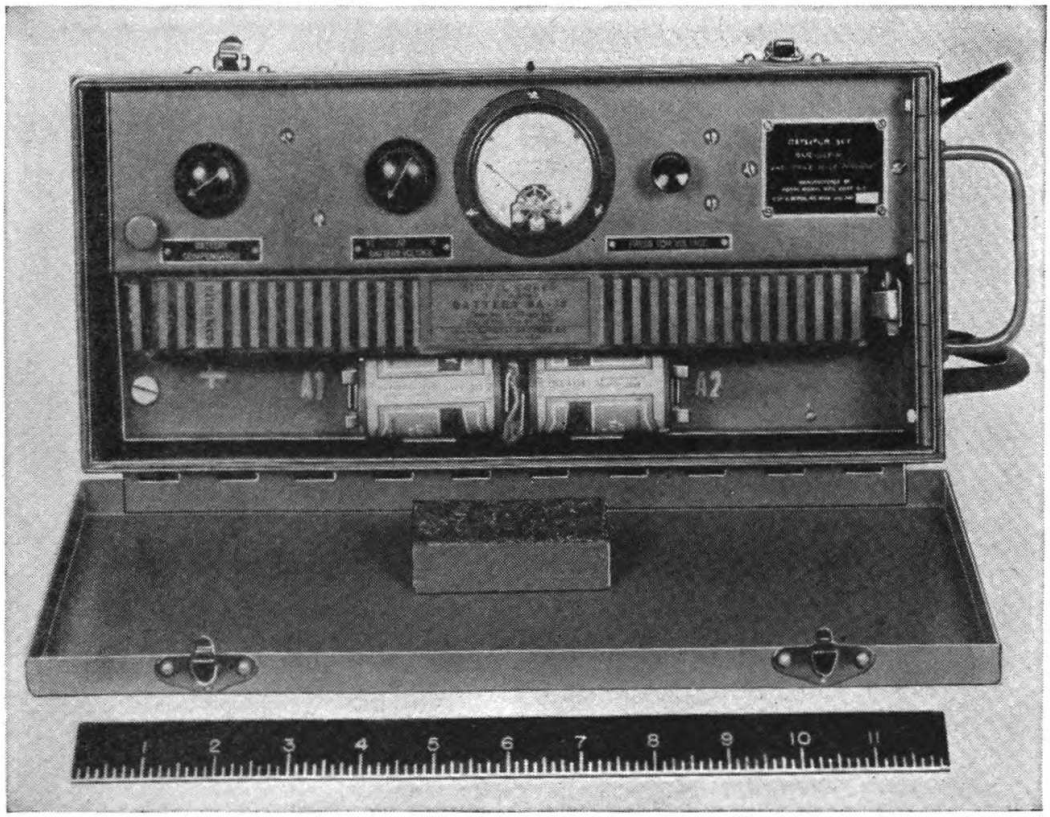


Fig. 11 Amplifier BC-1141-(*), Open, Showing Panel With Meter

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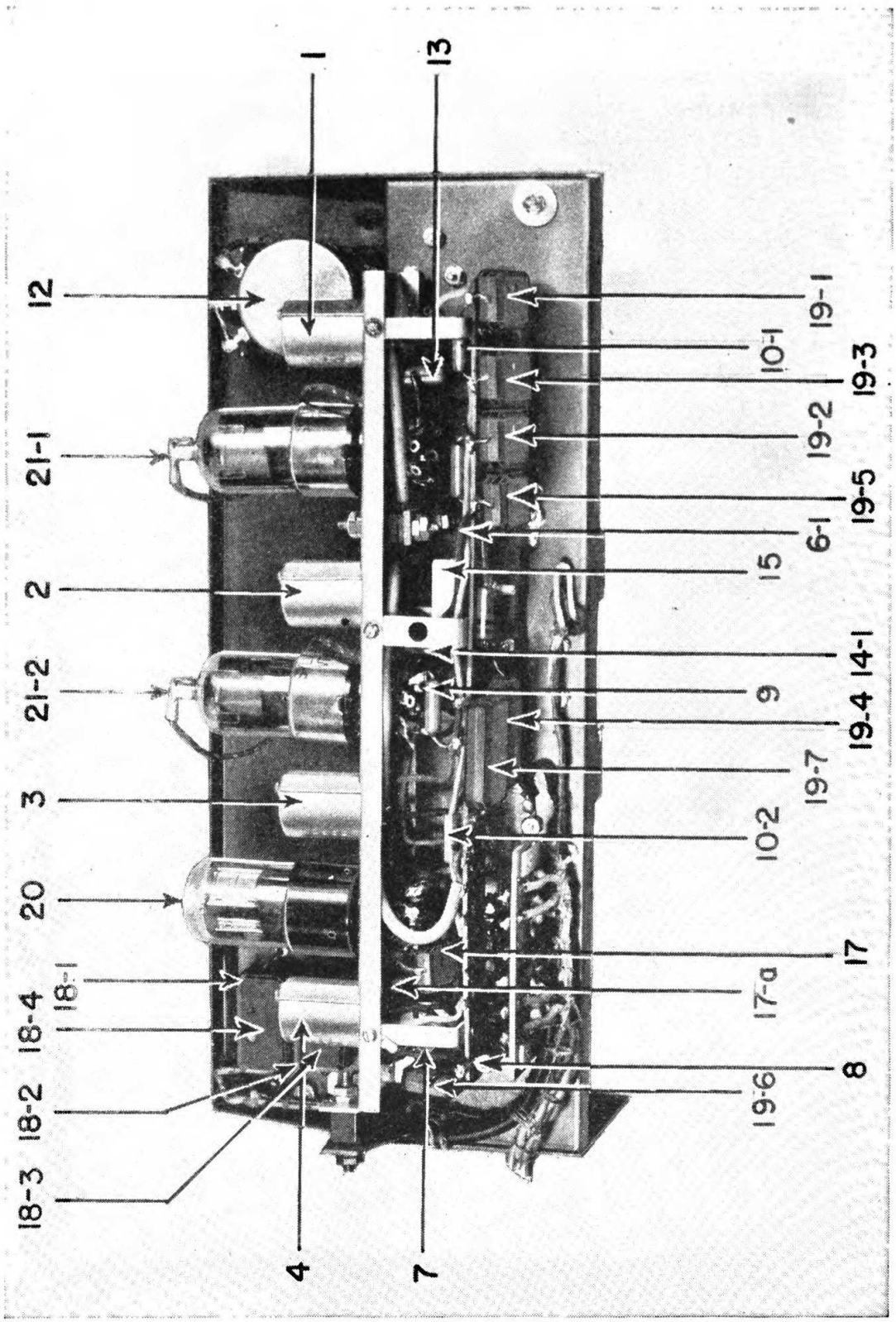


Fig. 12 Amplifier BC-1141-(*), Without Meter, Rear View Showing Chassis

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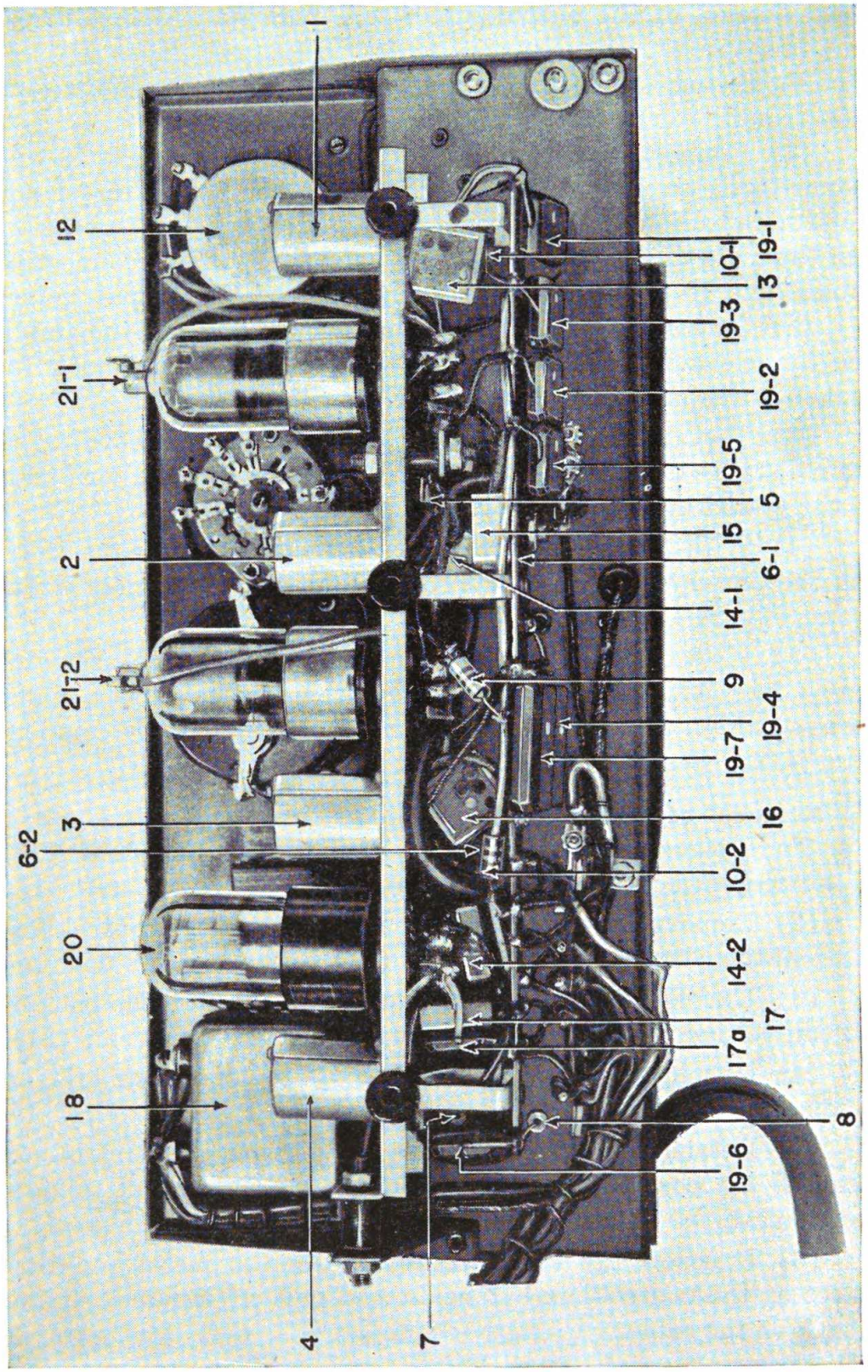


Fig. 13 Amplifier BC-1141-(*), With Meter, Rear View Showing Chassis

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No deflection of the output meter will indicate a defect in the amplifier circuit.

c. Following are checks to determine some of the more common trouble found in the amplifier circuit.

(1) Connect a wire from terminal 1 of terminal strip 59, and momentarily touch terminal 9 with the other end. This should cause a deflection of the output meter. If there is no indication, test the male (26) and female (25) connectors of the connecting cables, and if they show continuity, replace the output meter.

(2) Substitute a new tube in each socket, and test the amplifier for operation. If the amplifier does not function, look for broken wires and loose connections.

(3) Test transformers and choke windings according to the resistance and continuity table. Check "B" voltage terminals of the transformers for shorts to ground.

(4) With an ohmmeter, check all resistors and capacitors, and the battery compensator (12), following the schematic diagram, (figure 16.)

(5) If all tests fail, replace the whole amplifier chassis with a new one. After any repairs or replacements have been made, always realign the equipment, and readjust the battery compensator (12). See paragraph 26.

25. Removal of Parts.—

a. To replace search-coil.—(1) Remove bottom plate (71) of the control box by detaching screws.

(2) Remove the three screws on the back of the control box, and pull the coarse adjustment coil (31) into a vertical position.

(3) Unsolder the four wires coming in through the back of the control box and going to the terminal lugs on the coil (31).

(4) Unsolder the two wires going to the terminals on switch 28.

(5) Detach the search-coil assembly from the control-box assembly by loosening thumb nut 66c on the search-coil support and unmesh the bayonet joint separating the two assemblies.

(6) Unscrew the two screws holding the metal rod that serves as the control-box extension and pull off the rod, sliding it back on the cable.

(7) This exposes the cable clamp nut which should be unscrewed, allowing the cable to be pulled out of the control box.

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(8) Slide the clamp nut, packing ring, washer, and metal rod off the cable, completing the removal of the search-coil.

(9) Secure a new search-coil and thread the cable through the rod, starting from the end with the thumb nut (66c).

(10) Push the cable through the clamp nut, metal washer, and packing ring and into the control box leaving about four inches of wire protruding inside.

(11) Slide the extension rod up onto the projection of the control box and fasten in place with the two screws.

(12) Twist together the pairs of red and black, blue and white, and yellow and green wires.

(13) Thread the twisted wires into the control box and solder them to the terminal lugs according to the wiring diagram. (Fig. 20).

(14) Push the coil back into place and replace the three screws.

(15) Replace rubber gasket, bottom plate, and screws.

b. To replace fine "X," or fine "R" coils.—(1) Detach bottom plate on the control box by unfastening the screws.

(2) Detach adapter 73 from the front of the control box by removing the four screws.

(3) Unsolder the wires from the terminal lugs of the coil.

(4) Unfasten the screws on top and bottom of control knob and pull the assembly forward and out of the case.

(5) Install the new coil and the gasket removed with the old coil.

(6) Solder the four wires on the new coil according to the wiring diagram, (Fig. 20).

(7) Replace the two screws fastening the coil to the control box.

(8) Replace the adapter in the original position.

(9) Replace the rubber gasket, bottom plate and screws.

c. To replace coarse compensator.—(1) Detach bottom plate on the control box by unfastening screws.

(2) Remove the three screws on the back of the control box and pull the middle coil into a vertical position.

(3) Unsolder the wire or wires from coil, one terminal at a time, and solder them on the corresponding terminal of a new coil. This method will prevent any errors in wiring. If possible. tag each wire and its corresponding terminal.

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(4) Place the coil in the control box and replace the three screws.

(5) Replace the rubber gasket, bottom plate, and screws.

d. To replace output meter.—(1) Detach bottom plate on the control box (fig. 15) by unfastening screws.

(2) Remove the two terminal lugs on the back of the meter, by removing the nuts and lockwashers.

(3) Remove the front cover (72) on the control box by unfastening the four screws around its edge.

(4) Remove the old meter and install a new one.

(5) Replace front cover, making sure to install the gasket and rubber packing ring.

(6) Replace lugs on meter terminal and secure nuts.

(7) Replace the rubber gasket, bottom plate, and screws.

Note: Read the special note at the beginning of this section before doing anything else.

e. To replace amplifier transformer.—(1) Unscrew the locking screw (79) on the front panel.

(2) Lift the panel out of box by means of the knob above the locking screw.

(3) Remove the screws fastening terminal strip 58.

(4) Unsolder the leads from terminal strip 59 to terminal strip 58.

(5) Remove the nuts holding the rubber mounts between the chassis and the panel.

(6) Slide the amplifier chassis free of the panel.

(7) Unsolder the leads going to the defective transformer.

(8) Remove the two screws holding the transformer.

(9) Install the new transformer in the same position.

(10) Solder the wires back on the terminals as shown in the wiring diagram (fig. 17).

(11) Slide the chassis back in place on the panel.

(12) Replace nuts on the rubber mounts.

(13) Resolder the leads from the terminal strip according to the wiring diagram. (fig. 17).

(14) Replace the two screws and nuts holding the terminal strip.

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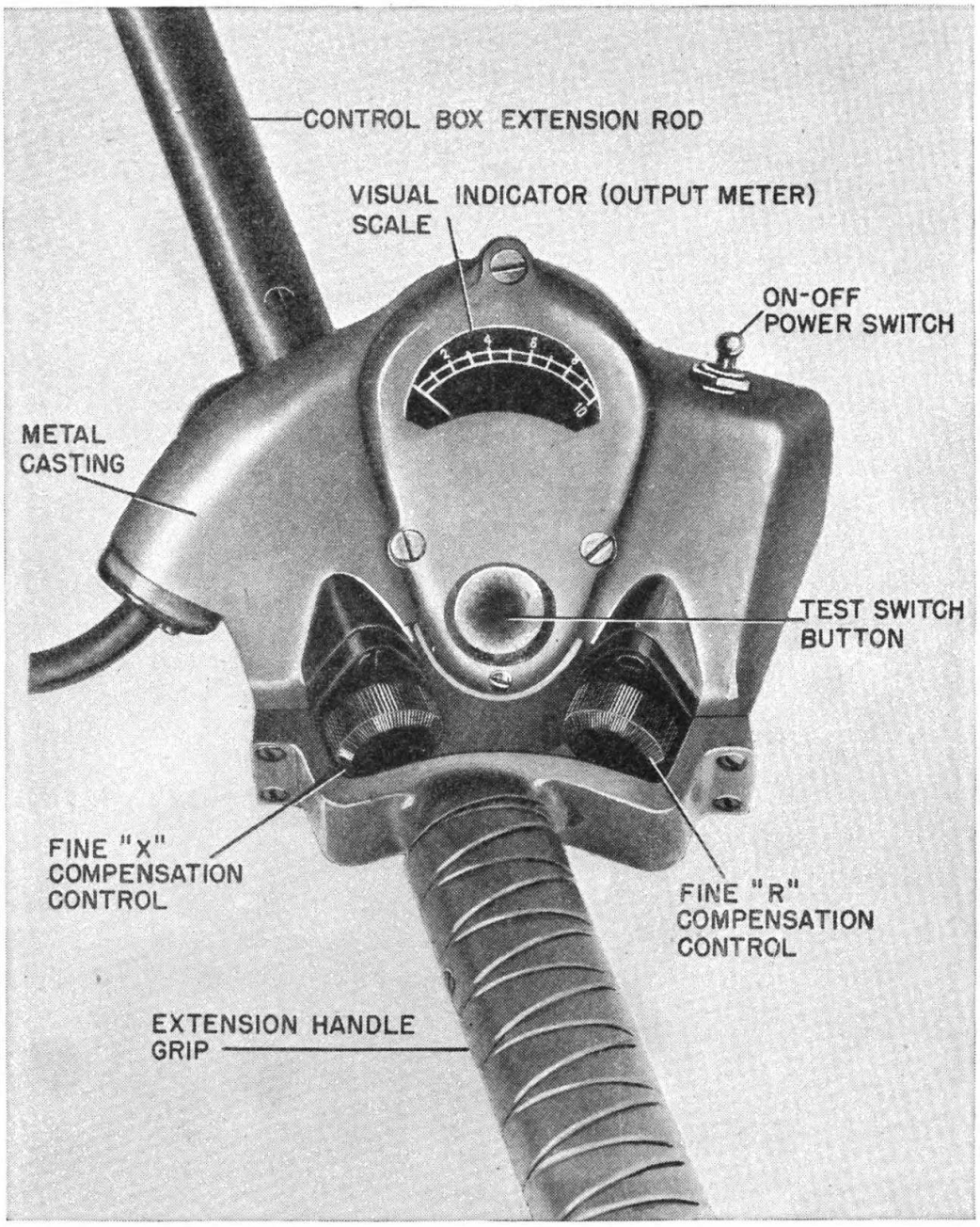


Fig. 14 Control Box BC-1140-(*), Front View

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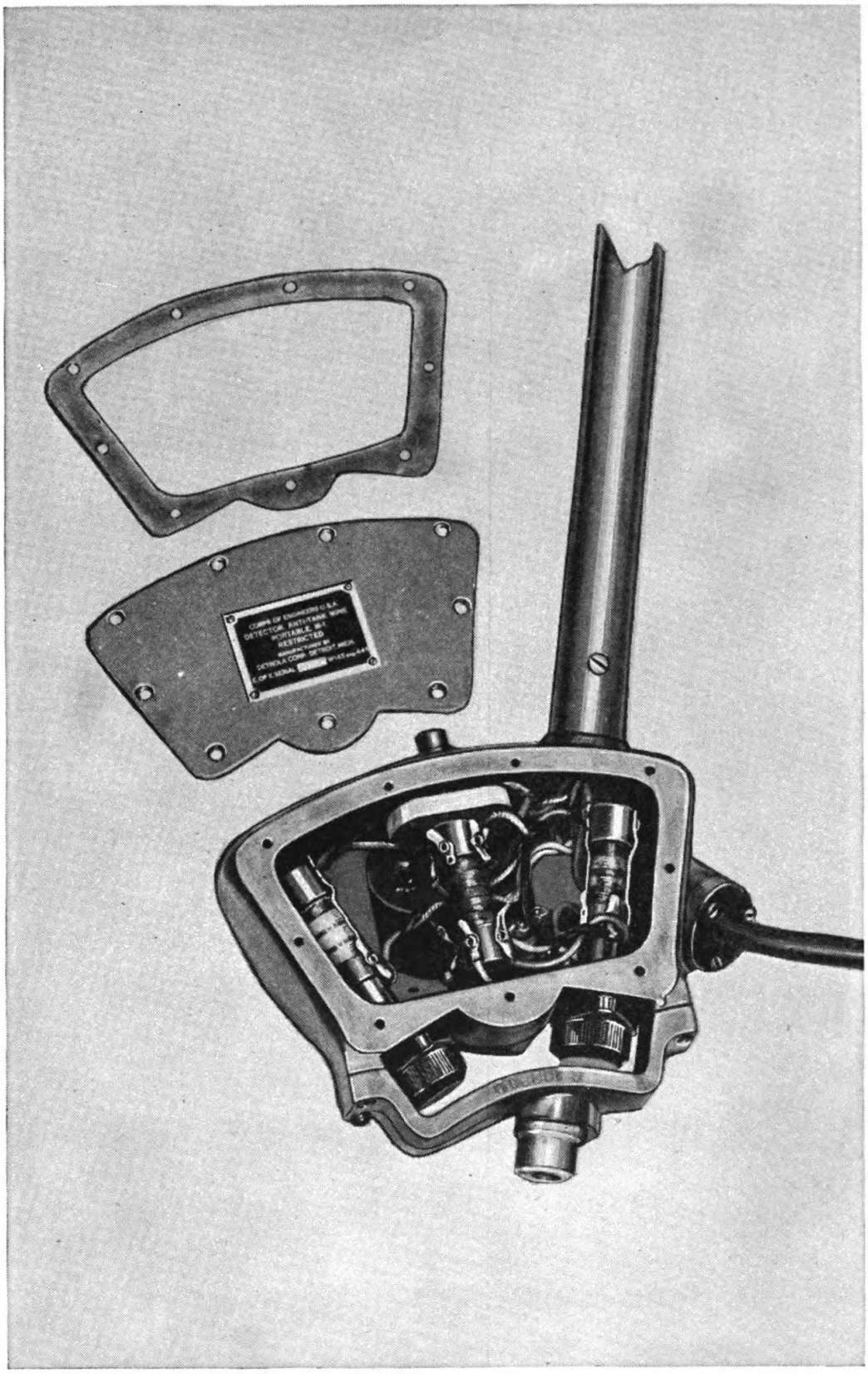


Fig. 15 Control Box BC-1140-(*), Bottom Cover Removed

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26. Alignment Procedure.—

To align amplifier.—The trimmer (15) used to tune the inductance (2) is the only tuning adjustment on the amplifier. If 15 is believed to be out of adjustment or has been replaced, proceed as follows:

a. Rotate either the Fine X (29) or Fine R (30) adjustment knobs until the visual indicator (24) reads "4" and a signal is heard in the resonator (23).

b. Turn adjustment screw of trimmer (15) in the direction that causes an *increase* in signal as indicated by the visual indicator and resonator.

c. Continue to adjust trimmer (15) until rotation in *either* direction causes a decrease in signal strength.

d. Adjust the battery compensator (12) until the visual indicator reads "2." Then readjust trimmer (15) for maximum signal.

e. If available, dab a small amount of wax, glue or cement on adjustment screw of the trimmer to prevent further movement.

NOTE: READJUSTMENT OF FINE "R" COMPENSATOR

If Search Coil C-446-(*), Control Box BC-1140-(*), or Fine "R" Compensator has been replaced and the balance position of the Fine "R" (right hand knob) control is not approximately 4 turns out from the full "in" position the following adjustments should be made.

1. **Remove 2 screws holding Fine "R" Compensator in Control Box BC-1140-(*), Fig. 15, Page 36.**

2. **Break cement seal that holds coil form to spindle support.**

3. **Remove coil form from support.**

4. **Break seal on nuts holding brass core on threaded spindle.**

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5. **Turn both nuts and brass core either in or out on the spindle the same number of turns needed to bring the control knob to a position approximately 4 turns out from the full "in" position.**

Example:

If the Fine "R" control knob balances at 7 turns out, the brass core should be screwed in on the spindle, 3 turns.

6. **Seal both nuts on the spindle with DuPont Household or similar cement.**

7. **Replace coil form on spindle support with the same cement.**

8. **Replace Fine "R" Compensator in Control Box BC-1140-(*) and secure with the 2 screws.**

Section V

SUPPLEMENTARY DATA

Paragraph
Table of Replaceable Parts 27

a. Mine Detector Model M-1 and Detector Sets SCR-625-B, SCR-625-D, and SCR-625-E.

b. Mine Detector Model M-1 and Detector Sets SCR-625-A and SCR-625-C.

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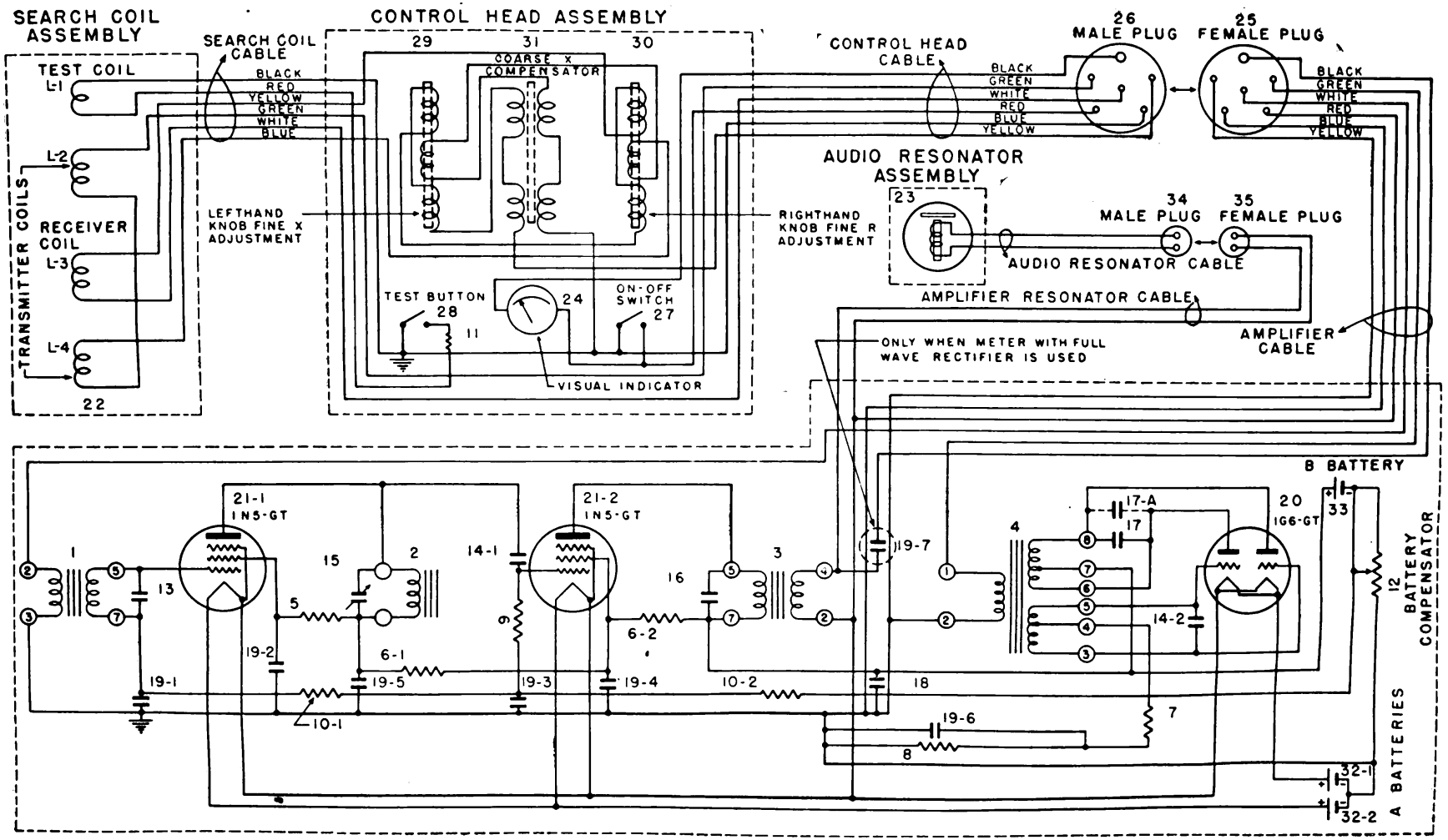


Fig. 16 Detector Set SCR-625-(*), Schematic Diagram

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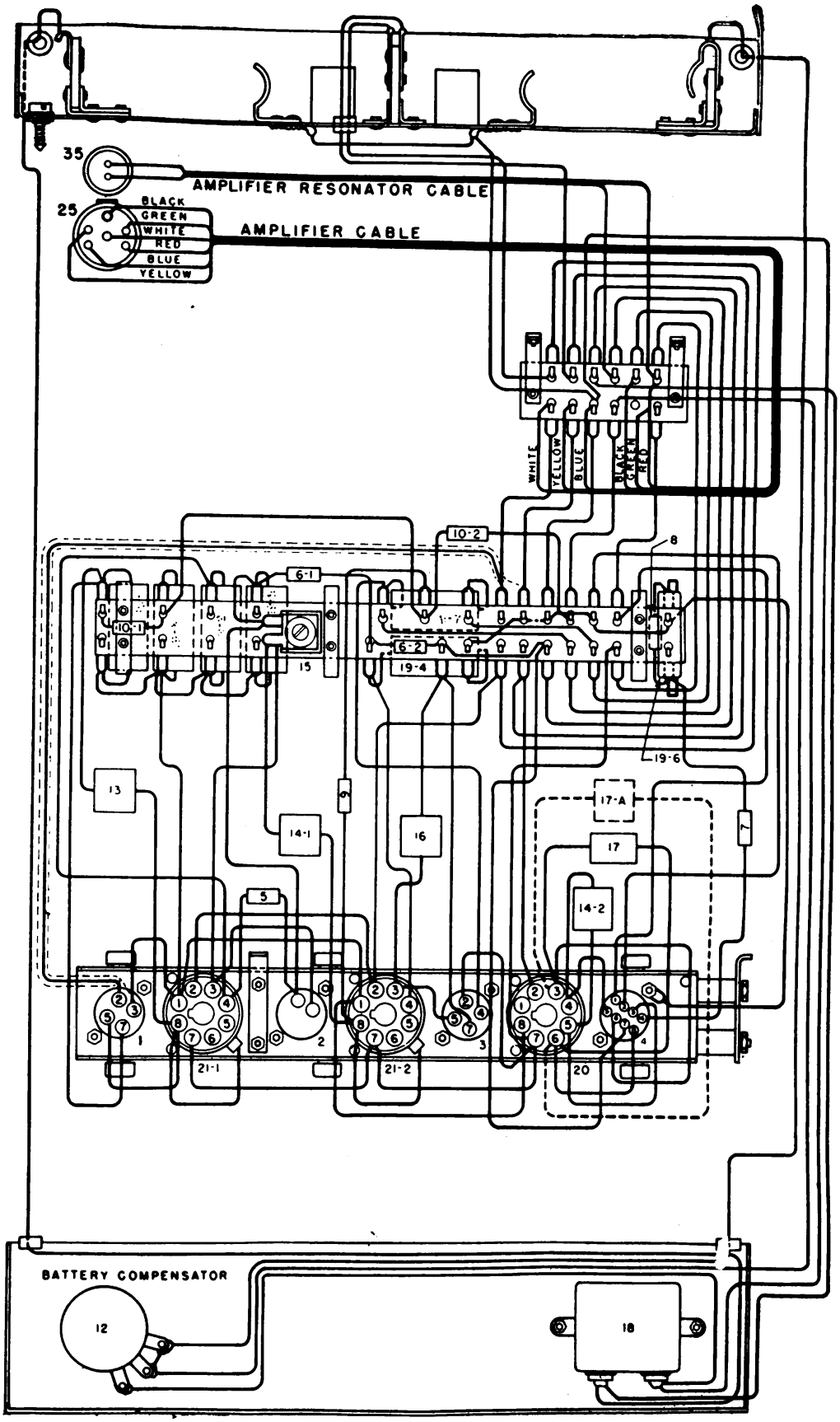


Fig. 17 Detector Set SCR-625-(*), Wiring Diagram

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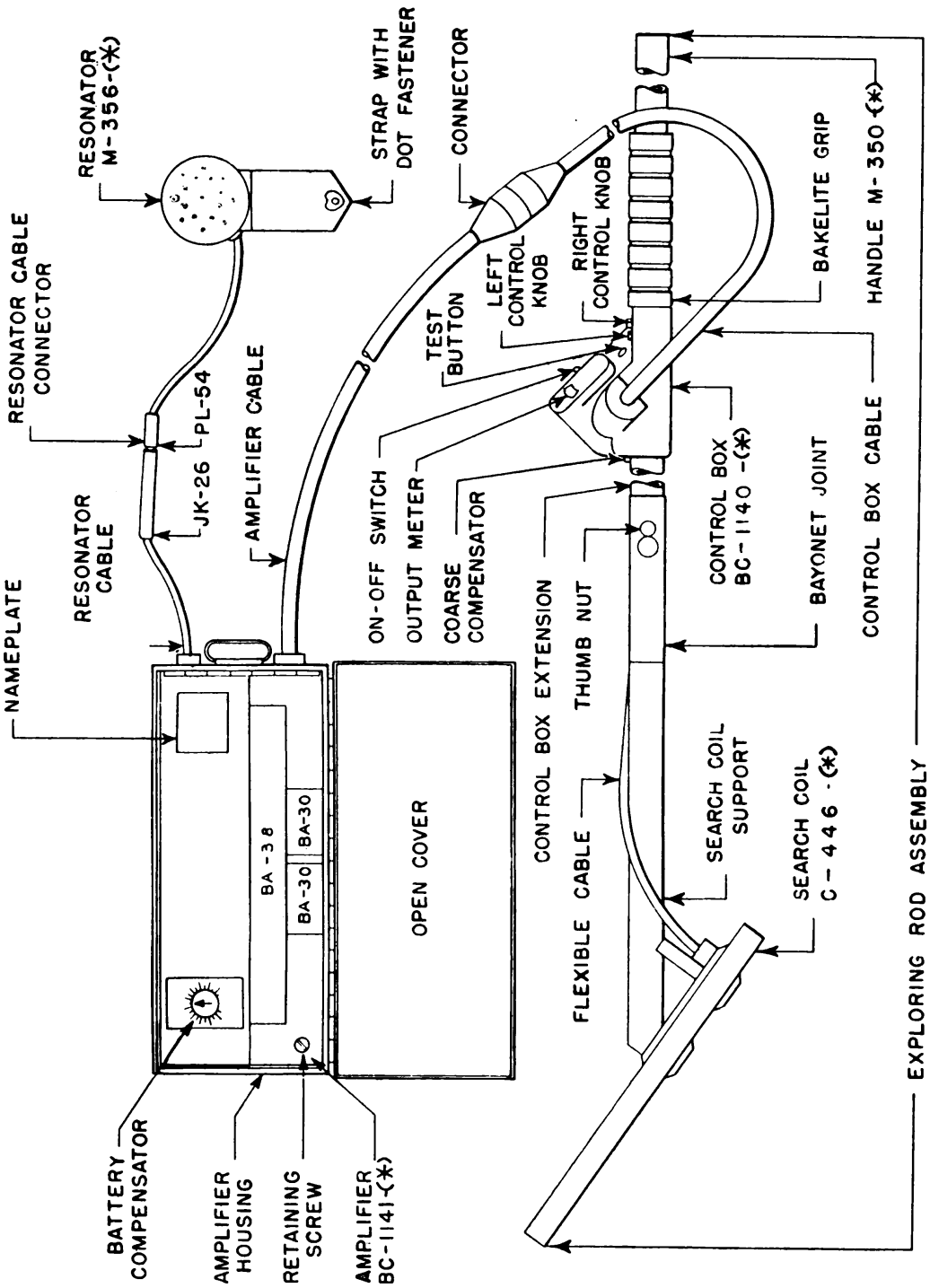


Fig. 18 Detector Set SCR-625-(*), Cording Diagram

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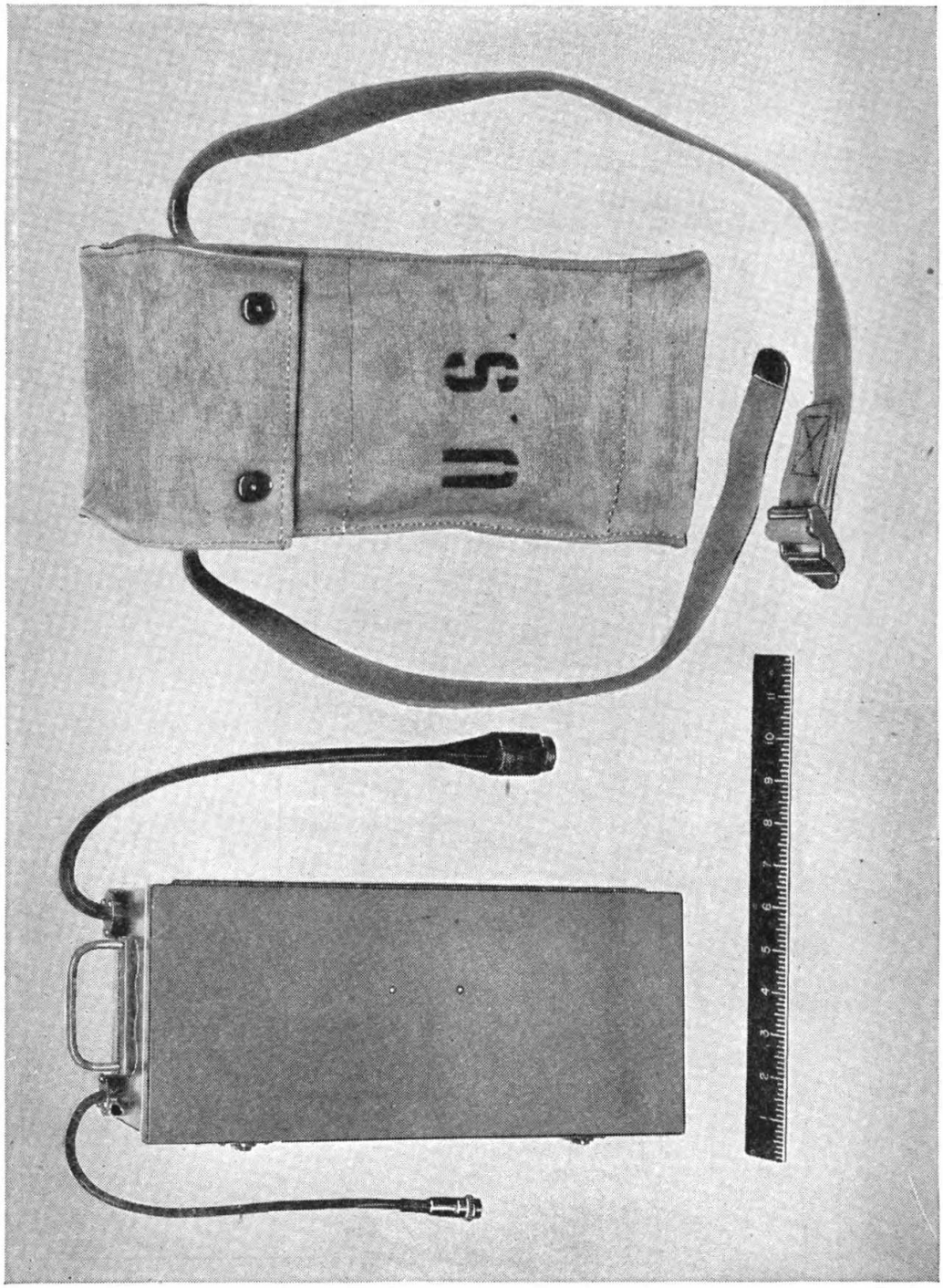


Fig. 19, Amplifier BC-1141-(*), And Bag BG-151-(*)

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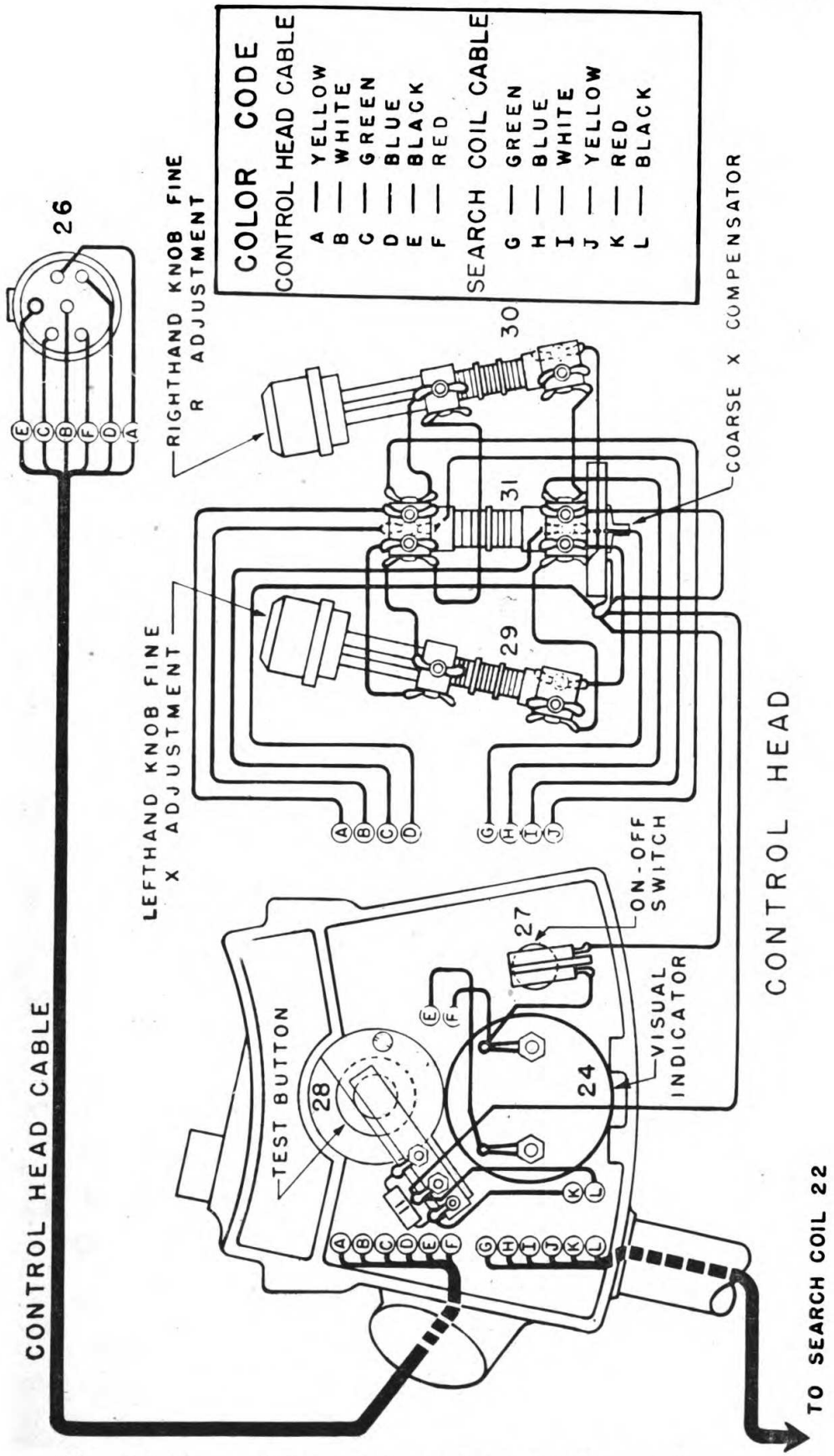


Fig. 20 Control Box BC-1140-(*), Wiring Diagram

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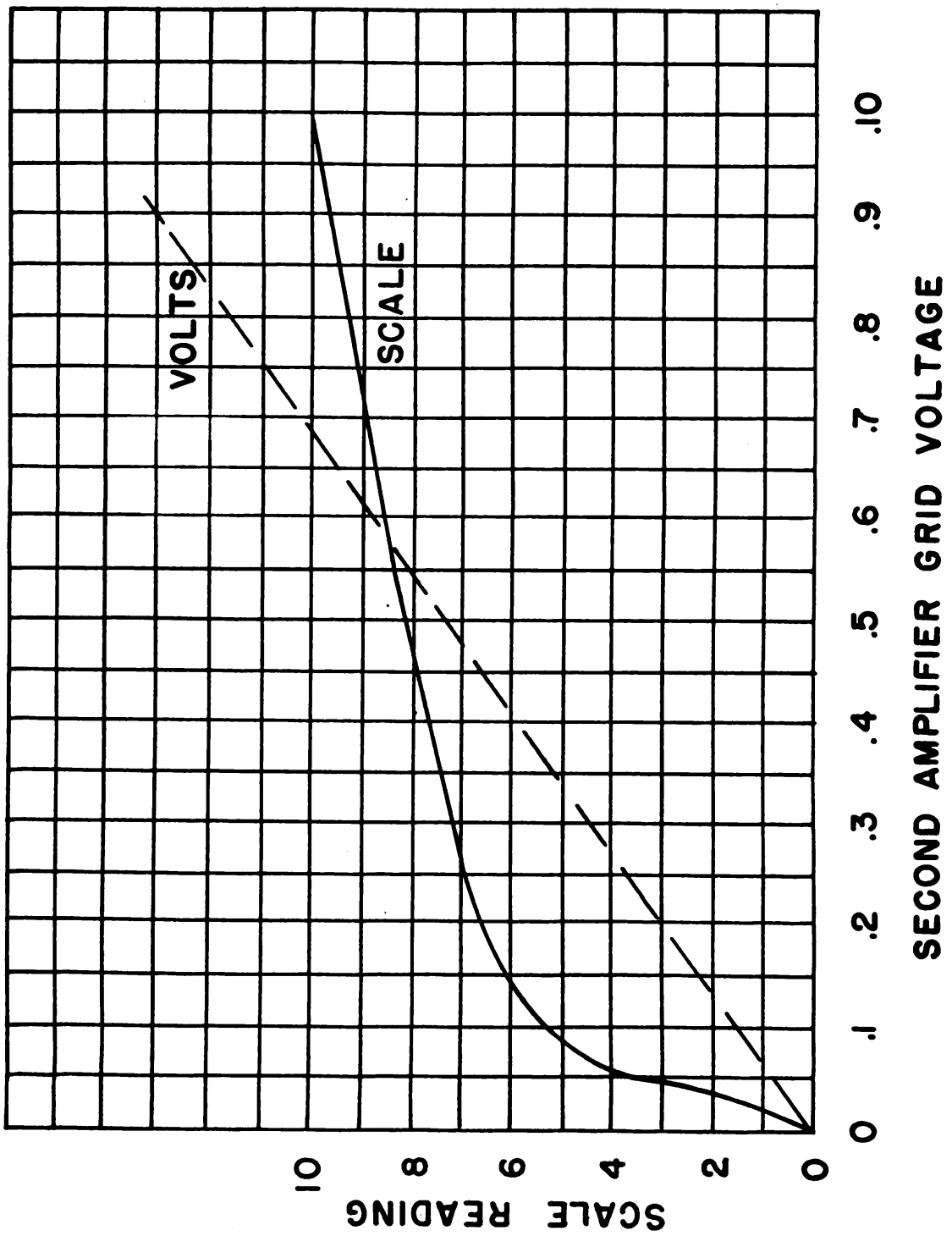


Fig. 21 Grid Voltage Chart, Second Amplifier

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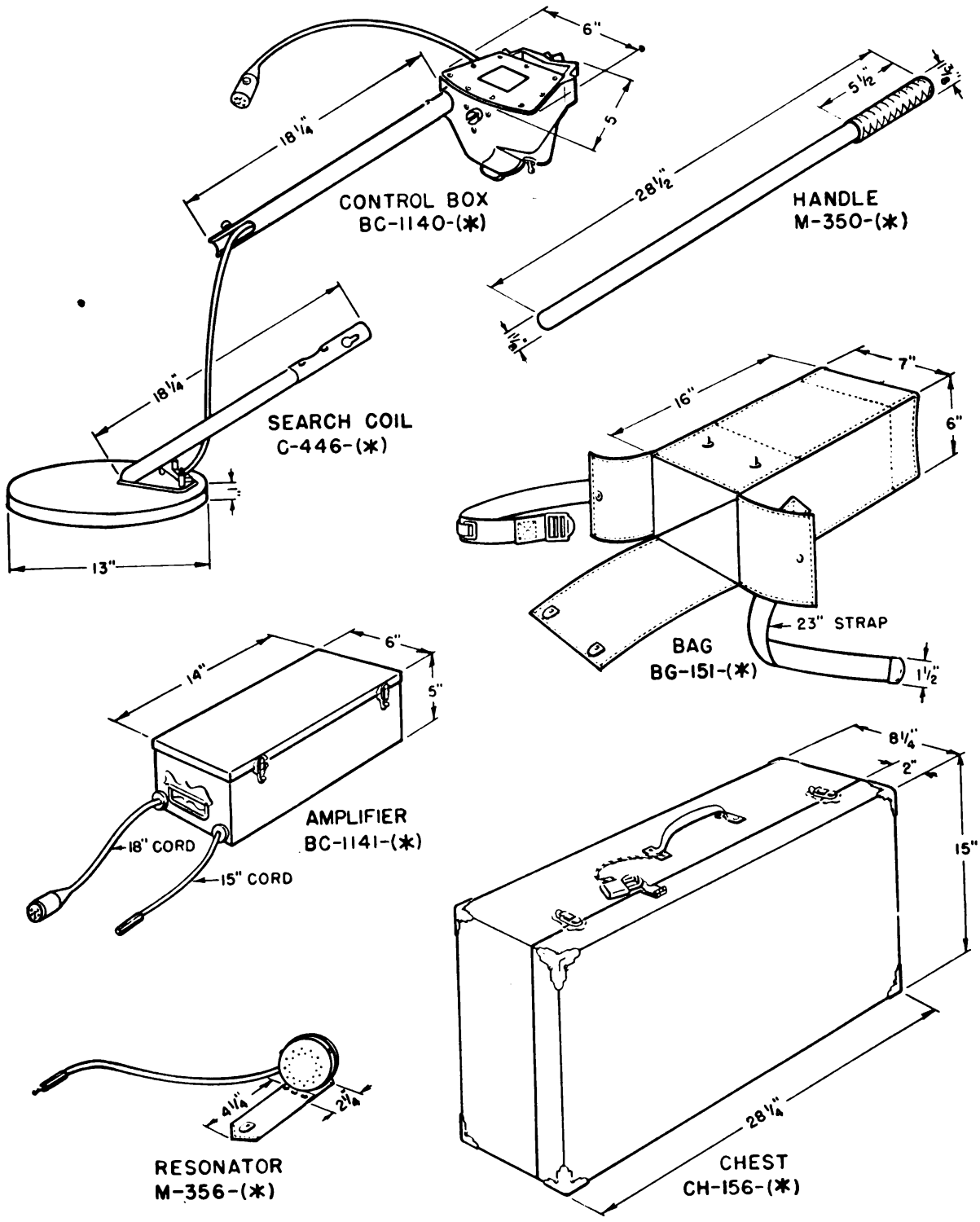


Fig. 22 Outline Dimensional Diagram

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TABLE OF REPLACEABLE PARTS
AS FURNISHED BY THE HORNI SIGNAL MFG. CORP.

27*a*. Mine Detector Model M-1, Detector Sets SCR-625-B, SCR-625-D and SCR-625-E

Ref. No.	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
1	2Z9631.5	Transformer	Ratio pri. to sec.—1:80 pri. inductance—.035 Hys. Type 65958. ⅞" dia. x 1 3/16" long.	Search coil to 1st grid coupling	7	
2	3C328-3	Choke	Inductance—50 Hys. at 1 Ma. D.C. Type 65957. ⅞" dia. x 1 3/16" long.	Plate inductance	7	
3	2Z9632.23	Transformer	Ratio pri. to sec.—10:1 pri. inductance—35 Hys. Type 65956. ⅞" dia. x 1 3/16" long.	2nd plate to output meter and resonator	7	
4	2Z9638.1	Transformer	Ratio pri. (plate) to sec.—24:1. Ratio pri. (grid) to sec.—12:1 Sec. inductance—.1 Hys. Type 65959. ⅞" dia. x 1 3/16" long.	Push-pull Osc. to search coil	7	
5	3Z6622-15	Resistor	½ Watt, 22,000 ohms insulated carbon. Type C ½. ¾" x .215 dia.	1st screen resistor	2	
6-1	326610-75	Resistor	½ Watt, 10,000 ohms insulated carbon. Type C ½. ¾" x .215 dia.	1st plate decoupling	2	
6-2	3Z6610-75	Resistor	Same as 6-1	2nd screen resistor	2	
7	3Z6220-10	Resistor	½ Watt, 2,200 ohms insulated carbon. Type C ½. ¾" x .215 dia.	Osc. grid current limiting	2	
8	3Z6330-12	Resistor	½ Watt, 3,300 ohms insulated carbon. Type C ½. ¾" x .215 dia.	Osc. grid bias	2	
9	3Z6804A7-3	Resistor	½ Watt, 4,700,000 ohms insulated carbon. Type C ½. ¾" x .215 dia.	2nd grid resistor	2	
10-1	3Z6801-16	Resistor	½ Watt, 1,000,000 ohms insulated carbon. Type C ½. ¾" x .215 dia.	1st grid decoupling	2	

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Ref. No.	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
10-2	3Z6801-16	Resistor	Same as 10-1	2nd grid decoupling	2	
11	3Z6010-10	Resistor	½ Watt, 100 ohms insulated carbon. Type C ½.	Test coil load resistor	2	
12	2Z7279-12	Potentiometer	1 Watt, 750 ohms wire wound, variable. Type 1-7821 1⅝" dia. ⅜" lg. shaft	Grid bias voltage compensator	3	
13	3DA1-13	Capacitor	Molded mica. 001 μf 200 V.D.C. Type "W." $^{13}/_{16}$" sq. x $^{9}/_{32}$"	1st grid tuning capacitor	4	3455-1 *
14-1	3D9500-81	Capacitor	Molded mica 500 $\mu\mu$f 200 V.D.C. Type "O." $^{11}/_{16}$" lg. x $^{7}/_{16}$" W. x $^{3}/_{16}$" th.	Plate to grid coupling	4	3455-1 *
14-2	3D9500-81	Capacitor	Same as 14-1	Osc. grid tuning	4	3455-1 *
15	3D9800V	Capacitor	Trimmer 500 $\mu\mu$f Type HC 41	1st plate inductance trimmer	5	
16	3D9800-6	Capacitor	Molded mica 800 $\mu\mu$f 200 V.D.C. Type "O." $^{11}/_{16}$" lg. x $^{7}/_{16}$" W. x $^{3}/_{16}$" th.	2nd plate inductance tuning	4	3455-1 *
17	3DA10-162	Capacitor	Molded paper .01 μf 200 V.D.C. ⅞" lg. x $^{9}/_{16}$" W. x ¼" th. Type 339	Osc. plate tuning	4	3109 *
17*a*.		Capacitor	Molded paper .002 $\mu\mu$f 200 V.D.C. ⅞" lg. x $^{9}/_{16}$" W. x ¼" th. Type 339	Osc. plate tuning	4	3109 *
18-1 18-2 18-3 18-4	3DA250-RE	Capacitor	Molded paper .25 μf 200 V.D.C. Type 345 $1^{7}/_{16}$" lg. x ¾" W. x ⅜" th.	Paralleled to produce 1.0μf across B battery	4	3109 *

*Indicates Manufacturer's Drawing No.
**Indicates Signal Corps Drawing No.
All else Contractor's Drawing No.

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27*a*.—(Cont'd.)

Mine Detector Model M-1, Detector Sets SCR-625-B, SCR-625-D and SCR-625-E—Table of Replaceable Parts

Ref. No.	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*	
19-1	3DA100-112	Capacitor	Molded paper .1μf 200 V.D.C. Type 345 7/15" lg. x ¾"W. x ⅜" th	1st grid bias voltage by-pass	4	3109	*
19-2	3DA100-112	Capacitor	Same as 19-1	1st screen voltage by-pass	4	3109	*
19-3	3DA100-112	Capacitor	Same as 19-1	2nd grid bias voltage by-pass	4	3109	*
19-4	3DA100-112	Capacitor	Same as 19-1	2nd screen voltage by-pass	4	3109	*
19-5	3DA100-112	Capacitor	Same as 19-1	1st plate voltage by-pass	4	3109	*
19-6	3DA100-112	Capacitor	Same as 19-1	Osc. grid bias voltage by-pass	4	3109	*
19-7	3DA100-112	Capacitor	Same as 19-1	Meter blocking capacitor	4	3109	*
20	2V1G6GT	Radio Tube	1G 6GT class B power amplifier twin triode	Push-pull oscillator	6		
21-1	2T146	Tube VT-146	VT 146 R.F. pentode	1st audio amplifier	6		
21-2	2T146	Tube VT-146	Same as 21-1	2nd audio amplifier	6		
22	3C300-446D	Search Coil C-446-(*)	Complete assembly; small coil 80 turns No. 24 solid en. wire; medium coil 80 turns No. 24 solid en. wire; large coil 50 turns No. 22 solid en. wire; test coil 1 turn No. 24 all concentrically mounted between two wooden discs, 13" dia. x ¾" thick "Special."	Transmitter and receiver coils for detection of metal	1		

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Ref. No.	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
23	2B2156E	Resonator M-356-(*)	Complete assembly, "Special" consisting of:	Audible indicating device	1	
23A		Receiver R-14	Single headphone 1,000 ohms D.C.	Audible indicating device	8	SC-D-2205-C **
23B		Resonator Housing	Female housing "Special"	Audible indicating device	1	TC-35109-2A
23C		Resonator Housing	Male housing "Special"	Audible indicating device	1	TC-35109-1A
24	3F891-12	Meter	0-1.0 ma rectifier type A.C. meter. Radium dial and pointer marked 0, 1, 4, 6, 8, 10. Shaded pole pieces A-132-5. 1,000 ohms D.C. on meter side of rectifier. Type 56 "Special."	Visual indicating device	9	
25	3E4005	Plug and Cable	Female plug No. 6093F molded on 30" 6-conductor cable. "Special"	Connection from amplifier to male plug	10	
26	3E4005-1	Plug and Cable	Male plug No. 6093M molded on 30" 6-conductor cable. "Special"	Connection from search coil to female plug	10	
27	3Z9858-8.1	Switch	On-off toggle switch S.P.S.T. Type 20994. ¾" shank.	Turn off batteries	11	
28	3Z9824-35	Switch	Push button switch momentary make contact "Special"	Sensitivity test switch	1	TC-35080-20
29	3C1084F-1	Coil	Fine "X" coil assembly adjustable iron core inside coil consisting of 3 sections of 7 turns No. 24 SSE wire. "Special"	Fine adjustment of reactive component	1	

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**Indicates Signal Corps Drawing No.
All else Contractor's Drawing No.

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27*a*.—(Cont'd.)

Mine Detector Model M-1, Detector Sets SCR-625-B, SCR-625-D and SCR-625-E—Table of Replaceable Parts

Ref. No.	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*	
30	3C1084F-2	Coil	Fine "R" coil assembly adjustable brass core inside coil consisting of 3 sections of 18 turns No. 26 SSE wire. "Special"	Fine adjustment of resistive component	1		
31	3C1084F-3	Coil	Coarse "X" coil assembly adjustable iron core inside coil consisting of 2 sections of 2 layers, 18 turns No. 30 SSE ea.; 2 sections of 2 layers, 9 turns No. 24 SSE ea.	Coarse adjustment of reactive component	1		
32-1	3A30	Battery BA-30	1.5 volt flashlight battery	Osc. filament supply	12	SC-A-535-C	**
32-2	3A30	Battery	Same as 32-1	Amp. filament supply	12	SC-A-535-C	**
33	3A38	Battery BA-38	103.5 volt "B" battery	Plate and screen supply for Osc. and Amp.	13	SC-A-6386-D	**
34	2Z7154	Plug	Phone plug type PL-54 with 18" 2-conductor cable	Connection from resonator to jack	14	SC-D-338-J	**
35	2Z5526	Jack JK-26 with Cable (*or cable connector*)	Phone jack with 27" 2-conductor cable (*or 2 prong female brass BNP Amphenol. Type MC2M cable connector*)	Connection from amplifier to plug	14	SC-D-484-L	**
50	2Z4866.8	Gasket	Neoprene, 4¼" x 2¾" x 1/32". "Special"	Indicating meter cover gasket	15	TC-35088-A-5	
51	2Z4866.7	Gasket	Gum rubber, 2 7/16" O.D. x 2¼" I.D. x 1 1/16". "Special"	Indicating meter window gasket, "Special"	15	TC-35088-A-6	
52	2Z4866.11	Gasket	Neoprene, 38⅞" x 13/32" x 1/16". "Special"	Amp. box seal strip	15	TC-35088-A-1	
53	2Z4866.13	Gasket	Neoprene, 1 x 1¾" x 1¼" x 1/32". "Special"	Fine compensator seal gasket	15	TC-35088-A-2	

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Ref. No.	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
54	6L54003	Gasket	Gum rubber, 9/16" O.D. x 13/32" x 1/8". "Special"	Cable clamp nut packing ring	15	TC-35088-A-8
55	2Z4866.15	Gasket	Neoprene, 6¼" x 3 19/32" x 1/32". "Special"	Back cover plate gasket	15	TC-35088-A-4
56	2C675-1140D/P1	Plug	Plug assembly, consisting of TC-35087—7A plug, TC-35087—14A washer, TC-35088—3A gasket	Coarse compensator plug assembly	1	
57	2Z8501-3	Shock Absorber	Rubber chassis mounts. Style A-320	Shock absorbers for Amp. chassis	16	
58	2C447-41D/T5	Terminal Strip	Nat. linen bakelite strip, 10¼" x 7/8", with lugs and brackets. "Special"	Connection from chassis to panel	1	TC-35090-A-16
59	2C447-41D/T6	Terminal Strip	Nat. linen bakelite strip, 3" x 7/8", with lugs and brackets. "Special"	Capacitor and resistor mounting strip	1	TC-35090-A-18
60	2Z5788	Knob	Bakelite. Type E-17 or E-292-3L	Battery compensator knob	17	
62	2C447-41D/T2	Terminal	Terminal assembly, consisting of TC-35088-7, TC-35088-8, TC-35099-9, TC-35088-10. "Spec."	"B" battery positive contact	1	TC-35087-A-1
63	2C447-41D/T3	Terminal	Terminal assembly, consisting of TC-35085-7, TC-35085-3, TC-35085-11, TC-35086-5. "Spec."	"B" battery negative contact	1	TC-35087-A-2
64	2C447-41D/T4	Terminal	Terminal assembly, consisting of TC-35087-4, TC-35087-5, TC-35087-6. "Special"	"A" battery positive double contact	1	TC-35087-A-3

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27*a*.—(Cont'd.)

Mine Detector Model M-1, Detector Sets SCR-625-B, SCR-625-D and SCR-625-E—Table of Replaceable Parts

Ref. No.	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
65	2C447-41D/C2	Terminal	Terminal clip. "Special"	"A" battery negative contact	1	TC-35088-A-12
66	2C675-1140D/C2	Clamp	Clamp assembly. "Special"—consisting of:	Clamp search coil to extension	1	
66a		SleeveNut	10-32 nut. "Special"	Extension locking nut	1	TC-35077-A-8
66b		Screw	10-32 machine screw. "Special"	Extension clamp screw	1	TC-35077-A-9
66c		Nut	10-32 knurled thumb nut. "Special"	Extension clamp nut	1	TC-35077-A-10
66d		Insert	Washer, ⅞" x ⅝" x ¼". "Special"	Washer for TC-35077-A-9 screw	1	TC-35077-A-11
67	2Z8899-137	Socket	Octal tube socket, bakelite. Type 8	Amp. and osc. tube	18	
68	6Z4873	Grommet	Rubber grommet, ½" I.D.	Cable seal ring for control box	19	
69	6Z4871	Grommet	Rubber grommet, ¼" I.D.	Cable seal ring for Amp. box	19	
70	2C675-1140D	Control Box	Aluminum casting. "Special"	Compensator control housing	1	TC-35081-A
71		Cover	Aluminum casting. "Special"	Rear cover for control housing	1	TC-35082-A-1
72		Cover	Aluminum casting. "Special"	Meter cover for control housing	1	TC-35082-A-2
73		Adapter	Aluminum casting. "Special"	Extension handle support	1	TC-35082-A-3

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Ref. No.	Stock No.	Name of Part	Description	Function	Mfr.	Drawing No.
74		Amplifier Case	Steel box with cover, 14" x 4¾" x 6". "Spec."	Amplifier carrying case	1	TC-35082-A
75-1	2C447-41D/C1	Clamp Assembly	Bakelite, consisting of (2) TC-35087-10 clamps, (3) 8-32 x ⅞" fillister head machine screws, (3) 8-32 hex. nuts. "Special."	Amplifier 6 conductor cable clamping washers	1	
75-2	2C447-41D/C1	Clamp	Bakelite clamp assembly, consisting of (1) TC-35087-10 clamp, (3) 8-32 x ⅞" fillister head machine screws. "Special"	Control box clamping washer	1	
76	2C675-1140D/C1	Clamp Assembly	Bakelite, consisting of (2) TC-35087-12 clamps, (3) 8-32 x ½" fillister head machine screws, (3) 8-32 hex. nuts. "Special."	Amplifier 2-conductor cable clamping washers	1	
79	6L7032-5.3S	Screw	Clamp screw, 10-32. "Special"	Instrument chassis clamping screw	1	TC-35086-A-7
80	6L75039	Washer	1/16" O.D. x .260 I.D. x 1/32" th.	Clamp screw washer	1	
81	6L7032-16S	Screw	10-32 x 1" flat head machine screw	Bayonet mounting screws		
82	6L3810-32.1	Nut	10-32 sleeve nut	Bayonet mounting nut	1	TC-35077-A-7
83		Tube Socket	Octal, 74-8Z	Shock mounting tube socket	18	
84		Window	Lucite disc, 2⅜" x .056	Meter lens		

*Indicates Manufacturer's Drawing No.
**Indicates Signal Corps Drawing No.
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LIST OF MANUFACTURERS' NAMES AND ADDRESSES

1. **Horni Signal Mfg. Corp., New York, N. Y.**
2. Continental Carbon Co., 13900 Loraine Ave., Cleveland, Ohio
3. Clarostat Mfg. Co., 285 N. 6th St., Brooklyn, N. Y.
4. Micamold Radio Corp., Brooklyn, N. Y.
5. F. W. Sickles, Chicopee, Mass.
6. Sylvania Corp., Emporiam, Penn.
7. United Transformer Corp., 150 Varick St., New York, N. Y.
8. Radio Speakers, Inc., 221 E. Cullerton St., Chicago, Ill.
9. Hickock Electrical Instrument Co., Cleveland, Ohio
10. Mines Equipment Co., St. Louis, Mo.
11. Arrow-Hart & Hegeman Mfg. Co., Hartford, Conn.
12. National Carbon Corp., Long Island City, N. Y.
13. Burgess Battery Co., Freeport, Ill.
14. Universal Microphone Co., Inglewood, Calf.
15. Canfield Rubber Co., Bridgeport, Conn.
16. United States Rubber Co., Detroit, Mich.
17. Hugh H. Eby, Philadelphia, Pa.
18. American Phenolic, Chicago, Ill.
19. U. S. Rubber Supply Co., New York, N. Y.

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TABLE OF REPLACEABLE PARTS
AS FURNISHED BY THE DETROLA CORP.

27*b*. Mine Detector Model M-1, Detector Sets SCR-625-A and SCR-625-C

(Circuit symbols printed in parentheses refer to circuit labels on equipment manufactured by the Detrola Corp.)

Circuit Symbol	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
1(T3)	2Z9631.5	Transformer	Ratio pri. to sec.—1:80 pri .inductance —.035 Hys. Type 65958, ⅞" dia. x 1 3/16" long	Search coil to 1st grid coupling	19	G-16114
2(T4)	3C328-3	Choke	Inductance — 50 Hy. at 1 Ma. D.C. Type 65957. ⅞ dia. x. 1 3/16" long	Plate inductance	19	G-16115
3(T2)	2Z9632.23	Transformer	Ratio pri. to sec.—10:1 pri. inductance—35 Hys. Type 65956. ⅞" dia. x 1 3/16" long	2nd plate to output meter and resonator	19	G-16113
4(T1)	2Z9638.1	Transformer	Ratio pri. (plate) to sec.—24:1 Ratio pri. (grid) to sec.—12:1. Sec. inductance—.1 Hys Type 65959. ⅞" dia. x 1 3/16" long	Push-pull Osc. to search coil	19	G-16112
5(R2)	3Z6622-15	Resistor	½ Watt, 22,000 ohms insulated carbon. Type C ½. ¾" x .215 dia.	1st screen resistor	6	G-16090
6-1(R4)	3Z6610-75	Resistor	½ Watt, 10,000 ohms insulated carbon. Type C ½.¾" x .215 dia.	1st plate decoupling	6	G-16091
6-2(R5)	3Z6610-75	Resistor	Same as 6-1	2nd screen resistor	6	G-16091
7(R8)	3Z6220-10	Resistor	½ Watt, 2,200 ohms insulated carbon. Type C ½. ¾" x .215 dia.	Osc. grid current limiting	6	G-16093
8(R9)	3Z6330-12	Resistor	½ Watt, 3,300 ohms insulated carbon. Type C ½. ¾" x .215 dia.	Osc. grid bias	6	G-16092

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27*b*.—(Cont'd.)

Mine Detector Model M-1, Detector Sets SCR-625-A and SCR-625-C—Table of Replaceable Parts

Circuit Symbol	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
9(R3)	3Z6804A7-3	Resistor	½ Watt, 4,700,000 ohms insulated carbon. Type C ½. ¾" x .215 dia.	2nd grid resistor	6	G-16088
10-1(R6)	3Z6801-16	Resistor	½ Watt, 1,000,000 ohms insulated carbon. Type C ½. ¾" x .215 dia.	1st grid decoupling	6	G-16089
10-2(R7)	3Z6801-16	Resistor	Same as 10-1	2nd grid decoupling	6	G-16089
11(R1)	3Z6010-10	Resistor	½ Watt, 100 ohms insulated carbon. Type C ½.	Test coil load resistor	9	G-16354
12(R10)	2Z7279-12	Potentiometer	1 Watt, 750 ohms wire wound variable .Type 1-7821. 1⅝" dia., ⅜" lg. shaft.	Grid bias voltage compensator	4	G-16169
13(C2)	3DA1-13	Capacitor	Molded mica .001μf 200 V.D.C. Type "W." $^{13}/_{16}$" sq. x $^{9}/_{32}$".	1st grid tuning capacitor	16	G-16097
14-1(C7)	3D9500-81	Capacitor	Molded mica 500μf 200 V.D.C. Type "O." $^{11}/_{16}$" lg. x $^{7}/_{16}$" W. x $^{3}/_{16}$" th.	Plate to grid coupling	16	G-16095
14-2(C12)	3D9500-81	Capacitor	Same as 14-1	Osc. grid tuning	16	G-16095
15(C1)	3D9800V	Capacitor	200 $\mu\mu$f $^{13}/_{16}$" x ¾" x ⅜" mcia, variable	1st plate inductance trimmer	15	G-16094
16(C9)	3D9800-6	Capacitor	Molded mica 800μf 200 V.D.C. Type "O." $^{11}/_{16}$" lg. x $^{7}/_{16}$" W. x $^{3}/_{16}$" th.	2nd plate inductance tuning	16	G-16096
17(C15)	3DA10-162	Capacitor	Molded paper .01μf 200 V.D.C. ⅞" lg. x $^{9}/_{16}$" W. x ¼" th. Type 339	Osc. plate tuning	11	G-16407
17*a*(C13)		Capacitor	2000 μf—mica. ¾" x ¾" ± 10%	Osc. plate tuning	16	G-16098

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Circuit Symbol	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
18(C10)		Capacitor	1μf—400 V. 2" x 1¾" x ⅞" paper, oil filled	Paralleled to produce 1.0 μf across B battery	16	G-16174
19-1(C3)		Capacitor	.02 μf—200 V. 1 7/16" x ¾" x 5/16" paper —10% + 20%	1st grid bias voltage by-pass	11	G-16408
19-2(C4)		Capacitor	.05 μf. —200 V. 1 7/16" x ¾" x 5/16" paper—10% +20%	1st screen voltage by-pass	11	G-16410
19-3(C5)		Capacitor	Same as 19-2	2nd grid bias voltage by-pass	11	G-16410
19-4(C6)		Capacitor	.25 μf. —200 V. 1 7/16" x ¾" x ⅜" paper—10% +20%	2nd screen voltage by-pass	11	G-16412
19-5(C8)		Capacitor	.05 μf. —200 V. 1 7/16" x ¾" x 5/16" paper—10% +20%	1st plate voltage by-pass	11	G-16410
19-6(C11)	3DA100-112	Capacitor	Molded paper .1 μf 200 V.D.C. Type 345. 1 7/16" lg. x ¾" W. x ⅜" th.	Osc. grid bias voltage by-pass	11	G-16411
19-7(C14)		Capacitor	.04 μf —200 V. 1 7/16" x ¾" x 5/16" —10% +20%	Meter blocking capacitor	11	G-16409
20(V3)	2V1G6GT	Radio Tube	1 G6GT class B power amplifier twin triode	Push-pull oscillator	17	G-16110
21-1(V1)	2T146	Tube VT-146	VT 146 R.F. pentode	1st audio amplifier	17	G-16109
21-2(V2)	2T146	Radio Tube	Same as 21-1	2nd audio amplifier	17	G-16109

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27*b*.—(Cont'd.)

Mine Detector Model M-1, Detector Sets SCR-625-A and SCR-625-C—Table of Replaceable Parts

Circuit Symbol	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
22 (L1) (L2) (L3) (L4)	3C300-446D	Search Coil C-446-(*)	Complete assembly: Small coil 80 turns No. 24 solid en. wire; Medium coil 80 turns No. 24 solid en. wire; large coil 50 turns No. 22 solid en. wire; test coil 1 turn No. 24 all concentrically mounted between two wooden discs, 13" dia. x ¼" thick. "Special"	Transmitter and receiver coils for detection of metal	5	G-16212
23 (M2)	2B2156E	Resonator M-356-(*)	Complete assembly, "Special," consisting of;	Audible indicating device	5	G-16193
23*a*		Receiver R-14	Single headphone 1,000 ohms D.C.	Audible indicating device	14	G-16196
23*b*		Resonator	Female housing. "Special"	Audible indicating device		G-16195
23*c*		Resonator	Male housing. "Special"	Audible indicating device		G-16194
24 (M1)	3F891-12	Meter	0-1.0 ma rectifier type A.C. meter. Radium dial and pointer marked 0, 1, 4, 6, 8, 10. Shaded pole pieces A-132-5. 1,000 ohms D.C. on meter side of rectifier. Type 56. "Special"	Visual indicating device	8	G-16351
25 (P2)	3E4005	Plug and Cable	Female plug No. 6093F molded on 30" 6-conductor cable. "Special"	Connection from amplifier to male plug	12	G-16192

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Circuit Symbol	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
26 (P1)	3E4005-1	Plug and Cable	Male plug No. 6093M molded on 30" 6-conductor cable. "Special"	Connection from search coil to female plug	12	G-16360
27 (S2)	3Z9858-8.1	Switch	On-off toggle switch S.P.S.T. Type 20994. ⅜" shank	Turn off batteries	2	G-16355
28 (S1)	3Z9824-35	Switch	Push button switch. Momentary make contact. "Special"	Sensitivity test switch	7	G-16332
29 (L5)	3C1084F-1	Coil	Fine "X" coil assembly adjustable iron core inside coil consisting of 3 sections of 7 turns No. 24 SSE wire. "Special"	Fine adjustment of reactive component	5	G-16305
30 (L7)	3C1084F-2	Coil	Fine "R" coil assembly adjustable brass core inside coil consisting of 3 sections of 18 turns No. 26 wire. "Special"	Fine adjustment of resistive component	5	G-16306
31 (L6)	3C1084F-3	Coil	Coarse "X" coil assembly adjustable iron core inside coil consisting of 2 sections of 2 layers, 18 turns No. 30 SSE ea.; 2 sections of 2 layers, 9 turns No. 24 SSE ea.	Coarse adjustment of reactive component	5	G-16291
32-1 (A1)	3A30	Battery BA-30	1.5 volt flashlight battery	Osc. filament supply	13	
32-2 (A2)	3A30	Battery BA-30	Same as 32-1	Amp. filament supply	13	
33 (B1)	3A38	Battery BA-38	103.5 volt "B" battery	Plate and screen supply for osc. and amp.	13	

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27*b*.—(Cont'd.)

Mine Detector Model M-1, Detector Sets SCR-625-A and SCR-625-C—Table of Replaceable Parts

Circuit Symbol	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
34 (P3)	2Z7154	Cable Connector	2-prong male plug with 27" 2-conductor cable	Resonator connection	1	
35 (P4)	2Z5526	Plug and Cable	2-prong, female, plug with 18" 2-conductor cable	Resonator connection	1	G-16189
50	2Z4866.8	Gasket	Neoprene, 4½" x 2$^{7}/_{16}$" dia. hole	Indicating meter cover gasket	5	G-16280
51	2Z4866.7	Gasket	Rubber 2⅜" O.D. x 2⅛" I.D.	Indicating meter window gasket "Special"	5	G-16353
52	2Z4866.11	Gasket	Neoprene, 38⅞" x $^{13}/_{32}$½ x 1/16", "Special"	Amp. box seal strip		G-16064
53	2Z4866.13	Gasket	Neoprene $^{13}/_{16}$" dia. hole	Fine compensator seal gasket	5	G-16321
54	6L54003	Gasket	Gum rubber, 9/16" O.D. x $^{13}/_{32}$ x ⅛" "Special,"	Cable clamp nut packing ring	5	G-16270
55	2Z4866.15	Gasket	Neoprene, 6¼" x 3$^{19}/_{32}$" x 1/32" "Spec."	Back cover plate gasket	5	G-16275
56	2C675-1140D/P1	Plug	Plug assembly, consisting of plug, washer, gasket	Coarse compensator plug assembly	5	G-16288 G-16289
57	2Z8501-3	Rubber chassis Mounts	7/16" x ⅜" with 8-32 x ⅜" studs, Style A-320	Shock absorbers for amp. chassis	18	G-16085
58	2C447-41D/T5	Terminal Strip	Nat. linen bakelite strip, 10¼" x ⅞" brackets and lugs, "Special"	Connection from chassis to panel	5	G16181
59	2C447-41D/T6	Terminal Strip	Nat. linen bakelite strip, 3½ x ⅞" with lugs and brackets, "Special"	Capacitor and resistor mounting strip	5	G-16118

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Circuit Symbol	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
60	2Z5788	Knob	Bakelite, Type E-17	Battery compensator knob	10	G-16170
62	2C447-41D/T2	Terminal	Terminal assembly, "Special"	"B" battery positive contact		G-16141
63	2C447-41D/T3	Terminal	Terminal assembly, "Special"	"B" battery negative contact		G-16134
64	2C447-41D/T4	Terminal	Terminal assembly, "Special"	"A" battery positive double contact		G-16151
65	2C447-41D/C2	Terminal	Terminal clip, "Special"	"A" battery negative contact		G-16147
66	2C675-1140D/C2	Clamp	Clamp assembly, "Special," consisting of:	Clamp search coil to extension		G-16256
66*a*		Sleeve Nut	Special threaded brass sleeve	Extension locking nut		G-16264
66*b*		Screw	10—32 machine screw. "Special"	Extension clamp screw		G-16261
66*c*		Nut	10—32 knurled thumb nut. "Special"	Extension clamp nut		G-16262
66*d*		Insert	Washer, 7/8" x 5/8" x 1/4". "Special"	Washer for 66*b* screw		G-16265
67	2Z8899-137	Socket	Octal tube socket, bakelite type 8	Amp. and osc. tube	1	G-17288
68-1		Grommet	Rubber, 9/16" O.D., 13/32" I.D., 1/8" thick	For 6-conductor cable	5	G-16381
68-2		Grommet	Rubber, 9/16" O.D., 13/32" I.D., 3/16" thick	For 6-conductor cable	5	G-16270
69	6Z4871	Grommet	Rubber, 7/16" O.D., 1/4" I.D., 1/8" thick	For 2-conductor cable	5	G-16071
70	2C675-1140D	Control box	Aluminum casting. "Special"	Compensator controls housing	5	G-16273
71		Cover	Aluminum casting. "Special"	Rear cover for control housing	5	G-16274

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27*b*.—(Cont'd.)

Mine Detector Model M-1, Detector Sets SCR-625-A and SCR-625-C—Table of Replaceable Parts

Circuit Symbol	*Stock No.*	*Name of Part*	*Description*	*Function*	*Mfr.*	*Drawing No.*
72		Cover	Zinc casting. "Special"	Meter cover for control housing	5	G-17382
73		Adapter	Aluminum casting. "Special"	Extension handle support	5	G-16286
74		Amplifier Case	Steel box with 14" x 4¾" x 6". "Special"	Amplifier carrying case	5	G-16045
75-1		Cable Clamp Assembly	Bakelite clamp G-16066, G-16067 and associated hardware. "Special"	Amplifier 6-conductor cable clamps	5	
75-2		Cable Clamp Assembly	Same as 75-1	Control box 6-conductor cable clamps	5	
76		Cable Clamp Assembly	G-16069, G-16070. "Special"	Amplifier 2-conductor cable clamping washers	5	
79	6L7032-5.3S	Cable Clamp Assembly	Clamp screw 10—32. "Special"	Instrument chassis clamping screw		G-16156
80	6L75039	Washer	1/16" O.D. x ¼" I.D. x 1/32" th.	Clamp screw washer		G-16157
81	6L7032-16S	Screw	10—32 x 1" flat head machine screw	Bayonet mounting screw		G-16258
82	6L3810-32.1	Nut	10—32 sleeve nut	Bayonet mounting nut		G-16257
83		Tube Socket	Octal, 74-8Z	Shock mounting tube socket	1	G-17491
84		Window	Lucite disc, 2⅜" x .056"	Meter lens		G-16352

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LIST OF MANUFACTURERS' NAMES AND ADDRESSES

1. American Phenolic Corp., 1250 Van Buren St., Chicago, Ill.
2. Arrow-Hart & Hegeman Mfg. Co., Hartford, Conn.
3. Atlantic India Rubber Works, Inc., Chicago, Ill.
4. Clarostat Mfg. Co., 285-287 N. Sixth St., Brooklyn, N. Y.
5. Detrola Corp. 1501 Beard Ave., Detroit, Mich.
6. Erie Resistor Corp., 644 W. 12th St., Erie, Pa.
7. Guardian Electric Mfg. Co., 1632 W. Walnut St., Chicago, Ill.
8. Hickok Electrical Instrument Co., Cleveland, Ohio
9. International Resistance Co., Philadelphia, Pa.
10. Kurz-Kasch Co., 1415 S. Broadway, Dayton, O.
11. Micamold Radio Corporation, Brooklyn, New York
12. Mines Equipment Co., 1909 S. Kingshighway, St. Louis, Mo.
13. Burgess Battery Company, Buffalo, New York
14. Radio Speakers, Inc., 221 E. Cullerton St., Chicago, Ill.
15. F. W. Sickles Co., 300 Main St., Springfield, Mass.
16. Solar Manufacturing Corp., 586 Avenue A, Bayonne, N. J.
17. Tung-Sol Lamp Works, Inc., 95 Eighth Ave., Newark, N. J.
18. United States Rubber Co., 1230 Sixth Ave., New York, N. Y.
19. United Transformer Co., 150 Varick St., New York, N. Y.

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[A.G. 062.11 (10-12-42)]

By Order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff

OFFICIAL:
J. A. ULIO,
Major General
The Adjutant General

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(For explanation of symbols, see FM 21-6)

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SUPPLEMENTARY DATA

INSTRUCTIONS FOR TESTING OPERATION OF SCR-625-(*) USING AMPLIFIER CASE FOR DUMMY MINE

THE FOLLOWING PROCEDURE WILL ENABLE PERSONNEL OPERATING THE MINE DETECTOR SCR-625-(*) TO CHECK THE OPERATION OF THE EQUIPMENT UNDER ACTUAL OPERATING CONDITION, USING THE AMPLIFIER CASE AS A DUMMY MINE. ADJUSTMENTS MADE IN PARAGRAPH A TO I SHOULD BE MADE WHILE HOLDING THE SEARCH COIL AS FAR FROM THE AMPLIFIER CASE AS THE LEADS WILL PERMIT.

(a) Assemble Search Coil C-446-(*) to Control Box BC-1140-(*). (See Par. 6a to 6c.)

(b) Connect Amplifier BC-1141-(*) to Control Box BC-1140-(*). (See Par. 6g to 6j.)

(c) Remove Amplifier BC-1141-(*) from Bag BG-150-(*). Open cover of amplifier and adjust battery compensator to "50" divisions.

(d) Hold exploring-rod assembly with the search-coil disc away from amplifier, and about three feet above the ground (see illustration).

(e) Turn on the detector by means of the ON-OFF switch on the upper right-hand side of the control box.

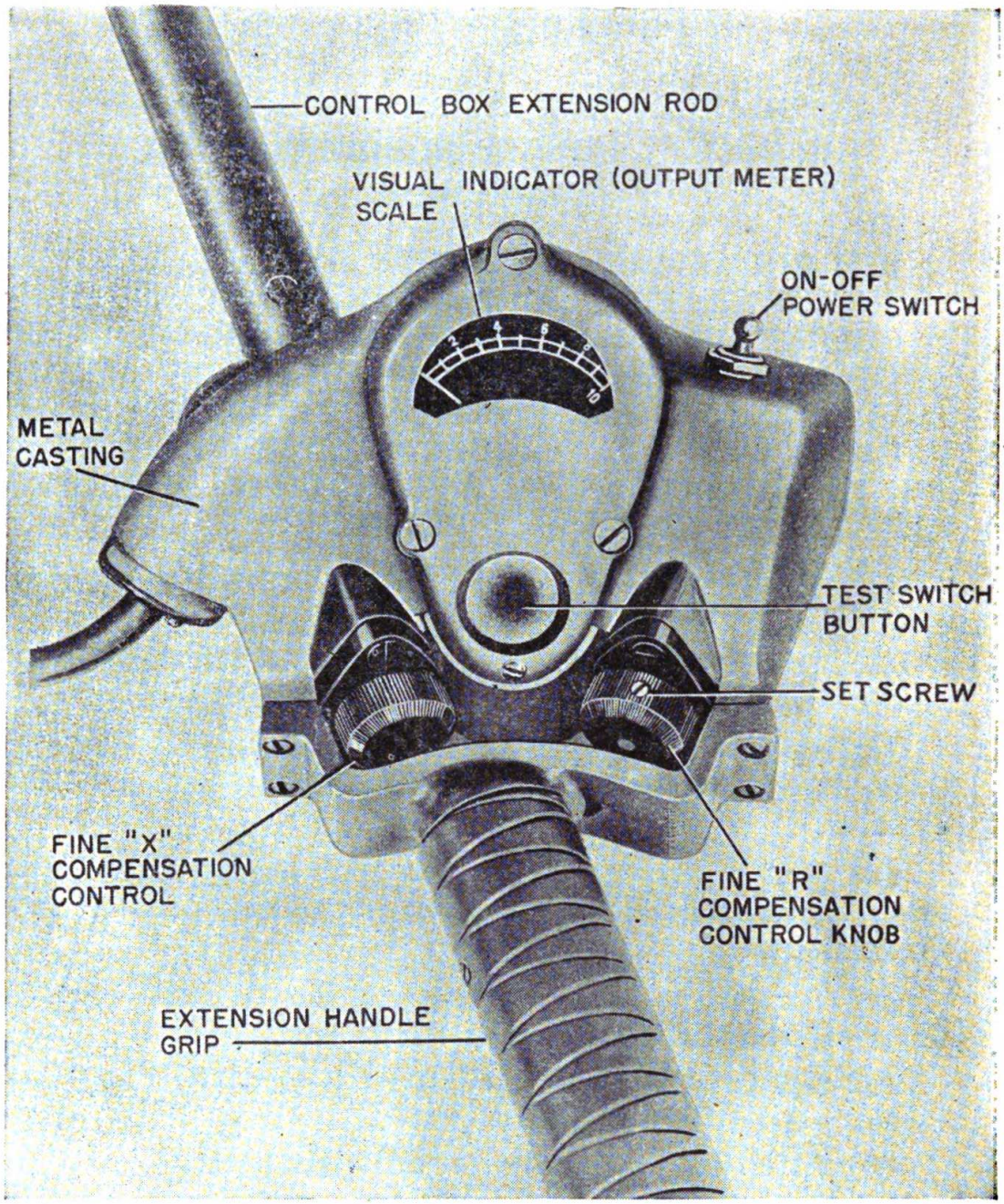
(f) Output meter should now read full scale, and a loud tone should be heard in the Resonator M-356-(*).

(g) Alternately adjust the left and right hand knobs on the control box, until the meter deflection and the sound in the resonator is least. The control knobs should now be approximately four turns out from the full "in" position. Meter should now be indicating zero.

(h) If Search Coil C-446-(*), Control Box BC-1140-(*), or Fine "R" Compensator has been replaced, or if due to ore-bearing soil the fine R control (right hand knob) does not balance at about four turns out, the knob may be adjusted by loosening the set screw (see illustration on following page) and moving the adjustable knob to approximately four turns out.

(i) Press the test-switch button. Meter should read "6" divi-

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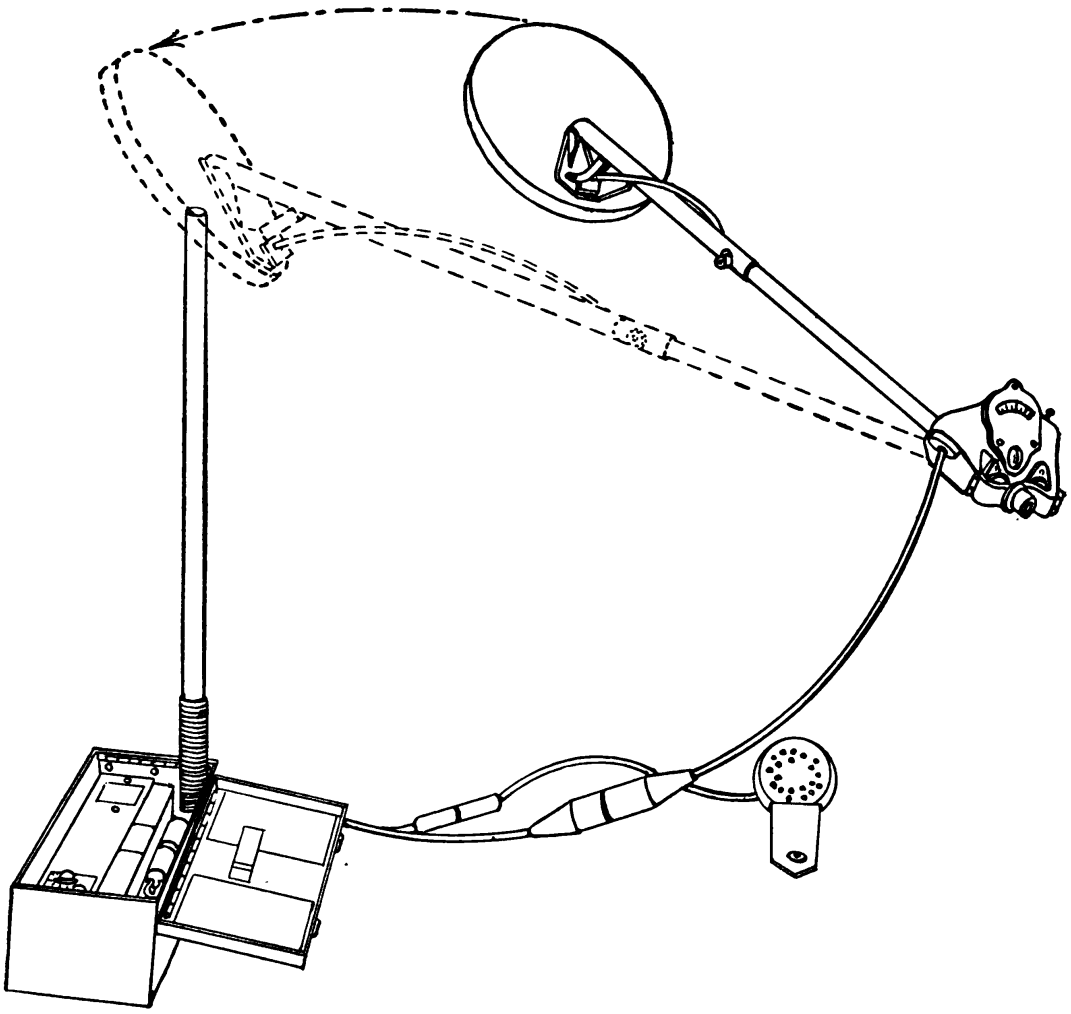
sions indicating proper balance. A clearly audible tone should be heard in the resonator at the same time.

(j) To check the sensitivity of the detector. Insert Handle M-350-(*) with the grip end down, in the battery compartment of the amplifier (see illustration).

(k) Place search-coil disc on upper end of handle as shown in dotted position. A tone equal in volume to that heard with the search-coil in its former test position indicates correct sensitivity, and a standard American anti-tank mine at a distance of 24 inches will produce a sound of equal intensity, and a meter reading of "6" divisions.

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(l) A reading of less than "6" divisions on the meter and a weak tone in the resonator with the search-coil on the handle and the battery compensator at "50" divisions, indicates defective Batteries BA-30 and BA-38. Advance battery compensator to "55" divisions. If meter reads "6," batteries are low, but the detector may still be used. If meter does not read "6," batteries are dead and must be replaced.



SENSITIVITY TEST

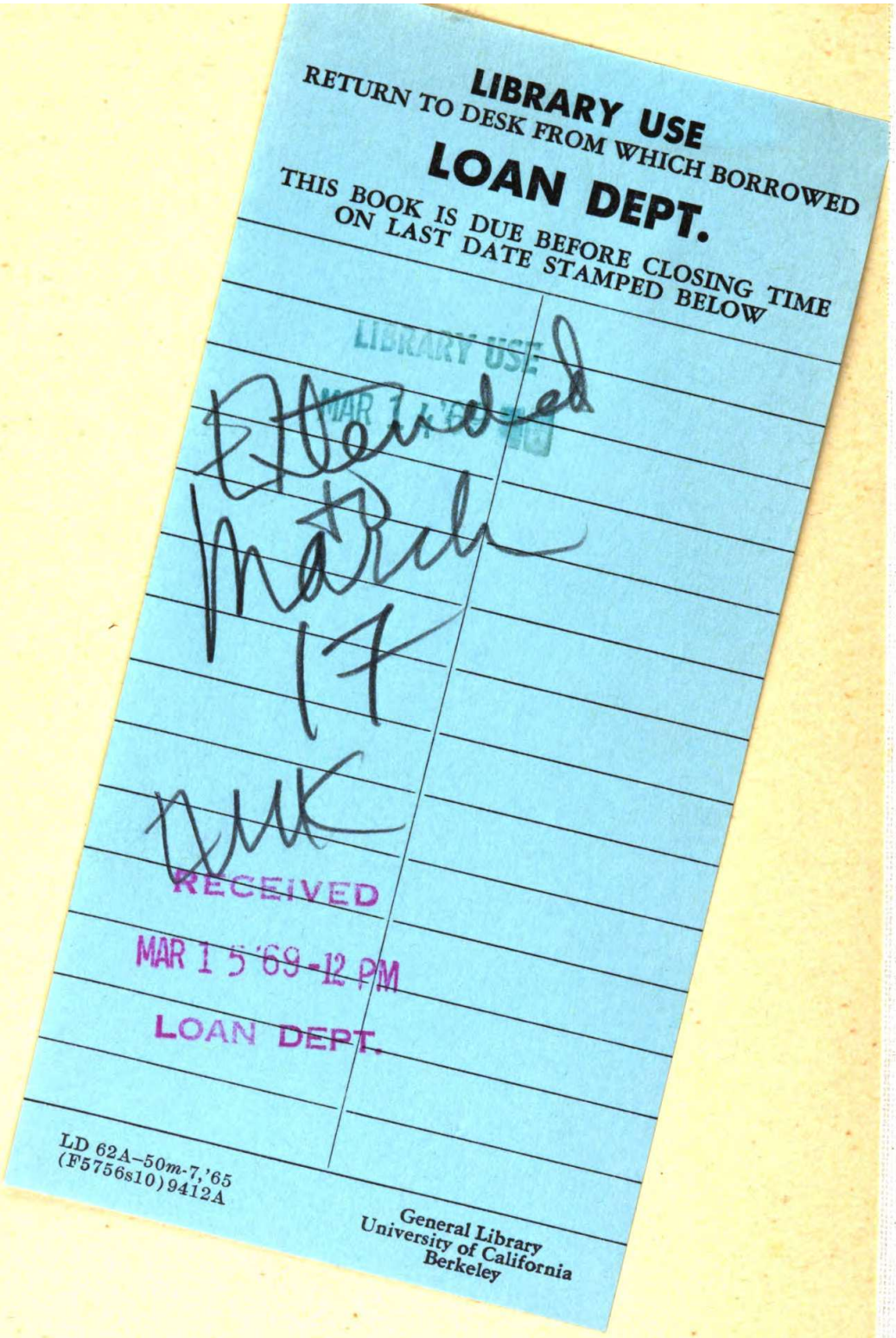
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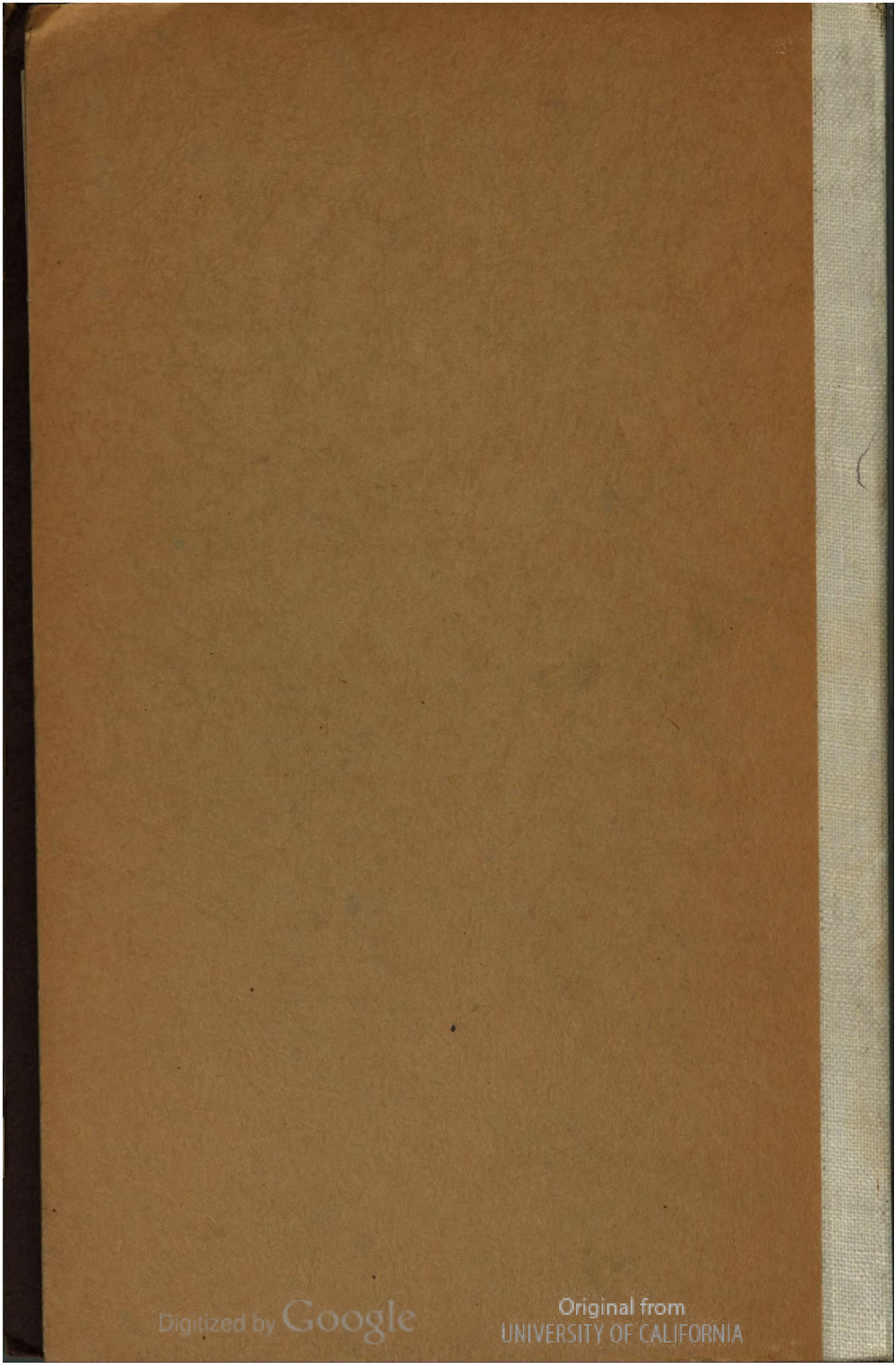


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