(USAF) T. O. 12R2-2AIC2-2
(NAVY) AN 16-30AIC2-3

HANDBOOK
MAINTENANCE INSTRUCTIONS

INTERPHONE EQUIPMENT

AN/AIC-2 AND AN/AIC-2A

PUBLISHED UNDER AUTHORITY OF THE SECRETARY OF THE AIR FORCE
AND THE CHIEF OF THE BUREAU OF AERONAUTICS

20 SEPTEMBER 1945
REVISED 1 JULY 1953

LIST OF REVISED PAGES ISSUED

INSERT LATEST REVISED PAGES. DESTROY SUPERSEDED PAGES.

NOTE: The portion of the text affected by the current revision is indicated by a vertical line in the outer margins of the page.

Page No.	*Date of Latest Revision*
*i	1 July 1953
*ii	1 July 1953
*4-2—5-0	1 July 1953
*5-1	1 July 1953
*5-2A	1 July 1953
*5-2B	1 July 1953
*5-2C	1 July 1953
5-9	21 September 1951
*5-10	1 July 1953
*5-10A	1 July 1953
6-4	13 June 1952
*8-3—8-4	1 July 1953
8-9	13 June 1952

* *The asterisk indicates pages revised, added or deleted by the current revision.*

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LIST OF ILLUSTRATIONS

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, machetes, 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. Burying all debris or disposing of it in streams or other bodies of water, where possible and when time permits.

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 and cut interconnections of 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.
8. Bury or scatter all debris.

DESTROY EVERYTHING!

★

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. Radio 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 Materiel (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.

SECTION I

GENERAL DESCRIPTION

1. GENERAL.

a. Interphone Equipment AN/AIC-2 and AN/AIC-2A are used in high altitude multiplace aircraft to provide interphone communication between the various interphone stations within the airplane. (See fig. 1-1.) Switching facilities for partial control of three complete radio sets and one additional radio receiver are provided.

b. Interphone Equipment AN/AIC-2 is a high impedance equipment and is installed in aircraft in which the output circuits of the interphone amplifier and the radio equipment are connected for high impedance operation. Headset Adapter MC-385-( ) must be used with each Headset HS-33 or Headset HS-38 used with Interphone Equipment AN/AIC-2. Interphone Equipment AN/AIC-2A is a low impedance equipment installed in aircraft in which the interphone implifier and the radio equipments have their output circuits connected for low impedance operation. Either interphone amplifier may be used with either of the subject interphone equipments. The output circut of the amplifier used must be connected to the proper output tap. Jack Box BC-1366 is a part of Interphone Equipment AN/AIC-2 only and must not be used with Interphone Equipment AN/AIC-2A. Jacl: Box BC-1366-M is a part of Interphone Equipment AN AIC-2A but may be used with Interphone Equipment AN/AIC-2 if Jack Box BC-1366 is not available.

c. The gain of Interphone Amplifier AM-26/AIC can be controlled by the manually operated, four-position gain control on the front of the amplifier or by means of Remote Gain Control C-97/AIC-2, if the latter is installed. The gain of Interphone Amplifier AM-26A/AIC is controlled by Automatic Gain Control C-158/AIC which automatically changes the gain at altitudes of approximately 10,000, 20,000 and 30,000 feet. Remote Gain Control C-97/AIC-2 is not used with Interphone Amplifier AM-26A/AIC.

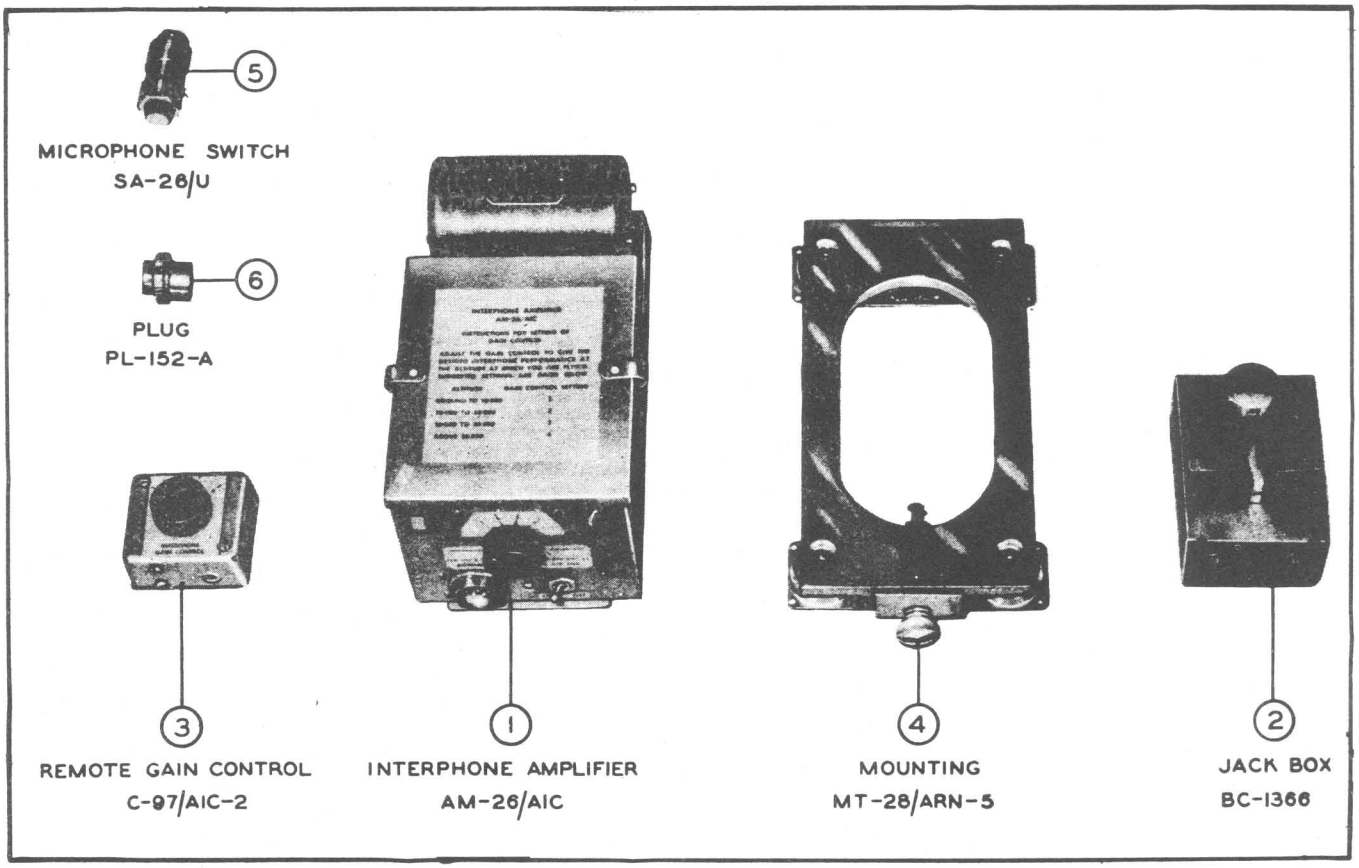


Figure 1-1. Interphone Equipment AN/AIC-2 or AN/AIC-2A—Major Assemblies

d. Either interphone amplifier of the interphone equipments operates from a 24- to 28-volt d-c primary power source. Either interphone amplifier draws approximately 1.7 amperes at 28 volts.

2. EQUIPMENT REQUIRED.

(See tables 1-1 and 1-2.)

Some of the equipment listed in table 1-1 may be supplied as parts of other radio sets or separately.

TABLE 1-1. EQUIPMENT REQUIRED WITH INTERPHONE EQUIPMENT AN/AIC-2

Quantity per Equipment	*Name of Unit*	*Army-Type Designation*	*Navy-Type Designation*	*Overall Dimensions (inches)*	*Weight (pounds)*
1	Interphone Amplifier	AM-26/AIC or	AM-26/AIC or		
	Including:	AM-26A/AIC	AM-26A/AIC	9-3/4 x 5-1/4 x 5-1/8	6.8
2	Tubes	JAN-12J5GT			
2	Tubes	JAN-12A6			
1	Dynamotor	DM-32-A			
1	Mounting	MT-28/ARN-5	MT-28/ARN-5	11-3/4 x 6 x 1-1/4	1.2
As Req.	Remote Gain Control	C-97/AIC-2	C-97/AIC-2	2-3/4 x 2-1/2 x 2-1/16	0.3
1	Plug	PL-152-A		1-1/8 x 1-1/4 dia.	0.06
*	Jack Box	BC-1366		4-11/16 x 3-1/4 x 3-1/16	1.0
* † ‡	Cord	CD-508 or CD-508-A			0.625
* † ‡	Microphone Switch	SA-26/U	SA-26/U		0.22
* † ‡	Microphone Switch	SA-47/AIC	SA-47/AIC		
* † ‡	Cordage	CO-122-A or CO-122-B			0.046/ft.
* † ‡	Cordage	CO-219			0.027/ft.
* † ‡	Plug	PL-68			0.035
* † ‡	Jack	JK-48			0.012
* †	Cord	CD-307-A			
* †	Headset	HS-33			0.7
* †	Headset Adapter	MC-385-( )			0.25
	Headset (in flyer's helmet)	HS-38			0.5
* † ‡	Microphone (in oxygen mask)	AMB-M-C1			0.1

* The quantity required depends upon the installation plan of the airplane. A maximum of 15 stations may be used.

† These items may be supplied as part of Interphone Equipment AN/AIC-2, as part of the radio sets with which they are used, or separately. The exact length of Cord CD-307-A depends on the individual installation.

‡ The following microphones may be used in place of Microphone ANB-M-C1:

(1) Microphone T-30-P, T-30-Q, T-30-R, T-30-S, T-30-U, T-30-V, or T-30-W.

(2) Microphone T-17, T-17B, T-17D, or T-17-E.

Wherever Microphone ANB-M-C1 or Microphone T-30-P, T-30-Q, T-30-R, T-30-S, T-30-U, or T-30-V is used, one of the following microphone cords must be provided (the type of cord required depends upon the installation plan of the airplane):

(*a*) Cord CD-508 or CD-508-A. These cords include Switch SW-141-( ) (any of this series may be used) which provides "ON-OFF" control of the send-receive relay of the radio sets associated with the interphone equipment and provides for the opening and closing of the microphone circuit.

(*b*) A fabricated microphone extension cord, including a suitable control switch such as Microphone Switch SA-26/U supplied as part of the airplane. The fabricated cord requires Jack JK-48 and a length of Cordage CO-219; this cord may also include Plug PL-68 and a length of Cordage CO-122-A or CO-122-B. Headset Adapter MC-385-C or MC-385-D should be used at pilot's and co-pilot's stations where Filter Equipment RC-198 is installed. A headset adapter with any suffix letter (A, -B, -C, -D) may be used at any other stations in the airplane.

TABLE 1-2. EQUIPMENT REQUIRED WITH INTERPHONE EQUIPMENT AN/AIC-2A

Quantity per Equipment	*Name of Unit*	*Army-Type Designation*	*Navy-Type Designation*	*Overall Dimensions (inches)*	*Weight (pounds)*
1	Interphone Amplifier Including:	AM-26/AIC or AM-26A/AIC	AM-26/AIC or AM-26A/AIC	9-3/4 x 5-1/4 x 5-1/8	6.8
2	Tubes	JAN-12J5GT			
2	Tubes	JAN-12A6			
1	Dynamotor	DM-32-A			
1	Mounting	MT-28/ARN-5	MT-28/ARN-5	11-3/4 x 6 x 1-1/4	1.2
As Req.	Remote Gain Control	C-97/AIC-2	C-97/AIC-2	2-3/4 x 2-1/2 x 2-1/16	0.3
1	Plug	PL-152-A		1-1/8 x 1-1/4 dia.	0.06
*	Jack Box	BC-1366 or BC-1366-M		4-11/16 x 3-1/4 x 3-1/16	1.0
* † ‡	Cord	CD-508 or CD-508-A			0.625
* † ‡	Microphone Switch	SA-26/U	SA-26/U		0.22
* † ‡	Microphone Switch	SA-47/AIC	SA-47/AIC		
* † ‡	Cordage	CO-122-A or CO-122-B			0.046/ft.
* † ‡	Cordage	CO-219			0.027/ft.
* † ‡	Plug	PL-68			0.035
* † ‡	Jack	JK-48			0.012
* †	Cord	CD-307-A			
* †	Headset	HS-33			0.7
	Headset (in flyer's helmet)	HS-38			0.5
* † ‡	Microphone (in oxygen mask)	AMB-M-C1			0.1

* The quantity required depends upon the installation plan of the airplane. A maximum of 15 stations may be used.

† These items may be supplied as part of Interphone Equipment AN/AIC-2, as part of the radio sets with which they are used, or separately. The exact length of Cord CD-307-A depends on the individual installation.

‡ The following microphones may be used in place of Microphone ANB-M-C1:

(1) Microphone T-30-P, T-30-Q, T-30-S, T-30-U, T-30-V or T-30-W.

(2) Microphone T-17, T-17B, T-17D, or T-17-E.

Wherever Microphone ANB-M-C1 or Microphone T-30-P, T-30-Q, T-30-R, T-30-U, or T-30-V is used, one of the following microphone cords must be provided (the type of cord required depends upon the installation plan of the airplane):

(*a*) Cord CD-508-A. This cord includes Switch SW-141-( ) (any of this series may be used) which provides "ON-OFF" control of the send-receive relay of the radio sets associated with the interphone equipment and provides for the opening and closing of the microphone circuit.

(*b*) A fabricated microphone extension cord, including a suitable control switch such as Microphone Switch SA-26/U supplied as part of the airplane. The fabricated cord requires Jack JK-48 and a length of Cordage CO-219; this cord may also include Plug PL-68 and a length of Cordage CO-122-A or CO-122-B.

3. DESCRIPTION OF MAJOR ASSEMBLIES.

a. INTERPHONE AMPLIFIER AM-26/AIC.—Interphone Amplifier AM-26/AIC is an audio amplifier contained in an aluminum chassis and housing. (See fig. 1-2.) A "GAIN CONTROL" switch, an "OFF-ON" switch, and an 8-circuit receptacle (for making connections to the amplifier) are mounted on the front of the amplifier. Dynamotor DM-32-A is mounted on the chassis to the rear of the amplifier housing.

b. INTERPHONE AMPLIFIER AM-26A/AIC.—Interphone Amplifier AM-26A/AIC is the same as Interphone Amplifier AM-26/AIC except that it includes Automatic Gain Control C-158/AIC mounted inside the tube compartment on the back end of the housing. (See fig. 1-3.)

c. MOUNTING MT-28/ARN-5.—Mounting MT-28/ARN-5 consists of a formed metal plate mounted on two base assemblies. (See fig. 1-4.) Each base assembly consists of two shockmounts and two grounding straps assembled to a steel base. A thumb screw and clamp assembly on the front of the mounting is used to secure the amplifier to the mounting.

d. REMOTE GAIN CONTROL C-97/AIC-2.—Remote Gain Control C-97 AIC-2 consists of a 4-position rotary switch assembled in a small aluminum box. (See fig. 1-5.)

e. JACK BOX BC-1366.—Jack Box BC-1366 consists of a 5-position rotary switch, a variable resistor, a headset jack, a microphone jack, and plug and jack terminal plates, all housed in an aluminum box. (See fig. 1-6.)

f. JACK BOX BC-1366-M.—Jack Box BC-1366-M is the same as Jack Box BC-1366 except that it has a 10,000-ohm volume control in place of the 150,000-ohm control (resistor RS-232) used in Jack Box BC-1366.

g. MICROPHONE SWITCH SA-26/U.—Microphone Switch SA-26/U is a 2-circuit-to-ground switch, with wiping contacts, contained in a removable, plastic housing. (See fig. 1-8.)

h. MICROPHONE SWITCH SA-47/AIC.—Microphone Switch SA-47/AIC is a 2-circuit-to-ground, foot-operated, pushbutton switch, normally used at the bombardier's position in some airplanes.

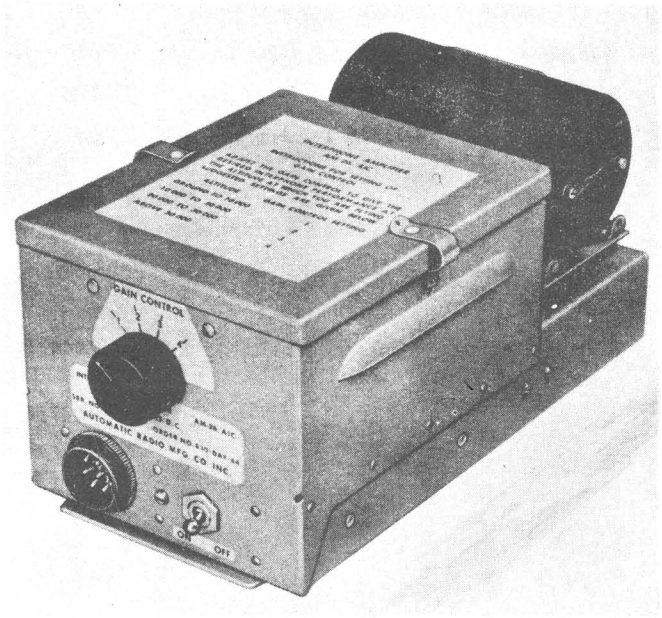


Figure 1-2. Interphone Amplifier AM-26/AIC—Exterior View

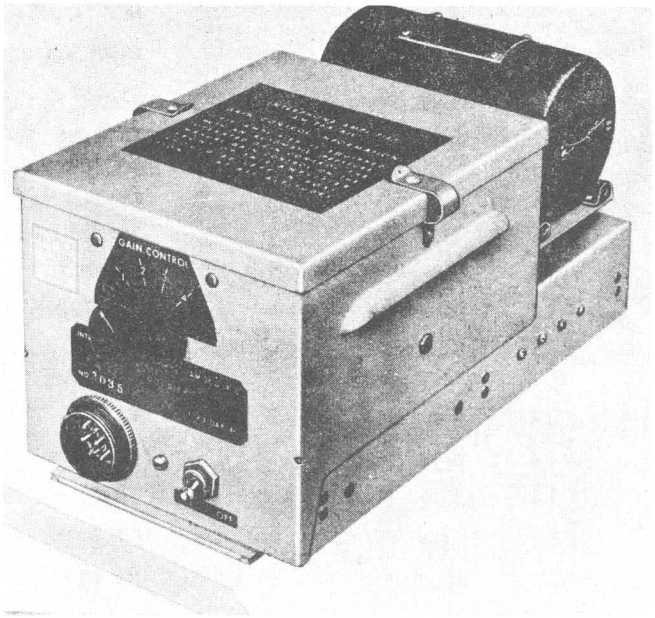


Figure 1-3. Interphone Amplifier AM-26A/AIC—Exterior Front Diagonal View

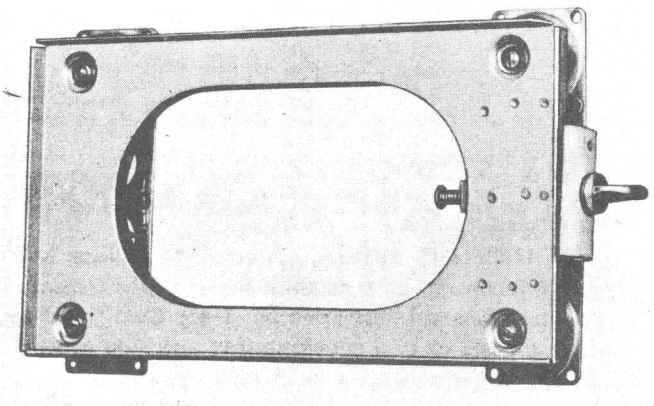


Figure 1-4. Mounting MT-28/ARN-5—Top View

Figure 1-5. Remote Gain Control C-97/AIC-2—Exterior Front Diagonal View

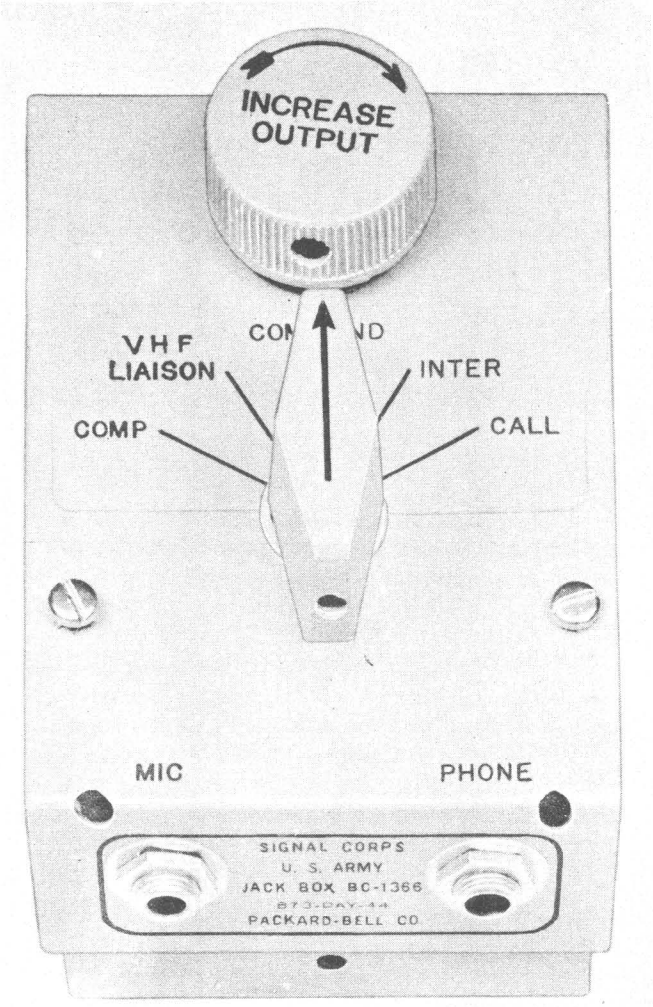


Figure 1-6. Jack Box BC-1366—Exterior Top Diagonal View

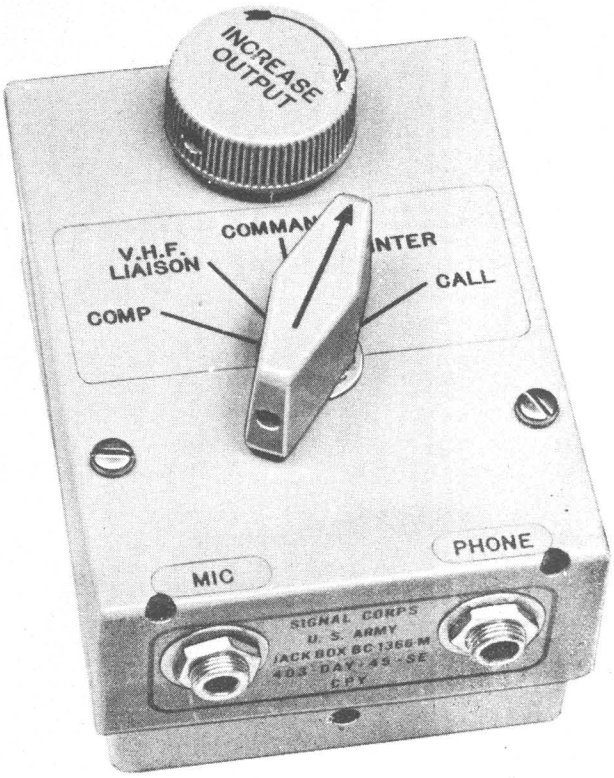
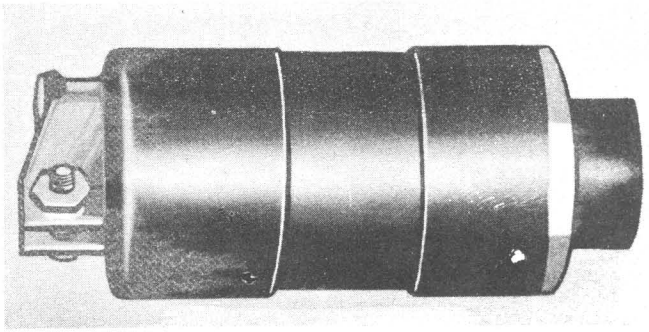


Figure 1-7. Jack Box BC-1366-M—Exterior Top Diagonal View

Figure 1-8. Microphone Switch SA-26/U—Side View



SECTION II

INSTALLATION AND ADJUSTMENT

1. PRE-INSTALLATION BENCH TESTS.

a. ADJUSTMENTS FOR THE OUTPUT TAP. —The interphone amplifier may be supplied with the output circuit connected for either high or low impedance. Amplifiers connected for low impedance at the factory will have a decalcomania stating "NOTICE CONNECTED FOR LOW IMPEDANCE OUTPUT" applied to the upper left corner of the front panel. Before any amplifier is installed in the airplane, check to make certain that the output circuit of the amplifier is properly connected. If there is any doubt as to the output connection of the amplifier, remove the bottom plate and make certain that the lead from terminal 8 of the 8-contact receptacle is connected to the proper tap on output transformer T-102. For high impedance output this lead must be connected to the "H" (high impedance) terminal of the transformer and for low impedance operation this lead must be connected to the "L" (low impedance) terminal of the transformer.

b. OPERATIONAL CHECK. — Both interphone amplifiers should be given a pre-installation bench test in accordance with the following:

(1) Connect the amplifier in the test circuit as shown in figure 6-1.

(2) With the "GAIN CONTROL" switch on the amplifier in position "1," the remote control in position "1," and switch S (test circuit) in position "M," close the microphone switch and speak into Microphone T-17. An accurate reproduction of the speaker's voice should be heard in the headset.

(3) Switch the "GAIN CONTROL" on the amplifier from position "1" to position "2," "3," and "4," in sequence, while speaking into the microphone and make certain that there is a noticeable increase in volume for each successively higher position of the gain control switch. Make this test while speaking at a constant voice level and at lower than normal volume to prevent uncomfortably high output from the headsets on the higher positions of the gain control.

(4) Return the "GAIN CONTROL" switch on the amplifier to position "1" and repeat the above test using the remote gain control. This test is not applicable for Interphone Amplifier AM-26A/AIC.

2. INSTALLATION.

a. PREPARATION FOR INSTALLATION.

(1) Mounting MT-28/ARN-5, for Interphone Amplifier AM-26/AIC is already drilled for mounting to the aircraft and requires no additional preparation. (See fig. 1-4.)

(2) The plate assembly for Remote Gain Control C-97/AIC-2 is already drilled for mounting and requires no additional preparation.

(3) Jack Box BC-1366 or BC-1366-M must be prepared for installation. Punch or drill the necessary holes for mounting and wiring the jack box. Place the various holes so that the interconnecting wires, grommets, and mounting screws will not interfere with the jack terminal plate, wiring, or internal components of the cover assembly of the cover to the box.

b. LOCATION OF MAJOR ASSEMBLIES.

(1) Install Mounting MT-28/ARN-5 (for interphone amplifier) convenient to the radio operator. Place the mounting in a horizontal position and in a location where the interphone amplifier will be readily accessible during flight, permitting adjustments of the gain control and access to the tubes. (See fig. 8-6.)

(2) If it is not possible to install the mounting so that Interphone Amplifier AM-26/AIC will be within reach of the radio operator, Remote Gain Control C-97/AIC-2 may be required. Mount the remote gain control so that it can be operated conveniently by the radio operator. Remote Gain Control C-97/AIC-2 is not required or usable when Interphone Amplifier AM-26A/AIC is installed.

(3) Mount the jack boxes in locations which are readily accessible to the using personnel. (See fig. 8-7.)

c. ASSEMBLY.—Assemble the interphone amplifier to the mounting as follows:

(1) Loosen the thumb screw on the front of the mounting.

(2) Place the amplifier on the mounting and tighten the thumb screw until the interphone amplifier is secured to the mounting. (See fig. 8-5.)

d. WIRING.—After the interphone amplifier, remote gain control (if required) and jack boxes have been mounted in the proper locations in the airplane, interconnect them with Air Corps wire (specification AN-J-C-48) in compliance with specification AN-W-14. (See fig. 8-1.) Form a *drip loop* in the cable whereever it enters a jack box, to prevent water from flowing into the jack box. Wire the circuits in accordance with standard Air Force or Signal Corps drawings. Use shielded wire for all microphone wiring between jack boxes and between the jack boxes and the inter-

phone amplifier. If the remote gain control is installed, use individually shielded wires to interconnect the interphone amplifier and remote gain control. Bond all shields together and ground them.

(1) Connect all incoming wires for the jack boxes to the soldering lugs on the underside of the jack terminal plate. The jack terminal plate is mounted on the bottom of the box and may be removed from the box when making the connections.

(2) In general for the radio operator's jack box, wire the liaison radio set to the liaison-VHF terminals of the jack box (terminals 2, 6, and 8) and connect the audio output of the VHF radio set to the spare call circuit (terminal 7). Mark out the letters "VHF" on the cover of the jack box with black lacquer.

(3) Generally for all other jack box stations in the airplane, connect the VHF radio set to the liaison-VHF terminals of the jack box (terminals 2, 6, and 8) and wire the audio output of the liaison radio set to the spare call circuit (terminal 7). Mark out the word "LIAISON" on the cover of the Jack box with black lacquer.

(4) Since the installation of this equipment varies with different airplane types, the installation drawings and mockup information for each particular airplane type should be consulted for detailed information as to the required interconnecting wiring.

e. PREPARATION OF MICROPHONE EXTENSION CORD.—If the microphone extension cord consists of Jack JK-48, a length of Cordage CO-219, Microphone Switch SA-26/U, (see fig. 2-1) a length of Cordage CO-122-A or CO-122-B and Plug PL-68, assemble the cord in the following manner:

Note

In some installations, Microphone Switch SA-47/AIC may be used instead of Microphone Switch SA-26/U.

(1) Strip away the jacket of the cordages at each end a sufficient length to allow for making the necessary connections. Care must be taken not to cut or damage the insulation on the individual conductors nor to disturb the lay of the conductors at the ends of the jackets.

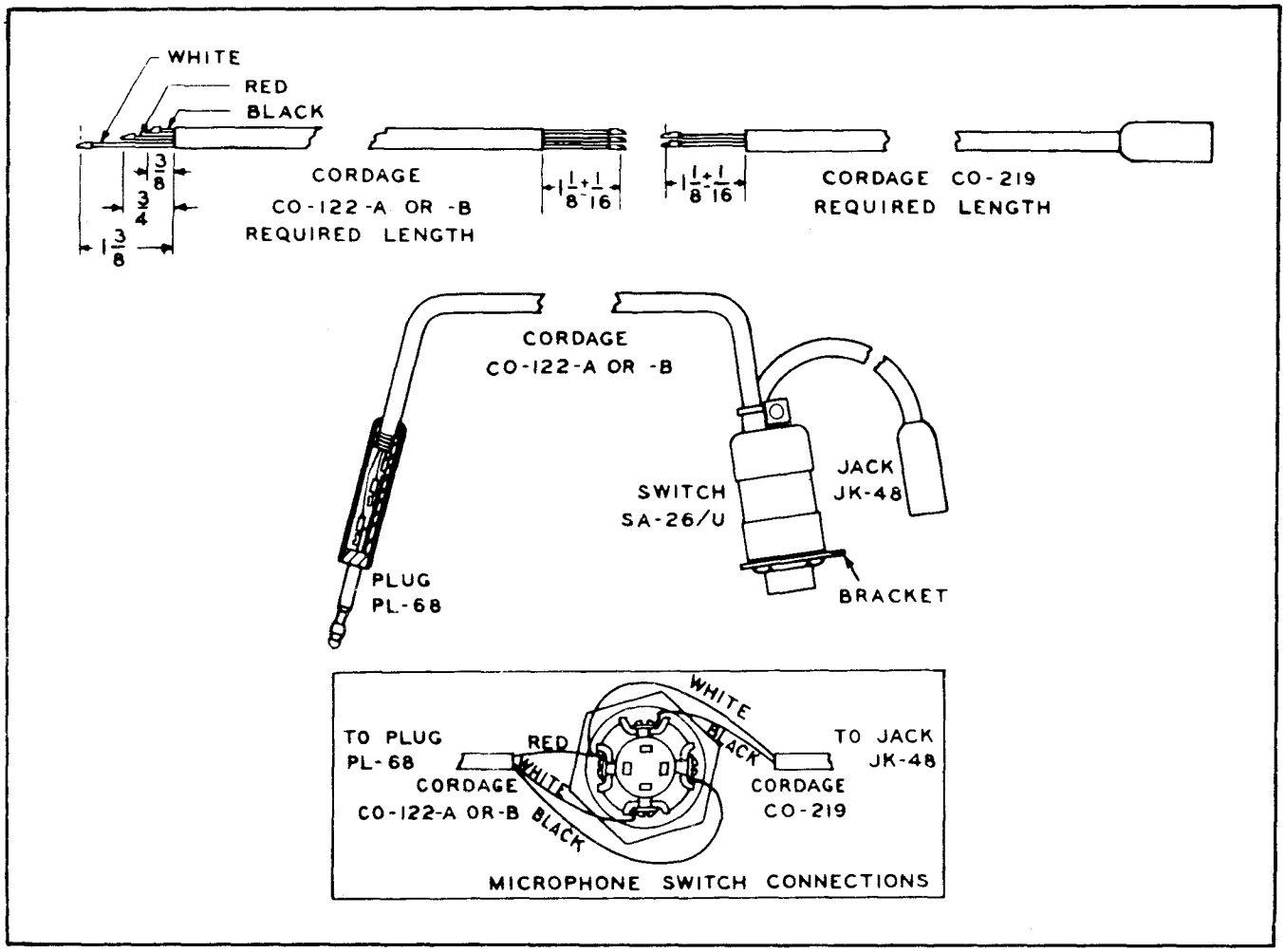


Figure 2-1. Microphone Extension Cord Assembly

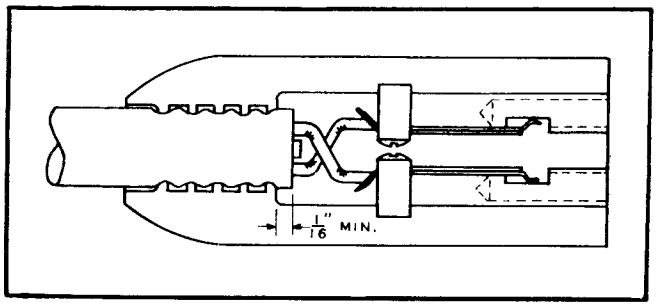


Figure 2-2. Assembly of Jack JK-48—Inside View

(2) Solder the leads on one end of Cordage CO-219 to the pin jacks of Jack JK-48.

(3) To assemble Jack JK-48 (see fig. 2-2), place a piece of ½-inch thick felt in a flat-bottomed metal container and fill the container with butyl acetate up to one half the thickness of the felt pad. Place the two halves of the shell for Jack JK-48 face down on the felt pad and press them lightly. Remove one shell from the pad after 15 to 30 seconds and place the pin jacks in this shell as shown in figure 2-2. After 30 to 60 seconds, remove the second half of the shell from the felt pad and assemble it to the first half. Place the entire assembly in a clamping fixture and apply suitable pressure for 15 to 30 minutes, in order to securely bond the assembly together. Buff and polish or otherwise remove rough edges after bonding is complete.

Note

The time intervals given above are only approximate; they must be controlled in such a manner as to insure a complete and secure assembly. The use of solvents or softening agents other than butyl acetate or cordages other than Cordage CO-219 will not be satisfactory.

(4) Remove the cordage clamp from the case of Microphone Switch SA-26/U and screw the case off the switch.

(5) Pull the other end of Cordage CO-219 through the cordage hole in the case for Microphone Switch SA-26/U and through the switch mounting hole in the bracket used to assemble the switch to the gun mount, or other point of location. Solder proper terminals to both conductors. Connect the white conductor to terminal X and the black conductor to terminal 1 of the switch.

(6) Pull the end of Cordage CO-122-A or CO-122-B through the cordage hole in the switch case and through the hole in the bracket. Solder suitable terminals (TM-50) to the conductors. Connect the red conductor of the cord or cordage to terminal X, the white conductor to terminal 2, and the black conductor to terminal G of the switch.

(7) Make sure that terminals are properly located, that a lockwasher is under the head of each screw, and that all four screws are securely tightened.

(8) Assemble the switch and case to the mounting bracket and tighten securely. Holding the switch fixed, thread the case onto the switch until one of the notches in the switch case engages with the punched lug on the mounting bracket. Then secure the assembly by tightening the hexagonally headed portion of the switch. Turn the cords in the case at the same time the switch is being rotated in tightening.

(9) Place the cordage clamp on the switch case and clamp the cords by securely tightening the screw. Properly clamped cords will require at least a 12-pound force to pull the cords out of the switch case.

(10) Slip the plug shell for Plug PL-68 onto the cordage.

(11) Connect the other end of Cordage CO-122-A or CO-122-B to Plug PL-68. Solder Terminals TM-89 of Plug PL-68 to the conductors of Cordage CO-122-A or CO-122-B, as shown in figure 2-1. Connect the white conductor to the tip, the red conductor to the ring, and the black conductor to the sleeve.

(12) Clamp or serve the cordage securely to the plug and thread shell tightly onto plug. Cordage properly clamped or served will require at least a 12-pound force to pull the cordage from the plug.

(13) Test cord for shorts and continuity with an ohmmeter.

f. PREPARATION OF CORD CD-307-A (HEADSET EXTENSION). (*See figure 2-3*)—Cord CD-307-A consists of a Plug PL-55, a length of Cordage CO-119-A or CO-119-B and a Jack JK-26. Assemble the cord in the following manner:

(1) Strip the jacket at each end of the cordage a sufficient length to allow for making the necessary connections. Do not cut or damage the insulation on the individual conductors or disturb the lay of the conductors at the ends of the jacket.

(2) Slip the shells for the plug and jack onto the cordage.

(3) Solder terminals to both conductors on each end. Terminals are furnished assembled to the plug and jack.

(4) Connect one end of the cordage to Plug PL-55 and the other end to Jack JK-26 as indicated in figure 2-3. In wiring Cordage CO-119-A or CO-119-B to Plug PL-55, connect the white conductor to the tip and the black conductor to the sleeve. In wiring Cordage CO-119-A or CO-119-B to Jack JK-26, connect the white conductor to the contact spring and the black conductor to the sleeve.

(5) Clamp or serve the cordage to the plug and to the jack, and assemble proper shells on the plug and jack. Cordage properly clamped or secured will

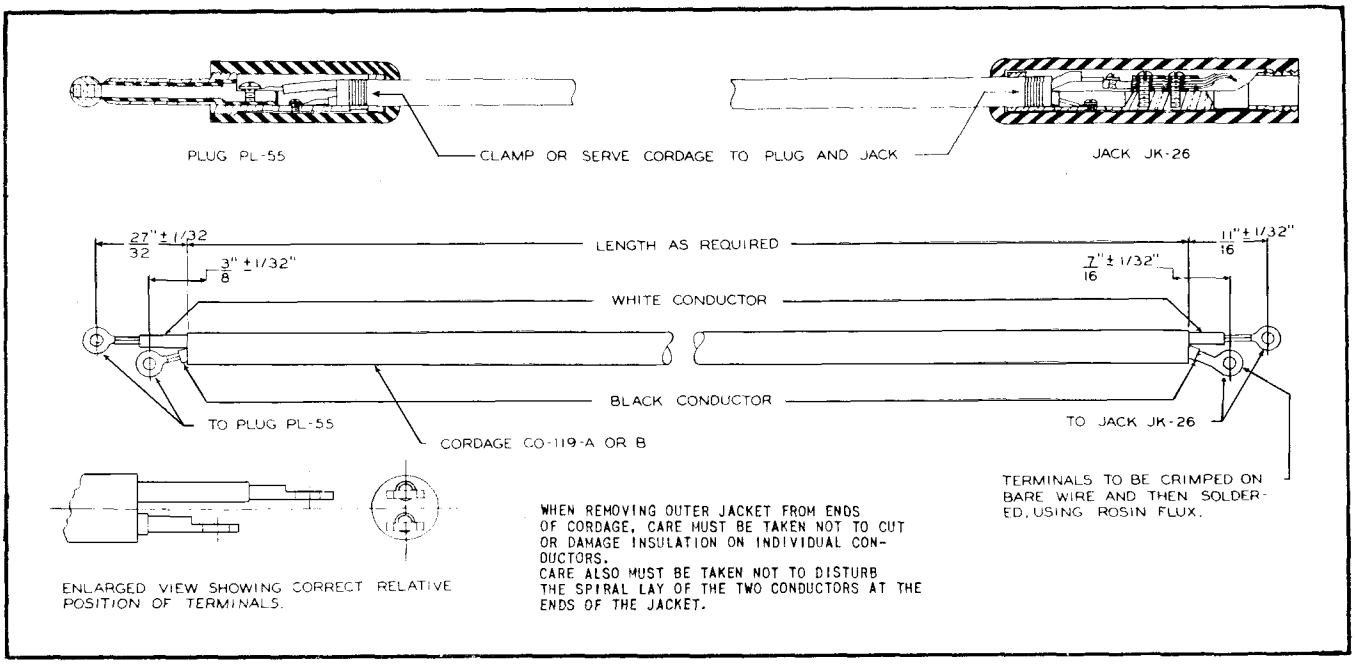


Figure 2-3. Cord CD-307-A—Headset Extension Cord Assembly Wiring Diagram

require at least a 12-pound force to pull the cordage from the plug or jack.

(6) Test cord for shorts and continuity with an ohmmeter.

g. SAFETY WIRING.—After the installation has been completed, safety wire the equipment as follows:

(1) Safety-wire the "ON-OFF" switch on front panel of the interphone amplifier in the "ON" position.

(2) If remote Gain Control C-97/AIC-2 is used, safety-wire the gain control on Interphone Amplifier AM-26A/AIC in position "1."

(3) If Interphone Amplifier AM-26A/AIC is used, safety-wire its manual gain control in position "1."

Note

When safety-wiring the manual gain control in position "1," and the "ON-OFF" switch "ON," pass the safety-wire through the holes in the gain control knob, the hole in the "ON-OFF" switch, and the hole in the safety-wire anchoring screw to the left of the "ON-OFF" switch and secure suitably.

(4) Safety-wire Tinnerman fasteners on top of the interphone amplifier to each other.

(5) Safety-wire thumb screw on Mounting MT-28/ARN-5 to the clamp.

3. AFTER-INSTALLATION CHECK.

a. INTERPHONE AMPLIFIER.

(1) Turn the interphone equipment on.

(2) Place the selector switch on the radio operator's "H" jack box in the "INTER" position.

(3) For Interphone Amplifier AM-26/AIC, switch the gain control on the interphone amplifier, or the remote gain control, when it is used, from position "1" to positions "2," "3," and "4," while speaking into the radio operator's microphone.

(4) Listen to the output of the interphone amplifier and make certain that there is a noticeable increase in volume for each successively higher position of the gain control switch.

(5) For Interphone Amplifier AM-26A/AIC, speak into the radio operator's microphone while listening on the radio operator's headset. The audio output signal should be an accurate reproduction of the speech impressed on the microphone.

b. JACK BOX.

(1) Turn on all radio sets associated with this interphone equipment.

(2) Check the equipment for operation of all circuits at all positions of the selector switch on each jack box installed in the airplane. (Refer to sec. III, par. 3.)

SECTION III

OPERATION

1. STARTING AND STOPPING EQUIPMENT.

a. STARTING THE EQUIPMENT.—To start the interphone amplifier, place the main airplane battery switch in the "ON" position. Make certain the "ON-OFF" switch on the interphone amplifier is in the "ON" position (normally, this switch will be safety-wired in the "ON" position).

b. STOPPING THE EQUIPMENT.—To stop the interphone amplifier, place the main airplane battery switch in the "OFF" position. To turn off the interphone amplifier in case of an emergency, remove the safety wire from the "ON-OFF" switch on the front panel of the amplifier and place the switch in the "OFF" position.

Note

In case the main airplane battery switch is to be left on for an extended period of time and the interphone amplifier is not to be used, remove the safety-wire from the "ON-OFF" switch on the front panel of the interphone amplifier and place the switch in the "OFF" position. When normal operation is resumed place the "ON-OFF" switch on the interphone amplifier in the "ON" position and safety-wire in place.

2. OPERATING INTERPHONE AMPLIFIER AM-26/AIC.

Adjust the "GAIN CONTROL" on the interphone amplifier or Remote Gain Control C-97/AIC-2 (if installed), to the switch position which provides the best interphone signal for the altitude at which the airplane is flying. (See table 3-1.)

TABLE 3-1. SUGGESTED GAIN CONTROL SETTINGS

Altitude	*Gain Control Setting*
Ground to 10.000 ft.	1
10,000 to 20,000 ft.	2
20,000 to 30,000 ft.	3
Above 30,000 ft.	4

3. OPERATING INTERPHONE AMPLIFIER AM-26A/AIC.

Interphone Amplifier AM-26A/AIC is equipped with Automatic Gain Control C-158/AIC which automatically changes the gain of the amplifier at altitudes of approximately 10,000, 20,000 and 30,000 feet. Leave the manual gain control on the front of the amplifier in position "1" at all times, unless the automatic gain control fails to operate or unless the output of the amplifier at a particular altitude is less than that required for satisfactory communication. When Automatic Gain Control C-158/AIC is operating properly, it will not be possible to reduce the gain by means of the manual gain control. The gain will be controlled by the switch that is in the highest gain position, that is, if the automatic gain control is in position "3" (20,000 foot switch closed) and the manual gain control is in position "2," the gain of the amplifier will be the value obtained from position "3."

4. OPERATING FROM JACK BOX POSITIONS (TYPICAL INSTALLATION).

(*See figures 1-6 and 1-7.*)

CAUTION

In order to insure satisfactory operation of this equipment, do not close more than one microphone switch at a time on any one facility.

When the interphone system and the radio sets interconnected therewith are properly installed, connected and operating, operation of the various facilities will generally be in accordance with the following procedure. In some aircraft, the installation may differ slightly from that indicated by this handbook, in which case determine the operating procedure from the available drawings on the particular type of aircraft involved.

a. COMPASS.—To use the radio compass proceed as follows:

(1) Place the selector switch in the "COMP" position. The audio output of the compass receiver will be heard in the headset.

(2) Adjust the "INCREASE OUTPUT" control on the jack box for desired output level. The maximum signal available will depend on the setting of the receiver volume control. The microphone does not operate in this position.

b. VHF (FOR JACK BOX STATIONS OTHER THAN THE RADIO OPERATOR'S).—To use the VHF radio set proceed as follows:

(1) Place the selector switch on the jack box in the "VHF" position. The audio output of the VHF command radio set will be heard in the headset.

(2) Adjust the "INCREASE OUTPUT" control on the jack box for desired output level. The maximum signal available will depend on the setting of the receiver volume control.

(3) To transmit on the VHF command set, close the microphone switch and speak into the microphone. The transmitter will be modulated and the voice output of the sidetone circuit will be heard in the headset.

c. LIAISON (RADIO OPERATOR'S STATION ONLY).—To use the liaison radio set proceed as follows:

(1) Place the selector switch on the jack box in the "LIAISON" position. The audio output of the liaison radio set will be heard in the headset.

(2) Adjust the "INCREASE OUTPUT" control, on the jack box, for desired output level. The maximum signal available will depend on the setting of the receiver volume control.

(3) To transmit on the liaison radio set, close the microphone switch and speak into the microphone. The transmitter will be modulated and the voice output of the sidetone circuit will be heard in the headset provided the "TONE-CW-VOICE" switch on the transmitter is in the "VOICE" position.

d. COMMAND.—To use the command radio set proceed as follows:

(1) Place the selector switch on the jack box in the "COMMAND" position. The audio output of the command radio set will be heard in the headset.

(2) Adjust the "INCREASE OUTPUT" control, on the jack box, for desired output level. The maximum signal available will depend on the setting of the receiver volume control.

(3) To transmit on the command radio set, close the microphone switch and speak into the microphone. The transmitter will be modulated and the voice output of the sidetone circuit will be head in the headset, provided the emission selector switch ("TONE-CW-VOICE" switch or "VOICE-CW-MCW" switch, as applicable) on the transmitter is in the "VOICE" position.

e. INTERPHONE.—To use the interphone circuit proceed as follows:

(1) Place the selector switch on the jack box in the "INTER" position. Any voice conversations on the interphone circuit will be heard in the headset.

(2) To talk on the interphone circuit, close the microphone switch and speak into the microphone.

(3) The "INCREASE OUTPUT" control is not effective when the selector switch is in the "INTER" position.

(4) If the crew member to be called does not have the selector switch on his jack box in the interphone position proceed as indicated in *f*, below.

f. CALL.—To call a crew member who has the selector switch on his jack box in some position other than "INTER" proceed as follows:

(1) Hold the selector switch on the jack box in the "CALL" position.

(2) Close the microphone switch and call the other crew member.

(3) The crew member should place the selector switch on his jack box in the "INTER" position and answer the call. Then the crew member making the call should release the selector switch on his jack box, place the switch on the "INTER" position, and continue the conversation on the interphone channel.

Note

Since the "CALL" facility interrupts the radio channels of all the crew members it should be used only as a calling circuit.

5. FACILITIES AVAILABLE AT VARIOUS STATIONS.

Table 3-2 shows the facilities which are normally available when using the interphone equipments.

In some aircraft, the facilities may differ somewhat from those indicated below, in which case the applicable drawings for the particular airplane type should be consulted to determine the available facilities.

TABLE 3-2. FACILITIES AVAILABLE AT VARIOUS STATIONS

Station	*Equipment*	*Facilities*	*Jack Box Setting*
Pilot Co-pilot Nose Observer	Radio Set SCR-274-N	Transmission and reception	"COMMAND"
	Radio Set SCR-522-A	Transmission and reception	"VHF"
	Liaison	No facilities	None
	Compass	Reception	"COMPASS"
	Interphone		"INTER"
	Call	Call all crew members	"CALL"
Navigator Bombardier	Radio Set SCR-274-N	Transmission and reception	"COMMAND"
	Radio Set SCR-522-A	Reception only	"VHF"
	Liaison	No facilities	None
	Compass	Reception	"COMPASS"
	Interphone		"INTER"
	Call	Call all crew members	"CALL"

Station	*Equipment*	*Facilities*	*Jack Box Setting*
Radio Operator	Radio Set SCR-274-N	Transmission and reception	"COMMAND"
	Radio Set SCR-522-A	No facilities	None
	Liaison	Complete control (Transmit-Receive)	"LIAISON"
	Compass	Reception	"COMPASS"
	Interphone		"INTER"
	Call	Call all crew members	"CALL"
Gunners, etc. (In Aft Positions)	Radio Set SCR-274-N	Transmission and reception	"COMMAND"
	Radio Set SCR-522-A	Reception only	"VHF"
	Liaison	No facilities	None
	Compass	Reception	"COMPASS"
	Interphone		"INTER"
	Call	Call all crew members	"CALL"

Note

It is possible to have interphone communication between any two jack boxes which are switched to the interphone position.

In case there is no forward observer on some airplanes, the facilities shown for the observer in the above table are furnished in the bombardier's jack box. On medium bombardment aircraft no provisions are made for a forward observer.

SECTION IV

THEORY OF OPERATION

1. GENERAL.

a. Interphone Equipment AN/AIC-2 and AN/AIC-2A are interphone systems designed for use in high altitude multiplace aircraft.

b. The interphone amplifiers are two-stage audio amplifiers utilizing two tubes JAN-12J5GT (V-101-1 and V-101-2) and two tubes JAN-12A6 (V-102-1 and V-102-2). The input circuit is designed for standard carbon microphones. The output circuit supplies sufficient power to operate (in parallel) fifteen Headset HS-33 or HS-38, each with an associated Headset Adapter MC-386-(*), when connected for high impedance output; or fifteen Headset HS-33 or HS-38 when connected for low impedance output.

2. DETAILED FUNCTIONING.

(*See figures 8-2 and 8-3.*)

Note

Interphone Amplifier AM-26/AIC has been produced with two different series of reference numbers. All amplifiers manufactured on Orders 828, 829, and 830-DAY-44 and a limited quantity on Orders 363 and 667-DAY-45 are marked with reference numbers ranging from 1 to 61. Remaining Interphone Amplifier AM-26/AIC produced on Orders 363 and 667-DAY-45 and Interphone Amplifier AM-26A/AIC are marked with reference numbers including a prefix letter and a number in the 100 to 199 series. The latter numbering system is used in the text of this handbook. A correlation between the two sets of reference numbers is found in section VII, paragraph 3C.

a. Primary power for the amplifier is obtained from the aircraft battery (28 volt d-c system) through the main battery switch. The power enters the amplifier through Plug PL-152-A and 8-circuit receptacle X-101 on the front of the amplifier. The "ON-OFF" switch S-101 on the front of the amplifier connects the power to the amplifier components when in the "ON" position. Primary power (28 volts d-c) is supplied to the filaments of the tubes (connected in a series-parallel arrangement) through 10-ohm filament dropping resistor R-113. Primary power is supplied to the low voltage winding of the dynamotor through a radio frequency audio frequency filter net work, consisting of the 100- to 112-microhenry choke L-101-2, the 10-microfarad electrolytic capacitor C-105-1, the 750 or 820-micromicrofarad mica capacitor C-106-1 a second 100- to 112-microhenry choke L-101-1 and a second 750 or 820 micromicrofarad mica capacitor C-106-2. This filter network prevents the audio and radio frequency noises generated by the dynamotor from being distributed on the 28-volt d-c supply line and also prevents the ripple voltage, due to audio and radio frequency interference from other equipment in the airplane, from appearing in the output of the amplifier. The high voltage winding of Dynamotor DM-32-A supplies power for all the tubes in the amplifier. The voltage is filtered by the 10-microfarad electrolytic

*Any model may be used.

capacitor C-105-2. Proper current for the microphone is obtained from the 28-volt d-c primary power supply through 270-ohm microphone dropping resistor R-102 and 100-ohm microphone loading resistor R-101. The 150-microfarad electrolytic capacitor C-101, in conjunction with microphone resistor R-101, filters the audio noise in the d-c supply line from the microphone circuits. 2200-ohm resistor R-108 provides self bias for the cathodes of voltage amplifier tube V-101-1 and phase inverter tube V-101-2. The 250 or 400-ohm resister R-112 provides self bias for the cathodes of the power output tubes V-102-1 and V-102-2.

b. When a microphone is connected to the input of the amplifier, the microphone switch closed and microphone spoken into, the variation in the resistance of the microphone, resulting from speech, causes a variation in the current through the 100-ohm microphone loading resistor R-101. The variable voltage developed across this resistor is coupled to the primary of input transformer T-101 through 1.0 microfarad capacitor C-102 and the gain control circuit. The gain control circuit consists of 2700-ohm resistor R-103, the 1000-ohm resistor R-104, and 470-ohm resistor R-105, connected in series, and the associated manual gain control switch S-102. Interphone Amplifier AM-26A/AIC has Automatic Gain Control C-158/AIC Switch S-103 in addition to the manual gain control. This control consists of three switches which automatically operate by barometric pressure at 10,000, 20,000, and 30,000 feet altitude respectively. With manual gain control switch S-102 in position "1," (no barometric switch operated) resistors R-103, R-104, and R-105 (total resistance 4170 ohms) are in series with the primary of the input transformer thus producing minimum gain. In position "2," (10,000 feet barometric switch closed) 2700-ohm resistor R-103 is shorted out and an increase in gain results. In position "3," (20,000 feet barometric switch closed) 2700-ohm resistor R-103 and 1000-ohm resistor R-104 are shorted out resulting in a further increase in gain. In position "4," (30,000 feet barometric switch closed) 2700-ohm resistor R-103, 1000-ohm resistor R-103, and 470-ohm resistor R-105 are shorted out resulting in the final increase in gain (microphone circuit coupled directly to the output transformer). Each successively higher position of the gain control provides approximately a 7-decibel increase in gain over the previous position. Input transformer T-101 couples the microphone circuit to the grid of voltage amplifier tube JAN-12J5GT (V-101-1). 390,000-ohm resistor R-110-3 connected across the secondary of the input transformer loads the transformer and stabilizes the impedance of the primary winding. The voltage amplifier tube amplifies the a-c signal impressed on its grid and develops an alternating voltage across 47,000-ohm plate resistor R-109-1, this voltage is coupled to the grid of power amplifier tube V-102-1 through 50,000-micromicrofarad coupling capacitor C-103-1 and 390,000-ohm grid resistor R-110-1. A portion of the voltage across the gride of power amplifier tube (V-102-1) JAN-12A6 is taken off by a voltage divider consisting of the 390,000-ohm grid resistor R-110-1 and 27,000-ohm resistor R-111 and fed to the grid of phase inverter tube (V-101-2) JAN-12J5GT; this voltage is amplified by this tube and impressed across 47,000-ohm plate resistor R-109-2. The amplified voltage is coupled to the grid of power output tube JAN-12A6 (V-102-2) through the 50,000-micromicrofarad coupling capacitor C-103-2 and 390,000-ohm resistor R-110-2; the voltage impressed on the grids of power amplifier tubes JAN-12A6 (V-102-1 and V-102-2) is amplified by these tubes (connected in push-pull). Output transformer T-102 couples the output of the power tubes to the headset load. Two 10,000-micromicrofarad capacitors C-104-1 and C-104-2 are used to reduce the response of the amplifier at frequencies above approximately 4000 cycles per second.

c. 50,000-micromicrofarad capacitor C-103-3 200,-000-ohm resistor R-107, the 3600-ohm resistor R-106 and the 390,000-ohm resistor (R-110-3) comprise an inverse feedback circuit which feeds some of the voltage output of power amplifier tubes V-102-1 and V-102-2 in such a manner as to reduce the overall distortion of the amplifier and improve the output regulation.

d. The alternating current voltage applied to the headsets results in vibration of the diaphragms in the receivers which produces an acoustic output that is an accurate reproduction of the speech impressed at the microphone.

3. PHASING.

a. The transformers used in the interphone amplifier must be phased properly in order to prevent oscillations from occurring in the interphone system. The close proximity of the microphone and headset leads in the aircraft wiring produces capacitance coupling between the input and output circuits of the amplifier; when the value of this capacitance is relatively high, oscillation at an audible frequency will result. In order to prevent any oscillation from occurring in normal aircraft installations, the amplifier components are so connected, in production, that the output and input circuits are as far out of phase as possible throughout the audio frequency range of 100 to 20,000 cycles per second.

b. The phasing of the amplifier is a function of the connections to the tubes and transformers. The phasing of tubes is fixed by the method of connection in the amplifier and therefore, the overall phasing of the input and output circuits of the amplifier is controlled by the transformers. The windings of the input transformer are connected in such a way that they are out of phase. The windings of the output transformer are connected in such a way that they are in phase. To check the phasing of the amplifier refer to section V, paragraph 3a(3)(c).

Note

Interphone Amplifier AM-26/AIC (Serial Nos. 1 to 525 produced on Order 829-DAY-44, manufacturers code CAJZ) contain input and output transformers both of which are incorrectly phased. If either transformer is defective in an amplifier of this group both transformers should be replaced.

SECTION V

MAINTENANCE

1. ROUTINE INSPECTION AND TESTS.

SPECIAL NOTICE

Periodic inspections prescribed herein represent minimum requirements. If, because of local conditions, peculiarities of equipment, or abnormal usage, they are found insufficient to attain satisfactory operation of equipment, local authority should not hesitate to increase their scope or frequency.

a. PREFLIGHT INSPECTION.—Turn on the interphone equipment and the associated radio sets. Check for operation of all facilities at each jack box (refer to sect. III par. 4). Thoroughly investigate any malfunctioning found in this check, or any reported by the airplane crew, and take necessary corrective action. Make a brief mechanical inspection of the major components and make certain that they are properly secured and safety wired.

b. PREFLIGHT TEST

(1) GENERAL.—Interphone Equipment AN/AIC-2 or AN/AIC-2A requires approximately 1¾ amperes at 28 volts d-c. In case an external power supply ("booster") is connected to the d-c power lines, care shall be taken to assure that the d-c voltage applied to the amplifier does not exceed 32 volts and that any ripple voltage caused by the external source is maintained at a level low enough to prevent interference with proper testing of the interphone equipment. (Interference shall not exceed that normally found in a standard aircraft power system.)

(2) TEST EQUIPMENT REQUIRED.—The following equipment is required for performing preflight tests.

(*a*) Headset HS-33

(*b*) Microphone T-30-( ) or Microphone T-17

(3) TEST PROCEDURE

(*a*) Briefly check the installation of each item of the interphone equipment to assure that it is properly placed and mechanically secure. Safety wiring shall be as detailed in section II, paragraph 1*g* of the Handbook of Operating Instructions for Interphone Equipment AN/AIC-2. Make certain that all grounds are properly bonded.

(*b*) Make sure that a Headset Adapter MC-385-( ) is properly installed at each jack box in high impedance installations; make sure that no Headset Adapter MC-385-( ) is used at any jack box in low impedance installations.

(*c*) Make sure that each microphone extension cord and each headset extension cord is suitably installed and of the proper length for each particular crew position.

(*d*) Turn on the interphone amplifier and the radio equipment wired to the interphone system.

(*e*) Test the installation for complete and proper operation at each crew position. (See table 5-1.) Check each jack box, each microphone switch, and each microphone and headset extension cord. Check the interphone amplifier for proper operation on each gain control position. Refer to Handbook of Operating Instructions for Interphone Equipment AN/AIC-2 and applicable drawings for the specific installation.

(*f*) When normally operated, the subject equipment shall not cause any interference to or malfunctioning of any radio equipment installed in the aircraft.

(*g*) When checking the complete interphone system make certain that cross talk does not interfere with the use of any facility available at the jack box.

(*h*) With all electrical equipment in the aircraft operating make certain that there is no abnormal interference from these equipments.

c. DAILY INSPECTION.—Give the complete installation a thorough mechanical check. Remove all plugs and jacks and look for signs of wear, corrosion and moisture. Visually inspect all cables and wires for breaks or signs of weak spots. After the mechanical check is completed, refer to section III and give all components a complete operational check.

d. 100-HOUR INSPECTION (NAVY 120-HOUR INSPECTION.)

(1) INTERPHONE AMPLIFIER AM-26/AIC OR INTERPHONE AMPLIFIER AM-26A/AIC.—Remove Plug PI-152-A from the amplifier and the amplifier from its mounting. Disassemble the base plate from the bottom of the amplifier by removing the six screws. Examine each part of the amplifier for effects of overheating, vibration, or moisture, and for other damage. Remove the cover by cutting the safety wire, releasing the two cover fasteners, and lifting the cover. Remove the tubes from their sockets and where possible (glass tubes) examine the elements, supports and structure for effects of vibration. Replace all defective tubes. If parts other than tubes are defective, replace the amplifier with one known to be good, and forward the defective amplifier to the proper agency for repair. After installing the new amplifier perform the after-installation checks given in section II, paragraph 3. If the amplifier is in satisfactory condition, reassemble the base plate and cover to the chassis and housing, secure the amplifier to the mounting (after the mounting has been inspected) and replace the safety wiring.

(2) INSPECT DYNAMOTOR DM-32-A ACCORDING TO THE FOLLOWING PROCEDURE:

(*a*) Remove the dust caps and inspect the commutators, brushes, etc. for any signs of excessive wear or other damage. Check to make certain that the brushes are free in their brush holders. Remove carbon or copper dust which may have accumulated in the vicinity of the commutators. (If the interphone amplifier is operating satisfactorily, no repairs should be made on the dynamotor as manipulation of brushes, or excessive lubricating is likely to do more harm than good.) A uniform band of brown discoloration on the commutator is an indication of normal operation and should not be removed. Dynamotor DM-32-A is provided with sealed or single shielded type ball bearings with removable cover plates containing sufficient lubricant for 1000 hours of operation. Replace brushes when they have worn to 3/16-inch or less in length. Prior to being placed in service use, after new brushes have been installed, dynamotors should be operated for at least 10 hours, at a light load, in order to properly form the brushes to the curvature of the commutator. This precaution must be observed or excessive noise may be produced in the interphone system.

Note

Make certain that all brushes are replaced in the proper "+" or "—" brush holder with the side on which the polarity is marked facing up. Replacement brushes are no longer marked "+" or "—" during manufacture. The service man should mark the proper polarity on each brush at the time of installation of new brushes.

(*b*) One indication of unsatisfactory operation of dynamotor is a high level of dynamotor noise in the amplifier output. If a loud, low pitched noise is heard, it may be indicative of bad commutation or armature trouble. The ripple caused by a normal dynamotor will be so low that it will be barely noticeable in the headset. If the audio frequency noise is loud, make certain that all brushes make good contact with the commutators and that brushes slide easily in their slots. If the noise persists, replace the dynamotor.

(*c*) Replace defective dynamotors with units known to be good, and forward defective machines to the proper organization for repair.

(2) MOUNTING MT-28/ARN-5.—Inspect the mounting for any obvious mechanical flaws and check each shockmount for serious flaws and cracks in the rubber.

(3) JACK BOX BC-1366 OR BC-1366-M.—Remove the cover portion, and inspect the jack box interior for damage caused by vibration or moisture. Particular attention should be given to the effects of moisture on the microphone jack, Jack JK-33-A. Remove all defective jack boxes and replace with units known to be good. Return defective jack boxes to the proper agency for repair. (See figs. 5-1 and 5-2.)

(4) OTHER PARTS.—Examine the various switches, plugs, jacks, cordage, etc. and repair or replace defective items.

e. MINIMUM PERFORMANCE STANDARDS

(1) Table 5-0 gives the information necessary to assure operational and organizational maintenance personnel that the interphone equipment is operating properly. The interphone equipment should be supplied with power before these tests are made. It is assumed that the headset and microphone are working properly. This can readily be checked by placing the selector switch on the jack box in several different positions. If an output is heard on at least one jack box function the headset and microphone are working properly. If no output is heard from the interphone amplifier when the selector switch on the jack box is in the "Inter" position, and continuity checks have been made, see table 5-3.

Note

Before making continuity checks from a terminal on the connector panel, disconnect the radio set from that terminal.

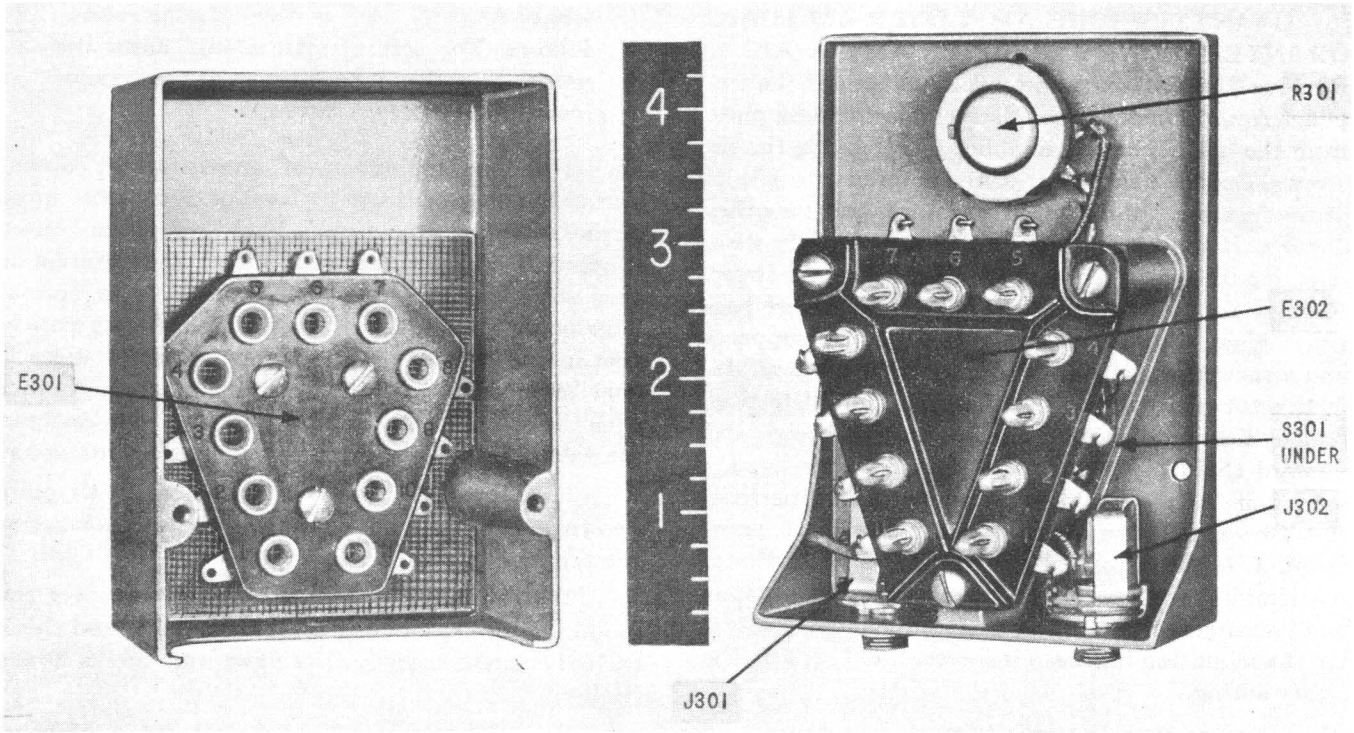


Figure 5-1. Jack Box BC-1366—Interior View of Cover and Box

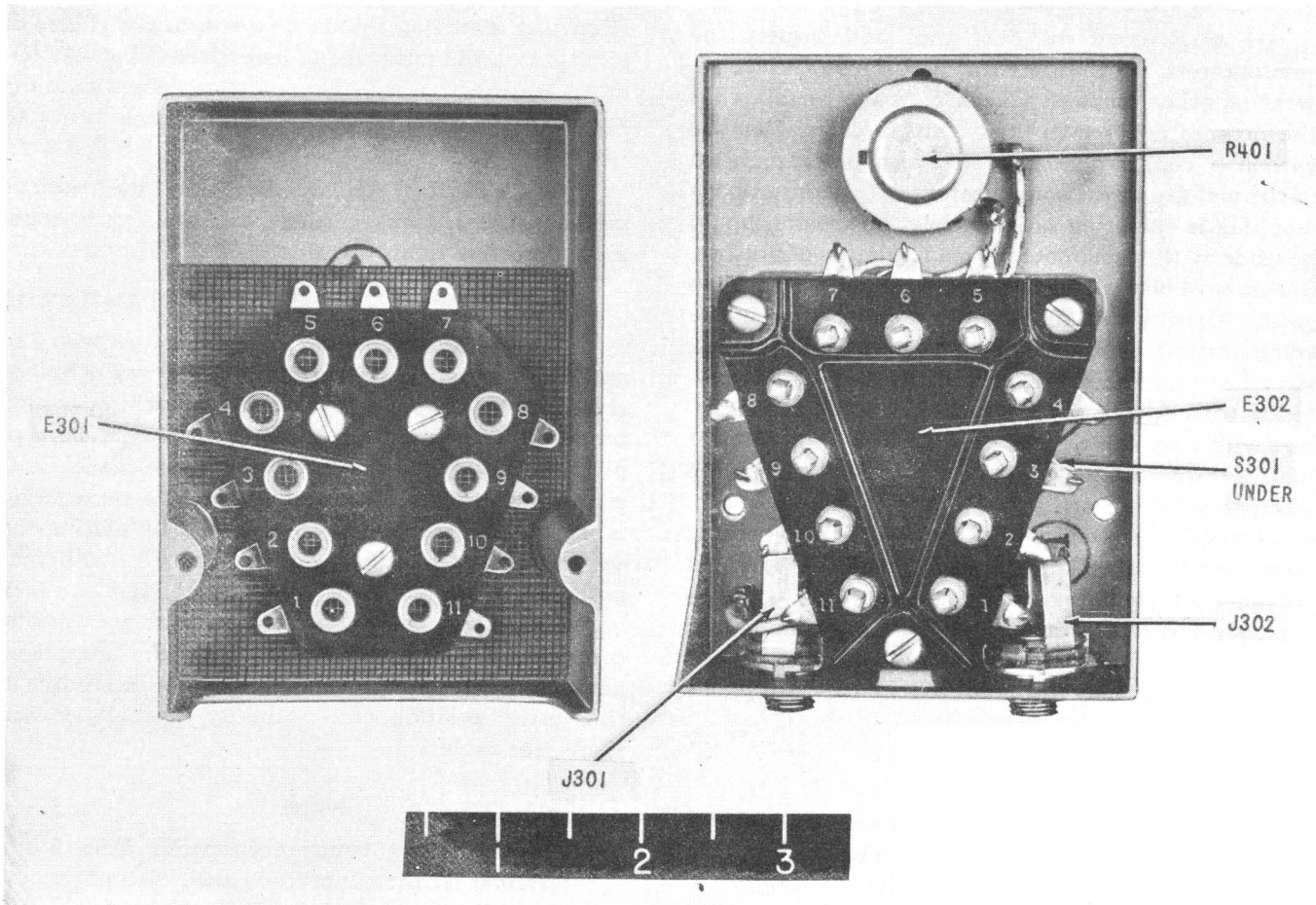


Figure 5-2. Jack Box BC-1366-M—Interior View of Cover and Box

TABLE 5-0. EQUIPMENT PERFORMANCE CHECKS

Type of Test	*Test Procedure*	*Normal Operation*	*To Restore to Normal Operation*
System Check from the radio operator's jack box.	1. Place the selector switch on the jack box in the "COMP" position.	1. The audio output of the compass receiver will be heard in the headset. The microphone should not operate with the selector switch in the "COMP" position.	1. See figure 8-3. Check continuity between terminal 1 on the connector panel and the tip contact of the phone jack.
	2. Place the selector switch on the jack box in the "LIAISON" position. Close the microphone switch and speak into the microphone.	2. The audio output of the liaison radio set should be heard in the headset. The liaison transmitter should be modulated and the voice output of the sidetone circuit should be heard, provided the "TONE-CW-VOICE" switch on the transmitter is in the "VOICE" position.	2. See figure 8-3. Check continuity between terminal 7 on the connector panel and the tip contact of the phone jack. Check continuity between terminal 6 on the connector panel and the ring contact on the microphone jack.
	3. Place the selector switch on the jack box in the "COMMAND" position. To transmit on the command set, close the microphone switch and speak into the microphone.	3. The audio output of the command radio set should be heard in the headset. The transmitter will be modulated and the voice output of the sidetone circuit should be heard in the headset, provided the emission selector switch ("TONE-CW-VOICE" switch, or "VOICE-CW-MCW" switch as applicable) on the transmitter is in the "VOICE" position.	3. See figure 8-3. Check continuity between terminal 10 on the connector panel and the tip contact on the phone jack. Check continuity between terminal 9 on the connector panel and the ring contact on the microphone jack.
	4. Place the selector switch on the jack box in the "INTER" position. To talk on the interphone circuit, close the microphone switch and speak into the microphone.	4. Any voice conversations on the interphone circuit should be heard in the headset. The output of the microphone is fed to the interphone amplifier and should be heard at all stations. The "INCREASE OUTPUT" control is not effective when the selector switch is in the "INTER" position.	4. Check continuity between tip of phone jack and ground. See figure 8-3. Check continuity between the ring contact of the microphone jack and contact 7 of the female receptacle connecting to PL-152-A. Twenty eight volts d-c should appear between contact 6 of female receptacle connecting to PL-152-A. If the above checks give normal indications and no output is heard, check the interphone amplifier. (See Table 5-3)
	5. Hold the selector switch on the jack box in the "CALL" position.	5. The audio output of the VHF command or compass set should be heard in the headset.	5. See figure 8-3. Check continuity between terminal 4 of the connector panel and the tip contact on the phone jack.

TABLE 5-0. EQUIPMENT PERFORMANCE CHECKS (Continued)

Type of Test	*Test Procedure*	*Normal Operation*	*To Restore to Normal Operation*
	Close the microphone switch and speak into the microphone.	The audio output of the microphone is fed to the interphone amplifier and should be heard at all stations.	Check continuity from tip contact of the phone jack to ground. Check continuity between contact 7 of the female receptacle connecting to PL-152-A, and the ring contact of the microphone jack.
System check from pilot's, co-pilot's, or observer's jack box.	6. Same as Procedure #1.	6. Same as Step 1.	6. Same as Step 1.
	7. Place the selector switch on the jack box in the "VHF" position.	7. The audio output of the VHF command radio set will be heard in the headset.	7. See figure 8-3. Check continuity between terminal 4 on the connector panel and the tip contact on the phone jack.
	To transmit on the VHF command set, close the microphone switch and speak into the microphone.	The transmitter will be modulated and the voice output of the sidetone circuit will be heard in the headset.	Check continuity between terminal 3 on the connector panel and the terminal ring contact of the microphone jack.
	8. Same as Procedure #3.	8. Same as Step 3.	8. Same as Step 3.
	9. Same as Procedure #4.	9. Same as Step 4.	9. Same as Step 4.
	10. Hold the selector switch on the jack box in the "CALL" position.	10. The audio output of the compass or liaison set should be heard in the headset.	10. See figure 3. Check continuity between terminal 7 on the connector panel and the tip contact on the phone jack.
	To be heard on the inter-com circuit, close the microphone switch and speak into the microphone.	The output of the microphone is fed to the interphone amplifier and should be heard at all stations.	Check continuity from the tip contact of the phone jack to ground. Check continuity between contact 7 of the female receptacle connecting to PL-152-A and the ring contact of the microphone jack.
System check from all other stations.	11. Same as Procedure #1.	11. Same as Step 1.	11. Same as Step 1.
	12. Place selector switch on jack box in the "VHF" position.	12. The audio output of the VHF receiver should be heard in the headset. No provision is made for modulating the VHF transmitter from this station.	12. See figure 8-3. Check continuity between terminal 4 on the connector panel and the tip contact of the phone jack.
	13. Same as Procedure #3.	13. Same as Step 3.	13. Same as Step 3.
	14. Same as Procedure #4.	14. Same as Step 4.	14. Same as Step 4.
	15. Hold the selector switch in the "CALL" position.	15. The audio output of the compass or the liaison set will be heard.	15. See figure 8-3. Check continuity between terminal 7 on the connector panel and the tip contact of the phone jack.
	Close the microphone switch and speak into the microphone.	The output of the microphone is fed to the interphone amplifier and should be heard at all stations.	Check continuity between contact 7 of the female receptacle connecting to PL-152-A and the ring contact of the microphone jack. Check continuity between the tip contact on the phone jack and ground.

2. TROUBLE SHOOTING INSTALLED EQUIPMENT.

a. GENERAL.—Failure of the interphone equipment may result from a failure of the dynamotor, tubes, or other component parts of either interphone amplifier, a failure in the power supply line for the amplifier, or short or open circuits in the jack boxes, switches, plugs, cordage, or interconnecting wiring comprising the system. The following chart applies for trouble shooting when the equipment is installed in the airplane.

b. EMERGENCY OPERATION.

(*See figures 5-3 and 5-4.*)

(1) If the amplifier fails during flight because of failure of tube JAN-12J5GT and a replacement of that type is not available, a spare tube JAN-12A6 may be substituted in its place. No circuit wiring changes are necessary.

(2) If voltage amplifier tube JAN-12J5GT (V-101-1) is burned out or inoperative and no spare is available, replace with phase inverter tube JAN-12J5GT (V-101-2) leave the latter tube socket empty.

TABLE 5-1. TROUBLE CHART FOR INSTALLED EQUIPMENT

Symptom	*Probable Trouble Location*	*Remedy*
No output on interphone, all other radio facilities OK at all jack boxes.	No 28-volt d-c primary supply voltage.	Check and replace defective fuses or close open switches or circuit breakers in 28-volt d-c supply line. Check Plug PL-152-A and switch S-101 on front of amplifier. Check 28-volt supply.
No output on interphone, all other radio facilities OK at all jack boxes, 28-volt supply OK, amplifier switch "ON" but dynamotor non-operative.	Defective Dynamotor DM-32-A on interphone amplifier. Defective wiring in amplifier.	Replace dynamotor. Repair wiring.
No output on interphone, all other radio facilities OK at all jack boxes. Dynamotor on amplifier operating satisfactorily.	Defective voltage amplifier tube, 20-1 or power amplifier tube 21-1 in interphone amplifier.	Replace tube JAN-12J5GT (V-101-1) or tube JAN-12A6 (V-102-1 or V-102-2)
No output on interphone, all other radio facilities OK at all jack boxes.	Defective or damaged components in interphone amplifier.	Replace amplifier and return defective unit to proper agency for repair.
Low output on interphone, all other radio facilities OK at all jack boxes.	Defective tubes in interphone amplifier.	Replace tube JAN-12J5GT (V-101-2) or tube JAN-12A6 (V-102-1 or V-102-2) as required.
Intermittent output of interphone and radio facilities.	Short circuit or open circuit, in headset or extension cords.	Check all headset and microphone lines and extension cords.
No output, or intermittent operations of interphone or radio facilities on one or several jack boxes only. Other jack boxes OK.	Jack box.	Inspect for adverse effects of moisture or dirt and clean if possible. Remove jack boxes containing defective parts, replace with jack boxes known to be good and return defective units to proper agency for repair.
Gain of Amplifier AM-26A/AIC does not change with altitudes at approximately 10,000, 20,000, and 30,000 ft.	Automatic Gain Control C-158/AIC.	Check barometric switches in automatic gain control and blow out dirt or other foreign matter.

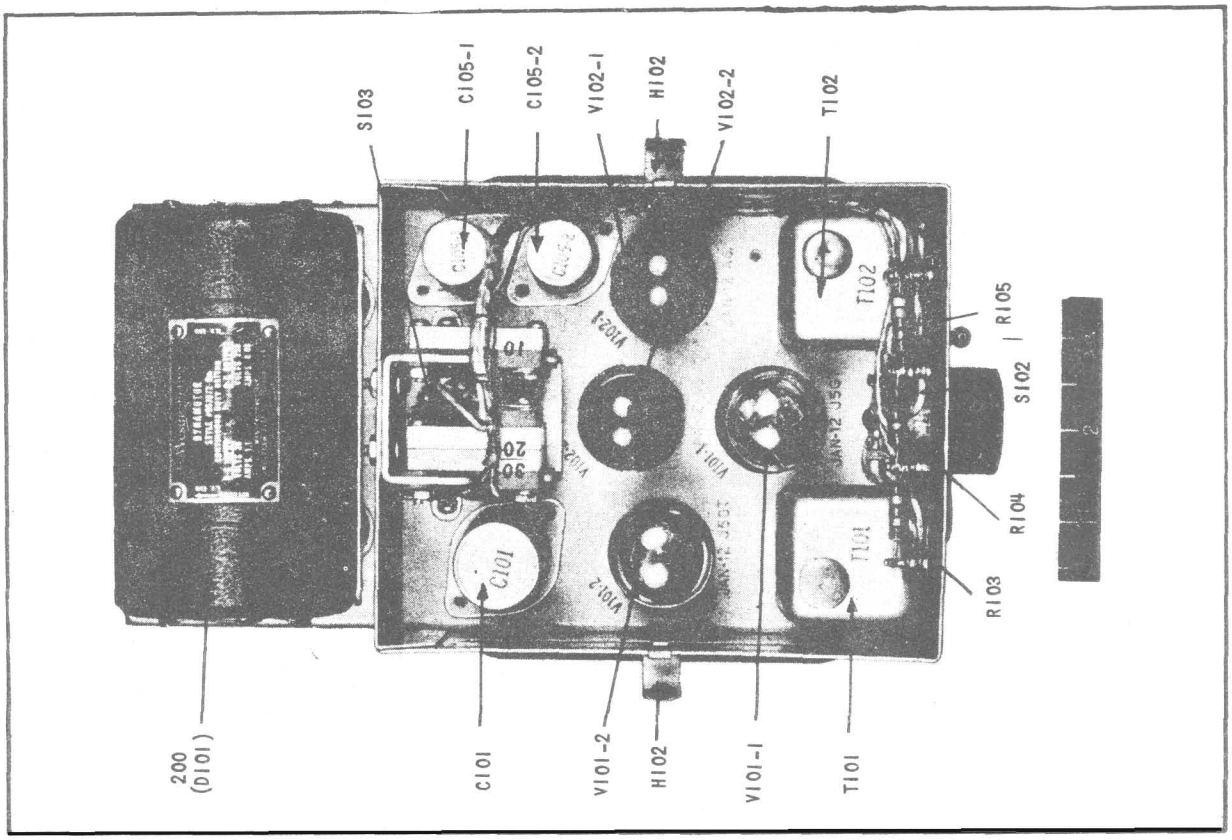


Figure 5-4. Interphone Amplifier AM-26A/AIC—Top Interior View

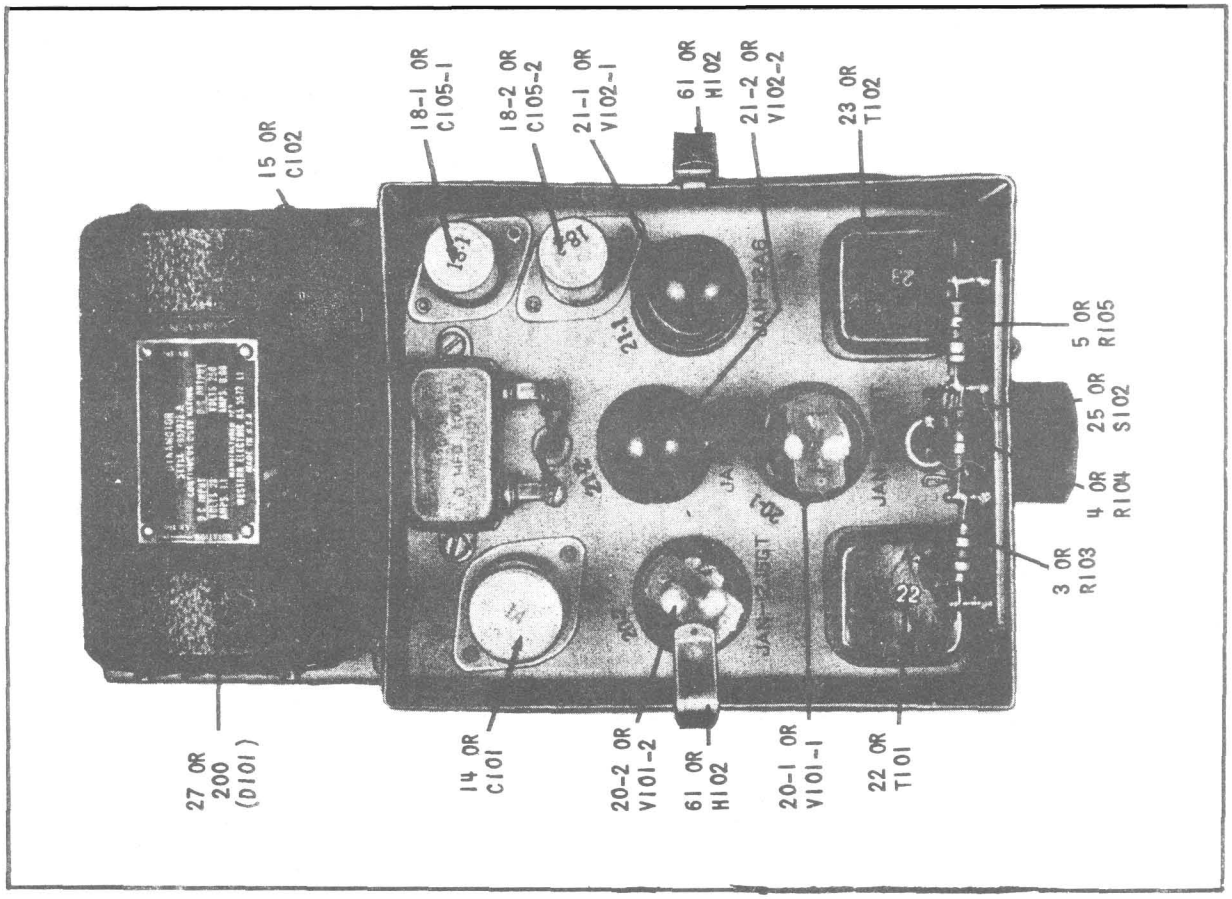


Figure 5-3. Interphone Amplifier AM-26/AIC—Top View Cover Removed

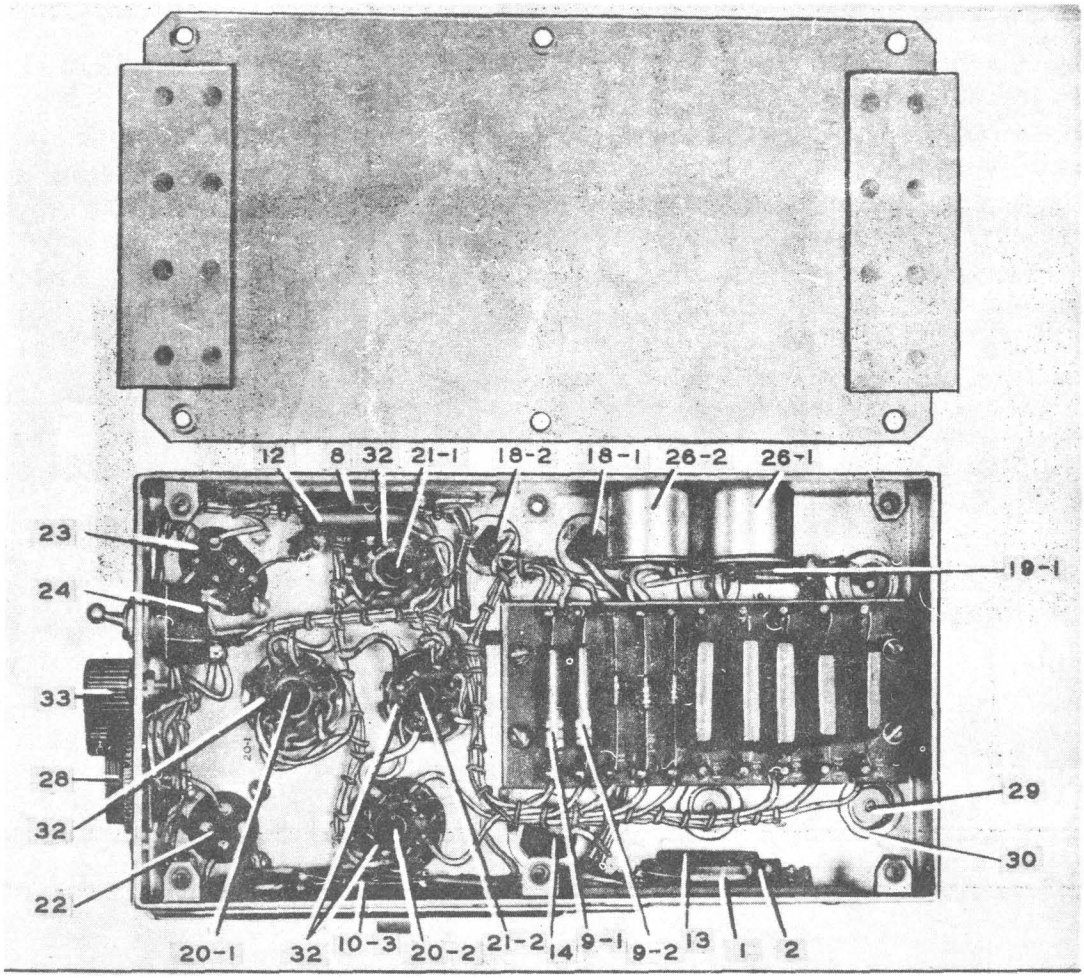


Figure 5-5. Interphone Amplifier AM-26/AIC—Bottom View

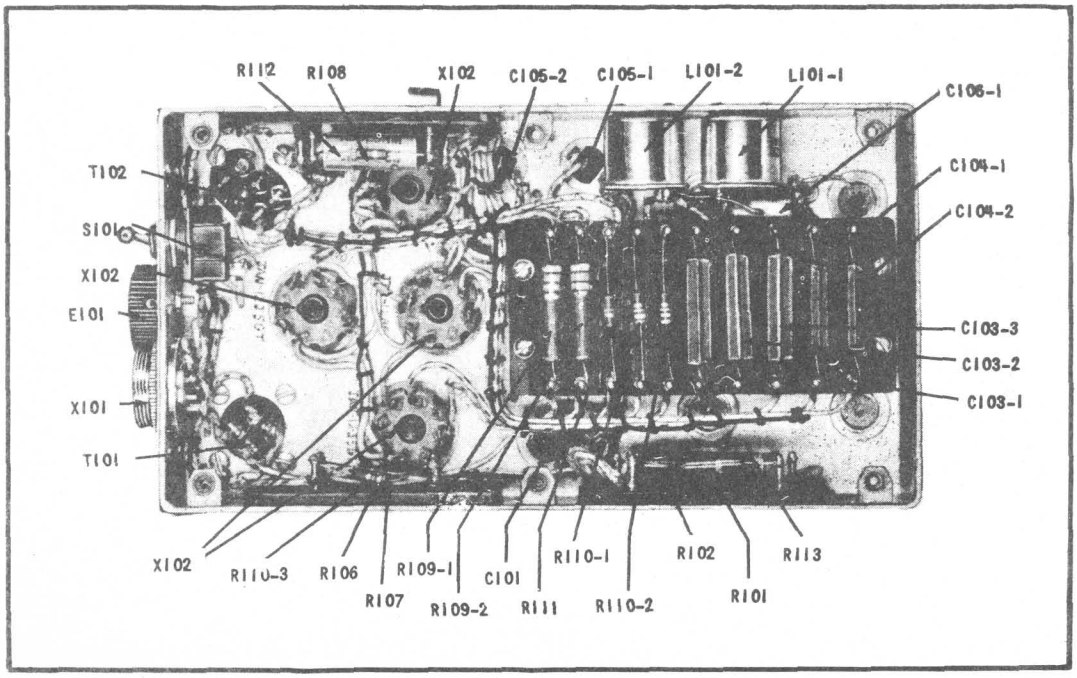


Figure 5-6. Interphone Amplifier AM-26A/AIC—Bottom View

(3) If both voltage amplifier tube JAN-12J5GT and phase inverter tube JAN-12J5GT fail and replacements are not available, use output tube JAN-12A6 in place of tube JAN-12J5GT (V-101-1).

(4) Since the above substitutions will result in reduction in the poser output of the amplifier, immediate action should be taken to effect corrective repairs as soon as the airplane has returned to its base.

(5) Tubes JAN-12J5GT and JAN-12A6 are also used in Radio Set SCR-274-N and Radio Set SCR-522-A.

c. EMERGENCY REPAIR.

(1) If failure of the interphone system occurs and the dynamotor has stopped, check the d-c supply line and replace burned-out fuses. If circuit breaker switches are used, make certain all such switches are closed.

(2) Dynamotor DM-32-A is also used in Radio Set SCR-274-N.

(3) Check Plug PL-152-A on the front of the amplifier. Make certain that it is tightly assembled to the amplifier and that no wires have been broken. If it is possible, check all plugs and jacks in the headsets and microphones and their extension cords, and all wires interconnecting the radio and interphone equipment for shorts or open circuits.

Note

All tubes of a given type supplied with the equipment shall be consumed prior to employment of tubes from general stock.

3. TROUBLE SHOOTING AND MAINTENANCE AT REPAIR STATION.

a. INTERPHONE AMPLIFIER AM-26/AIC OR INTERPHONE AMPLIFIER AM-26A/AIC

(1) If replacing the vacuum tubes and/or the dynamotor does not correct a defective amplifier proceed as follows:

(*a*) Disassemble the base plate from the amplifier by removing the six screws on the bottom.

(*b*) Carefully inspect the component parts and wiring for any effects of overheating, vibration, moisture, etc.

(*c*) Check resistors and wiring for charred surfaces and discoloration. Check transformers for excessive leakage of potting compounds.

(*d*) Test all parts which have an abnormal appearance and replace if defective.

(2) Use the following chart for trouble shooting Interphone Amplifier AM-26/AIC and Interphone Amplifier AM-26A/AIC.

TABLE 5-2. TROUBLE CHART FOR INTERPHONE AMPLIFIER AM-26/AIC AND INTERPHONE AMPLIFIER AM-26A/AIC

Symptoms	*Possible Source of Trouble*
No output	Open microphone series resistor R-102
	Open or shorted microphone loading resistor R-101
	Open microphone coupling capacitor C-102
	Open gain control resistor R-103, R-104, or R-105
	Shorted input transformer loading resistor R-110-3
	Open winding input transformer T-101 or output transformer T-102
	Open or shorted plate resistor R-109-1
	Open coupling capacitor C-103-1
	Open grid resistor R-111
	Open filament dropping resistor R-113
	Shorted dynamotor filter capacitor C-106-1, C-106-2, C-105-1, or C-105-2
	Open r-f choke L-101-1 or L-101-2
	Open cathode resistor R-108 or R-112
Low output, "GAIN CONTROL" position "1"	Open microphone capacitor C-101
	Open filament circuit for phase inverter tube V-101-2 and power output tube V-102-2
	Open grid resistor R-109-2 for phase inverter tube V-101-2
	Open coupling capacitor C-103-2
	Shorted feed back resistor R-107
	Shorted feed back resistor R-106
	Open grid resistor R-110-2 for power output tube V-102-2
	Shorted frequency control capacitor C-104-1 or C-104-2
	Shorted turns input transformer T-101
	Shorted turns output transformer T-102
Higher than normal output on "GAIN CONTROL" position "1"	Open feedback capacitor C-103-3
	Shorted resistor R-103, R-104, or R-105 in gain control circuit
	Open input transformer loading resistor R-110-3

TABLE 5-2. TROUBLE CHART FOR INTERPHONE AMPLIFIER AM-26/AIC AND INTERPHONE AMPLIFIER AM-26A/AIC (Continued)

Symptoms	*Possible Source of Trouble*
Oscillates when 0.002 mfd. capacitor is connected between output and input in case output is connected for high impedance; or when 0.005 mfd. capacitor is connected between output and input in case output circuit is connected for low impedance	Output or input transformer improperly phased
Noisy	Noisy dynamotor
Noisy when tapped	Defective tubes, loose or unsoldered connections
*Gain does not change with variations in altitude	Defective barometric switch in Automatic Gain Control C-158/AIC
	Dirt in barometric switches
	Open circuit in wiring to Automatic Gain Control C-158/AIC
*No output	Barometric switches in Automatic Gain Control C-158/AIC shorted to mounting bracket

* Applies to Interphone Amplifier AM-26A/AIC only.

(3) Analysis procedure for Interphone Amplifier AM-26 AIC or AM-26A/AIC is as follows:

(*a*) Connect the amplifier in the circuit as illustrated in figure 6-2. Turn on the amplifier and check the d-c voltages at the points indicated in table 5-4 (see circuit diagram, figs. 8-2 and 8-3). If the d-c voltages are within 10 percent of those shown at the test points, impress a 0.125-volt 1000 cps signal on the input of the amplifier with the "GAIN CONTROL" in position "4." Use a 250-ohm load connected to the output when testing amplifiers connected for high impedance output; or a 40-ohm load connected to the output when testing amplifiers connected for low impedance output. Using a test prod connected to a vacuum tube voltmeter (suitably protected with a capacitor) measure the a-c signal voltages at the points indicated in table 5-5. (See figs. 8-2 and 8-3.) The voltages should be within 15 percent of the values indicated in this table.

(*b*) A serious deviation in reading from the specified d-c or a-c voltage or resistance values at one or more points in the amplifier, should indicate the portion of the circuit which contains the fault. Check resistors and capacitors in the faulty part of the circuit and replace defective items.

(c) Where the input and output transformers are not properly phased, oscillations may occur in the amplifier. To check the phasing of Interphone Amplifier AM-26/AIC or AM-26A/AIC operate the amplifier with the input circuit open, the gain control switch in position "4," and no load except an oscilloscope connected to the amplifier output circuit. Under these conditions an amplifier, the output circuit of which is connected for high impedance, should show no signs of oscillations as detected by the oscilloscope when a 0.002 microfarad capacitor is connected between terminal 7 (input) of receptacle (X-101) and terminal 8 (output of receptacle) (X-101.) A 0.005 microfarad capacitor should be used when testing any amplifier on which the output circuit is connected for low impedance.

Note

Interphone Amplifier AM-26/AIC (Serial Nos. 1 to 525 produced on Order 829-DAY-44, manufacturer's code CAJZ) contains input and output transformers both of which are incorrectly phased. If either transformer is defective in an amplifier of this group, replace both transformers.

b. AUTOMATIC GAIN CONTROL C-158/AIC.

(1) GENERAL. — Automatic Gain Control C-158/AIC consists of three barometric switches mounted on an aluminum bracket.

(2) ANALYSIS OF AUTOMATIC GAIN CONTROL C-158/AIC. — Check the operation of these switches by placing the amplifier in a vacuum chamber and determining the altitudes at which the individual barometric switches operate. For this test, connect the amplifier in the circuit as shown in figure 6-2 and test as follows:

(a) ALTITUDE INCREASING.

1. AMPLIFIER AT GROUND LEVEL.— Adjust audio input signal to 1.0 volt, at a frequency of 1000 cps; set manual gain control in position "1." Connect a 40-ohm load to the output when testing amplifiers connected for low impedance; use a 250-ohm load when testing amplifiers connected for high impedance. Measure the output voltage. This voltage should be within 15 percent of the 1000 cps value given for gain control position "1" in table 5-10 for amplifiers connected for low impedance output or table 5-9 for amplifiers connected for high impedance output, respectively. Then adjust the audio input voltage to 0.5 volt, and reduce the pressure (increase the altitude) within the chamber.

2. 10,000-FOOT CHANGE.—As the altitude within the test chamber is increased, the altitude at which a sudden increase in amplifier output voltage occurs should be recorded. This point will generally be the *make* altitude for the 10,000-foot switch and should occur between 8500 feet and 11,500 feet (21.8

to 19.4 in. Hg.). With 0.5-volt input, the output voltage should be within 15 percent of the 1000 cps value given for gain position "2" in table 5-10 for amplifiers connected for low impedance output and in table 5-9 for amplifiers connected for high impedance output, respectively. While the output voltage reading is being taken, stop the ascent within the test chamber at approximately 14,000 feet (17.6 in. Hg.).

3. AMPLIFIER AT 14,000 FEET.—Adjust the input signal to 0.25 volt at 1000 cps.

4. 20,000-FOOT CHANGE. — Allow the altitude within the test chamber to increase gradually from the 14,000-foot point. Record the *make* point of the 20,000-foot switch (as indicated by a sudden increase in the output voltage). The 20,000-foot *make* point should occur between 18,000 and 22,000 feet (14.94 to 12.63 in. Hg.). With an input of 0.25 volt at 1000 cps, the output voltage should be within 15 percent of the 1000 cps value given for gain position "3" in table 5-10 for amplifiers connected for low impedance output and in table 5-9 for amplifiers connected for high impedance output, respectively. Hold the altitude in the test chamber at approximately 24,000 feet (11.6 in. Hg.) while the above output reading is being recorded.

5. AMPLIFIER AT 24,000 FEET.—Adjust input signal to 0.125 volt, at 1000 cps.

6. 30,000-FOOT CHANGE.—Increase the altitude within the test chamber and note the *make* altitude of the 30,000-foot switch. This altitude should be between 27,000 and 32,000 feet (10.2 to 8.1 in. Hg.). The output voltage should be within 15 percent of the 1000 cps value given for gain position "4" in table 5-10 for amplifiers connected for low impedance output and in table 5-9 for amplifiers connected for high impedance output.

(*b*) ALTITUDE DECREASING.

1. 30,000-FOOT CHANGE. — The output voltage shall remain constant until the 30,000-foot switch "breaks." The *break* point shall occur at least 200 feet below but not more than 2500 feet below the *make* point. After the 30,000-foot switch has opened, adjust the input signal to 0.25 volt at 1000 cps. The output voltage shall be within 5 percent of that recorded during the test outlined in paragraph 3a(5)(*a*) *4* of this section.

2. 20,000-FOOT CHANGE. — The output voltage shall remain constant during the descent until the 20,000-foot switch opens. The *break* point shall occur at least 200 feet below but not more than 2500 feet below the *make* point. After the 20,000 foot switch has opened adjust the input signal to 0.50 volt at 1000 cps. The output voltage shall be within 5 percent of that measured during the test outlined in paragraph 3a(5)(*a*)*2* of this section.

3. 10,000-FOOT CHANGE. — The output voltage shall remain constant, during the descent, until the 10,000-foot switch opens. The "BREAK" point shall occur at least 200 feet below but not more than 2500 feet below the *make* point. After the 10,000-foot switch has operated, adjust the input signal to 1.0-volt at 1000 cps. The output voltage should be within 5 percent of the 1000 cps value given for gain control position "1" as determined by the measurement described in preceding sub paragraph *b*(2)(*a*)*1* of this section.

(3) REPAIR OF AUTOMATIC GAIN CONTROL C-158/AIC.—The barometric switches used in the automatic gain control are extremely sensitive switches and no attempt should be made to change the setting of the adjustment screw. If it has been determined by the above analysis that a barometric switch is defective, the following repair procedure should be followed:

(*a*) Clean the switch contacts by blowing out with a blast of clean air, or if additional cleaning is required insert a clean sheet of plain white paper under the bridge of the defective switch between the contact screw and the diaphram, and work back and forth several times to polish the contact area.

(*b*) If the switch is still defective after the above cleaning, replace the entire automatic gain control with one known to be good. Tag the defective unit to indicate the faulty switch. Stock it for possible future use of the good switches in making emergency repairs of automatic gain control.

c. DYNAMOTOR DM-32-A. — No special tools are required for ordinary care of the dynamotor. A 3½-inch cabinet screwdriver and small pliers should be sufficient for most maintenance and repair work. Dynamotors should be removed from the aplifier before attempting repairs.

(1) LOCATION OF TROUBLE.—The following chart is for trouble shooting Dynamotor DM-32-A.

TABLE 5-3. TROUBLE CHART FOR DYNAMOTOR DM-32-A

Symptoms	*Trouble Location*	*Remedy*
Dynamotor stops, or fails to start.	No d-c supply; open or loose connection, capacitor shorted.	Repair connections, replace shorted condenser.
	Brushes not seating properly; dirty, sticking or worn	Remove brushes from holders and clean thoroughly. Replace worn brushes.
Dynamotor stops, or fails to start.	Worn bearings: armature strikes pole faces, or connections.	Replace bearings: Repair connections.
	Poor commutation: dirty, oily, or rough commutators; high mica.	Clean commutator and brushes; if rough, turn down commutator and undercut mica.

TABLE 5-3. TROUBLE CHART FOR DYNAMOTOR DM-32-A (Continued)

Symptoms	*Trouble Location*	*Remedy*
	Defective armature: short or open.	Replace armature.
Excessive arcing at brushes.	Poor commutation: rough, worn commutator, high mica.	Clean commutator and brushes; if rough, turn down commutator and undercut mica.
	Brushes not seating properly: dirty, sticking, worn, twisted pigtail.	Remove brushes from holder, clean, untwist pigtail or replace brush assembly.
	Brush spring defective; weak.	Replace brush assembly.
	Short between bars: dirty commutator.	Clean slots or replace armature.
	Open in armature coil.	Replace armature.
Rapid wearing of brushes.	Excessive arcing.	See *excessive arcing at brushes,* above.
	High mica.	Turn down commutator and undercut mica.
	Dirty commutator: grit.	Clean commutator and brushes.
Excessive noise in amplifier.	Sparking at commutator.	See *excessive arcing at brushes,* above.
	Loose connections.	Repair connections.
	Capacitor shorted.	Replace capacitor.
Excessive noise and vibration.	Armature striking pole faces.	Replace bearings.
	Armature striking internal wiring.	Rearrange and insulate (where necessary) internal wiring.
	Worn bearings.	Replace bearings.

(2) ANALYSIS PROCEDURE FOR DYNAMOTOR DM-32-A.

(*a*) GENERAL.—Dynamotor DM-32-A may become defective and generate radio-frequency or audio-frequency noises. Radio frequency noises which affect the various radio receivers in the airplane may be caused by poor commutation in the dynamotor. A defect in the r-f filter circuit in the amplifier or a poor ground between the dynamotor and the amplifier, or between the amplifier and the airplane structure, will also cause radio-frequency noise, even though the dynamotor itself is operating properly. Audio-frequency noise may be caused by poor commutation or a defective armature. This type of noise will be very apparent in the output of the amplifier. The extent of the radio frequency or audio frequency noise in a dynamotor should be checked by comparing the defective unit with a dynamotor known to be satisfactory.

(*b*) METHOD OF ANALYSIS.—If a dynamotor is found to be noisy, check the brushes to make certain that they make good contact with the commutators and that they slide easily in their slots. If the noise still persists, remove the brushes and check the armature windings for open or short circuits. This test may be accomplished by measuring the d-c resistance between each set of adjacent commutator bars with an ohmmeter.

CAUTION

Ohmmeter prods must not be applied to that portion of the commutator which comes in contact with the brushes. Also make tests between the commutators and the frame to make certain no shorts exist. Replace defective armatures if proper tools and replacement armatures are available, if not, return dynamotor to proper agency for repair.

(3) BEARINGS.

(*a*) The single shielded bearings or sealed bearings used in Dynamotor DM-32-A are designed for long life, but should be replaced if excessively noisy, loose on the shaft, or if otherwise defective.

Note

Bearing replacement, and turning down and undercutting of commutators are to be accomplished only by the proper echelon.

(*b*) To replace the bearings, remove the dust caps and brushes from both high and low voltage ends of the machine. Disconnect the leads to the brush holders on the high voltage end, and remove the nuts from the clamping bolts. Remove the end bracket from the frame and take out the armature. Remove the bearings with a "bearing puller," if available, or bearings may be removed by clamping the outer race firmly in a vise and driving the shaft out of the bearing, by placing a nail set or similar tool, against the end of the armature shaft and tapping lightly with a hammer. Do not re-use a bearing that has been removed from the shaft.

(*c*) Install a new bearing on the armature shaft with the shield side of bearing towards the commutator. The new bearing should show a light press fit on the shaft. Some selection of bearings may be necessary in order to find one that will fit snug on the shaft. A small piece of pipe with a smooth end and an inside diameter slightly larger than the shaft, will be useful in setting a new bearing on a shaft. In pressing the bearing on the shaft make certain that it goes on squarely and does not bind. Do not exert pressure on the outer race of a bearing that is being put on a shaft.

(d) Clean out the bearing housing in the end bracket with a clean dry cloth and reassemble the dynamotor, placing a spring washer between the bearing and the bearing retainer on each end if space permits. Take up any additional end play by the use of washers furnished with the replacement bearings. A maximum end play of 0.015 inch for the armature is permissible. Do not place all shim washers on one end but divide them approximately equal between the two ends.

(e) If there is grit in the bearing and immediate replacement of the bearing is impractical, the bearing may be left on the shaft and cleaned temporarily, by removing the armature from the machine and "swishing" the bearing back and forth in cleaning fluid, such as, petroleum spirits, kerosene, gasoline or carbon tetrachloride. Do not insert the armature far enough into the fluid to permit the windings to become wet. Do not permit the cleaning fluid to splash onto the windings.

CAUTION

Fumes from gasoline and carbon tetrachloride are harmful when breathed. Observe the usual precautions against fire if gasoline is used.

After cleaning in this manner, shake off as much cleaning fluid as possible and then insert the bearing in a bath of light machine oil, remove and allow to drain before repacking with grease as outlined in section V, paragraph 5. If this temporary cleaning method is used, the bearing should be replaced as soon as practicable.

Note

Bearings and armatures are no longer considered as items replaceable in the field and when the present supply of spare bearings and armatures is exhausted dynamotors with these parts defective must be replaced by a complete, new dynamotor.

(4) COMMUTATOR.—A highly polished commutator surface is desirable and a dark color should not be mistaken for a burned condition. If the surface is smooth and polished and the commutation satisfactory the commutator should be left alone. Slight sparking is not necessarily evidence of poor commutation. If the surface of the commutator becomes dirty, wipe with a clean cloth. If necessary, clean with a cloth moistened with cleaning fluid, (petroleum, spirits, kerosene or gasoline). If the mica insulators, between the bars, extend up to the commutating surface, due to wearing of the commutator bars, they should be undercut. If the commutator has worn irregularly and if it is badly pitted or grooved, it should be turned down smooth. If the mica is to be undercut or the commutator turned down, the armature must be removed from the machine.

(5) BRUSHES.—Replace brushes when less than 3 16 inch long. The brush pressure is considered satisfactory if ¼ inch or more of the spring extends out of the holder when the brush holder cap is removed and the end of the brush is touching the commutator. When brushes are removed for any reason they should be replaced so that the polarity mark faces upward. To obtain proper fit, new brushes should be run in for approximately 10 hours at no load, or preferably, a light load of approximately 15 milliamperes, before the dynamotor is required to carry a full load. A brush should be seated so that at least 75 percent of its area is in contact with the commutator. It is very important that brush resistance be kept as low as possible and therefore the brush pigtails must be in good condition. If a brush pigtail is broken or loose in the brush or end cap, the current will have a tendency to go through the brush spring, causing the spring to overheat. This may result in a reduction of the temper of the brush spring and reduce the brush pressure below the amount required for proper operation.

(6) ARMATURE.—A short circuit or open in the armature windings may be indicated in a number of different ways such as the dynamotor not operating or operating at reduced speed, low output voltage, overheating, excessive arcing at the brushes, rapid wearing of the brushes or noise in the amplifier. A measurement of the resistance between immediately adjacent commutator bars should detect faults in the armature windings. The resistance between adjacent commutator bars on the low voltage end should be approximately 0.3 ohms. The resistance between adjacent commutator bars on the high voltage end should be approximately 22 ohms. Resistances approximately 20 per cent more or less than the average values will indicate defective windings. Defective armature should be replaced.

d. JACKBOX BC-1366 OR BC-1366-M.—Check defective jack boxes as follows: (See figs. 5-1 and 5-2.)

(1) Carefully inspect the component parts, the wiring and the interior of the jack box for any effects of moisture, vibration or other damage.

(2) Check all parts which appear to be abnormal and replace any defective items. Clean out all corrosion. Coat insulating materials and the metal parts of the jack adjacent thereto on *"Mic"* and *"Phone"* jacks with high grade insulating varnish. Care must be taken to prevent the varnish from getting on the contact areas. If either the *"Mic"* or *"Phone"* jack is replaced, coat the insulating materials and the metal parts of the jack adjacent thereto, on the new jack, with two coats of high grade insulating varnish.

(3) Connect the jack box in the circuit shown in figure 6-3 and check the operation of the jack box as indicated in the instructions given in figure 6-3.

(4) If lights other than those detailed in the instructions light up, the box is defective; check the switch, jacks, volume control and circuit wiring for defects, open or short circuits (see schematic wiring diagram fig. 8-4).

e. MINIMUM PERFORMANCE STANDARDS.—Table 5-4A gives the information necessary to assure maintenance personnel (field and fasron level) that a repaired component of the interphone equipment meets minimum standards of performance.

4. VOLTAGE AND RESISTANCE MEASUREMENTS.

The following tables list the voltages and resistances found in Interphone Amplifier AM-26/AIC and AM-26A/AIC.

a. D-C VOLTAGE MEASUREMENTS.—For the d-c voltage measurement, maintain the supply voltage at 28.0 volts ±0.2-volt. Measure the d-c voltage to ground from each of the points indicated below, using a 1000-ohm per volt or a 20,000-ohm per volt d-c voltmeter.

TABLE 5-4. D-C VOLTAGE READINGS

Point-To-Ground	*Voltage in Volts*	
	1,000 ohms-per-voltmeter	*20,000 ohms-per-voltmeter*
Terminal 7 on socket X-701	2.8	2.8
Junction 100-ohm resistor (1) and 270-ohm resistor R-102	9.8	9.8
Input of r-f choke L-101-2	28.0	28.0
Input of r-f choke L-101-1	27.9	27.9
Output of r-f choke L-101-1	27.7	27.7
Terminal B on output transformer T-102	255	255
Terminal 2 of tube V-101-1	12.2	12.2
Terminal 3 of tube V-101-1	170	180
Terminal 7 of tube V-101-1	24.8	24.8
Terminal 8 of tube V-101-1	7.7	7.7
Terminal 2 of tube V-101-2	12.2	12.2
Terminal 3 of tube V-101-2	170	180
Terminal 7 of tube V-101-2	24.8	24.8
Terminal 8 of tube V-101-2	7.7	7.7
Terminal 3 of tube V-102-1	250	250
Terminal 4 of tube V-102-1	255	255
Terminal 7 of tube V-102-1	12.2	12.2
Terminal 8 of tube V-102-1	16.5	16.5
Terminal 3 of tube V-102-2	250	250
Terminal 4 of tube V-102-2	255	255
Terminal 7 of tube V-102-2	12.2	12.2
Terminal 8 of tube V-102-2	16.5	16.5

b. A-C VOLTAGE MEASUREMENTS.—Establish the following conditions: maintain the supply voltage at 28.0 volts ±0.2-volt; the input voltage 0.125 volt at 1000 cycles (see fig. 6-1); the gain control in position "4," 250-ohm load for an amplifier the output current of which is connected for high impedance operation; or a 40-ohm load for an amplifier the output circuit of which is connected for low impedance operation. Measure a-c voltages to ground from each of the points indicated below using a high resistance vacuum tube voltmeter protected with a suitable capacitor in series with the test leads.

TABLE 5-5. SIGNAL TEST VOLTAGES

Point-To-Ground	*Voltage in Volts*
Terminal 7 of receptacle X-101	.075
Terminal 8 of receptacle X-101	23.0
Terminal S2 of input transformer T-101	1.60
Terminal 3 of tube V-101-1	6.7
Terminal 5 of tube V-101-1	4.5
Terminal 3 of tube V-101-1	6.7
Terminal 5 of tube V-101-2	4.5
Terminal 3 of tube V-102-1	98
Terminal 5 of tube V-102-1	6.7
Terminal 3 of tube V-102-2	98
Terminal 5 of tube V-102-2	6.7
Terminal L of output transformer T-102	9.3

Note

For amplifiers which have the output circuit connected for low impedance operation the readings will be the same as above except for item 2, terminal 8 of receptacle X-101, which should read 9.3 volts.

c. RESISTANCE MEASUREMENTS.—The following table shows typical resistance-to-ground measurements in ohms made at the indicated points. Measurements should be made using a standard ohmmeter such as that furnished in Test Set I-56 (all models). When making the measurements Plug PL-152-A must be disconnected from the amplifier, Dynamotor DM-32-A must be in place, the gain control switch must be in position "1" and the "ON-OFF" switch in the "on" position. The resistances below are nominal design values, actual resistances in amplifiers may vary as much as ± 15 percent from the values shown.

TABLE 5-4A. PERFORMANCE TEST

Type of Test	*Test Procedure*	*Test Indication*	*Trouble Reference*
Transformer phasing check	1. Operate the interphone amplifier with the input circuit open. Turn the gain control switch to position 4 making sure that no load except an oscilloscope is connected to the amplifier output circuit. (See figure 6-2.) Place a 0.002 = microfarad capacitor between terminal 7 (input) of receptacle (X101) and terminal 8 (output of receptacle) (X-107). A 0.005-microfarad capacitor should be used when testing any amplifier on which the output circuit is connected for low impedance.	Under these conditions the amplifier should show no signs of oscillation as determined by the oscilloscope.	Section IV paragraph 3, and paragraph 7.
Amplifier performance test	2. Connect the amplifier as shown in figure 6-2. Establish the following conditions: *a*. Maintain the supply voltage at 28 volts. *b*. The input voltage 0.125 volts at 1000 cycles (see fig. 6-1). c. The gain control in position 4. *d*. A 250-ohm load for an amplifier, the output current of which is connected for high impedance operation, or a 40-ohm load for an amplifier, the output circuit of which is connected for low impedance operation. e. Measure the a-c voltage from terminal 8 to ground. *f*. To test the automatic gain control, see paragraph 5*b* of this section.	The voltmeter should read 23V if the output of the amplifier is connected for high impedance, or 9.3 volts if the amplifier is connected for low impedance. The output signal on the oscilloscope should be sinusoidal with little apparent distortion.	Table 5-2.
Jack box test	3. Connect the jack box in the circuit shown in figure 6-3 and check the operation of jack box as indicated in the instructions given in figure 6-3.	See figure 6-3. If lights other than those detailed in the instructions light up, the box is defective. Check the switch, jacks, volume control, and circuit wiring for defects, open, or short circuits.	Section V paragraph 3*d*.
Dynamotor check	4. Listen to the output of the interphone amplifier.	The output should not be noisy. The extent of the radio frequency noise in a dynamotor should be checked by comparing the suspected unit with one known to be good.	Table 5-3.

TABLE 5-6. RESISTANCE CHART

Point-To-Ground	*Resistance in Ohms*
Receptacle X-101	
Terminal #1	4200
Terminal #2	1500
Terminal #3	480-520*
Terminal #4	0
Terminal #5	10-50*
Terminal #6	3
Terminal #7	400
Terminal #8	5-14*
Socket for tube JAN-12J5-GT (V-101-1)	
Terminal #1	———
Terminal #2	11
Terminal #3	47,250
Terminal #4	47,250
Terminal #5	5100-10,000*
Terminal #6	———
Terminal #7	8
Terminal #8	2200
Socket for tube JAN-12J5-GT (V-101-2)	
Terminal #1	———
Terminal #2	11
Terminal #3	47250
Terminal #4	47250
Terminal #5	27000
Terminal #6	———
Terminal #7	8
Terminal #8	2200
Socket for tube JAN-12A6 (V-102-1)	
Terminal #1	0
Terminal #2	0
Terminal #3	300-550*
Terminal #4	200-300†
Terminal #5	390,000
Terminal #6	———
Terminal #7	10
Terminal #8	350
Socket for tube JAN-12A6 (V-102-2)	
Terminal #1	0
Terminal #2	0
Terminal #3	300-550*
Terminal #4	200-300†
Terminal #5	417,000
Terminal #6	———
Terminal #7	10
Terminal #8	350

* These resistances vary over a wide range due to the fact that transformers produced by different manufacturers vary considerably. (Refer to sec. V, par. 7.)

† These resistances are a function of the resistance of the high voltage winding of the dynamotor and may vary with dynamotors of different manufacturers.

Note

For amplifiers which have the output circuit connected for low impedance operation the test values will be the same as those given above, except that the value for the resistance between terminal 8 of the receptacle (X-101) and ground should be 2.0 to 3.0 ohms.

5. LUBRICATION.

Dynamotors are shipped from the factory with sufficient lubrication for 1000 hours of operation. Bearings should be lubricated after every 1000 hours of operation (or approximately every six months). To lubricate the dynamotor proceed as follows:

a. Remove the dust caps by cutting the safety wire on the ends of the machine and removing the assembly screws and retain the washers. After the dust caps have been removed, blow out loose dirt and dust. Then remove the screws holding the end shield bearing retainer. Remove the retainer, and retain any washers from the end of the shaft.

b. Wipe out as much of the grease as possible, using a tooth brush, or other similar brush, and a clean cloth. Apply three or four drops of a light machine oil to the balls and repack the outer side of the bearing with a small amount of grease AN-G-5. Add only enough grease to cover the bearing (approximately 3/16" cube). Do not pack the bearing full. Keep the dirt out of the housing, and do not allow dirt, grease or oil to get on the commutators.

c. Replace all washers in their original positions and assemble end shield bearing retainers and dust cap to the dynamotor and safety-wire the dust cap screws.

d. The following chart is for the lubrication of Dynamotor DM-32-A:

Part Requiring Lubricant	*Place Requiring Lubricant*	*Type of Lubricant*	*Amount and Method of Application*	*Note and Ref.*	*—65° to —40°*	*—40° to —10°*	*—10° to +32°*	*+32° to +100°*	*+100° to +160°*
Ball Bearings	Bearings on ends of shaft	Grease	1/2 fill space	F	GH	GH	GH	GH	GH

Note: F—Service every 1000 hours. GH—AN-G-5 Grease, high temperature.

6. VACUUM TUBES.

a. DISCARDING VACUUM TUBES.—Replace tubes JAN-12J5GT when the internal elements show wear or damage due to vibration or other effects, or when the tubes test unsatisfactory in a tube tester. Replace tubes JAN-12A6 when they show wear or damage due to vibration or other effects, or when the tubes test unsatisfactory in a tube tester. Performance in the amplifier should be the important factor in determining defective tubes since some tubes will show satisfactory readings on a tube tester and yet not provide satisfactory operation in the amplifier. Interphone amplifiers which are noisy in flight but quiet on the ground, generally will be found to contain tubes which have become defective due to vibration. Replace such tubes.

Note

Use all tubes of a given type supplied with the equipment prior to employment of tubes from general stock.

b. TUBE POTENTIALS.—Table 5-7 below gives the characteristic ratings of the tubes used in the amplifier. These values are not necessarily the operating values found in Interphone Amplifier AM-26/AIC or Interphone Amplifier AM-26A/AIC. The interphone amplifier should not be operated for extended periods of time at supply voltages greater than 28.0 volts since excessive potentials on the tubes will result and tube life will be decreased.

TABLE 5-7. CHARACTERISTIC RATINGS OF TUBES

	JAN-12J5GT	*JAN-12A6*
Heater voltage	12.6 volts	12.6 volts
Heater current	0.15 amp.	0.15 amp.
Control grid voltage	—8 volts	—12.5 volts
Plate voltage	250 volts	250 volts
Screen grid voltage		250 volts
Plate current	9 milliamperes	30 milliamperes
Screen current		3.5 milliamperes
Transconductance	2600 micromhos	3000 micromhos
Plate resistance	7700 ohms	70,000 ohms
Amplification factor	20	
Power output		3.4 watts 7% distortion 7500-ohm load

7. TYPICAL CHARACTERISTICS OF TRANSFORMERS FOR INTERPHONE AMPLIFIER AM-26/AIC AND INTERPHONE AMPLIFIER AM-26A/AIC.

a. INPUT TRANSFORMER T-101.—The following data is applicable.

Primary d-c resistance	= UTC 79825	50 ohms
	Best E-112	33 ohms
	Peerless 4389	11 ohms
Secondary d-c resistance	= UTC 79825	6500 ohms
	Best E-112	1550 ohms
	Peerless 4389	5000 ohms

Primary impedance = Not less than 700 ohms at 200 cps, not less than 400 ohms at 4000 cps with 1.0 volt rms applied to primary, secondary open circuited.

Turns ratio (secondary to primary) = 36 to 1.

Phasing = With instantaneous voltage at terminal P1 increasing with respect to that at terminal P2, the instantaneous voltage at terminal S1 shall be decreasing with respect to that at terminal S2, that is, the windings are out of phase.

b. OUTPUT TRANSFORMER T-102.—The following test data is applicable to typical output transformers. (*See table 5-8.*)

Primary d-c resistance	= UTC 79071	410 ohms
	Best E-110A	300 ohms
	Peerless 912	450 ohms
Secondary d-c resistance (high impedance)	= UTC 79091	8.3 ohms
	Best E-110A	6 ohms
	Peerless 912	12 ohms
Low impedance tap	= UTC 79071	2.0 ohms
	Best E-110A	2.4 ohms
	Peerless 912	2.8 ohms

Primary impedance = Not less than 60,000 ohms at 250 cps and not less than 200,000 ohms at 4000 cps when measured with a voltage of 100 volts, rms, applied across terminals P1 and P2. Secondary open circuited.

Turns ratio (total primary to total secondary) = 8 to 1; primary center-tapped, secondary tapped at 40 percent from ground end.

Phasing = With instantaneous voltage at terminal P, increasing with respect to that at terminal B, the instantaneous voltage at terminal H shall be increasing with respect to that at terminal G, i.e., windings in phase.

8. TYPICAL PERFORMANCE DATA FOR INTERPHONE AMPLIFIER AM-26/AIC OR INTERPHONE AMPLIFIER AM-26A/AIC.

Note

The data in the following paragraphs represent the average performance of a typical production interphone amplifier when tested in the test circuit shown in figure 6-2.

a. RESPONSE, HIGH IMPEDANCE TAP.

(*See figure 6-3*).—Establish the following conditions: 28.0-volt d-c primary supply voltage, 250-ohm

resistive load. Gain control setting, input voltage, frequency and output data as indicated in table 5-8. (See fig. 6-2.)

TABLE 5-8. OUTPUT VERSUS FREQUENCY HIGH IMPEDANCE TAP

Gain Control Position / *Input Voltage* / *Frequency CPS*	*1* *1.0 Output in Volts*	*2* *0.5 Output in Volts*	*3* *0.25 Output in Volts*	*4* *0.125 Output in Volts*
200	1.6	12.6	11.5	7.9
400	13.3	16.8	16.8	16.8
600	15.0	17.8	19.2	20.0
800	15.4	18.6	20.0	21.0
1000	15.9	18.8	20.2	21.1
1500	16.6	19.4	20.9	21.1
2000	16.8	20.0	20.9	21.1
2500	16.8	19.4	20.0	21.5
3000	16.3	18.6	18.6	19.4
4000	14.1	16.3	17.3	18.0
6000	10.0	10.6	12.1	14.1
8000	6.7	7.7	8.7	10.6
10000	4.6	5.6	6.7	8.9

b. DISTORTION HIGH IMPEDANCE TAP.— Establish the following conditions: 28.0-volt d-c primary supply voltage, 250-ohm resistive load, "GAIN CONTROL" position "4" and a frequency of 1000 cps. (See table 5-9.)

TABLE 5-9. DISTORTION CHARACTERISTICS, HIGH IMPEDANCE TAP

Power Output (Watts)	*Volts Output*	*Percent Distortion*	
		(Normal)	*(Maximum)*
1	15.8	3.0	5
2	22.4	3.3	5
3	27.4	4.0	5
4	31.6	6.0	8
5	35.4	9.0	15

c. VARIATION IN OUTPUT VOLTAGE WITH CHANGE IN LOAD, HIGH IMPEDANCE TAP.— Establish the following conditions: 28.0-volt d-c primary supply voltage, 250-ohm resistive load, gain control in position "4," input voltage adjusted to provide an output voltage of 31.6 volts (4 watts) at a frequency of 400 cps. The output voltage should increase to a value not greater than 44.7 volts when the load is changed to 1875 ohms.

d. RESPONSE, LOW IMPEDANCE TAP. — Establish the following conditions: 28.0-volt d-c power supply voltage, 40-ohm resistive load. Gain control setting, input voltage and frequency as indicated in table 5-10.

TABLE 5-10. OUTPUT VERSUS FREQUENCY, LOW IMPEDANCE TAP

Gain Control Position / *Input Voltage* / *Frequency CPS*	*1* *1.0 Output in Volts*	*2* *0.5 Output in Volts*	*3* *0.25 Output in Volts*	*4* *0.125 Output in Volts*
200	4.5	5.5	5.0	3.5
400	5.6	6.8	7.1	6.8
600	5.9	7.1	7.7	7.9
800	6.1	7.3	8.0	8.2
1000	6.3	7.7	8.1	8.4
1500	6.5	7.8	8.2	8.6
2000	6.7	7.9	8.1	8.4
2500	6.7	7.7	8.1	8.1
3000	6.5	7.5	7.8	7.9
4000	5.8	6.5	7.1	7.5
6000	4.1	4.6	5.2	5.8
8000	2.7	3.3	3.6	4.6
10000	2.0	2.5	2.8	3.9

e. DISTORTION, LOW IMPEDANCE TAP.— Establish the following conditions: 28.0-volt d-c primary supply voltage, 40-ohm resistive load, gain control in position "4," frequency 1000 cps. (See table 5-11.)

TABLE 5-11. DISTORTION CHARACTERISTICS, LOW IMPEDANCE TAP

Volts Output	*Power Output (Watts)*	*Percentage Distortion*	
		(Normal)	*(Maximum)*
6.3	1	3.0	5
9.0	2	3.5	5
11.0	3	4.5	5
12.6	4	7.0	8
14.2	5	11.0	15

f. VARIATION IN OUTPUT VOLTAGE WITH CHANGE IN LOAD, LOW IMPEDANCE TAP.— Establish the following conditions: 28.0-volt primary supply voltage. 40-ohm resistive load, gain control in position "4" and input voltage adjusted to provide an output voltage of 12.6 volts (4 watts) at a frequency of 400 cps. The output voltage shall increase to a value not greater than 17.8 volts when the load is changed to 300 ohms.

SECTION VI

SUPPLEMENTARY DATA

1. THROAT MICROPHONE.

a. Extreme care must be taken in the use of this type of microphone in order to obtain satisfactory communication. For the best results place the microphone elements so that they are equally spaced on either side of and just above the thyroid cartilage (Adam's Apple). Exercise care to insure that the microphone elements do not fall below the Adam's Apple as this will result in a loss in transmission from the throat microphone.

b. Adjust the neck band length to permit the microphone elements to bear firmly but not too tightly against the throat, in order that the black plastic caps, the vibration-sensitive surfaces, are always in contact with the skin of the neck. Best results are obtained when the microphone feels reasonably comfortable to the wearer and is neither too loose nor too tight. For best results the entire area of the plastic face of each microphone element must be in contact with the neck. A properly adjusted microphone makes it unnecessary for the user to employ his hands to hold the microphone elements in intimate contact with his neck.

c. While the performance of the microphone is not appreciably affected by contact with clothing of the user, it is important that the clothing does not get between the microphone elements and the skin.

d. Certain precautions must be taken in using any type of microphone in order to insure intelligibility; this is especially true when throat microphones are used. One should speak as distinctly as possible. Hurried speech often leads to misunderstanding or requires that the message be repeated. Reasonably slow, clear, distinct speech is essential for good communication in aircraft. The speech reproduced by a throat-type microphone will not sound as natural as that from other standard types of microphones because of the inherent differences between speech sounds picked up from the throat and those emitted from the mouth. However, speech from a throat microphone can be intelligible if suitable precautions in line with the above comments are taken, and if the equipment with which the microphone is used is properly installed, operated and maintained.

e. Some personnel will be unable to use a throat-type microphone because their particular voice and neck characteristics are not suitable; such personnel should obtain another type of microphone for their particular use.

2. MASK MICROPHONE.

Microphone ANB-M-C1 is a carbon type microphone designed for use in oxygen masks. It consists of Microphone Unit MC-254-A, Microphone Cover M-369, and a short length of Cordage CO-219 which connects the microphone unit to Plug PL-291. When used in an oxygen mask this microphone is directly interchangeable with the Microphone T-30 series and will provide much better performance than the throat-type microphone. Microphone Cover M-369 is used to prevent the accumulation of moisture on and within the microphone unit; replacement of this cover is required when it becomes ragged, worn or torn to the extent that it permits moisture to gain access to the microphone unit.

3. EFFECTS OF ALTITUDE UPON COMMUNICATION.

a. GENERAL.—Prior to any discussion of headsets microphones and interphone equipment used in aircraft, the conditions and problems involved in high altitude communication should be considered.

(1) The high noise levels in military aircraft (measurements show that levels in excess of 120 decibels are encountered) place limitations on the signal intensities which will afford adequate levels for suitable signal-to-noise ratios for satisfactory speech transmission; the maximum tolerable signal is limited by the threshold of pain and feeling (approximately 130 decibels) and considerations for the comfort of the user. Under the more severe conditions of noise, this leaves a very narrow signal range over which communication will be satisfactory.

(2) Physiological changes take place with changes in ambient pressure which prevent the person from speaking as effectively at high altitude as on the ground. Some persons are able to muster enough added effort to speak at 30,000 feet with nearly as great a volume as at ground level; however, the majority of personnel show pronounced losses in speech intensity, and some show severe losses at high altitudes.

(3) The transmission medium is so rarefied at high altitude that losses occur in transmission efficiency at both the microphone and headset ends of the system.

(4) The characteristics of both the microphone and headset change with changes in ambient pressure. These latter changes appear as shifts in basic output level with given input level and variations in the response characteristics of the item in question. Other

factors such as severe changes in temperature and humidity, vibration, and the reactions of personnel to the excitement of combat warfare, also cause variations in performance.

b. HEADSETS.—Headset HS-33 and HS-38 have a low impedance (nominal 600 ohms at 1000 cps). Receiver ANB-H-1 of these headsets has an essentially flat response characteristic over the 100 to 4000 cps audio frequency range (accomplished by close control of the acoustic cavities and other acoustic elements within the receiver). This receiver has inherently lower distortion and is less affected by changes in altitude than Receiver R-14 which is part of the old Headset HS-18 and HS-23. Because of the flat response characteristics and low distortion of Receiver ANB-H-1, Headset HS-33 and HS-38 can be driven at much higher levels than Headset HS-18 and HS-23; the audio output can be maintained at a level sufficiently above the ambient noise to allow good communication without excessive distortion or painful and annoying effects to the user. Headset HS-33 and HS-38 provide communication vastly improved over Headset HS-18 and HS-23.

c. MICROPHONES.

(1) Microphones T-30-P, T-30-Q, T-30-R, T-30-S, T-30-U, T-30-V and T-30-W are improved over former models. They are more stable, less affected by changes in altitude and moisture and possess better frequency response characteristics than former models. (Refer to sec. VI, par. 1.)

(2) Microphone ANB-M-C1 has a response characteristic *tailored* to suitably complement the acoustical characteristics of the oxygen mask. Under conditions of use the microphone-mask combination gives a slightly rising response characteristic and effectively transmits speech over the frequency range from 200 to 3000 cps. (Refer to sec. VI, par. 2.)

d. INTERPHONE AMPLIFIER AM-26/AIC or AM-26A/AIC.—These amplifiers possess a power output capability of approximately 5 watts as compared to approximately 0.75 watt available from Interphone Amplifier BC-347-C which it replaces in certain installations. Interphone Amplifier AM-26/AIC incorporates a manual gain control which permits compensation for the losses associated with high altitude operation and allows a choice of signal level to suit the noise levels present in the various aircraft.

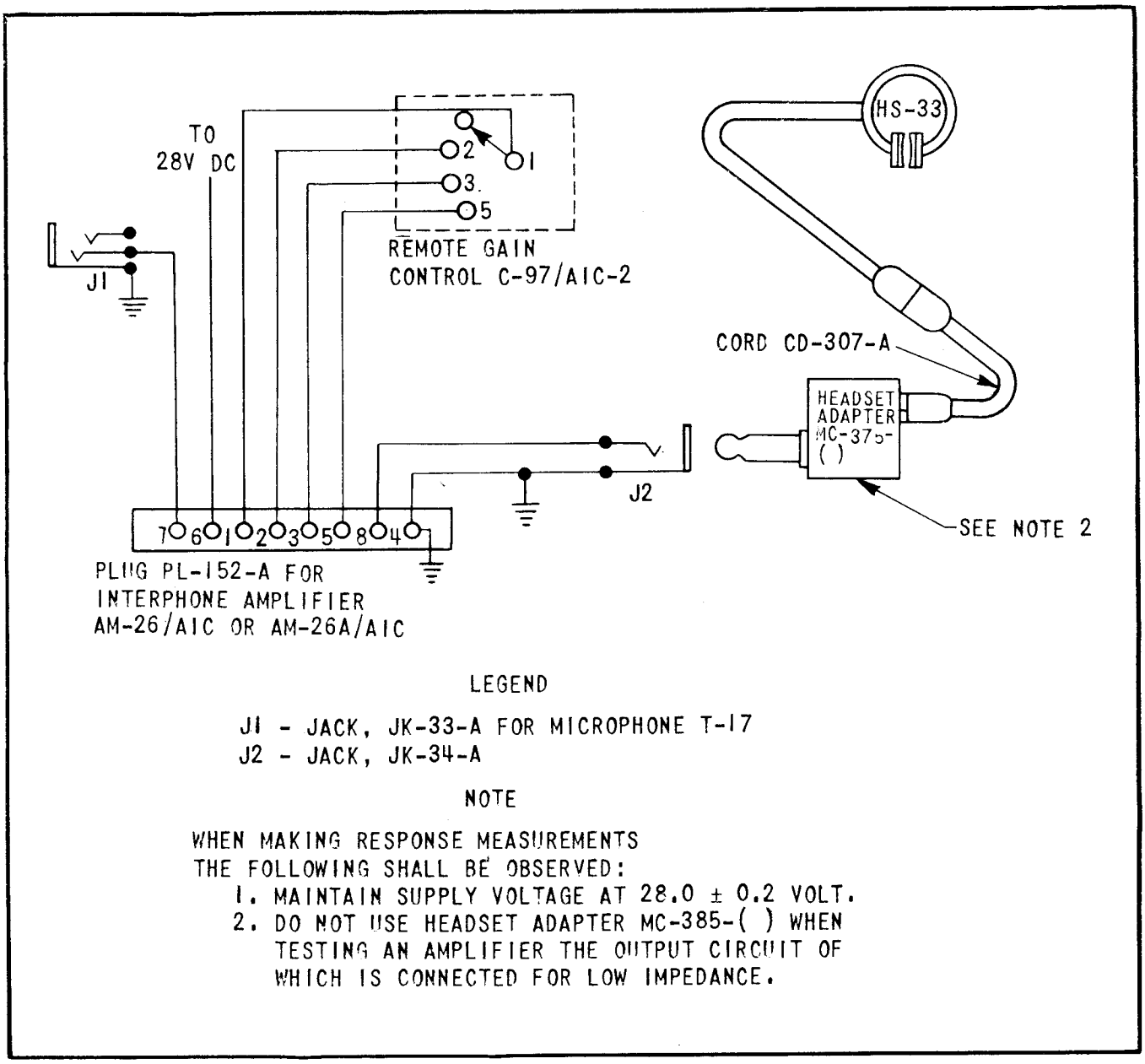
Interphone Amplifier AM-26A/AIC contains an Automatic Gain Control C-158/AIC the barometric switches of which automatically change the gain of the amplifier at altitudes of approximately 10,000, 20,000 and 30,000 feet. These changes in gain compensate for the normal losses associated with high altitude flights.

e. SUMMARY. — The combination of Headset HS-33 or HS-38 in the latest flyer's helmet, Microphone ANB-M-C1 in an oxygen mask, and Interphone Amplifier AM-26/AIC or AM-26A/AIC affords excellent communication at altitudes up to at least 40,000 feet.

4. TUBE COMPLEMENT.

Ref. Symbol	*Stock No.*	*JAN*	*Desig. VT*	*Function*
V-101-1	2J12J5GT	JAN-12J5GT	VT-135	Voltage Amplifier
V-101-2	2J12J5GT	JAN-12J5GT	VT-135	Phase Inverter
V-102-1	2J12A6	JAN-12A6	VT-134	Power Amplifier
V-102-2	2J12A6	JAN-12A6	VT-134	Power Amplifier

Note: No spares are furnished.



LEGEND

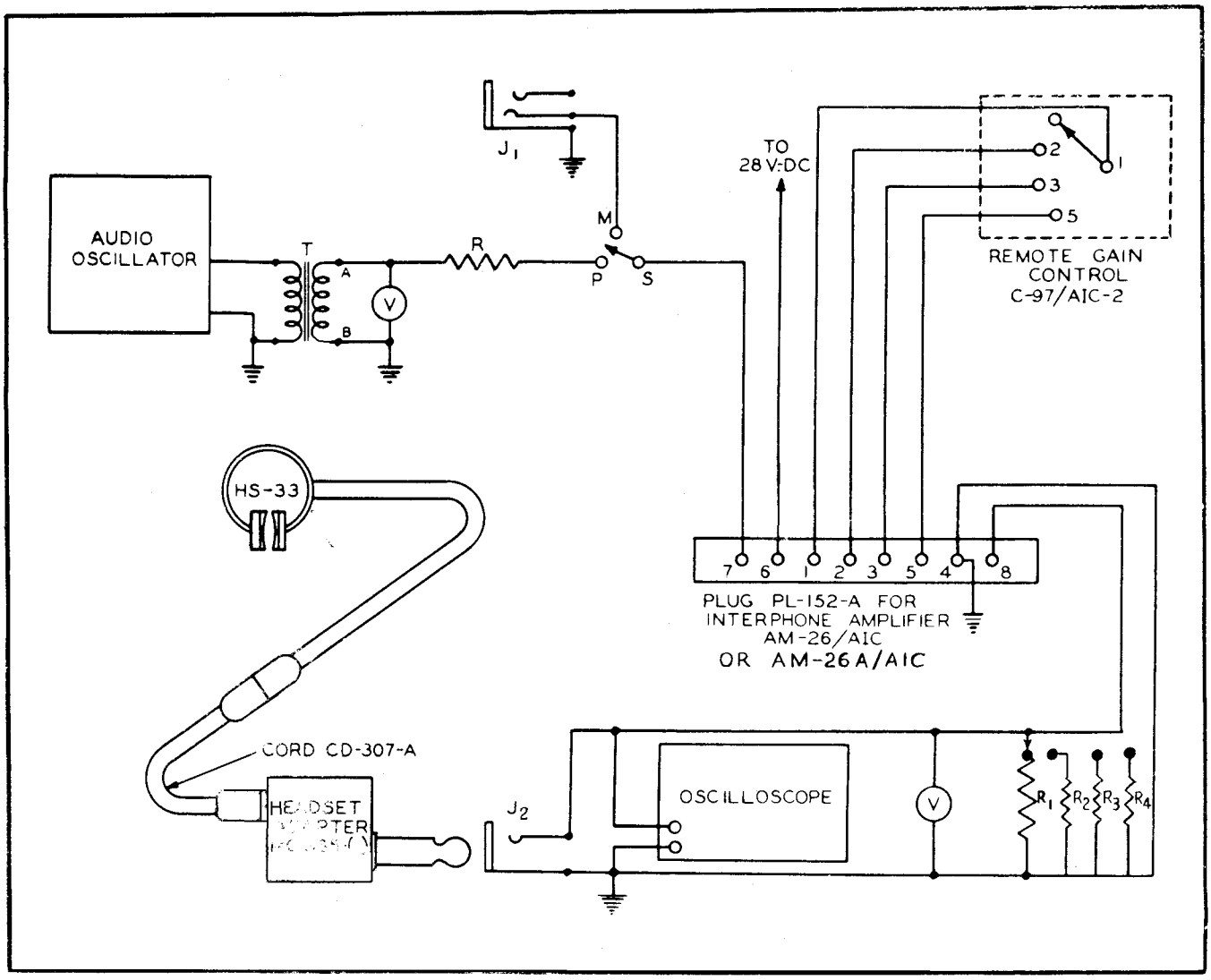
J1 - JACK, JK-33-A FOR MICROPHONE T-17
J2 - JACK, JK-34-A

NOTE

WHEN MAKING RESPONSE MEASUREMENTS
THE FOLLOWING SHALL BE OBSERVED:

1. MAINTAIN SUPPLY VOLTAGE AT 28.0 ± 0.2 VOLT.
2. DO NOT USE HEADSET ADAPTER MC-385-( ) WHEN TESTING AN AMPLIFIER THE OUTPUT CIRCUIT OF WHICH IS CONNECTED FOR LOW IMPEDANCE.

Figure 6-1. Interphone Amplifier AM-26/AIC or AM-26A/AIC—Bench Test Circuit



LEGEND

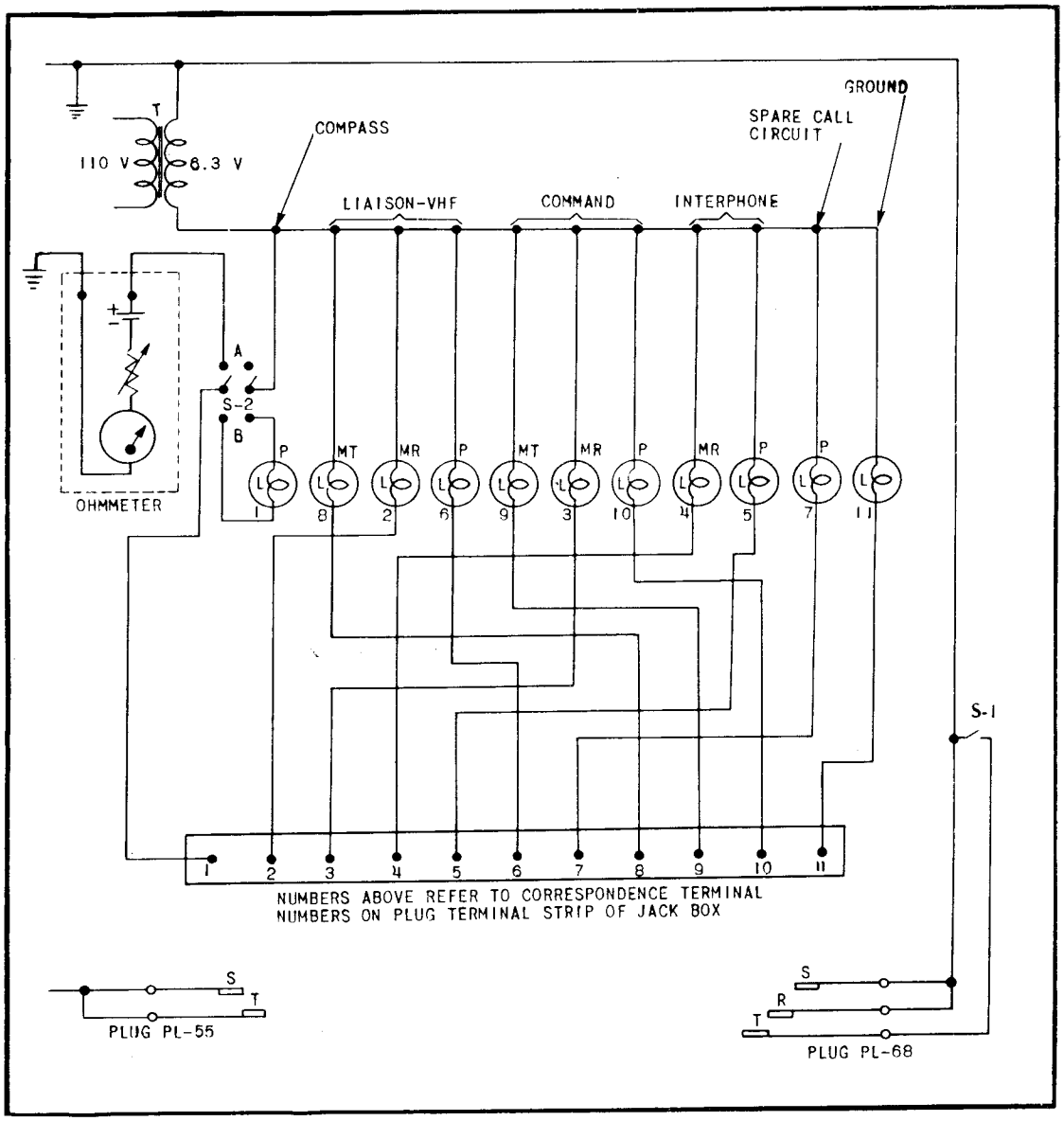
T —Transformer; d-c resistance of a to b not more than 1.0 ohms.
V —Voltmeter, electronic, Ballantine Model 300.
R —Resistor, carbon, 40 ohms ±5%, 2 watts.
J_1—Jack, JK-33-A for Microphone T-17.
S —Switch, S.P.D.T.
R_1— 40 ohms, 10 watts.
R_2— 300 ohms, 10 watts.
R_3— 250 ohms, 10 watts.
R_4—1875 ohms, 10 watts.
J_2—Jack JK-34-A.

NOTE

When making response measurements the following shall be observed:

1. Maintain supply voltage at 28.0 volts ±0.2 volts.
2. Disconnect Headset Adapter and Headset from J_2.
3. Place Switch S in P position.
4. Maintain test conditions as indicated for the particular test described elsewhere in this handbook.
5. Do not use Headset Adapter MC-585-( ) when testing an amplifier the output circuit of which is connected for low impedance.

Figure 6-2. Interphone Amplifier AM-26/AIC or AM-26A/AIC—Test Circuit



INSTRUCTIONS

1. Short circuit volume control. (Potentiomiometer RS-232 for BC-1366; volume control per SC-C-10102 for BC-1366-M).
2. Place switch S-2 of test circuit in position "B."
3. Plug jack box into test circuit.
4. Insert plug PL-55 in "Phone" jack.
5. Rotate jack box selector switch through all positions. Lights should light as indicated below: compass position—#1 and 11 only. Liaison-V.H.F. position—#6 and 11 only. Command position—#10 and 11 only. Interphone position—#5 and 11 only. Call position—#1, 6, 10, 5, 7, and 11 only.
6. Insert plug PL-68 in "Mic" jack. Open switch S-1. Rotate jack box selector switch through all positions. Lights should light as indicated below:
   Compass position—#1 and 11 only.
   Liaison-V.H.F. position—#2, 6, and 11 only.
   Command position—#3, 10, and 11 only.
   Interphone position—#4, 5, and 11 only.
   Call position—#1, 6, 10, 4, 5, 7, and 11 only.
7. Close switch S-1. Rotate jack box selector switch through all positions. Lights should light as indicated below:
   Compass position—#1 and 11 only.
   Liaison-V.H.F. position—#8, 2, 6, and 11 only.
   Command position—#9, 3, 10, and 11 only.
   Interphone position—#4, 5, and 11 only.
   Call position—#1, 6, 10, 4, 5, 7, and 11 only.
8. Place jack box selector on "Compass" position. Place switch S-2 of test circuit on position "A". Remove short circuit from volume control and check control for maximum and minimum resistance and smoothness of operation.

LEGEND

T—Transformer, 110 v to 6.3 v 2 amp.
S-1—Switch, single-pole single-throw.
S-2—Switch, double-pole double-throw.
L—Pilot lamp, 6-8 v. .150 ma.

Figure 6-3. Jack Box BC-1366 and BC-1366-M—Test Circuit

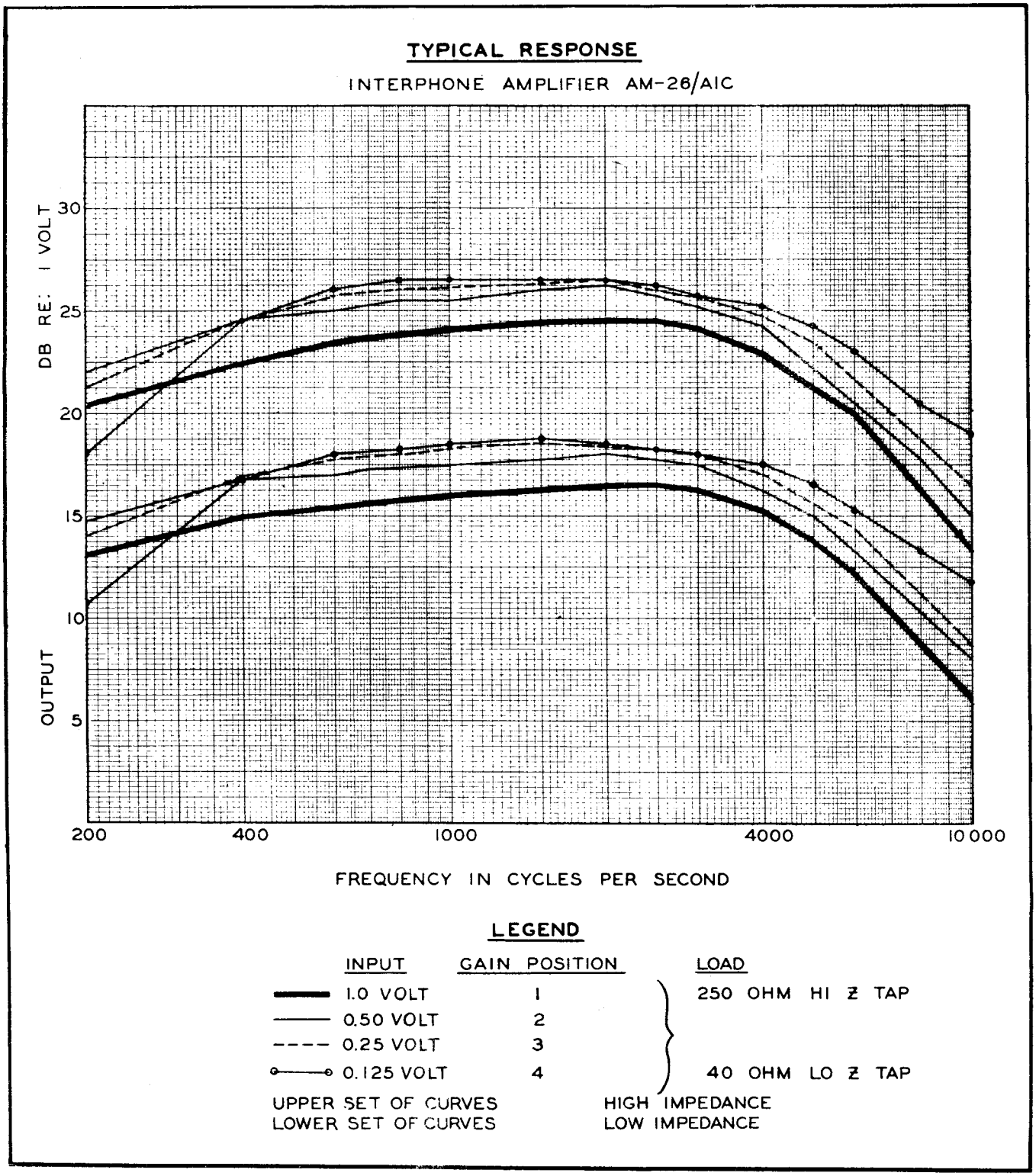


Figure 6-4. Interphone Amplifier AM-26/AIC or AM-26A/AIC—Typical Response Curves

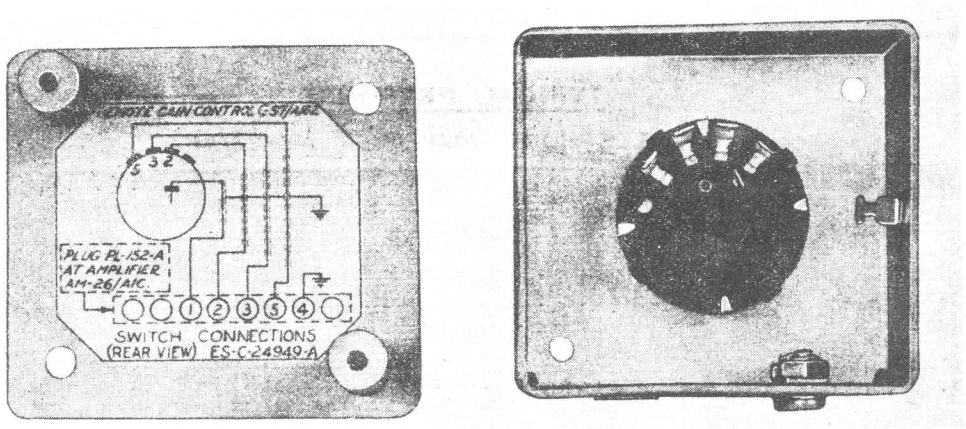


Figure 6-5. Remote Gain Control C-97/AIC-2—Inside View

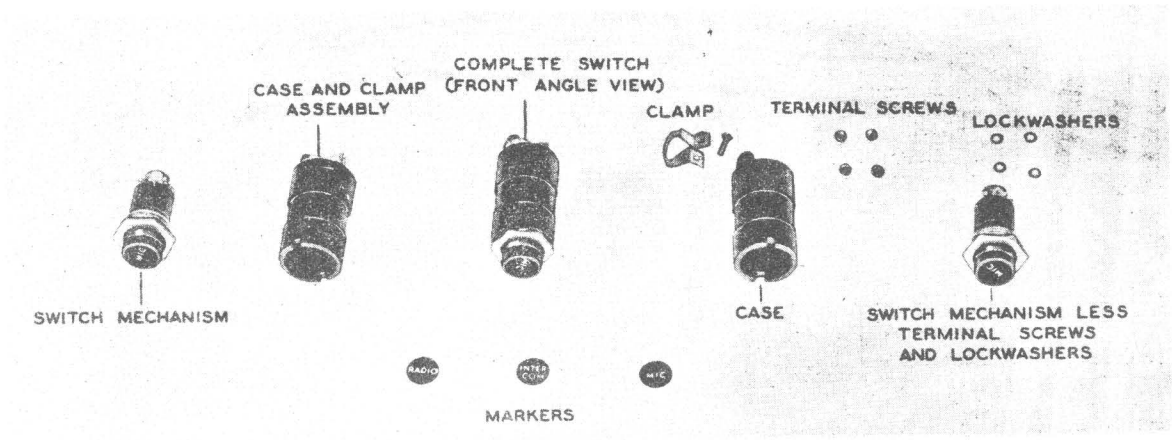


Figure 6-6. Microphone Switch SA-26/U— Component Parts

SECTION VII

TABLE OF REPLACEABLE PARTS

1. CONTENT AND ARRANGEMENT OF TABLE.

a. Listings in the Table of Replaceable Parts do not constitute a complete breakdown of the equipment but consist of all electrical parts and such operative mechanical parts, with the exception of structural and minor parts such as standard bolts, screws, nuts, etc., that are subject to loss or failure.

b. Parts are grouped by major assemblies. Under each major assembly they are listed (1) alphabetically according to type and (2) numerically under each type.

2. ORDERING SPARE PARTS.

a. GENERAL.—Each Service using the Table of Replaceable Parts has established certain depots and service groups for the storage and issue of spare parts. The regulations of each Service should be studied to determine the method of requisitioning spare parts and the sources from which they may be obtained. Information in the table pertaining to manufacturers' or contractors' names, types, models, or drawing numbers is not to be interpreted as authorization to field agencies to attempt to purchase identical or comparable spare parts directly from wholesale or retail stores except under emergency conditions as covered by the existing regulations of the Service concerned.

b. U. S. ARMY PERSONNEL.—The Table of Replaceable Parts is for information *only* and is not to be construed as a list of allowances of maintenance parts or components. Organizations using this equipment will consult applicable AAF Technical Orders of the 00-30 and 00-30A series. Higher maintenance and supply echelons will consult applicable Combat Supply Tables X11A, X11B, and X111.

3. EXPLANATION OF SYMBOLS USED.

a. REFERENCE SYMBOLS (COLUMN ONE). —To identify parts of an equipment referred to in the text, in illustrations, and in the Table of Replaceable Parts, a reference symbol is assigned to each part making up a major assembly of an equipment. Each symbol consists of an alphabetical portion and a numerical portion, separated by a hyphen. (Example C-101.) The alphabetical portion denotes the type of part, classified in accordance with the following list:

Alphabetical Portion of Reference Symbol	*Type of Part*
A	Structural parts, panels, frames, castings, etc.
C	Capacitors of all types
D	Dynamotors
E	Miscellaneous electrical parts, insulators, knobs, brushes, etc.
H	Hardware, screws, bolts, studs, pins, snap-slides, tools, etc.
J	Jacks and receptacles (stationary)
L	Inductors, radio-frequency, and audio-frequency
O	Mechanical parts, bearings, shafts, couplings, gears, ferrules, flexible shafts, housings, etc.
P	Plugs
R	Resistors, fixed and variable (potentiometers, etc.)
S	Switches, interlocks, thermostats
T	Transformers, radio-frequency, audio-frequency and power
V	Vacuum and gaseous discharge tubes
X	Sockets
BT	Batteries
MG	Motor generators (single unit)

The numerical portion of the reference symbol is assigned as follows: Each part in each of the classifications of parts within a major assembly is assigned a number running consecutively for 99 numbers—from 101 to 199 for the first major assembly listed in the table, from 201 to 299 for the second major assembly, etc. If parts in one or more classifications of parts within a major assembly exceed 99, however, the next hundred series, e.g. 301 to 399, is assigned to that major assembly even though only part of the numbers in that series are used. The next major assembly listed then begins with the next series, e.g. 401 to 499. The block of numbers assigned to each major assembly is shown in paragraph 5, this section.

4. DIFFERENCES IN REFERENCE NUMBERS.

Interphone Amplifier AM-26/AIC has been produced with two different systems of assignment of reference numbers. All amplifiers manufactured on Orders 828, 829, and 830-DAY-44 and a limited quantity on Orders 363 and 667-DAY-45 are marked with reference numbers ranging from 1 to 61. The remaining Interphone Amplifiers AM-26/AIC produced on Orders 363 and 667-DAY-45 and all Interphone Amplifiers AM-26A/AIC are marked with reference numbers including a prefix letter and a number in the 100 to 199 series. The latter numbering system is used in the text of this handbook and in the Table of Replaceable Parts.

The correspondent symbols for identical parts are listed below:

Earlier Models	*Later Models*
1	R-101
2	R-102
3	R-103
4	R-104
5	R-105
6	R-106
7	R-107
8	R-108
9-1	R-109-1
9-2	R-109-2
10-1	R-110-1
10-2	R-110-2
10-3	R-110-3
11	R-111
12	R-112
13	R-113
14	C-101
15	C-102
16-1	C-103-1
16-2	C-103-2
16-3	C-103-3
17-1	C-104-1
17-2	C-104-2
18-1	C-105-1
18-2	C-105-2
19-1	C-106-1
10-2	C-106-2
20-1	V-101-1
20-2	V-101-2
21-1	V-102-1
21-2	V-102-2
22	T-101
23	T-102
24	S-101
25	S-102
26-1	L-101-1
26-2	L-101-2
27	
28	X-101
29	C-101

Earlier Models	Later Models
30	H-101
31	P-101
32	X-102
33	E-101
61	H-102

5. ABBREVIATIONS.

Abbreviations used in the Table of Replaceable Parts are as follows:

Abbreviation	Definition
AF	audio frequency
approx	approximately
AWG	American Wire Gauge
AWS	American War Standard
cps	cycles per second
DC	direct current
dia	diameter
ft	foot, feet
"	inch (es)
ID	inner diameter
JAN	joint Army Navy
ma	milliampere (s)
mf	microfarad (s)
OD	outer diameter
±	plus or minus
RF	radio frequency
RMA	Radio Manufacturers' Association
SPST	single pole single throw
v	volt (s)

6. INDEX OF MAJOR ASSEMBLIES.

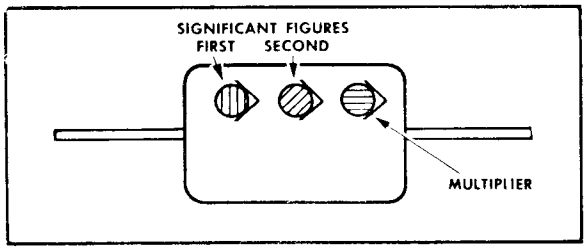
Major Assembly	Numerical Series of Reference Symbols
Interphone Amplifier AN/AIC-2 and AN/AIC-2A	101 to 113
Dynamotor DM-32-A	201 to 210
Jack Box BC-1366 or BC-1366-M	301 to 306
Remote Gain Control C-97/AIC-2	501
Mounting MT-28/ARN-5	601

7. DECIMAL EQUIVALENTS OF WIRE SIZES OF AWG AND SWG (BRITISH).

Size AWG	Diameter (inches)	Size SWG	Diameter (inches)
0000	.46000	0000	.4000
000	.40964	000	.3720
00	.36480	00	.3480
0	.32486	0	.3240
1	.28930	1	.3000
2	.25763	2	.2760
3	.22942	3	.2520
4	.20431	4	.2320
5	.18194	5	.2120
6	.18202	6	.1920
7	.14428	7	.1760
8	.12849	8	.1600
9	.11442	9	.1440
10	.10190	10	.1280
11	.09074	11	.1160
12	.08081	12	.1040
13	.07196	13	.0920
14	.06408	14	.0800
15	.05707	15	.0720
16	.05082	16	.0640
17	.04526	17	.0560
18	.04030	18	.0480
19	.03589	19	.0400
20	.03196	20	.0360
21	.02846	21	.0320
22	.02535	22	.0280
23	.02257	23	.0240
24	.02010	24	.0220
25	.01790	25	.0200
26	.01594	26	.0180
27	.01420	27	.0164
28	.01264	28	.0148
29	.01126	29	.0136
30	.01003	30	.0124
31	.008928	31	.0116
32	.007950	32	.0108
33	.007080	33	.0100
34	.006305	34	.0092
35	.005615	35	.0084
36	.005000	36	.0076
37	.004453	37	.0068
38	.003965	38	.0060
39	.003531	39	.0052
40	.003145	40	.0048

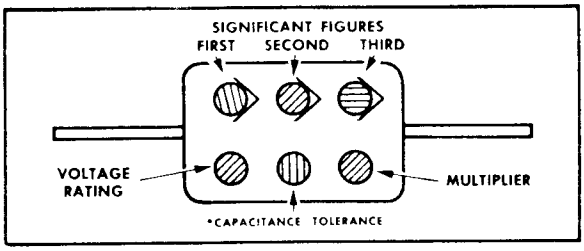
CAPACITOR COLOR CODES

RMA 3-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS

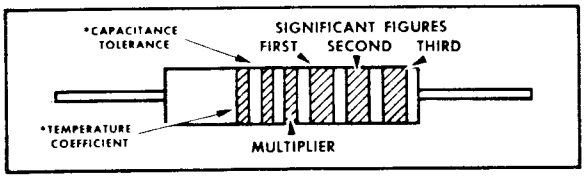


Capacitors marked with this code have a voltage rating of 500 volts.

RMA 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



RMA COLOR CODE FOR TUBULAR CERAMIC-DIELECTRIC CAPACITORS



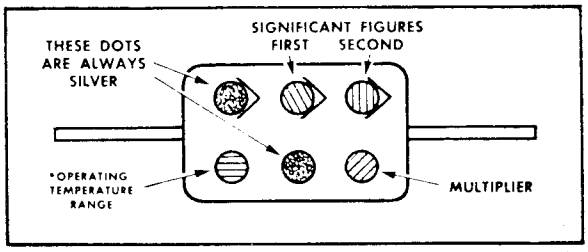
Capacitors marked with this code have a voltage rating of 500 volts.

RMA Radio Manufacturers Association JAN Joint Army-Navy

Note These color codes give all capacitances in micromicrofarads

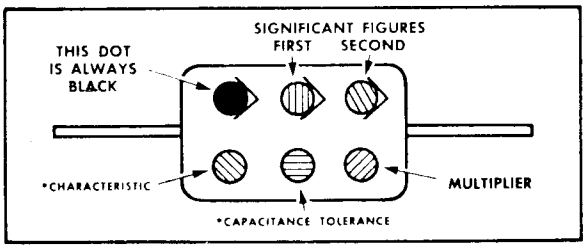
*Items marked with an asterisk are of interest primarily to depot and higher echelon repair personnel

JAN 6-DOT COLOR CODE FOR PAPER-DIELECTRIC CAPACITORS



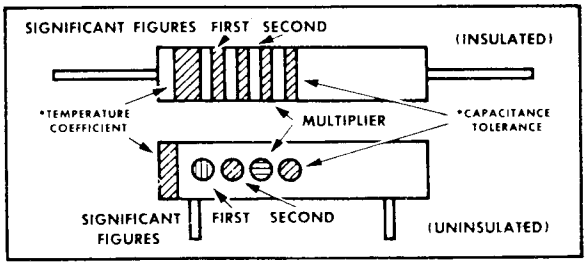
The silver dots serve to identify this marking. For working voltages see JAN type designation code.

JAN 6-DOT COLOR CODE FOR MICA-DIELECTRIC CAPACITORS



The black dot serves to identify this code. For working voltages see JAN type designation code.

JAN COLOR CODE FOR FIXED CERAMIC-DIELECTRIC CAPACITORS

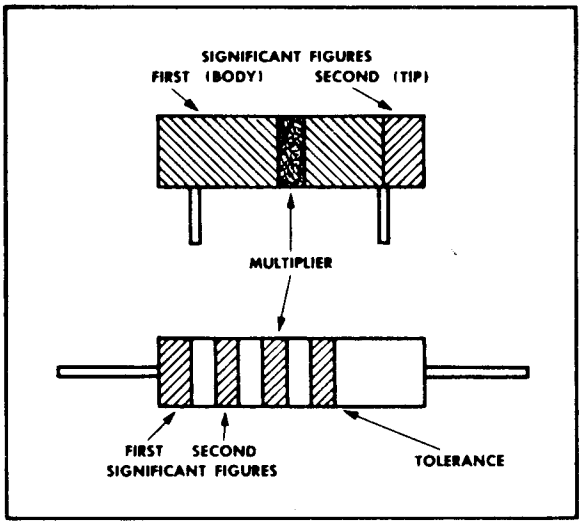


Capacitors marked with this code have a voltage rating of 500 volts. Either the band or dot code may be used.

COLOR	SIGNIFICANT FIGURE	MULTIPLIER			RMA VOLTAGE RATING
		RMA MICA-AND CERAMIC-DIELECTRIC	JAN MICA-AND PAPER-DIELECTRIC	JAN CERAMIC-DIELECTRIC	
BLACK	0	1	1	1	
BROWN	1	10	10	10	100
RED	2	100	100	100	200
ORANGE	3	1,000	1,000	1,000	300
YELLOW	4	10,000			400
GREEN	5	100,000			500
BLUE	6	1,000,000			600
VIOLET	7	10,000,000			700
GRAY	8	100,000,000		0.01	800
WHITE	9	1,000,000,000		0.1	900
GOLD		0.1	0.1		1,000
SILVER		0.01	0.01		2,000
NO COLOR					500

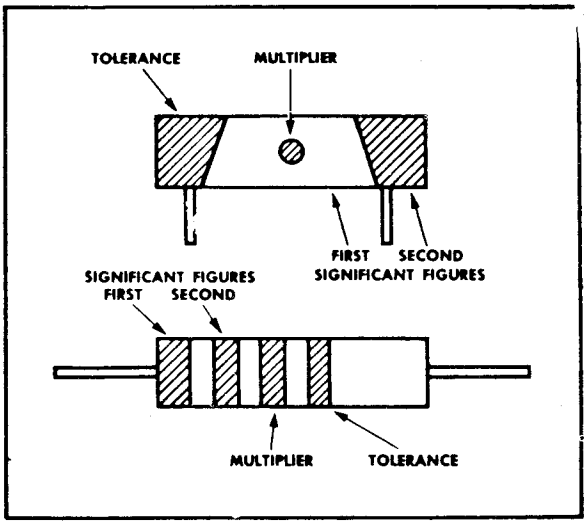
RESISTOR COLOR CODES

RMA COLOR CODE FOR FIXED COMPOSITION RESISTORS



Insulated fixed composition resistors with axial leads are designated by a natural tan background color. Non-insulated fixed composition resistors with axial leads are designated by a black background color.

JAN COLOR CODE FOR FIXED COMPOSITION RESISTORS



Resistors with axial leads are insulated. Resistors with radial leads are uninsulated.

COLOR	SIGNIFICANT FIGURE	MULTIPLIER	TOLERANCE (PERCENT)
BLACK	0	1	
BROWN	1	10	
RED	2	100	
ORANGE	3	1,000	
YELLOW	4	10,000	
GREEN	5	100,000	
BLUE	6	1,000,000	
VIOLET	7	10,000,000*	
GRAY	8	100,000,000*	
WHITE	9	1,000,000,000*	
GOLD		0.1*	5
SILVER		0.01*	10
NO COLOR			20

*JAN ONLY

Example: A 50,000-ohm resistor with a standard tolerance of 20 percent (no color) would be indicated by a green ring (5), a black ring (0), and an orange ring (000)

RMA: Radio Manufacturers Association
JAN: Joint Army-Navy

JOINT ARMY-NAVY TYPE DESIGNATION CODES FOR ELECTRICAL COMPONENTS

INTRODUCTION: Fixed and variable resistors and fixed capacitors manufactured under JAN specifications may be labeled with a *type designation code* instead of a color code or actual electrical value. For resistors and capacitors marked with the JAN type designation code, electrical values and other data can be determined by consulting the following information.

RESISTORS

FIXED, COMPOSITION

COMPONENT: RC signifies *fixed, composition resistor.*

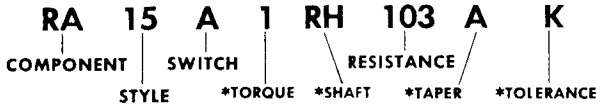
STYLE: A two-digit symbol indicates power rating and physical size.

Resistor style	Wattage
RC10, RC15, RC16	¼ WATT
RC20, RC21, RC25	½ WATT
RC30, RC31, RC35, RC38	1 WATT
RC40, RC41, RC45	2 WATTS
RC65	4 WATTS
RC75, RC76	5 WATTS

RESISTANCE: A three-digit symbol indicates the resistance value in ohms. The first two digits give the first two figures of the resistance value; the third digit gives the number of zeros which follow the first two figures.

RESISTORS

VARIABLE, WIRE-WOUND



COMPONENT: RA signifies *variable, wire-wound resistor.*

STYLE: A two-digit symbol indicates power rating and physical size and shape.

SWITCH: Symbol A indicates no switch. Symbol B indicates a switch turned ON at start of clockwise rotation.

RESISTANCE: A three-digit symbol indicates the resistance value in ohms. The first two digits give the first two figures of the resistance value; the final digit gives the number of zeros which follow the first two figures. The letter *R* may be substituted to represent a decimal point; but when *R* is used, the last digit of the group becomes significant.

RHEOSTATS

WIRE-WOUND, POWER-TYPE

COMPONENT: RP signifies all *rheostats.*

STYLE: Same as for variable, wire-wound resistors.

OFF POSITION:

Numeral	OFF position
1	None.
2	At end of counterclockwise rotation.
3	At end of clockwise rotation.

RESISTANCE: Same as for variable, wire-wound resistors.

*Items starred are of interest primarily to depot and higher echelon repair personnel.

CAPACITORS

FIXED MICA-DIELECTRIC

CM 20 B 511 K

COMPONENT | CASE | *CHARACTERISTIC | CAPACITANCE | *TOLERANCE

COMPONENT: CM signifies *fixed, mica-dielectric capacitor.*

CASE: A two-digit symbol identifies a physical case size and shape.

CAPACITANCE: A three-digit symbol indicates the capacitance value in micromicrofarads. The first two digits give the first two figures of the capacitance value; the final digit gives the number of zeros which follow the first two figures. When more than two significant figures are required, additional digits may be used, the last digit always indicating the number of zeros.

D-C WORKING VOLTAGE FOR CAPACITANCE RANGE

Case	Capacitance range	Vdcw
CM20	5-510 mmf	500
CM25	5-1,000 mmf	500
CM30	470-3,300 mmf	500
CM35	470-6,200 mmf	500
	6,800-10,000 mmf	500
CM40	3,300-8,200 mmf	500
	9,100-10,000 mmf	300

NOTE: Working voltages for capacitors above CM40 are stamped on the case.

The d-c working voltage of a capacitor can be determined from the above table when the case size and value of capacitance are known.

CAPACITORS

FIXED, MOLDED, PAPER-DIELECTRIC†

CN 36 A 302

COMPONENT | CASE | *CHARACTERISTIC | CAPACITANCE

COMPONENT: CN signifies *fixed, molded, paper-dielectric capacitor.*

CASE: Same as for fixed, mica-dielectric capacitors.

CAPACITANCE: A three-digit symbol indicates the capacitance value in micromicrofarads. The first two digits give the first two figures of the capacitance value; the third digit gives the number of zeros which follow the first two figures.

D-C WORKING VOLTAGE FOR CAPACITANCE RANGE

Case	Capacitance	Vdcw
CN35	3,000 mmf	800
	6,000 mmf	600
	10,000 mmf	400
CN36	3,000 mmf	400
	6,000 mmf	400
	10,000 mmf	300
CN40	3,000 mmf	400
	6,000 mmf	300
	10,000 mmf	300
CN41	3,000 mmf	600
	6,000 mmf	600
	10,000 mmf	400

The d-c working voltage of a capacitor can be determined from the above table when the case size and value of capacitance are known.

CAPACITORS

FIXED, CERAMIC-DIELECTRIC

CC 20 AH 100 G

COMPONENT | CASE | *CHARACTERISTIC | CAPACITANCE | *TOLERANCE

COMPONENT: CC signifies *fixed, ceramic-dielectric capacitor.*

CASE: Same as for fixed, mica-dielectric capacitors.

CAPACITANCE: Same as for fixed, molded, paper-dielectric capacitors.

NOTE: All fixed, ceramic-dielectric capacitors have a working voltage of 500 volts, d-c.

*Items starred are of interest primarily to depot and higher echelon repair personnel.

†This is not a JAN specification. These capacitors are covered by AWS C75/221.

TABLE OF REPLACEABLE PARTS

MODEL: INTERPHONE EQUIPMENT AN/AIC-2 AND AN/AIC-2A **MAJOR ASSEMBLY: INTERPHONE AMPLIFIER AM-26/AIC AND AM-26A/AIC**

Reference Symbol	*Army Stock No. Navy Stock No. British Ref. No.*	*Name of Part and Description*	*Function*	*Mfr. and Desig. or Standard Type*	*Cont. or Govt. Dwg. or Spec. No.*
C-101	3DB150-1	CAPACITOR, fixed: 150-microfarad +100%—20%; 50-volt DCW; electrolytic, 1" diam 2" long (approximately).	Microphone supply voltage filter	P. R. Mallory and Co.	SC-F-17956
C-102	3DB1.092	CAPACITOR, fixed: 1.0-microfarad +20% —15%; 100-volt DCW; oil filled paper; bathtub case; 1-13/16" x 1" x 3/4"; 2-1/8" mounting centers.	Microphone circuit coupling	Cornell Dubilier Corp.	SC-C-17957
C-103-1	3DA50-15	CAPACITOR, fixed: 50,000-micromicrofarad +20% —10%; 400-volt DCW; paper; molded phenolic case.	Interstage coupling	Micamold 342 or 345	SC-C-17975
C-103-2		Same as C-103-1.	Interstage coupling		
C-103-3		Same as C-103-1.	Feedback		
C-104-1	3DA10-124 3DA10-126	CAPACITOR, fixed: 10,000-micromicrofarad +20% —10%; 600 volt DCW; paper; molded phenolic case.	Frequency control	Micamold 340, 342 or 345	SC-C-17975
C-104-2		Same as C-104-1.	Frequency control		
C-105-1	3DB10-78	CAPACITOR, fixed: 10-microfarad +100% —30%; 350-volt DCW; electrolytic; 3/4" diam 2" long.	Dynamotor input filter	P. R. Mallory and Co.	SC-F-17956
C-105-2		Same as C-105-1.	Dynamotor output filter		
C-106-1	3D9750-4	CAPACITOR, fixed: 750-micromicrofarad ±20%; 400-volt DCW; mica.	Radio frequency filter	Cornell Dubilier Corp.	JAN-C-5
C-106-2		CAPACITOR, fixed: 820-micromicrofarad ±10%; 400-volt DCW; mica.	Radio frequency filter	CM25A750J or CM35A821K	
D-101	3H1632A	DYNAMOTOR DN-32-A: Input 28 volts D-C, 1.1 amperes; output 250 volts D-C, 60 ma.	High voltage power supply	W. E. 6936	
E-101	2Z5748.2	KNOB: round; aluminum; black wrinkle finish; 1-1/4" diam x 9/16" high; 2 setscrews; for 1/4" diam shaft.	Gain control Knob	Str Carl D-3716	SC-B-17983
H-102	6Z3810-14.1	FASTENER: snap; "Speed clip"; two parts.	To hold amplifier cover down	Tinnerman 5928-1 and 5928-2	SC-F-17956
L-101-1	3F2997-1	CHOKE, RF: 100 to 112 microhenries ±10%; maximum d-c resistance 0.15 ohms.	Radio frequency filter	W. E. 5546 ARC 5546	SC-C-17967
L-101-2		Same as L-101-1.			
O-101	P/O 2Z8496	MOUNT: vibration; consists of a cup; 2 washers; snap-slide stud; rubber absorber 0.375" high x .750" diam with 1/4" diam bushing.	Isolates dynamotor vibrations.	W. E. 4681 ARC 4681	SC-C-18074
P-101	2Z7412-1	CONNECTOR, male contact: 3 contacts; mica insulating plates; aluminum ring 1.156" diam x 0.234" high.	Dynamotor connector	W. E. 4718 ARC	SC-D-17962
H-101	P/O 2Z8496	NUT: 5/8" x 27; aluminum.	Secures shock absorber to chassis	W. E. 4686 ARC 4686	SC-C-18074

TABLE OF REPLACEABLE PARTS (Continued)

MODEL: INTERPHONE EQUIPMENT AN/AIC-2 AND AN/AIC-2A **MAJOR ASSEMBLY: INTERPHONE AMPLIFIER AM-26/AIC AND AM-26A/AIC**

Reference Symbol	*Army Stock No. Navy Stock No. British Ref. No.*	*Name of Part and Description*	*Function*	*Mfr. and Desig. or Standard Type*	*Cont. or Govt. Dwg. or Spec. No.*
R-101	3RC31BE101K 3Z6010-46	RESISTOR, fixed: 100 ohms ±10%; 1 watt; wire wound or carbon.	Microphone loading	IRC JAN RC31BE101K	JAN-R-11
R-102	3RC41BE271K	RESISTOR, fixed: 270 ohms±10%; 2 watt; wire wound or carbon.	Microphone voltage dropping	IRC JAN RC41BE271K	JAN-R-11
R-103	3RC21BE272K 3Z6270-2	RESISTOR, fixed: 2700 ohms ±10%; 1/2 watt; carbon.	Gain control	IRC BT-1/2 JAN RC21BE272K	JAN-R-11
R-104	3RC21BE102K 3Z4525	RESISTOR, fixed: 1000 ohms ±10%; 1/2 watt; carbon.	Gain control	IRC BT-1/2 JAN RC21BE102K	JAN-R-11
R-105	3RC21BE471K 3Z6047 3Z6047-12	RESISTOR, fixed: 470 ohms ±10%; 1/2 watt; carbon.	Gain control	IRC BT-1/2 JAN RC21BE471K	JAN-R-11
R-106	3RC21BE362J 3ZK6360-9	RESISTOR, fixed: 3600 ohms ±5%; 1/2 watt; carbon.	Feedback	IRC BT-1/2 JAN RC21BE362J	JAN-R-11
R-107	3RC21BE204J 3Z6720-1	RESISTOR, fixed: 200,000 ohms ±5%; 1/2 watt; carbon.	Feedback	IRC BT-1/2 JAN RC21BE204J	JAN-R-11
R-108	3RC21BE222K 3Z6220-4	RESISTOR, fixed: 2200 ohms ±10%; 1/2 watt; carbon.	Cathode bias	IRC BT-1/2 JAN RC21BE222K	JAN-R-11
R-109-1	3RC31BE473K 3Z6647-8	RESISTOR, fixed: 47,000 ohms ±10%; 1 watt; carbon.	Voltage amplifier plate resistor	IRC BT-1 JAN	JAN-R-11
R-109-2		Same as R-109-1.	Phase inverter plate resistor	RC31BE473K	
R-110-1	3RC21BE394K	RESISTOR, fixed: 390,000 ohms ±10%; 1/2 watt; carbon.	P.A. grid resistor P.A. grid resistor	IRC BT-1/2 JAN RC21BE394K	JAN-R-11
R-110-2		Same as R-110-1.	Input		
R-110-3		Same as R-110-1.	Transformer loading		
R-111	3RC21BE273K 3Z6627-1	RESISTOR, fixed: 27,000 ohms ±10%; 1/2 watt; carbon.	Voltage divider	IRC BT-1/2 JAN RC21BE273K	JAN-R-11
R-112	3Z6035-28	RESISTOR, fixed: 350 ohms ±10%; 5 watt; wire wound. OR RESISTOR: fixed; 900 ohms ±10%; 5 watt; wire wound.	Cathode bias	Sprague Koolohm JAN RW55H401 or RW55J401	JAN-R-26
R-113	3Z6001-61	RESISTOR, fixed: 10 ohms ±10%; 5 watt; wire wound.	Heater voltage dropping	Sprague Koolohm JAN RW55H100 or RW55J100	JAN-R-26

S-101	3Z9845 .8	SWITCH: toggle; S.P.S.T.; with 0.046" hole in handle.	"OFF-ON" Switch	C-H 8280	SC-C-17957
S-102	3Z9825-55.36	SWITCH: single pole; four position; rotary type.	Gain control	P. R. Mallory and Co. 3114	SC-C-17966
S-103		CONTROL: consists of three barometric switches (10,000, 20,000 and 30,000 ft. operating altitudes) mounted on aluminum bracket. Overall size approx 2" x 2" x 2".	Automatic gain control		71-5115 SC-C-17887
T-101	2Z9631.121	TRANSFORMER, A-F: input; turns ratio, secondary to primary 36-1.	To couple microphone circuit to voltage amplifier	United Transformer Co. 79825 Best E-112 Peerless 4389	SC-C-17958
T-102	2Z9632.164	TRANSFORMER, AF: output; turns ratio, primary to secondary 8-1; primary center tapped; secondary tapped at 40% from ground end.	To couple amplifier to output load	UTC 79071 Best E-110A Peerless 912	SC-C-17958
V-101-1	2J12J5GT	TUBE JAN-12J5 GT: triode. (VT-135).	Voltage amplifier Phase inverter		JAN-1A
V-101-2		Same as V-101-1.			
V-102-1	2J12A6	TUBE JAN-12A6: beam power tetrode. (VT-134).	Power amplifier Power amplifier		JAN-1A
V-102-2		Same as V-102-1.			
X-101	2Z7412	CONNECTOR, male contact: 8 pin; nut 1-1/8" x 24 thread; receptacle ring 1.312" diam x 0.688" high.	For external connection to amplifier	W. E. 6418 ARC 4718	SC-C-17972
X-102	2Z8654.7 or 2C2500.456.1/S1	SOCKET, tube: octal base; 8 contact; with retainer ring	Tube socket	Cinch AMPH	SC-F-17856
A-201	3H1632A/B4	BASE ASSEMBLY: complete with snapslides and 3-contact connector.	Holds dynamotor machine	WE 5722	
C-201	3DA1-63	CAPACITOR, FIXED: 1000 mf +20% —10%. 500 volts DCW; mica.	RF filter	WE-4251	
E-201	3H1632A/A1	ARMATURE ASSEMBLY.	Rotor WSHT 957972A CONT. 27829-WS-7610	G.E. K-81286 12AA-3	
E-202	3H1632A/B1	BRUSHES, (HV): set of 2 high voltage brushes with pigtails, springs, and end plugs attached; 1-7/16" overall length.	Collect current from high voltage commutator	G. E. K-5893583AB3 WSTH 7-D-8603 Ass. 1 and 2 CONT. 23609-4	
E-203	3H1632A/B2	BRUSHES, (LV): set of 2 low voltage brushes with pigtails, springs, and end plugs attached; 1-7/16" overall length.	Supplies current to low voltage commutator	G. E. K-8100699AA1 WSTH 7-D-8603 Ass. 1 and 2 CONT. 2309-#	
E-204	3H1632A/C4	CAP, brush: molded black phenolic with threaded brass insert, 9/16" diam x 9/32" wide.	Holds brush in holder	G. E. 8100698AA1 WSTH 4-D-9423 Ass. 1 CONT. 23610-X	

TABLE OF REPLACEABLE PARTS (Continued)

MODEL: INTERPHONE EQUIPMENT AN/AIC-2 AND AN/AIC-2A **MAJOR ASSEMBLY: DYNAMOTOR DM-32-A**

Reference Symbol	*Army Stock No. Navy Stock No. British Ref. No.*	*Name of Part and Description*	*Function*	*Mfr. and Desig or Standard Type*	*Cont. or Govt. Dwg. or Spec. No.*
E-205	3H1632A/C2	FIELD COIL ASSEMBLY: low voltage field windings; two sections.	Field coil	G. E. V5872743 WSTH 1-C-2150 Ass. 3 CONT. 21668-WS-7610	
E-206	3H1632A/G1	GROMMET: rubber; circular.	P/O Dynamotor DM-32-A	CONT. 25926-18 WSTH 5-0-7168 G. E. K-8104169AA1	
H-201	3H1632A/S2	SCREW: machine; flat head; 2-56 x 1/4"; nickle plated steel.	For bearing retainer	WSTH 6B-9601 Item 4 CONT. 25926-23	
H-202	6L6832-3-1.125	SCREW: machine; fillister head; 8-32 x 7/32"; cadmium plated steel.	Holds dynamotor machine to base	W. E. 6016	
H-203	3H1632A/S4	BOLT, stud: fillister head; hard brass nickleplated; 1/2" long #4-40 thread.	Dynamotor orientation	W. E. 5219	
H-204	3H1632A/W1	WASHER: cover screw; 0.193" ID x 0.435" OD.	For cover screw	G. E. K-5863757AA-PT7 WSTH 93-D-397 Item 2 CONT. 25926-27	
H-205	2Z8609/S2	BUTTON: snapslide fastener; nickle plated brass overall dimensions 0.437" diam x 0.192" long.	P/O Dynamotor DM-32-A	ARC 211 6	DM-32-A
H-206	2Z8609/S1	FASTENER: snapslide half hard nickle silver; overall dimensions 1.050" long x 0.362" high x 0.437" deep.	P/O Dynamotor DM-32-A		
H-207	2Z8609/G1	GUIDE: snapslide fastener; yellow brass; nickle plated; two holes between centers; overall dimensions 0.984" long x 0.167" high x 0.490" wide.	P/O Dynamotor DM-32-A	W. E. 4750	
H-208	616440-4.9	SCREW: machine; binding head; 4-40 x 1/4"; class two thread.	P/O Dynamotor DM-32-A	W. E. 6008	
H-209	2S274N/T2	TERMINAL: lug; yellow brass; silver plated; 90-degree angle at each end.	P/O Dynamotor DM-32-A	W. E. 5216	
H-210	2Z8609/W1	WASHER: flat; for snapslide; spring brass; nickle plated; 0.005" thick; bent to form a depth of 0.062" ID x 0.437" OD.			
M-G201	3H1632A/1	DYNAMOTOR MACHINE.	Mounts on base assembly to make complete Dynamotor DM-32-A	W. E. KS5572 CONT. 25926-WS-7610 G. E. M5845839 (5DY82AB1)	

S-201	2Z7227-10	CONNECTOR ASSEMBLY: 3-contact socket; with 3 jacks WE-5215; mica insulating plates assembled in an aluminum ring; approx 1/4" diam.	Connection to amplifier		WE-5211
C-201	3H1632A/B3	BEARING ASSEMBLY.			G. E. K5893658AC-PT2 WSTH 507158 Item 2 CONT. 25926-10
C-202	3H1632A/B5	COVER: drawn aluminum.	End cover		G. E. K-5859161AD-PT2 WSTH 5-D-7098 Item 2 CONT. 19964-1

MODEL: INTERPHONE EQUIPMENT AN/AIC-2 AND AN/AIC-2A **MAJOR ASSEMBLY: JACK BOX BC-1366 AND BC-1366-M**

E-301	2C2216/6.1	JACK TERMINAL PLATE ASSEMBLY: 11 pin jacks assembled on rectangular phenolic plate.	Electrical connections to aircraft wiring		SC-D-3150
E-302	2C2216/7.1	PLUG TERMINAL PLATE ASSEMBLY: 11 pin plugs assembled on rectangular phenolic plate.	Electrical connections to jack box parts		SC-D-3150
E-303	2C2216/9	INSULATOR, jack: rectangular; natural laminated phenolic sheet.	Insulates jack terminal plate assembly from box		SC-D-3150
E-304	2C2216/8	INSULATOR, plug: triangular; natural laminated phenolic sheet.	Insulates plug terminal plate assembly from jack box parts		SC-D-3150
E-305	2Z5830-183	KNOB MC-183: aluminum bar; selector.	Selector for Switch SW-145		SC-D-2241
E-306	2Z5818	KNOB MC-168: aluminum; round; 1-1/4" diam x 9/16"; marked "INCREASE OUTPUT."	Volume control		SC-D-2241
J-301	2Z5534A	JACK JK-34-A: 2-contact; headset jack.	Phone jack	P.R.M.	71-852 SC-D-2339
J-302	2Z5533A	JACK JK-33-A: 3-contact; microphone jack.	Microphone jack	P.R.M.	71-852 SC-D-2332
O-301	2Z4856	FRICTION SPREADER MM-6.			SC-B-2232
R-301	2Z7297-232	POTENTIOMETER RS-232: variable resistor; 0-150,000 ohms; carbon. (Used in Jack Box BC-1366 Only.)	Volume control	A.B.	SC-D-2237
R-401		RESISTOR, variable; 1-10,000 ohms. (Used in Jack Box BC-1366-M only.)	Volume control		SC-C-10102
S-301	3Z8145	SWITCH SW-145: selector; 2-gang; 5-position		P.R.M. Oak Centralab	SC-C-2470

TABLE OF REPLACEABLE PARTS (Continued)

MODEL: INTERPHONE EQUIPMENT AN/AIC-2 AND AN/AIC-2A — **MAJOR ASSEMBLY: REMOTE GAIN CONTROL C-97/AIC-2**

Reference Symbol	*Army Stock No. Navy Stock No. British Ref. No.*	*Name of Part and Description*	*Function*	*Mfr. and Desig. or Standard Type*	*Cont. or Govt. Dwg. or Spec. No.*
H-501		CLAMP: cable; zinc plated, cold rolled steel 1-1/8" x 1/4"; two mounting holes 3/16" from ends, 3/4" between mounting centers; center bent in a 5/32" radius semi-circle.		P/O 6-97/AIC-2	
S-501		SWITCH: rotary; single pole four-positions; rotary type.	Remote gain control	P. R. Mallory & Co. 3114	

MODEL: INTERPHONE EQUIPMENT AN/AIC-2 AND AN/AIC-2A — **MAJOR ASSEMBLY: MOUNTING MT-28/ARN-5**

A-600	2Z6763-28	MOUNTING MT-28/ARN-5: consists of four rubber shock mounts; mounting plate and locking mechanism for holding the amplifier in place.	Shock mount for Interphone Amplifier AM-26/AIC or Interphone Amplifier AM-26A/AIC		SC-D-10661
A-601	2Z6763-28/1	BASE, mounting: consists of one steel base; two connector strips; two shock mounts; overall 6" x 1-3/4".	P/O MT-28/ARN-5		SC-D-10666

SECTION VIII

DRAWINGS

WIRE TABLE

All wires to be aircraft cable per spec. AN-J-C-48, unless otherwise specified. + indicates wires to be individually shielded per spec. 95-27273. ⊗ indicates wires whose voltage drop must not exceed limits of spec. 95-32310.

Ref. Note	Wire No.	Maximum Operating Voltage	Max. Allowable Resistance In Ohms (71°C)	Minimum Cable Size Permitted	Ref. Note	Wire No.	Maximum Operating Voltage	Max. Allowable Resistance In Ohms (71°C)	Minimum Cable Size Permitted
	801	30	0.5	20 +		841	100	1.0	20 +
	802	75	1.0	20		842	30	0.5	20
	803					843	30	0.5	20
	804	30	.05	18		844	30	0.5	20 +
	805	0	.05	18		845	75	1.0	20
	806					846	100	1.0	20 +
	807					847	100	1.0	20 +
	808					848	30	0.3	18
	809					849	30	0.3	18
	810	100	1.0	20 +		850	100	1.0	20 +
	811	100	1.0	20 +	14	851	0	.05	18
	812	30	0.5	20		852			
	813	30	0.5	20		853			
	814	30	0.5	20 +		854	30	.05	18
	815	75	1.0	20		855	30	.05	18
	816	100	1.0	20 +		856	0	.001	18
	817	100	1.0	20 +					
	818	30	0.3	18		531	100	1.0	20 +
	819	30	0.3	18		553	30	0.3	18
	820	100	1.0	20 +		554	30	0.5	20
	821	100	1.0	20+					
	822								
	823	30	0.5	20		690	100	1.0	20 +
	824	30	0.5	20 +		691	30	0.3	18
	825	75	1.0	20		692	30	0.5	20
	826	100	1.0	20 +					
	827	100	1.0	20 +					
14	828	0	.05	18		716	100	1.0	20 +
	829	30	0.3	18					
	830								
	831	30	1.0	20 +		997	100	1.0	20 +
	832	30	1.0	20 +		998	30	0.5	20
	833	30	1.0	20 +		999	30	0.3	18
	835	30	1.0	20 +					
14	838	0	.05	18					

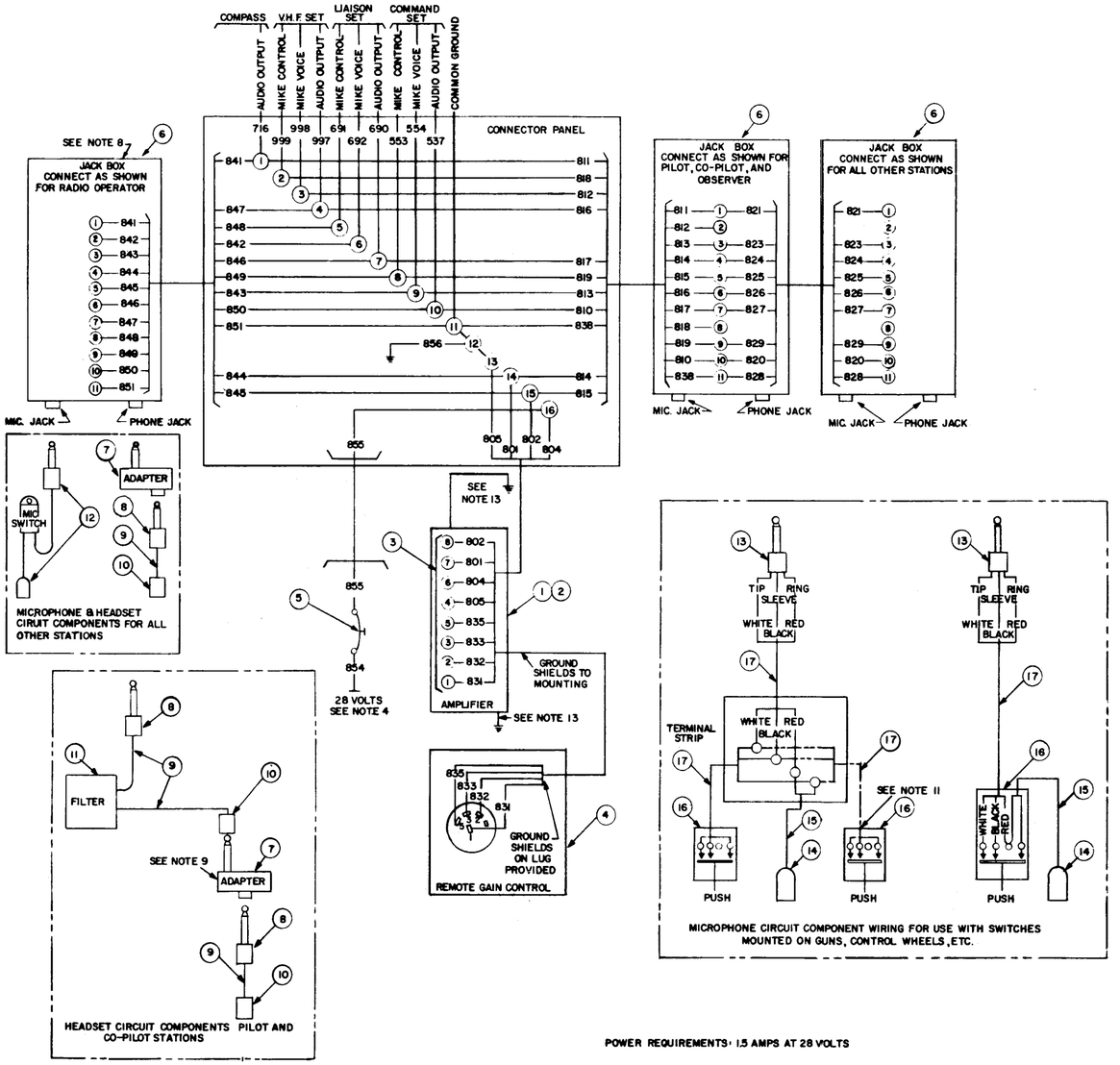


Figure 8-1. Interphone Equipment AN/AIC-2 and AN/AIC-2A--Cording Diagram

COMPONENT TABLE

Item	Quan. Req'd.	Equipment Nomenclature: Description	Equipment Nomenclature: Type No.	Spec. or Installation Drawing
* 1	1	Interphone Amplifier	AM-26/AIC	H44D3800
* 2	1	Mounting	MT-28/ARN-5	H44D3800
* 3	1	Plug	PL-152-A	H41G3028
* 4	1	Remote Gain Control	C-97/AIC-2	H44D3800
5	1	Circuit Breaker	AN-3161-P5 (See Note 12)	AN-C-77
* 6		Jack Box	BC-1366	H40D2226
* 7		Headset Adapter	MC-385-( )	H44B2143
* 8		Plug	PL-55	36B4044
* 9		Cordage	CO-119-( )	36B4044
* 10		Jack	JK-26	36B4044
* 11		Filter	FL-8-( )	H43D4316
* 12		Cord (Throat Mike)	CD-508	H42A502
* 13		Plug	PL-68	H41G10356
* 14		Jack (Throat Mike)	JK-48	H41G10067
* 15		Cordage	CO-219	H41G10067
* 16		Switch Momentary Two Circuits to Ground	SA-26/U or Equivalent	H45D2162
17		Cord (See Note 10)		
18				

* Indicates Government Furnished Equipment

1 All terminal strips required in the installation of the wiring shall be made of suitable insulating material and with terminal spacing to provide against voltage breakdown.

2 See appropriate airplane specification for detailed list of equipment to be used in a given model airplane.

3 If remote gain control is not required, delete item 4 and wires 831, 832, 833 and 835.

4 Power to be obtained direct from main line so interphone will operate whenever main line switch is closed.

5 Connections to radio sets shall be made at most convenient points, not necessarily as shown.

6 Jack boxes do not have to be wired in order shown.

7 If no station is provided for observer, connect bombardier's jack box as shown for observer.

8 All jack boxes have a position marked "V. H. F." and "LIASON" "V. H. F." on the radio OP's jack box should be blocked out while "LIASON" on all other jack boxes should be treated similarly.

9 At pilot and co-pilot positions, with filter FL-8-( ) use only headset adapter MC-385-C MC-285-D or subsequent.

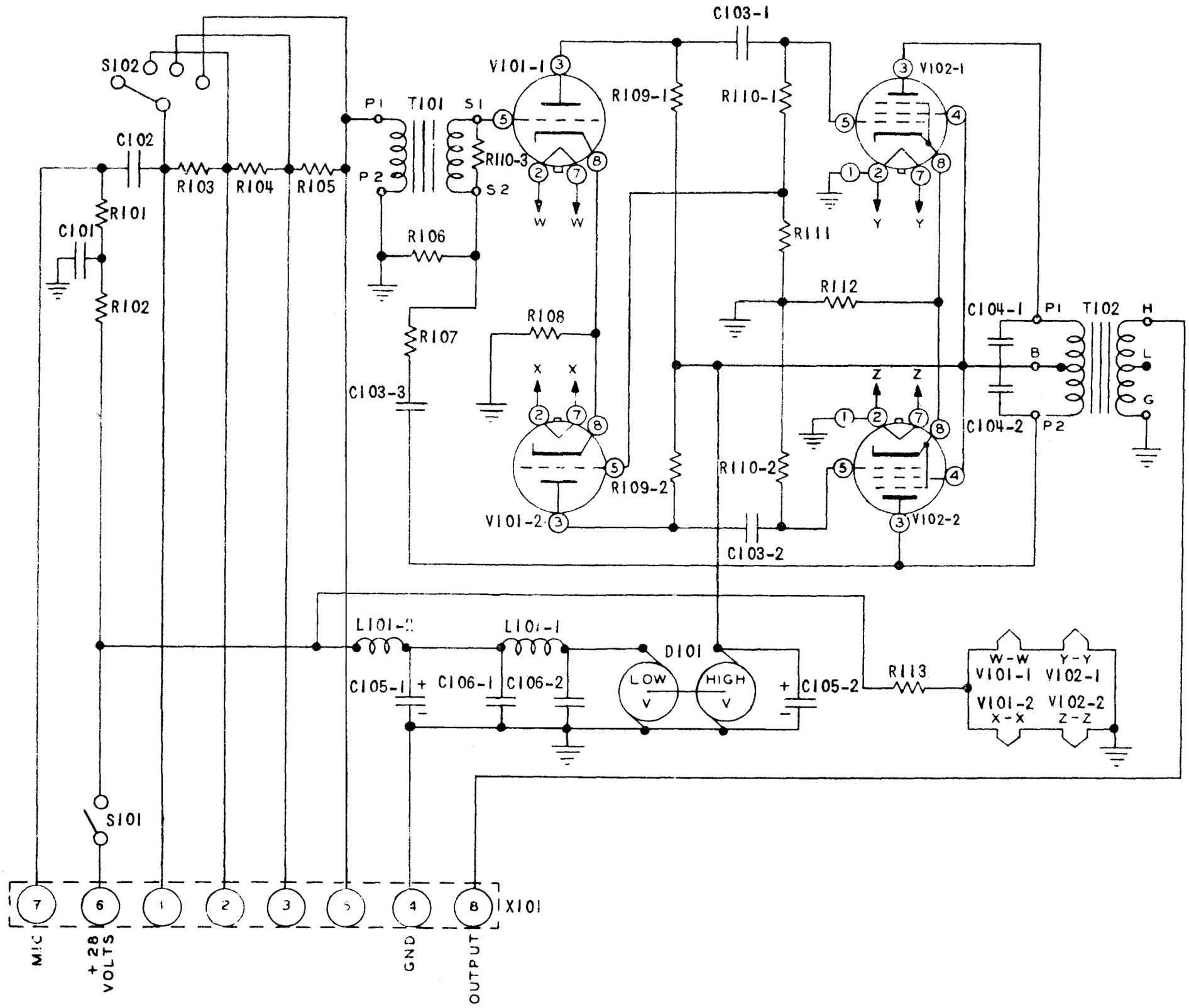
10 As required, this item may be cordage *CO-122-A, retractable cord *CX-179/AIC, or three wires size AN-20.

11 Additional microphone switches may be paralleled as shown dotted when crew member has alternate stations.

12 Arrange the new amplifier so that the "ON-OFF" switch will be accessible to a crew member in flight; if the "ON-OFF" switch is thrown OFF, it may be turned on again, while the aircraft is in the air. It will be satisfactory to safety wire this switch in the ON position. Under these conditions, the crew chief may cut the safety wire and throw the switch OFF when working in the airplane on the ground. If the interphone amplifier cannot be made accessible during flight, the circuit breaker shall be installed in a position to comply with the above requirements.

13 To avoid radio noise each end of mounting shall be electrically bonded to aircraft structure.

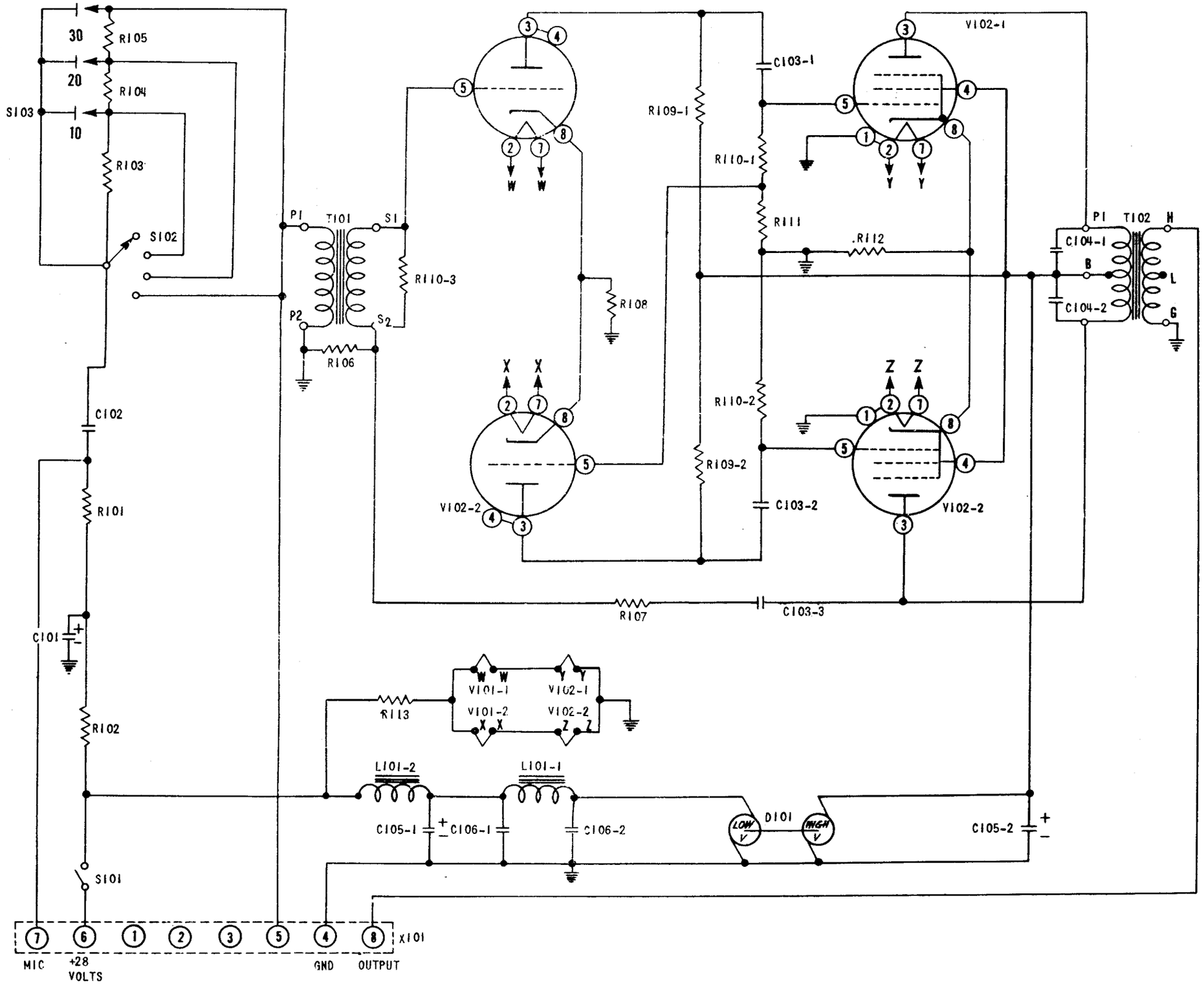
14 When all shields of shielded wires in each jack box are connected to pin #11 in each jack box, and the shields form a continous circuit circuit between boxes and terminal 11 of the connector panel, wires 828, 838, and 851 may be omitted.



LEGEND

C101	Capacitor—150 microfarads
C102	Capacitor—1.0 microfarads
C103-1	Capacitor—50,000 micromicrofarads
C133-2	Capacitor—50,000 micromicrofarads
C103-3	Capacitor—50,000 micromicrofarads
C104-1	Capacitor—10,000 micromicrofarads
C104-2	Capacitor—10,000 micromicrofarads
C105-1	Capacitor—10 microfarads
C105-2	Capacitor—10 microfarads
C106-1	Capacitor—750 micromicrofarads
C106-2	Capacitor—750 micromicrofarads
D101	Dynamotor DM-32-A
L101-1	Choke, RF., 100 microhenries
L101-2	Choke, RF., 100 microhenries
R101	Resistor—100 ohms—1 watt
R102	Resistor—270 ohms—2 watt
R103	Resistor—2700 ohms—1/2 watt
R104	Resistor—1000 ohms—1/2 watt
R105	Resistor—470 ohms—1/2 watt
R106	Resistor—3600 ohms—1/2 watt
R107	Resistor—200,000 ohms—1/2 watt
R108	Resistor—2200 ohms—1/2 watt
R109-1	Resistor—47,000 ohms—1 watt
R109-2	Resistor—47,000 ohms—1 watt
R110-1	Resistor—390,000 ohms—1/2 watt
R110-2	Resistor—390,000 ohms—1/2 watt
R110-3	Resistor—390,000 ohms—1/2 watt
R111	Resistor—27,000 ohms—1/2 watt
R112	Resistor—350 ohms—5 watts
R113	Resistor—10 ohms—5 watt
S101	Switch, S.P.S.T.
S102	Switch, S.P., 4 positions
T101	Transformer, input
T102	Transformer, output
V101-1	Tube JAN 12J5GT
V101-2	Tube JAN 12J5GT
V102-1	Tube JAN 12A6
V102-2	Tube JAN 12A6
X101	Receptacle

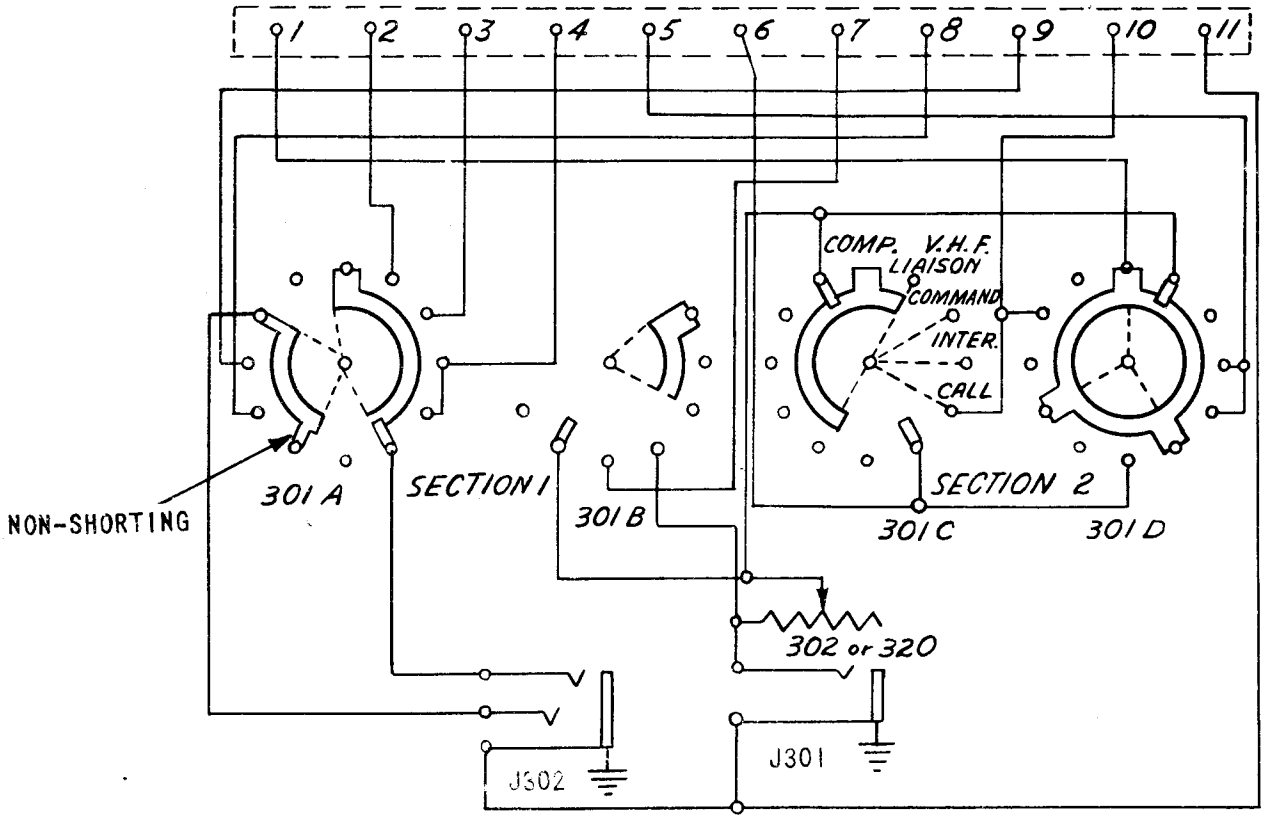
Fiaure 8-2. Interphone Amplifier AM-26/AIC—Schematic Diagram



LEGEND

C101	Capacitor—150 microfarads
C102	Capacitor—1.0 microfarads
C103-1	Capacitor—50,000 micromicrofarads
C103-2	Capacitor—50,000 micromicrofarads
C103-3	Capacitor—50,000 micromicrofarads
C104-1	Capacitor—10,000 micromicrofarads
C104-2	Capacitor—10,000 micromicrofarads
C105-1	Capacitor—10,000 micromicrofarads
C105-2	Capacitor—10,000 micromicrofarads
C106-1	Capacitor—820 micromicrofarads
C106-2	Capacitor—820 micromicrofarads
D101	Dynamotor DM-32-A
L101-1	Choke, RF., 100 microhenries
L101-2	Choke, RF., 100 microhenries
R101	Resistor—100 ohms—1 watt
R102	Resistor—270 ohms—2 watt
R103	Resistor—2700 ohms—1/2 watt
R104	Resistor—1000 ohms—1/2 watt
R105	Resistor—470 ohms—1/2 watt
R106	Resistor—3600 ohms—1/2 watt
R107	Resistor—200,000 ohms—1/2 watt
R108	Resistor—2200 ohms—1/2 watt
R109-1	Resistor—47,000 ohms—1 watt
R109-2	Resistor—47,000 ohms—1 watt
R110-1	Resistor—390,000 ohms—1/2 watt
R110-2	Resistor—390,000 ohms—1/2 watt
R110-3	Resistor—390,000 ohms—1/2 watt
R111	Resistor—27,000 ohms—1/2 watt
R112	Resistor—400 ohms—5 watts
R113	Resistor—10 ohms—5 watts
S101	Switch, S.P.S.T.
S102	Switch, S.P., 4 positions
S103	Automatic Gain Control C-158/AIC
T101	Transformer, Input
T102	Transformer, Output
V101-1	Tube JAN-12J5GT
V101-2	Tube JAN-12J5GT
V102-1	Tube JAN-12A6
V102-2	Tube JAN-12A6
X101	Receptacle

Figure 8-3. Interphone Amplifier AM-26A/AIC—Schematic Diagram



JACK BOX BC-1366

301A, 301B, 301B, 301D	SWITCH SW-145
302	POTENTIOMETER RS-232, 0-150,000 OHMS
J301	JACK JK-34-A
J302	JACK JK-33-A

JACK BOX BC-1366-M

301A, 301B, 301C, 301D	SWITCH SW-145
320	VOLUME CONTROL PER SC-C-10102, 0-10,000 OHMS
J301	JACK JK-34-A
J302	JACK JK-33-A

Figure 8-4. Jack Box BC-1366 and Jack Box BC-1366-M—Schematic Diagram

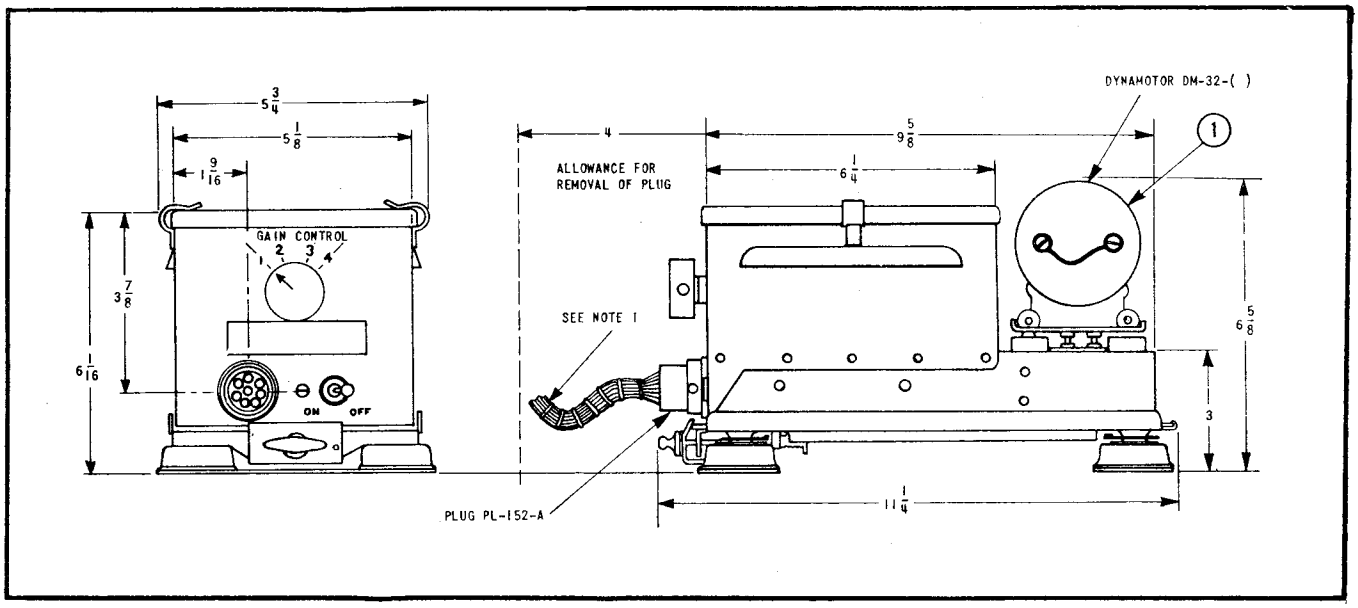


Figure 8-5. Interphone Amplifier AM-26/AIC or AM-26A/AIC—Outline Dimensional Diagram

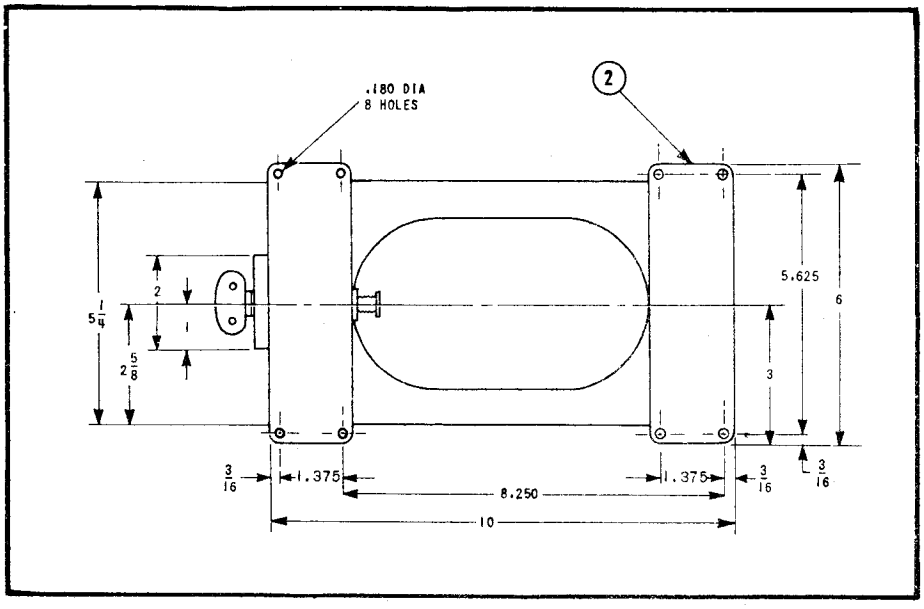


Figure 8-6. Mounting MT-28/ARN-5—Outline Dimensional Drawings

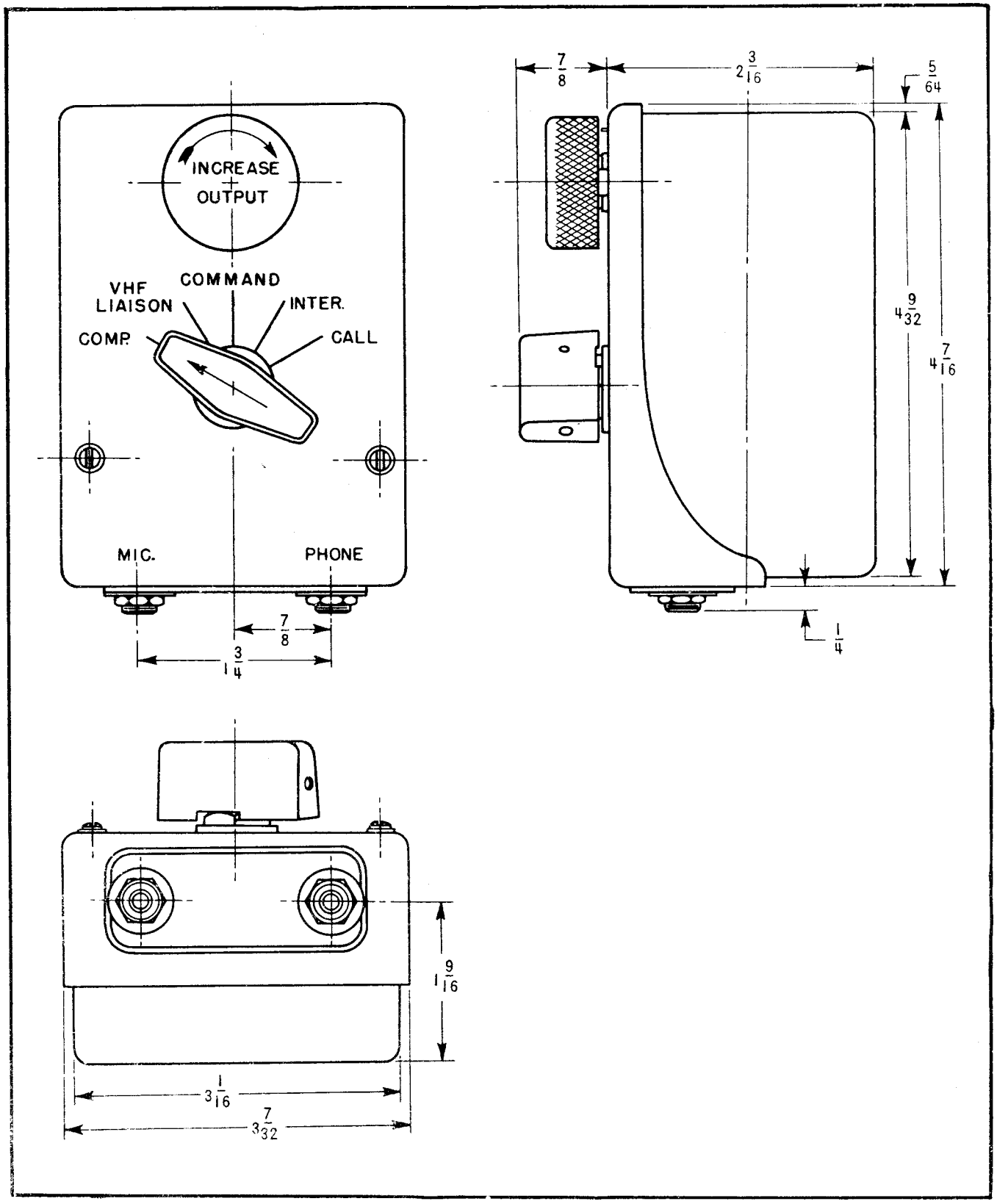


Figure 8-7. Jack Box BC-1366 or BC-1366-M—Outline Dimensional Drawing