THIS SUPPLEMENT WILL REMAIN IN EFFECT ONLY UNTIL THE INFORMATION IS PUBLISHED IN AN OFFICIAL DEPARTMENT OF THE ARMY AND DEPARTMENT OF THE AIR FORCE PUBLICATION.

SUPPLEMENT

15 MAY 1955

SUPPLEMENT TO

TM 11-297/TO 16-30VRC19-5

RADIO SETS AN/VRC-19, -19X, AND -19Y

The following information, published on Order No. 21506-Phila-55, supplements TM 11-297/TO 16-30VRC19-5, 25 August 1954. This supplement covers all serial numbers of the equipment.

Personnel using this equipment and having custody of the technical manual will enter suitable notations beside each affected paragraph and figure in the technical manual to indicate the presence of this supplementary information.

References in the technical manual to specific serial numbers of equipments apply only to units made on Order No. 11661-Phila-52, unless otherwise specified.

Changes which were made only on Order No. 21506-Phila-55 in Radio Receiver R-394/U, Radio Transmitter T-278/U, Power Supplies PP-867/U, PP-868/U, and PP-869/U, and Dynamotor-Power Supplies DY-93/G, DY-98/G, and DY-100/U will be found in the manual, supplement, and addendas applicable to the specific component.

Changes which were made in radio set components not covered in separate technical manuals (such as Radio Set Control C-847/U and Electrical Equipment Cabinet CY-938A/VRC) will be found in Technical Manual TM 11-297 as amended by this supplement.

The bail handle at the front of Radio Transmitter T-278/U is not supplied on units with serial numbers 13,100 and above on Order No. 11661-Phila-52 and with serial numbers 1 and above on Order No. 21506-Phila-55. Note this change at the following locations in the technical manual:

Page 10. Fig. 4

Page 11. Par. 12a. Line 8

Page 12. Fig. 6

Page 24. Fig. 20

Page 29. Fig. 23

Page 14. Par. 15b. In the fourth line change "32-contact" to read: 30-contact.

Page 18. Par. 22 (Chart). Make the following changes:

Add the following material to the tube section of the table:

Item	Equipment		
	Radio Set AN/VRC-19Y	Radio Set AN/VRC-19X	Radio Set AN/VRC-19
Tube, electron, type 5783	1	1	1

Add the following note after the table:

Note: In radio sets made on Order No. 21506-Phila-55, three spare 3B4's are supplied.

Page 18. Par. 23b. Add the following material after subparagraph *b*:

c. Radio Set AN/VRC-19(*) was originally manufactured on Order No. 11661-Phila-52 and then at a later date on Order No. 21506-Phila-55. The following changes were made on Radio Sets AN/VRC-19 (*)manufactured on Order No. 21506-Phila-55.

(1) The wiring in Electrical Equipment Cabinet CY-938A/VRC was changed to permit connection of the receiver control for selective call operation (see fig. 58.1).

(*a*) Wires were added from:
terminal 2 of TB802 to terminal 1 of TB804
terminal 7 of TB801 to terminal 2 of TB804
terminal 6 of TB802 to terminal 3 of TB804
terminal 1 of TB802 to terminal 20 of TB805

(*b*) A shorting strap was added from terminal 9 of TB802 to terminal 10 of TB802

(*c*) The shorting strap was eliminated from terminal 5 of TB802 to terminal 6 of TB802.

(*d*) The unused wire was deleted from terminal 20 of TB805 to terminal 15 of J801.

(2) The wiring in Radio Set Control C-847/U was changed to permit connection at the hook switch for selective call operation (see fig. 40.1).

(*a*) Wires were added from:
terminal 1 of TB1501 to pin J of J1501
terminal 2 of TB1501 to pin E of J1501
terminal 20 of TB1502 to pin L of J1501
pin D of J1501 to ground.

(*b*) The connection was deleted from pin E of J1501 to ground.

(*c*) The control cable (Electrical Special Purpose Cable Assembly CX-2341/U), which connects between Radio Set Control C-847/U and Electrical Equipment Cabinet CY-938A/VRC, is attached at the factory. Also, the radio set control is mounted to the electrical equipment cabinet at the factory. In units made on Order No. 11661-Phila-52, control cable CX-2341 and Radio Set Control C-847/U were shipped as separate items and had to be attached in the field.

(3) The wiring in Radio Receiver R-394/U was changed to permit connection of the receiver control for selective call operation. This was accomplished by connecting pin 6 of P251 to pin R of J263, thus providing a -40-volt bias for the receiver control.

(4) In Power Supply PP-867/U, pins 1 and 5 of G2901 were disconnected from ground and connected to pins 2 and 4 respectively of G2901. This change placed the vibrator contacts in parallel and thus lengthened the vibrator life. At the same time, R2905 was decreased from 33 ohms to 1.2 ohms to provide the necessary value of resistance from the vibrator contacts to ground. The positions of capacitors C2901 and C2908 were interchanged.

(5) In Dynamotor-Power Supplies DY-93/G, DY-98/G, and DY-100/U, continuous-duty type dynamotors were used instead of the intermittent-duty type used in the dynamotor-power supplies made on Order No. 11661-Phila-52. Also, dynamotor-power supplies made on Order No. 21506-Phila-55 contain a number of r-f (hash) suppression components not found in units made on Order No. 11661-Phila-52. These components consist of a capacitor at each of the dynamotor brush terminals, at each output terminal of the dynamotor, across the dynamotor field winding, across the dynamotor relay coil, and in the case of Dynamotor-Power Supply DY-98/G only, three r-f chokes in the vibrator circuit.

d. The bail handle at the front of Radio Transmitter T-278/U is not supplied on transmitters with serial numbers 13,100 and above on Order No. 11661-Phila-52, and with serial numbers 1 and above on Order No. 21506-Phila-55. A protective adapter is attached to the FINAL PLATE TUNE adjusting shaft on Radio Transmitters T-278/U with serial numbers 11,205 and above on Order No. 11661-Phila-52, and with serial numbers 1 and above on Order No. 21506-Phila-55. The adapter minimizes the possibility of damage to the adjusting shaft and provides easier tuning with a screw driver or hex wrench.

Page 23. Par. 26*d* and 26*e*. Add the following note after each of subparagraphs *d* and *e*:

Note: In Radio Sets AN/VRC-19(*) built on Order No. 21506-Phila-55, the equipment is shipped with the control bracket and the control unit attached to the equipment cabinet.

Page 25. Fig. 21. Make the following changes:

Show a dashed-line jumper between terminals 9 and 10 of TB802; add the words "SEE NOTE 2" near the dashed line.

Add the following to note 2: IN UNITS MADE ON ORDER NO. 21506-PHILA-55, JUMPERS ARE USED BETWEEN TERMINALS 3 AND 4 OF TB801, 8 AND 9 OF TB802, AND 9 AND 10 OF TB802 FOR EITHER NORMAL OR SELECTIVE CALL OPERATION; NO JUMPER IS USED BETWEEN TERMINALS 5 AND 6 OF TB802.

Page 26. Par. 27*c*(1). Add the following note after subparagraph (1):

Note: In Radio Sets AN/VRC-19(*) manufactured on Order No. 21506-Phila-55, place a jumper between terminals 3 and 4 of TB801, between terminals 8 and 9 of TB802, and between terminals 9 and 10 of TB802. Do *not* place a jumper between terminals 5 and 6 of TB802 since this will blow a fuse or damage the set if selective call operation is used.

Page 26. Par. 27*d*. Add the following after subparagraph *d*:

(1) In Radio Sets AN/VRC-19 with serial numbers 13,777 and above on Order No. 11661-Phila-52, a loop clamp is supplied in the cloth bag (containing handset hardware) attached to Electrical Equipment Cabinet CY-938A/VRC. Before replacing the rear cover on the control unit, place this clamp around the control cable inside the control unit to act as a strain relief.

(2) In Radio Sets AN/VRC-19(*) made on Order No. 21506-Phila-55, the equipment is supplied with the control cable attached to the control unit and to the equipment cabinet. No control cable connections need therefore be made in radio sets made on Order No. 21506-Phila-55.

Page 27. Par. 27*f*. Add the following after subparagraph *f*:

g. Selective Call Connections. Radio Sets AN/VRC-19(*) made on Order No. 21506-Phila-55 can be adapted for selective call operation. For this purpose, two auxiliary components, not supplied as part of Radio Set AN/VRC-19(*) are required: the receiver control, and the hook switch. The procedure necessary for converting the radio set to selective call will be found in the manual accompanying the selective call equipment.

Page 27. Par. 30. In the "Function" column, second item, change "disconnect" to read: disconnects.

Page 28. Par. 31. Insert the following material after "FINAL GRID jack":

Control	Function
BAL jacks	Test points for checking plate current balance of the push-pull power amplifier during tuning procedure.

Page 32. Par. 37. Change the fifth sentence to read: During retransmission operation, the transmitter operates only when a signal is being received.

Page 32. Par. 37.1. Add the following new paragraph after paragraph 37:

37.1 Selective Call Operation

This type of operation eliminates the necessity for the radio operator in a group of radio stations to listen to all transmissions in order to pick out his own messages. When there is a message for a specific station, the tones of the selective call system operate a call light and cause a tone signal at the speaker. At all other times the call light is out, and the speaker remains silent.

Page 51. Par. 60. In the last sentence, change "if." to read: rf.

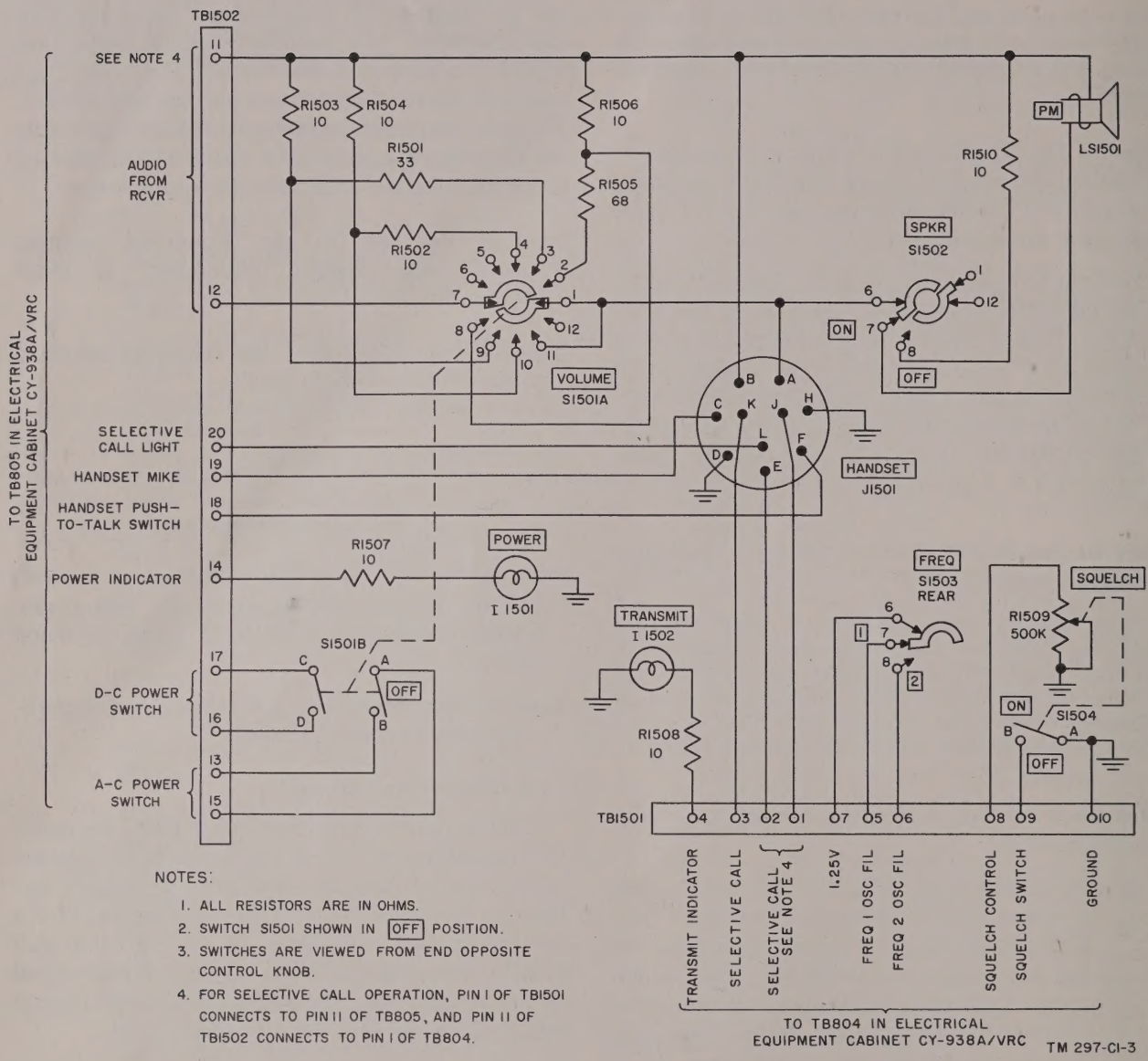
Page 51. Fig. 37. In the figure caption, change "*PP-869/U* to read: *PP-867/U*.

Page 52. Fig. 39. In the figure caption, change "*PP-867/U*" to read: *PP-869/U*.

Page 54. Fig. 40. Make the following changes:

At switch S1504, change the letters A and B to read B and A respectively.

In the caption, after "*schematic diagram*" insert: *for units made on Order No. 11661-Phila-52.*



NOTES:

1. ALL RESISTORS ARE IN OHMS.
2. SWITCH SI501 SHOWN IN OFF POSITION.
3. SWITCHES ARE VIEWED FROM END OPPOSITE CONTROL KNOB.
4. FOR SELECTIVE CALL OPERATION, PIN I OF TBI501 CONNECTS TO PIN II OF TB805, AND PIN II OF TBI502 CONNECTS TO PIN I OF TB804.

Figure 40.1. Radio Set Control C-847/U, schematic diagram for units made on Order No. 21506-Phila-55.

Page 54. Fig. 40.1. Add figure 40.1 after figure 40.

Page 54. Par. 65*d*. Make the following changes: In line 2, after "serial numbers from 1 to 600", add: on Order No. 11661-Phila-52.

In line 6, right-hand side, after "serial numbers of 601 and higher", add: on Order No. 11661-Phila-52, and 1 and higher on Order No. 21506-Phila-55.

Page 56. Fig. 42. In note 4, after "SERIAL NUMBERED 601 OR HIGHER", add: ON ORDER NO. 11661-PHILA-52, AND 1 OR HIGHER ON ORDER NO. 21506-PHILA-55.

Page 57. Fig. 43. In note 2, after "SERIAL NUMBERED 601 OR HIGHER", add: ON ORDER NO. 11661-PHILA-52, AND 1 OR HIGHER ON ORDER NO. 21506-PHILA-55.

Page 58. Fig. 44. In the caption, after "*serial numbers from 1 to 600*", add: *on Order No. 11661-Phila-52.*

Page 59. Fig. 45. Make the following changes: Add the words "SEE NOTE 3" near pin E of J1501.

Add the following note after note 2:

3. IN UNITS MADE ON ORDER NO. 21506-PHILA-55, THE HANDSET MICROPHONE IS GROUNDED THROUGH PIN D OF THE HANDSET AND PIN D OF J1501; PIN E OF J1501 IS NOT GROUNDED.

In the caption, after "*serial numbers above 600*", add: on *Order No. 11661-Phila-52, and with serial numbers 1 and above on Order No. 21506-Phila-55.*

Page 60. Par. 68.1. Add the following new paragraph after paragraph 68:

68.1 Selective Call Operation

Radio Sets AN/VRC-19(*) made on Order No. 21506-Phila-55 may be adapted for selective call by using two auxiliary components and by making one wiring change in Radio Set Control C-847/U. Under selective call operation, Radio Set AN/VRC-19(*) will usually operate in conjunction with a base station and a group of mobile stations. By means of a selector control the base station can call any one, or all, of the mobile stations. Even though all the stations may be tuned to the same carrier frequency, only the particular mobile station desired will receive the calling signal. This "selective calling" is accomplished by push-button selection of a pair of tones generated by *vibrasenders* at the transmitter used in conjunction with *vibrasponders* at the receiver. The operator at the fixed station modulates his transmitter by means of a selected pair of vibrasenders. The particular mobile radio receiver which contains vibrasponders of the same frequency as the selected vibrasenders will receive a "call" signal which will be heard in the speaker and will operate a call light; the called operator will then pick up his handset and communicate with the base station. Additional information regarding the maintenance and theory of the selective calling system will be found in the manual accompanying that equipment.

Page 62. Fig. 47. Make the following changes in figure 47:

At the lower center of the figure, change "6 TB801" to read: 8 TB801.

In the caption, change "*Radio Set AN/VRC-194*" to read: *Radio Set AN/VRC-19Y.*

Page 63. Par. 74 (Table). Make the following changes:

In the "Description" column, opposite Fig. 40, change the figure title to read: Radio Set Control C-847/U, schematic diagram for units made on Order No. 11661-Phila-52.

Opposite Fig. 58, change the figure title to read: Electrical Equipment Cabinet CY-938(*)/VRC, schematic diagram for units made on Order No. 11661-Phila-52.

Insert the following figure titles after figure 40 and figures 58 respectively:

Figure No. 40.1. Radio Set Control C-847/U, schematic diagram for units made on Order No. 21506-Phila-55.

Figure No. 58.1. Electrical Equipment Cabinet CY-938A/VRC, schematic diagram for units made on Order No. 21506-Phila-55.

Page 67. Par. 76. In subparagraphs *i*(2) and (3), change "TB805" to read: TB804.

Page 67. Par. 79. In the "Reading (ohms)" column of the chart, next to last line, change "5.5" to read: 6.4.

Page 69. Fig. 51. Make the following changes:

Add the words "SEE NOTE 1" near terminals 5 and 6 of TB802; 9 and 10 of TB802; and 1, 2, and 3 of TB804.

Add the following note:

NOTE 1. IN UNITS MADE ON ORDER NO. 21506-PHILA-55, A JUMPER IS CONNECTED BETWEEN TERMINALS 9 AND 10 OF TB802; NO JUMPER IS CONNECTED BETWEEN TERMINALS 5 AND 6 OF TB802; AND WIRES ARE CONNECTED TO TERMINALS 1, 2, AND 3 OF TB804 FROM THE ADJACENT CABLE.

Page 70. Table *i*. After the third item, add: (no connection between these points in units made on Order No. 21506-Phila-55).

Page 72. Par. 83b. Last Sentence. Change "fig. 53" to read: fig. 55.

Page 72. Par. 85a. In subparagraph (5), line 11, enclose "162 ±1 mc" in parentheses.

Page 74. Par. 85b(5). Make the following changes: In line 2, change "nine tenths of the maximum noted above" to read: between -4 and -5 volts dc.

In line 4, delete the sentence: "Nominal voltage is -5 volts dc".

Page 74. Par. 85b(13). Add the following note after subparagraph (13):

Note: In Radio Transmitters T-278/U with serial numbers 11,205 and above on Order No. 11661-Phila-52 and with serial numbers 1 and above on Order No. 21506-Phila-55, a protective adapter is attached to the FINAL PLATE TUNE adjusting shaft. The adapter transfers excess pressure from the shaft to the rigid metal bracket behind the panel and eliminates the possibility of damage during adjustment. It also provides easier tuning with a screw driver or a hex wrench. The adapter is fastened to the tuning shaft by two set screws. A brass washer fits between the adapter and the bracket. For installation or replacement of the adapter, the front cover of the transmitter is removed and the bracket at the lower front of the transmitter is loosened.

Page 74. Par. 85b(23). Line 1. Change "19 and 20" to read: 21 and 22.

Page 75. Par. 85b(26). At the end of subparagraph (26), add the following:

Caution: If a voltmeter with a metal case is used to measure across the BAL jacks, be sure to insulate the case from the equipment chassis (ground). Both jacks are at a high positive potential. Do not touch the voltmeter while making measurements.

Page 75. Par. 85b.(31) Line 3. Change "fig. 26" to read: fig. 53.

Page 80. Par. 87d.(1). In the first sentence, change "controls" to read: control.

Page 82. Fig. 58. Change the caption to read:

Electrical Equipment Cabinet CY-938(*)/VRC, schematic diagram for units made on Order No. 11661-Phila-52.

Page 82. Fig. 58.1. Insert the new figure 58.1 after figure 58.

Page 88. Fig. 63. Delete figure 63 and substitute the new figure 63.

Page 91. Fig. 67. Make the following changes:

At upper right, change L192 and L193 to read L92 and L93 respectively.

Add the words "SEE NOTE 8" near R252.

Add the following note after note 7:

8. IN RADIO RECEIVERS R-394/U WITH SERIAL NUMBERS 15,701 AND ABOVE, R252 IS 150K.

Page 91. Fig. 68. Change the value of C451 from 25 uuf to 4-23 uuf.

Page 91. Fig. 69. Make the following changes: Show new wires in the diagram as follows:

Location	*Color and number of wire*
Terminal 1 of TB804	Black-White 4
Terminal 2 of TB804	Violet-Red 4
Terminal 3 of TB804	Brown-Violet 3
Terminal 1 of TB802	Brown-Grey 4
Terminal 2 of TB802	Black-White 4
Terminal 7 of TB801	Violet-Red 4
Terminal 6 of TB802	Brown-Violet 3
Terminal 20 of TB805	Brown-Grey 4
Terminals 9 and 10 of TB802	Add jumper between terminals

Add the words "SEE NOTE 2" near each of the above wires, and also near terminal 6 of TB802 and terminal 15 of J801. At the bottom of the figure, designate the existing note as: 1, and add the following note:

2. THE FOLLOWING CHANGES WERE MADE IN UNITS BUILT ON ORDER NO. 21506-PHILA-55: WIRES WERE CONNECTED BETWEEN TERMINALS 1 OF TB804 & 2 OF TB802, 2 OF TB804 & 7 OF TB801, 3 OF TB804 & 6 OF TB802, 1 OF TB802 & 20 OF TB805, AND 9 OF TB802 & 10 OF TB802. THE JUMPER BETWEEN TERMINALS 5 AND 6 OF TB802 AND THE WIRE (COLOR CODE: VI—YEL 3) BETWEEN TERMINAL 20 OF TB805 AND PIN 15 OF J801 WERE DELETED.

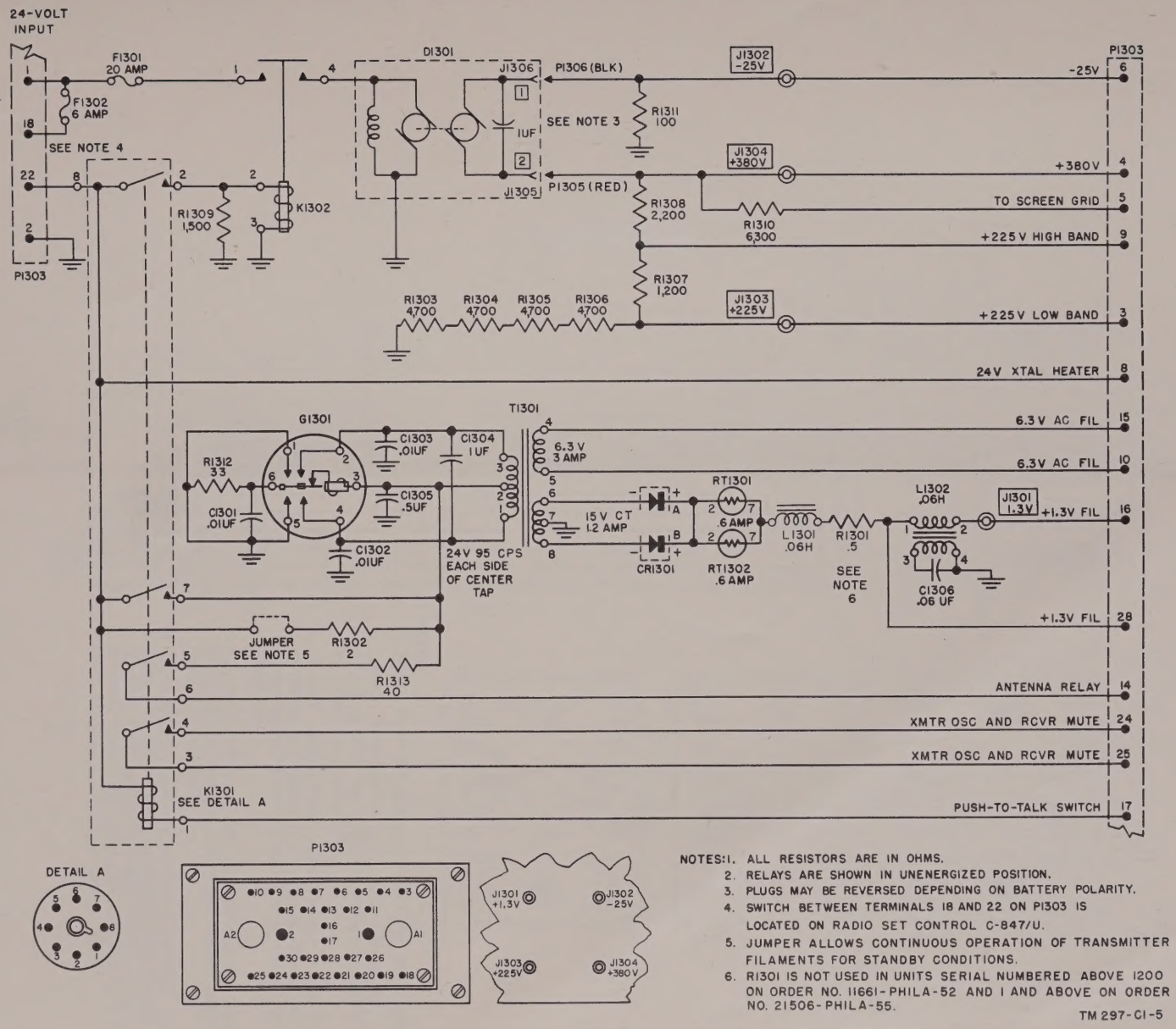
Page 91. Fig. 70. Make the following changes: Add the words "SEE NOTE 8" near terminals 6 and 10 of TB802, and also near terminals 1, 2, and 3 of TB804.

Add the following to note 1: FOR UNITS MADE ON ORDER NO. 21506-PHILA-55, DO NOT CONNECT JUMPER BETWEEN TERMINALS 5 AND 6 OF TB802; CONNECT JUMPER BETWEEN TERMINALS 9 AND 10 OF TB802.

At note 7, after "NUMBERED BELOW 601", insert: ON ORDER NO. 11661-PHILA-52. Add the following to note 7: IN UNITS MADE ON ORDER NO. 21506-PHILA-55, THERE IS NO CONNECTION AT PIN 15 OF J801.

Add the following note after note 7:

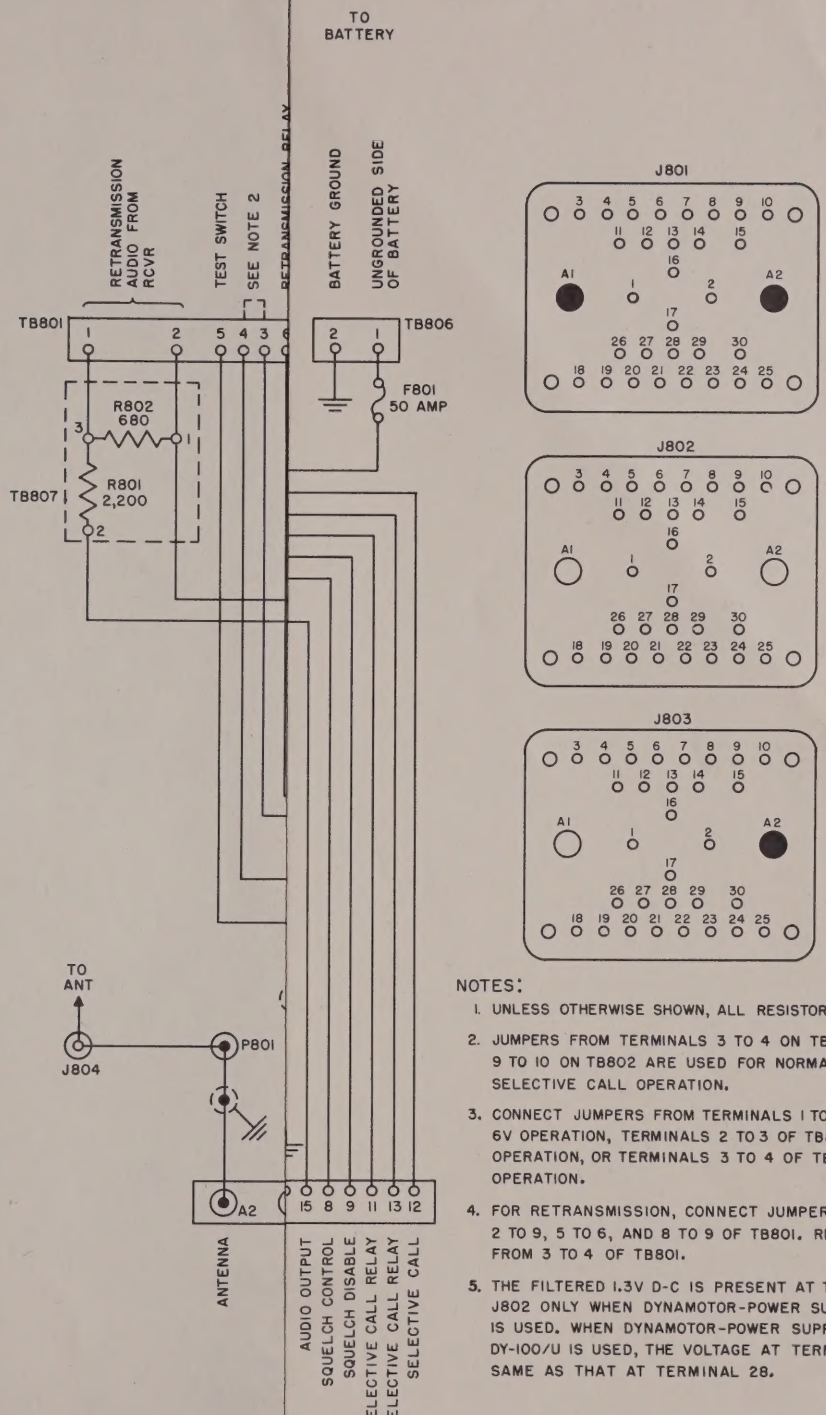
8. IN UNITS MADE ON ORDER NO. 21506-PHILA-55, RESISTANCE AT TERMINAL 10 OF TB802 IS .7 OHM; MEASUREMENTS AT TERMINAL 6 OF TB802 AND AT TERMINALS 1, 2, AND 3 OF TB804 ARE OV(OV)/ ∞.



NOTES:
1. ALL RESISTORS ARE IN OHMS.
2. RELAYS ARE SHOWN IN UNENERGIZED POSITION.
3. PLUGS MAY BE REVERSED DEPENDING ON BATTERY POLARITY.
4. SWITCH BETWEEN TERMINALS 18 AND 22 ON P1303 IS LOCATED ON RADIO SET CONTROL C-847/U.
5. JUMPER ALLOWS CONTINUOUS OPERATION OF TRANSMITTER FILAMENTS FOR STANDBY CONDITIONS.
6. R1301 IS NOT USED IN UNITS SERIAL NUMBERED ABOVE 1200 ON ORDER NO. 11661-PHILA-52 AND I AND ABOVE ON ORDER NO. 21506-PHILA-55.

TM 297-CI-5

Figure 63. Dynamotor-power Supply DY-98/G, schematic diagram.



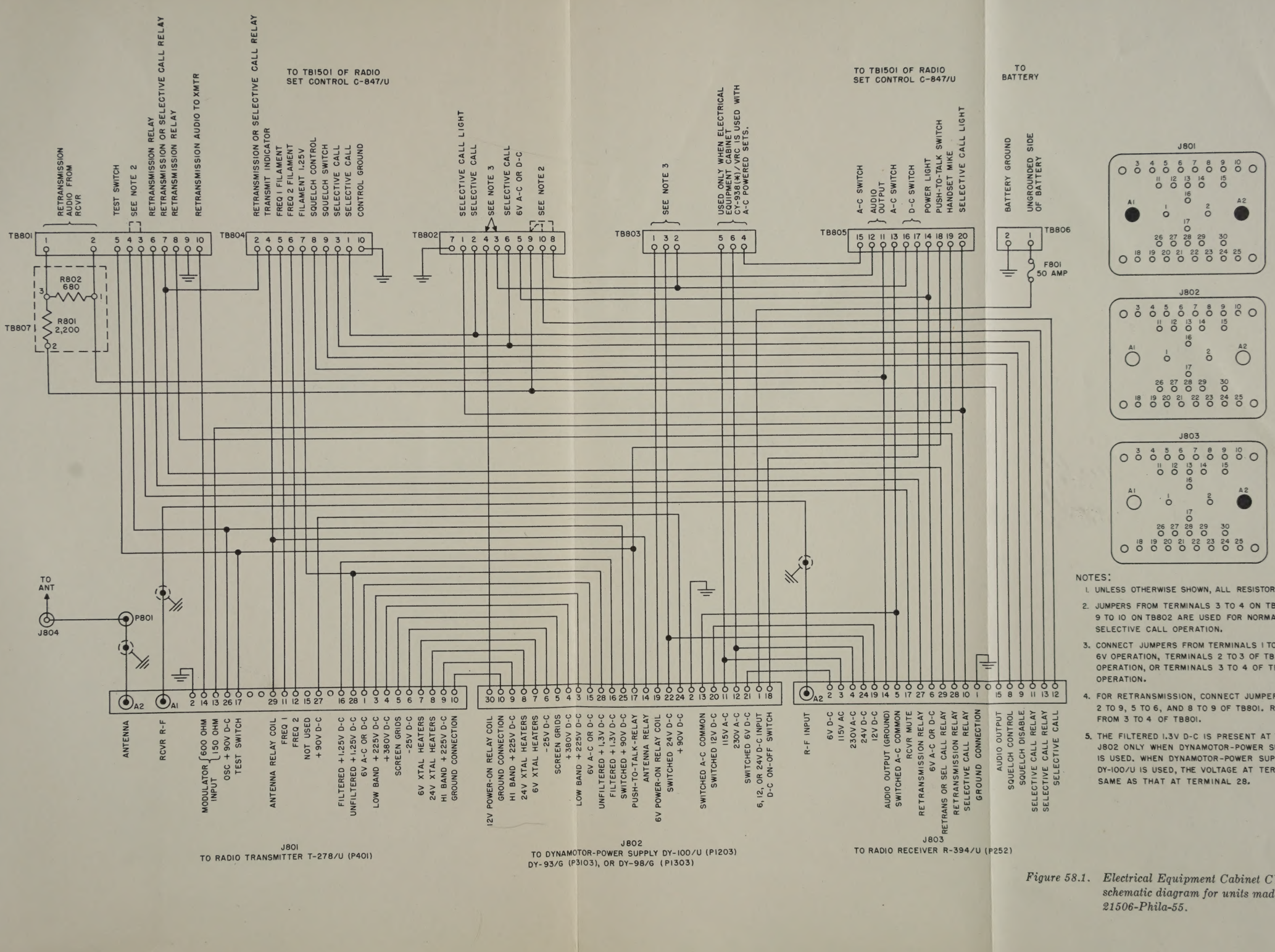
NOTES:

1. UNLESS OTHERWISE SHOWN, ALL RESISTORS ARE IN OHMS.
2. JUMPERS FROM TERMINALS 3 TO 4 ON TB801, 8 TO 9, AND 9 TO 10 ON TB802 ARE USED FOR NORMAL OPERATION OR SELECTIVE CALL OPERATION.
3. CONNECT JUMPERS FROM TERMINALS 1 TO 2 OF TB803 FOR 6V OPERATION, TERMINALS 2 TO 3 OF TB803 FOR 24V OPERATION, OR TERMINALS 3 TO 4 OF TB802 FOR 12V OPERATION.
4. FOR RETRANSMISSION, CONNECT JUMPERS FROM 1 TO 10, 2 TO 9, 5 TO 6, AND 8 TO 9 OF TB801. REMOVE JUMPER FROM 3 TO 4 OF TB801.
5. THE FILTERED 1.3V D-C IS PRESENT AT TERMINAL 16 OF J802 ONLY WHEN DYNAMOTOR-POWER SUPPLY DY-98/G IS USED. WHEN DYNAMOTOR-POWER SUPPLY DY-93/G OR DY-100/U IS USED, THE VOLTAGE AT TERMINAL 16 IS THE SAME AS THAT AT TERMINAL 28.

(252)

TM 297-C1-4

Figure 58.1. Electrical Equipment Cabinet CY-938A/VRC, schematic diagram for units made on Order No. 21506-Phila-55.



NOTES:

1. UNLESS OTHERWISE SHOWN, ALL RESISTORS ARE IN OHMS.
2. JUMPERS FROM TERMINALS 3 TO 4 ON TB801, 8 TO 9, AND 9 TO 10 ON TB802 ARE USED FOR NORMAL OPERATION OR SELECTIVE CALL OPERATION.
3. CONNECT JUMPERS FROM TERMINALS 1 TO 2 OF TB803 FOR 6V OPERATION, TERMINALS 2 TO 3 OF TB803 FOR 24V OPERATION, OR TERMINALS 3 TO 4 OF TB802 FOR 12V OPERATION.
4. FOR RETRANSMISSION, CONNECT JUMPERS FROM 1 TO 10, 2 TO 9, 5 TO 6, AND 8 TO 9 OF TB801. REMOVE JUMPER FROM 3 TO 4 OF TB801.
5. THE FILTERED 1.3V D-C IS PRESENT AT TERMINAL 16 OF J802 ONLY WHEN DYNAMOTOR-POWER SUPPLY DY-98/G IS USED. WHEN DYNAMOTOR-POWER SUPPLY DY-93/G OR DY-100/U IS USED, THE VOLTAGE AT TERMINAL 16 IS THE SAME AS THAT AT TERMINAL 28.

TM 297-CI-4

Figure 58.1. Electrical Equipment Cabinet CY-938A/VRC, schematic diagram for units made on Order No. 21506-Phila-55.