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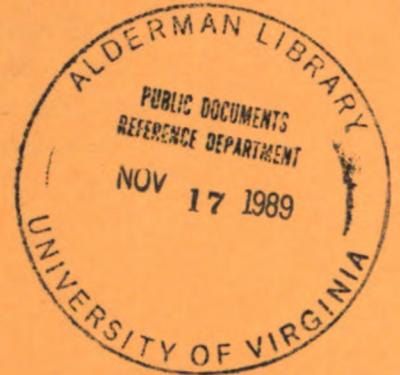
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D 101.11:
11-5815-204-10

TM 11-5815-204-10

DEPARTMENT OF THE ARMY TECHNICAL MANUAL



OPERATOR'S MANUAL

RADIO TELETYPEWRITER SETS
AN/GRC-46, AN/GRC-46A, AN/GRC-46B,
AND AN/VRC-29

This copy is a reprint which includes current pages from Changes 1,3,8,9,10,11,12.

HEADQUARTERS, DEPARTMENT OF THE ARMY
14 SEPTEMBER 1960

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89-725-P

WARNING

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT

The voltages used in this equipment are high enough to cause death. When the transmitter is operating, high power is present at the antenna and on the antenna lead-in wire. Be careful not to come in contact with the antenna or antenna circuit; severe burns and shock may result.

DONT TAKE CHANCES!

TECHNICAL MANUAL

Operator's Manual

RADIO TELETYPEWRITER SETS

AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AND AN/VRC-29

TM 11-5815-204-10

CHANGES No. 1

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 8 February 1961

TM 11-5815-204-10, 14 September 1960, is changed as follows:

Page 2, figure 1. Delete the caption and substitute:

Radio Teletypewriter Sets AN/GRC-46 and AN/GRC-46A, interior view, major components installed.

Page 3, paragraph 1b. After the last sentence, add: For official nomenclature of the security equipment, see the appropriate technical manual.

Paragraph 3a. After the last sentence, add: Security equipment may be used with the AN/GRC-46, AN/GRC-46A, AN/GRC-46B, and AN/VRC-29.

Page 4, paragraph 4. Add after subparagraph b.

b.1. *Interconnecting Box J-1195/GRC-46 (fig. 4.1).*

Power receptacle.....	1.
Jacks.....	2 for KWB-9/TSEC signal lines. 1 for J-668/GR signal line. 3 for TT-76(*)/GGC signal lines.
Input voltage.....	120 volts dc.
Input signals.....	Teletypewriter dc impulses.
Output signals.....	Teletypewriter dc impulses.

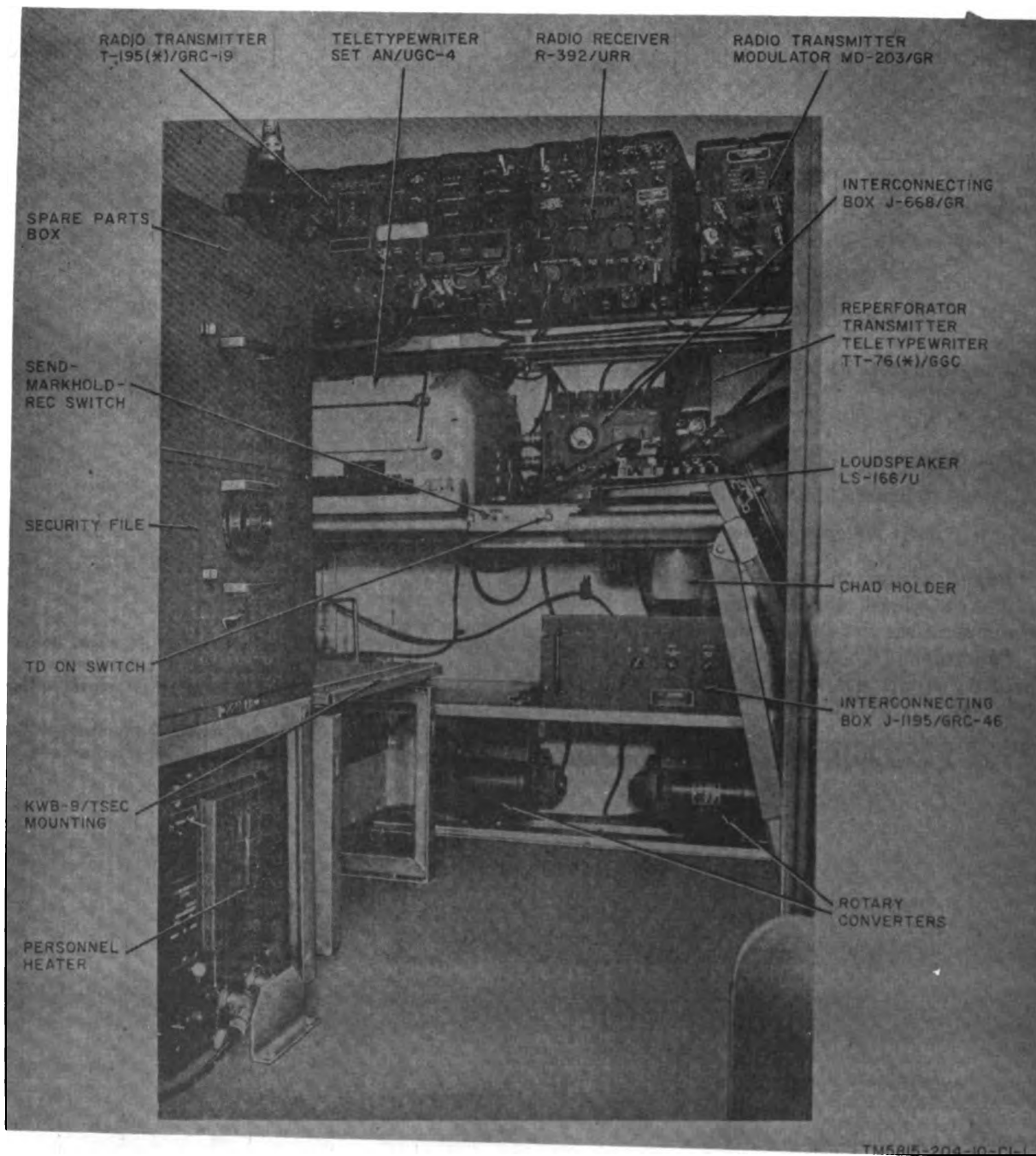


Figure 1.1. (Added) Radio Teletypewriter Set AN/GRC-46B, interior view, major components installed.

Paragraph 5. Delete subparagraph a and substitute:

a. Radio Teletypewriter Set AN/GRC-46(*) Components.

Quantity (2)	Item	Fig. No.	Component of			Height (in.)	Depth (in.)	Width (in.)	Unit Weight (lb)
			AN/GRC- 46	AN/GRC- 46A	AN/GRC- 46B				
1	Radio Set AN/GRC-19 (refer to TM 11-5820-295-10). Consisting of: 1 Radio Transmitter T-195(*)/GRC-19..... 1 1 Radio Receiver R-392/URR..... 1		X	X	X				
1	Loudspeaker LS-164/U..... 1	1	X	X	X	5	5½	3½	1
1	Modulator, Radio Transmitter MD-203/GR..... 1	1	X	X	X	9½	14½	7½	23½
2	Mounting MT-791/U; MT-791A/U..... 1	1	X	X	X	3½	12½	8½	15
1	Converter, Frequency Shift CV-278/GR..... 1	1	X	X	X	9½	14½	7½	19½
1	Interconnecting Box J-668/GR..... 1	1	X	X	X	6	7	16	12½
1	Teletypewriter Set AN/UGC-4..... 1	1	X	X	X				
	consisting of: 1 Teletypewriter TT-98B/FG..... 1 Power Supply PP-978/FG.....					11½	20½	17½	54
						4	4	9	7
1	Repeater-Transmitter, Teletypewriter TT-76(*)/GCC..... 1	1	X	X	X	21	18	12	45
2	Motor generator (rotary converter) (Wind-charger model 88688)..... 1, 5		X	X	X	9	12½	6½	40
1	Cord CG-409C/U (4 ft 3 in.)..... 8		X	X	X				¾
2	Cable Assembly, Radio Frequency CG-590B/U (2 ft 11 in.)..... 8		X	X	X				¾
1	Cable Assembly, Radio Frequency CG-1127/U (2 ft 6 in.)..... 8		X	X	X				¾
1	Cable Assembly, Radio Frequency CG-1127/U (1 ft)..... 8		X	X	X				¾
1	Cable Assembly, Power, Electrical CX-4539/U (4 ft 9 in.)..... 8		X	X	X				¾
1	Cable Assembly, Power, Electrical CX-4540/U (4 ft 6 in.)..... 8		X	X	X				1½
1	Cable Assembly, Power, Electrical CX-4540/U (3 ft 2 in.)..... 8		X	X	X				1½
2	Cable Assembly, Power, Electrical CX-4541/U (6 ft 11 in.)..... 8		X	X	X				¾
1	Cable Assembly, Power, Electrical CX-4542/U (8 ft 11 in.)..... 8		X	X	X				¾
1	Cable Assembly, Power, Electrical CX-4543/U (10 ft 3 in.)..... 8		X	X	X				¾
1	Cable Assembly, Power, Electrical CX-4544/U (12 ft 8 in.)..... 8		X	X	X				1
1	Cable Assembly, Power, Electrical CX-4545/U (6 ft 5 in.)..... 8		X	X	X				¾
1	Cord Assembly, Electrical CX-4546/U (3 ft 9 in.)..... 8		X	X	X				¾
1	Cable Assembly, Special Purpose, Electrical CX-4547/U (5 ft 6 in.)..... 8		X	X	X				¾
2	Cord Assembly, Electrical CX-4548/U (5 ft 11 in.)..... 8		X	X	X				¾
1	Cord Assembly, Electrical CX-4549/U (4 ft 5 in.)..... 8		X	X	X				¾
2	Cord Assembly, Electrical CX-4551/U (7 ft 5 in.)..... 8		X	X	X				¾
1	Cord Assembly, Electrical CX-4551/U (9 ft 3 in.)..... 8		X	X	X				¾
1	Cord Assembly, Electrical CX-4551/U (8 ft 2 in.)..... 8		X	X	X				¾

Quantity (ea)	Item	Fig. No.	Component of			Height (in.)	Depth (in.)	Width (in.)	Unit weight (lb)
			AN/GRC- 46	AN/GRC- 46A	AN/GRC- 46B				
1	Cord Assembly, Electrical CX-4551/U (10 ft 8 in.)	8			X				3/8
1	Cord Assembly, Electrical CX-4548/U (9 ft 7 in.)	8			X				3/8
1	Cord Assembly, Electrical CX-4549/U (6 ft 3 in.)	8			X				3/8
1	Cable Assembly, Power, Electrical CX-6292/U (12 ft 11 in.)				X				1
1	Cable Assembly, Power, Electrical CX-6293/U (13 ft 1 in.)				X				1 1/2
1	Cable Assembly, Power, Electrical CX-6294/U (7 ft 10 in.)				X				3/8
1	Cable Assembly, Power, Electrical CX-6536/U (8 ft 6 in.)				X				3/8
1	Cable Assembly, Power, Electrical CX-6537/U (13 ft 9 in.)				X				3/8
1	Electrical Equipment Shelter S-89C/G	7	X			59	77 1/2	57	625
	or								
	Electrical Equipment Shelter, Lightweight, including the following items:	6		X		59	77 1/2	57	320
	3 seats, individual	1							23
	1 fan, ventilating, propeller								5
	2 fixtures, lighting								1 1/2
	2 lamps, incandescent								3/8
	2 reflectors, light								3/8
	1 clock, aircraft, mechanical w/mtg bracket								3/8
	1 padlock								3/8
	1 extinguisher, fire, carbon dioxide								5
1	Electrical Equipment Shelter S-144/G including the following items:				X				
	1 seat, individual	1							23 1/2
	1 seat (jump)	1							12
	1 fan, ventilating, propeller								5
	2 fixtures, lighting								3/8
	2 lamps, incandescent								3/8
	1 clock, aircraft, mechanical w/mtg bracket								3/8
	2 reflectors, light								3/8
	1 padlock								3/8
	1 extinguisher, fire, carbon dioxide								5
1	Rack, electrical equipment	1	X			27	54	28	21
1	Rack, electrical equipment (security)	1	X			2	54	28	16 1/2
1	Rack, electrical equipment	1		X		25 1/2	54 1/2	24 1/2	20
1	Rack, electrical equipment	1			X	25 1/2	54	24	20
1	Rack, electrical equipment (security)	1		X	X	2	54	24	16 1/2
1	Rod, ground	6	X	X	X		46 1/2	1/2	2 1/2
2	Cording diagrams (on wall)		X	X	X				3/8
1	Reel RI-29		X	X	X				3/8
3	Adapters, Connector UG-306/U		X	X	X				3/8
1	Thermostatic control (on wall)				X	5 1/2	2	2 1/2	3/8
1	Clamp, loop: antenna rope clamp		X	X	X				3/8
2	Technical Manuals TM 11-5815-204-10		X	X	X				
1	Set running spares (c below)		X	X	X				
1	Rack, security file				X	16	20	21 1/2	5 1/2
1	KWB-9/TSEC mounting	1.1			X	16 1/2	17 1/2	21 1/2	14
1	Interconnecting Box J-1195/GRC-46	4.1			X	7	7 1/2	18	4 1/2
1	Security file w/instructions	1.1			X	24	20	18 1/2	220
1	Interconnecting Box J-1194/GRC-46	4.2			X	4 1/2	3	6	1 1/2

Page 6, paragraph 5b chart. Add after line 14

Quantity (ea.)	Item	Fig. No.	Height (in.)	Depth (in.)	Width (in.)	Unit weight (lb)
1	Interconnecting Box J-1195/GRC-46.	4.1	7	7 $\frac{1}{4}$	18	4 $\frac{1}{4}$
1	Interconnecting Box J-1194/GRC-46.	4.2	4 $\frac{1}{4}$	3	6	1 $\frac{1}{4}$

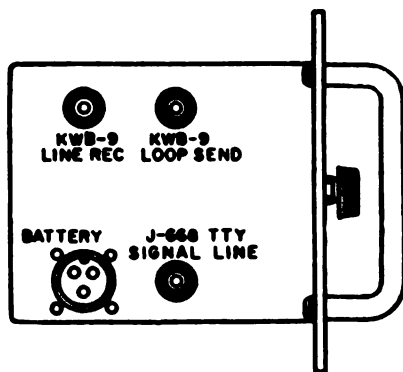
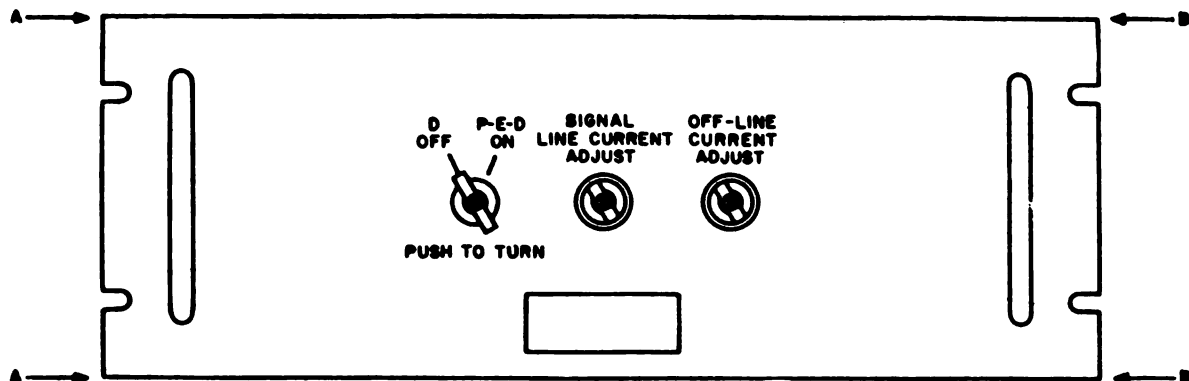
Page 7, paragraph 7a. After the third sentence, add: In the AN/GRC-46B, the KWB-9/TSEC security equipment is mounted on a rack in the space identical with that occupied by the roadside operator's set in the AN/GRC-46 and AN/GRC-46A.

Page 9, paragraph 7, make the following changes: Add subparagraph a.1.

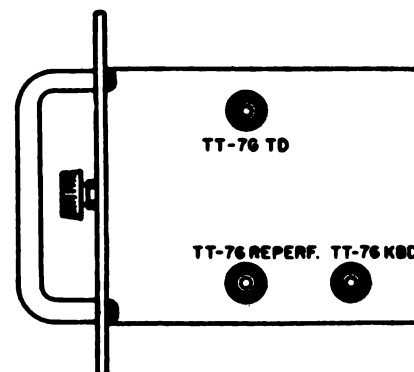
a.1. In the S-144/G, a metal file cabinet with two drawers is mounted on the rack above the heater (fig. 1.1). The lower file drawer has a combination lock and is the security file; the upper drawer is the spare parts box. The KWB-9/TSEC security equipment is mounted on a rack next to the file cabinet. The top frame of the rack is shock mounted. A plate, which is fastened to the KWB-9/TSEC security equipment, is secured to the top of the rack with four $\frac{1}{4}$ -turn wing-type fasteners for quick removal.

In subparagraph b, line 4, change "AN/GRC-446(*)" to: AN/GRC-46(*)

Page 10, paragraph 13. After the first sentence, add: In the AN/GRC-46B, the transmitter-distributor unit of the TT-76(*)/GCC is modified for use with the KWB-9/TSEC equipment.



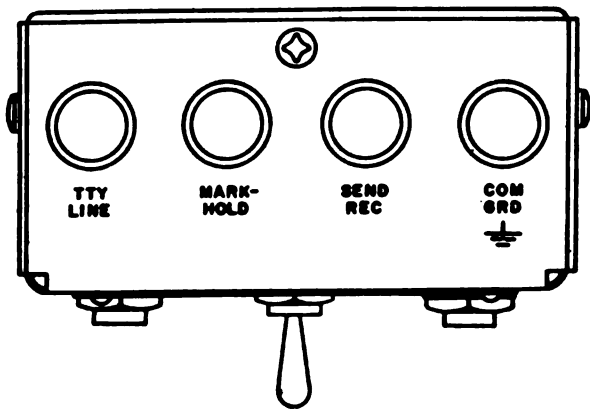
VIEW A-A



VIEW B-B

TM5018-204-10-C1-2

Figure 4.1. (Added) Interconnecting Box J-1195/GRC-46, operating controls and receptacles.



14.1. Interconnecting Box J-1195/GRC-46

(fig. 1.1, 4.1)

(Added)

Interconnecting Box J-1195/GRC-46 serves as interconnecting equipment for the power and signal wiring between the teletypewriters and the KWB-9/TSEC security equipment. Handles on the front panel protect the knobs and help in removal of the unit. The manual controls are mounted on the front panel. A cable receptacle and phone jacks are mounted on the sides of the chassis behind the panel.

14.2. Interconnecting Box J-1194/GRC-46

(fig. 4.2)

(Added)

Interconnecting Box J-1194/GRC-46 is used in remote operation of the AN/GRC-46B. The SEND-MARK HOLD-REC switch for the remote site is incorporated in the unit. Three phone jacks provide for plugging in the teletypewriter equipment, and four binding posts for connecting the four line wires at the remote site to the J-668/GR at the shelter.

Paragraph 16. Make the following changes: Delete the fourth and fifth sentences and substitute: The S-144/G and the lightweight shelter are constructed of aluminum sheets $\frac{1}{8}$ inch thick with styrofoam insulation. The S-89C/G shelter is constructed of aluminum sheets $\frac{1}{8}$ inch thick and $\frac{1}{4}$ -inch plywood with fiberglass insulation.

After the last sentence, add: The S-144/G has a metal file case and an additional rack for mounting the security equipment.

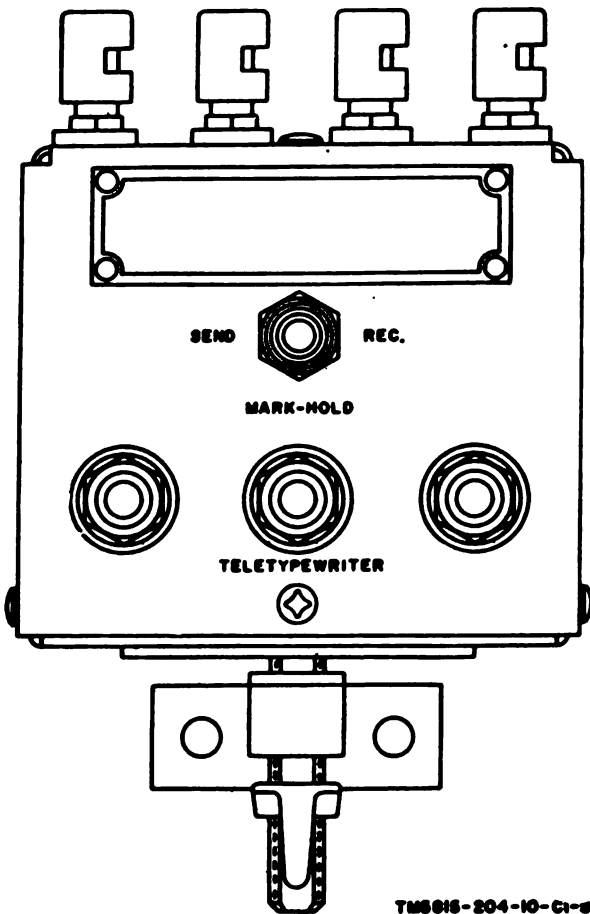
Page 12, paragraph 17, chart. In Type column, line 1, change "CG-409/U" to: CG-409C/U.

Page 13, paragraph 17, chart. In Lengths AN/GRC-46 (*) column, line 6, change "12 ft 1 in." to: 12 ft 11 in.

Page 15, paragraph 17, chart, Type column. Make the following changes:

Add after line 1: (AN/GRC-46 and AN/GRC-46A).

Add after line 2: (AN/GRC-46 and AN/GRC-46A).



TMS816-204-10-C1-8

Figure 4.2. (Added) Interconnecting Box J-1194/GRC, operating controls and receptacles.

Page 16. paragraph 17, chart. After first entry and before the note add:

Type	Lengths		Type of connector	Type of connector	Comments			
	AN/GRC-46(*)	AN/TBC-46			From		To	
					Dist	Receptacle	Dist	Receptacle
CX-4548/U (AN/GRC-46B).	9 ft 7 in.	None	Two-conductor, rubber-covered. Two-conductor, rubber-covered.	Plug, Telephone PJ-055B each end. Connector, Plug, Electrical AN2106A-148-78 one end; 1 plug, phone tip (red), 1 plug, phone tip (black) on other end.	J-1196/GRC-46	KWB-9 LOOP SEND	KWB-9/TSEC	BLK SEND
	6 ft 8 in.	None			AN/UGC-4	+ and - terminal	J-1196/GRC-46	BATTERY
CX-4551/U (AN/GRC-46B).	10 ft 8 in.	None	Two-conductor, rubber-covered.	2 terminal lugs one end; plug, Telephone PJ-055B on other end.	AN/UGC-4	Terminals 3 and 4	KWB-9/TSEC	REC RED
	8 ft 2 in.	None			J-1196/GRC-46	KWB-9 LINE REC	KWB-9/TSEC	SEND & REC
CX-6536/U (AN/GRC-46B).	8 ft 6 in.	None	Two-conductor, rubber-covered.	2 terminal lugs one end; 1 terminal lugs one end; 1 terminal lugs one end; 1 terminal lugs one end.	TT-76(*)/GGC	TB-5	TD ON switch	
	13 ft 9 in.	None			TT-76(*)/GGO	TB-5	KWB-9/TSEC	TD CONT BLU

20.1. Interconnecting Box J-1195/GRC-46 Controls

(fig. 4.1)

(Added)

Control	Function						
D OFF—P-E-D ON function selector switch.	Two-position rotary switch used for routing the signal line current into sending and receiving circuits of teletypewriters when the KWB-9/TSEC is used.						
	<table border="0"> <tr> <td style="text-align: center;"><i>Position</i></td> <td style="text-align: center;"><i>Action</i></td> </tr> <tr> <td>P-E-D ON</td> <td>Switches the KWB-9/TSEC send loop into the Re-perforator-Transmitter, Teletypewriter TT-76(*)/GGC keyboard and transmitter-distributor circuits.</td> </tr> <tr> <td>D OFF</td> <td>The KWB-9/TSEC LOOP SEND jack is disconnected from the keyboard and transmitter-distributor circuits.</td> </tr> </table>	<i>Position</i>	<i>Action</i>	P-E-D ON	Switches the KWB-9/TSEC send loop into the Re-perforator-Transmitter, Teletypewriter TT-76(*)/GGC keyboard and transmitter-distributor circuits.	D OFF	The KWB-9/TSEC LOOP SEND jack is disconnected from the keyboard and transmitter-distributor circuits.
<i>Position</i>	<i>Action</i>						
P-E-D ON	Switches the KWB-9/TSEC send loop into the Re-perforator-Transmitter, Teletypewriter TT-76(*)/GGC keyboard and transmitter-distributor circuits.						
D OFF	The KWB-9/TSEC LOOP SEND jack is disconnected from the keyboard and transmitter-distributor circuits.						
SIGNAL LINE CURRENT ADJUST.....	Permits adjustment of the signal line current.						
OFF-LINE CURRENT ADJUST.....	Permits adjustment of the off-line current. Not effective with function selector switch in the P-E-D ON position.						

Paragraph 21c. Add after subparagraph c.

Note. In remote operation of Radio Teletypewriter Set AN/GRC-46B, the SEND-MARK HOLD-REC switch of Interconnecting Box J-1194/GRC-46 performs the same functions as described in a through c above.

Add paragraph 21.1 after paragraph 21:

21.1. SEND-MARK HOLD-REC switch

(fig. 10.1)

In the AN/GRC-46B equipments, a push switch is added to the right side of the SEND-MARK HOLD-REC switch and is marked TD ON. The TD ON switch must be pressed for clear text operation of the transmitter-distributor in the modified TT-76(*)GGC.

Figure 10. Add to end of caption: (AN/GRC-46 and AN/GRC-46A).

Page 22, paragraph 24. Make the following changes:

Delete the third sentence and substitute:

The three modes of operation are described in a through c below.

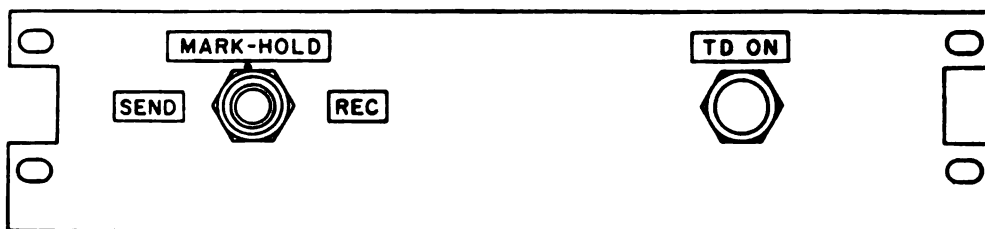
Add subparagraph c.

c. Security Equipment Operation. For security equipment operation, refer to KAO-33/TSEC, Instructions for TSEC/KWB-9.

Page 24, paragraph 26, chart. Make the following changes: After "Interconnecting Box J-668/GR", add:

Component	Control	Position
Interconnecting Box J-1195/GRC-46 (AN/GRC-46B).	D OFF—P-E-D ON switch.	P-E-D ON
KWB-9/TSEC (AN/GRC-46B).	POWER switch	OFF
	P-C switch	F

In Control column, line 13, change "Distributor level" to: START-STOP lever.



TM5815-204-10-C1-4

Figure 10.1. (Added) SEND-MARK HOLD-REC switch (AN/GRC-46B).

Paragraph 27, chart. Add to the chart:

Unit	Control	Action
J-668/GR (AN/GRC-46B).....	CRYPT switch.....	Place at ON, for teletypewriter and reperforator operation.
KWB-9/TSEC (AN/GRC-46B).....	POWER switch.....	Place at ON, for teletypewriter and reperforator operation.

Page 25, paragraph 29a, chart. Add after unit "J-668/GR":

Unit	Control	Action
Teletypewriter shelf (AN/GRC-46B).	SEND-MARK HOLD REC....	Place at MARK HOLD.
J-1195/GRC-46 (AN/GRC-46B).	D OFF-P-E-D ON.....	Turn to D OFF. Adjust OFF-LINE CURRENT ADJUST control on J-1195/GRC-46 for a 60-ma indication on the line current meter of KWB-9/TSEC.
Teletypewriter shelf.....	SEND-MARK HOLD REC switch.	Place at REC.

Page 26, paragraph 29b, chart. Add after unit "AN/UGC-4":

Unit	Control	Action
Teletypewriter shelf (AN/GRC-46B).	TD ON..	Depress for unit to transmit.

Page 27, paragraph 29c(4), chart. Add to chart:

Unit	Control	Action
Teletypewriter shelf (AN/GRC-46B).	TD ON..	Depress for unit to transmit.

Page 28, paragraph 29c(5). After the second sentence, add: The TD ON switch must be pressed for the reperforator-transmitter to transmit clear text in the AN/GRC-46B equipment.

Paragraph 31, chart. Add to the chart:

Unit	Control	Action
KWB-9/TSEC (AN/GRC-46B).	POWER switch.	Place at OFF.

Page 35, paragraph 35c, chart, Action column. Add to step 60: Press TD ON switch in the AN/GRC-46B equipment.

Page 37, paragraph 36. Delete subparagraph b and substitute:

b. *Auxiliary Equipment Needed.* The following additional items are required to operate a remote page printer in conjunction with the RTT set:

Number required	Item
1.....	Teletypewriter Set AN/UGC-4.
1.....	Four-conductor telephone cable, maximum length 5,280 feet, color-coded leads, if possible.
1.....	Double-pole, three-position switch, SEND-REC-MARK HOLD switch or equivalent (AN/GRC-46 and AN/GRC-46A). (Interconnecting Box J-1194/GRC-46 in the AN/GRC-46B).

BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official:

R. V. LEE,
Major General, United States Army,
The Adjutant General.

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6-137	6-634	11-39	33-105
6-138	7	11-55	33-106
6-146	7-11	11-57	39-51
6-148	7-12	11-96	39-61
6-150	7-17	11-97	39-71
6-200	7-25	11-98	44-12
			44-15
			44-16
			44-35
			55-11
			55-12
			55-16
			55-46
			55-57
			55-75
			55-76
			55-79
			55-116
			55-136
			55-500 AA-AE
			57
			57-5
			10-46
			17-55
			39-73
			44-36

NC: State AG (3) Units same as Active Army except allowance is one copy to each unit.

USAR: None.

For explanation of abbreviations used, see AR 320-50.

TECHNICAL MANUAL

Operator's Manual

RADIO TELETYPEWRITER SETS AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AND AN/VRC-29

TM 11-5815-204-10

CHANGES No. 3

TM 11-5815-204-10, 14 September 1960, is changed as follows:

Page 38, after paragraph 37, add:

37.1. Alternate Method for Remote Operation

The RTT sets may be operated from a remote site by using Radio Set Control Group OA-1754/GRC (fig. 16) and Control Group AN/GRA-6 (TM 11-5038). Maximum distance from the RTT set is 2 miles. CW or fsk operation at the remote site is possible.

a. Cw Mode (fig. 17).

- (1) Plug the RE-479/GRC (receptacle J101) into the T-195/GRC-19 AUDIO receptacle.
- (2) Remove FUSE 15 AMP 24 VOLT fuse cap from the T-195/GRC-19. Substitute the modified fuse cap supplied as part of the RE-479/GRC.
- (3) Insert connector P101 of the WS-16/U into the jack of the modified fuse cap.
- (4) Mount the SA-708/GRC at the remote site as convenient. Use the angle bracket as required.
- (5) Connect Key, Telegraph KY-116/U to receptacle J1 on the SA-708/GRC through a cable assembly such as CX-1852/U.
- (6) Connect an appropriate two-conductor line, not exceeding 2 miles in length, between the LINE binding posts of the RE-479/GRC and the LINE binding posts of the SA-708/GRC.
- (7) At the local site, place the SERVICE SELECTOR switch of the T-195/GRC-19 at CW. At the remote site, set the FSK ON switch located on the SA-708/

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 7 May 1960

GRC in the down (off) position. The set is then ready for operation.

b. Fsk Mode (fig. 18).

- (1) Remove the jumper wire connecting terminals E2 and E5 (TTY LINE) on Interconnecting Box J-668/GR. Reconnect the jumper wire between terminals E3 and E4.
- (2) Insert one end of a suitable two-conductor line such as WD-1/TT (not to exceed 2 miles in length) into J-668/GR terminals E2 and E5. At the remote site, connect the other end of the line to a teletypewriter set. Use the binding posts prescribed for two-wire operation.
- (3) Connect one end of another two-conductor line (not to exceed 2 miles in length) to J-668/GR terminals E4 and E5. At the remote site, connect the other end of the line to the LINE binding posts of the SA-708/GRC.
- (4) Install Control Group AN/GRA-6 between local and remote sites as required. This provides a voice and fsk monitoring capability.
- (5) The RE-479/GRC is not used for remote fsk operation.
- (6) The SERVICE SELECTOR switch on the T-195/GRC-19 must be at VOICE/FSK. The SEND-RECEIVE-MARK HOLD switch located on the teletypewriter shelf must be at RECEIVE. At the remote site, the FSK ON switch located on the SA-708/GRC must be in the up (on) position during teletypewriter transmission and in the down (off) position for reception.

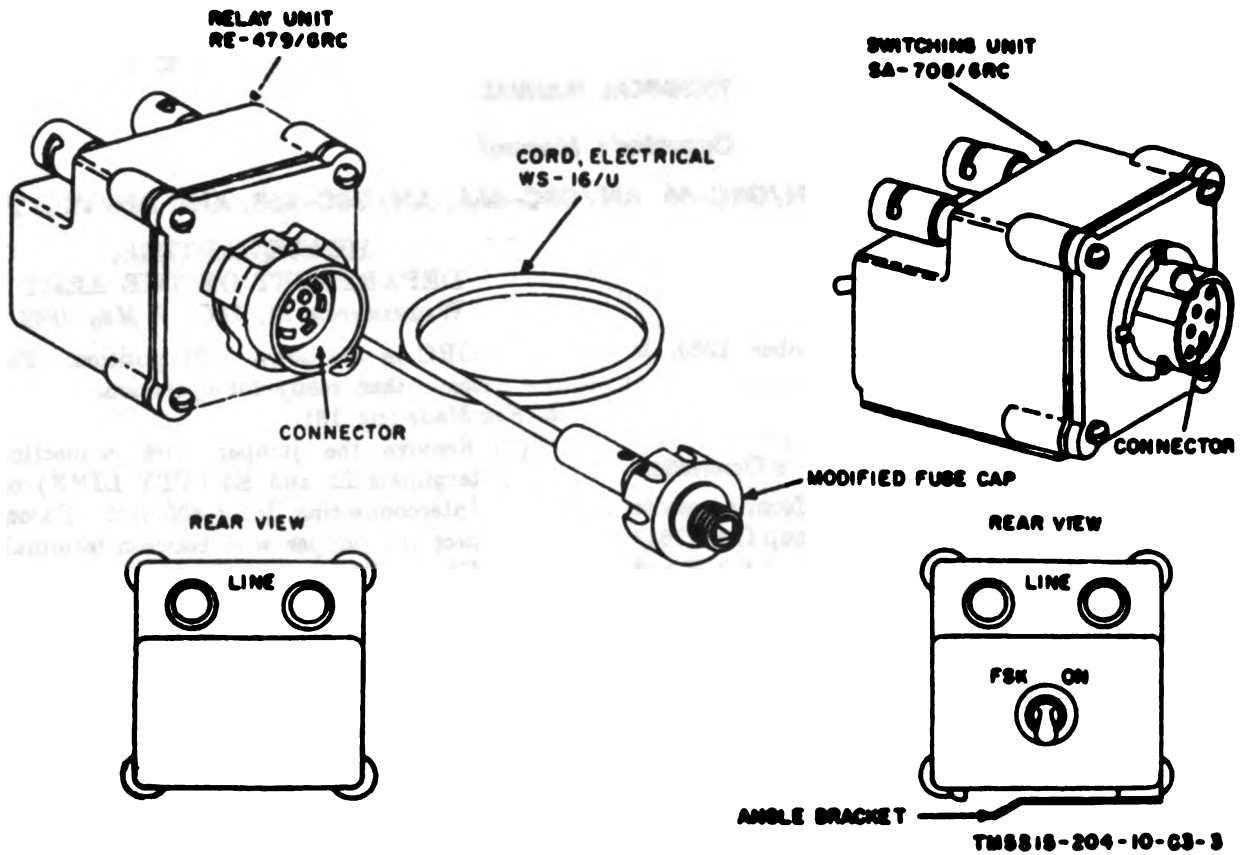


Figure 16. (Added) Radio Set Control Group OA-1764/GRC.

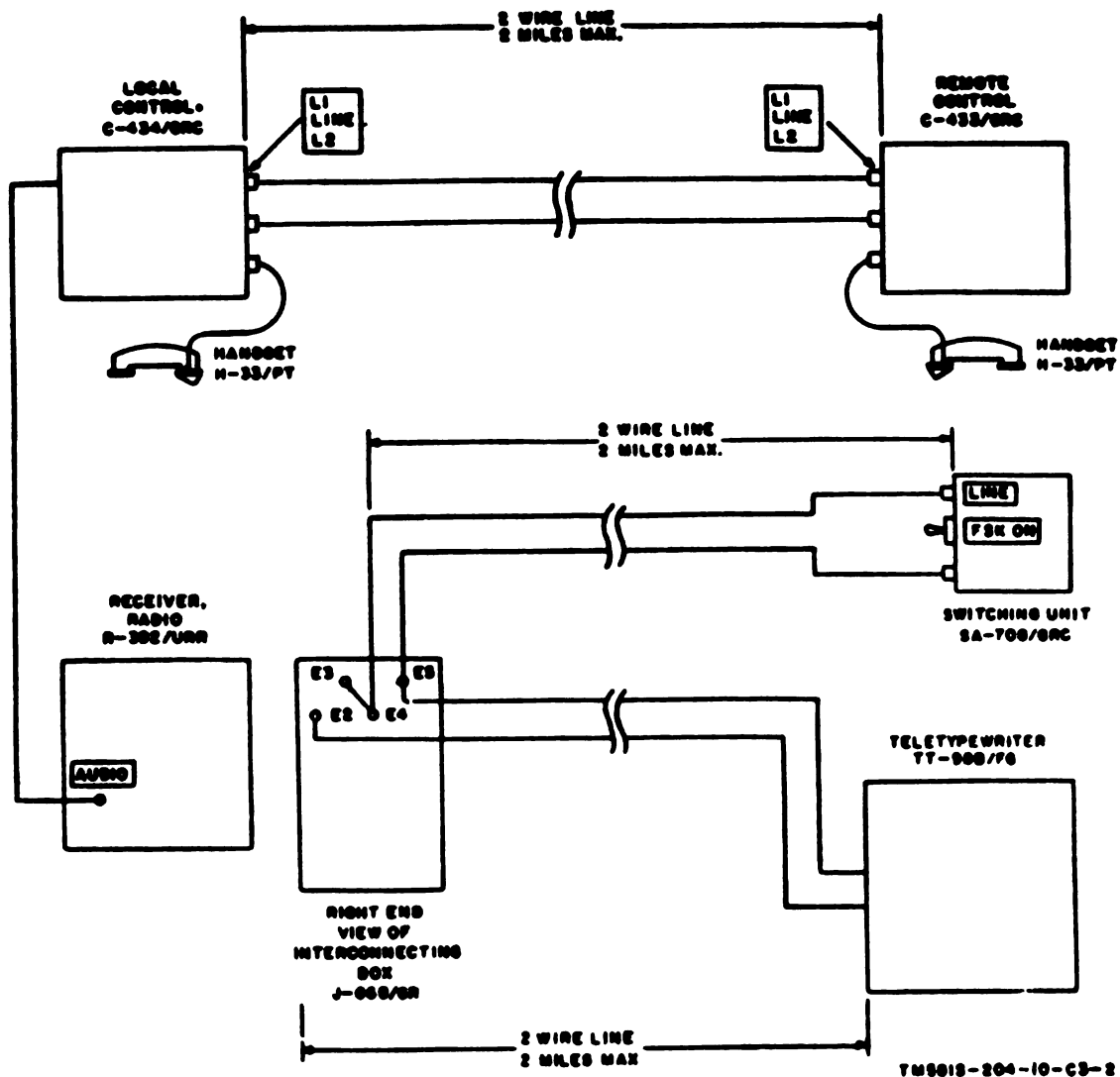


Figure 18. (Added) Connections for remote fsk operation.

BY ORDER OF THE SECRETARY OF THE ARMY:

G. H. DECKER,
General, United States Army,
Chief of Staff.

Official:

J. C. LAMBERT,
Major General, United States Army,
The Adjutant General.

Distribution:

Active Army:

DASA (6)	USASSA (20)	7-12 (2)	10-500 AA-AD
USASA (2)	USASSAMWO (1)	7-17 (2)	(2)
CNGB (1)	USASEA (1)	7-25 (2)	10-536 (2)
Tech Stf, DA (1) except	USARCARIB Sig Agcy (1)	7-26 (2)	11-5 (2)
CSigO (14)	USA Sig Mal Spt Agcy (13)	7-31 (2)	11-7 (2)
Tech Stf Bd (1)	Sig Fld Maint Shops (3)	7-32 (2)	11-16 (2)
USCONARC (5)	USA Corps (3)	7-42 (2)	11-37 (2)
USAARTYBD (1)	Def Log Svc Cen (1)	7-45 (2)	11-38 (2)
USAARMBD (2)	JBUSMC (2)	7-46 (2)	11-55 (2)
USAIB (1)	Units organized under following	7-52 (2)	11-57 (2)
USARADBD (2)	TOE's:	8-15 (2)	11-85 (2)
USAAVNB (1)	1-7 (2)	8-16 (2)	11-87 (2)
USAABELCTBD (1)	1-17 (2)	8-30 (2)	11-96 (2)
USAATBD (1)	1 25 (2)	8-301 (2)	11-97 (2)
ARADCOM (2)	1 26 (2)	8-315 (2)	11-98 (2)
ARADCOM Rgn (2)	1 37 (2)	8-316 (2)	11-117 (2)
OS Maj Comd (3)	1-67 (2)	8-325 (2)	11-155 (2)
OS Base Comd (2)	1-75 (2)	8-326 (2)	11-157 (2)
LOGCOMD (2)	1-76 (2)	8-328 (2)	11-165 (2)
MDW (1)	1-78 (2)	8-330 (2)	11-168 (2)
Armies (2)	1-127 (2)	8-345 (2)	11-167 (2)
Corps (2)	1-137 (2)	8-346 (2)	11-287 (2)
Instl (2)	5-5 (2)	8-355 (2)	11-500 AA-AE
Ft Monmouth (63)	5-6 (2)	8-356 (2)	RM-RT (4)
USATC AD (2)	5-15 (2)	8-358 (2)	11-555 (2)
USATC Armor (2)	5-16 (2)	8-401 (2)	11-557 (2)
USATC Engr (2)	5-45 (2)	8-405 (2)	11-587 (2)
USATC Inf (2)	5-46 (2)	8-406 (2)	11-592 (2)
USATC FA (2)	5-214 (2)	8-415 (2)	11-597 (2)
USAOMC (3)	6-100 (2)	8-416 (2)	17 (2)
Svc College (2)	6-101 (2)	8-425 (2)	10-17 (2)
Br Svc Sch (2)	6-115 (2)	8-426 (2)	10-22 (2)
GENDEP (2) except	6-116 (2)	8-500 AA (2)	10-45 (2)
Atlanta GENDEP (none)	6-125 (2)	8-501 (2)	10-46 (2)
Sig Sec. GENDEP (5)	6-126 (2)	8-525 (2)	10-105 (2)
Sig Dep (12)	6-134 (2)	8-535 (2)	10-106 (2)
WRAMC (1)	6-135 (2)	8-536 (2)	10-107 (2)
USA Trans Tml Comd (1)	6-136 (2)	8-545 (2)	10-157 (2)
Army Tml (1)	6-137 (2)	8-555 (2)	10-201 (2)
POE (1)	6-138 (2)	8-565 (2)	10-202 (2)
OSA (1)	6-155 (2)	8-575 (2)	10-208 (2)
1st GM Bde (2)	6-156 (2)	8-576 (2)	10-347 (2)
USAEFG (2)	6-165 (2)	8-577 (2)	10-348 (2)
AFIP (1)	6-166 (2)	8-585 (2)	10-377 (2)
AMS (1)	6-168 (2)	8-635 (2)	10-445 (2)
Army Pictorial Cen (2)	6-175 (2)	8-686 (2)	10-446 (2)
EMC (1)	6-176 (2)	8-687 (2)	10-447 (2)
Yuma Test Sta (3)	6-177 (2)	7 (2)	10-448 (2)
USACA (3)	6-200 (2)	7-11 (2)	17-116 (2)

Units organized under following		44-26 (2)	44-500 AA-AD	55-11 (2)	55-150 (2)
TOE's—Continued		44-295 (2)	(2)	55-12 (2)	55-400 (2)
20-5 (2)	33-100 (2)	44-296 (2)	44-535 (2)	55-16 (2)	55-457 (2)
20-21 (2)	39-51 (2)	44-435 (2)	44-536 (2)	55-46 (2)	55-460 (2)
20-35 (2)	44-12 (2)	44-436 (2)	44-537 (2)	55-57 (2)	55-460 (2)
20-35 (2)	44-15 (2)	44-437 (2)	44-544 (2)	55-75 (2)	55-500 AA-AB
20-36 (2)	44-16 (2)	44-445 (2)	44-545 (2)	55-76 (2)	(2)
20-65 (2)	44-35 (2)	44-446 (2)	44-546 (2)	55-79 (2)	57 (2)
32-57 (2)	44-36 (2)	44-447 (2)	44-547 (2)	55-116 (2)	57-5 (2)
33-105 (2)	44-35 (2)	44-448 (2)	44-548 (2)	55 127 (2)	

NG: State AG (2); units—same as Active Army except allowance is one copy to each unit.

UBAR: None.

For explanation of abbreviations used, see AR 320-50.

CHANGE }
No. 8 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 3 April 1969

**Operator's Manual
RADIO TELETYPEWRITER SETS AN/GRC-46, AN/GRC-46A,
AN/GRC-46B, AN/GRC-46C, AND AN/VRC-29**

TM 11-5815-204-10, 14 September 1960, is changed as follows:

Note. The parenthetical reference to a previous change (example: page 6 of C 1) indicates that pertinent material was published in that change.

Change the title of the manual as shown above.

Page 3, paragraph 1a, line 3. After "AN/GRC-46B," add: AN/GRC-46C.

Last sentence. Delete the last sentence and substitute: The basic issue items list for all models is included in appendix II.

Subparagraph b, line 6. After "AN/GRC-46B," add: and AN/GRC-46C.

Subparagraph c. After subparagraph b, add:

c. Application of MWO 11-5815-204-35/7 to the AN/GRC-46 and the AN/GRC-46A, or application of MWO 11-5815-204-35/4 to the AN/GRC-46B, results in an AN/GRC-46C.

Paragraph 2 (as added by C 5, 27 Mar 63)

Delete paragraph 2 and substitute:

2. Indexes of Publications

a. *DA Pam 310-4.* Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. *DA Pam 310-7.* Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

Paragraph 2.1 (as changed by C 5, 27 Mar 63) Delete paragraph 2.1 and substitute:

2.1. Forms and Records

a. *Reports of Maintenance and Unsatisfactory Equipment.* Use equipment forms and records in accordance with instructions given in TM 38-750.

b. *Report of Packaging and Handling Deficiencies.* Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army), NAVSUP Pub 378 (Navy), AFR 71-4 (Air Force), and MCO P4030-29 (Marine Corps).

c. *Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38 (Army), NAVSUP Pub 459 (Navy), AFM 75-34 (Air Force), and MCO P4610.19 (Marine Corps).

d. *Reporting of Equipment Publication Improvements.* The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commanding General, U.S. Army Electronics Command, ATTN: AMSEL-ME-NMP-AD, Fort Monmouth, N.J., 07703.

Paragraph 3a (page 1 of C 1), last sentence. After "AN/GRC-46B," add: AN/GRC-46C.

Page 4, paragraph 5 (page 3 of C 1). Delete paragraph 5 and substitute:

5. Components

Components of the AN/GRC-46(*) are listed in appendix II. Running spares are illustrated in figure 2.

Page 7, paragraph 7 (page 5 of C 1). Make the following changes:

Subparagraph a, fourth sentence. Delete

*This change supersedes C 5, 27 March 1963, and C 7, 27 August 1963.

"KWB-9/TSEC."

Subparagraph a.1, lines 5 and 9. Delete "KWB-9/TSEC."

Page 10, paragraph 13 (page 5 of C 1). Delete the second sentence.

Page 11. Make the following changes:

Paragraph 14.1 (page 6 of C 1). After the last sentence, add: The J-1195/GRC-46 is not used in the AN/GRC-46C and the AN/VRC-29.

Paragraph 14.2 (page 6 of C 1). Add paragraphs 14.3, 14.4, and 14.5 and figures 3.1, 3.2, and 3.3 after paragraph 14.2:

14.3 Interconnecting Box J-2491/GRC (fig. 3.1)

The J-2491/GRC is a modified J-668/GR (para 14) used in the AN/GRC-46C. Application of MWO 11-5815-204-35/4 or MWO 11-5815-204-35/7 to the J-668/GR permits it to perform its function with the security equipment in the AN/GRC-46C. The SYNC INPUT jack on the right side is now lettered TTY SIGNAL LINE. The modified left side is shown in figure 3.1.

14.4. Interconnecting Box J-2498/GRC (fig. 3.2)

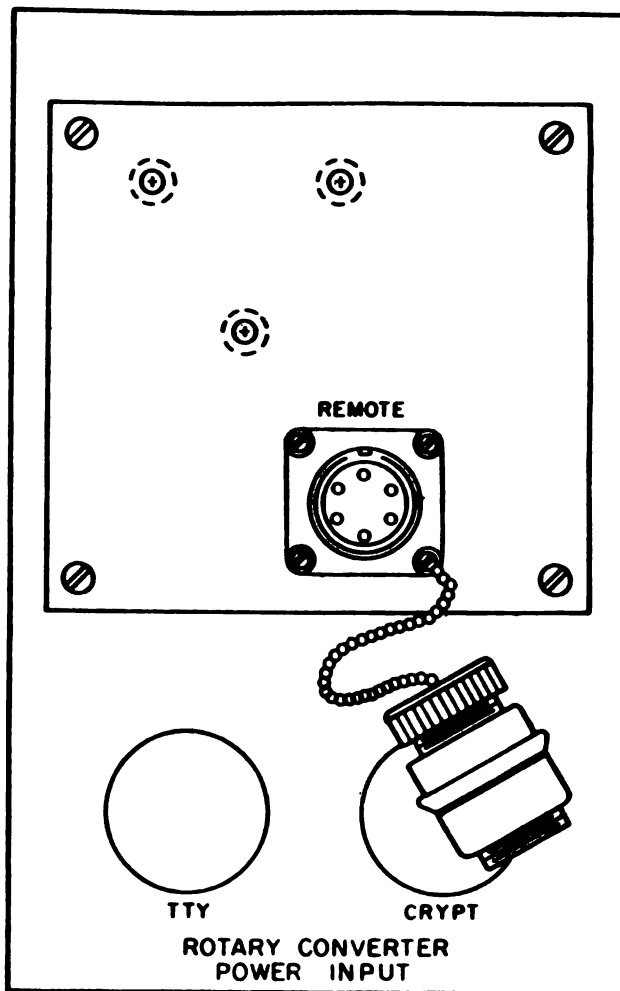
The J-2498/GRC is used in the AN/GRC-46C. It completes power and signal circuits when the security equipment is removed, and is mounted and connected in place of the security equipment to permit operation in the clear.

14.5. Switch, Electronic SA-1243/GRC (fig. 3.3)

The SA-1243/GRC is used in the AN/GRC-46C. It is a two-position toggle switch contained in an aluminum housing that is mounted on top of the housing for the SEND-REMARK HOLD switch.

Paragraph 15. After the last sentence, add: In the AN/GRC-46C, a box that contains two additional ac outlet receptacles is mounted on top of the filter box, above the existing receptacles.

Paragraph 16 (as added by C 7, 27 Aug 63). At the end of the paragraph, add: The door locks on these shelters have been modified by MWO 11-5815-224-35/2 to permit locking the door from the inside of the shelter. The door locks on the shelters



TM 5815-204-10-C8-1.

Figure 3.1. Interconnecting Box J-2491/GRC, left side.

of some Radioteletypewriter Sets AN/GRC-46A have been modified to permit the door lock to be unlocked from the inside, when it has been inadvertently locked from the outside.

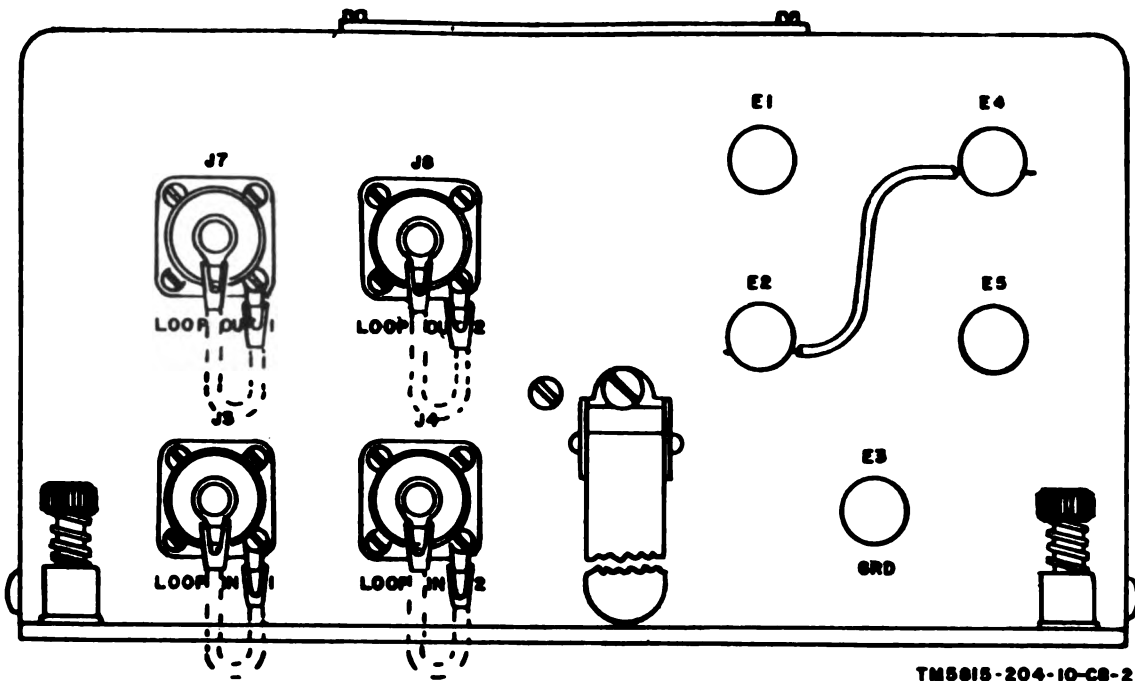
Page 19, paragraph 20. Add the following note after the chart:

Note. The controls and operation of the J-2491/GRC are identical with those of the J-668/GR.

Add paragraph 21.2 after paragraph 21.1 (page 8 of C 1).

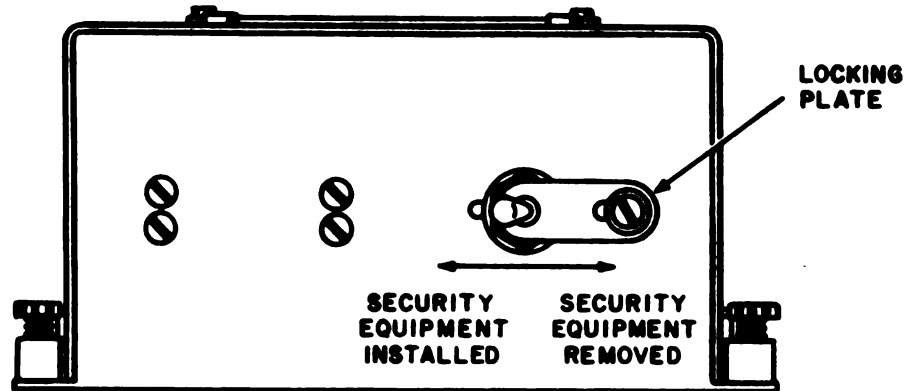
21.2. Switch, Electronic SA-1243/GRC, Operation

In the AN/GRC-46C, the SA-1243/GRC is mounted on the case for the SEND-REMARK HOLD switch. Set the two-position toggle switch at the position that corresponds



TM5815-204-10-C8-2

Figure 3.2. Interconnecting Box J-2498/GRC.



TM5815-204-10-C8-3

Figure 3.3. Switch, Electronic SA-1243/GRC.

to the type of the installation; with or without security equipment. When the switch is placed in the SECURITY EQUIPMENT INSTALLED position, be sure that the locking plate is in place and that the screw in the plate is tight.

Page 24, Paragraph 27 (page 9 of C 1), heading. Add the following cautions after the heading:

Cautions:

1. Do not apply external power to the loop circuits of the security equipment in the AN/GRC-46C.

2. In the AN/GRC-46C, do not set the AN/UGC-4 DC POWER switch to ON.

Page 26, paragraph 29b (page 9 of C 1), head-

ing. After the heading, add: In the AN/GRC-46C, the AN/UGC-4 has no transmitting capability. If the TT-76(*) becomes inoperative, and it is necessary to continue transmitting, remove the cables from terminals 1 and 2 on the TT-76(*) and connect them to terminals 2 and 5 on the AN/UGC-4.

Page 29, paragraphs 32 through 34.3 (as changed by C 5, 27 Mar 63). Delete paragraphs 32 through 34.3 and substitute:

32. Scope of Maintenance

The maintenance duties assigned to the operator of the AN/GRC-46, AN/GRC-46A, AN/

GRC-46B, AN/GRC-46C, and AN/VRC-29 are listed in *a* through *d* below, together with references to paragraphs covering the specific maintenance function. The duties assigned do not require tools or test equipment other than those issued with the equipment.

a. Daily preventive maintenance checks and services chart (para 34.1).

b. Weekly preventive maintenance checks and services chart (para 34.2).

c. Cleaning (para 34.3).

d. Repairs and adjustments.

(1) Replacement of the paper and ribbons in the teletypewriter (TM 11-2225).

(2) Emptying chad container (TM 11-2225).

(3) Operator's maintenance for the page printer, reperforator-transmitter, receiver, and transmitter is given in the applicable technical manual (app I).

(4) Replacement of fuses and lamps.

33. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, reduce downtime, and assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 32, 33, and 34 cover systematic care essential to proper upkeep and operation of the equipment when it is used daily. If the equipment is not used daily, the cleaning operations (para 34.3) must be performed before operation, after any extended shutdown, or once a week while the equipment is

kept in standby condition. The other items must be checked before the equipment is placed in operation or after it is turned off, as specified in the applicable paragraph.

b. Preventive Maintenance Checks and Services Charts. The preventive maintenance checks and services charts (para 34.1 and 34.2) outline inspections to be made at a specific interval to determine combat serviceability; that is, to determine that the equipment is in good general (physical) condition, in good operating condition, and likely to remain combat serviceable. To assist operators in determining and maintaining combat serviceability, the charts indicate what to inspect, how to inspect, and what the normal conditions are; the *References* column lists the paragraphs that contain additional information. If the defect cannot be remedied by the operator, higher category maintenance or repair is required. Records and reports of these inspections must be made in accordance with instructions given in TM 38-750.

34. Preventive Maintenance Checks and Services Periods

Maintenance checks and services of the equipment are required daily and weekly. Paragraphs 34.1 and 34.2 specify the items to be inspected and serviced. In addition to the routine daily services and inspection, the equipment should be checked and serviced immediately before going on a mission and as soon after completion of the mission as possible.

34.1. Daily Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedure	Reference
1	Completeness	Check to see that equipment is complete	App II. Para 34.3.
2	Cleanliness	Inspect cases, racks, mounts, microphones, headsets, and panels for dust, dirt, moisture, and grease.	
3	Hardware	Check for broken, missing, or loose catches, latches, handles, and hinges; all items should be properly secured.	
4	Cords and cables	Check external cords and cables for cuts, cracked or gouged jackets, fraying, and kinks.	
5	Plugs and receptacles.	Check external items for breakage and seating.	
6	Knobs, dials, and switches	Check for proper mechanical action by setting each control to each of its possible settings. Action should be positive without backlash, binding, or scraping.	
7	Antenna system	Check antenna, mast base, and bracket for evidence of damage. Mast bracket should be firmly attached to shelter and mast base properly mounted.	
8	Operational check.		

34.2. Weekly Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedure	Reference
1	Preservation.	Check painted surfaces. They must be free of bare spots, rust, and corrosion.	Para 35.
2	Cases, racks, and mounts	Check to see that items are properly mounted and secure.	
3	Accessible items	Inspect switches, knobs, jacks, motors, and blowers for looseness. Items should be securely mounted.	
4	Air filters	Air filters should be clean and properly fitted in air vents.	
5	Shelter	Inspect for weatherproofing. Door seals and shelter glands should be free of cracks or cuts.	

34.3. Cleaning

The interior surfaces of the radio set should be free of dust, dirt, and fungus.

a. Remove dust and loose dirt with a clean, soft cloth.

Warning: Prolonged breathing of cleaning compound is dangerous; make sure adequate ventilation is provided. Cleaning compound is flammable; do not use near a flame. Avoid contact with the skin; wash off any that spills on the hands.

b. Remove grease, fungus, and ground-in dirt from the cases; use a cloth dampened

(not wet) with the cleaning compound (Federal stock No. 7930-395-9542).

Caution: Do not press on the glass meter faces when cleaning; the meter may become damaged.

c. Clean the control panels and control knobs; use a soft cloth. If dirt is difficult to remove, dampen the cloth with water; mild soap may be used to make the cleaning more effective.

Page 30 (as deleted by C 5, 27 Mar 63). Delete figure 15.

Page 41, appendix I (as changed by C 7, 27 Aug 63) Delete and substitute:

APPENDIX I REFERENCE

Following is a list of applicable references that are available to the operator of Radio Teletypewriter Sets AN/GRC-46(*) and AN/VRC-29:

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Modification Work Orders.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 9-213	Painting Instructions for Field Use.
TM 11-806	Radio Transmitters T-195/GRC-19, T-195A/GRC-19, and T-195B/GRC-19.
TM 11-5410-201-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Shelter, Electrical Equipment S-89C/G.
TM 11-5410-205-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List: Shelters, Electrical Equipment S-144/G, S-144A/G, S-144B/G, and S-144C/G.
TM 11-5805-210-10	Operator's Manual: Frequency Shift Converter CV-278/GR.
TM 11-5805-295-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Mountings MT-791/U and MT-791A/U.
TM 11-5815-200-12	Organizational Maintenance Manual Including Repair Parts and Special Tools List: Teletypewriter Sets AN/FGC-20, AN/FGC-20X, AN/FGC-21, AN/FGC-64, AN/FGC-66, AN/FGC-67, AN/FGC-67X, AN/UGC-4, AN/UGC-29, AN/UGC-29X, and Teleprinter TT-259/FG.
TM 11-5815-238-12	Organizational Maintenance Manual Including Repair Parts and Special Tools List: Teletypewriter Sets AN/GGC-3 and AN/GGC-3A and Teletypewriter Reperforator-Transmitters TT-76/GGC, TT-76A/GGC, TT-76B/GGC, and TT-76C/GGC.
TM 11-5820-205-10	Operator's Manual: Radio Transmitter Modulator MD-203/GR.
TM 11-5820-295-10	Operator's Manual: Radio Set AN/GRC-19.
TM 11-5820-334-10	Operator's Manual: Radio Receiver R-392/URR.
TM 11-5820-335-10	Operator's Manual: Transmitters, Radio T-195/GRC-19, T-195A/GRC-19, and T-195B/GRC-19.
TM 11-5820-401-10	Operator's Manual: Radio Sets AN/VRC-12 and AN/VRC-43, -44, -45, -46, -47, -48, and -49.

TM 11-5820-479-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Mast Base MP-65, MP-65A, and MP-65B.
TM 11-5965-222-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tool Lists and Maintenance Allocation Chart: Dynamic Loudspeaker LS-166/U.
TM 11-5965-231-15P	Operator, Organizational, Field and Depot Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Headset, Electrical H-113/U.
TM 11-6625-261-12	Operator's and Organizational Maintenance Manual: Audio Oscillators TS-382A/U, TS-382B/U, TS-382D/U, TS-382E/U, and TS-382F/U.
TM 11-6625-384-12	Operator's and Organizational Maintenance Manual: Maintenance Kit, Electronic Equipment MK-427/ARC.
TM 38-750	Army Equipment Record Procedures.

Page 42. Delete appendix II (as changed by C 7, 27 Aug 63) and substitute:

APPENDIX II

BASIC ISSUE ITEMS LIST

Section I INTRODUCTION

1. Scope

This appendix lists items comprising an operable equipment and those required for installation, operation, or operator's maintenance for Radio Teletypewriter Sets AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29.

2. Explanation of Columns

The following is a list of explanations of columns in section II.

a. Source, Maintenance, and Recoverability Codes (SMR) Column.

(1) *Source code (S).* The selection status and source for the listed item is the first code indicated in this column. The source code used and its explanation is:

<i>Code</i>	<i>Explanation</i>
P	Applies to repair parts that are stocked in or supplied from GSA/DSA, or Army supply system, and authorized for use at indicated maintenance categories.

(2) *Maintenance code (M).* The lowest category of maintenance authorized to install the item is indicated by the second code in the column. The maintenance category code and its explanation is:

<i>Code</i>	<i>Explanation</i>
C	Operator/crew

(3) *Recoverability code (R).* The recoverability code is the third code in the column. It indicates whether unserviceable items should be returned for recovery or salvage. Recoverability code and its explanation is as follows:

Note. When no code is indicated in the recoverability column, the part will be considered expendable.

<i>Code</i>	<i>Explanation</i>
R	Applies to repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.

b. *Federal Stock Number Column.* This column indicates the Federal stock number for the item.

c. *Description Column.* This column includes the Federal item name and any additional description of the item which may be required. A part number or other reference number is followed by the applicable five-digit Federal Supply Code for Manufacturers. When required to indicate that the part is used on the models, or serially numbered groups so identified, the numbers 1, 2, 3, 4, etc. are placed under the heading *Usable on Code*. An explanation of the codes used precedes the first item in section II of the basic issue items list.

d. *Unit of Measure Column.* The unit used

as a basis of measure (e.g., ea, pr, ft, yd, etc.) is given in this column.

e. Quantity Incorporated in Unit Column. The total quantity of the item used in the equipment is given in this column.

f. Quantity Furnished With Equipment Column. This column lists the quantity of the item supplied for initial operation of the equipment and/or the quantities authorized to be kept on hand by the operator for maintenance of the equipment.

g. Illustrations Column.

(1) *Figure number (a).* The number of the illustration in which the item is shown is indicated in this column.

(2) *Item No. or reference designation (b).* The reference designation and/or item

number callout used to reference the item in the illustration appears in this column.

3. Federal Supply Codes

This paragraph lists the Federal supply code and the associated manufacturer's name.

<i>Code</i>	<i>Manufacturer</i>
24446	General Electric Co
36922	Longines-Wittnauer Watch Co Inc
74545	Hubbell Harvey Inc
76854	Oak Mfg Co
78385	South Wind Div of Stewart Warner Corp
80063	Army Electronics Command
81348	Federal Specifications
81349	Military Specifications
96906	Military Standards
98738	Stewart-Warner Electronics Division of Stewart-Warner Corp

SECTION II. BASIC ISSUE ITEMS

(1) SIR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code	(4) USABLE OR CODE	(5) UNIT OF MEAS	(6) QTY INC IN UNIT	(7) QTY FORM WITH EQUIP	(8) ILLUSTRATIONS	
							(a) FIG. NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
	5815-5A3-1760	RADIOTELETYPEWRITER SET AM/GRC-46; AM/GRC-46A; AM/WRC-46B: (This item is nonseparable)					1	
	5815-082-4205	RADIO TELETYPEWRITER SET AM/GRC-46C: (This item is nonseparable)						
	5815-5A3-1758	RADIO TELETYPEWRITER SET AM/WRC-29: (This item is nonseparable)						
		NOTE: Usable on Code 1 refers to AM/GRC-46; 2 refers to AM/GRC-46A; 3 refers to AM/GRC-46B; 4 refers to AM/WRC-29; 5 refers to AM/GRC-46C.						
		TECHNICAL MANUAL TM 11-5815-204-10:	1,2,3,4,5	ea	1	1		
		A quantity of one technical manual is packed with each equipment. Where a valid need exists, additional copies may be requisitioned and kept on hand.						
P-C	5935-666-16A9	ADAPTER, CONNECTOR UG-306A/U	1,2	ea	3	3		CFE01, CF2-2, CFE03
P-C	5935-647-2600	ADAPTER, CONNECTOR UG-306B/U	3,5	ea	3	3		CFE01, CF202, CFE03
-C-R	5820-633-03A4	ANTENNA MOUNTING ASSEMBLY: SC-C-11A35 & 11A370; 80063	1,2,3,5	ea	1	1		
-C-R	5820-698-6202	ANTENNA MOUNTING ASSEMBLY: 01X20A964; 98738	2,3,5	ea	1	1		
-C	5306-5A3-5898	BOLT, BUSH: SM-B-11A538; 80063	1,2,3,5	ea	1	1		NP2
-C	66A5-633-3597	BRACKET: SM-B-11A537; 80063	1,2,3,5	ea	1	1		NP1
-C	5815-706-3051	BRACKET ASSEMBLY: (Left hand) SM-B-11A266; 80063	4	ea	1	1		NP16
-C	5815-706-3052	BRACKET ASSEMBLY: (Right hand) 07X20B629; 98738	4	ea	1	1		NP15
-C	5815-706-3053	BRACKET: 07X20A78; 98738	4	ea	2	2		NP17, NP18
-C-R	7110-082-6109	CABINET, FILING SECURITY: AMF-358C (This item is nonseparable)	3,5 ,5	ea	1	1		
-C-R	5995-577-8058	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4539/U: (5 ft. 0 in.) SM-C-11A229; 80063	1,2,3,5	ea	1	1	8	WE50
-C-R	5995-617-1868	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4540/U: (3 ft. 2 in.) SM-C-11A244; 80063	1,2,3,5	ea	1	1	8	WE09
-C-R	5995-617-0312	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4540/U: (4 ft. 9 in.) SM-C-11A259; 80063	1,2,3,5	ea	1	1	8	WE13
P-C	5995-681-8789	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4547/U: (1 ft. 20 in.)	4	ea	2	2	8	WE09, WE13
-C-R	5995-823-3106	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4541/U: (6 ft. 11 in.) SM-C-11A235; 80063	1,2,3,5	ea	2	2	8	WE22, WE23
-C-R	5995-889-0899	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4541/U: (3 ft. 1 in.)	4	ea	2	2	8	WE22, WE23
-C-R	5995-617-1869	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4542/U: (8 ft. 11 in.)	1,2,3,5	ea	1	1	8	WE09
-C-R	5995-752-0492	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4551/U: (10 ft. 6 in.)	4	ea	1	1		WE37
-C-R	5995-681-8788	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4549/U: (6 ft. 3 in.)	4	ea	1	1		WE09
-C-R	5995-752-0193	CABLE ASSEMBLY, POWER, ELECTRICAL CX-6292/U: (12 ft. 11 in.)	3,5	ea	1	1		WE38
-C-R	5995-617-0313	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4545/U: (6 ft. 5 in.) SM-C-11A245; 80063	1,2,3,5	ea	1	1	8	WE47
-C-R	5995-681-8785	CABLE ASSEMBLY, POWER, ELECTRICAL CX-4550/U: (6 ft. 5 in.)	4	ea	1	1	8	WE47
-C-R	5995-823-3051	CABLE ASSEMBLY, RADIO FREQUENCY CO-5308/U: (2 ft. 11 in.)	1,2,3,5	ea	2	2	8	WE08, WE09
-C	5995-682-3319	CABLE ASSEMBLY, RADIO FREQUENCY CO-5308/U: (1 ft. 5 in.)	4	ea	2	2	8	WE09, WE09
-C-R	5995-823-2309	CABLE ASSEMBLY, RADIO FREQUENCY CO-1127/U: (2 ft. 6 in.) SC-RL-C5033; 80063	1,2,3,5	ea	1	1	8	WE11
-C	5995-682-3312	CABLE ASSEMBLY, RADIO FREQUENCY CO-1127/U: (1 ft. 7 in.)	4	ea	1	1	8	WE11
-C-R	5995-823-3068	CABLE ASSEMBLY, RADIO FREQUENCY CO-4092/U: (4 ft. 3 in.)	1,2,3,5	ea	1	1	8	WE07
-C-R	5995-617-1874	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4546/U: (3 ft. 9 in.) SM-C-11A230; 80063	1,2,3,5	ea	1	1	8	WE08
-C-R	5995-617-1876	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4547/U: (5 ft. 6 in.) SM-C-11A242; 80063	1,2,3,5	ea	1	1	8	WE15

SECTION II BASIC ISSUE ITEMS (CONTINUED)

(1) SW CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code	USABLE SW CODE	(4) UNIT OF MEAS	(5) QTY INC OR UNIT	(6) QTY FORM WITH EQUIP	(7) ILLUSTRATIONS	
							(a) FIG. NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
-C-R	5995-681-8990	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4048/U: (3 ft. 6 in.)	4	ea	1	1		W215
-C-R	5995-682-3311	CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4551/U: (7 ft. 5 in.)	1,2	ea	1	1	5	W235
-C-R	5815-707-8321	CABLE AND SWITCH ASSEMBLY, SPECIAL PURPOSE: (4 ft. 9 in.) 302204081; 98738 (This item is nonexpendable)	3,4,5	ea	1	1		W245
-C-R	5995-985-7912	CABLE ASSEMBLY, SPECIAL PURPOSE CX-7994/U: (3 ft. 0 in.) SC-D-379945; 80063	1,2,3,5	ea	1	1		W1
-C-R	5995-937-3785	CABLE ASSEMBLY, SPECIAL PURPOSE CX-9794/U: (8 ft. 6 in.) SC-D-379946; 80063	1,2,3,5	ea	1	1		W2
-C-R	5995-937-3786	CABLE ASSEMBLY, SPECIAL PURPOSE CX-9795/U: (8 ft. 6 in.) SC-D-379947; 80063	1,2,3,5	ea	1	1		W3
-C-R	5995-985-7904	CABLE ASSEMBLY, SPECIAL PURPOSE CX-9996/U: (7 ft. 6 in.) SC-D-379948; 80063	1,2,3,5	ea	1	1		W4
-C-R	5995-985-7906	CABLE ASSEMBLY, SPECIAL PURPOSE CX-9997/U: (7 ft. 6 in.) SC-D-379949; 80063	1,2,3,5	ea	1	1		W5
-C-R	5995-985-7907	CABLE ASSEMBLY, SPECIAL PURPOSE CX-9998/U: (8 ft. 0 in.) SC-D-379950; 80063	1,2,3,5	ea	1	1		W6
-C-R	5995-985-7918	CABLE ASSEMBLY, SPECIAL PURPOSE CX-10000/U: (8 ft. 0 in.) SC-D-379951; 80063	1,2,3,5	ea	1	1		W7
-C-R	5995-985-8047	CABLE ASSEMBLY, BOMB, ELECTRICAL CX-10064/U: (6 ft. 0 in.) SC-D-371064; 80063	1,2,3	ea	1	1		W9
-C-R	5995-985-8230	CABLE ASSEMBLY, SPECIAL PURPOSE CX-11078/U: (13 ft. 6 in.) SM-D-374571; 80063	5	ea	1	1		W233
-C-R	5995-985-8231	CABLE ASSEMBLY, SPECIAL PURPOSE CX-11079/U: (8 ft. 6 in.) SM-D-374570; 80063	5	ea	1	1		W261
-C	5340-619-1353	CLAMP, LOOP: (5/8 in. v.) SC-D-19491; 80063	1,2,3,5	ea	1	1		
-C-R	6645-663-4079	CLOCK, AIRCRAFT, MECHANICAL: (8 day) A-11-638; 36982 (This item is nonexpendable)	1,2,3,5	ea	1	1	1	M1
-C-R	5815-543-1788	CONVERTER, FREQUENCY SHIFT CV-278/GR: (This item is nonexpendable)	1,2,3,4,5	ea	1	1	1	
-C-R	5995-617-1875	CORD ASSEMBLY, ELECTRICAL CX-4549/U: (4 ft. 5 in.)	3	ea	1	1		W219
-C-R	5995-682-3309	CORD ASSEMBLY, ELECTRICAL CX-4549/U: (3 ft. 3 in.)	4	ea	1	1		W219
-C-R	4140-624-4476	FAN, VENTILATING, PROPELLER: OLE202758; 98738 (This item is nonexpendable)	1,2,3,5	ea	1	1		
-C		FIXTURE, LIGHTING: SM-D-114346; 80063	1,2,3,5	ea	1	1		W215
-C	6210-633-6731	FIXTURE, LIGHTING: SM-D-114349; 80063	1,2,3,5	ea	1	1		W216
-C-R	4520-649-8915	HEATER, SPACE HEAT-FUEL: (15,000 BTU) M52204; 81349	1,2,3,5	ea	1	1		
-C	5970-240-3845	INSULATOR, BUSHING: Sig insulator ID-111	1,2,3,5	ea	1	1	7	
-C	5970-405-8971	INSULATOR, STRAIN: 1121264/20; 81349	1,2,3,5	ea	8	8		
-C-R	5815-615-9894	INTERCONNECTING BOX J-668/GR: SC-DL-113906; 80063 (This item is nonexpendable)	4	ea	1	1	3, 4	
-C-R	5815-082-3925	INTERCONNECTING BOX J-2491/GR: SM-D-374508; 80063 (This item is nonexpendable)	1,2,3,5	ea	1	1	3, 1	
-C-R	5815-816-0266	INTERCONNECTING BOX J-1194/ZNC: (This item is nonexpendable)	3,5	ea	1	1		
-C-R	5815-816-0265	INTERCONNECTING BOX J-1195/GNC: (This item is nonexpendable)	5	ea	1	1		
-C-R	5815-082-3924	INTERCONNECTING BOX J-2490/GR: SC-DL-379875; 80063 (This item is nonexpendable)	1,2,3	ea	1	1	3.	
-C-R	5815-912-4745	INTERCONNECTING BOX: SWITCH, ELECTRONIC, SA-1243/GR: SC-D-379916; 80063 (This item is nonexpendable)	1,2,3,5	ea	1	1	3.	
-C	6240-238-8515	LAMP, INCANDESCENT: 25A30; 24446	1,2,3,5	ea	2	2		
-C-R	5965-243-6420	LUDSPEAKER LB-166/U: (This item is nonexpendable)	1,2,3,4,5	ea	1	1		
-C-R	5820-543-1672	MODULATOR, RADIO TRANSMITTER MD-803/GR: (This item is nonexpendable)	1,2,3,4,5	ea	1	1		

SECTION II. BASIC ISSUE ITEMS (CONTINUED)

(1) SIR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code	(4) USABLE OR CODE	(5) UNIT OF MEAS	(6) QTY INC IN UNIT	(6) QTY FORM WITH EQUIP	(7) ILLUSTRATIONS	
							(a) FIG. NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
-C-R	6125-617-1A35	MOTOR-GENERATOR: SM-D-11A30A (Windcharger); 80063 (This item is nonexpensible).	1,2,3,4,5	ea	2	2	1,	
-C-R	5805-186-9A6A	MOUNTING ME-751A/U; ME-751A/U; (This item is nonexpensible)	1,2,3,4,5	ea	2	2	1	
-C	5815-702-6539	PLATE, INSTRUCTION: 63P20A96B; 98738	4	ea	1	1		NP19
-C-R	5815-912-5157	POWER SUPPLY PP-978/PG; SC-IL-1A8306B; 80063 (This item is nonexpensible)	1,2,3,5	ea	1	1		
-C-R	5880-090-0155	RADIO SET AM/GMC-19; (This item is nonexpensible)	1,2,3,4,5	ea	1	1	1	
-C-R	5880-090-8969	REEL RL-29; (This item is nonexpensible)	1,2,3,5,	ea	1	1		
-C	6810-633-6732	REFLECTOR LIGHT: 5A29P; 74545	1,2,3,5	ea	2	2		NP17, NP18
-C-R	5815-503-8760	REFLECTOR-TRANSMITTER TT-76/GOC; (This item is nonexpensible)	1,2,3,4,5	ea	1	1	1	
-C	5975-080-8827	R/D, GROUND: SC-IL-75591; 80063	1,2,3,5	ea	1	1	1	
-C-R	5410-614-8448	SEAT, INDIVIDUAL: OLY200454-2 (right); 98738 (This item is nonexpensible)	1,2,3,5	ea	1	1	1	
-C-R	5410-633-3603	SEAT, INDIVIDUAL: SM-C-11A302 (rear); 80063 (This item is nonexpensible)	1,2,3,5	ea	1	1	1	
-C-R	5410-542-5868	SHOETER, ELECTRICAL EQUIPMENT S-89C/0; (This item is nonexpensible)	1	ea	1	1		
-C-R	5410-542-2532	SHOETER, ELECTRICAL EQUIPMENT S-144/G: OLP204925; 98738 (This item is nonexpensible)	2	ea	1	1		
-C-R	5410-752-951A	SHOETER, ELECTRICAL EQUIPMENT S-144/G: SC-IL-37725; 80063 (This item is nonexpensible)	3,5	ea	1	1		
-C-R	5815-557-5970	TELETYPEWRITER SET AM/UGC-4; (This item is nonexpensible)	1,2,3,4,5	ea	1	1	1	
-C-R	6660-633-3596	VENTILATOR KIT: OLY202756; 98738	1,2,3,5	ea	1	1		
-C	61A5-617-0952	WIRE, ELECTRICAL: type C Class B (bare 16 AWG); 81349 (Note: To be requisitioned as required in minimum of 250 ft.)	1,2,3,5	ft	250	250		W1
-C	5410-542-5887	WIRE ROPE ASSEMBLY, SINGLE LEG: 55X200417 (10 ft. lg.); 98738 HEATER, INSTALLATION C/O THE FOLLOWING:	1,2,3,5	ea	4	4		A7, A81, A82, A83
-C	2590-473-6331	BRACKET: (gas can 5 gallon)	1,2,3,5	ea	1	1		
-C	7240-222-3088	CAN, GAS: (5 gallon)	1,2,3,5	ea	1	1		
-C	6115-679-9153	ELECTRODE IGNITER: T00806; 78385	1,2,3,5	ea	1	1	2	
-C-R	4210-770-4512	EXTINGUISHER, FIRE CARBON DIOXIDE: (5 lb.) (This item is nonexpensible)	2,3,5	ea	1	1		
-C	5980-284-6795	FUSE, CARTRIDGE: F04AL08B; 96906	1,2,3,5	ea	1	5	2	
-C	4720-678-2262	R/S ASSEMBLY, METAL: SM-B-11A330; 80063	1,2,3,5	ea	1	1		
-C	5340-682-1508	PAI LOCK: CD-2414-3-C; 11175	2,3,5	ea	1	1		
-C	5430-678-0737	TAN., FUEL: SM-C-11A305 (1-1/2 gal.); 80063	1,2,3	ea	1	1	6	NP10
-C	6130-659-1556	VIBRATOR, INTERRUPTER: 9A-H; 76854 NO ACCESSORIES, TOOLS OR TEST EQUIPMENT ARE TO BE ISSUED WITH THIS EQUIPMENT NO BASIC ISSUE ITEMS ARE MOUNTED IN OR ON THIS EQUIPMENT	1,2,3,5	ea	1	2		Q1

By Order of the Secretary of the Army:

Official:

KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

Distribution:

To be distributed in accordance with DA Form 12-51, Operator requirements for AN/GRC-46 and AN/VRC-29 radio sets.

Change }
No. 9 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., 26 December 1973

Operator's Manual
RADIO TELETYPEWRITER SETS AN/GRC-46,
AN/GRC-46A, AN/GRC-46B, AN/GRC-46C,
AND AN/VRC-29

TM 11-5815-204-10, 14 September 1960, is changed as follows:

Page 3, paragraph 2.1. Paragraph 2.1 is superseded by the following:

2.1. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army)/NAVSUP Pub 378 (Navy)/AFR 71-4 (Air Force)/and MCO P4030-29 (Marine Corps).

c. Discrepancy in Shipment Report

(DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38 (Army)/NAVSUP Pub 459 (Navy)/AFM 75-34 (Air Force)/and MCO P4610.19 (Marine Corps).

Add paragraph 2.2 after paragraph 2.1.

2.2. Reporting of Errors

The reporting of errors, omissions, and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commander, US Army Electronics Command, ATTN: AMSEL-MA-CR, Fort Monmouth, NJ 07703.

Page 4, paragraph 5. Paragraph 5 is superseded by the following:

5. Items Comprising Operable Radio Teletypewriter Sets AN/GRC-46, AN/GRC-46A, AN/GRC-46B (FSN 5815-543-1760), AN/VRC-29 (FSN 5815-543-1758), and AN/GRC-46C (FSN 5815-082-4205)

FSN	QTY	Nomenclature, part No., and mfr code	Usable on code
NOTE			
The part number is followed by the applicable 5-digit Federal supply code for manufacturers (FSCM) identified in SB 708-42 and used to identify manufacturer, distributor, or Government agency, etc.			
NOTE			
In usable on code column, number 1 refers to AN/GRC-46; number 2 refers to AN/GRC-46A; number 3 refers to AN/GRC-46B; number 4 refers to AN/VRC-29; number 5 refers to AN/GRC-46C.			
5935-666-1649	3	Adapter, Connector UG-306A/U	1,2
5935-847-2600	3	Adapter, Connector UG-306B/U	3,5
5820-633-0344	1	Antenna Mounting Assembly: SC-C-11436 and 114370; 80063	1,2,3,5
5820-698-6202	1	Antenna Mounting Assembly: 01X204964; 98738	2,3,5
5306-543-5898	1	Bolt, Hook: SM-B-114538; 80063	1,2,3,5

F2M	QTY	Nomenclature, part No., and mfr code	Unable on code
6645-633-3597	1	Bracket: SM-B-114537; 80063	1,2,3,5
5815-706-3051	1	Bracket Assembly: (Left hand) SM-B-114266; 80063	4
5815-706-3052	1	Bracket Assembly: (Right hand) 07x202629; 98738	4
5815-706-3053	2	Bracket: 07P200478; 98738	4
7110-082-6109	1	Cabinet, Filing Security: AAF-358C (This item is nonexpendable)	3,5
5995-577-8058	1	Cable Assembly, Power, Electrical CX-4539/U: (5 ft. 0 in.) SM-C-114229; 80063	1,2,3,5
5995-617-1868	1	Cable Assembly, Power, Electrical CX-4540/UP (3 ft 2 in.) SM-C-114244; 80063	1,2,3,5
5995-617-0312	1	Cable Assembly, Power, Electrical CX-4540/U: (4 ft 9 in.) SM-C-114259; 80063	1,2,3,5
5995-681-8589	2	Cable Assembly, Power, Electrical CX-4847/U: (1 ft 10 in.)	4
5995-823-3106	2	Cable Assembly, Power, Electrical CX-4541/U: (6 ft 11 in.) SM-C-114235; 80063	1,2,3,5
5995-889-0899	2	Cable Assembly, Power, Electrical CX-4541/U: (3 ft 1 in.)	4
5995-617-1869	1	Cable Assembly, Power, Electrical CX-4542/U: (8 ft 11 in.)	1,2,3,5
5995-752-2492	1	Cable Assembly, Power, Electrical CX-4551/U: (10 ft 6 in.)	4
5995-681-8584	1	Cable Assembly, Power, Electrical CX-4849/U: (6 ft 3 in.)	4
5995-752-2193	1	Cable Assembly, Power, Electrical CX-6292/U: (12 ft 11 in.)	3,5
5995-617-0313	1	Cable Assembly, Power, Electrical CX-4545/U: (6 ft 5 in.) SM-C-114245; 80063	1,2,3,5
5995-681-8585	1	Cable Assembly, Power, Electrical CX-4850/U: (6 ft 5 in.)	4
5995-823-3031	2	Cable Assembly, Radio Frequency CG-530E/U: (2 ft 11 in.)	1,2,3,5
5995-682-3319	2	Cable Assembly, Radio Frequency CG-530B/U: (1 ft 5 in.)	4
5995-823-2309	1	Cable Assembly, Radio Frequency CG-1127/U: (2 ft 6 in.)	1,2,3,5
5995-682-3312	1	Cable Assembly, Radio Frequency CG-1127/U: (1 ft 7 in.)	4
5995-823-3068	1	Cable Assembly, Radio Frequency CG-409G/U: (4 ft 3 in.)	1,2,3,5
5995-617-1874	1	Cable Assembly, Special Purpose, Electrical CX-4546/U: (3 ft 9 in.) SM-C-114230; 80063	1,2,3,5
5995-617-1876	1	Cable Assembly, Special Purpose, Electrical CX-4547/U: (5 ft 6 in.) SM-C-114242; 80063	1,2,3,5
5995-681-8590	1	Cable Assembly, Special Purpose, Electrical CX-4848/U: (3 ft 6 in.)	4
5995-682-3311	1	Cable Assembly, Special Purpose, Electrical CX-455/U:	1,2
5815-707-2321	1	Cable and Switch Assembly, Special Purpose: (4 ft 9 in.) 30X204081; 98738 (This item is nonexpendable)	3,4,5
5995-985-7912	1	Cable Assembly, Special Purpose CX-9994/U: (3 ft 0 in.)	1,2,3,5
5995-937-3785	1	Cable Assembly, Special Purpose CX-9994/U: (8 ft 6 in.) SC-D-379946; 80063	1,2,3,5
5995-937-3786	1	Cable Assembly, Special Purpose CX-9995/U: (8 ft 6 in.) SC-D-379947; 80063	1,2,3,5
5995-985-7904	1	Cable Assembly, Special Purpose CX-9996/U: (7 ft 6 in.) SC-D-379948; 80063	1,2,3,5
5995-985-7906	1	Cable Assembly, Special Purpose CX-9997/U: (7 ft 6 in.) SC-D-379949; 80063	1,2,3,5
5995-985-7907	1	Cable Assembly, Special Purpose CX-9998/U: (8 ft 0 in.)	1,2,3,5
5995-985-7918	1	Cable Assembly, Special Purpose CX-1000/U: (8 ft 0 in.)	1,2,3,5
5995-985-8047	1	Cable Assembly, Power, Electrical CX-10064/U: (6 ft 0 in.)	1,2,3,
5995-985-8230	1	Cable Assembly, Special Purpose CX-11078/U: (13 ft 6 in.) SM-D-374571; 80063	5
5995-985-8231	1	Cable Assembly, Special Purpose CX-11079/U: (8 ft 6 in.) SM-D-374570; 80063	5
5340-619-1353	1	Clamp, Loop: (5/8 in w) SC-B-19491; 80063	1,2,3,5
6645-663-4079	1	Clock, Aircraft, Mechanical: (8 day) A-11-63R; 36922 (This item is nonexpendable)	1,2,3,5
5815-543-1728	1	Converter, Frequency Shift CV-278/GR: (This item is nonexpendable)	1,2,3,4,5
5995-617-1875	1	Cord Assembly, Electrical CX-4549/U: (4 ft 5 in.)	3
5995-682-3309	1	Cord Assembly, Electrical CX-4549/U: (3 ft 3 in.)	4
4140-824-4476	1	Fan, Ventilating, Propeller: 01X202758; 98738 (This item is nonexpendable)	1,2,3,5
	1	Fixture, Lighting: SM-B-114346; 80063	1,2,3,5
6210-633-6731	1	Fixture, Lighting: SM-B-114349; 80063	1,2,3,5
4520-649-8915	1	Heater, Space Multi-Fuel: (15,000 BTU) M52204; 81349	1,2,3,5
5970-240-3845	1	Insulator, Bushing: Sig insulator IN-111	1,2,3,5

FSN	QTY	Nomenclature part No., and mfr code	Usable on code
5970-405-8971	8	Insulator, Strain: 1123264/20; 81349	1,2,3,5
5815-615-9854	1	Interconnecting Box J-668/GR: SC-DL-113906; 80063 (This item is nonexpendable)	4
5815-082-3925	1	Interconnecting Box J-2491/GR: SM-D-374508; 80063 (This item is nonexpendable)	1,2,3,5
5815-816-0266	1	Interconnecting Box J-1194/GRC: (This item is nonexpendable)	3,5
5815-816-0265	1	Interconnecting Box J-1195/GRC: (This item is nonexpendable)	5
5815-082-3924	1	Interconnecting Box J-2498/GRC: SC-DL-379895; 80063 (This item is nonexpendable)	1,2,3
5815-912-4745	1	Interconnecting Box: Switch, Electronic, SA-1243/GRC SC-D-379916; 80063 (This item is nonexpendable)	1,2,3,5
5965-243-6420	1	Loudspeaker L8-116/U: (This item is nonexpendable)	1,2,3,4,5
5820-543-1672	1	Modulator, Radio Transmitter MD-203/GR: (This item is nonexpendable)	1,2,3,4,5
6125-617-1435	2	Motor-Generator: SM-D-114304 (Wincharger); 80063 (This item is nonexpendable)	1,2,3,4,5
5805-186-9464	2	Mounting MT-791/U: MT-791A/U: (This item is nonexpendable)	1,2,3,4,5
5815-702-6539	1	Plate, Instruction: 63P204968; 98738	4
5815-912-5157	1	Power Supply PP-978/FG; SC-DL-148306B; 80063 (This item is nonexpendable)	1,2,3,5
5820-030-0155	1	Radio Set AN/GRC-19; (This item is nonexpendable)	1,2,3,4,5
5820-030-2969	1	Reel RL-29: (This item is nonexpendable)	1,2,3,5
6210-633-6732	2	Reflector Light: 5429P; 74545	1,2,3,5
5815-503-2760	1	Reperforator-Transmitter TT-76/GGC: (This item is nonexpendable)	1,2,3,4,5
5410-614-4668	1	Seat, Individual: 01X200454-2 (right); 98738 (This item is nonexpendable)	1,2,3,5
5410-633-3603	1	Seat, Individual: SM-C-114302 (rear); 80063 (This item is nonexpendable)	1,2,3,5
5410-542-5868	1	Shelter, Electrical Equipment S-89C/G: (This item is nonexpendable)	1
5410-542-2532	1	Shelter, Electrical Equipment S-114/G: 01P204925; 98738 (This item is nonexpendable)	2
5410-752-9514	1	Shelter, Electrical Equipment S-144/G: SC-DL-37725; 80063 (This item is nonexpendable)	3,5
5815-557-5970	1	Teletypewriter Set AN/UGC-4: (This item is nonexpendable)	1,2,3,4,5
6145-617-0352	250	Wire, Electrical: type C Class B (bare 16 AWG); 81349 (Note: To be requisitioned as required in minimum of 250 ft)	1,2,3,5
5410-542-5887	4	Wire Rope Assembly, Single Leg: 55X200417 (10 ft lg) 98738 HEATER, INSTALLATION C/O THE FOLLOWING	
2590-473-6331	1	Bracket: (gas can 5 gallon)	1,2,3,5
7420-222-3088	1	Can, Gas: (5 gallon)	1,2,3,5
6115-679-9153	1	Electrode Igniter: 700808; 78385	1,2,3,5
4720-678-2262	1	Hose Assembly, Metal: SM-B-114330; 80063	1,2,3,5
5430-678-0737	1	Tank, Fuel: SM-C-114305 (1-1/2 gal); 80063	1,2,3
6130-659-1556	1	Vibrator, Interrupter: 94-H; 76854	1,2,3,5

Add paragraph 5.1 after paragraph 5.

5.1 Running Spares

FSN	Qty	Item	Usable on code
5920-284-6795	1	Fuse, cartridge: F04A10ROB; 96906	1,2,3,5

FSN	Qty	Item	Usable on code
6240-238-8515	2	Lamp, incandescent: 25A30; 24446	1,2,3,5

Page 42, appendix II. Appendix II is superseded by the following:

**APPENDIX II
BASIC ISSUE ITEMS LIST**

Section I. INTRODUCTION

1. Scope

This appendix lists basic issue items required by the crew/operator for installation, operation, and maintenance

of Radio Teletypewriter Sets AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29.

2. General

The basic issue items list (Section II) is a list, in alphabetical sequence, of items which are furnished with, and which must be turned in with the end item.

3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. *Illustration.* Not applicable.

b. *Federal Stock Number.* Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. *Part number.* Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications standards, and inspection requirements, to identify an item or range of items.

d. *Federal Supply Code for Manufacturer (FSCM).* The FSCM is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., and is identified in SB 708-42.

e. *Description.* Indicates the Federal item name and a minimum description required to identify the item.

f. *Unit of Measure (U/M).* Indicates the standard of basic quantity of the listed item as used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation, (e.g., ea, in., pr, etc.). When the unit of measure differs from the unit of issue, the lowest unit of issue that will satisfy the required units of measure will be requisitioned.

g. *Quantity Furnished with Equipment (Basic Issue Items Only).* Indicates the quantity of the basic issue item furnished with the equipment.

4. Special Information

Usable on codes are included in Column 5. Uncoded items are applicable to all models. Identification of the usable on codes are as follows:

Code	Used on
1	AN/GRC-46
2	AN/GRC-46A
3	AN/GRC-46B
4	AN/VRC-29
5	AN/GRC-46C

SECTION II. BASIC ISSUE ITEMS LIST

(1) ILLUSTRATION		(2) FEDERAL STOCK NUMBER	(3) PART NUMBER	(4) FSCM	(5) DESCRIPTION	(6) USABLE ON CODE	(6) UNIT OF MEAS	(7) QTY FURN WITH EQUIP
(A) FIG NO	(B) ITEM NO							
		5975-020-8827	SC-DL-75591	80063	ROD, GROUND	1,2,3,5	EA	1
		6660-633-3596	01X202756	98738	VENTILATOR KIT	1,2,3,5	EA	1
		4210-270-4512			HEATER, INSTALLATION C/O THE FOLLOWING EXTINGUISHER, FIRE CARBON DIOXIDE: (5 lb.) (This item is nonexpendable)	2,3,5	EA	1
		5340-682-1508	CD-2414-3-2	13175	PADLOCK	2,3,5	EA	1

By Order of the Secretary of the Army:

Official:

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

CREIGHTON W. ABRAMS
General, United States Army
Chief of Staff

Distribution:

To be distributed in accordance with DA Form 12-51, Operator requirements for AN/GRC-46 and AN/VRC-29.

Changes in force: C 1, C 3, C 8, C 9, and C 10

TM 11-5815-204-10
C 10

CHANGE }
No. 10 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 8 October 1974

**Operator's Manual
RADIO TELETYPEWRITER SETS AN/GRC-46,
AN/GRC-46A, AN/GRC-46B, AN/GRC-46C,
AND AN/VRC-29**

TM 11-5815-204-10, 14 September 1960, is changed as follows:

Delete all reference to "Interconnecting Box J-1194/GRC-46" in the following places in the manual:

Page 4, paragraph 5, 37th line from bottom of chart.

Page 9, figure 4.2.

Page 10, paragraph 14.2.

Page 19, paragraph 21c note.

Page 37, paragraph 36b chart, last item.

By Order of the Secretary of the Army:

Official:

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

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General, United States Army
Vice Chief of Staff

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Changes in force: C 1, C 2, C 3, C 9, C 10, and C 11

**TM 11-5815-204-10
C 11**

CHANGE

No. 11

**HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 7 April 1975**

**Operator's Manual
RADIO TELETYPEWRITER SETS AN/GRC-46, AN/GRC-46A,
AN/GRC-46B, AN/GRC-46C, AND AN/VRC-29**

**TM 11-5815-204-10, 14 September 1960, is changed as follows:
Inside front cover. Radiation warning is added after existing notices.**

WARNING RADIATION HAZARD



**RADIOACTIVE MATERIAL
CONTROLLED DISPOSAL REQUIRED
ACCOUNTABILITY NOT REQUIRED**

STD RW-2

Voltmeter	Ra 226	0.28uCi	6625-00-590-1901
Ammeter	Ra 226	0.28uCi	6625-00-590-9579
Ammeter	Ra 226	0.59uCi	6625-00-590-0243
Meter	Ra 226	0.69uCi	6625-00-690-0760
	Electron Tube 0A2WA		5900-00-503-4880
EEVC	U 238	0.1uCi	
CBS Hytron	Ni 63	0.5uCi	
Raytheon	Co 60	0.2uCi	

Radiation Hazard Information: The following radiation hazard information must be read and understood by all personnel before operating or repairing Radio Teletypewriter Sets AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AN/GRC-46C, and AN/VRC-29. Hazardous radioactive materials are present in the above listed components of Frequency Shift Converter CV-278/GR and Transmitter Radio T-195A, and B/GRC-19.

The components are potentially hazardous when broken. See qualified medical personnel and the local Radiological Protection Officer (RPO) immediately, if you are exposed to or cut by broken components. First aid instructions are contained in TB 43-0116, TB 43-0122, and AR 755-15.

NEVER place radioactive components in your pocket.

Use extreme care **NOT** to break radioactive components while handling them.

NEVER remove radioactive components from cartons until you are ready to use them.

If any of these components are broken, notify the local BPO immediately. The RPO will survey the immediate area for radiological contamination and will supervise the removal of broken components.

The above listed radioactive components *will not* be repaired or disassembled. Disposal of broken, unserviceable, or unwanted radioactive components will be accomplished in accordance with the instructions in AR 755-15.

By Order of the Secretary of the Army:

Official:

FRED C. WEYAND
General, United States Army
Chief of Staff

VERNE L. BOWERS
Major General, United States Army
The Adjutant General

Distribution:

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Changes in force: C 1, C 3, C 8, C 9, C 10, and C 11

TM 11-5815-204-10
C 12

CHANGE }
No. 12 }

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 2 June 1980

**Operator's Manual
RADIO TELETYPEWRITER SETS
AN/GRC-46 (NSN 5815-00-543-1760)
AN/GRC-46A (NSN 5815-00-543-1760)
AN/GRC-46B (NSN 5815-00-570-5488)
AN/GRC-46C (NSN 5815-00-082-4205)
AN/VRC-29 (NSN 5815-00-543-1758)**

TM 11-5815-204-10, 14 September 1960, is changed as follows:

Title of manual is changed as shown above.

Inside front cover. Add excessive weight warnings after existing warnings as follows:

WARNING

Transmitter, Radio T-195(*)/GRC-19 weighs approximately 122 pounds. Two persons are required to lift it whenever it is moved. Be very careful when handling

the transmitter to prevent injury to personnel and damage to equipment.

WARNING

Receiver, Radio R-390(*)/URR weighs approximately 52 pounds. Two persons are required to lift it whenever it is removed. Be very careful when handling the receiver to prevent injury to personnel and damage to equipment.

By Order of the Secretary of the Army:

Official:

J. C. PENNINGTON
Major General, United States Army
The Adjutant General

E. C. MEYER
General, United States Army
Chief of Staff

DISTRIBUTION:

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TECHNICAL MANUAL)
 No. 11-5815-204-10)

HEADQUARTERS,
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 WASHINGTON 25, D. C., 14 September 1960

RADIO TELETYPEWRITER SETS
AN/GRC-46, AN/GRC-46A, AN/GRC-46B, AND AN/VRC-29

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*This manual supersedes TM 11-5815-204-10, 13 November 1958, including C1, 14 March 1960, TM 11-5815-224-10P, 16 March 1959, TM 11-5815-222-10P, 16 March 1959, and first echelon portion of TM 11-5829-273-12P, March 1960.

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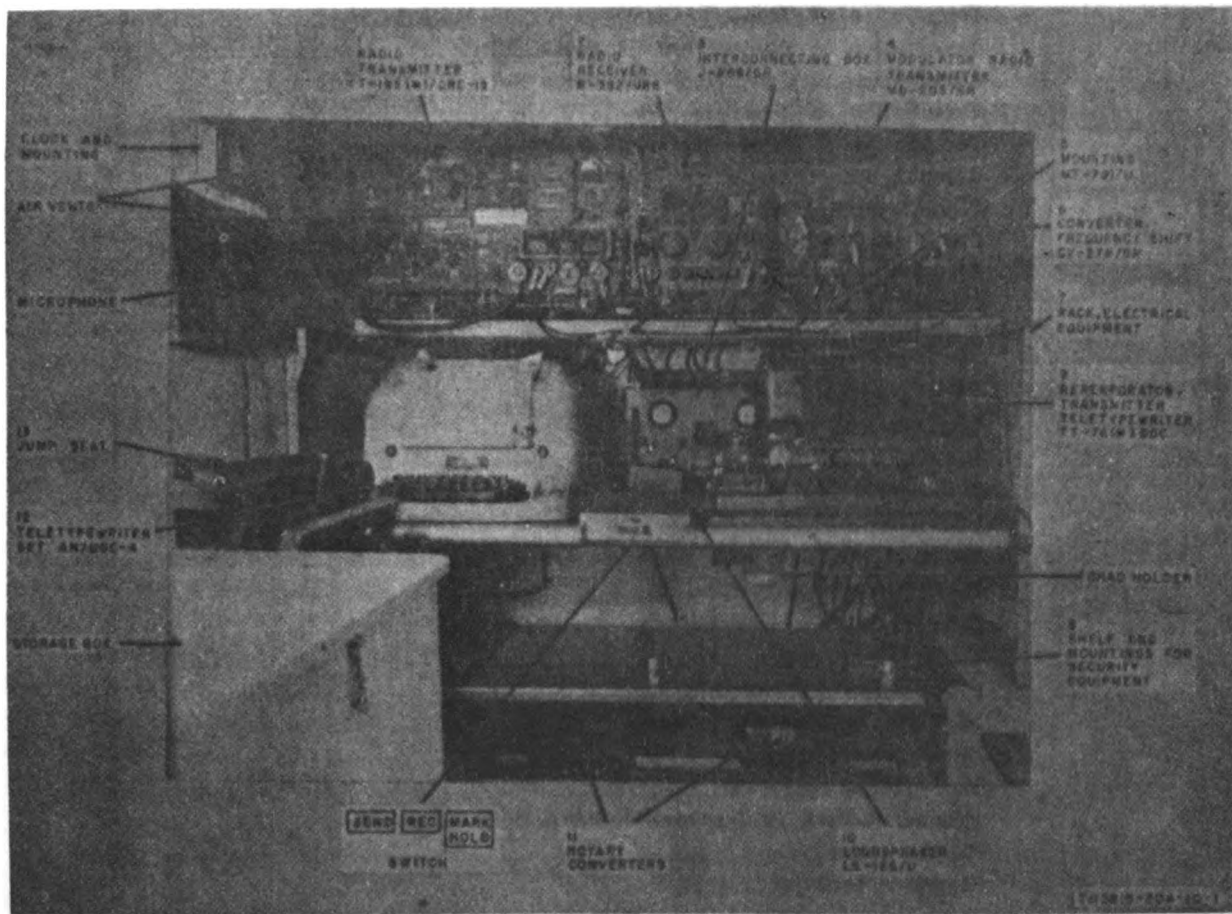


Figure 1. Radio Teletypewriter Set AN/GRC-46(*), interior view, major components installed.

CHAPTER I

INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual describes Radio Teletypewriter Sets AN/GRC-46, AN/GRC-46A, AN/GRC-46B, and AN/VRC-29 and covers their operation and operator's maintenance. It includes operating instructions and inspection and cleaning procedures for the equipment. A list of references is contained in appendix I. The basic issue items list for the AN/GRC-46, AN/GRC-46A, and the AN/VRC-29 is included in appendix II.

b. Official nomenclature followed by (*) is used to indicate all models of the equipment covered in this manual. Thus Radio Teletypewriter Set AN/GRC-46(*) represents Radio Teletypewriter Set AN/GRC-46, AN/GRC-46A, and AN/GRC-46B. Radio Transmitter T-195(*)/GRC-19 represents Radio Transmitter T-195/GRC-19 and T-195A/GRC-19. Reperforator-Transmitter Teletypewriter TT-76(*)/GGC represents Reperforator-Transmitter Teletypewriter TT-76A/GGC and TT-76B/GGC.

2. Forms and Records

a. *Unsatisfactory Equipment Report.* Fill out and forward DD Form 787-1 (Electronic Failure Report—Signal Equipment) to the

Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-MLM, Fort Monmouth, N. J. as prescribed in AR 700-38.

b. *Report of Damaged or Improper Shipment.* Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58.

c. *Preventive Maintenance Form.* Prepare DA Form 11-238 (fig. 15) (Maintenance Checklist for Signal Equipment (Sound Equipment, Radio, Direction Finding, Radar, Carrier, Radiosonde, and Television)), in accordance with the instructions on the form.

d. *Parts List Form.* Forward DA Form 2028 (Recommended Changes to DA Technical Manual Parts Lists or Supply Manuals 7, 8 and 9) direct to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-MLM, Fort Monmouth, N. J., with any comments on parts listings in appendix II.

e. *Comments on Manual.* Forward all other comments on this publication directly to the Commanding Officer, U. S. Army Signal Materiel Support Agency, ATTN: SIGMS-PA-2d, Fort Monmouth, N. J.

Section II. DESCRIPTION AND DATA

3. Purpose and Use

a. Radio Teletypewriter Set AN/GRC-46(*) and Radio Teletypewriter Set AN/VRC-29 (fig. 1) are similar, except that the AN/GRC-46(*) is a shelter-housed transportable radio teletypewriter terminal and the AN/VRC-29 is mounted in an armored vehicle (M-59). They provide facilities for amplitude-modulated (am.) voice, continuous wave (cw), and frequency-shift-keyed (fsk) radio teletypewriter signals. Teletypewriter operation may be one-way reversible (half-duplex without break-in) or full-duplex. Full-duplex operation requires the use of an additional antenna.

b. The AN/GRC-46(*) and AN/VRC-29

are used in radio nets. They may be netted with other equipment of the same type or with other radio teletypewriter sets with similar characteristics and frequencies, such as Radio Set AN/GRC-26, AN/GRC-26A, AN/GRC-26B, AN/GRC-26C, and AN/GRC-26D.

4. Technical Characteristics

a. *Radio Teletypewriter Set AN/GRC-46(*).*

Frequency range:
Transmitter 1.5 to 20 mc (in 10 bands).
Receiver 0.5 to 32 mc.
Reliable distance range .. 50 miles.

Types of operation Am. voice (A3), and frequency shift keying (F1) simultaneously or independently, or cw (A1).

Method of tuning Manual or automatic (7 preset channels).

Antenna requirements 15-foot whip, 50-ohm unbalanced antenna, or transformer-fed doublet.

Power:

Input 2.5 kw at 27.5 volts dc.

Output 13 to 100 watts, depending on frequency of transmission and type of antenna used. (See TM 11-5820-295-10).

b. Interconnecting Box J-668 GR (fig. 3).

Main power circuit breaker. Rated at 100 amperes.

Main power receptacles .. 9.

Jacks 1 for sync input.
1 for sync output.
3 for teletypewriter signal lines.

Binding posts 4 for remote control teletypewriters.

Current metering 0-100 ma dc meter.

Power voltage metering. 0-50 vdc meter.

Input voltage 27.5 vdc.

Input signals Teletypewriter dc impulses.

Output signals Teletypewriter dc impulses.

c. Motor Generator (Rotary Converter) (fig. 5).

Output 115 ± 5 volts ac at 60 cycles with 350-watt load.

Regulation 15% maximum with 0- to 400-watt load.

Radio noise Suppressed.

Power output 400 watts maximum at unity power factor.

Efficiency 55% minimum at 350-watt load.

Input voltage 27.5 vdc.

Input current 24 amperes maximum.

5. Components

The components of Radio Teletypewriter Set AN/GRC-46(*) are listed in a below; the AN/VRC-29 in b below. Running spares for both sets are listed in c below.

a. Radio Teletypewriter Set AN/GRC-46() Components.*

(oo) Quantity	Item	Fig. No.	Height (in.)	Depth (in.)	Width (in.)	Net weight (lb)
1	Radio Set AN/GRC-19 (Refer to TM 11-5820-295-10.) Consisting of:					
	1 Radio Transmitter T-195(*)/GRC-19	1				
	1 Radio Receiver R-395/URR	1				
1	Loudspeaker LS-166/U	1	5	5 1/4	3 1/2	1
1	Modulator, Radio Transmitter MD-203/GR	1	9 1/4	14 1/4	7 1/2	23 1/2
2	Mounting MT-791 U; MT-791A/U	1	3 1/4	12 1/2	8 1/4	15
1	Converter, Frequency Shift CV-278/GR	1	9 1/4	14 1/4	7 1/2	19 1/2
1	Interconnecting Box J-668 GR	1	6	7	16	12 1/4
1	Teletypewriter Set AN UGC-4 consisting of:					
	1 Teletypewriter TT-98B/FG		11 1/4	20 9/16	17 1/4	54
	1 Power Supply PP-978/FG		4	4	9	7
1	Reperforator-Transmitter, Teletypewriter TT-76(*) GGC.	1	21	18	12	45
2	Motor generator (rotary converter) (Wincharger model SS688).	1, 5	9	12 1/2	6 1/4	40
1	Cord CG-409C/U (4 ft 3 in.)	3				3/16
2	Cable Assembly, Radio Frequency CG-530B/U (2 ft 11 in.).	3				3/16
1	Cable Assembly, Radio Frequency CG-1127/U (2 ft 6 in.).	3				3/16
1	Cable Assembly, Radio Frequency CG-1127/U (1 ft).	3				3/16
1	Cable Assembly, Power, Electrical CX-4539/U (4 ft 9 in.).	3				3/16
1	Cable Assembly, Power, Electrical CX-4540/U (4 ft 6 in.).	3				11/16

Quantity (incl)	Item	Qty No.	Height (in.)	Depth (in.)	Weight (lb.)	Sub weight (lb.)
1	Cable Assembly, Power, Electrical CX-4540/U (8 ft 2 in.).	8				11/16
2	Cable Assembly, Power, Electrical CX-4541/U (6 ft 11 in.).	8				%
1	Cable Assembly, Power, Electrical CX-4540/U (8 ft 11 in.) (AN/GRC-46 and AN/GRC-46A).	8				%
1	Cable Assembly, Power, Electrical CX-4543/U (10 ft 3 in.) (AN/GRC-46 and AN/GRC-46A).	8				%
1	Cable Assembly, Power, Electrical CX-4544/U (12 ft 8 in.).	8				1
1	Cable Assembly, Power, Electrical CX-4540/U (6 ft 5 in.).	8				%
1	Cord Assembly, Electrical CX-4540/U (8 ft 9 in.).	8				%
1	Cable Assembly, Special Purpose, Electrical CX-4547/U (5 ft 6 in.).	8				%
2	Cord Assembly, Electrical CX-4540/U (5 ft 11 in.).	8				5/16
1	Cord Assembly, Electrical CX-4543/U (4 ft 5 in.).	8				5/16
2	Cord Assembly, Electrical CX-4551/U (7 ft 5 in.).	8				%
1	Cord Assembly, Electrical CX-4551/U (9 ft 3 in.).	8				%
1	Cable Assembly, Power, Electrical CX-6294/U (7 ft 10 in.) (AN/GRC-46B).					%
1	Cable Assembly, Power, Electrical CX-6293/U (12 ft 1 in.) (AN/GRC-46B).					1 1/2
1	Cable Assembly, Power, Electrical CX-6293/U (12 ft 1 in.) (AN/GRC-46B).					1
1	Electrical Equipment Shelter S-30C/G (AN/GRC-46) or	7	50	77 1/2	87	625
1	Electrical Equipment Shelter Lightweight (AN/GRC-46A) or	6	50	77 1/2	87	230
1	Electrical Equipment Shelter S-144/G (AN/GRC-46B) with the following items installed:		62 1/2	74	87	230
	3 Seat, individual	1				
	1 Fan, ventilating, propeller					
	2 Fixture, lighting					
	2 Lamp, incandescent					
	1 Clock, aircraft, mechanical w/mtg bracket.					
	1 Padlock					
	1 Extinguisher, fire, carbon dioxide					5
	1 Rack, electrical equipment (AN/GRC-46)	1	27	54	26	
	1 Rack, electrical equipment: security equipment rack (AN/GRC-46).	1	2	54	26	
	1 Rack, electrical equipment (AN/GRC-46A).	1	26 1/2	54 1/2	24 1/2	
	1 Rack, electrical equipment: security equipment rack AN/GRC-46A).	1	2	54	24	
	1 Rack, electrical equipment (AN/GRC-46B).	1	26 1/2	54	24	
	1 Rack, electrical equipment: security equipment rack (AN/GRC-46B).	1	2	54	24	
	2 Reflectors; light		1 1/2	6	2 1/2	
	1 Rod, Ground	6		45 1/2	1/2	
	1 Cording diagram (on wall)					
	1 Reel RL-29					
	8 Adapters, connector: MII type UG-306/U.					
	1 Clamp, loop: antenna rope clamp.					
	2 Technical Manuals TM 11-5815-204-10.					
	1 set Running spares (c below)					

b. Radio Teletypewriter Set AN/VRC-29 Components.

Quantity (ea)	Item	Fig. No.	Height (in.)	Depth (in.)	Width (in.)	Unit Weight (lb)
1	Radio Set AN/GRC-19 (Refer to TM 11-5830-295-10) consisting of:					
	1 Radio Transmitter T-195(*)/GRC	1				
	1 Radio Receiver R-392/URR	1				
1	Loudspeaker LS-166/U	1	5	5½	3½	1
1	Modulator, Radio Transmitter MD-203/GR	1	9¼	14¼	7¼	23½
2	Mounting MT-791/U; MT-791A/U	1	3¼	12¼	3¼	15
1	Converter, Frequency Shift CV-278/GR	1	9¼	14¼	7¼	19½
1	Reperforator-Transmitter, Teletypewriter TT-76(*)/GGC.	1	21	18	12	45
1	Teletypewriter Set AN/UGC-4 consisting of:	1	11¼	20 9/16	17¼	54
	1 Teletypewriter TT-98B/FG					
	1 Power Supply PP-978/FG					
1	Interconnecting Box J-668/GR	3	6	7	16	12¼
2	Motor generator (rotary converter) (Wincharger model .3S688).	5	9	12¼	6¼	40
1	Cord CG-409C/U (3 ft 3 in.)	8				¼
2	Cable Assembly, Radio Frequency CG-530B/U (1 ft 5 in.).	8				¼
1	Cable Assembly, Radio Frequency CG-1127/U (1 ft 7 in.).	8				¼
1	Cable Assembly, Radio Frequency CG-1127/U (1 ft).	8				1/10
1	Cable Assembly, Power, Electrical CX-4539/U (5 ft 2 in.).	8				1½
2	Cable Assembly, Power, Electrical CX-4541/U (3 ft 1 in.).	8				¼
1	Cord Assembly, Electrical CX-4546/U (6 ft 4 in.).	8				¼
2	Cord Assembly, Electrical CX-4548/U (5 ft 11 in.).	8				5/16
1	Cord Assembly, Electrical CX-4549/U (3 ft 3 in.).	8				¼
1	Cord Assembly, Electrical CX-4551/U (3 ft 4 in.).	8				3/16
1	Cord Assembly, Electrical CX-4551/U (7 ft 5 in.).	8				¼
1	Cord Assembly, Electrical CX-4551/U (6 ft 4 in.).	8				5/16
2	Cable Assembly, Power, Electrical CX-4847/U (1 ft 10 in.).	8				7/16
1	Cable Assembly, Special Purpose, Electrical CX-4848/U (3 ft 6 in.).	8				¼
1	Cable Assembly, Power, Electrical CX-4849/U (6 ft 3 in.).	8				¼
1	Cable Assembly, Power, Electrical CX-4850/U (6 ft 5 in.).	8				¼
1	Cord Assembly, Electrical CX-4854/U (9 ft 1 in.).	8				7/16
1	Cord Assembly, Electrical CX-4855/U (9 ft 1 in.).	8				7/16
1	Cable and Switch Assembly, Special Purpose (4 ft 9 in.).	8				¼
2	Technical Manual TM 11-5815-204-10.					

Note. Equipment equivalent to that furnished as part of the shelter of AN/GRC-46(*) above is not part of AN/VRC-29, but is provided as part of the armored vehicle.

c. Running Spares (fig. 2).

Quantity (incl)	Description
1	Clamp, loop: antenna rope clamp.
1	Electrode igniter: ignites fuel for heater.
1	Vibrator, interrupter: 24 vdc power output.
2	Fuse cartridge: ¼ amp, 250 volts.
2	Fuse cartridge: 10 amp, 32 volts.
4	Fuse cartridge: 30 amp, 32 volts.
1	Relay armature: 2 windings, dc, 100 ohms, 27.5 volts.

6. Common Names

Components of the AN/GRC-46(*) and the AN/VRC-29 and their assigned common names are listed below.

Item	Common name
Radio Teletypewriter Set AN/GRC-46(*) and AN/VRC-29.	RTT set.
Radio Transmitter T-196(*)/GRC-19.	Transmitter.
Radio Receiver E-392/URR	Receiver.
Modulator, Radio Transmitter MD-203/GR.	Modulator.
Converter, Frequency Shift CV-273/GR.	Frequency-shift converter.
Interconnecting Box J-608/GR	Junction box.

Item	Common name
Reperforator-Transmitter Teletypewriter TT-76(*)/GGC.	Reperforator-transmitter.
Teletypewriter Set AN/UGC-4	Page printer.
Motor Generator	Rotary converter.

7. Description of RTT Set (fig. 1)

a. The components of the AN/GRC-46(*), except for the antenna, are mounted inside the shelter. Space for mounting security equipment is provided on a shelf under the teletypewriter equipment. For operator's use, jump seats on each side of the shelter can be pulled down in front of the page printer and reperforator-transmitter. A third jump seat is provided near the door directly across from the storage cabinet and heater. The page printer and reperforator-transmitter are secured to sliding shelves which may be pulled out to reach the distribution box and cabling mounted near the front wall. Intake and exhaust air vents in the shelter wall are connected to the transmitter by flexible tubing to provide for cooling of the transmitter. All the operating

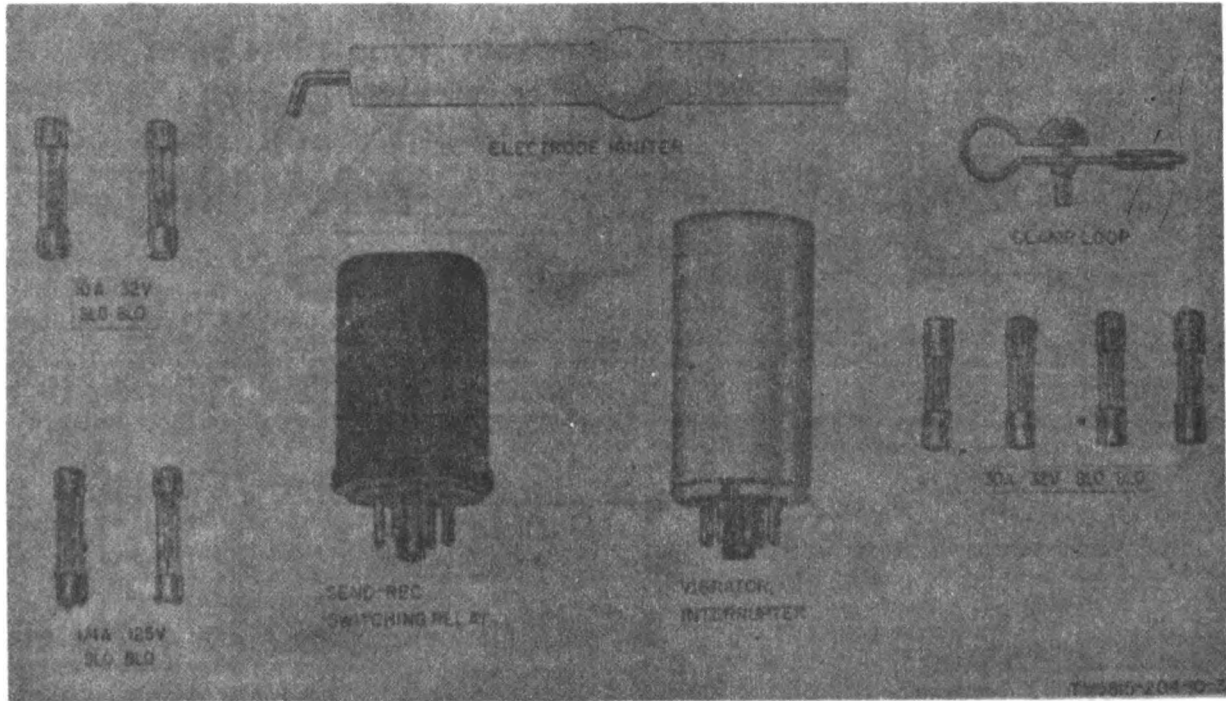


Figure 2. Running spares.

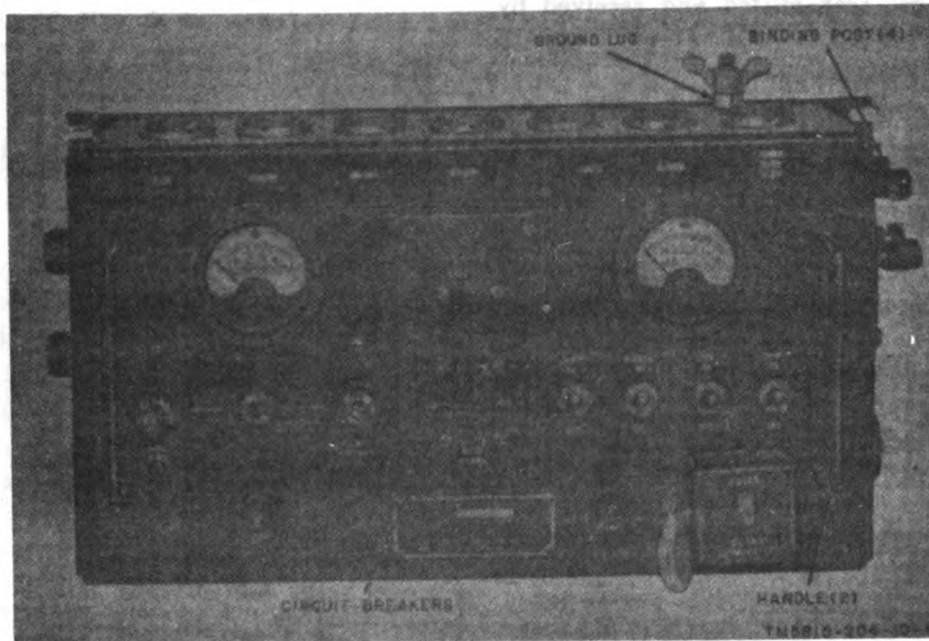


Figure 4. Interconnecting Box J-668/GR.

radio equipment of AN/GRC-46(*) is mounted on shelves across the front of the shelter.

b. All the operating components of the AN/VRC-29 are mounted inside an armored vehicle similarly to the manner in which the AN/GRC-446(*) components are installed in a shelter.

**8. Description of Radio Transmitter
T-195(*)/GRC-19
(fig. 1)**

The forced-air-cooled transmitter is used for transmitting cw, voice, and frequency-shift radioteletype and voice signals at the same time, in a frequency range of 1.5 to 20 megacycles (mc). Refer to TM 11-806 for a detailed description.

**9. Description of Radio Receiver
R-392/URR
(fig. 1)**

The receiver is a superheterodyne type used for receiving cw, modulated continuous wave (mcw), voice, frequency-shift radioteletype, or frequency-shift radioteletype and voice signals at the same time. Refer to TM 11-5820-334-10 for a detailed description.

**10. Description of Converter, Frequency Shift CV-279/GR
(fig. 1)**

The frequency-shift converter is a demodulator used to convert fsk signals received by the receiver to direct current (dc) teletypewriter pulses. Refer to TM 11-5805-210-10 for a detailed description.

**11. Description of Modulator, Radio Transmitter MD-203/GR
(fig. 1)**

The modulator is used in conjunction with the transmitter to provide frequency-shift keying for radioteletype transmissions. It is connected to the transmitter and must be in operation when the transmitter is on. Refer to TM 11-5820-205-10 for a detailed description.

**12. Description of Teletypewriter Set AN/UGC-4
(fig. 1)**

Teletypewriter TT-98B/FG and Power Supply PP-978/FG comprise Teletypewriter Set AN UGC-4. Both are mounted on one frame and provide printed copies of the teletype-

writer messages transmitted and received by the RTT set. Refer to TM 11-5815-200-10 for a detailed description.

13. Reperforator-Transmitter Teletypewriter TT-76(+)/GGC
(fig. 1)

The reperforator-transmitter provides printed and perforated paper-tape copies of teletypewriter messages. Refer to TM 11-2225 for a detailed description.

14. Interconnecting Box J-668/GR
(fig. 1, 3, and 4)

Interconnecting Box J-668/GR is the termination and interconnecting equipment for all power and signal wiring (except the antennas) of the RTT set. It contains the necessary cable

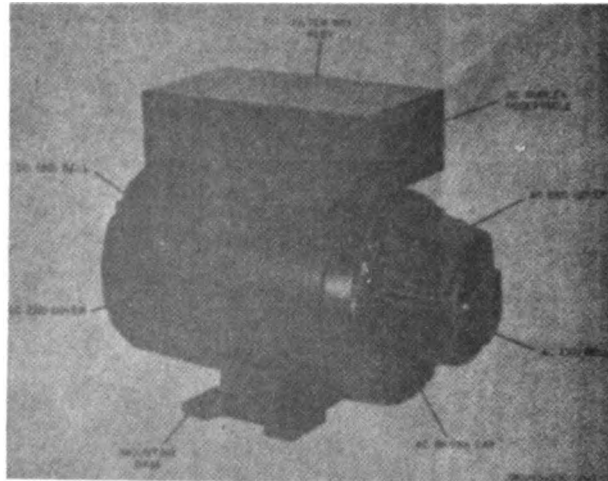


Figure 5. Rotary converter.

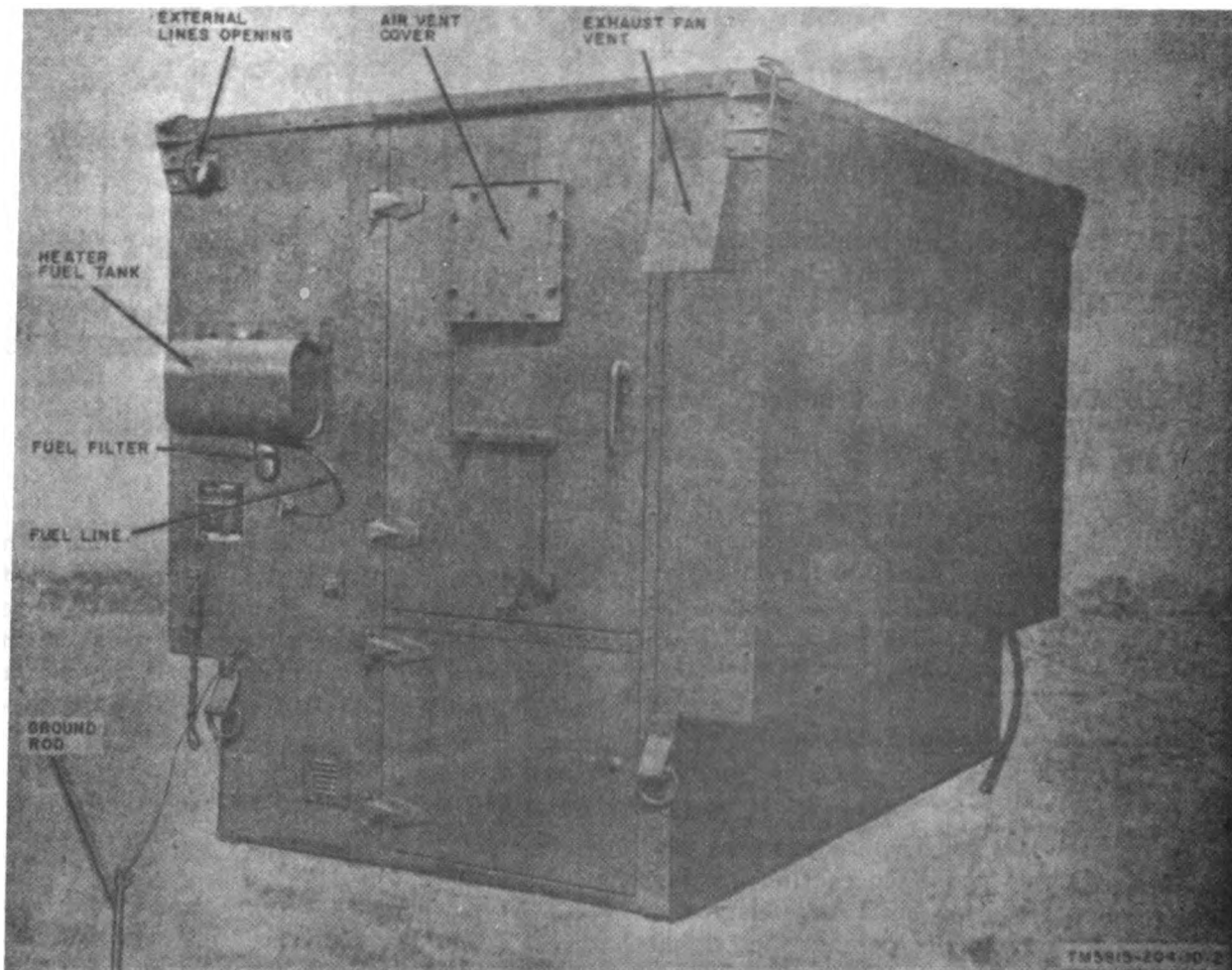


Figure 6. Modified Electrical Equipment Shelter, lightweight.

receptacles, binding posts, switches, fuses, and meters. These components are mounted on the two ends, top, and front panel. Handles on the front panel permit removal of panel and chassis assembly of the interconnecting box from its case.

15. Motor Generators (Rotary Converters) (fig. 1 and 5)

The rotary converters are single armature machines with fan ventilation and air ducts at the bottom of the endbells. They are supported on mounting feet, and inspection covers are on the endbells. The brush caps, on the outside, house the alternating current (ac) brushes on one end and the dc brushes on the other end. A filter box that contains the filter parts is mounted on the top of each rotary converter. Ac output receptacles are mounted on the filter box. The rotary converters are used to provide 110 volts ac for the ac motors of components of the RTT set. One is used for the teletype-

writer equipment, and the other for security equipment.

16. Shelters (AN/GRC-46(*))

The shelters of the various models of the AN/GRC-46(*) are similar, but not identical. They are designed for installation on a $\frac{3}{4}$ -ton truck, or on the ground. They also can be transported by helicopter. The S-144/G and the lightweight shelter are constructed of aluminum and plywood and are insulated with fiberglass. The S-89C/G is constructed of steel and plywood. They contain racks, shelves, and other mounting facilities required for installation of other AN/GRC-46(*) components. The main differences between the S-89C/G (AN/GRC-46) and the lightweight (AN/GRC-46A) are apparent by comparing figures 6 and 7. The S-144/G (AN/GRC-46B) (fig. 9) is somewhat larger than the S-89C/G (para 5a) but is similar in appearance to the shelter of the AN/GRC-46A. The door on the S-144/G is mounted to swing right and the exhaust fan is mounted to the left of the door.

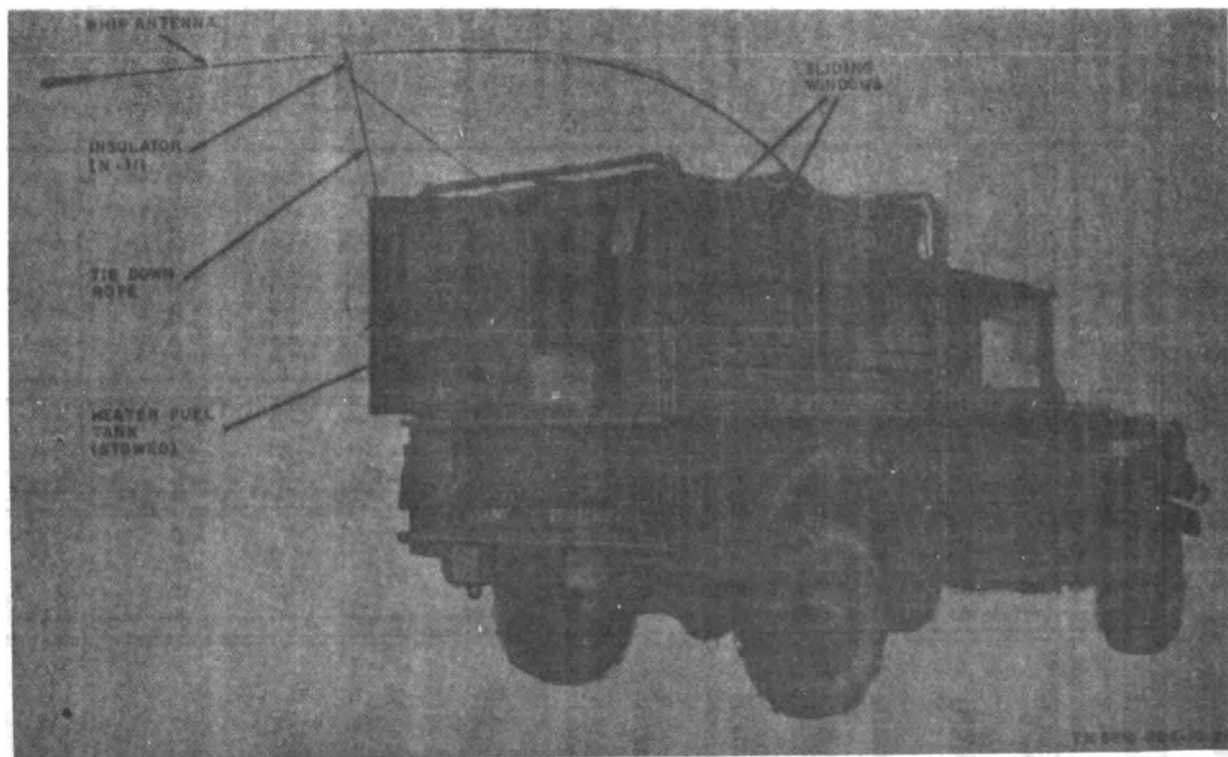


Figure 7. Electrical Equipment Shelter S-89C/G, mounted on a vehicle.

17. Cables (fig. 8)

Type	Lengths		Type & No. of conductors	Type of connectors	Comments			
	AM/URC-44(*)	AM/URC-37			From	To	Remarks	
CG-409/U	4 ft 3 in.	3 ft 3 in.	Radio Frequency Cable RG-58/U.	Radio Frequency Plug UG-88/U each end.	J-668/GR	MD-203 (left side)	MD-203/GR	KEYING INPUT
CG-530B/U	2 ft 11 in.	1 ft 5 in.	RG-62A/U coaxial cable.	Plug UG-260B/U each end.	T-195(*)GRC-19	MO OUT	MD-203/GR	MO INPUT
CG-530B/U	2 ft 11 in.	1 ft 5 in.	RG-62A/U coaxial cable.	Plug UG-260B/U each end.	MD-203/GR	FSK OUTPUT	T-195(*)GRC-19	FSK IN-PUT
CG-1127/U	2 ft 6 in.	1 ft 7 in.	Radio Frequency Cable RG-58C/U.	Connector, Plug UG-913/U each end.	R-392/URR	IF OUT	CV-278/GR	INPUT
CG-1127/U	1 ft	1 ft	Radio Frequency Cable RG-59C/U.	Connector, Plug UG-913/U each end.	T-195(*)GRC-19	RECEIVER AN-TENNA	R-392/URR	ANT.
CX-4538/U	4 ft 9 in.	5 ft 2 in.	Two-conductor, rubber covered.	Connector, plug, electrical each end.	J-668/GR	T-195	T-195(*)GRC-19	24 VOLTS DC
CX-4540/U	4 ft 6 in.	None	Two-conductor, rubber covered.	Connector, Plug, Electrical CS-1320-(1) (P) (375) each end.	CV-278/GR	27.5 VOLTS DC	J-668/GR	CV-278 (on top)
CX-4540/U	3 ft 2 in.	None	Two-conductor, rubber covered.	Connector, Plug, Electrical CS-1320-(1) (P) (375) each end.	MD-203/GR	27.5 VOLTS DC	J-668/GR	MD-203 (on top)
CX-4547/U	None	1 ft 10 in.	Two-conductor, rubber covered.	Connector, Plug, Electrical CS-1320-(1) (P) (375) each end.	CV-278/GR	27.5 VOLTS DC	J-668/GR	CV-278 (on top)
CX-4547/U	None	1 ft 10 in.	Two-conductor, rubber covered.	Connector, Plug, Electrical CS-1320-(1) (P) (375) each end.	MD-203/GR	27.5 VOLTS DC	J-668/GR	MD-203 (on top)
CX-4541/U	6 ft 11 in.	3 ft 1 in.	Two-conductor, rubber covered.	Two terminal lugs, one end; Connector Plug, Electrical, CS-1320 (1) (P) (690) on other end.	J-668/GR	ROTARY CON-VERTOR POWER INPUT TTY (right side)	TTY rotary converter	DC terminals (E221, E222)

Type	Lengths		Type & No. of conductors	Type of connectors	From	To	Common	
	AN/GRC-447	AN/GRC-77					Interlocks	Units
	6 ft 11 in.	3 ft 1 in.					Units	Interlocks
CX-4541/U	6 ft 11 in.	3 ft 1 in.	Two-conductor, rubber covered.	Two terminal lugs, one end; Connector, Plug, Electrical, CS-1320 (1)(P)(690) on other end.	J-668/GR	CRYPT rotary converter	ROTARY CON-VERTOR POWER INPUT CRYPT (right side)	DC terminal nuts E228, E294
CX-4542/U	8 ft 11 in.	None	Two-conductor, rubber covered.	Terminal lug (black wire), Connector, Plug, Electrical AN3106B-19-6S (white wire), one end; tinned on other end.	J-668/GR	Vehicular electrical system.	POWER INPUT 27.5V	
CX-4849/U	None	6 ft 3 in.	Two-conductor, rubber covered.	Terminal lug (black wire), Connector, Plug, Electrical AN3106B-19-6S (white wire), one end; tinned on other end.	J-668/GR	Vehicular electrical system.	POWER INPUT 27.5V	
CX-4543/U (AN/GRC-6 and AN/GRC-46A)	10 ft 3 in.	None	Two-conductor, rubber covered.	2 terminal lugs one end; Connector, Plug, Electrical CS-1320 (1)(P)(375) on other end.	J-668/GR	Blower	BLOWER	
CX-4544/U (AN/GRC-46 and AN/GRC-46A)	12 ft 8 in.	None	Two-conductor, rubber covered.	2 terminal lugs one end; Connector, Plug, Electrical type CS-1320(1)(P)(375) on other end.	J-668/GR	Heater	HEATER	
CX-6392/U (AN/GRC-46B)	12 ft 1 in.	None	Two-conductor, rubber covered.	2 terminal lugs one end; Connector, Plug, Electrical MSS106B-12S-3P on other end.	J-668/GR	Blower	BLOWER	

Type	Lengths		Type & lbs. of conductors	Type of connectors	Connects		
	AM/GRG-46B	AM/GRG-39			From	To	Remarks
	13 ft 1 in.	None					
CX-6293/U (AN/GRG-46B)	None	Two-conductor, rubber covered.	Connector, Plug, Electrical MS3108B-14S-7S(C) on one end; Connector, Plug, Electrical CS-1320 (1)(P)(375) on other end.	J-668/GR	HEATER	Heater	
CX-6294/U (AN/GRG-46B)	7 ft 10 in.	Two-conductor, rubber covered.	2 terminal lugs, one end; Connector, Plug Electrical MS3108B-12S-3P on other end.	Heater		Thermostat	
CX-4545/U	6 ft 5 in.	Two-conductor, rubber covered.	Connector, Plug, Electrical CS-1320(1)(P)(375) one end; tinned on other end.	J-668/GR	LIGHTS	Lights and door switch	
CX-4850/U	None	Two-conductor, rubber covered.	Connector, Plug, Electrical CS-1320(1)(P)(375) one end; tinned on other end.	J-668/GR	LIGHTS	Lights	
CX-4546/U	3 ft 9 in.	Two-conductor, rubber covered.	Connector, Plug U-77/U each end.	J-668/GR	TRANS CONTROL	R-392/URR	AUDIO
CX-4547/U	5 ft 6 in.	Four-conductor, rubber covered.	Connector, Plug, Electrical CS-1320(1)(P)(343) each end.	J-668/GR	CV-278	CV-278/GR	PRINTER
CX-4848/U	None	Four-conductor, rubber covered.	Connector, Plug, Electrical CS-1320(1)(P)(343) each end.	J-668/GR	CV-278	CV-278/GR	PRINTER
CX-4548/U	5 ft 11 in.	Two-conductor, rubber covered.	Plug, Telephone PJ-065B each end.	J-668/GR	SYNC INPUT	Security equipment	
CX-4548/U	5 ft 11 in.	Two-conductor, rubber covered.	Plug, Telephone PJ-065B each end.	J-668/GR	SYNC OUTPUT	Security equipment	

Type	Lengths		Type & No. of conductors	Type of connector	From		To	
	AN/068-447)	AN/068-47			Sub	Receptacle	Sub	Receptacle
CX-4549/U	4 ft 5 in.	3 ft 3 in.	Two-conductor, rubber covered.	Connector, Plug, Electrical AN3106A-14S-7S one end; 1 phone plug, phone tip (black) on other end.	J-668/GR	BATTERY	AN/UGC-4	Red plug to positive jack. Black plug to negative jack.
CX-4551/U	9 ft 3 in.	6 ft 4 in.	Two-conductor, rubber covered.	2 terminal lugs one end; Plug, Telephone PJ-055B on other end.	TT-76(*)/GGC	REC	AN/UGC-4	Black lead to terminal 3. White lead to terminal 4.
CX-4551/U	7 ft 5 in.	3 ft 4 in.	Two-conductor, rubber covered.	2 terminal lugs one end; Plug, Telephone PJ-055B on other end.	J-668/GR	TTY SIGNAL LINES (J16)	AN/UGC-4	Black lead to terminal 1. White lead to terminal 2.
CX-4551/U	7 ft 5 in.	7 ft 5 in.	Two-conductor, rubber covered.	2 terminal lugs one end; Plug, Telephone PJ-055B on other end.	Used with security equipment.			
CX-4854/U	None	9 ft 1 in.	Two-conductor, rubber covered.	2 terminal lugs one end; Plug, Telephone PJ-055B on other end.	TT-76(*)/GGC (gray plug).		J-668/GR	TTY SIGNAL LINES (J17)
CX-4855/U	None	9 ft 1 in.	Two-conductor, rubber covered.	2 terminal lugs one end; Plug, Telephone PJ-055B on other end.	TT-66(*)/GGC (red plug).		J-668/GR	TTY SIGNAL LINES KW9 IN

Type	Length		Type & No. of conductors	Type of connector	Connectors			
	AM/REC-44(*)	AM/REC-19			From	To	Remarks	
					Unit	Unit	Remarks	
Cable and switch assembly, special purpose	None	4 ft 9 in.	Three-conductor, rubber covered.	Connector, Plug, Electrical AN3106A-14S-7P one end; double-pole, three-position toggle switch.	J-668/GR	MARK HOLD-SEND-REC SWITCH		
<i>Note:</i> Cables described below are part of Radio Set AN/GRC-19.								
CX-1599/U	9 ft 9 in.		Eight-conductor, rubber-covered.	Connector, Plug, Electrical Amphenol type No. 164-4FS(500) on one end; Connector, Plug, Electrical Amphenol type No. 164-44FS(500) on other end.	T-195(*)/GRC-19	RECEIVER CONT	R-392/URR	POWER INPUT
CX-1852/U	6 ft		Two-conductor, rubber covered.	Connector, Plug U-77/U on one end; 2 terminal lugs on other end.	T-195(*)/GRC-19	AUDIO		To microphone or telegraph key
CX-1334/U	3 ft 3 in.		Two-conductor, rubber covered.	Connector, Plug U-77/U on one end; JAN type JJ-026 jack on the other end.	R-392/URR	AUDIO		To headset or loud-speaker
Wire W-146	6 ft		Single-conductor, stranded, polyethylene and cotton-braid insulation.		T-195(*)/GRC-19	WHIP ANTENNA		Antenna

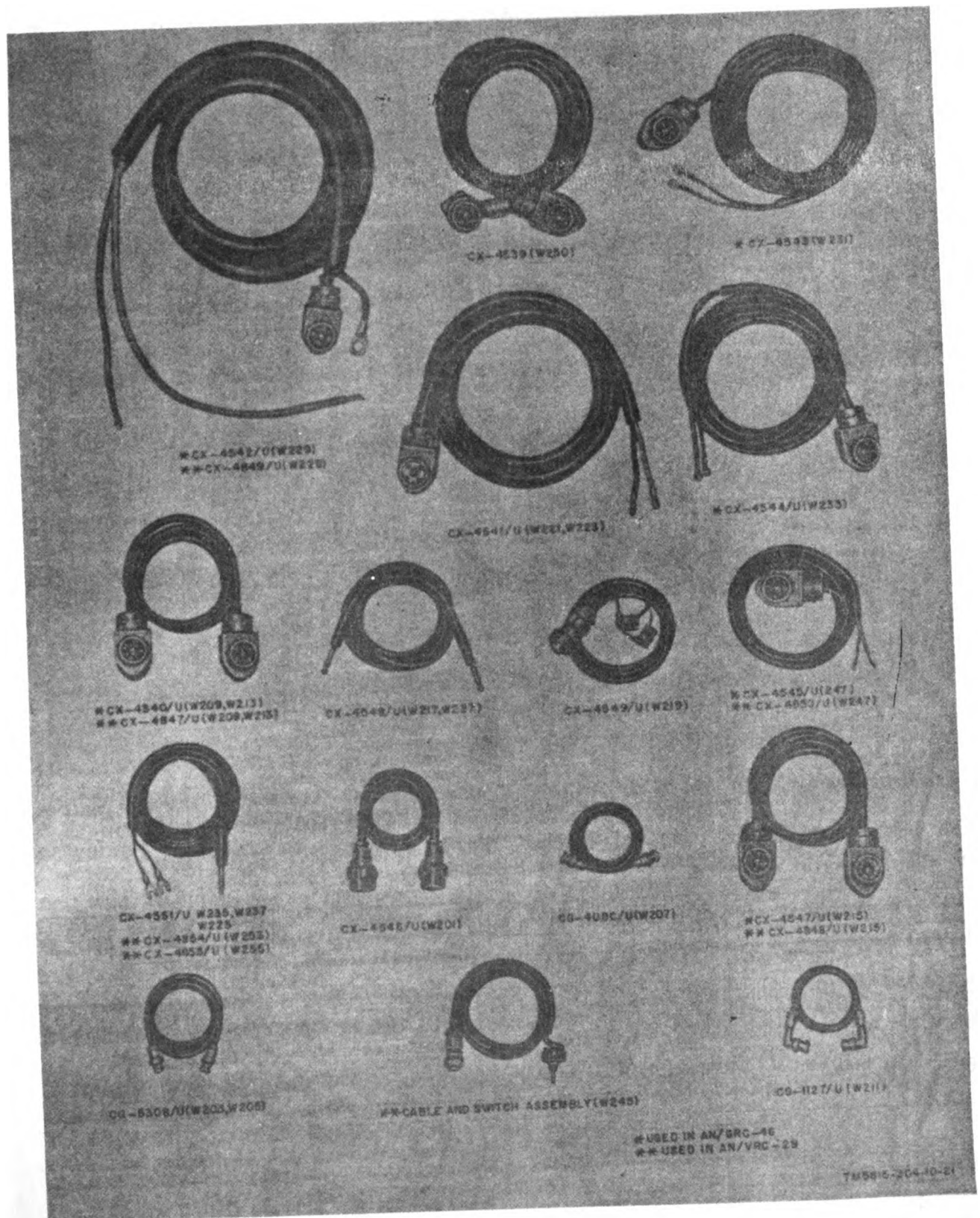


Figure 8. AN/GRC-46(*) and AN/VRC-29 power and signal cables.

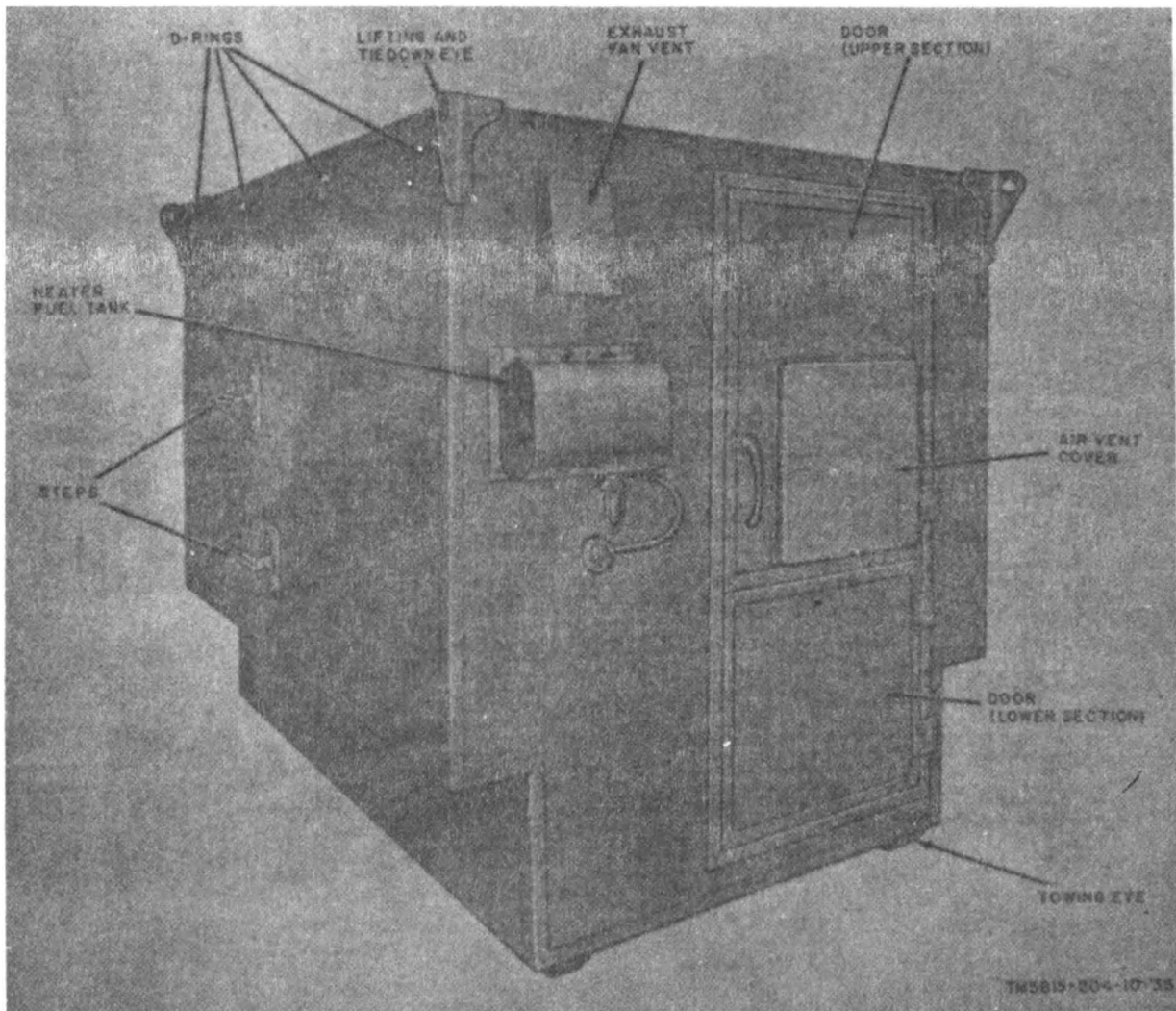


Figure 9. Electrical Equipment Shelter S-144/G.

18. Differences in Models

Item	AN/68C-46	AN/68C-46A	AN/68C-46B
Electrical Equipment Shelter	S-89C/G	Lightweight	S-144/G
Shelter material	Steel	Aluminum	Aluminum
Weight less crate	1,400 lb	1,175 lb	1,110 lb
Space heater heat control	Manually operated thermostat	Manually operated thermostat	Automatic external thermostat

CHAPTER 2 OPERATING INSTRUCTIONS

Section I. CONTROLS AND INSTRUMENTS

19. General

This section covers controls and instruments used by the operator that are not covered in other manuals; controls and instruments used by maintenance personnel are covered in instructions for the appropriate maintenance echelon. Refer to the applicable technical manuals listed in appendix I for the controls of the various components that make up the RTT set.

20. Interconnecting Box J-668/GR Controls (fig. 3)

Control or Indicator	Function
Function selector switch.	Two position toggle switch. Selects circuit connected to DC MILLI-AMPERES meter. <i>Position</i> BIAS 30MA <i>Action</i> Permits measurement of bias current of the keying relay. BIAS 60MA Permits measurement of page printer signal line current.
MAIN POWER circuit breakers.	OFF-ON breakers. Open and close main power circuit.
Power switches..	Four two-position (ON-OFF) toggle switches: Control power to equipment as indicated: LIGHTS, BLOWER, TTY, CRYPT.
DC VOLTS meter.	Indicates the input supply voltage, 0 to 50 dc.
DC MILLIAMPERES meter.	Indicates the current in the bias circuit, or in the page printer line circuit as selected by the function selector switch, 0 to 100 ma dc.

21. SEND-REC-MARK HOLD Switch (fig. 10)

The SEND-REC-MARK HOLD switch, located on the center front of the teletypewriter shelf (fig. 1), is used to control the send, receive, and mark-hold functions of the equipment.

a. In the SEND position, the equipment is connected for teletypewriter or simultaneous voice and teletypewriter transmission. The

transmitter is energized and teletypewriter signals will be fed to the modulator.

b. In REC position, the equipment is connected for teletypewriter or simultaneous voice and teletypewriter reception. The output of the frequency-shift converter is connected to the page printer loop.

c. In the MARK HOLD position, the RTT set is connected for standby operation; the receiver is operational and must be monitored. The page printer and reperforator-transmitter are in the mark condition. The page printer will not print even if a message is being received. Reception of voice and cw is possible in this position.

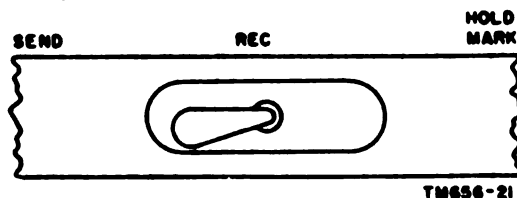


Figure 10. SEND-REC-MARK HOLD switch.

22. Blackout Switch (fig. 11)

The blackout switch is at the top of the shelter door. Whenever the door is opened, the ceiling lights go off. The switch lever may be pulled down manually to the detent stop to keep the lights on when the door is open. The switch automatically trips to the OFF position when the door is closed to prevent the light from going on when the door is opened again.

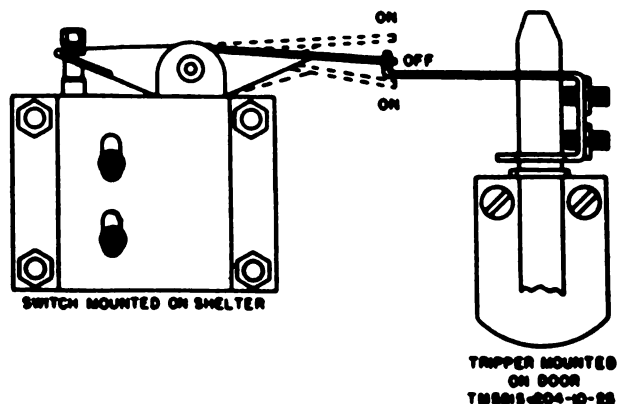


Figure 11. Blackout switch.

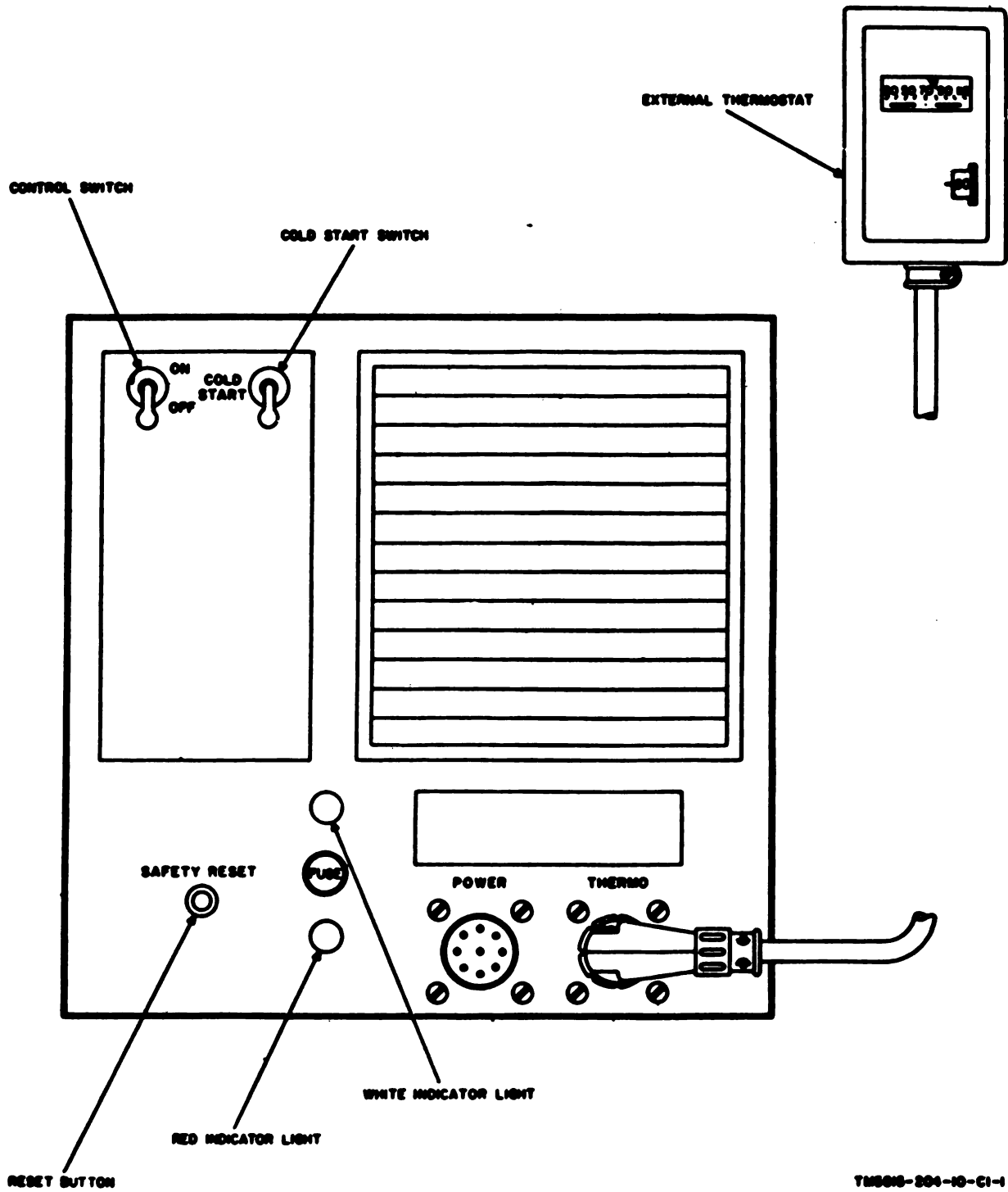


Figure 12. Heater controls, AN/GRC-46B.

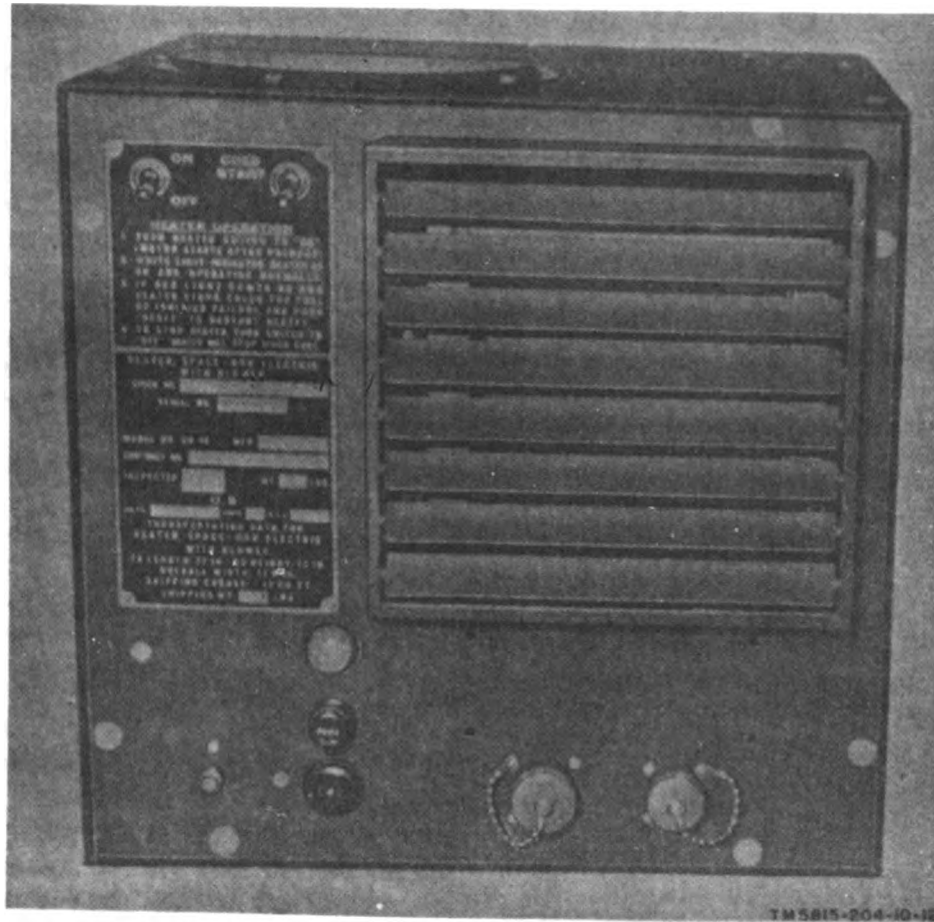


Figure 13. Heater, AN/GRC-46B.

23. Heater Controls

a. The following table lists the controls of the heater (fig. 12) in the AN/GRC-46B and indicates their function:

Control	Function
CONTROL switch	In ON position, starts the heater; in OFF position, stops the heater.
COLD START switch..	Manually operates the glow plug to preheat the burner head for extreme cold weather starting. This switch must be held in the ON position.
EXTERNAL THERMOSTAT.	Controls the heater to maintain a desired temperature.
RESET BUTTON	Manually closes the points of the thermal relay for purposes of checking the heater for momentary failure.
WHITE INDICATOR light.	Indicates heater is ON and operating normally.

Control	Function
RED INDICATOR light.	Indicates a malfunction has occurred and heater is OFF.
FUSE HOLDER	Contains a slow-blow, 5-ampere fuse which is connected between the power receptacle and CONTROL switch for protection of the heater.

b. The following table lists the controls of the heater (fig. 14) in the AN/GRC-46, and AN/GRC-46A and indicates their function:

Control	Function
ON-OFF-PRIME switch	Sw Pos ON Starts the heater
	OFF Stops the heater
	PRIME Primes the heater
HEAT CONTROL thermostat.	Controls output of the heater. Pull out for maximum heat.

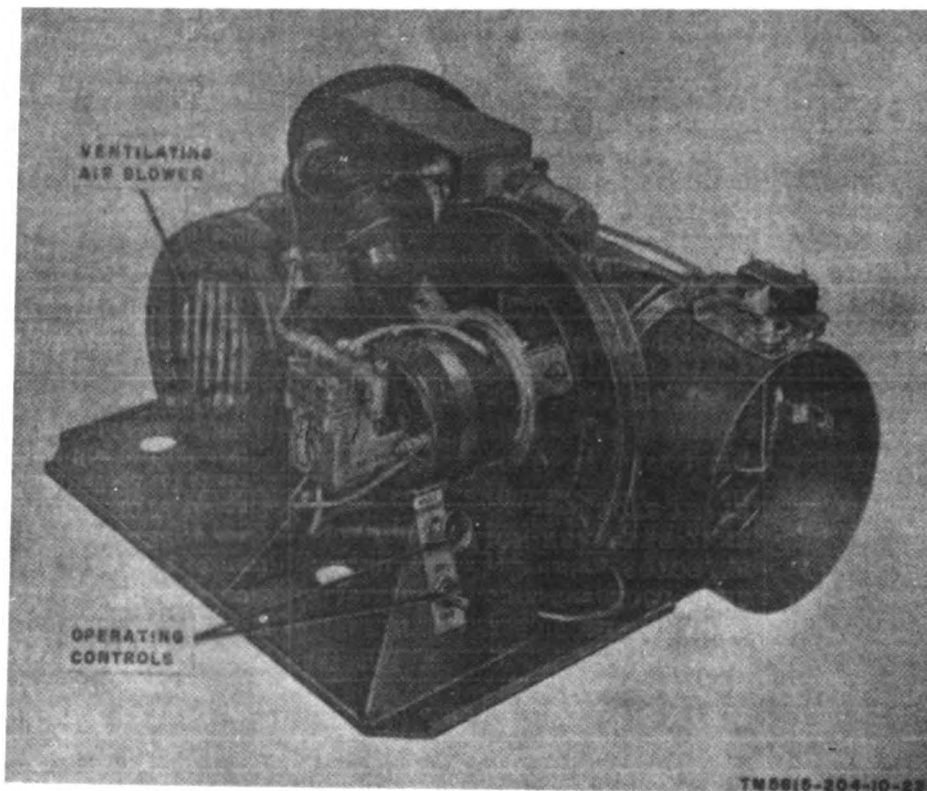


Figure 14. Heater controls, AN/GRC-46, and AN/GRC-46A.

Section II. OPERATION

24. Types of Operation

The AN/GRC-46(*) (AN/VRC-29) may be operated on either a one-way reversible basis or on a full duplex basis. Full duplex requires an additional antenna. The two modes of operation are described in *a* and *b* below. Operating procedures are covered in paragraphs 25 through 29.

a. One-Way Reversible. The RTT set is used with one whip antenna mounted on the vehicle. The transmitter and receiver do not operate at the same time. When the transmitter is on the air, the receiver is disabled; when the receiver is on the air, the transmitter is disabled. Transmission and reception may be done either on a single frequency or on two different frequencies. In this type of operation, a message typed on the page printer will be printed and perforated at the reperforator-transmitter and transmitted to a distant station via the transmitter; or, conversely, a

message transmitted by a distant station may be received locally on the page printer and the reperforator-transmitter. A tape message, previously prepared on the reperforator-transmitter, may be used to transmit a message in place of the page printer.

Note. The black plug of reperforator-transmitter is not connected; therefore, its keyboard cannot be used for direct transmission.

b. Duplex Operation. With the use of two antennas (one for receiving and one for transmitting), the RTT set can be used for sending and receiving fsk transmission at the same time. The transmitter and receiver must be tuned at least 1 megacycle apart, and the antennas must be separated at least 50 feet to avoid blocking of the receiver when transmitting. For voice and cw operation, cabling changes which require higher echelon personnel are necessary. *In mobile use, duplex operation is not recommended.*

25. Preparation for Operation

Before the AN/GRC-46(*) is used for operation, preliminary adjustments on each component of the RTT set must be performed. Whenever the assigned operating frequency is changed from one of the transmitter preset channels, the transmitter calibrating and pre-setting procedures must be repeated; also, whenever the transmitter operating frequency is changed, the modulator BAND SELECTOR switch may have to be changed to correspond to the new frequency. The receiver must be tuned manually whenever the operating frequency is changed. For preliminary adjustments and testing procedures, and for the function of controls for the operating components of the RTT set, refer to the applicable technical manuals (appx I).

26. Preliminary Starting Procedure

Perform the preliminary operations listed below before starting the equipment (para 27).

Caution: Do not operate the transmitter unless it is connected to the antenna or to a dummy antenna. Be sure that the air intake and air exhaust vents on the transmitter are open and free from obstructions.

a. Preliminary Procedures.

- (1) Start the vehicle engine; run it at a fast idle.
- (2) Release the tiedown Rope RP-5 from the antenna. For best results, operate the antenna in a vertical position.
- (3) Check to see that the braided ground strap, located on the outside rear bottom of the shelter, is connected to the vehicle frame.
- (4) Set the junction box LIGHTS switch at ON. In the AN/GRC-46(*), the junction box LIGHTS switch is in series with the blackout switch (fig. 11). When the shelter door is open, the blackout switch must be in its lowest position for the lights to go on.
- (5) Set the junction box BLOWER switch at ON. The blower motor will start, and the damper flap on the shelter will swing open freely.

b. *Preliminary Setting of Controls.* For all types of operation, set the front panel controls as indicated below.

Note. Prior to the preliminary setting of controls, be sure that the transmitter BAND SELECTOR and TUNING controls are locked.

Component	Control	Position	
Radio Transmitter T-106(*)/GRC-19.	SERVICE SELECTOR switch	OFF.	
	DIAL DIM switch	DIM or FULL, as desired.	
	RELAY-NORMAL-DUPLEX switch	NORMAL.	
	TEST METER	PA CATHODE.	
	LINE LEVEL	+12.	
	PRESET CHANNELS switch	Desired channel.	
	Radio Receiver R-392/URR	Function switch	OFF.
		BFO switch	OFF.
		BFO PITCH	0.
		AGC switch	ON.
ANT TRIM		0.	
AF GAIN control		Center range.	
BAND WIDTH switch		4KC.	
DIAL DIM switch		DIM or ON, as desired.	
RF GAIN SQUELCH THRESH control ...	Extreme clockwise.		
DIAL LOCK	Unlocked.		

Component	Control	Position
Modulator, Radio Transmitter MD-203/GR.	POWER switch	OFF.
	POWER switch	OFF.
Converter, Frequency Shift CV-278/GR.	SERVICE switch	MARK HOLD.
	MAIN POWER circuit breaker	OFF.
Interconnecting Box J-668/GR	TTY power switch	OFF.
	CRYPT switch	OFF.
	Function selector switch	BIAS 30MA.
	POWER switch (located inside cover, right side rear).	OFF.
Teletypewriter Set AN/UGC-4	MOTOR switch	OFF.
	LIGHT switch	OFF.
	SEND-LOCK switch	SEND.
	Distributor level	FEED-RETRACK.
	SELECTOR switer	3.
	POWER switch	OFF.
Reperforator-Transmitter Teletype- writer TT-76(*)/GGC.	LIGHT switch	OFF.
	MOTOR switch	OFF.
	SEND-REC-MARK HOLD switch	MARK HOLD.
	Teletypewriter shelf (fig. 1)	SEND-REC-MARK HOLD switch

27. Starting Procedure

For all types of operation, start the equipment as follows:

Unit	Control	Action
J-668/GR	MAIN POWER switch	Place at ON. The DC VOLTS meter should indicate between 27.5 and 28 volts.
T-195(*)/GRC-19	SERVICE SELECTOR switch	Place at STANDBY.
R-392/URR	Function switch	Place at NORMAL.
CV-278/GR	POWER switch	Place at ON.
MD-203/GR	POWER switch	Place at ON. Allow the equipment to warm up for 5 minutes.
J-668/GR	TTY switch	Place at ON, for teletypewriter and reperforator operation.
	BIAS 30MA adjustment control	Loosen the locknut, and adjust for a meter reading of 30 milliamperes on the DC MILLIAMPERES meter. Tighten the locknut.

28. Voice or Cw Operation

a. Refer to paragraph 26 of TM 11-5820-295-10 for voice operation instructions.

b. Refer to paragraph 27 of TM 11-5820-295-10 for cw operation instructions.

**29. Frequency-Shift Keying
(Radio Teletypewriter) Operation**

Calibrate the receiver as indicated in TM 11-5820-834-10 and the transmitter as indicated in TM 11-806.

Note. Before calibrating the transmitter, set the modulator BAND SELECTOR switch to correspond to the operating frequency of the transmitter.

a. Reception.

Unit	Control	Action
R-302/URR	Function switch	Operate to NORMAL.
	DIAL LOCK control	Turn DIAL LOCK to the left (counter-clockwise).
	BFO switch	Turn to ON.
	Frequency selector controls (MEGACYCLES and KILOCYCLES).	Adjust until desired frequency is indicated on frequency indicator.
	BAND WIDTH switch	Turn to 4 kc.
	BFO PITCH control	Adjust until desired tone of the beat note is heard.
	AF GAIN control	If signal is being received, adjust until level of signal is loud and clear.
	CARRIER LEVEL meter	Observe; it may or may not show a reading.
	KILOCYCLES control and ANT TRIM control.	Adjust to obtain maximum loudness. If reading was observed on CARRIER LEVEL meter, adjust controls to obtain peak reading on meter.
	AF GAIN control	If signal is now too loud, turn control to obtain desired level.
CV-278/GR	POWER switch	Place at ON.
R-302/URR	ANT TRIM	Adjust to obtain maximum indication on SIGNAL INPUT meter of CV-278/GR.
	RF GAIN	Adjust until SIGNAL INPUT meter of CV-278/GR indicates 5. If 5 cannot be obtained, set RF GAIN control to obtain highest possible indication on meter.
CV-278/GR	DISCRIMINATOR meter	Meter needle should oscillate around zero when fsk signal from distant transmitter is properly tuned. When no fsk signal is received from distant transmitter, meter should indicate zero.
AN/UGC-4	POWER, LIGHT, and MOTOR switches.	Place at ON.
	SEND-LOCK switch	Place at SEND.
TT-76(°)/GCC	POWER, LIGHTS, and MOTOR switches	Place at ON.
	SELECTOR switch	Turn to position 1.
J-608/GR	Function selector switch	Place at LINE 60MA. The DC MILLIAMPERES meter should indicate 60 milliamperes. If the value is not obtained, loosen the LINE 60MA adjustment control locknut, and adjust the control until the meter indicates 60 milliamperes. Tighten the locknut.

Unit	Control	Action
CV-278/GR	SERVICE switch	Turn to NOR.
Teletypewriter shelf.	SEND-REC-MARK HOLD switch	Place at REC. If distant station is transmitting fak, the page printer and reperforator will print clear copy.
CV-278/GR	SERVICE switch	If clear copy is not received, turn to REV.
R-392/URR	KILOCYCLES control	A slight readjustment may be necessary to obtain readable copy.
	DIAL LOCK control	Turn fully clockwise.
	RF GAIN SQUELCH control	Turn fully counterclockwise. Page printer and reperforator-transmitter will print garbled copy. Adjust control until they print legible.
	Function switch	<i>Note.</i> Whenever the received signal goes off the air or is interrupted, the page printer and reperforator-transmitter will print garbled copy unless the SEND-REC-MARK HOLD switch is placed in the MARK HOLD position or the CV-278/GR SERVICE switch is placed in the MARK HOLD position. Under these conditions, the receiver must be monitored.
	BFO switch	If noise or static interferes with received signal (voice or fak operation), turn to LIMITER.
		Turn to OFF, if received signal is below a reading of 5 on CV-278/GR SIGNAL INPUT meter or if voice is expected along with fak.

b. Transmission.

Unit	Control	Action
T-195(*)/GRC-19	PRESET CHANNEL selector switch.	Turn to channel number assigned to desired frequency. Consult chart on transmitter front panel.
MD-203/GR	POWER switch	Turn to ON.
	BAND SELECTOR switch	Turn to correspond to the operating frequency of the transmitter. This value (band) is indicated on the transmitter BAND indicator dial.
T-195(*)/GRC-19	SERVICE SELECTOR switch	Place at VOICE/FSK.
Teletypewriter shelf	SEND-REC-MARK HOLD switch	Place at SEND. The TUNING INDICATOR on the transmitter will light. Dynamotor in transmitter will start (unlettered model).
T-195(*)/GRC-19	TEST METER switch	Place at PA CATH. The test meter pointer should be in the shaded area of the meter marked PA CATHODE.
TT-76(*)/GGC	SEND LOCK switch	Place at SEND. The page printer may now be operated as indicated in c below.
or		
AN/UGC-4	SEND LOCK switch	Place at SEND. The reperforator-transmitter may now be operated as indicated in c below.

c. *Page Printer and Reperforator-Transmitter Operation.* When the RTT set has been set up as described in a and b above, operate

the page printer and reperforator-transmitter as follows:

(1) *Transmission on Teletypewriter Set AN/UGC-4.*

Unit	Control	Action
Teletypewriter shelf	SEND-REC-MARK HOLD switch	Place at SEND. The page printer is now ready to transmit radioteletype messages.

(2) *Punching tape using Teletypewriter Set AN/UGC-4 (no transmission).*

Unit	Control	Action
T-105(*)/GRC-10	SERVICE-SELECTOR switch	Turn to STAND BY.
TT-76(*)/GGC	MOTOR switch	Place at ON.
	LIGHT switch	Place at ON.
	POWER switch	Place at ON.
	SEND-LOCK switch	Place at SEND.
	SELECTOR switch	Turn to position 1.
Typewriter shelf	SEND-REC-MARK-HOLD switch	Place at SEND.
Transmitter-distributor	START-STOP lever	Place at STOP. The AN/UGC-4 is now ready for operation. The reperforator-transmitter will automatically punch the tape, which will feed out of the left-hand side of the machine.

(3) *Punching tape using reperforator-transmitter keyboard (no transmission).*

Unit	Control	Action
TT-76(*)/GGC	MOTOR switch	Place at ON.
	LIGHT switch	Place at ON.
	POWER switch	Place at ON.
	SEND-LOCK switch	Place at SEND.
	SELECTOR switch	Turn to position 3.
Typewriter shelf	SEND-REC-MARK HOLD switch	Place at MARK HOLD. The reperforator-transmitter is now ready for the operator to punch a new tape. <i>Note.</i> The END OF LINE INDICATOR will light after 65 characters have been typed on each line. This is a warning signal to press the CAR RET. LINE FEED and LTRS keys and continue typing.

(4) *Transmitting messages by tape.*

Unit	Control	Action
T-105(*)/GRC-10	SERVICE SELECTOR switch	TURN to VOICE/FSK
TT-76(*)/GGC	MOTOR switch	Place at ON.
	LIGHT switch	Place at ON.
	POWER switch	Place at ON.
	SEND-LOCK switch	Place at SEND.
	SELECTOR switch	Turn to position 2.
Teletypewriter shelf	SEND-REC-MARK HOLD switch	Place at SEND. Open the tape cover and insert the tape in the tape guide. Typed messages on the tape must be face up. The perforated holes in the tape must fit the cogs in the feed guide. The tape is now ready for transmission.
Transmitter-distributor	START-STOP lever	Place at START.

- (5) *Transmitting from either page printer or reperforator-transmitter.* Place the SEND-REC-MARK HOLD switch (fig. 1) at SEND. The page printer and the reperforator-transmitter may be operated to transmit from either page printer keyboard or the reperforator transmitter-distributor (tape). The teletypewriter receiver will print copies of the message being transmitted. Voice transmission is also available.
- (6) *Reception with either page printer or reperforator-transmitter.* Place the SEND-REC-MARK HOLD switch at REC. The page printer and reperforator-transmitter are able to receive teletypewriter messages and will make page and tape copies of the messages. Voice reception is also available (para 28).

Note. For normal operation (starting, testing, and stopping procedures) of the page printer and reperforator-transmitter, refer to TM 11-2225.

30. Antijamming

When it is known that the receiver is being jammed, the operator will notify the immediate superior officer immediately and continue to operate the equipment. To provide maximum intelligibility of jammed signals, follow the operational procedure described in TM 11-5820-334-10.

31. Stopping Procedure

In an emergency, the entire RTT set may be shut down by placing the junction box MAIN POWER switch in the OFF position. To shut down the RTT set under normal conditions, proceed as follows:

Unit	Control	Action
TT-76(*)/GGC	MOTOR switch	Place at OFF.
	LIGHTS switch	Place at OFF.
	POWER switch	Place at OFF.
AN/UGC-4	MOTOR switch	Place at OFF.
	LIGHTS switch	Place at OFF.
	POWER switch	Place at OFF.
J-668/GR	TTY switch	Place at OFF.
	CRYPT switch	If used, place at OFF.
CV-278/GR	POWER switch	Place at OFF.
R-892/URR	Function switch	Place at OFF.
T-195(*)/GGC	SERVICE SELECTOR switch	Place at OFF.
J-668/GR	MAIN POWER switch	Place at OFF; removes power from all components except the lights and blower.
	BLOWER switch	Place at OFF.
	LIGHTS switch	Place at OFF.

CHAPTER 3

MAINTENANCE INSTRUCTIONS

32. Scope of Operator's Maintenance

a. The maintenance duties normally performed by the operator of the RTT set are listed in *b* below. These procedures do not require special tools or test equipment.

b. Operator's maintenance for the RTT set consists of the following:

- (1) Preventive maintenance (para 33).
- (2) Replacement of the paper and ribbons in the teletypewriter. (Refer to TM 11-2225).
- (3) Checking condition of power cords and seating of connectors (para 34).
- (4) Emptying chad container. (See TM 11-2225).
- (5) Operational checklist (para 35c).

c. Operator's maintenance (including preventive maintenance) for the page printer, reperforator-transmitter, receiver, and transmitter is prescribed in the applicable technical manual (app I).

33. Preventive Maintenance

a. *DA Form 11-238*. DA Form 11-238 (fig. 15) is a preventive maintenance checklist to be used by the operator. Items not applicable to the RTT set are lined out in the figure. Reference in the ITEM block in the figure are to paragraphs that contain additional information pertinent to the particular item.

b. *Items*. The information contained in the chart below is supplementary to DA Form 11-238. The item numbers correspond to the ITEM numbers on the form.

Item	Procedure
2	If necessary, wet a cloth with Cleaning Compound (Federal stock No. 7990-395-9542) and then wipe the parts with a dry clean cloth.
8	All control knobs should work smoothly, be tight on the shaft, and should not bind.
7	Inspect the signal lines and power cords; eliminate any sharp bends or severe twists; examine the insulation for dry rot, cuts, breaks, or fraying.
11	Check the air filter to be sure that it is clean and that air is moving through it.

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

34. Visual Inspection

a. When the equipment fails to perform properly, place the junction box MAIN POWER switch in the OFF position and check the items listed below.

- (1) Improper setting of switches and controls.
- (2) Power cable connectors worn, broken, or loose. Headset or loudspeaker cord, telegraph key, or antenna lead-in wire improperly connected or seated. Hand-tighten all connectors.
- (3) Grounded or broken antenna.

b. Turn the MAIN POWER switch to ON and check the input voltage. The DC VOLTS meter, located on the junction box, should indicate between 27.5 and 28 volts.

35. Operational Checklist

a. *General*. The operational checklist will help the operator locate trouble quickly. The corrective measures are to be used to repair this trouble. If the corrective measures suggested do not restore normal equipment performance, troubleshooting at a higher echelon is necessary. Note on the repair tag what corrective measures were taken and how the equipment performed at the time of failure.

Note. Complete operational checklists for the page printer and reperforator-transmitter are given in their respective manuals (TM 11-2225 and TM 11-5815-200-10).

b. *Procedure*. Operate the controls of the RTT set to the preliminary starting positions (para 26). Perform the steps shown in *c* below, in the order given. Observe the equipment operation and perform any corrective measures necessary. After starting a unit, allow it to warm up for 5 minutes before observing the equipment operation. If the corrective measures given does not correct the fault, higher echelon maintenance is required. If the procedure calls for the replacement of a fuse and the replacement fuse blows out, higher echelon maintenance is required.

Caution: Do not replace any fuses with other than the required rating. Damage to the equipment may result.

DAILY CONDITION FOR MONTH OF AUGUST 1960		DAILY CONDITION FOR MONTH OF																																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31			
Satisfactory, ✓ Adjusted, Repair or Replacement required, X. Defect corrected, (C)																																			
DAILY ITEM 1. COMPLETED AND GENERAL CONDITION OF EQUIPMENT. Affirmation—communications—component, wire, cable, microphone, tubes, open parts, technical manual. 2. CLEAN DIRT AND MOISTURE FROM ANTENNA, MICRO-PHONES, HEADSETS, KEYS, JACKS, PLUGS, COMPONENT PANELS. PARA 33B(2) 3. INSPECT CONTROLS FOR NORMAL OPERATION. TAP CONTROLS LIGHTLY FOR EVIDENCE OF CUT-OUT FROM LOOSE CONTACTS. PARA 33B(3) 4. CHECK FOR NORMAL OPERATION OF EQUIPMENT OR ALERT FOR UNUSUAL OPERATION ON CONDITION.		WEEKLY 1ST 2ND 3RD 4TH 5TH 6TH			ADDITIONAL ITEMS FOR 2D AND 2D SCHEDULE INSPECTIONS																														
5. CLEAN AND TIGHTEN EXTERIOR OF CASES, RACKS, MOUNTS, TRANSMISSION LINES. 6. INSPECT CASES, MOUNTS, ANTENNA HOUSINGS AND EXPOSED METAL SURFACES FOR RUST, CORROSION. 7. INSPECT CORDS, CABLE WIRE, UNDER MOUNTS FOR CUTS, TENS, BREAKS, FRAVING, UNDER STRAIN. PARA 33B(7) 8. CHECK ANTENNA CABLES FOR DAMAGE. 9. INSPECT ACCESSIBLE ITEMS FOR LOOSE, MISSING SCREWS, NUTS, JACKS, CONNECTORS, JOINTS, CONNECTORS, MOTORS, PILOT LIGHTS, GLOWERS, ETC. 10. CLEAN AND/OR INSPECT AIR FILTERS, DRUMS, TAPES, NAME PLATES, DIAL AND METER WINDOWS.		1ST 2ND 3RD 4TH 5TH 6TH			10. INSPECT... 10. INSPECT... 11. INSPECT... 12. INSPECT... 13. INSPECT... 14. INSPECT... 15. INSPECT... 16. INSPECT... 17. INSPECT... 18. INSPECT... 19. INSPECT... 20. INSPECT... 21. INSPECT... 22. INSPECT... 23. INSPECT... 24. INSPECT... 25. INSPECT... 26. INSPECT... 27. INSPECT... 28. INSPECT... 29. INSPECT... 30. INSPECT... 31. INSPECT...																														
ADDITIONAL ITEMS FOR 2D AND 2D SCHEDULE INSPECTIONS		CONDITION			CONTINUED ON PAGE 3																														

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TM 9815-204-10-6

Figure 16. DA Form 11-928.

c. Operational Checks.

Action	Normal indicator	Corrective measure
<p>1. Set junction box LIGHTS switch at ON.</p>	<p>Lights go on</p>	<p>Be sure shelter door is closed or black-out switch is at ON (para 23). Check junction box 10 AMP fuse and lamps by substitution. Check seating of plug in junction box LIGHTS receptacle and condition of associated cabling.</p>
<p>2. Set junction box BLOWER switch at ON.</p>	<p>Blower starts</p>	<p>If lights do not go on or are not used, check junction box fuse F1 (10 AMP). If lights are on, check seating of plug in junction box BLOWER receptacle. If turning BLOWER switch to ON burns out 10 AMP fuse, higher echelon repair is required.</p> <p><i>Note.</i> In an emergency, the equipment may be operated with the BLOWER switch at OFF. Be sure to leave shelter doors and windows open for adequate ventilation.</p>
<p>3. Set junction box MAIN POWER circuit breakers at ON.</p> <p><i>Note.</i> Prior to this step, be sure vehicle engine is running at a fast idle.</p>	<p>DC VOLTS meter indicates 27.5 volts.</p>	<p>Check plug in POWER INPUT 27.5V connector and ground terminal for proper seating. If circuit breaker will not remain at ON, higher echelon repair is required.</p>
<p>4. Turn transmitter SERVICE SELECTOR switch to CALIB and TEST METER switch to BATT.</p>	<p>Transmitter test meter indicates at midpoint of BATTERY scale.</p> <p>Dynamometer starts within 40 seconds on unlettered model.</p> <p><i>Note.</i> Refer to step 10 to check lettered models of transmitter.</p>	<p>Higher echelon repair required.</p> <p>Check dynamometer fuse on front panel of transmitter. Higher echelon repair required.</p>
<p>5. Turn receiver function switch to STAND BY.</p>	<p>Dial lamps light</p>	<p>Check the seating of cables on receiver front panel.</p>
<p>6. Turn modulator POWER switch to ON.</p>	<p>Indicator lamp lights</p>	<p>Check LINE 5 AMP fuse on receiver front panel.</p>
<p>7. Turn modulator BAND SELECTOR switch to correspond to the transmitter operating frequency.</p>		<p>Check the seating of 27.5 VOLTS DC connector on modulator front panel and MD-303 connector on junction box.</p>
<p>8. Turn frequency-shift converter POWER switch to ON and SERVICE switch to MARK HOLD.</p>	<p>Power indicator lamp lights</p>	<p>Check frequency-shift converter 3 AMP fuse.</p>
<p>9. Turn transmitter TEST METER switch to PA GRID.</p>		<p>Check the seating of frequency-shift converter 27.5 VOLTS DC connector and junction box connector CV-275/GR.</p>

Action	Normal indication	Corrective measure
10. Turn transmitter PRESET CHANNELS switch to 1 through 7, then to desired channel number. For each position, momentarily hold the transmitter TEST KEY in the ON position.	Test meter indicates within the shaded area marked PA GRID .	Check modulator MO INPUT and FSK OUTPUT and transmitter FSK IN and MO OUT connectors for proper seating. Higher echelon repair required.
11. Turn transmitter SERVICE SELECTOR switch to CW . Turn transmitter TEST METER switch to PA CATH .	Dynamotor starts within 10 seconds. Test meter indicates in the shaded area marked PA CATHODE .	Higher echelon repair required.
12. Hold transmitter TEST KEY at ON .	TUNING INDICATOR stays lit after a slight delay of not longer than 30 seconds. Test meter indicates in the shaded area marked PA CATHODE .	Check antenna and ground connections. Higher echelon repair required.
13. Release transmitter TEST KEY from the ON position.	400-cycle sidetone signal can be heard in headset. TUNING INDICATOR is not lit. Test meter reads zero. The 400-cycle sidetone signal is not heard in headset.	Check headset and cord, or loudspeaker and cord, whichever is used. Higher echelon repair required.
14. If cw transmission is desired, remove microphone and cable from the AUDIO receptacle. Connect telegraph key and cable to the AUDIO receptacle. Hold telegraph key closed. If cw transmission is not desired, omit steps 14, 15, and 16.	Test meter indicates within the shaded area marked PA CATHODE . TUNING INDICATOR stays lit. The 400-cycle sidetone signal is heard in the headset.	Higher echelon repair required.
15. Release the telegraph key.		
16. Turn the transmitter SERVICE SELECTOR switch to STAND BY .	The dynamotors stop. The TUNING INDICATOR is not lit. Nothing is heard in the headset. The dial lamps are lit.	Higher echelon repair required.
17. Turn the transmitter SERVICE SELECTOR switch to VOICE/FSK .	The dynamotor does not start (unlettered model). The TUNING INDICATOR is not lit. The test meter reads zero.	Higher echelon repair required.
18. If telegraph key is connected to AUDIO connector, replace it with the microphone and cable. Press microphone switch and talk into the microphone. Speak normally and hold microphone about 2 inches from the lips.	The dynamotor starts when the microphone button is depressed. The TUNING INDICATOR stays lit. The test meter indicates in the shaded area marked PA CATHODE , and the pointer moves slightly while the operator is talking. The audio level meter on the transmitter indicates about 100 (on the peaks). Voice sidetone signal is heard in the headset or loudspeaker.	Check transmitter AUDIO cable connector for proper seating. Check the microphone and cord.

Action	Normal indication	Corrective measure
19. Release microphone button. Turn transmitter SERVICE SELECTOR switch to STAND BY.	The dynamometer stops. The dial lamps stay lit.	Higher echelon repair required.
20. Turn transmitter DIAL DIM switch to OFF.	The dial lamps are not lit	Higher echelon repair required.
21. Turn transmitter DIAL DIM switch to DIM.	The dial lamps light dimly	Higher echelon repair required.
22. Turn transmitter DIAL DIM switch to FULL.	The dial lamps light fully	Higher echelon repair required.
23. Turn receiver function switch to NORMAL. Tune the receiver MEGACYCLES and KILOCYCLES controls to receive a voice signal.	A signal or a rushing noise is heard in the headset or loudspeaker, until a signal is heard. The CARRIER LEVEL meter may show the strength of the received signal or noise.	If the signal cannot be received, check the transmitter and antenna connections. Check the seating of the cable connectors between the receiver and transmitter. If the CARRIER LEVEL meter does defect, check the headset or loudspeaker and its connections.
24. Turn the AF GAIN control of the receiver through the entire range.	The signal heard in the headset or loudspeaker becomes louder as the control is turned clockwise.	Higher echelon repair required.
25. Turn the receiver ANT TRIM control through the entire range.	If a carrier of sufficient strength is being received, the CARRIER LEVEL meter shows increasing and decreasing signal strength.	Higher echelon repair required.
26. Adjust ANT TRIM control for maximum signal strength.	CARRIER LEVEL meter indicates maximum signal strength.	Higher echelon repair required.
27. Turn the receiver BAND WIDTH switch from SKC to 4KC to SKC.	The selectivity becomes sharper; this is indicated by less background noise in 4KC position and the least background noise in SKC position.	Higher echelon repair required.
28. Turn the receiver function switch to LIMITER.	If noise or static is being received, the noise peaks are reduced in strength.	Higher echelon repair required.
29. Hold the transmitter TEST KEY at ON.	The receiver is silenced; nothing is heard in headset.	Higher echelon repair required.
30. Release transmitter TEST KEY from ON.	The signal is heard in headset or loudspeaker.	Higher echelon repair required.
31. Turn receiver function switch to SQ, adjust KILOCYCLES control so that only noise (without a signal) is heard. Adjust RF GAIN control slowly counterclockwise until the background noise stops. Turn KILOCYCLES control through the entire range.	There is no noise as receiver is tuned between stations. When listening to voice-operated stations, receiver is quieted between transmissions.	Check the setting of RF GAIN control.
32. Turn receiver function switch to NORMAL.		

Notes	Normal Indication	Corrective measure
33. Turn receiver BFO switch to ON and adjust KILOCYCLES control until a cw signal is heard in headset.	Clear, sharp cw signals are heard in headset.	Higher echelon repair required.
34. Turn receiver BFO PITCH control through the entire range.	The tone of the cw signal changes.	Higher echelon repair required.
35. Turn receiver AGC switch to CAL and turn KILOCYCLES control through the entire range.	A beat note is heard in headset, and CARRIER LEVEL meter pointer moves at every 100-kc point on the frequency indicator.	If beat note is heard but not the 100-kc points, recalibrate receiver (TM 11-5830-334-10). If beat note is not heard at any point, higher echelon repair is required.
36. Turn receiver DIAL DIM switch to OFF.	Dial lamps are not lit	Higher echelon repair required.
37. Turn receiver DIAL DIM switch to midposition.	Dial lamps light dimly	Higher echelon repair required.
38. Turn receiver DIAL DIM switch to ON.	Dial lamps light fully	Higher echelon repair required.
39. Turn receiver function switch to STAND BY.	The receiver is silenced. Dial lamps stay lit.	Higher echelon repair required.
40. Turn receiver function switch to NORMAL.		
41. Tune receiver to a fak transmission.	Frequency-shift converter SIGNAL INPUT meter indicates at least 5.	Check setting of RF GAIN control; if no indication, check receiver IF OUT cable connectors for proper seating.
42. Tune receiver KILOCYCLES control until frequency-shift converter DISCRIMINATOR meter oscillates around zero on the scale.	Associated page printer does not print. Discriminator needle oscillates around zero.	Higher echelon repair required.
43. Set junction box TTY switch at ON.	Rotary converter starts	Remove junction box (fig. 5) protective cover marked FUSES, ROTARY CONVERTER and check fuse (30 AMP) beneath TTY switch. Check seating of cable connector in the ROTARY CONVERTER POWER INPUT TTY receptacle on junction box; check condition of associated cabling.
44. Set page printer POWER switch at ON.		
45. Set page printer LIGHTS switch at ON.	Lamp lights	Check lamp (under the dust cover of page printer).
46. Set page printer MOTOR switch at ON.	Motor starts	Check seating of cable in 130 VAC receptacle of rotary converter.
47. Set page printer SEND-LOCK switch at SEND.		Higher echelon repair required.
48. Set reperforator-transmitter POWER switch at ON.		

Action	Normal indication	Corrective measure
49. Set reperforator-transmitter LIGHT switch at ON.	Copyright lights	Check lamp (under the dust cover of the reperforator-transmitter).
50. Set reperforator-transmitter MOTOR switch at ON.	Motor starts	Check seating of 120 VAC receptacle of rotary converter.
51. Turn frequency-shift converter SERVICE switch to NOR.	Discriminator needle oscillates around 0.	Higher echelon repair required.
52. Turn remote SEND-REC-MARK HOLD switch to REC.	Page printer prints accurate copy in either the NOR or REV position of the frequency-shift converter service switch. Page printer prints garbled copy in other position. <i>Note.</i> Not all fax transmissions are 60 WPM and plain text. If they are not, the page printer will print garbled copy.	Check seating of cable connector in frequency-shift converter PRINTER receptacle and junction box cable connector in TTY SIGNAL LINES, located on right side of junction box.
53. Turn frequency-shift converter SERVICE switch to NOR. Have operator of distant station transmit a steady mark signal to your equipment.	DISCRIMINATOR needle holds at right-hand four-division mark.	Higher echelon repair required.
54. Turn frequency-shift converter SERVICE switch to REV.	DISCRIMINATOR needle holds at left-hand four-division mark.	Higher echelon repair required.
55. Turn frequency-shift converter SERVICE switch to NOR. Have operator at distant station transmit a steady space signal to your equipment.	DISCRIMINATOR needle holds at left-hand four-division mark.	Higher echelon repair required.
56. Turn frequency-shift converter SERVICE switch to REV.	DISCRIMINATOR needle holds at right-hand four-division mark.	Higher echelon repair required.
57. Turn frequency-shift converter SERVICE switch to NOR.		
58. Turn SEND-REC-MARK HOLD (fig. 1) switch to SEND.	High-voltage dynamotor in unlettered models of the transmitter starts.	
59. Type at least five consecutive copies of a test message on page printer.	Page printer runs closed (quiet) on a steady marking when not sending or receiving. Distant station receives good copy.	Check line cords and plugs.
60. Turn reperforator-transmitter SELECTOR switch to position 2. Place prepared tape in transmitter-distributor and place START-STOP lever at START.	Equipment transmits from prepared tape. When page printer is on, home copy of transmitted tape message is made.	Higher echelon repair required.
61. Turn reperforator-transmitter SELECTOR switch to position 1.	A duplicate tape is punched when transmitting from a prepared tape. A home copy of transmitted message is made.	Higher echelon repair required.
62. Press reperforator-transmitter BREAK switch.	The reperforator-transmitter runs open. Paper tape feeds.	Higher echelon repair required.

Action	Normal indication	Corrective measure
63. Have distant operator send a test message. Place SEND-REC-MARK HOLD (fig. 1) switch at REC.	Page printer prints legible copy. Inking ribbon feeds as every character is typed.	Higher echelon repair required.
64. Set SEND-REC-MARK HOLD switch at SEND. Send continuous R's and Y's with reperforator-transmitter keyboard.	Code is punched correctly	Higher echelon repair required.
65. Turn SELECTOR switch to position 3.		
66. Move reperforator-transmitter manual feedout lever to left.	Paper tape feeds out. BLANK symbol prints on paper tape.	Higher echelon repair required.
67. Press reperforator-transmitter keyboard S key with unit shifted to figures position.	Signal bell rings	Higher echelon repair required.
68. Operate reperforator-transmitter backspace lever.	Paper tape back spaces one space for each operation.	Higher echelon repair required.
69. Turn SELECTOR switch to position 1.		
70. Set reperforator-transmitter SEND-LOCK switch at LOCK.	No transmission possible from transmitter keyboard.	Higher echelon repair required.
71. Place 3 test paper taps in transmitter-distributor of the reperforator-transmitter. Set START-STOP lever at START.	Transmitter-distributor transmits from tape.	Higher echelon repair required.
72. Set SEND-REC-MARK HOLD (fig. 1) switch at MARK HOLD.		
73. Shut down equipment as outlined in paragraph 31.		

CHAPTER 4

MATERIAL USED IN CONJUNCTION WITH RTT SET

36. Purpose of Auxiliary Equipment

a. *General.* Although it is possible to operate Radio Teletypewriter Sets AN/GRC-46(*) and AN/VRC-29 locally, tactical considerations often make it necessary to install the RTT set in one location and to control part of the operation from a more protected and remote location. The remote control equipment which may be used with the AN/GRC-46(*) and AN/VRC-29 installations is described in b below. (For detailed instructions concerning the auxiliary equipment necessary to operate Radio Set AN/GRC-19 remotely, refer to TM 11-5820-295-10).

b. *Auxiliary Equipment Needed.* The following additional items are required when it is desired to operate a remote page printer in conjunction with the RTT set.

Number required	Item
1	Teletypewriter Set AN/UGC-4
1	Four-conductor telephone cable, maximum length 5,280 feet, color-coded leads, if possible.

Site	Unit	Control	Action
Local	J-668/GR	LINE 60 MA control	Turn fully counterclockwise.
Remote	AN/UGC-4	DC POWER switch	Place at OFF.
		LINE SELECTOR switch	Turn to 60.
		LINE CURRENT control	Turn fully clockwise.
		MOTOR switch	Place at OFF.
		LIGHT switch	Place at OFF.
		SEND-LOCK switch	Place at SEND.
		POWER switch	Place at OFF.
	Teletypewriter shelf	SEND-REC-MARK HOLD switch ..	Place at REC.

c. *Operational Procedure.* Follow the instructions given in b above and paragraph 29. Both page printers and the reperforator-trans-

Number required	Item
1	Double-pole, three-position switch (SEND-REC-MARK HOLD switch or equivalent).

37. Operation of Teletypewriter Set AN/UGC-4 From Remote Site

a. *General.* In addition to the page printer already installed in the RTT set (local site), a page printer can be operated from any remote control point (remote site) up to 1 mile from the RTT set. Although the remote cable adds resistance to the page printer line circuit, the remote function is the same as the normal circuit function for the page printer at the local site, except that the remote site is an extension of the junction box wiring and SEND-REC-MARK HOLD switch. The installation is done by higher echelon personnel.

b. *Preparation for Operation.* Preoperational setup is as follows:

mitter are now in the same loop, but the page printer at the remote site is not operational.

Site	Unit	Control	Action
Remote	AN/UGC-4	MOTOR switch	Place at ON.
		LIGHT switch	Place at ON.
		POWER switch	Place at ON.
		DC POWER switch	Place at ON.

used. Incendiary grenades usually are most effective if destruction of small parts and wiring is desired.

- (2) For quick destruction of Radio Teletypewriter Set AN/GRC-46(*), place an incendiary or fragmentation gre-

nade in the unit. Get away from the unit after the grenade is placed.

- e. Dispose.* Bury or scatter destroyed parts or throw them into nearby waterways. This is particularly important if a number of parts have not been completely destroyed.

APPENDIX I

REFERENCES

Following is a list of applicable references that are available to the operator of Radio Teletypewriter Sets AN/GRC-46(*) and AN/VRC-29:

SIG 7 & 8	Microphone K-29/U; M-29A/U.	TM 11-5815-200-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Teletypewriter Set AN/FGC-20, AN/FGC-20X, AN/FGC-21, and AN/UGC-4.
TM 11-306	Radio Transmitters T-195/GRC-19 and T-195A/GRC-19.	TM 11-5815-238-12P	Operator's and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Teletypewriter Set AN/GGC-3 and AN/GGC-3A.
TM 11-3225	Teletypewriter Sets AN/GGC-2 and AN/GGC-3A, and Teletypewriter Reperforator-Transmitters TT-76/GGC, TT-76A/GGC, and TT-76B/GGC.	TM 11-5820-205-10	Radio Transmitter Modulator MD-205/GR: Operator's Manual.
TM 11-5410-201-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Shelter, Electrical Equipment S-89C/G.	TM 11-5820-295-10	Radio Set AN/GRC-19.
TM 11-5805-210-10	Operator's Manual: Frequency Shift Converter CV-278/GR.	TM 11-5820-295-10P	Operator Maintenance Repair Parts and Special Tools List: Radio Set AN/GRC-19.
TM 11-5805-295-12P	Operator and Organizational Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart: Mounting MT-791/U and MT-791A/U.	TM 11-5820-334-10	Radio Receiver R-392/URR.
TM 11-5815-200-10	Operator's Manual: Teletypewriter Sets AN/FGC-20, AN/FGC-20X, AN/FGC-21, AN/UGC-4, and Teleprinter TT-259/AG.	TM 11-5820-334-10P	Operator's Maintenance Repair Parts and Special Tools List: Receiver, Radio R-392/URR.
		TM 11-5965-222-15P	Maintenance Repair Parts and Special Tools List and Maintenance Allocation Chart for Dynamic Loudspeaker LS-166/U.

APPENDIX II
BASIC ISSUE ITEMS LIST
RADIO TELETYPEWRITER SETS AN/GRC-46,
AN/GRC-46A, AND AN/VRC-29

Section I. INTRODUCTION

1. Scope

a. This appendix lists items supplied for initial operation and for running spares. The list includes tools, accessories, parts, and material issued as part of the major end item. The list includes all items authorized for basic operator maintenance of the equipment. End items of equipment are issued on the basis of allowances prescribed in equipment authorization tables and other documents that are a basis for requisitioning.

b. The columns are as follows:

- (1) *Source, maintenance, and recoverability code.* Not used.
- (2) *Federal stock number.* This column lists the 11-digit Federal stock number.
- (3) *Designation by model.* Not used.
- (4) *Description.* Nomenclature or the standard item name and brief identifying data for each item are listed in this column. When requisitioning, enter the nomenclature and description on the requisition.
- (5) *Unit of issue.* The unit of issue is the supply term by which the individual item is counted for procurement, stor-

age, requisitioning, allowances, and issue purposes.

- (6) *Expendability.* Expendable items are indicated by the letter X; nonexpendable items are indicated by NX.
- (7) *Quantity authorized.* Under "Items Comprising an Operable Equipment," the column lists the quantity of items supplied for the initial operation of the equipment. Under "Running Spares and Accessory Items," the quantities listed are those issued initially with the equipment as spare parts. The quantities are authorized to be kept on hand by the operator for maintenance of the equipment.
- (8) *Illustration.* The "Item No." column lists the figure number and the reference designations that appear on the part in the equipment. These same designations are also used on any illustrations of the equipment.

2. Critical Items

A zero slash (0/) in the "Description" column indicates items that are expected to fail during the first year; also items that will make the equipment inoperative if they fail.

Section II. FUNCTIONAL PARTS LIST

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS	
							FIGURE NO	ITEM NO.
			ITEMS COMPRISING AN OPERABLE EQUIPMENT					
			RADIO TELETYPEWRITER SET AN/GRC-46 AN/GRC-46A AND AN/VRC-29					
	5815-543-1740		RADIO TELETYPEWRITER SET AN/GRC-46; AN/GRC-46A; TECHNICAL MANUAL TM 11-5815-204-10	ea	NR			
	Order thru AGC			ea	X	3		
	5935-500-3967		ADAPTER, CONNECTOR: MIL type UC-306.C	ea	X	3		CP201 thru CP203
	5820-613-0044		ANTENNA MOUNTING ASSEMBLY: mts ant on shelter; includes plate, mfg plate bracket; SWED part 01X2P2785	ea	X	1		
	5820-678-6202		ANTENNA MOUNTING ASSEMBLY: r/o 4 ea plates; 1 ea bracket and receptacle assy; SWED part 01X2P4964 (Note: Used in AN/GRC-46 A only)	ea	X	1		
	5806-543-5898		BOLT, NICK: retains head microphone; SWED part 07P237238	ea	X	1		W2
	6448-633-2597		BRACKET: mfg bracket f/clock; SWED part 07P237238	ea	X	1		W21
	5995-577-8058		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4539/U: 4 ft 9 in lg o/e	ea	X	1		W250
	5995-617-1848		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4510/U: 3 ft 2 in lg o/e	ea	X	1		W209
	5995-617-0012		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4540/U: 3 ft 6-1/4 in lg o/e	ea	X	1		W213
	5995-617-1871		CABLE ASSEMBLY, POWER, ELECTRICAL WX-4541/U: 6 ft 11 in lg o/e	ea	X	2		W221 W223
	5995-617-1869		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4512/U: 6 ft 11 in lg o/e	ea	X	1		W229
	5995-617-0314		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4543/U: 10 ft 3 in lg o/e	ea	X	1		W231
	5995-617-1870		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4544/U: 12 ft 8 in lg o/e	ea	X	1		W233
	5995-617-0313		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4545/U: 6 ft 5 in lg o/e	ea	X	1		W247
	5995-617-0346		CABLE ASSEMBLY, RADIO FREQUENCY CG-5108/U: 2 ft 11 in lg o/e	ea	X	2		W203 W206
	5995-617-1877		CABLE ASSEMBLY, RADIO FREQUENCY CG-1127/U: 2 ft 6 in lg o/e	ea	X	1		W211
	5995-617-1860		CABLE ASSEMBLY, RADIO FREQUENCY CG-409 C/U: 4 ft 3 in lg o/e	ea	X	1		W207
	5995-617-1874		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4546/U: 3 ft 9 in lg o/e	ea	X	1		W201
	5995-617-1876		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4547/U: 5 ft 6 in lg o/e	ea	X	1		W216
	5995-682-3313		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4548/U: 5 ft 11 in lg o/e	ea	X	2		W217 W227
	5995-617-1875		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4549/U: 4 ft 5 in lg o/e	ea	X	1		W219
	5995-617-1432		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4550/U: 7 ft 5 in lg o/e	ea	X	2		W225 W226
	5995-617-1434		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4551/U: 9 ft 3 in lg o/e	ea	X	1		W227

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPANDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS	
							FIGURE NO	ITEM NO
			AN/GRC-46, AN/GRC-46A, AN/VRC-29 (continued)					
	5340-619-1353		CLAMP, LOOP: antenna rope clamp; 5/8 in w o/s; SWED part No. 42X200114	00	X	1		
	6645-633-3824		CLOCK, AIRCRAFT, MECHANICAL: Longines-Waltham Watch Co Inc part No. A-11-63R 0-4day normal winding type;	00	NK	1		MI
	5818-843-1798		CONVERTER, FREQUENCY SHIFT CV-278/GR	00	NK	1		
	4140-624-4476		FAN, VENTILATING, PROPELLER: c/o 2 circulating fans, 1 dc motor, 1 screen (wire fabric) and housing; SWED part 01X20275A	00	NK	1		
	6210-633-6790		FIXTURE, LIGHTING: 250 v dc, 2.65 amp, 660 w; SWED part 09P202614	00	X	1		MP16
	6210-633-6791		FIXTURE, LIGHTING: 250 v dc, 2.65 amp, 660 w; SWED part 09P202615	00	X	1		MP16
	4520-690-2956		HEATER, INSTALLATION: SWED part 01X204966	00	NK	1		
	5970-240-3845		INSULATOR, BUSHING: Sig Insulator N-111	00	X	1		
	5970-433-8971		INSULATOR, SPREADER: MIL type NS485224	00	X	6		
	5815-615-9054		INTERCONNECTING BOX J 60A/GR	00	NK	1		
	6240-238-8515		LAMP, INCANDESCENT: 30 v, 25 w; GE part No. 25A30	00	X	2		11
	5965-243-6420		LOUDSPEAKER 15 in h/1	00	NK	1		
	5870-543-1672		MODULATOR, RADIO TRANSMITTER MD 203/GR	00	NK	1		
	6125-617-1435		MOTOR-GENERATOR 27.5 v input, 12-37 A in lg a 6-1/2 in w a 9-3/4 in h; Wincharger part 55-6AA	00	NK	2		
	5806-186-9464		MOUNTING RT-791/1, MT-791A/0	00	NK	2		
	5975-615-7302		RACK, ELECTRICAL EQUIPMENT: security equip rack T/AN/GRC-46; SWED part 01X20135	00	X	1		
	5818-676-3417		RACK, ELECTRICAL EQUIPMENT: security equip rack T/AN/GRC-46A; SWED part 01X204922	00	X	1		
	5975-615-7301		RACK, ELECTRICAL EQUIPMENT: 46 in lg a 26 in w a 27 in h o/s; SWED part 01X20496 (Note: Used in AN/GRC-46 only)	00	X	1		
	5815-676-3418		RACK, ELECTRICAL EQUIPMENT: 46-3/4 in lg a 24-1/4 in w a 25-1/4 in h o/s; SWED part 01X204921 (Note: Used in AN/GRC-46A only)	00	X	1		
	5890-000-0155		RADIO SET AN/GRC-19	00	NK	1		
	5890-000-2949		REEL RL-29	00	NK	1		
	6310-633-6792		REFLECTOR, LIGHT: 6 in lg a 3-1/2 in w a 1-3/4 in h o/s; Hobbell part No. 84599	00	X	2		MP17 MP18
	5818-600-2760		REPERFORATOR-TRANSMITTER TELETYPE UNIT-76/GC	00	NK	1		
	5975-615-7310		ROD, GROUND: 46-1/2 in lg a 1/2 in dia o/s; SWED part No. 47X200121	00	X	1		
	5410-614-666A		SEAT, INDIVIDUAL: right hand seat; SWED part 01X200454-2	00	NK	1		
	5410-633-3403		SEAT, INDIVIDUAL: rear seat; SWED part 01X270111	00	NK	1		
	5410-633-3404		SEAT, INDIVIDUAL: left hand seat; SWED part 01X200454-1	00	NK	1		
	5410-549-5848		SHELTER, ELECTRICAL EQUIPMENT S-9RC/G (Note: Used in AN/GRC-46 only)	00	NK	1		
	5410-549-2833		SHELTER, ELECTRICAL EQUIPMENT S-142/G (Modified) SWED part 01P204925 (Note: Used in AN/GRC-46A only)	00	NK	1		

AN/GRC-46, AN/GRC-46A, AN/VRC-29

SOURCE REFERENCE AND RESPONSIBILITY CODE	FEDERAL STOCK NUMBER	DESIGNATION OF MODEL	DESCRIPTION	UNIT OF ISSUE	EXPENDABILITY	AVAILABILITY	CLASSIFICATIONS	
							PACKAGE NO.	ITEM NO.
			AM/CMC-44, AM/CMC-44A, AM/CMC-39 (continued)					
	6900-000-0000		0 SWITCH, LEVER: 2/0 on end w/sg bracket; irregular shape; SMD part 01X200705	00	X	1		01X200705
	6900-000-0000		SWITCH AND MOUNTING BRACKET: for lighting system interlock; SMD part no. 00000044	00	X	1		AS
	6910-000-0000		TELETYPE UNIT, SET AM/CMC-4: VENTILATOR ASSEMBLY: 7/filtered air vent; SMD part 01X200705	00	NE	1		
	6910-000-0000		Note: Used in AM/CMC-44A only					
	6920-000-0000		VENTILATOR KIT: 7/Radio Transmitter 7-104/CMC-10; SMD part 01X200705	00	X	1		
	6100-017-0000		WIRE, ELECTRICAL: bare, 16 AWG; 7 strands, 34 AWG strands; MIL type C, class B	FT	X	200		W
			Note: To be requisitioned as required in minimum lengths of 200 ft or multiples thereof					
	6410-000-0000		WIRE WIRE ASSEMBLY, SINGLE USE: used 7/tilting shifter; 10 ft lg SMD part 00000017	00	X	4		AV,AMI above ASB
			HEATER, INSTALLATION GROUP AM/CMC-44() only					
	6000-000-0000		ELECTRIC JUNCTION: ignites fuel 7/booster; 30, Sealed Div part 700000	00	X	1		
	6920-000-0000		ROSE, CARTRIDGE: MIL type P0410000	00	X	1		
	6100-000-0000		ROSE, ASSEMBLY, METAL: rd; 1-3/8 in ID; Amer brass part AMB-19701	00	X	1		
	6400-000-0000		VALVE, FUEL, SPACE HEATER: 1-1/2 gal cap; SMD part 01X200705	00	X	1		01X200705
	6120-000-0000		0 VIBRATOR, INTERRUPTER: 30 v dc per output; 0db part 01-2	00	X	1		01
			SWELTER, ELECTRICAL EQUIPMENT GROUP AM/CMC-44() only					
	6210-000-0000		EXTINGUISHER, FIRE, CARBON DIOXIDE: 5 lb, squeeze grip type	00	NE	1		
	6040-000-0000		WALLET: lock 7/shifter door; Fed 77-1-101 Amend 1 type EPA	00	X	1		
			INTERCONNECTING BOX J-644/CMC MOTOR GENERATOR GROUP					
	6930-000-0000		BASE UNIT: for Interconnecting Box J-644/CMC	00	NE	1		
	6920-000-0000		CAP, ELECTRICAL: Littelfuse part No. 343015-BA-3	00	X	3		01X 030
	6920-000-0000		ROSE, CARTRIDGE: 1/2 amp, 250 v; MIL type P0410000	00	X	1		W
	6930-000-0000		ROSE, CARTRIDGE: 10 amp, 35 v; MIL type P0410000	00	X	1		W
	6920-000-0000		ROSE, CARTRIDGE: 30 amp, 35 v; MIL type P0410000	00	X	3		W, W

AM/CMC-44, AM/CMC-44A, AM/CMC-39

(1) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(2) FEDERAL STOCK NUMBER	(3) DESIGNATION BY MODEL	(4) DESCRIPTION	(5) UNIT OF ISSUE	(6) EXPENDABILITY	(7) QUANTITY AUTHORIZED	(8) ILLUSTRATIONS	(9) ITEM NO
							FIGURE NO	
								ITEM NO
	9948-618-1487		AN/CRC-46, AN/CRC-46A, AN/VRC-29 (continued) RELAY, ARMATURE: 2 wdg, dr, 160 ohm, 27.5 v; 3-1/32 in lg x 1-18/16 in dia o/e; SWED part No. ANP200049	ea	X	1		21
	9948-618-7189		RELAY, ARMATURE: 1 wdg, dr, 2000 ohm, 27.5 v; 1-21/32 in lg x 1-7/16 in w x 2-25/32 in h; SWED part No. ANP200106	ea	X	1		23
	9918-843-1758		RADIO TELETYPEWRITER SET AN/VRC-29	ea	NR			
	Order thru AGC		TECHNICAL MANUAL TM11-5815: 204-10	ea	X	2		
	9915-704-3051		BRACKET, ASSEMBLY (LEFT HAND): SWED part 07K202630	ea	X	1		WP16
	9918-704-3082		BRACKET, ASSEMBLY (RIGHT HAND): SWED part 07K202629	ea	X	1		WP15
	9915-704-3063		BRACKET: equip stop bracket, SWED part 07P200478	ea	X	2		WP17 WP18
	9998-682-3315		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4551/U: 3 ft 1 in lg o/e	ea	X	2		W221 W225
	9998-681-8589		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4847/U: 1 ft 10 in lg o/e	ea	X	2		W209 W213
	9998-681-8584		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4849/U: 6 ft 3 in lg o/e	ea	X	1		W249
	9998-681-8585		CABLE ASSEMBLY, POWER, ELECTRICAL CX-4850/U: 6 ft 3 in lg o/e	ea	X	1		W247
	9998-682-3319		CABLE ASSEMBLY, RADIO FREQUENCY CG-508B/U: 1 ft 3 in lg o/e	ea	X	2		W203 W208
	9998-682-3312		CABLE ASSEMBLY, RADIO FREQUENCY CG-1127/U: 1 ft 7 in lg o/e	ea	X	1		W211
	9998-681-8890		CABLE ASSEMBLY, SPECIAL PURPOSE, ELECTRICAL CX-4848/U: 3 ft 6 in lg o/e	ea	X	1		W215
	9918-707-2321		CABLE AND SWITCH ASSEMBLY SPECIAL PURPOSE: 4 ft 9 in lg o/e, SWED part 30K204981	ea	NR	1		W246
	9346-619-1385		CLAMP, LOOP: ant rope clamp, SWED part 42K300114	ea	X	1		
	9918-843-1728		CONVERTER, FREQUENCY SHIFT CX-278/GA.	ea	NR	1		
	9998-673-3314		COND CG: 6-C/U: 3 ft 3 in lg o/e	ea	X	1		W207
	9998-682-3325		COND ASSEMBLY, ELECTRICAL CX-4566/U: 6 ft 4 in lg o/e	ea	X	1		W201
	9998-682-3313		COND ASSEMBLY, ELECTRICAL CX-4548/U: 5 ft 11 in lg o/e	ea	X	1		W217 W227
	9998-682-3309		COND ASSEMBLY, ELECTRICAL CX-4549/U: 3 ft 3 in lg o/e	ea	X	2		W219
	9998-682-3311		COND ASSEMBLY, ELECTRICAL CX-4551/U: 7 ft 3 in lg o/e	ea	X	1		W235
	9998-682-3316		COND ASSEMBLY, ELECTRICAL CX-4551/U: 6 ft 4 in lg o/e	ea	X	1		W237
	9998-682-3317		COND ASSEMBLY, ELECTRICAL CX-4551/U: 3 ft 4 in lg o/e	ea	X	1		W228
	9998-682-3318		COND ASSEMBLY, ELECTRICAL CX-4854/U: 9 ft 1 in lg o/e	ea	X	1		W253
	9998-682-3310		COND ASSEMBLY, ELECTRICAL CX-4854/U: 9 ft 1 in lg o/e	ea	X	1		W256
	9918-813-8864		INTERCONNECTING BOX J-648/CAC-46	ea	NR	1		
	9948-943-6190		LOUDSPEAKER LB-166/U:	ea	NR	1		
	9908-643-1672		MODULATOR, RADIO TRANSMITTER RB-263/GA.	ea	NR	1		
	6128-617-1438		MYTER-GENERATOR: 27.5 v input; Bleed resistor part 88-468	ea	NR	2		
	9908-186-2464		REAR PANEL RB-191/U; WP-191A/U:	ea	NR	3		

AN/CRC-46, AN/CRC-46A, AN/VRC-29

61) SOURCE MAINTENANCE AND RECOVERABILITY CODE	62) FEDERAL STOCK NUMBER	63) DESIGNATION BY MODEL	64) DESCRIPTION	65) UNIT OF ISSUE	66) EXPERIMENTALITY	67) QUANTITY AUTHORIZED	68) ILLUSTRATIONS	
							FIGURE NO	ITEM NO
	5A15-703-6339		AM/CAC-66, AM/CAC-66A, AM/VRC-39 (continued) PLATE, INSTRUCTION: cording diagram of AM/VRC-39 17 in x 11 in x 3/64 in thick SWED part No. 61204966	00	X	1		MP19
	5A20-100-0153		RADIO SET AM/CAC-10	00	XX	1		
	5A15-706-2410		SLIDE AND PIN ASSEMBLY: c/o slide right hand and pin shoulder headed; SWED part 57292684	00	X	1		A3
	5A15-706-3064		SLIDE AND PIN ASSEMBLY: c/o slide left hand and pins headed SWED part 57292690	00	X	1		A1
	5A15-503-3760		TELETYPEWRITER 11-76/22C	00	XX	1		
	5A15-587-8970		TELETYPEWRITER SET AM/UC2-3	00	XX	1		
			MOTOR GENERATOR GROUP					
			Maintenance information for Motor Generator is included in Radio Teletypewriter Set AM/CAC-66; AM/CAC-66A					
			WORKING SPARES AND ACCESSORY ITEMS					
			BACKO TELETYPEWRITER SET AM/CAC-66 AM/CAC-66A AND AM/VRC-39					
	5340-419-1363		CLAMP, LOOP: antenna rope clamp; 5/8 in x 1/2 in; SWED part No. 62250014	00	X	1		

AM/CAC-66, AM/CAC-66A, AM/VRC-39

(b) SOURCE MAINTENANCE AND RECOVERABILITY CODE	(c) FEDERAL STOCK NUMBER	(d) DESIGNATION BY MODEL	(e) DESCRIPTION	(f) UNIT OF ISSUE	(g) EXPENDABILITY	(h) QUANTITY AUTHORIZED	(i) ILLUSTRATIONS	
							FIGURE NO	ITEM NO
			AN/GRC-46, AN/GRC-46A, AN/VRC-29 (continued)					
			HEATER INSTALLATION GROUP AN/GRC-46() only					
	4520-670-6459		ELECTRODE IGNITER: ignites fuel f/heater; SW, Sealthind Div part 770600A	ea	X	1		
	5920-284-6795		FUSE, CARTRIDGE: MIL type FMA10R08	ea	X	2		
	6130-699-1556		Ø VIBRATOR, INTERRUPTER: 24 v dc per output; Oak part 94-11	ea	X	1		G1
			INTERCONNECTING BOX 3-669/GR					
	5920-543-0428		FUSE, CARTRIDGE: 1/4 amp, 250 v; MIL type F70G25A78	ea	X	2		
	5920-284-6795		FUSE, CARTRIDGE: 10 amp, 32 v; MIL type FMA10R08	ea	X	2		
	5920-552-0008		FUSE, CARTRIDGE: 30 amp, 32 v; MIL type FMA30R08	ea	X	4		F3 F4
	5945-618-1487		RELAY, ARMATURE: 2 end, dr, 160 ohm, 27.5 v; 3-1/32 in lg x 1-15/16 in dia o/e; SWED part No. 80P20004	ea	X	1		
	5340-619-1383		CLAMP, LOOP: ant rep clamp; SWED part 42X20114	ea	X	1		

AN/GRC-46, AN/GRC-46A, AN/VRC-29

By Order of Wilber M. Brucker, Secretary of the Army:

L. L. LEMNITZER,
General, United States Army,
Chief of Staff

Official:

R. V. LEE,
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57
57-5

NC: State AG (3).

USAR: None.

For explanation of abbreviations used, see AR 320-50.



**TM 11-5815-204-10 RADIO TELETYPEWRITER SETS AN/GRC-46, AN/GRC-46A,
AN/GRC-46B, AND AN/VRC-29—1960**