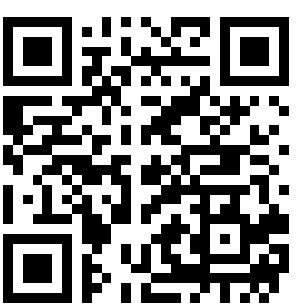

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL MAINTENANCE MANUAL

RECEIVERS, RADIO R-1041/ARN AND R-1041A/ARN

Headquarters, Department of the Army, Washington 25, D. C.

13 May 1963

*This manual supersedes C1, 4 April 1961, and C3, 15 January 1963, to TM 11-5826-208-12, 15 October 1959, and so much of C2, 21 August 1961, to TM 11-5826-208-12 as is applicable to Receiver, Radio R-1041/ARN.

TM 11-5826-219-12
C 2

Change No. 2

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., *30 July 1973*

Operator's and Organizational Maintenance Manual
RECEIVERS RADIO R-1041/ARN, R-1041A/ARN, AND R-1041B/ARN

TM 11-5826-219-12, 13 May 1963, is changed as follows:

Page 3. Paragraph 2 is superseded as follows:

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 3. Paragraph 3 is superseded as follows:

3. 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).

Paragraph 3.1 is added as follows:

3-1. 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: Commander, US Army Electronics Command, ATTN: AMSEL-MA-AN, Fort Monmouth, NJ 07703.

Page 4. Paragraph 6 is superseded as follows:

6. Items Comprising an Operable Equipment

FSN	Qty	Nomenclature
5826-837-7261	1	Receiver, Radio, R-1041/ARN (Basic Component)
5826-892-3739	1	Receiver, Radio R-1041A/ARN (Basic Component)

Page 21. Delete appendix III in its entirety.

By Order of the Secretary of the Army:

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

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

Distribution:
To be distributed in accordance with DA Form 12-36, (qty. rqr block No. 514) Organizational Maintenance Requirements for R-1041/ARN.

CHANGE
No. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *20 April 1966*

Operator and Organizational Manual
RECEIVERS, RADIO R–1041/ARN AND R–1041A/ARN AND R–1041B/ARN

TM 11–5826–219–12, 13 May 1963, is changed as follows:

Title is changed as shown above.

Where manual refers to radio receivers, change to also apply to the following:

Nomenclature	Order No.
Receiver, Radio R–1041B/ARN	FR 11–022–H–5–20396(E)

Add "and R–1041B/ARN" after "R–1041-A/ARN" in the following places:

Page 3, paragraph 1*a*, line 2.

Page 3, paragraph 1*b*, line 5.

Page 5, paragraph 9, line 2.

Page 19, appendix II, section II, "Part or Component" column.

Page 20, appendix II, section III, "Tools Required for Maintenance Functions" column, line 1.

Page 4, paragraph 5. Make the following changes:

Delete the "Power requirements" and substitute:

Power requirements:

R–1041/ARN and R–1041A/ARN	Approximately 75 milliamperes at 27.5 volts dc, exclusive of indicator lamp current.
R–1041B/ARN	Approximately 50 milliamperes at 27.5 volts dc, exclusive of indicator lamp current

Delete the "Dimensions" and substitute:

Dimensions:

R–1041/ARN and R–1041A/ARN	1–3/4 inches high by 3–7/8 inches deep by 5 inches wide.
R–1041B/ARN	1–3/4 inches high by 4–1/2 inches deep by 5 inches wide.

Delete the "Weight" and substitute:

Weight:

R–1041/ARN and R–1041A/ARN	16 ounces (less mounting); 22 ounces (including mounting).
R–1041B/ARN	20 ounces (less mounting); 28 ounces (including mounting).

Page 4, paragraph 7, third sentence. After "panel", add the following: for the R–1041/ARN and R–1041A/ARN and on the rear panel for the R–1041B/ARN (fig. 4).

Page 5, Add figure 4 after figure 3:

Page 6, paragraph 10, line 9. Delete "(fig. 1)" and substitute: (R–1041/ARN and R–1041-A/ARN, fig. 1; R–1041B/ARN, fig. 4).

Page 9, paragraph 17*c*(2). Delete "control" and substitute: switch.

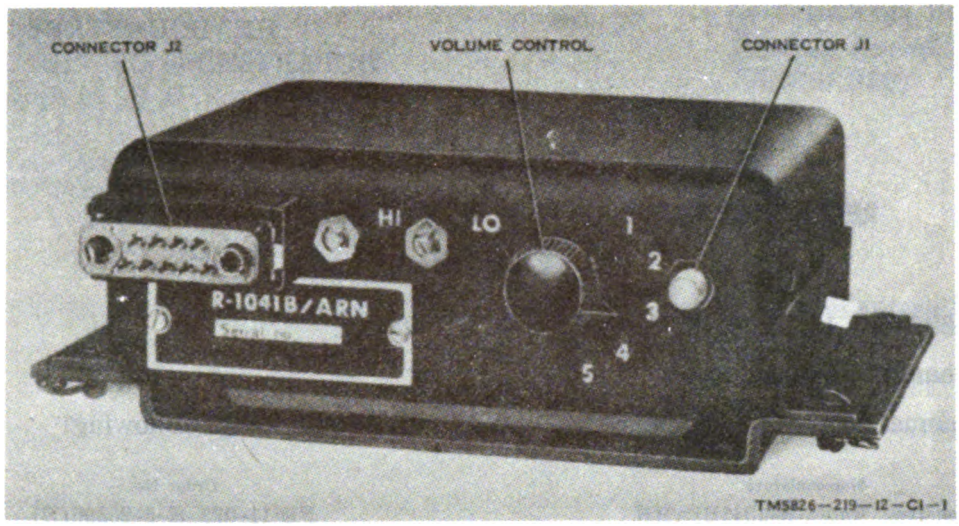

Figure 4. Receiver, Radio R-1041B/ARN attached to Mounting MT-2292/AR, rear view.

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:

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

Distribution:

To be distributed in accordance with DA Form 12-36, Unclassified requirements for Operator and Crew Maintenance Literature for the CV-2B, OV-1A, OV-1B, OV-1C, TO-1D, U-1A, U-6A, RU-8D, U-8F, U-10A, CH-21B, CH-21C, CH-34A, CH-34C, CH-37B, CH-47A, UH-1A, UH-1B, UH-1D, UH-19D.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual describes Receivers, Radio R-1041/ARN and R-1041A/ARN and covers their operation and organizational maintenance. It includes instructions for operation, cleaning and inspection of the equipment, and replacement of parts available to second echelon maintenance.

b. Official nomenclature followed by (*) is used to indicate all models of the equipment covered in this manual. Thus Receiver, Radio R-1041(*)/ARN represents Receivers, Radio R-1041/ARN and R-1041A/ARN.

c. Throughout this manual, Receiver, Radio R-1041(*)/ARN is referred to as *receiver;* Mounting MT-2292/AR is referred to as *mounting.*

2. Index of Publications

Refer to the latest issue of DA PAM 310-4 to determine whether there are new editions, changes, or additional publications pertaining to your equipment. Department of the Army Pamphlet No. 310-4 is a current index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders that are available through publications supply channels. The index lists the individual parts (-10, -20, -35P, etc.) and the latest changes and revisions of each equipment publication.

3. Forms and Records

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

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 (Army), NAVSANDA Publication 378 (Navy), and AFR 71-4 (Air Force).

c. Comments on Manual. Forward all comments on this publication direct to: Commanding Officer, U. S. Army Electronics Materiel Support Agency, ATTN: SELMS-MP, Fort Monmouth, New Jersey. (DA Form 1598 (Record of Comments on Publications), DA Form 2496 (Disposition Form), or letter may be used.)

Section II. DESCRIPTION AND DATA

4. Purpose and Use (fig. 1)

a. Purpose. Receiver, Radio R-1041(*)/ARN is an airborne radio navigational aid for receiving marker beacon signals from a ground transmitter.

b. Use. The receiver is used in light aircraft to provide the pilot with aural and visual indications of the received marker beacon signal. The marker beacon signal aids the pilot in determining his exact location for navigational and instrument landing purposes.

5. Technical Characteristics

Operating frequency	75 megacycles, crystal controlled.
Receiver type	Superheterodyne (double conversion).
Type of modulation	Amplitude.
Sensitivity	250 microvolts to produce audio output of 5 to 15 milliwatts (into a normal load of 150 ohms, with 90-percent

Sensitivity—Cont.	modulation of 400 to 3,000 cycles per second with 20-db minimum signal-plus-noise to noise ratio) and to light the indicator lamp.
Bandwidth	80 kc at -6 db; 300 kc at -60 db.
Image frequency rejection	Greater than 60 db.
Spurious frequency rejection	Greater than 80 db.
Agc	Not more than 6-db rise above 12.5-milliwatt threshold for 40-db increase in rf signal.
Antenna input impedance	Approximately 50 ohms at 75 megacycles.
Power requirements	Approximately 75 milliamperes at 27.5 volts dc, exclusive of indicator lamp current.
Dimensions	1-3/4 inches high by 3-7/8 inches deep by 5 inches wide.
Weight	16 ounces (less mounting); 28 ounces (including mounting).

6. Table of Components

The components of Receiver, Radio R-1041(*)/ARN are listed in the basic issue items list (appx III) and illustrated in figure 2.

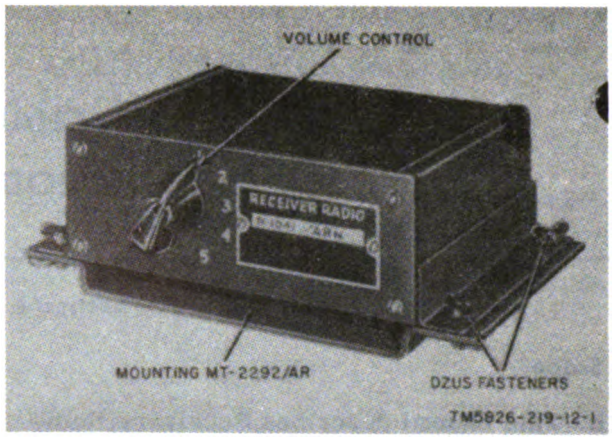

Figure 1. Receiver, Radio R-1041/ARN attached to Mounting MT-2292/AR, front view.

7. Description

Receiver, Radio R-1041(*)/ARN (fig. 2) is a radio marker beacon receiver that is used with a one-lamp indicating assembly. The R-1041(*)/ARN is secured to Mounting MT-2292/AR with four Dzus fasteners (fig. 1), two on each side. A volume control is located on the front panel. The antenna and all power and signal output connections are made at the rear of the chassis (fig. 3).

8. Additional Equipment Required

The following equipment is not supplied as part of Receiver, Radio R-1041(*)/ARN but is

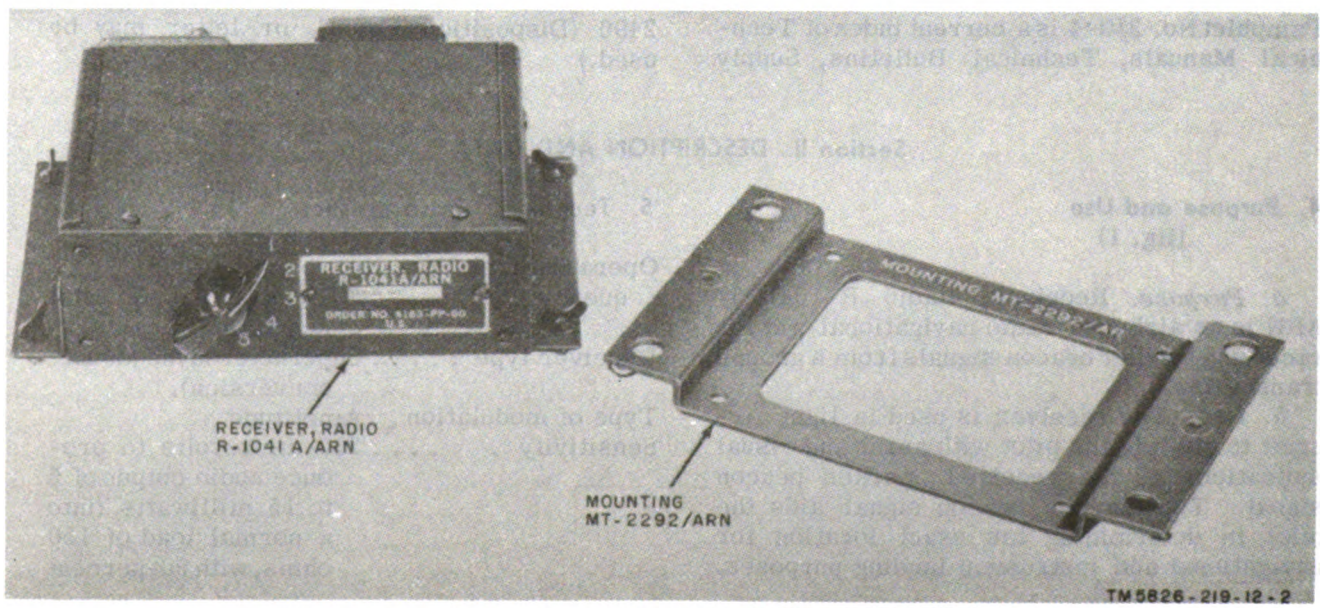

Figure 2. Receiver, Radio R-1041A/ARN and Mounting MT-2292/AR.

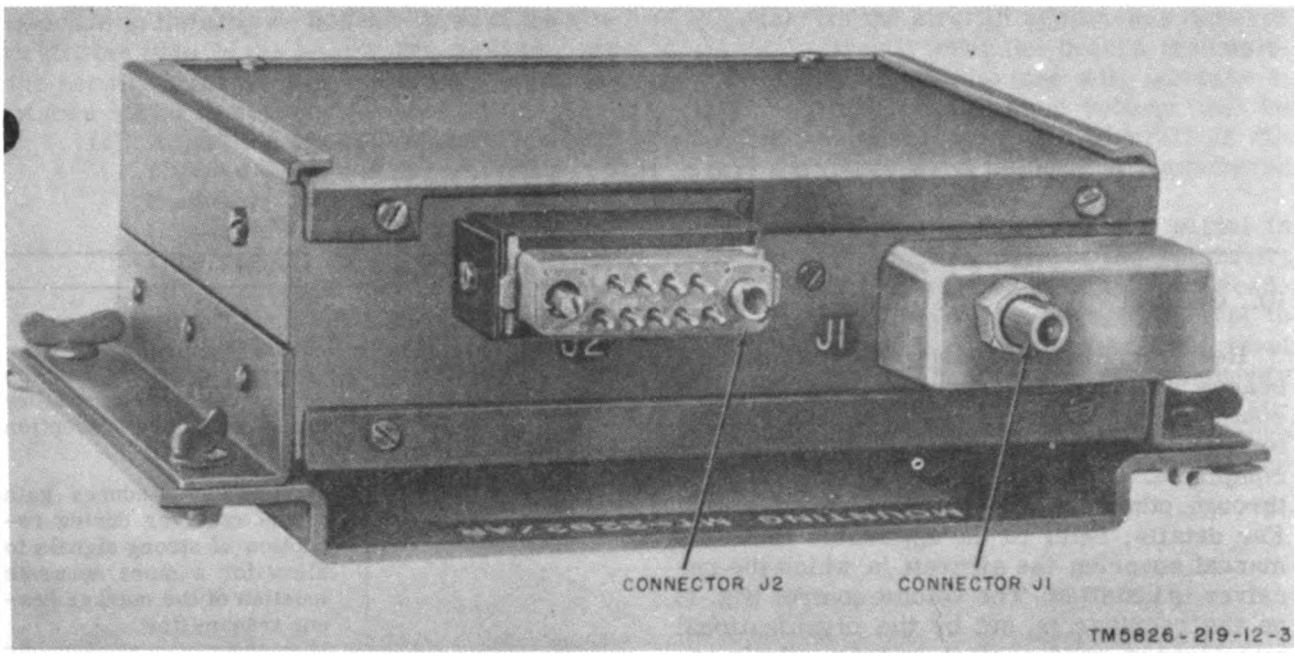

Figure 3. Receiver, Radio R-1041A/ARN attached to Mounting MT-2292/AR, rear view.

needed for use with the receiver. This equipment is normally installed in the aircraft by the airframe manufacturer; refer to the technical manuals covering the applicable aircraft.

a. Indicator Lamp Assembly. An indicator lamp assembly is mounted on the front panel of the aircraft to provide visual indication of a received marker beacon signal.

b. Remote Volume Control. A remote volume control is mounted on the front panel of the aircraft to allow the pilot to control the volume of the received marker beacon signal.

c. Antenna. A 50-ohm impedance antenna is used to receive the 75-megacycle signal.

d. Audio System. A headset or audio interphone system with a 150-ohm input impedance is used to provide an aural indication of the received signal.

e. Sensitivity Switch. A single-pole, single-throw switch controls internal circuits in the receiver to increase the gain of the receiver for reception of weak signals.

f. Mounting. Mounting MT-2292/AR (fig. 2) is used for holding Receiver, Radio R-1041(*)/ARN in the interior of an aircraft.

9. Differences in Models

Receivers, Radio R-1041/ARN and R-1041A/ARN are electrically and mechanically interchangeable as complete units. There are extensive internal differences between the receivers; however, these differences do not affect operation or organizational maintenance of the equipment.

CHAPTER 2

OPERATING INSTRUCTIONS

10. General

Receiver, Radio R-1041(*)/ARN is a marker beacon receiver that requires a minimum of control. The receiver must be energized prior to takeoff and deenergized after the flight is completed. The audio signal is often rerouted through other control circuits of the aircraft. For details, refer to the applicable technical manual covering the aircraft in which the receiver is installed. The volume control (fig. 1) on the receiver is set by the organizational maintenance personnel; it is not a pilot's operational control. The volume control (step attenuator) is preset at a position that provides the pilot with sufficient range for adjusting the remote volume control (para 8*b*) to obtain and maintain a comfortable level of audio in the headset.

11. Controls and Indicators

The following table lists the controls and indicators which the pilot uses during operation of the receiver. These controls and indicators (para 8) are located remote from the receiver for convenient use by the pilot.

Control or Indicator	Function
Indicator lamp	Provides a visual indication of the received marker beacon signal; flashes or lights steadily depending on the type of marker beacon signal being received.
Remote volume control	Allows the pilot to adjust the audio level of the received signal. (This control may not be used if the audio signal is routed through the aircraft intercom system.)
Sensitivity switch . .	High position: Increases the gain of the receiver to allow for satisfactory reception of weak signals. Low position: Reduces gain of the receiver during reception of strong signals to allow for a more accurate location of the marker beacon transmitter.

12. Operating Procedure

a. Starting and Stopping Procedure. The R-1041(*)/ARN does not contain an on-off switch. It is energized automatically when the aircraft master communication or navigation switches are turned on. After the equipment has been energized, allow a 3-minute warmup period. The receiver is automatically deenergized when the aircraft master communication or navigation switches are turned off.

b. Preflight Procedure. After the equipment has been energized (*a* above), press in on the lens of the indicator lamp assembly; the lamp should light until the lens is released. Place the remote volume control to the maximum volume position and operate the sensitivity switch to the high position.

c. Flight Procedure. The 75-megacycle marker beacon signal is radiated in a narrow vertical beam. The R-1041(*)/ARN receives this signal and converts it to visual and audible signals which aid the pilot in determining his exact position. When the aircraft enters the beam of a marker beacon transmitter, the indicator lamp will light and an audible signal will be heard in the headset. The indicator lamp will light steadily or flash, and a steady or interrupted audible signal will be heard, depending on the type of signal being received. The length of time during which visual and aural response is obtained while approaching, passing over, and leaving a marker beacon station

depends on the altitude and the speed of the aircraft, the type of the beacon transmitter, and the sensitivity of the receiver. When a marker beacon signal is received, proceed as follows:

(1) Adjust the remote volume control to obtain a comfortable audio level in the headset. Note whether the setting of the volume control on the receiver allows sufficient range for adjustment of the remote volume control to maintain a comfortable level of audio in the headset.

(2) Observe the indicator lamp and determine the type of signal being received. The type of signal may also be determined by listening to the audio signal.

(3) As the aircraft approaches the area directly over the beacon transmitter, the audio tone will increase in volume; maximum volume will be obtained when the aircraft is directly over the beacon transmitter antenna.

(4) If an exceptionally strong signal is being received, place the sensitivity switch to the low position and readjust the remote volume control to maintain a comfortable audio level in the headset. The sensitivity switch should be kept in the low position whenever possible to insure a sharper audio indication of the marker beacon position.

CHAPTER 3

EQUIPMENT SERVICEABILITY CRITERIA

13. Purpose

The procedures described in paragraphs 16, 17, and 18 will be used to evaluate equipment serviceability under the provisions of AR 750-10. This chapter does not affect the requirements in other portions of the technical manual pertaining to periodic preventive maintenance service on the equipment.

14. Scope of Equipment Serviceability Criteria

The instructions in this chapter apply to all organizations of the Army and will be performed by first or second echelon maintenance personnel. Evaluation of each assigned equipment will be made periodically in accordance with these instructions; the frequency of the evaluation will be directed by appropriate Commands. This equipment serviceability criteria will be used to evaluate Receiver, Radio R-1041(*)/ARN when it is installed in an aircraft. The procedures apply to this equipment only and do not evaluate or qualify the remaining portions of the aircraft electronic configuration.

15. Catagories of Equipment Serviceability

Equipment will be rated as either *GO* (Combat Ready) or *NO-GO* (not Combat Ready).

a. The *GO* condition is subdivided into two categories: GREEN and AMBER.

(1) GREEN - *Completely Combat Ready.*
   (*a*) Equipment passes all applicable tests in this chapter.
   (*b*) All running spares and accessories are on hand at the using organization.

(2) AMBER - *Conditionally Combat Ready.* Equipment passes all applicable tests in this chapter. As soon as the complete prescribed load of running spares and accessories is on hand at the using organization, the category AMBER changes to GREEN.

b. The *NO-GO* classification is defined as category RED. Category RED is in effect when:

(1) Equipment fails one or more of the applicable tests in this chapter even though all running spares and tools and accessories are on hand at the using organization.

(2) One or more URGENT modification work orders (MWO) have not been applied.

16. Inspection and Maintenance Worksheet

a. Equipment Inspection and Maintenance Worksheet DA Form 2404 will be used to record results of the equipment serviceability evaluation as follows:

(1) Complete blocks 1, 2, 3, and 5.

(2) Enter ESE (equipment Serviceability evaluation) in block 6.

(3) Enter the publication number and publication date in block 7.

(4) Enter the item number of each test in column *a* and the symbol P (for Pass) or F (for Fail) as applicable in column *b*.

(5) Record the date of each evaluation below the last entry in column *b*.

(6) After performing the evaluation, the evaluator will sign DA Form 2404 above column *b*. Supervisor will sign after the last entry in column *b*

b. Lines may be drawn vertically in columns *c* and *d* to record subsequent evaluations. If column *c* or *d* is used for recording subsequent evaluations, the date of the evaluation will be recorded and DA Form 2404 will be signed by the evaluator and his supervisor.

17. Test Conditions

The receiver is connected directly to the electrical and communications systems of the

host aircraft, and the operating controls for the receiver are part of the aircraft configuration. Prepare the receiver for testing (para 18) as follows:

a. Check the connectors on the rear of the receiver to make sure they are secure.

b. Set the receiver volume control at position 5.

c. If the aircraft contains a remote volume control and a sensitivity control, set them as follows:

(1) Adjust the remote volume control to the extreme clockwise position to obtain maximum volume.

(2) Set the sensitivity control to the high position to obtain maximum gain.

d. Position all aircraft switches and circuit breakers that control the application of 28 volts dc to the receiver to off. Refer to the technical manuals covering the applicable aircraft for the names and locations of these switches and circuit breakers.

e. Connect an auxiliary power unit to furnish 28-volt dc power. Refer to the technical manuals covering the applicable aircraft for the procedure for connecting the auxiliary power unit.

f. Obtain Test Oscillator BC-376-(*) (para 20*c*(2)) and place it on the ground approximately 15 feet from the aircraft; extend the antenna to run parallel to the aircraft fuselage.

18. Test Items

Item No.	Item	Action	Result
1	Aircraft power switches and circuit breakers that control the application of primary power (28 vdc) to the receiver.	Place in on position	Switches and circuit breakers move freely to on positions.
2	Aircraft interphone system.	Adjust the interphone system for reception of the marker beacon signal.	Switches and controls operate freely to marker beacon positions.
3	Marker beacon indicator lamp.	Press in on lens; after noting normal indication, release the lens.	Marker beacon indicator lamp lights when lens is pressed; indicator lamp goes out when lens is released.
4	Test Oscillator BC-376-(*).	Turn the test oscillator on and adjust it according to the instructions located inside the cover; then, monitor the interphone system headset and the aircraft panel-mounted marker beacon indicator lamp.	The coded output from the test oscillator will be heard as an aural tone in the headset and the marker beacon indicator lamp will flash.
5	Receiver volume control and remote volume control.	Monitor the interphone system headset while changing the volume control from position 5 to position 1; for each position of the receiver volume control, rotate the remote volume control throughout its range.	The level of the aural tone heard in the headset decreases in incremental steps as the volume control is positioned from 5 to 1; the remote volume control varies the level of the aural tone for each position of the receiver volume control.
6	Sensitivity switch	Set the sensitivity switch to the low position.	The aural tone heard in the headset decreases in strength.

Item No.	Item	Action	Result
7	Test Oscillator BC-376-(*).	Turn off the test oscillator.	The aural tone will no longer be heard in the headset and the marker beacon indicator lamp will go out.
8	Aircraft power switches and circuit breakers that control the application of primary power (28 vdc) to the receiver.	Place in off position	Switches and circuit breakers move freely to off positions.

CHAPTER 4

ORGANIZATIONAL MAINTENANCE

19. Scope of Maintenance

The maintenance duties assigned to the organizational maintenance repairman are listed below together with a reference to the paragraphs covering the specific maintenance function. The duties include instructions for performing preventive maintenance and corrective maintenance.

Note: The pilot will not perform preventive or corrective maintenance.

a. Preventive maintenance (para 21).

b. Daily preventive maintenance checks and services (para 22 and 23).

c. Cleaning (para 24).

d. Intermediate preventive maintenance checks and services (para 25 and 26).

e. Retouching painted surfaces (para 27).

f. Periodic preventive maintenance checks and services (para 28 and 29).

g. Troubleshooting (para 30).

h. Removal and replacement of receiver (para 31) and marker beacon indicator lamp (para 32).

20. Tools, Materials, and Test Equipment

The following tools, materials, and test equipment are required for organizational maintenance of the receiver:

a. Tools. The tools required are contained in Tool Kit TK-115/G.

b. Materials.

(1) Cleaning Compound (Federal stock No. 7930-395-9542).
(2) Cleaning cloth.
(3) Fine sandpaper or emery cloth.
(4) Friction tape.
(5) Rubber tape.

c. Test Equipment.

(1) Multimeter AN/URM-105.
(2) Test Oscillator BC-376-(*).

Note: Test Oscillator BC-376-(*) represents Test Oscillators BC-376-A, BC-376-B, BC-376-C, BC-376-D, BC-376-E, BC-376-F, BC-376-G, BC-376-H, and BC-376-K.

21. Preventive Maintenance

Preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in serviceable condition, prevent breakdown, and assure maximum operational capability. Preventive maintenance is the responsibility of all echelons concerned with the equipment and includes the inspection, testing, and repair or replacement of parts, subassemblies, or units that inspection and tests indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services of the receiver at second echelon level are made at daily, intermediate, and periodic intervals, unless otherwise directed by the commanding officer. The maintenance services should be scheduled concurrently with the periodic service schedule of the aircraft in which the receiver is installed.

a. Systematic Care. The procedures given in paragraphs 22 through 29 cover systematic care essential to proper upkeep and operation of the equipment. The cleaning operations (para 24) should be performed once a day. If the equipment is not used daily, however, the cleaning operations must be performed before operation after any extended shutdown or once a week while the equipment is kept in *standby* condition.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services charts (para 23, 26, and 29) outline inspections to be made at specific intervals. These inspections are made to maintain combat serviceability; that is, to maintain the equipment in good general (physical) condition and in good operating condition. To assist the organizational maintenance man in maintaining combat serviceability, the charts indicate what to inspect, how to inspect, and what the normal conditions are; the *last* column lists references that contain additional information. If the defect cannot be remedied by the organizational maintenance man, higher echelon

maintenance or repair is required. Records and reports of these inspections must be made in accordance with TM 38-750.

22. Daily Preventive Maintenance

Paragraph 23 specifies checks and services that must be accomplished daily and under special conditions listed below.

a. Following the last flight of each day or preceding the first flight of the next day.

b. When the equipment is initially installed.

c. When the equipment is replaced after removal for any purpose.

d. At least once each week if the equipment is maintained in standby condition.

23. Daily Preventive Maintenance Checks and Services

Sequences No.	Item	Procedure	References
1	Exterior surfaces	Clean the exterior of the receiver	Para 24.
2	Knob	Check to see that the mechanical action of the switch is smooth and free of external or internal binding. If the knob requires frequent tightening, replace the setscrew.	Fig. 1.
3	Operational check	Perform the following procedures during the aircraft's first flight of the day:	
		a. Press in on the lens of the marker beacon indicator lamp and note that the lamp lights.	a. Para 30.
		b. Fly the aircraft over a marker beacon transmitter and note that the marker beacon indicator lamp lights and an aural tone is heard in the headset.	b. Para 30.

24. Cleaning

Inspect the exterior of the receiver. The surfaces should be clean, free of dirt, dust, grease, and fungus. If necessary, clean the equipment as follows:

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

Warning: Cleaning compound is flammable and its fumes toxic. Provide adequate ventilation. *Do not* use near a flame.

b. Remove grease, fungus, and ground-in dirt with a cloth moistened with cleaning compound.

c. If dirt is difficult to remove, clean the equipment with mild soap and water.

25. Intermediate Preventive Maintenance

Perform the maintenance functions indicated in the intermediate preventive maintenance checks and services chart (para 26) at the time intermediate inspections are scheduled for the aircraft. Intermediate preventive maintenance checks and services are performed in addition to the daily preventive maintenance checks and services (para 23). Equipment maintained in a standby (ready for immediate operation) condition must have intermediate maintenance performed on it. Equipment in limited storage (requires service before operation) does not require intermediate maintenance.

26. Intermediate Preventive Maintenance Checks and Services

Sequence No.	Item	Procedure	References
1	External surfaces	Check painted surfaces for bare spots, rust, and corrosion.	Para 27.
2	Mounting	Inspect the seating and stability of the mounting. Make sure no nuts, bolts, or other fasteners are loose or broken on the mounting.	Configuration manual of applicable aircraft.
3	Connections	Inspect cables for cuts, kinks, breaks, fraying, and undue strain; inspect connectors for cracks and breaks. Repair or replace cables and connectors as required.	Configuration manual of applicable aircraft.
4	Operational check	Check the equipment for normal operation in accordance with the procedures given in paragraphs 17 and 18.	Para 30.

27. Retouching Painted Surfaces

Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TM 9-2130.

28. Periodic Preventive Maintenance

Periodic preventive maintenance of the R-1041(*)/ARN will be scheduled in accordance with the requirements of TM 38-750. Periodic preventive maintenance checks and services should be scheduled concurrently with the periodic maintenance service schedule of the aircraft in which the equipment is installed to reduce out-of-service time to a minimum. All deficiencies or shortcomings will be immediately reported to a higher echelon by use of forms and procedures specified in TM 38-750. Equipment that has a deficiency that cannot be corrected by second echelon maintenance personnel should be deadlined in accordance with TM 38-750. Perform all the checks and services listed in the periodic preventive maintenance checks and services chart (para 29) in addition to the daily (para 23) and intermediate (para 26) checks and services.

29. Periodic Preventive Maintenance Checks and Services

Sequence No.	Item	Procedure	References
1	Installation	Check the installation of the receiver and the mounting to see that they are installed in accordance with instructions in the aircraft configuration manual.	Configuration manual of applicable aircraft.
2	Publications	a. Check to see that pertinent publications are on hand and that there are no missing pages. Requisition pertinent publications not on hand. b. Check DA Pam 310-4 to see whether all Changes pertinent to the equipment are on hand.	a. Appx I. b. DA Pam 310-4.

Sequence No.	Item	Procedure	References
3	Modification work orders.	a. Check DA Pam 310-4 to determine whether new applicable MWO's have been published.	a. DA Pam 310-4.
		b. Make sure that all URGENT MWO's have been applied to the equipment.	b. DA Pam 310-4.
		c. Make sure that all ROUTINE MWO's have been scheduled.	c. DA Pam 310-4.

30. Troubleshooting

a. General. Troubleshooting of this equipment is based on the operational check contained in paragraphs 17 and 18. When an abnormal condition or result is observed, turn to the troubleshooting chart (*b* below). Perform the checks and corrective actions indicated in the troubleshooting chart. If the corrective measures indicated do not result in correction of the trouble, higher echelon maintenance is required.

b. Troubleshooting Chart.

Item	Symptom	Probable trouble	Corrective measures
1	No audio output from receiver; marker beacon indicator lamp does not light.	Defective dc power source or defective receiver.	Check power source for presence of +27.5 volts dc. If power is being supplied, replace receiver (para 31).
2	Indicator lamp does not light; receiver audio output is normal.	Defective indicator lamp or defective receiver.	Press in on lens on marker beacon indicator lamp. If lamp does not light, replace lamp (para 32); if lamp lights, replace receiver (para 31).
3	No audio output from receiver; indicator lamp lights.	Defective headset or defective receiver.	Check setting of volume control on receiver. Replace headset; if there is still no output, replace receiver (para 31).

31. Removal and Replacement of Receiver

a. Removal.
(1) Loosen the four Dzus fasteners (fig. 1) on the sides of the receiver and lift the receiver off the mounting.
(2) Disconnect antenna connector J1 (fig. 3) and power connector J2.

b. Replacement.
(1) Connect antenna connector J1 (fig. 3) and power connector J2 to the receiver.
(2) Position the receiver on the mounting bracket and tighten the four Dzus fasteners (fig. 1) to secure the receiver.

32. Removal and Replacement of Marker Beacon Indicator Lamp

a. Removal.
(1) Unscrew the lens from the indicator lamp assembly (applicable instruction manual for aircraft).
(2) Remove the lamp from the lamp assembly.

b. Replacement.
(1) Insert the replacement lamp and secure it in the socket of the indicator lamp assembly (applicable instruction manual for aircraft).
(2) Screw on the lens of the indicator lamp assembly.

CHAPTER 5

DEMOLITION OF MATERIAL TO PREVENT ENEMY USE

33. Authority for Demolition

Demolition of the equipment will be accomplished only upon the order of the commander. The destruction procedures given in paragraph 34 will be used to prevent further use of the equipment.

34. Methods of Destruction

Use any of the following methods to destroy the equipment:

a. Smash. Smash the controls, transistors, coils, switches, capacitors, and transformers; use sledges, axes, handaxes, pickaxes, hammers, or crowbars.

b. Cut. Cut the output and power cord; use axes, handaxes, or machetes.

Warning: Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

c. Burn. Burn cords and technical manuals; use gasoline, kerosene, oil, flamethrowers, or incendiary grenades.

d. Explode. If explosives are necessary, use firearms, grenades, or TNT.

e. Bend. Bend the panel and cabinet.

f. Dispose. Bury or scatter the destroyed parts in slit trenches, foxholes, or throw them into streams.

APPENDIX I
REFERENCES

Following is a list of references applicable and available to the organizational maintenance repairman of Receiver, Radio R-1041(*)/ARN.

DA Pamphlet 310-4	Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
TM 9-213	Painting Instructions for Field Use.
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 11-6625-522-15	Operator, Organizational, Field and Depot Maintenance Manual: Test Set I-76, Test Oscillators BC-376-A, -B, -C, -D, -E, -F, -G, -H, and -K and Test Indicators BE-67, -A, and -C.
TM 38-750	The Army Equipment Record System and Procedures.

APPENDIX II
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

1. General

a. This appendix assigns maintenance functions to be performed on components, assemblies, and subassemblies by the lowest appropriate maintenance echelon.

b. Colums in the maintenance allocation chart are as follows:

(1) *Part or component.* This column shows only the nomenclature or standard item name. Additional descriptive data are included only where clarification is necessary to identify the component. Components, assemblies, and subassemblies are listed in top-down order. That is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. Each generation breakdown (components, assemblies, or subassemblies) is listed in disassembly order or alphabetical order.

(2) *Maintenance function.* This column indicates the various maintenance functions allocated to the echelons.

(a) *Service.* To clean, to preserve, and to replenish lubricants.

(b) *Adjust.* To regulate periodically to prevent malfunction.

(c) *Inspect.* To verify serviceability and to detect incipient electrical or mechanical failure by scrutiny.

(d) *Test.* To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc.

(e) *Replace.* To substitute serviceable components, assemblies, or subassemblies, for unserviceable components, assemblies, or subassemblies.

(f) *Repair.* To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

(g) *Align.* To adjust two or more components of an electrical system so that their functions are properly synchronized.

(h) *Calibrate.* To determine, check, or rectify the graduation of an instrument, weapon, or weapons system, or components of a weapons system.

(i) *Overhaul.* To restore an item to *completely serviceable* condition as prescribed by serviceability standards developed and published by heads of technical services. This is accomplished through employment of the technique of "Inspect and Repair Only as Necessary" (IROAN). Maximum utilization of diagnostic and test equipment is combined with minimum disassembly of the item during the overhaul process.

(j) *Rebuild.* To restore an item to a standard as near as possible to original or new condition in appearance, performance, and life expectancy. This is accomplished through the maintenance

technique of complete disassembly of the item, inspection of all parts or components, repair or replacement of worn or unserviceable elements using original manufacturing tolerances and/or specifications and subsequent reassembly of the item.

(3) *1st, 2d, 3d, 4th, 5th echelons.* The symbol X indicates the echelon responsible for performing that particular maintenance operation, but does not necessarily indicate that repair parts will be stocked at that level. Echelons higher than the echelon marked by X are authorized to perform the indicated operation.

(4) *Tools required.* This column indicates codes assigned to each individual tool equipment, test equipment, and maintenance equipment referenced. The grouping of codes in this column of the maintenance allocation chart indicates the tool, test, and maintenance equipment required to perform the maintenance function.

(5) *Remarks.* Entries in this column will be utilized when necessary to clarify any of the data cited in the preceding column.

c. Columns in the allocation of tools for maintenance functions are as follows:

(1) *Tools required for maintenance functions.* This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

(2) *1st, 2d, 3d, 4th, 5th echelon.* The dagger (†) indicates the echelons normally allocated the facility.

(3) *Tool code.* This column lists the tool code assigned.

2. Maintenance by Using Organizations

When this equipment is used by signal services organizations organic to theater headquarters or communication zones to provide theater communications, those maintenance functions allocated up to and including fourth echelon are authorized to the organization operating this equipment.

SECTION II. MAINTENANCE ALLOCATION CHART

PART OR COMPONENT	MAINTENANCE FUNCTION	ECHELON 1	2	3	4	5	TOOLS REQUIRED	REMARKS
RECEIVER, RADIO R-1041/ARN AND R-1041A/ARN	service		X					
	inspect		X					
	test		X				13	Third echelon will make code 16 available for a flight line test.
				X			1,2,5,7,8,15,16	
					X		1,2,3,4,5,6,7,8,11, 14,15	
	repair			X			9	
	overhaul					X		
MOUNTING MT-2292/AR	inspect		X					
	replace		X					

SECTION III. ALLOCATION OF TOOLS FOR MAINTENANCE FUNCTIONS

TOOLS REQUIRED FOR MAINTENANCE FUNCTIONS	ECHELON 1	2	3	4	5	TOOL CODE	REMARKS
R-1041/ARN AND R-1041A/ARN (continued)							
METER, AUDIO LEVEL TS-585/U			†	†	†	1	
AUDIO OSCILLATOR, TS-382/U			†	†	†	2	
FREQUENCY METER AN/USM-26				†	†	3	
MULTIMETER ME-26/U				†	†	4	
MULTIMETER TS-352/U			†	†	†	5	
RADIO TEST SET AN/ARM-52				†	†	6	
RF SIGNAL GENERATOR SET, AN/URM-25			†	†	†	7	
GENERATOR, SIGNAL AN/USM-44			†	†	†	8	
TOOL KIT, RADAR & RADIO REPAIR TK-87/U			†	†	†	9	
TOOL KIT SUPPLEMENTARY RADAR & RADIO REPAIR TK-88/U				†	†	10	
TEST SET TRANSISTOR TS-1836()/U				†	†	11	
TOOL KIT RADIO REPAIR TK-115/G		†				12	
MULTIMETER AN/URM-105		†				13	
ATTENUATOR (BOONTON MOD 505A)				†	†	14	
ADAPTER UG-274A/U			†	†	†	15	
TEST OSCILLATOR BC-376/U			†	†	†	16	

APPENDIX III

BASIC ISSUE ITEMS LIST

Section I. INTRODUCTION

1. General

This appendix lists items supplied for initial operation. 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.

2. Columns

Columns are as follows:

a. Federal Stock Number. This column lists the 11-digit Federal stock number.

b. Designation by Model. Not used.

c. 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.

d. Unit of Issue. The unit of issue is each unless otherwise indicated and is the supply term by which the individual item is counted for procurement, storage, requisitioning, allowances, and issue purposes.

e. Expendability. Nonexpendable items are indicated by NX. Expendable items are not annotated.

f. Quantity Authorized. Under "Items Comprising an Operable Equipment," the column lists the quantity of items supplied for the initial operation of the equipment.

g. Illustration. Not used.

SECTION II. FUNCTIONAL PARTS LIST

FEDERAL STOCK NUMBER	DESIGNATION BY MODEL	DESCRIPTION	UNIT OF ISSUE	EXP	QTY AUTH	ILLUSTRATION	
						FIGURE NO.	ITEM NO.
5826-837-7261		RECEIVER, RADIO R-1041/ARN:					
5826-892-3739		RECEIVER, RADIO R-1041A/ARN:					
		ITEMS COMPRISING AN OPERABLE EQUIPMENT					
		RECEIVER, RADIO R-1041/ARN (BASIC COMPONENT)		NX	1		
		RECEIVER, RADIO R-1041A/ARN(BASIC COMPONENT		NX	1		
Order thru AGC		TECHNICAL MANUAL TM 11-5826-219-12			2		
		RUNNING SPARE ITEMS					
		No parts authorized for stockage at first echelon					

By Order of the Secretary of the Army:

EARLE G. WHEELER,
General, United States Army,
Chief of Staff.

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