RADIO TRANSMITTING AND RECEIVING EQUIPMENT

TYPICAL RECEIVERS

TYPE CBY-23155
RECEIVER CONTROL BOX
WITH MOUNTING 6831
AND DIALS (REFER TO TABLE I)

TYPE CBY-46107
RECEIVER RACK

TYPE CBY-49107
SWITCH PANEL ADAPTERS

TYPE CBY-46085
RECEIVER MOUNTING

TYPE CBY-52212
TRANSMITTER RACK

TYPICAL TRANSMITTERS

MODEL ATA
(2-UNIT)

TYPE CBY-21531
RECEIVER DYNAMOTOR UNITS

TYPE CBY-29125
ANTENNA RELAY UNIT MOUNTING

TYPE CBY-52213
TRANSMITTER MOUNTING

MODEL ARA
(2-UNIT)

TYPE CBY-46149
RECEIVER RACK

TYPE CBY-29126
ANTENNA RELAY UNIT

MODEL ARA
(3-UNIT)

TYPE CBY-23251
RECEIVER CONTROL BOX
WITH MOUNTING 7054
AND DIALS (REFER TO TABLE I)

TYPE CBY-29125
ANTENNA RELAY UNIT

TYPE CBY-52212
TRANSMITTER RACK

Radio Transmitting and Receiving Equipment
Radio-Transceivers

ATA/ARA     RADIO TRANSMITTING AND RECEIVING EQUIPMENT

FUNCTIONAL DESCRIPTION

The model ATA transmitter and model ARA receiver together make up a complete multichannel radio transmitting and receiving set for use on airplanes equipped with a 24 volt DC power supply. It is designed to transmit and receive voice, tone-modulated, or continuous-wave signals.

The receivers cover the frequency range of 190 to 9100 kilocycles in five independent units, any two or three of which may be installed and operated one at a time or simultaneously, depending upon the requirements. The bands are 190 to 550 kc, 520 to 1500 kc, 1.5 to 3 mc, 3 to 6 mc, 6 to 9.1 mc.

The transmitters cover the frequency range of 2.1 to 9.1 megacycles in five independent units, any two of which may be installed and operated one at a time, depending upon the requirements. The bands are 2.1 to 3 mc, 3 to 4 mc, 4 to 5.3 mc, 5.3 to 7 mc, 7 to 9.1 mc.

No field changes in effect at time of preparation (18 October 1956).

RELATION TO OTHER EQUIPMENT

ARA receivers are interchangeable with RAV receivers in corresponding frequency ranges except those in 190 to 550 kc and 520 to 1500 kc ranges. The receiver units of the RAT-1 equipment may be operated in the ARA receiver racks, or vice versa.

Equipment Required but not Supplied: Antennas as required, Receiver Test Set, Transmitter Test Set.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RECEIVER DATA
FREQUENCY RANGE: 190 to 9100 kc in 5 bands.
RECEPTION: Voice, CW, MCW.
FREQUENCY ACCURACY: 0.3%.
TYPE: Superheterodyne.
POWER REQUIREMENTS: 22 to 30 v DC, 1.6 amp at 28 v DC for each receiver.

TRANSMITTER DATA
FREQUENCY RANGE: 2.1 to 9.1 mc in 5 bands.
PWR OUTPUT: Exceeds 40 W for CW and 15 W for voice at 28 v DC input under optimum antenna loading conditions for each transmitter, nominal 25 W CW, 12 W MCW, 8 W voice.
FREQUENCY ACCURACY: 0.04%.
EMISSION: Voice, CW, MCW.
POWER REQUIREMENTS: 22 to 30 v DC, 8.8 amps at max power output on CW, 2.5 amps heater current.

MANUFACTURER'S OR CONTRACTOR'S DATA

Aircraft Radio Corporation, Boonton, New Jersey.
Contract No's 74912, dated 29 June 1940.

TUBE AND/OR CRYSTAL COMPLEMENT

<table>
<thead>
<tr>
<th>Receiver</th>
<th>Total Tubes: 6 Each Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmitter</td>
<td>(2) 1625</td>
</tr>
<tr>
<td>(1) 1629</td>
<td></td>
</tr>
<tr>
<td>Modulator</td>
<td>(1) 12J5GT</td>
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<tr>
<td>(1) VR150-30</td>
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</tr>
<tr>
<td>Total Crystals: 3 Each Modulator</td>
<td></td>
</tr>
<tr>
<td>DC-8-A</td>
<td></td>
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</tbody>
</table>

REFERENCE DATA AND LITERATURE

NA-08-50-4: Technical Manual for Model ATA Aircraft Radio Telegraph and Telephone Transmitting and Receiving Equipment

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAE
PROCUREMENT COGNIZANCE
STOCK NO.
# RADIO TRANSMITTING AND RECEIVING EQUIPMENT

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>Radio Receiver NT-46129 (190 to 550 kc)</td>
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<td>Radio Receiver NT-46104 (1.5 to 3 mc)</td>
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<tr>
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<td>Radio Receiver NT-46105 (3 to 6 mc)</td>
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<td>Radio Receiver NT-46106 (6 to 9.1 mc)</td>
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<td>6.00</td>
<td>Radio Transmitter NT-52232 (2.1 to 3 mc)</td>
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<td>1.00</td>
<td>Radio Transmitter NT-52209 (4 to 5.3 mc)</td>
<td>5-1/2 X 7-1/4 X 11-3/16</td>
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<tr>
<td>3.00</td>
<td>Radio Transmitter NT-52208 (3 to 4 mc)</td>
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<td>Radio Transmitter NT-52210 (5.3 to 7 mc)</td>
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<td>Auxiliary Outlet Adaptor NT-62036 (for NT-46145 receiver only)</td>
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<tr>
<td>1.00</td>
<td>Modulator Unit NT-50083</td>
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<td>Receiver Control Box (2-unit) NT-23155 with dials for receiver frequency</td>
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<td>Dials, Receiver Control Box, 190-550 KC, 520-1500 KC, 1.5-3 mc, 3-6 mc, 6-9.1 mc</td>
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<td>Receiver Rack NT-46110 (2-unit)</td>
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<td>1.00</td>
<td>Receiver Rack NT-46149 (3-unit)</td>
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</tr>
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<td>Transmitter Mounting NT-52213 (2-unit)</td>
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<td>1.00</td>
<td>Transmitter Rack NT-52212 (2-unit)</td>
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<td>1.00</td>
<td>Set of Cable Assemblies</td>
<td>3/4 X 8-1/2 X 11</td>
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<td>Technical Manual NA-08-50-4</td>
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<td>1.00</td>
<td>Set of Mechanical Linkage</td>
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<td>Set of Tools</td>
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<td></td>
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<td>1.00</td>
<td>Set of Spare Parts</td>
<td>9-3/4 X 10-1/2 X 17-1/4</td>
<td>26</td>
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</table>
Radio Receiver and Transmitter BC-1000-A

FUNCTIONAL DESCRIPTION

The BC-1000-A is a low power, portable, frequency modulated radio receiver and transmitter powered by dry batteries. The set is designed for two-way voice communication over short ranges.

The equipment is an 18 tube, FM low-power receiver and transmitter operating over a frequency range of 40 to 48 megacycles.

No field changes in effect at time of preparation (18 Sept 1956).

RELATION TO OTHER EQUIPMENT

Similar to BC-1000-B except for component parts.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 40.0 to 48.0 mc.
RANGE: 3 mi or more w/long antenna; slightly less w/short antenna.

POWER OUTPUT
RECEIVER: 2 milliwatts.
TRANSMITTER: 300 milliwatts.
1ST I.F.: 4.3 mc.
2ND I.F.: 2.515 mc.
POWER SOURCE: 4-1/2, 90 and 60 v DC from batteries.

MANUFACTURER'S OR CONTRACTOR'S DATA

Order No. 15025-PH-43
Order No. 26925-Phila-44-01
Order No. 29316-Phila-44-01

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 1A3
(5) 1L4
(1) 1BS/VT171
(6) 1T4/VT173
(3) 1S5/VT172
(2) 3A4

Total Tubes: (18)
Total Crystals: (2)

REFERENCE DATA AND LITERATURE

Radio Receiver and Transmitter BC-611, -A, -B, -C, -D, -E, -F

FUNCTIONAL DESCRIPTION

The BC-611, -A, -B, -C, -D, -E, -F are low-powered dry-battery operated receiving and transmitting sets used for A-3 communication between ground units. The outstanding feature of these units is portability; the weight of the entire unit in operation is 5.5 pounds. They are used to communicate with Radio Sets AN/GRC-9, AN/TRC-2, AN/VRC-1, SCR-188-A, SCR-399-A, SCR-499-A, SCR-694, SCR-193 and SCR-506-A.

The BC-611, -A, -B, -C, -D, -E, -F are functional interchangeable but differ in their component parts.

Data on this sheet reflects the following field changes: (MWD SIG 11-235-2) (13 May 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Batt BA-37 and batt BA-38.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

GENERAL
FREQUENCY RANGE: 3.5 to 6 mc, any one of 50 channels.
FREQUENCY CONTROL: Crystal.
DISTANCE RANGE
OVER LAND: 1 mi approx.
OVER SALT WATER: 3 mi approx.
POWER SOURCE REQUIRED: Self-contained dry batt BA-37 1.5 v and BA-38, 103.5 v.

TRANSMITTER
OUTPUT POWER: 0.181 W.
EMISSION: A3.

RECEIVER
TYPE: Superheterodyne.
RECEPTION: A3.
IF: 455 kc.

ANTENNA
TYPE: 40 in. telescopic rod.

MANUFACTURER'S OR CONTRACTOR'S DATA

Galvin Mfg Corp, Chicago, Illinois.
Approximate Cost: $89.00 with equipment spares.
Radio-Transceivers

BC-611,-A,-B,-D,-C,-E,-F RADIO RECEIVER AND TRANSMITTER

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 3S4  (1) 1S5
(1) 1T4

Total Tubes: (5)
Crystal Type Data not Available.
Total Crystal: (2)

REFERENCE DATA AND LITERATURE


TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

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<thead>
<tr>
<th>NUMBER OF BOXES</th>
<th>CONTENTS AND IDENTIFICATION</th>
<th>VOLUME (Cu.Ft.)</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT PACKED (lbs.)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Radio Receiver and Transmitter w/Accessories BC-611 or BC-611-A or BC-611-B or BC-611-C or BC-611-D or BC-611-E or BC-611-F</td>
<td>0.6</td>
<td>7-3/8 X 10-1/2 X 21-1/4</td>
<td>17</td>
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EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>3-5/8 X 5-3/8 X 15-3/4</td>
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</tbody>
</table>
FUNCTIONAL DESCRIPTION

The BC-620-A and F are designed for short range two-way voice communication. It is a low power, portable frequency-modulated radio receiver and transmitter. The set is designed to operate over distances up to 5 miles. The max range will be greater when operating from an elevated position.

No field changes in effect at time of preparation (5 November 1956).

RELATION TO OTHER EQUIPMENT

Similar to BC-620-B, G, H, J.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 20,000 to 27,900 kc, 2 channels.
TYPE CONTROL: Crystal.
DIFFERENT CHANNELS: 2 to 80.
AUDIO OUTPUT IMPEDANCE: 4,000 ohms.
OPERATING POWER: Batteries BA-39 and BA-40 or 6 v or 12 v vehicular battery.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 3B7/1291  (4) 3DC/1299  (4) ILN5
(1) LLH4  (1) LR4/1294  (1) ILC6
Total Tubes: (13)
Transceivers
BC-620-A,F

RADIO-RECEIVER-TRANSMITTER

(2) Crystals
Total Crystals: (2)

REFERENCE DATA AND LITERATURE


UNCLASSIFIED
June 1957
RADIO TRANSMITTER

BC-655-A

No field changes in effect at time of preparation (7 December 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 17.5 to 36 mc, 34 to 76 mc, 75 to 160 mc.
OPERATING POWER: 1.5 v DC and two 45 v DC batteries.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 958A
(1) 1A5GT/G
Total Tubes: (2)

REFERENCE DATA AND LITERATURE


EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<tbody>
<tr>
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<td>Radio Transmitter BC-655-A</td>
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<tr>
<td>1</td>
<td>Cover BG-123-A</td>
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<tr>
<td>1</td>
<td>Antenna AN-103-A</td>
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</tbody>
</table>

FUNCTIONAL DESCRIPTION

The BC-655-A is a low-powered, portable continuous-wave transmitter used to determine the sight error of a high-frequency, direction-finding receiving station. It may be mounted on the surveyor type tripod LG-23-B when in use or carried in an airplane or captive balloon.
FUNCTIONAL DESCRIPTION

The BC-659, BC-659-A, BC-659-H, and BC-659J are designed for short range two-way F3 communication. They are low power, portable, radio receiver-transmitters. These sets are designed to operate over distances up to 5 miles. The max. range will be greater when operating from an elevated position. The unit is crystal controlled in reception but not in transmission, and will operate in parts of the HF and VHF frequency ranges. The unit is designed to operate on either of two preset channels within its frequency range, the channel being selected by the use of a band change switch located on the front panel. There are no operational or mechanical differences in the models of BC-659.

RELATION TO OTHER EQUIPMENT


ELECTRICAL AND MECHANICAL CHARACTERISTICS

RECEIVER

TYPE: Superheterodyne.

IF: 4.3 mc.
Radio-Transceivers

BC-659, A, H, J

RADIO RECEIVER AND TRANSMITTER

RECEPTION: F3.
TRANSMITTER
EMISSION: F3.
RECEIVER-TRANSMITTER
FREQUENCY RANGE: 27 to 38.9 mc.
POWER SOURCE REQUIRED: 6 or 12 v vehicular voltage supply.

MANUFACTURER'S OR CONTRACTOR'S DATA

Galvin Mfg Co, Chicago, Illinois.
Purchase Order: 32905-Phila-43.
Purchase Order: 16129-Phila-44.
Approximate Cost: $1,000.00 with equipment spares.

REFERENCE DATA AND LITERATURE


EQUIPMENT SUPPLIED DATA

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<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
</tr>
</thead>
</table>

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 3B7
(5) 1LN5
(1) 1LH4
(1) 1L6
(1) 1R4

Total Tubes: (14)
FUNCTIONAL DESCRIPTION

The BC-669-A, B, C, D, AM, BM, CM provide instant change from reception to transmission and is suitable for operation by personnel of limited radio experience. The equipment is designed to operate either as a field station or a vehicular radio providing radio telephone and continuous-wave communication to anti-aircraft brigades and regiments.

Communications may be carried on over distances from 20 to 30 mi when the unit is operated as a field station. As a vehicular radio (vehicles in motion) the range is approximately 15 miles. Actual distances vary according to conditions of weather, height location or operating frequencies.

The BC-669-AM, BM, and CM differ from the A, B, C, D in that they can be operated without the use of Remote Control Unit RM-21-A, B, C.

No field changes in effect at time of preparation (28 January 1957).
Radio Transceivers

BC-669-A, B, C, D, AM, BM, CM

Radio Receiver and Transmitter

Electrical and Mechanical Characteristics

Frequency Range: 1680 kc to 4450 kc.
Type of Signals: CW and MCW.
Receiver Type: Superheterodyne.
Channels: 6.
Frequency Control: Crystal.
Operation: Preset or manual.
Power Input: 220 W for receiving; 550 W for transmitting.
Transmitter Output: 45 W.
CW Tone Frequency: 1000 cps.
Power Source Required: 12 v DC.

Tube and/or Crystal Complement

(3) 6SK7GT
(5) 6L6GA
(1) 6SA7
(2) 6J5GT/G

(1)* 6H6GT/G
(2) 807
(1) 12J5GT
Total Tubes: (15) *12SN7GT used in model -D

(12) FT-171-B
Total Crystals: (12)

Reference Data and Literature


Type Classification
Design Cognizance
Procurement Cognizance
Stock No.

Equipment Supplied Data

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</table>
Radio Transceivers
BC-745-A, -B, -C, -D, -E

Radio Receiver and Transmitter
BC-745-A, -B, -C, -D, -E

FUNCTIONAL DESCRIPTION

The BC-745-A, -B, -C, -D and -E are low powered, portable, amplitude modulated (a-m) voice-communication transceivers with interrelated components powered by either dry or wet batteries. Seven tubes are used in a superheterodyne circuit and six tubes are used in a grid-modulated transmitter circuit. Rapid changeover from receive to transmit is accomplished through a manually operated change-over switch.

The chassis base and housing of each set is located near the top of a three foot hollow metal staff which houses a three-section 90-inch telescoping antenna.

The equipments operate on specific channels in the frequency range from 2000 to 6000 kc. The set can be made to operate on any channel in this range by choosing the appropriate frequency of tuning unit BC-746-A, -B. For correct performance, each set must be adjusted to the tuning unit used.

Under favorable conditions, the operating range is about 5 mi. The range, however, may vary depending upon the terrain over which it is used.

There are no operational differences between models. They differ in the physical arrangement and utilization of component parts.

No field changes in effect at time of preparation (19 December 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2000 to 6000 kc.
RANGE: 5 mi.
SENSITIVITY: 6 uv input with 0.3 v output.
TRANSMITTER OUTPUT: 25 ma output current.
MODULATION CAPABILITY: 90% modulation with a 0.2 v, 1000 cps modulation signal.
ANTENNA: Telescopic rod.
RECEIVER IF FREQUENCY: 455 kc.
FREQUENCY CONTROL: Crystal.
TYPE OF MODULATION: AM, grid-modulation.
TYPE OF SIGNAL: Voice.

CONTROLS: A press-to-talk switch operated by a thumb ring located around the staff and above the housing actuates a spring-loaded, seven-pole, double-throw, change-over switch within the set. By fully extending the telescopic antenna rod, the set is automatically turned on. When the telescopic antenna rod is fully retracted, the set is automatically turned off. The bottom section of the antenna operates the on-off power switch. No volume control is used. The volume in the earphone is set to a normal level by the design of the equipment.

POWER SOURCE REQUIRED
RECEIVER: 1.5 v DC at 355 ma and 67.5 v DC at 20 ma.
TRANSMITTER: 1.5 v DC at 490 ma and 105 to 125 v DC at 50 ma.
Radio Transceivers

**BC-745-A,-B, -C,-D,-E**

**TUBE AND/OR CRYSTAL COMPLEMENT**

- (5) 3S4
- (3) 1T4
- (1) 1S5

**Total Tubes:** (9)

- (2) Quartz

**Total Crystals:** (2)

---

**REFERENCE DATA AND LITERATURE**


---

**EQUIPMENT SUPPLIED DATA**

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Radio Receiver and Transmitter BC-745-A or BC-745-B or BC-745-C or BC-745-D or BC-745-E c/o 1 Tuning Unit BC-746-A or BC-746-B</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FUNCTIONAL DESCRIPTION

The CMS (Electronic Research Mfg Co) is designed as a single frequency Receiver-Transmitter. It provides two-way voice communication with a similar equipment operating on the same frequency.

No field changes in effect at time of preparation (17 March 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF FREQUENCY CONTROL: Crystal.
TYPE OF CIRCUIT: Superheterodyne.
TYPE OF EMISSION TRANSMITTER AND RECEIVER: A1 type.
NUMBER OF BANDS TRANSMITTER AND RECEIVER: 2 bands.
OUTPUT POWER: 25 W max.
FREQUENCY RANGE TRANSMITTER AND RECEIVER: 3.1 to 13.5 mc.
OPERATING POWER RQMT: 425 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Electronic Research and Mfg Co., Cleveland, Ohio. 
Model No. CMS.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 3S4 (3) 6L6 (3) 6V6GT
Total Tubes: (10)
Crystal Data not available.

REFERENCE DATA AND LITERATURE

Electronic Research and Mfg Corporation Catalog No. 1540 for Radio Set Model CMS.

EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Receiver CMS-R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Transmitter CMS-5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Antenna Coils (for transmitter)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Antenna Reel (w/132 ft of wire)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Antenna Insulator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Pair of Phone (600 ohms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Key (w/knob, cord &amp; plug)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Tool Kit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Cord and Receptacle (for receiver)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Cord and Receptacle (for Transmitter)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Single Sideband Radio Communication Equipment CRV-SSB-1

FUNCTIONAL DESCRIPTION:

Single Sideband Radio Communication Equipment CRV-SSB-1 is a single-sideband, low-power, suppressed carrier system designed for simplex telephone or telegraph operation. It may also be operated as a single-sideband-with-carrier equipment to make it compatible with existing amplitude modulated (AM) systems. It covers the frequency range of 3 to 15 mc, with the actual operating frequency selected from one of four pre-tuned channels. The peak envelope power output of the transmitter is nominally 60 watts.

Data on this sheet reflects the following field changes: FC 1, 2, 3, 4.

TECHNICAL CHARACTERISTICS:

CHANNELS: 4.
TYPE OF OPERATION: Simplex ("Push-To-Talk" telephone, or telegraph).
FREQUENCY RANGE
CRV-SSB-1 SINGLE SIDEBAND RADIO COMMUNICATION EQUIPMENT

CHANNELS 1 AND 2: 3.0 to 6.7 mc.
CHANNELS 3 AND 4: 6.7 to 15.0 mc.

ANTENNA REQUIRED
RESISTANCE: 10 to 80 ohms.
CAPACITANCE: 300 uuf (min).
TYPE: Single wire not to exceed 1/4 wave length at highest channel frequency.

EMISSION
PHONE: Single Sideband Suppressed Carrier; Single Sideband with Carrier.
TELEGRAPH: A1; Single Sideband Keyed Tone.
RECEPTION: Single Sideband with Carrier, Single Sideband Suppressed Carrier, A1; A2; A2
Keyed Tone; Single Sideband Keyed Tone; A3.

KEYING SPEED
MANUAL (BREAK-IN) OPERATION: 30 wpm.
TELEPRINTER OPERATION: 60 wpm.

TRANSMITTER
POWER OUTPUT: 60 W.
FREQUENCY STABILITY: Porm 0.0005%.
CLARIFIER RANGE: Porm 75 cps.
TRANSMITTED SIDEBAND: Lower.
UNWANTED SIDEBAND SUPPRESSION: 50 db.
CARRIER SUPPRESSION: 50 db.
HARMONIC SUPPRESSION: 56 db.
AUDIO INPUT: Single button carbon microphone from local handset or from standard Navy
Remote System; M6 dbm in 600 ohm line for full transmitter output.
AUDIO FIDELITY: Porm 2 db, 350 to 3000 cps.
AMOUNT OF SPEECH CLIPPING: 20 db.
TRANSMITTED SIDEBAND DISTORTION: Single tone, full power output, no clipping, 2.5% at
1000 cps.
TWO-TONE TEST: Distortion products M26 db.

RECEIVER
SENSITIVITY: Better than 1 mv for 50 mw output with 6 db signal-to-noise ratio.
SELECTIVITY: 3.2 kc nominal band width for 6 db attenuation; 6.5 kc band width for 60 db
attenuation.
AUDIO FIDELITY: Porm 2 db, 350 to 3000 cps.
AUDIO OUTPUT: 2 W max. in speaker; with 50 mw output in loud speaker, audio level in 600
ohm line is M7 dbm.
AUDIO DISTORTION: 2.5% (1000 cps at 50 mw output).
TWO-TONE TEST: Distortion products M26 db.
POWER REQUIREMENTS: 115 v porm 10%, 50 to 60 cyc, single ph.
POWER LOAD
RECEIVER ONLY: 85 W.
RECEIVER AND TRANSMITTER
NO SIGNAL, POWER ON: 210 W.
SINGLE SINEWAVE INPUT: 310 W.
FULL-OUTPUT: 310 W.

RELATION TO OTHER EQUIPMENT: None.
EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

<table>
<thead>
<tr>
<th>QTY</th>
<th>ITEM</th>
<th>STOCK NUMBERS</th>
<th>DIMENSIONS (INCHES)</th>
<th>WEIGHT (LBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Single Sideband Radio Communication Equipment CRV-SSB-1</td>
<td></td>
<td>16-3/8 x 22-3/8 x 24-1/8</td>
<td>150</td>
</tr>
</tbody>
</table>

REFERENCE DATA AND LITERATURE:


TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) OA3/VR-75 (1) OD3/VR-150 (6) 12AT7 (3) 5R4G (1) 6AL5 (1) 6AQ5 (4) 6BA6 (4) 6BE6 (2) 6CL6 (1) 6U8 (1) 5726/6AL5 (1) 5814/12AU7 (2) 6146

CRYSTALS: (1) CR-27/U(1150 kc) (1) CR-47/U(250 kc) (4) CR-27/U(one per channel).

SEMI-CONDUCTORS: (2) IN34A.

SHIPPING DATA

PKGS VOLUME (CU FT) WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

CONTRACTOR LOCATION CONTRACT OR ORDER NO. APPROX. UNIT COST

Radio Corp. of America New York, New York N0bsr-71747 $1,483.60
Type no. SSB-1 N0bsr-72666
25 February 1958 $1,483.60

1.7 CRV-SSB-1: 3
**RADIO DIRECTION FINDER SET**

**FUNCTIONAL DESCRIPTION**

The **DAJ-a** is designed as a High Frequency Direction Finder; it is installed at shore stations and is used to determine the bearings of received signals within the frequency range of 1.5 to 30 megacycles (MC).

No field changes in effect at time of preparation (19 April 1960).

**RELATION TO OTHER EQUIPMENT**

The **DAJ-a** is similar to the **DAJ** except for: Improved R.F. Transmission lines and boxes used in a non-pressurized system; Terminal Box housings for phase inverters; improved antenna components and guy wire system.

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

**TYPE OF INDICATION:** Bearing by Cathode Ray tube type.

**NUMBER OF BANDS:** 4 bands.

**FREQUENCY RANGE:** 1.5 to 30 MC.

**OPERATING POWER RQMT:** 115 to 125 v, 55 to 65 cps, single ph.

**TUBE AND/OR CRYSTAL COMPLEMENT**

- 4 2X2A
- 4 5NP1
- 12 5U4G
- 8 6AC7
- 8 6A67
- 8 6H6
- 4 615
- 8 6SA7
- 3 6SG7
- 5 6SH7
- 8 6SJ7
- 16 6SK7
- 4 6SQ7
- 4 6V/6/GT or 6K6/GT
- 40 7V7
- 4 OC3/UR-150
- 8 OD3/UR-150(4) 10-4A

Total Tubes: (152)

No Crystals used.

**REFERENCE DATA AND LITERATURE**

**SHIPS 382:** Technical Manual for High Frequency Radio Direction Finder Equipment **DAJ-a**.

**HAZELTINE ELECTRONIC CORPORATION**

Neck, N.Y.

Contract N00042510, dated 1 March 1948.

**MANUFACTURER'S OR CONTRACTOR'S DATA**

Hazeltine Electronic Corporation, Little Neck, N.Y.
## RADIO DIRECTION FINDER SET

### SHIPPING DATA

<table>
<thead>
<tr>
<th>NUMBER OF BOXES</th>
<th>CONTENTS AND IDENTIFICATION</th>
<th>VOLUME (Cu.Ft.)</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT PACKED (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Rack Containing:</td>
<td>11.0</td>
<td>19 x 27 x 37</td>
<td>190</td>
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<tr>
<td>1</td>
<td>Rectifier Unit N.T. 20679</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Goniometer Control N.T. 23551</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Goniometer N.T. 472557</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Automatic Bearing Indicator N.T. 55241</td>
<td>11.3</td>
<td>17 x 22 x 52</td>
<td>195</td>
</tr>
<tr>
<td>1</td>
<td>Goniometer N.T. 472557</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Radio Receiver N.T. 46308 Including:</td>
<td>11.6</td>
<td>25 x 25 x 32</td>
<td>275</td>
</tr>
<tr>
<td>1</td>
<td>Rectifier Power Unit N.T. 20680</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Phase Inverter &amp; Set of Cables</td>
<td>6.89</td>
<td>18 x 20 x 33</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>Expanded Metal Sheet for Ground Mats</td>
<td>21.9</td>
<td>5 x 75 x 101</td>
<td>770</td>
</tr>
<tr>
<td>4</td>
<td>Pedestal</td>
<td>22.2</td>
<td>16 x 32 x 75</td>
<td>340</td>
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<tr>
<td>4</td>
<td>Base Insulator</td>
<td>23.6</td>
<td>14 x 15 x 208</td>
<td>470</td>
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<tr>
<td>4</td>
<td>Guy Wire Ass 'Y</td>
<td>14.0</td>
<td>21 x 24 x 48</td>
<td>255</td>
</tr>
<tr>
<td>4</td>
<td>Plate &amp; Clamps for attaching Terminal Boxes N.T. 62508</td>
<td>6.89</td>
<td>18 x 20 x 33</td>
<td>155</td>
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<tr>
<td>4</td>
<td>Terminal Box N.T. 62508</td>
<td>7.15</td>
<td>17 x 25 x 29</td>
<td>175</td>
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<tr>
<td>4</td>
<td>Anchor Rod (Ground Straps, Ground Rods, Copper Bus Bars)</td>
<td>1.05</td>
<td>3 x 5 x 121</td>
<td>163</td>
</tr>
<tr>
<td>4</td>
<td>Power Field Junction Box N.T. 62507 Including:</td>
<td>14.0</td>
<td>21 x 24 x 48</td>
<td>297</td>
</tr>
<tr>
<td>1</td>
<td>Junction Box N.T. 62509</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Interconnection Box N.T. 62505</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Power Junction Box N.T. 62506</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Set of Thimbles &amp; Clamps</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Antenna Mast Sections</td>
<td>26.4</td>
<td>13 x 14 x 250</td>
<td>735</td>
</tr>
<tr>
<td>1</td>
<td>Expanded Metal Sheets for Ground Mats</td>
<td>21.9</td>
<td>5 x 75 x 101</td>
<td>737</td>
</tr>
<tr>
<td>1</td>
<td>Accessory Box</td>
<td>5.21</td>
<td>10 x 15 x 60</td>
<td>100</td>
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</tbody>
</table>

### EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Radio Receiver N.T. 46308</td>
<td>13-21/32 x 17-9/16 x 19</td>
<td>97</td>
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<tr>
<td>1</td>
<td>Radio Receiver N.T. 46309</td>
<td>13-21/32 x 17-9/16 x 19</td>
<td>97</td>
</tr>
<tr>
<td>4</td>
<td>Rectifier Power Unit N.T. 20680</td>
<td>10-1/2 x 17 x 19</td>
<td>50</td>
</tr>
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<td>4</td>
<td>Rectifier Power Unit N.T. 20679</td>
<td>8-3/4 x 12-1/4 x 19</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Automatic Bearing Indicator (With Goniometer N.T. 472557) N.T. 55241</td>
<td>11-15/16 x 17-1/4 x 45-3/4</td>
<td>110</td>
</tr>
<tr>
<td>1</td>
<td>Automatic Bearing Indicator (With Goniometer N.T. 47234) N.T. 55240</td>
<td>11-15/16 x 17-1/4 x 48-1/4</td>
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# RADIO DIRECTION FINDER SET

## Equipment Supplied Data

<table>
<thead>
<tr>
<th>Quantity Per Equip</th>
<th>Name and Nomenclature</th>
<th>Overall Dimensions (inches)</th>
<th>Weight (lbs.)</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>Goniometer Control (With Goniometer N.T. 472557) N.T. 23551</td>
<td>10-1/2 x 11 x 19</td>
<td>28</td>
</tr>
<tr>
<td>1</td>
<td>Goniometer Control (With Goniometer N.T. 47234) N.T. 23552</td>
<td>10-1/2 x 11 x 19</td>
<td>30</td>
</tr>
<tr>
<td>20</td>
<td>Phase Inverter</td>
<td>4-1/4 x 4-1/4 x 5-3/8</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>Terminal Box N.T. 62508</td>
<td>6-3/4 x 8-1/8 x 22-1/2</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>Junction Box N.T. 62509</td>
<td>5-1/2 x 14-1/2 x 18-1/2</td>
<td>29</td>
</tr>
<tr>
<td>4</td>
<td>Power Field Junction Box N.T. 62507</td>
<td>5-1/2 x 9-3/4 x 18-3/4</td>
<td>19</td>
</tr>
<tr>
<td>12</td>
<td>Interconnecting Box N.T. 62505</td>
<td>5-1/2 x 9-3/4 x 14-1/2</td>
<td>16</td>
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<tr>
<td>4</td>
<td>Power Junction Box N.T. 62506</td>
<td>5-7/16 x 9-5/8 x 11</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Desk Type Relay Rack</td>
<td>12 x 22-1/2 x 32-1/8</td>
<td>23</td>
</tr>
<tr>
<td>1</td>
<td>Target Transmitter N.T. 52300</td>
<td>8-3/8 x 8-3/8 x 10-3/4</td>
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<tr>
<td>1</td>
<td>Demagnetizer</td>
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<td></td>
</tr>
<tr>
<td>2</td>
<td>Armor Bending Clamp</td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>Set of Interconnecting Cables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Set of Test Cables</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Radio Direction Finder Set
DAW-1

RADIO DIRECTION FINDER SET

Mobile H.F. Direction Finder Model DAW-1

FUNCTIONAL DESCRIPTION

The DAW-1 is designed as a Mobile Radio High Frequency Direction Finder. It affords
High Frequency coverage and frequency guard
plus provisions for radio communications
with other mobile units or a "control" sta-
tion, and be capable of rapid removal to
necessary for use.

No field changes in effect at time of
preparation (15 April 1960).

RELATION TO OTHER EQUIPMENT

The DAW-1 is similar in operation to the
DAW-2 except that it differs in equipment
supplied and the tube compliment.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF EMISSION RECEIVED: F0 and F3 types.
TYPE OF PRESENTATION: Cathode ray tube
NUMBER OF BANDS: 2 bands.
FREQUENCY RANGE: 1.5 to 22 mc.
OPERATING POWER REQMT: 110 v AC, 60 cps,
single ph; 6 VD (internal batteries).

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Laboratory Navy Yard, Washington,
D.C.
P.O. 692/43 and P.O. 412/44, dated 9
September 1944.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OC3W  (2) OD3W
(3) 1R5  (1) 1S4
(5) 1T4  (5) 12A6
(1) 12SA7Y  (3) 12SK7
(1) 12SQ7  (4) 1625
(1) 2X2A  (1) 3B7-1291
(1) 5NP1  (2) 5R4WGB
(2) 5U4GB  (1) 6AC7WA
(1) 6C5  (2) 6H6
(1) 6J5  (1) 6K6GT
(1) 6K8  (1) 6SA7Y
(2) 6SH7  (8) 6SK7WA
(1) 6SQ7  (1) 6V6Y
(3) 6X5WGT  (2) 65J7Y

Total Tubes: (58)

No Crystals used.

REFERENCE DATA AND LITERATURE

SHIPS 303: Technical Manual for Mobile
Radio H.F. Direction Finding Equipment
DAW-1 and DAW-2.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.
### RADIO DIRECTION FINDER SET

**DAW-1**

#### EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Direction Finding Set DAW-1 Including:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Target Transmitter DAQ HF/DF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Portable HF/DF DAG</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Receiver RBG</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transmitter-Receiver TCS-9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frequency Meter LM-12 or LM-18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Onan 3 kw (plants)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Tube Tester 02-1</td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>Truck Ford Model OTB (1.5 ton)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Trailer</td>
<td></td>
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</tr>
</tbody>
</table>

**Overall Dimensions:**
- **83 x 119 x 244**
- **4 x 4**
FUNCTIONAL DESCRIPTION

The DAX is a Radio Direction Finder covering the frequency range from 1.5 to 22 megacycles (MC), which provides instantaneous cathode ray tube indications of bearing of vertically polarized signals tuned in anywhere within the range. Provisions are also made for frequency scanning the band of frequencies extending plus and minus fifty kilocycles from the frequency to which the receiver unit of this equipment is tuned, and making instantly visible on the face of the cathode ray tube indicator suitable patterns which indicate the presence of signals existing within this scanned band.

The DAX is designed for vehicular service where ruggedness, lightweight, ease of installation and performance under conditions of wide variations in temperature and humidity are important considerations. It is designed to operate from a 12 volt direct current (DC) source.

No field changes in effect at time of preparation (14 April 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF EMISSION RECEIVED: F3 type.
NUMBER OF BANDS: 3 bands.
NUMBER OF CHANNELS: 1 channel.
AUDIO OUTPUT: 50 mw into 600 ohms impedance.
SCANNED BAND WIDTH: 100 kc.
AMBIENT TEMPERATURE RANGE: -40° C to +65° C.
POWER CONSUMPTION: Approx 150 W max.
DAX DIRECTION FINDER SET

POWER SOURCE: 12 v DC (2-6 v batteries).
OPERATING FREQUENCY RANGE: 1.5 to 22 mc.

MANUFACTURER'S OR CONTRACTOR'S DATA

Federal Telephone & Radio Corporation,
New York, New York.
Contract NXsr-45457.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 12SH7  (2) 12SA7
(5) 12S17  (1) 12H6
(1) 12SR7  (2) 0D3/VR150
(1) 12SG7  (1) 8016
(1) 3GP1  (2) 6X5GT/G
(1) 12SH7  (1) 9001
(1) 6AQ6  (1) 6AG7

REFERENCE DATA AND LITERATURE

Copy No. 16 Federal Telephone & Radio Corporation Technical Manual for Direction Finder Equipment DAX.

TUBE AND/OR CRYSTAL COMPLEMENT

EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIP</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<td>1</td>
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<tr>
<td></td>
<td>Collector System FT &amp; RL No. NUS-189</td>
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<td>Receiver FT &amp; RL No. NUS-192</td>
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<td></td>
<td>Indicator Power Supply FT &amp; RL No. NUS-193</td>
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<td>Goniometer Motor Distributor FT &amp; RL No. NUS-190</td>
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<td>Submersion Proof Container FT &amp; RL No. NUS-197</td>
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<td></td>
<td>R. F. Transmission Line and Power Cables FT &amp; RL No. NUS-191</td>
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<td></td>
<td>Target Transmitter FT &amp; RL No. NRT-40</td>
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<tr>
<td></td>
<td>Set of Equipment Spares FT &amp; RL No. NUS-194</td>
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</table>
FUNCTIONAL DESCRIPTION

The DAY is designed as a high frequency vehicular Radio Direction Finder, which provides instantaneous visual indications of the bearings of received signals in the frequency range of 20 to 100 megacycles (MC) through the use of a scanner, a cathode-ray tube and a motor driven loop. The indications are automatic with simultaneous monitoring of the received Interrupted Continuous Wave (ICW) and keyed reception. The scanner permits the operation to see a bandwidth of 500 kilocycles (KC) on either side of the frequency to which the receiver is tuned.

No field changes in effect at time of preparation (14 April 1960).

RELATION TO OTHER EQUIPMENT

The DAY is similar in operation to the DAX but differs in the frequency coverage and tube compliment.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF EMISSION RECEIVED: CW, MCW, ICW and FM.

BEARING INDICATIONS: Instantaneous automatic visual.

TYPE OF RECEIVER: Superheterodyne.

NUMBER OF BANDS: 2 bands.

CURRENT RATING: 7 amps.

RECEIVER INTERMEDIATE FREQUENCY: 4.0 mc.

FREQUENCY RANGE: 20 to 100 mc.

POWER SOURCE: 12 v DC (2-6 v batteries).

MANUFACTURER'S OR CONTRACTOR'S DATA

Contract NXSr-45457.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6AK5  (1) 6AS6
Radio-Transcievers

**DAY**

Radio Direction Finder

(1) 6C4
(1) VR-150-30
(1) 12SA7
(1) 6AQ6
(1) 6J6
(1) 6AG7
(1) 2021
(1) OB2
(1) 8016
(1) 3GP1
(2) 6X5GT
(1) 12SH7
(1) 3A5
(1) 9006
(6) 9001

Total Tubes: (25)

No Crystals Used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 95082: Technical Manual for High Frequency Radio Direction Finder Equipment DAY.

**EQUIPMENT SUPPLIED DATA**

<table>
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<th>OVERALL DIMENSIONS (inches)</th>
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<tr>
<td>1</td>
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<tr>
<td>1</td>
<td>Scanner FT &amp; RL No. NUS-203</td>
<td>5 X 14 X 78</td>
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<td>1</td>
<td>Radio Receiver Ass'y FT &amp; RL No. NUS-1068</td>
<td>10 X 14 X 78</td>
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<td>1</td>
<td>Loop &amp; Sense Antenna Ass'y FT &amp; RL No. NUS-200</td>
<td>5-1/8 X 11-1/4 X 25-1/2</td>
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<td>1</td>
<td>Rectifier Power Unit FT &amp; RL No. NUS-192</td>
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<td>Set of Interconnecting Cables FT &amp; RL No. NUS-202</td>
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<td>1</td>
<td>Set of Special Tools and Maintenance Equipment FT &amp; RL No. NUS-204</td>
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<tr>
<td>1</td>
<td>Target Transmitter FT &amp; RL No. NRT-41</td>
<td>6-1/2 X 6-1/2 X 8</td>
<td>7-1/2</td>
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FUNCTIONAL DESCRIPTION

The DZ-a is designed for installation in all types of Naval Aircraft whose space limitations are such as will permit access for operation of the receiver and loop controls, and which, by absence of closed loops or other obstructions, permits successful direction finding. It operates in the frequency range of 15 to 70 kilocycles (KC), and from 100 to 1500 kilocycles (KC).

No field changes in effect at time of preparation (15 April 1960).

RELATION TO OTHER EQUIPMENT

The DZ-a is similar in operation to the DZ-1 except that it differs in equipment supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF EMISSION RECEIVED: AO, A2, A3 type.
TYPE OF PRESENTATION: Audio type.
TYPE OF CIRCUIT: Superheterodyne.
NUMBER OF BANDS: 6 bands.
FREQUENCY RANGE: 15 to 70 kc and 100 to 1500 kc.
POWER SOURCE: 220 v DC (internal batteries).

MANUFACTURER’S OR CONTRACTOR’S DATA

RCA Mfg Co., Inc., Camden, New Jersey.
Contract NOa-67427, dated 29 June 1939.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6D6 (2) 76
(2) 6C6 (1) 41
Total Tubes: (8)
No Crystals used.

REFERENCE DATA AND LITERATURE

Nomenclature Card DZ-a for Direction Finding Set.

EQUIPMENT SUPPLIED DATA

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<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<tr>
<td>1</td>
<td>Dynamotor Filter Mtg Base N.T. 21422</td>
<td>4-5/16 X 6-1/16 X 7-7/8</td>
<td>7.2</td>
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<tr>
<td>1</td>
<td>Dynamotor Filter Unit N.T. 21562</td>
<td>4-5/16 X 6-1/16 X 7-7/8</td>
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<td>1</td>
<td>Loop Antenna N.T. 69067</td>
<td>14 dia</td>
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<tr>
<td>1</td>
<td>Loop Mtg Pedestal N.T. 69068</td>
<td>4-3/16 h X 8 dia</td>
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<tr>
<td>1</td>
<td>Loop Pedestal Extension N.T. 69030</td>
<td>4-3/4 dia X 6-1/2</td>
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<td>Receiver N.T. 46124</td>
<td>10-5/8 X 12 X 19-5/8</td>
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<td>1</td>
<td>Receiver Mtg Base N.T. 46087</td>
<td>1-3/4 X 11 X 16-3/4</td>
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</table>
Portable Radiotelegraph Transmitter-Receiver Model ET-8053
ET-8053  RADIO TELEGRAPH TRANSMITTER RECEIVER

FUNCTIONAL DESCRIPTION

The Model ET-8053 is a portable radiotelegraph transmitter and receiver, powered by a built-in hand driven generator for use in lifeboats or other survival craft. It includes a collapsible metal rod antenna, wire and insulators for an optional "single wire" antenna and other accessories.

No field changes in effect at time of preparation (2 October 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF EMISSION: A2 type.

TRANSMITTER DATA
NUMBER OF BANDS: 2 bands.
FREQUENCY RANGE: 500 kc and 8364 kc.

RECEIVER DATA
NUMBER OF BANDS: 2 bands.
FREQUENCY RANGE: 500 kc and 8250 to 8750 kc.

ANTENNA SYSTEMS: Vertical rod, single wire supported by vertical rod and sailing mast, or single wire supported by sailing mast.

POWER SUPPLY: Hand driven generator.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radiomarine Corp. of America, New York, N.Y.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6AK6  (1) 6146
(1) 6BE6  (1) 6BH6
(1) 12AU7  (1) OA2

Total Tubes: (8)
(1) IN34  (1) 500KC
(1) 8364KC
Total Crystals: (3)

REFERENCE DATA AND LITERATURE


EQUIPMENT SUPPLIED DATA

<table>
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<tr>
<th>QUANTITY PER EQUIPT</th>
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<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<td>1</td>
<td>Radiotelegraph Transmitter Receiver Model ET-8053 Including:</td>
<td>12-1/2 X 13-1/4 X 20</td>
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<td>1</td>
<td>Set of Equipment Spares</td>
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FUNCTIONAL DESCRIPTION

The FMTR-25 (Motorola) is designed as a crystal controlled single frequency (FM) radiotelephone transmitter and receiver for installation in commercial vehicles, specifically passenger automobiles. It provides two-way voice communication with similar fixed or mobile equipment operating on the same frequency. A single antenna is used which receives or transmits in accordance with the operation of an antenna relay in the transmitter. This equipment employs a dynamotor power supply operated from a 6 volt storage battery of the vehicle.

No field changes in effect at time of preparation (21 March 1960).

RELATION TO OTHER EQUIPMENT

Similar to the FMTR-500 except for power output. It is also similar to the AN/VRC-2X except for mechanical and electrical differences and in accessories supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF FREQUENCY CONTROL: Crystal.
TYPE OF EMISSION
TRANSMITTER AND RECEIVER: F3 type.
TYPE OF RECEIVER: Double superheterodyne.
NUMBER OF BANDS
TRANSMITTER AND RECEIVER: 1 band.
TYPE OF ANTENNA: 1/4 wave telescopic whip type.
POWER OUTPUT: 25 W max.

OPERATING FREQUENCY RANGE
TRANSMITTER AND RECEIVER: 30 to 40 mc.
OPERATING POWER REQMT: 6 v DC, battery.

MANUFACTURER'S OR CONTRACTOR'S DATA


TUBE AND/OR CRYSTAL COMPLEMENT

(8) 6SD7GT     (2) 6H6GT
(1) 6K6GT      (3) 7C7
(1) RK-39      (1) 6K8GT
(1) 6C8G       (2) 6X5GT
(1) 6V6        (2) 7A8
Total Tubes: (22)
(1) 48A        (1) 48B81487
(1) 48B81488
Total Crystals (3)

REFERENCE DATA AND LITERATURE

FMTR-13, FSR-13 and FMT-FMTR-FMATR-30 and 50-D Installation and Operating Instruction for Model FMTR-30D.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

<table>
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<th>OVERALL DIMENSIONS (inches)</th>
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<tr>
<td>1</td>
<td>Power Supply Part No. VPA-3A</td>
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</table>

1.7 FMTR 25: 1
FUNCTIONAL DESCRIPTION

The FMTR-30 (Motorola) is a crystal controlled single frequency Frequency Modulated (FM) radiotelephone transmitter and receiver designed for installation in commercial vehicles, specifically passenger automobiles. It provides two-way voice communication with a similar fixed or mobile equipment operating on the same frequency. A single antenna is used which receives or transmits in accordance with the operation of an antenna relay in the transmitter. The equipment employs a dynamotor power supply operated from a six volt storage battery of the vehicle.

No field changes in effect at time of preparation (16 March 1960).

RELATION TO OTHER EQUIPMENT

The FMTR-30 is similar to the FMTR-25 and FMTR-50D except for power output. It is also similar to the AN/VRC-2X except for mechanical and electrical differences and accessories supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF FREQUENCY CONTROL: Crystal.
TYPE OF RECEIVER: Double superhetrodyne.
TYPE OF EMISSION
RECEIVER AND TRANSMITTER: A3.
NUMBER OF BANDS
RECEIVER AND TRANSMITTER: 1 Band.
FREQUENCY RANGE
RECEIVER AND TRANSMITTER: 30 to 40 mc.
TYPE OF ANTENNA: 1/4 wave telescopic whip type.

POWER OUTPUT: 25 W max.
POWER SOURCE REQUIRED: 6 v storage battery.

MANUFACTURER'S OR CONTRACTOR'S DATA

Galvin Mfg., Chicago, Illinois.
Model FMTR-30.

TUBE AND/OR CRYSTAL COMPLEMENT

(8) 6SD7GT (2) 6H6GT (1) 6K6GT
(3) 7C7 (1) RK-39 (1) 6K8GT
(1) 6GBG (2) 6X5GT (1) 6V6
(2) 7A8

Total Tubes: (22)

(1) 48A (1) 48B81487 (1) 48B81488

Total Crystals: (3)

REFERENCE DATA AND LITERATURE

FMTR-13, FSR-13 and FM-TRANS-30 and 50-D Installation and operating Instructions for Model FMTR-30.

EQUIPMENT SUPPLIED DATA

<table>
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<tr>
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<tr>
<td>1</td>
<td>Microphone Galvin Type No. 258 or 278</td>
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<td>1</td>
<td>Receiver Unit Galvin Type No. 8033</td>
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<td>Generator Filter Galvin Type No. 246</td>
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M. R. 10 MTR-30: 1
TRANSMITTER-RECEIVER

FUNCTIONAL DESCRIPTION

The FMTR-30D (Motorola) is a crystal controlled single frequency FM radiotelephone transmitter and receiver designed for installation in commercial vehicles, specifically passenger automobiles. It provides two way voice communication with a similar fixed or mobile equipment operating on the same frequency. A single antenna is used which receives or transmits in accordance with the operation of an antenna relay in the transmitter. The equipment employs a dynamotor power supply operated from the 6 v storage battery of the vehicle.

No field changes in effect at time of preparation (8 June 1956).

RELATION TO OTHER EQUIPMENT

Similar to the FMTR-25 v and FMTR-50D except for power output. It is also similar to the AN/VRC-2X except for mechanical and electrical differences and in accessories supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY: 30 to 40 mc.
FREQUENCY CONTROL: crystal.
TYPE SIGNAL: F3
TYPE RECEIVER: Double superheterodyne.
RECEIVER IF: 4.5 mc and 455 kc.
POWER OUTPUT: 30 W.
POWER SOURCE REQUIRED: 6 v storage battery.
ANTENNA: 1/4 wave telescopic whip type.
Radio-Transceivers

FMTR-30D

MANUFACTURER'S OR CONTRACTOR'S DATA
Galvin Mfg. Corp. Chicago, Ill.
Model-FMTR-30D

TUBE COMPLEMENT
(8) 6SD7GT  (1) 6K8GT
(2) 6H6GT   (1) 6CBG
(1) 6K6GT   (2) 6X5GT
(3) 7C7     (1) 6V6
(1) RK-39   (2) 7A8
Total Tubes: (22)

(1) 48A (1) 48B81487 (1) 48B81488
Total Crystals: (3)

REFERENCE DATA AND LITERATURE
FMTR-13, FSR-13 and FMT +FMTR-FMATR-30 and 50-D
Installation and Operating Instructions for Model-FMTR-30D

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<tr>
<th>TYPE CLASSIFICATION</th>
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<th>PROCUREMENT COGNIZANCE</th>
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<td>Receiver Unit PA-8033</td>
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<td>Antenna P-253</td>
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<td>Control Head P-8022</td>
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<td>Connecting Cable Kit K-8025</td>
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<td>Accessory Bag P-8055</td>
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RADIO SET

FMTR-50

FUNCTIONAL DESCRIPTION

The FMTR-50 (Motorola) is designed as a crystal controlled single frequency FM radio telephone transmitter and receiver for installation in commercial vehicles, specifically passenger automobiles. It provides two way voice communication with a similar fixed or mobile equipment operating on the same frequency. A single antenna is used which receives or transmits in accordance with the operation of an antenna relay in the transmitter. This equipment employs a dynamotor power supply operated from the 6-volt storage battery of the vehicle.

No field changes in effect at time of preparation (18 March 1960).

RELATION TO OTHER EQUIPMENT

Similar to the FMTR-25 v and FMTR-50-D except for power output. It is also similar to the AN/VRC-2X except for mechanical and electrical differences and in accessories supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF EMISSION
RECEIVER AND TRANSMITTER: F3 type.

NUMBER OF BANDS
RECEIVER AND TRANSMITTER: 1 band.

TYPE OF RECEIVER: Double superheterodyne

TYPE OF ANTENNA: 1/4 wave telescopic whip type.

TYPE OF FREQUENCY CONTROL: Crystal.

OPERATING FREQUENCY
RECEIVER: 25 to 44 mc.
TRANSMITTER: 30 to 40 mc.

POWER OUTPUT: 35 W max.
OPERATING POWER RQMT: 6 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Motorola Inc., Chicago, Illinois.
Model No. FMTR-50.

TUBE AND/OR CRYSTAL COMPLEMENT

(8) 6SD7GT (2) 6H6GT
(1) 6K6GT (3) 7C7
(1) RK-39 (1) 6K8GT
(1) 6C8G (2) 6X5GT
(1) 6V6 (2) 7A8
Total Tubes: (22)
(1) 48A
(1) 48B81487
(1) 48B8148
Total Crystals: (3)

REFERENCE DATA AND LITERATURE

FMR-13, FSR-13 and FMT-FMTR-FMATR-30 and 50-D Installation and Operating Instructions for Model FMTR-50.

EQUIPMENT SUPPLIED DATA

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<td>Receiver Part No. 11UF</td>
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<tr>
<td>1</td>
<td>Power Supply Part No. VPA-3A</td>
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</table>

UNCLASSIFIED
TRANSMITTER-RECEIVER-EQUIPMENT

The FOA and FOC is designed for transmission and reception of pictures to and from remote points. As a transmitter it generates signals which may be carried by the telephone wires or by radio waves; as a receiver it is capable of recording the signals on film for negative operation or on photographic paper for positive operation.

When negative reception is employed the exposed film is handled like any other photographic negative from which any number of prints in any size may be made by projection printing; or any number of prints of the same size may be made by contact printing.

The difference between the FOA and FOC is; capable of receiving or transmitting either 100 lines per inch or 300 lines per inch.

No field changes in effect at time of preparation (31 July 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

CARRIER FREQUENCY: 1500 to 2500 cps.
PAPER ACCOMMODATED: 7 in. by 9 in. sheet.
POWER SOURCE REQUIRED: 110 or 220 V AC, 50 to 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Acme Newspicture, Cleveland, Ohio.
Contract NXsr-85015.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) VR-150-30 (1) 5V4G (1) 6SN7GT
(3) 6SL7GT (5) 6N7 (1) SZ4
(1) 6H6 (1) 6F6 (1) 5.5V
(1) X2A (2) CE36C (2) 5122
Total Tubes: (22)

REFERENCE DATA AND LITERATURE

NAVSHIPS 95004 and 95005: Technical Manual for Transmitter-Receiver FOA-FOC.

EQUIPMENT SUPPLIED DATA

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<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Trans-Ceiver Unit FOA and FOC consists of:</td>
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<td>160</td>
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<tr>
<td>1</td>
<td>Front Panel</td>
<td>10-3/4 X 17</td>
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<tr>
<td>1</td>
<td>Bed</td>
<td>5 X 16-3/8</td>
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<tr>
<td>1</td>
<td>Optical Unit</td>
<td>3-1/2 X 4-1/2 X 4-3/4</td>
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<tr>
<td>1</td>
<td>Picture Amplifier Drawer</td>
<td>3-1/8 X 11 X 15-3/4</td>
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</tr>
<tr>
<td>1</td>
<td>Lamp Supply Drawer</td>
<td>5 X 11 X 15-3/4</td>
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</tr>
<tr>
<td>1</td>
<td>Multi-Vibrator Drawer</td>
<td>4 X 11 X 15-3/4</td>
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<tr>
<td>1</td>
<td>Power Supply Drawer</td>
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</table>
**FUNCTIONAL DESCRIPTION**

The Motorola Model FSATR-50BR is designed as a transmitter-receiver type Radio Set. It is a fifty (50) watt upright and console fixed station installation. Operating within the 25 to 44 megacycle (mc) band.

No field changes in effect at time of preparation (21 October 1958).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

**TYPE OF EMISSION:** F3 type of emission for both transmitter and receiver.

**TRANSMITTER CONTROL:** Remote control over a two wire 500 ohm line.

**ANTENNA:** Antenna relay mounted on transmitter chassis permits use of single antenna for both receiving and transmitting. Antenna switched to receiver during standby periods.

**NOMINAL LINE INPUT**

**SINGLE RECEIVER INSTALLATIONS**

- **STANDBY RECEIVE:** 117 v AC, 60 cps, 135 W.
- **TRANSMIT:** 117 v AC, 60 cps, 315 W.

**TWO RECEIVER INSTALLATIONS**

- **STANDBY RECEIVE:** 117 v AC, 60 cps, 200 W.
- **TRANSMIT:** 117 v AC, 60 cps, 380 W.

**TRANSMITTER PROTECTION:** Adequate fusing of primary circuits.

**OUTPUT IMPEDANCE:** 50 to 72 ohms for 7/8 in. coaxial transmission line to antenna.

**NOMINAL OUTPUT:** 50 W.

**FREQUENCY CONTROL:** Quartz crystal adjusted at the factory to one specified frequency within 0.005%.

**FREQUENCY RANGE:** 25 to 44 megacycles.

**POWER SOURCE:** Two wire service, 117 v AC, 60 cps.

**NUMBER OF BANDS**

- RECEIVER AND TRANSMITTER: 1 band.

**MANUFACTURER’S OR CONTRACTOR’S DATA**

Motorola Inc., Chicago 51, Illinois.

**TUBE AND/OR CRYSTAL COMPLEMENT**

- (10) 7C7
- (1) 6V6
- (2) 5Z3
- (2) RK39/807
- (1) 7AG7
- (1) 7F7
- (2) 7A6
- (1) 7C5
- (1) 80

Total Tubes: (24)
No Crystals used.

**REFERENCE DATA AND LITERATURE**


---

**EQUIPMENT SUPPLIED DATA**

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<tbody>
<tr>
<td>1</td>
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<tr>
<td>1</td>
<td>Receiver Type No. PA-8135</td>
<td>13 X 13 X 40</td>
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<td>1</td>
<td>Transmitter Type No. PA-8032</td>
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<tr>
<td>1</td>
<td>Operators Console Type No. P-8280</td>
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<td>1</td>
<td>Handset and Hangup Box Type No. P-348-E</td>
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<tr>
<td>1</td>
<td>Control Head Type No. P-8022</td>
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**TYPE CLASSIFICATION**

- DESIGN COGNIZANCE
- PROCUREMENT COGNIZANCE

**STOCK NO.**

---

UNCLASSIFIED
FUNCTIONAL DESCRIPTION

The FSTR-50-BRL (Motorola) is designed as a crystal controlled single frequency FM radio telephone transmitter receiver. It provides two way voice communication with a similar equipment on the same frequency. A single antenna is used which receives or transmits in accordance with the operation of an antenna relay in the transmitter.

No field changes in effect at time of preparation (23 March 1960).

RELATION TO OTHER EQUIPMENT

The FSTR-50-BRL is similar to the FSTR-25 except that it differs in max power output.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF FREQUENCY CONTROL: Crystal.
TYPE OF EMISSION
TRANSMITTER AND RECEIVER: F3 type.
NUMBER OF BANDS
TRANSMITTER AND RECEIVER: 1 band.
NUMBER OF CHANNELS
TRANSMITTER AND RECEIVER: 1 channel.
FREQUENCY RANGE
TRANSMITTER AND RECEIVER: 25 to 44 mc.
POWER OUTPUT: 50 W max.
OPERATING POWER RQMT: 117 v, 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Galvin Mfg Corporation, Chicago, Illinois
Model No. FSTR-50-BRL.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 5Z3 (1) 6V6 (2) 7A6
(3) 7A8 (1) 7AG7 (1) 7C5
(10) 7C7 (1) 7F7 (2) 807

Total Tubes: (23)

Crystal Data not Available.

REFERENCE DATA AND LITERATURE

FSATR-50BRL and FSTR-50-BRL Operating Instruction for Radio Set.

EQUIPMENT SUPPLIED DATA

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<th>QUANTITY PER EQUIPT</th>
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<td>Coaxial Junction Box Model P-8073-A</td>
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<td>1</td>
<td>Control Head Model P-8022</td>
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<tr>
<td>1</td>
<td>Control Unit Model P-8066-A</td>
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<tr>
<td>1</td>
<td>Receiver Model PA-8043</td>
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<tr>
<td>1</td>
<td>Transmitter Model PA-8032</td>
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<tr>
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<td>Radio Set FSTR-50-BRL</td>
<td>15 X 22-1/2 X 68</td>
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UNCLASSIFIED
RADIO SET

FSTR-50-BR

MANUFACTURER'S OR CONTRACTOR'S DATA

Motorola Inc., Chicago, Illinois.
Model No. FSTR-50-BR.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 5Z3  (1) 6V6  (2) 7A6
(3) 7A8  (1) 7AG7 (1) 7C5
(10) 7C7  (1) 7F7 (2) 807

Total Tubes: (23)

Crystal Data not Available.

REFERENCE DATA AND LITERATURE

FSTR-50-BR and FSTR-50-BRL Operating Instruction Book for Radio Set.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE COMMERCIAL
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

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<tr>
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<td>Radio Set FSTR-50-BR Consisting of:</td>
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<td></td>
<td>Transmitter Model No. PA-8032</td>
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<td></td>
<td>Receiver Model No. PA-8043</td>
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</tr>
<tr>
<td></td>
<td>Remote Control Unit Model No. P-8066-A</td>
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</table>
FUNCTIONAL DESCRIPTION

The FTR-101B (Federal Telephone & Radio Corp) is designed as a crystal controlled, single frequency FM radio telephone transmitter and receiver designed for installation in commercial vehicles, specifically passenger automobiles. It provides two-way voice communication with a similar fixed or mobile equipment operating on the same frequency.

No field changes in effect at time of preparation (22 March 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF EMISSION
TRANSMITTER AND RECEIVER: A2 type.

TYPE OF FREQUENCY CONTROL: Crystal.

TYPE OF ANTENNA: Telescopic whip type.

POWER OUTPUT: 25 W max.

OPERATING POWER RQMT: 12 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Federal Telephone and Radio Corp., Newark, New Jersey.
Type No. FTR-101B.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and/or Crystal Data not available.

REFERENCE DATA AND LITERATURE

Federal Telephone and Radio Corporation Commercial Catalog for Radio Set FTR-101B.

EQUIPMENT SUPPLIED DATA

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<tr>
<td>1</td>
<td>Transmitter-Receiver Federal Telephone and Radio Corp Type 101B</td>
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<tr>
<td>1</td>
<td>Battery Federal Telephone and Radio Corp (12V)</td>
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<td>1</td>
<td>Battery Charger Federal Telephone and Radio Corp Type No. 120A</td>
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<td>1</td>
<td>Control Charger Unit Federal Telephone and Radio Corp Type No. 101A</td>
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<td>1</td>
<td>Headset Western Electric Co. Type No. 509</td>
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</table>
TRANSMITTING AND RECEIVING EQUIPMENT

FUNCTIONAL DESCRIPTION

The Navy Model GF is a complete radio transmitting and receiving set designed for use on aircraft. It is adapted for installation and operation in airplanes of all types. It may be used to receive modulated or damped-wave signals within the two bands 224 to 350 kilocycles (kc) and 5400 to 8100 kilocycles (kc) and to transmit modulated and unmodulated signals in the band of 6200 to 7700 kilocycles (kc) signals.

No field changes in effect at time of preparation (8 August 1958).

EQUIPMENT REQUIRED BUT NOT SUPPLIED


ELECTRICAL AND MECHANICAL CHARACTERISTICS

NUMBER OF BANDS: 2 bands.
TRANSMITTER OUTPUT: 1.5 W.
FREQUENCY RANGE
TRANSMITTER: 6200 to 7700 kc, 224 to 350 kc.
RECEIVER: 5400 to 8100 kc.
OPERATING POWER RMT: 12 to 15 v battery.

MANUFACTURER'S OR CONTRACTOR'S DATA


TUBE AND/OR CRYSTAL COMPLEMENT

(4) CBY-38039 (1) CBY-38037
Radio Transceivers

GF TRANSMITTING AND RECEIVING EQUIPMENT

(1) CBY-38038
(1) CBY-38142
Total Tubes: (10)
No Crystals Used.

REFERENCE DATA AND LITERATURE

<table>
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<th>EQUIPMENT SUPPLIED DATA</th>
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<tbody>
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</table>
FUNCTIONAL DESCRIPTION

The GF-11 and RU-16 Aircraft Radio Equipment together make up a complete Radio Transmitting and Receiving Set (GF-11/RU-16) for use on aircraft with a 12 volt DC power supply. This equipment is designed to transmit or receive voice, tone modulated or continuous wave signals. The receivers cover the frequency range of 195 to 13,575 kc. The transmitters cover the range of 2000 to 9050 kc. Corresponding units of GF-11/RU-16 equipment are interchangeable with those of GF-8/RU-13, serial no. 121 and above. Corresponding units of GF-8/RU-13 serial no. 1 to 120 inclusive are interchangeable with those of GF-3/RU-4A, GF-4/RU-5A and GF-5/RU-7 and differ from GF-11/RU-16 only in certain modifications in the NT-23096 Receiver Switch Box and NT-21109 Dynamotor Filter Unit. Subject to slightly modified performance, these switch boxes and dynamotor filter units are interchangeable.

No field changes in effect at time of preparation (13 July 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
RECEIVER: 195 to 13,575 kc.
TRANSMITTER: 2000 to 9050 kc.
EMISSION: Voice, cw, mcw.
MODULATION: AM, voice 95%, mcw 100%.
TONE FREQUENCY: 1000 cps.
Radio-Transmitting and Receiving Set

POWER OUTPUT DATA
- 2000 to 3200 kc.
  - VOICE: 2 to 7 W peak.
  - CW: 2 to 7 W.
  - MCW: 2 to 7 W peak.
- 3000 to 9050 kc.
  - VOICE: 12 to 15 W peak.
  - CW: 12 to 15 W.
  - MCW: 12 to 15 W peak.

POWER SOURCE REQUIRED: 12 to 15 v DC at 8 amp.
DYNAMOTOR OUTPUT: 425 v at 163 ma.

TUBE AND/OR CRYSTAL COMPLEMENT
- (2) 89
- (2) 77
- (1) 38233
- (3) 78
Total Tubes: (10)

REFERENCE DATA AND LITERATURE

MANUFACTURER'S OR CONTRACTOR'S DATA

EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (INCHES)</th>
<th>WEIGHT (LBS.)</th>
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<tbody>
<tr>
<td>1</td>
<td>Dynamotor-Filter Unit NT-22109A (with base)</td>
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<td>*1</td>
<td>Test Meter-NT-22266</td>
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<td>Remote Tuning Control-NT-23012 (with 0-100 Dial and 100-0 Dial)</td>
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<tr>
<td>1</td>
<td>Antenna Relay Unit-NT-23049 (with base)</td>
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<td>Receiver Switch Box-NT-23096A (with base)</td>
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<td>Transmitter Control Box-NT-23097 (with base)</td>
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<td>1</td>
<td>Extension Control Box-NT-23099 (with base)</td>
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<td>1</td>
<td>Aircraft Radio Receiver-NT-66051A (With NT46011 Mounting Base, NT-23022 Local Tuning Control, NT-23050 Antenna-Loop Control, Set of Tubes)</td>
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<td>12.9</td>
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<tr>
<td>1 per coil set</td>
<td>Coil Set Containers for Mod RU-16 Aircraft Radio Equip. NT-47029</td>
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<tr>
<td>1</td>
<td>Model RU-16 Coil Set, Range D, 850-1330 kc NT-47068</td>
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<td>Model RU-16 Coil Set, Range E, 1330-2040 kc NT-47069</td>
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<td>Model RU-16 Coil Set, Range F, 2040-3000 kc NT-47070</td>
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<td>1</td>
<td>Model RU-16 Coil Set, Range H, 4000-6000 kc NT-47072</td>
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<td>Model RU-16 Coil Set, Range K, 9050-13575 kc NT-47075</td>
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**RADIO TRANSMITTING AND RECEIVING SET**

**GF-11/RU-16**

### EQUIPMENT SUPPLIED DATA

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<th>QUANTITY PER EQUIPT</th>
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<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<tbody>
<tr>
<td>1 per coil set</td>
<td>Coi1 Set Containers for Model GF-11</td>
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<td>Aircraft Radio Equipment NT-47092</td>
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<td>Model RU-16 Dual Coil Set, Range O,</td>
<td>195-290 kc; Range P, 290-435 kc-NT-47105</td>
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<td>Model RU-16 Dual Coil Set, Range Q,</td>
<td>540-830 kc; Range G, 3000-4524 kc-NT-47107</td>
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<td>Model RU-16 Dual Coil Set, Range Q</td>
<td>540-830 kc; Range M, 5200-7700 kc-NT-47108</td>
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<td>1</td>
<td>Model RU-16 Dual Coil Set, Range L,</td>
<td>400-600 kc; Range N, 600-9050 kc-NT-47112</td>
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<tr>
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<td>Model GF-11 Coil Set, 2000-2500 kc-NT-47135</td>
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<td>Model GF-11 Coil Set, 2500-3200 kc-NT-47136</td>
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<td>Model GF-11 Coil Set, 3000-3675 kc-NT-47137</td>
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<td>Model GF-11 Coil Set, 4000-4900 kc NT-47139</td>
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<td>Model GF-11 Coil Set, 4900-6000 kc NT-47140</td>
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<td>Model GF-11 Coil Set, 6000-7350 kc-NT-47141</td>
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<td>Model GF-11 Coil Set, 7350-9050 kc-NT-47142</td>
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<td>Model RU-16 Dual Coil Set, Range Q,</td>
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<td>Aircraft Radio Transmitter-NT-52063A</td>
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<td>(with NT-52014 Mounting Base, with Set Tubes.)</td>
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<tr>
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<td>Junction Box-NT-62008A (with base, Sub. plugs, two caps, and cap nut)</td>
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<td>Remote Tuning Control Mechanical Linkage, supplied in bulk, weight per foot assembled NT-23021</td>
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<td>Antenna-Loop Remote Control-NT-23051</td>
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<td>Remote Switching Mechanical Linkage, bulk weight per foot assembled NT-23052</td>
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<td>Dual Coil Set Local Control (on Dual Coil Sets) NT-23053</td>
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<td>Dual Coil Set Remote Control-NT-23054</td>
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<td>Transmitter Slip Cover</td>
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<td>Instruction Book</td>
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*Optional, not furnished with all lots of equipments.
RADIO TRANSMITTING AND RADIO RECEIVING EQUIPMENT

The Navy Model GF-12 and Model RU-17 Aircraft Radio Equipments together make up a complete Radio Transmitting and Receiving Set for use on aircraft equipped with a twenty-four (24) v DC power supply. This equipment is designed to transmit or receive voice, tone modulated, or continuous wave signals. The Receiver covers the frequency range of 195 to 13,575 kilocycles (kc). The transmitter covers the ranges of 2000 to 2500, 3000 to 4525, and 6000 to 9050 kilocycles (kc).

No field changes in effect at time of preparation (7 August 1958).

RELATION TO OTHER EQUIPMENT

The GF-12/RU-17 is interchangeable with the GF-9/RU-14 except for modification in Navy Type 23096 Receiver Switch Box and Navy Type 21454 Dynamotor Filter Unit.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
TRANSMITTER: 2000 to 2500 kc, 3000 to
Radio-Transceivers
GF-12 and RU-17

RADIO TRANSMITTING AND RADIO RECEIVING EQUIPMENT

4525 kc, 6000 to 9050 kc.
RECEIVER: 195 to 13575 kc.

NOMINAL POWER OUTPUT OF TRANSMITTER
VOICE: 2 to 7 W peak at 2000 to 2500 kc.
CW: 2 to 7 W peak at 2000 to 2500 kc.
MCW: 2 to 7 W peak at 2000 to 2500 kc.
VOICE: 12 to 15 W peak at 3000 to 4525 kc, 6000 to 9050 kc.
CW: 12 to 15 W peak at 3000 to 4525 kc, 6000 to 9050 kc.
MCW: 12 to 15 W peak at 3000 to 4525 kc, 6000 to 9050 kc.

OPERATING POWER REQMT: 24 v DC power supply.

MANUFACTURER'S OR CONTRACTOR'S DATA


TUBE AND/OR CRYSTAL COMPLEMENT

(5) 2C21 (5) 77 (5) 78

REFERENCE DATA AND LITERATURE

Technical Manual Serial No. 5198 for Model GF-12 and Model RU-17 Aircraft Radio Telegraph and Telephone Transmitting and Receiving Equipments.
Radio Transceiving and Receiving Equipment MAB

FUNCTIONAL DESCRIPTION

The MAB is an ultra-compact, portable voice communication equipment designed to provide a link between parachute forces. The set is also suitable for reconnaissance or outpost communications. It is satisfactory for communication over a range of approximately one mile, with somewhat increased range between aircraft and ground units.

No field changes in effect at time of preparation (8 April 1958).

RELATION TO OTHER EQUIPMENT

Similar to Radio Telephone Transmitting and Receiving Equipments MP, MU, MV, MW, and MX. The MAB may be preset to any frequency within the 2.3 to 4.5 Mc limits, while the prior equipments are capable of tuning to only a portion of this band.

Equipment Required but not Supplied: (1) Vibrator Power Unit NT-20221 and (1) Lead-Acid Storage Battery NT-19046 or for emergency operation. (1) Battery Pack (Dry) NT-19027A. (1) Canvas Carrying case.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

EMISSION AND RECEPTION: A3.
FREQUENCY RANGE: One preset frequency within range of 2.3 to 4.5 Mc.
MAB

RADIO TRANSMITTING AND RECEIVING EQUIPMENT

POWER OUTPUT: 0.2 W.
POWER REQUIREMENTS: 6.4 v storage battery with vibrator power unit or 1.5, 6, 67.5, 135 v dry battery pack.

MANUFACTURER'S OR CONTRACTOR'S DATA

Communications Co., Inc., Coral Gables, Florida.
Contract NXss-14439, dated October 1, 1942.
Spec: 145-4C-510 Rev A.
Approximate Cost: $140.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 1R5
(2) 1T4
(1) 1S5
(3) 3S4
Total Tubes: (7)

REFERENCE DATA AND LITERATURE

NAVSHIPS 95121: Technical Manual for Radio Telephone Transmitting and Receiving Equipment Navy Model MAB.

TYPE CLASSIFICATION
DESIGN COGNIZANCE: BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

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<td>Microphone and Case Cover Assembly NT-51048</td>
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<td>Antenna and Load Coil Assembly NT-66081</td>
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<td>1</td>
<td>Plastic Case NT-10162</td>
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</table>

1.7 MAB: 2
RADIO TRANSMITTING AND RECEIVING EQUIPMENT

Test Meter Unit Type 1410

Radio Transmitter-Receiver 43052
The Model MAC is designed for operation on board naval vessels such as minesweepers to provide coordinated control of minesweeping equipment on cooperating boats. It has been designed for remote control and unattended operation.

A frequency-modulated short-range radio circuit is provided on which two tone signals may be impressed alternately to operate separate control relays at the receiving points. Means is provided to limit the effective range to as low as 1000 yards for security reasons.

No field changes in effect at time of preparation (14 November 1956).

Equipment Required but not Supplied: Test Equipment as Required.

FREQUENCY RANGE: 30 to 42 mc.
TYPE EMISSION AND RECEPTION: FM ±15 kc.
FREQUENCY CONTROL: Crystal.
CONTROL CHANNEL FREQUENCIES: 235 and 1000 cps.
TRANSMITTER POWER OUTPUT: 0.01 to 2 W adjustable.
TRANSMITTER OUTPUT IMPEDANCE: 30 to 100 ohms into concentric transmission line.
TYPE RECEIVER: Superheterodyne.
RECEIVER SENSITIVITY: 0.5 uv.
INTERMEDIATE FREQUENCY: 456 kc.
POWER REQUIREMENTS: 115 v., 50 to 60 cps, single phase, 80 W.
TYPE ANTENNA: Whip.

MANUFACTURER'S OR CONTRACTOR'S DATA

Fred M. Link, New York, N.Y.
Contract NXss 32846, dated 24 June 1943.
Approximate Cost: $140.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6AC7WA
(1) 6SJ7
(2) 6H6
(1) 6SN7WGTA
(2) 6K8
(3) 6V6GT
(1) 6SG7Y
(1) 6X5SWGT

Total Tubes: (19)
(3) FT-243
Total Crystals: (3)

REFERENCE DATA AND LITERATURE

FUNCTIONAL DESCRIPTION

The Model MAH is a complete portable radiotelephone station suitable for voice communication with other similarly equipped stations. It is enclosed in submersion proof cases and is designed to be used on land, on board ship and on motor vehicles.

It is capable of reception and transmission on any one of four channels, and reception on two channels simultaneously is possible when desired, one of these two channels being channel 1 in all cases.

No field changes in effect at time of preparation (14 June 1957).

RELATION TO OTHER EQUIPMENT

Transmitter-Receiver RT-19/ARC-4 is the Western Electric Company Model 233A.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

CHANNELS: 4

FREQUENCY CONTROL: Crystal.

TYPE RECEIVER: Superheterodyne.

POWER REQUIREMENTS: 12 or 24 V DC, 115 V, 50 to 60 cps, single ph.

MANUFACTURER’S OR CONTRACTOR’S DATA

Western Electric Company, Inc, New York, N. Y.

Contract NXR-65292 dated 14 June 1944.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6AC7 (2) 6V6GT/G (1) 12SQ7/GT/G
(2) 6L6 (2) 12A6/GT (1) 832
(4) 6N7 (3) 12SJ7 (2) 1614
Radio-Transceivers

**MAH**

**RADIO TRANSMITTING AND RECEIVING EQUIPMENT**

Radio Transmitting and Receiving Equipment Model MAH.

Total Tubes: (19)

(4) 703A

Total Crystals: (4)

**REFERENCE DATA AND LITERATURE**

NAVSHIPS 900420-1B: Technical Manual for...

**EQUIPMENT SUPPLIED DATA**

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<thead>
<tr>
<th>QUANTITY</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<td>Control Unit C-51/ARC-4</td>
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<td>Adapter NT-62122</td>
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<td>Remote Jack Box NT-62123</td>
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<td>Antenna Assembly NT-66102</td>
<td>2-5/8 X 5-7/8 X 7</td>
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<td>Headset Assembly NT-49479</td>
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<td>Microphone Assembly NT-51004C</td>
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<td>Test Meter TS-80/U</td>
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<td>Transmitter Phantom Assembly TS-78/U</td>
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<td>Receiver Phantom Assembly TS-79/U</td>
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<td>Set of Spare Parts</td>
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<td>Submersion Proof Case NT-10279</td>
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<td>Gasoline Engine-Generator Assembly NT-73028</td>
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<td>Rectifier Power Unit NT-20263 including:</td>
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<td>Set of Operating Spare Parts</td>
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FUNCTIONAL DESCRIPTION

The Navy Model MAK is a four channel mobile unit designed to provide a compact, two-way radio installation for use in naval craft, combat vehicles and other applications where space is at a premium. It is crystal controlled and designed for operation in the 2 to 4 megacycle frequency range. It can be operated from a 6 or 12 volt direct-current power source by using the proper associated power assembly. The essential control circuits can be operated from a remote location with the exception of voice-continuous wave and channel selection circuits.

No field changes in effect at time of preparation (1 August 1958).

RELATION TO OTHER EQUIPMENT

The Navy Model MAK is similar to Navy Model MO-1, differing mainly in the frequency range coverage.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

Cable as Required, Antenna.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2 to 4 mc.
POWER OUTPUT: 25 W.
EMISSION: A2, A3.
Radio-Transceivers

RADIO TELEPHONE AND TELEGRAPH
TRANSMITTING AND RECEIVING
EQUIPMENT

MAK

FREQUENCY CONTROL: Crystal oscillator.
MODULATION DATA
CAPABILITY: 90%.
FREQUENCY: 600 cps.
RECEIVER DATA
TYPE: Superheterodyne.
IF: 455 kc.
OUTPUT IMPEDANCE: 600 ohms.
SENSITIVITY: Approx 2 uv for 50 mw output across a 600 ohm load.
POWER REQUIREMENTS: 6 v DC or 12 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Communications Co, Inc., Coral Gables, Fla.
Contract NXs-5884, dated 3 June 1942.

TUBE AND/OR CRYSTAL COMPLEMENT

6VDC 12VDC
(3) HY69  (3) HY1269
(1) 6K8  (2) 12A6
(2) 6SK7WA  (1) 12K8
(1) 6SQ7  (2) 12SK7
(2) 6V6Y  (1) 12S97

Total Tubes: (9) Total Tubes: (9)
(8) Operating Crystal (8) Operating Crystal
Total Crystal: (8) Total Crystal: (8)

REFERENCE DATA AND LITERATURE

Technical Manual for Navy Models MO-1 and
MAK Radio Telephone and Telegraph Transmitting and Receiving Equipment.

EQUIPMENT SUPPLIED DATA

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<th>QUANTITY PER EQUIPT</th>
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EMERGENCY MOBILE COMMUNICATION EQUIPMENT

**FUNCTIONAL DESCRIPTION**

The MAM is a very high frequency communication unit designed for use in aircraft in the 140 to 144 mc band. The unit is intended for two-way communication by radio telephone between airplanes and from airplanes to ground stations. The equipment may be pre-tuned for operation on four crystal controlled frequencies in the 140 to 144 mc band.

No field changes in effect at time of preparation (6 August 1956).

**ELECTRICAL AND MECHANICAL CHARACTERISTICS**

- **Type of Reception and Transmission:** A2, A3.
- **Frequency Range:** 140 to 144 mc.
- **Frequency Control:** Crystal and master oscillator.
- **Power Source Required:** 115 v AC, 60 cps, single ph or 12 v DC (battery).

**MANUFACTURER’S OR CONTRACTOR’S DATA**

Air-Track Mfg Corp., College Park, Maryland

**REFERENCE DATA AND LITERATURE**


**TUBE AND/OR CRYSTAL COMPLEMENT**

- (7) 12A6
- (8) 12SK7
- (1) 5R4GY
- (2) 6L6
- (1) 832
- (2) VR-150-30
- (2) 1614
- (4) 6N7
- (2) 12K8
- (2) 12SQ7
- (1) 5U4G
- (4) 6N7
- (3) 12SJ7
- (2) 6AC7
- (3) 6V6GT
- (4) 1625

**Total Tubes:** (46)
## MAM EMERGENCY MOBILE COMMUNICATION EQUIPMENT

### EQUIPMENT SUPPLIED DATA

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</table>
PORTABLE RADIO TRANSMITTING AND RECEIVING EQUIPMENT

FUNCTIONAL DESCRIPTION

The MAN is a portable, crystal-controlled transmitter and receiver for voice transmission and reception in any one of eleven channels in the 30 to 40 mc band. The equipment will provide reliable communication for approximately 10 miles. The Transmitter and Receiver are housed in one metal weather-proof case and the battery in another.

No field changes in effect at time of preparation (9 April 1958).

RELATION TO OTHER EQUIPMENT

The transmitter unit of the MAN equipment is Motorola Model FMT-24VW and the receiver unit is Motorola Model FMR-13V.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

GENERAL
FREQUENCY RANGE: 30 to 40 mc in eleven channels.
FREQUENCY CONTROL: Crystal.
POWER REQUIREMENTS: 6 v DC.
RECEIVER
RECEPTION: F3.
OUTPUT IMPEDANCE: 600 ohms.
TRANSMITTER
EMISSION: F3.
POWER OUTPUT: 15 to 20 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Contract NXar-48316, dated 22 January 1944.
PORTABLE RADIO TRANSMITTING AND RECEIVING EQUIPMENT

Approximate Cost: $1400.00 with equipment spares.

(22) Operating Crystals
Total Crystals: (22)

TUBE AND/OR CRYSTAL COMPLEMENT

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Total Tubes: (24)

REFERENCE DATA AND LITERATURE

NAVSHIPS 95124: Technical Manual for Transmitter-Receiver Navy Model MAN.

EQUIPMENT SUPPLIED DATA

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<tr>
<td>1</td>
<td>Technical Manual</td>
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**FUNCTIONAL DESCRIPTION**

The Navy Model MAR is a transportable two-way communication equipment designed for voice and modulated continuous-wave operation in the 225 to 390 megacycle frequency range. It has a motor-driven selector mechanism energized by rotation of a panel switch for selecting any one of ten pre-set, crystal-controlled channels and has provisions for connecting a remote control system.

It may be adapted to widely-varying power supply inputs and operating environments, such as are encountered in motor vehicles, on board ship, or in the field, by use of associated kits and equipment.

Its power supply is designed to furnish power to Portable Radio Receiving Equipment.
VHF RADIO TRANSMITTING AND RECEIVING EQUIPMENT

Navy Model RDR and to Navy Model MAR at the same time. The Navy Model RDR, while not part of the Navy Model MAR system, is similar in design and operation to the receiver section of the Navy Model MAR, and serves to extend the receiving range.

Data on this sheet reflects the following field changes: FC-1, -2, -3, -4, -5, -6 (14 April 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied:
SHIPBOARD INSTALLATIONS
(1) Low-Pass Filter NT-53349, Cable as Required, (2) Bulkhead Angle Bracket, Mounting Hardware as Required.
FIELD INSTALLATIONS
(3) Battery BA-30, (1) Battery BA-51, Telephone Wire W110-B as Required.
ACCESSORY EQUIPMENT INSTALLATION
Power Cable as Required, Mounting Hardware for Electrical Noise Suppressor.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 225 to 390 mc.
POWER OUTPUT: 8 W.
EMISSION: A2, A3.
FREQUENCY CONTROL: Crystal-controlled oscillator.
MODULATION CAPABILITY: 100%.
TRANSMITTER DATA
AF RESPONSE: 300 to 3000 cps.
DUMMY LOAD: 50 ohms resistance, 0 reactance at 400 mc.
IMPEDANCE
RF: 50 ohm output.
AF INPUT: 100 ohms to microphone, 600 ohms remote.
RECEIVER DATA
TYPE: Superheterodyne.
SENSITIVITY: 8 uV.
SELECTIVITY: 220 kc bandwidth at 6 db.
IF: 30.2 mc.
SILENCER CIRCUIT: Operates 6 db change.
POWER OUTPUT: 1 W into 600 ohm load.
AF RESPONSE: 300 to 3000 cps.

MANUFACTURER'S OR CONTRACTOR'S DATA

RCA Victor Division, Radio Corporation of America, Camden, N. J.
Contract NXsr-60008, dated 4 May 1944.
Approximate Cost: $7000.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 12A6
(2) 12H6
(4) 12SG7Y
(2) 12SL7GT
(2) 2C39A
(2) 3B28
(1) 5654/6AK5W
(1) 6AG7Y
(3) 6C4WA
(1) 6J6WA
(2) 6L6WGB
(1) 829B
(1) 9003
Total Tubes: (23)
(10) NT-40163
(1) NT-40177
Total Crystals: (11)

REFERENCE DATA AND LITERATURE

NAVSHIPS 900719(A): Technical Manual for VHF Radio Transmitting and Receiving Equipment Navy Model MAR.

SHIPPING DATA

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### VHF RADIO TRANSMITTING AND RECEIVING EQUIPMENT

#### SHIPPING DATA

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#### EQUIPMENT SUPPLIED DATA

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*Note: Dimensions are approximate and may vary.*
## VHF RADIO TRANSMITTING AND RECEIVING EQUIPMENT

### EQUIPMENT SUPPLIED DATA

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**NOTE:**
- Accessory Equipment.
- Includes chest and contents, exclusive of basic units.
- Includes chest, contents, and basic units, ready for use in field.
PORTABLE VHF RADIO TRANSMITTING AND RECEIVING EQUIPMENT

MAW, MAW-1

FUNCTIONAL DESCRIPTION

The MAW and MAW-1 is designed to provide two-way communication for air or shore liaison parties, using MCW or voice transmission over any one of ten preset crystal controlled channels in the frequency range of 115 to 156 mc.

The equipment may be operated portable by means of a shoulderstrap or by a standard AN packboard. The equipment may also be set up and operated as a fixed station.

The receiver, transmitter, power supply and batteries are housed in a glass-fiber, submersion proof case.

No field changes in effect at time of preparation (6 Aug 1956).

RELATION TO OTHER EQUIPMENT

The MAW and MAW-1 are electrically and mechanically interchangeable.

Equipment Required but not Supplied: Electrolyte for batteries, (6) Crystals CR-5B/U or CR-18/U (for MAW-1 only).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 115 to 156 mc.
NUMBER OF PRESET FREQUENCIES: 10, each changeable to any frequency within the frequency range.
FREQUENCY CONTROL: Crystal controlled.
**Radio-Transceivers**

**MAW, MAW-1**

**PORTABLE VHF RADIO TRANSMITTING AND RECEIVING EQUIPMENT**

December 1956

**EMISSION:** A2, A3.
**UNMODULATED CARRIER OUTPUT:** 0.5 W nominal.
**MODULATED POWER OUTPUT:** 0.7 W max.
**RECEIVER TYPE:** Superheterodyne.
**INTERMEDIATE FREQUENCY:** 12 mc.
**RECEIVER OUTPUT:** 25 mw into a 600 ohm load at 1000 cps (MAW); 15 mw into a 600 ohm load at 1000 cps (MAW-1).
**TYPE OF RECEPTION:** A2, A3.

**ANTENNA DATA**

- **TYPE:** 1/4 wave ground plane type.
- **FULL LENGTH:** 120 mc.
- **SECOND DETENT:** 135 mc.
- **FIRST DETENT:** 150 mc.
- **FULLY COLLAPSED:** 168 mc.
- **IMPEDANCE:** 52 ohms.

**POWER SUPPLY:** Synchronous vibrator type supplying 100 v DC for receiver, or 135 v DC for transmitter and 1.5 and 3 v DC filament voltage from a 4 v DC source.

---

### TUBE AND/OR CRYSTAL COMPLEMENT

**MAW**

- (9) 1L5 (includes 1 spare)
- (2) IS5 (includes 1 spare)
- (14) 3A4 (includes 3 spares)
- (6) 3A5 (includes 3 spares)

**Total Tubes:** (31)

**MAW-1**

- (9) 1L5 (includes 1 spare)
- (2) IS5 (includes 1 spare)
- (14) 3A4 (includes 3 spares)
- (6) 3A5 (includes 3 spares)

**Total Tubes:** (31)

**MAW**

- (26) CR-5B/U (includes 6 spares)

**Total Crystals:** (26)

**MAW-1**

- (20) CR-5B/U or CR-18/U

**Total Crystals:** (20)

---

### MANUFACTURER'S OR CONTRACTOR'S DATA

**Howard Radio Co., Chicago, Ill.**

Contract NAXer-77870.

**Hoffman Radio Corp., Los Angeles, Calif.**

Contract NObsr 52170, dated 15 Dec 1950.

Approximate Cost: $1600 with Equipment spares (MAW).

Approximate Cost: $1750 with Equipment spares (MAW-1).

---

### SHIPPING DATA

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### EQUIPMENT SUPPLIED DATA

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**REFERENCE DATA AND LITERATURE**

NAVSHIPS 900,734: Technical Manual for Portable Radio Transmitting and Receiving Equipment Navy model MAW.

### Portable VHF Radio Transmitting and Receiving Equipment

#### Equipment Supplied Data

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<td><strong>Microphone Cord NT-49561</strong></td>
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<td>3-1/4 x 11-1/4 x 11-1/4</td>
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<sup>*</sup>The Headset-Microphone Assembly are supplied with variations. The microphone and face harness are not supplied with some shipments; these are to be government furnished in the field. The Gas Mask Adapter is not supplied, and the combined cord for both headset and microphone is replaced by two cords.
Radio Transmitter-Receiver RT-18/ARC-1 P/O Navy Model MAX

FUNCTIONAL DESCRIPTION

The Navy Model MAX is a portable equipment suitable for operation on mobile vehicles, while in motion or while stationary, and is designed to provide reliable, long range, two-way, amplitude-modulated radiotelephone communication between ground stations and aircraft as well as with other ground stations.

It operates in the 100 to 156 megacycle frequency range on any one of nine fixed, crystal-controlled channels and one crystal-controlled guard channel which is fixed and within a restricted band. It can be monitored on the guard channel while operating on one of the other channels and contains provisions for remote operation.

No field changes in effect at time of preparation (4 August 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER OUTPUT: 8 W nom.
EMISSION: A3.
AUDIO OUTPUT (RECEIVER): 400 mw into 300 or 4000 ohm resistive load.
POWER REQUIREMENTS: 24 v DC.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OD3W (1) 1B3GT
(1) 5CP1 (1) 5T4
(4) 5654/6AK5W (2) 5726/6AL5W
(1) 5727/2D21W (1) 5749/6BA6W
(6) 6AG5 (2) 6C4WA
(2) 6N7 (2) 6SL7GT
(1) 6SN7WGT (1) 9002
(2) 9003

Total Tubes: (28)

(3) CR-1A/AR (9) CR-1B/AR

Total Tubes: (12)
# Radio-Transceivers
## MAX RADIO TRANSMITTING AND RECEIVING EQUIPMENT

### REFERENCE DATA AND LITERATURE

- AN08-30ARC1-2: Technical Manual for Model AN/ARC-1 Aircraft Radio Equipment.

## EQUIPMENT SUPPLIED DATA

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<td>Case CY-570/MRD-8</td>
<td>7-3/4 X 19 X 19-1/2</td>
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</tbody>
</table>
PORTABLE RADIO TRANSMITTING AND RECEIVING EQUIPMENT MAY-1

Cog Service: FSN: 5820-352-0065

USA

USN

USAF

FUNCTIONAL DESCRIPTION:

The Portable Radio Transmitting and Receiving Equipment MAY-1, is a two-way battery-operated field set, designed for packboard carry. This set provides voice or Modulated Continuous Wave (MCW) communication on any one of four (4) preset channels in the frequency range of 225 to 390 megacycles (MC).

The electrical design of the equipment is such that it complies with blackout requirements under all conditions of normal operation, while receiver radiation is attenuated more than 40 dB below the normal transmitting power level.

The mechanical design of this equipment is such that it will maintain adjustment and provide normal operation during long periods of tropical service. The equipment is submerged proof, buoyant in fresh water, and presents a low silhouette, when carried by a man lying prone.

Data on this sheet reflects the following field changes: F.C. #2.
MAY-1 PORTABLE RADIO TRANSMITTING AND RECEIVING EQUIPMENT

TECHNICAL CHARACTERISTICS:

TYPE OF FREQUENCY CONTROL
   TRANSMITTER: Crystal-controlled, 4 preset frequencies.
   RECEIVER: Crystal-controlled, 4 preset frequencies.

TYPE OF EMISSION: A3 (voice) AM 90% modulation capability; A2 (MCW), 850-1000 cycles, 90% modulation capability.

TRANSMITTER DATA
   FREQUENCY RANGE: 225 to 390 mc.
   TYPE OF FREQUENCY CONTROL: Crystal, 4 preset frequencies.
   OUTPUT IMPEDANCE: 50 ohm, noninductive.
   POWER OUTPUT: 1 W.

RECEIVER DATA
   TYPE OF RECEIVER: Superheterodyne.
   AUDIO OUTPUT: 25 mw into 300 ohms (phones).
   INPUT IMPEDANCE: 50 ohms (antenna).
   TYPE OF RECEPTION: A3 (voice) and A2 (MCW).
   INTERMEDIATE FREQUENCY: 100 kc.

ANTENNA DATA
   TYPE: Broad-band collapsible, ground plane type, Telescopic Arm Antenna.
   INPUT IMPEDANCE: 50 ohms.
   SWR (VOLTAGE): Less than 1.5-to-1 over the entire 225 to 390 mc.
   POLARIZATION: Vertical.
   TYPE OF CRYSTALS USED: CR-9/U.
   POWER SUPPLY: Self-contained vibrator power supply.
   PRIMARY POWER SOURCE: Self-contained 6-volt lead-acid battery.

RELATION TO OTHER EQUIPMENT:

The MAY-1 is capable of communication with VHF Radio Transmitting & Receiving Equipment MAR, VHF Radio Receiving Equipment RDZ, Radio Receiving Set AN/URR-13, Radio Sets AN/ARC-27, AN/ARC-34 and similar equipments in the same frequency.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(2) Plywood Packboards w/attachments; (1) Battery Charger; (1) Metal Crystal box containing 186 CR-9/U crystals.

MAJOR COMPONENTS

<table>
<thead>
<tr>
<th>QTY</th>
<th>ITEM</th>
<th>STOCK NUMBERS</th>
<th>DIMENSIONS (INCHES)</th>
<th>WEIGHT (LBS)</th>
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<td>Transmitter-Receiver N.T.</td>
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<td>Microphone Ass'y N.T.</td>
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<td>49534(A)</td>
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<td>1</td>
<td>Microphone Extension Cord and</td>
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<tr>
<td>QTY</td>
<td>ITEM</td>
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<td>Auxiliary Battery Pack N.T. CRP-19062</td>
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<td>Technical Manual NAVSHIPS 91792</td>
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<td>1</td>
<td>Coil Box</td>
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</table>

REFERENCE DATA AND LITERATURE:


TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 1007 (1) 2E41 (5) 5656 (1) 5744 (5) 6AK5

CRYSTALS: (9) CR-9/U

SEMI-CONDUCTORS: (1) 1N43

SHIPPING DATA

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PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: USN, BuShips
SPEC &/OR DWG:

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<th>CONTRACTOR</th>
<th>LOCATION</th>
<th>CONTRACT OR ORDER NO.</th>
<th>APPROX. UNIT COST</th>
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<tbody>
<tr>
<td>Raytheon Mfg. Co.</td>
<td>Waltham, Mass.</td>
<td>NObsr-43097,</td>
<td>1.7 MAY-1: 3</td>
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</table>

30 December 1948
AIRCRAFT RADIO TRANSMITTER-RECEIVER

FUNCTIONAL DESCRIPTION

The Model MB is designed for use on aircraft and is intended for fire control spotting work. The transmitter and receiver are enclosed in a case which is connected by detachable cables to the frequency meter, wind driven generator, battery, key, antenna, and counterpoise. Break in operation is obtained by means of a relay which connects the antenna to the transmitter when the key is closed but leaves the antenna connected to the receiver at all other times. Transmission is continuous wave with complete keying. The receiver is one of the non-radiating type and arranged for undamped and damped wave reception.

No field changes in effect at time of preparation (25 October 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 550 to 1000 kc.
BANDS: 19 band of approximately 25 kc ea.

POWER REQUIREMENTS

TYPE: Wind driven Generator NT-2501 with Air Propeller NT-3851.
OUTPUT: 200 W on 50% of efficiency.
SPEED: 4500 rpm at wind velocities between 60 and 125 mph.
ANTENNA TYPE: Reel NT-2506.

TUBE AND/OR CRYSTAL COMPLEMENT

(6) 1344  (3) 2010/2566
Total Tubes: (9)
(1) Crystal
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

Technical Manual for Aircraft Radio Transmitter and Receiver Navy Model MB.
<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<tbody>
<tr>
<td>1</td>
<td>Transmitter, Receiver and Case NT-2500</td>
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<tr>
<td>1</td>
<td>Generator NT-2501</td>
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<td>1</td>
<td>Frequency Meter NT-2502 including:</td>
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<td>Crystal Holders NT-2505 with crystals</td>
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<td>1</td>
<td>Air Propeller NT-3851</td>
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<td>Transmitting Key Type SE-1443A</td>
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<td>Antenna Reel NT-2506</td>
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<td>Lead-out Insulator NT-2508</td>
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<td>Antenna Weights NT-2508</td>
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<td>Spool of Antenna Wire (300 ft)</td>
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<td>1</td>
<td>Propeller Wrench</td>
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</tr>
<tr>
<td>1</td>
<td>Set of Cables</td>
<td></td>
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</tbody>
</table>
The MBF is a portable transmitting and receiving equipment housed in two waterproof cases, used for ship-to-ship telephone communication within line of sight distances.

No field changes in effect at time of preparation (9 April 1958).

The MBF replaces the MS Radio Transmitting and Receiving Equipment and can work in conjunction with VHF Radio Transmitting and Receiving Equipment TBS.

Equipment Required but not Supplied: Power Source 115 v DC or 115 v AC, 50 to 60 cycles.
PORTABLE RADIO TRANSMITTING AND RECEIVING EQUIPMENT

ELECTRICAL AND MECHANICAL CHARACTERISTICS

GENERAL

EMISSION AND RECEPTION: A3.

FREQUENCY RANGE: Any frequency from 60 to 80 mc depending upon crystals available.

FREQUENCY CONTROL: crystals.

FREQUENCY STABILITY: ±0.03%.

POWER FACTOR: 0.89.

POWER REQUIREMENTS: 115 v DC or 115 v AC, single phase, 50 to 60 cycles.

TRANSMITTER

POWER OUTPUT: 3.0 W.

OUTPUT IMPEDANCE: 30 to 120 ohms at zero phase angle or 40 to 230 ohms at ±45 degrees angle.

MODULATION CAPABILITY: 80%.

RECEIVER

SENSITIVITY: 2 uv.

CIRCUIT: Superheterodyne.

OUTPUT IMPEDANCE: 600 ohms.

POWER OUTPUT

TO SPEAKER: Up to 1 W with not more than 15% distortion at 60% modulation.

TO HEADPHONES: Up to 10 mw with not more than 15% distortion at 60% modulation.

TUBE AND/OR CRYSTAL COMPLEMENT

(5) 6AK5
(3) 6AQ6
(3) 28D7
(10) 6C4

Total Tubes: (23)

(8) Operating Crystals
Total Crystals: (8)

REFERENCE DATA AND LITERATURE


MANUFACTURER’S OR CONTRACTOR’S DATA

Collins Radio Co, Cedar Rapids, Iowa.

SHIPPING DATA

<table>
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<tr>
<th>NUMBER OF BOXES</th>
<th>CONTENTS AND IDENTIFICATION</th>
<th>VOLUME (Cu.Ft.)</th>
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<th>WEIGHT PACKED (lbs.)</th>
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<tr>
<td>1</td>
<td>MBF Radio Transmitting and Receiving Equipment with Accessories</td>
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<td>16 x 24 x 30</td>
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<td>Set of equipment spares</td>
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EQUIPMENT SUPPLIED DATA

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<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
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<th>WEIGHT (lbs.)</th>
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<tbody>
<tr>
<td>1</td>
<td>Radio Transmitter-Receiver NT-43065</td>
<td>9-1/2 x 10-1/16 x 15-13/16</td>
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<td>4</td>
<td>Shockmount Base NT-10479</td>
<td>1-1/4 x 8-1/4 x 14</td>
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<td>1</td>
<td>Accessory Case NT-10406 and contents</td>
<td>9-3/8 x 9-7/16 x 15-1/16</td>
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<td>1</td>
<td>Set of Equipment Spares</td>
<td>12-1/4 x 12-1/4 x 31</td>
<td>74</td>
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</table>
MOBILE COMMUNICATION UNIT

FUNCTIONAL DESCRIPTION

The Navy Model MBL Mobile Unit design and construction does not afford mobile operation in the common sense of the word. The unit is primarily a package on wheels containing all the components of a receiving station with the additional features of a very high frequency (vhf) radio link multi-audio tone system, voice recording, and a sound-proofed program studio for rebroadcasting.

No field changes in effect at time of preparation (17 September 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE

RECEPTION
AM SIGNALS: 200 kc to 31 mc.
FM SIGNALS: 70 to 100 mc.
TRANSMISSION: 70 to 100 mc.
EMISSION RECEIVED: A1, A2, A3.
PRIMARY POWER REQUIREMENT: 115 v., 60 cps, single ph.

MANUFACTURER’S OR CONTRACTOR’S DATA

Contract NXsa-83417 dated 9 November 1944.

TUBE AND/OR CRYSTAL COMPLEMENT

(6) OC3
(6) 5U4G
### Mobile Communication Unit

#### REFERENCE DATA AND LITERATURE

Descriptive Material for Navy Model MBL Mobile Communication Unit NAVSHIPS 95133.

<table>
<thead>
<tr>
<th>TYPE CLASSIFICATION</th>
<th>DESIGN COGNIZANCE</th>
<th>PROCUREMENT COGNIZANCE</th>
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<td>BUSHIPS</td>
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#### MOBILE COMMUNICATION UNIT

| (6) 6K8            | (54) 6SJ7         |
| (8) 6H6            | (6) 6C5           |
| (11) 6V6GT/G       | (24) 6SK7         |
| (5) 6AC7           | (2) 6SL7GT        |
| (2) 6SN7GT         | (7) 6SH7          |
| (2) 6X5GT/G        | (1) 829B          |
| (2) 12A6           | (4) 12H6          |
| (7) 12G7           | (6) 12SJ7         |
| (3) 12SK7          | (8) 394A          |

Total Tubes: (170)

Crystals unavailable.

#### EQUIPMENT SUPPLIED DATA

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<th>OVERALL DIMENSIONS (inches)</th>
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<td>Trailer, Signal Corps K-35</td>
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<td>Loudspeaker NT-69152</td>
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<td>Telegraphic Typewriter</td>
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<td>Headset, Low Impedance</td>
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1.7 MBL: 2
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<td>Antenna Assembly AS-19/TRC-1</td>
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AIRCRAFT RADIO TRANSMITTER-RECEIVER ME

FUNCTIONAL DESCRIPTION

The Model ME is designed for use with aircraft of the observation and reconnaissance types. Its purpose is for communications with both ships and other planes. The transmitter and receiver are enclosed in one case and connected by detachable cables to the wind driven generator, battery, key, antenna and frame of the plane.

Break in operation is obtained by means of a relay which connects the antenna to the transmitter when the key is closed but leaves the antenna connected to the receiver at all other times. Transmission is continuous wave, crystal controlled, at a predetermined constant frequency. The receiver is of the non-radiating type arranged for damped or undamped wave reception.

No field changes in effect at time of preparation (25 October 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 3000 to 4000 kc.
CONTROL: Crystal.
POWER REQUIREMENTS
TYPE: Wind Driven Generator SE-3063 with Air Propeller.
OUTPUT: 500 W on 50% efficiency.
SPEED: 4000 rpm at wind velocities between 50 and 125 mph.
ANTENNA TYPE: 1/4 wave reel type.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 2566  (1) 1984  (4) 1344
Total Tubes: (6)
(3) Crystals
Total Crystals: (3)
**Radio-Transceivers**

**ME**

**AIRCRAFT RADIO TRANSMITTER-RECEIVER**

**REFERENCE DATA AND LITERATURE**

Technical Manual for Aircraft Transmitter-Receiver Navy Model ME.

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### EQUIPMENT SUPPLIED DATA

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<th>WEIGHT (lbs.)</th>
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<td>1</td>
<td>Generator SE-3063</td>
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<td>Air Propeller</td>
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<td>Crystal Holders SE-2980 with crystals</td>
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<td>Transmitting Key SE-1443-A</td>
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<td>Antenna Reel</td>
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<td>Lead-out Insulator</td>
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<td>Propeller Wrench</td>
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<tr>
<td>1</td>
<td>Set of Cables</td>
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</table>
FUNCTIONAL DESCRIPTION

The Navy Model MN series equipments are mobile two-way radiotelephone communication sets intended to provide reliable, short-range communication on Navy vessels, aircraft, cars, trucks, or at shore stations. They are designed to provide frequency-modulated transmission in the 30 to 42 megacycle frequency range, and operate on either storage battery or alternating current power sources.

They are similar in operation but are not interchangeable due to modifications in components used, cabinets and mountings. The Model MN is particularly designed for shipboard use and may be powered from a 32 or 110 volt direct current source or an 115 or 440 volt alternating current source. The Models MN-1,-2,-3 are basically like the Model MN except for the addition of a built-in 6 volt direct current power supply and are always supplied in weather-proof cabinets for portable and semi-fixed use. The Model MN-4 is the same as the Model MN except that it is designed for use in small aircraft and operates only from 13.5 volts direct current. The Model MN-5 is designed for use from a 115 volt alternating current or 13.5 or 27.0 volts direct current source and is built in a standard ATR aircraft rack, size B-1, for universal use. It has provisions for two-frequency operation on adjacent channels.

No field changes in effect at time of preparation (25 April 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 42 mc.
POWER OUTPUT: 0 to 2 W, adjustable.
FREQUENCY CONTROL: Crystal.
EMISSION: F3.
EMISSION DEVIATION: ±15 kc.
RECEIVER DATA

TYPE: Superheterodyne.
AUDIO RESPONSE: ±1.5 db at 300 to 2750 cps, -30 db at 3500 cps and above.
SENSITIVITY: 0.5 uv or better.
OUTPUT POWER: 1 W max.
OUTPUT IMPEDANCE

TRANSMITTER

MN: 70 ohms.
MN-1,-2,-3,-4: 30 to 100 ohms.
MN-5: 50 to 100 ohms.
RECEIVER
Radio-Transceivers

Radio Transmitting and Receiving Equipment

MN, MN-1 THRU -5

MN, MN-1, -2, -3: 8 ohms.
MN-4: 500 ohms.
MN-5: 6 ohms to loudspeaker, 200 to 2000 ohms to headset.

Power Requirements
MN: 115 v, 50 to 60 cps, single ph, 0.9 amps, 90 W.
MN-1, -2, -3: 115 v, 50 to 60 cps, single ph, 90 W or 6 v DC, 11 amps.
MN-4: 12 to 15 v DC, 6 amps.
MN-5: 115 v, 50 to 400 cps, single ph, 30 W or 13.5 v DC, 6 amps or 27 v DC, 3 amps.

Manufacturer's or Contractor's Data

Fred M. Link, New York, N.Y.
Contract NXs-3834, dated 20 April 1942 (MN).
Contract NXs-14291, dated 5 October 1942 (MN-1).
Contract NXs-20219, dated 26 December 1942 (MN-2).
Contract NXs-30781, dated 1 June 1943 (MN-3).
Contract NXS-32191, dated 24 June 1943 (MN-4).
Contract NXs-41011, dated 6 November 1943 (MN-5).
Contract NXs-48343, dated 5 February 1944 (MN-5).
Approximate Cost: $800.00 with equipment spares.

Tube and/or Crystal Complement

MN, MN-1, -2, -3
(2) 6K8
(2) 6SG7Y
(2) 6SJ7
(2) 6SL7WGT
(4) 6V6GTY
(1) 6X5WGT

MN-4
(2) 6K8
(2) 6K8
(1) 6SG7Y
(1) 6SG7Y
(1) 6SJ7
(1) 6SJ7
(2) 6SL7WGT
(2) 6SL7WGT
(2) 12SL7GT
(4) 6V6GTY
(4) 6V6GTY
(4) 6AC7WA
(4) 6V6GTY
(1) 6V6GTY
(1) 6V6GTY
(1) 6X5WGT

MN-5
(1) 12A6
(1) XTMR Crystal
(3) Total Crystals: (5)

Total Tubes: (16) (15), (16)

MN-MN-1, -2, -3, -4

Reference Data and Literature


Shipping Data

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<th>CONTENTS AND IDENTIFICATION</th>
<th>VOLUME (Cu.Ft.)</th>
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<td>(1) Handset NT-51032</td>
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1.7 MN: 2

UNCLASSIFIED
### RADIO TRANSMITTING AND RECEIVING EQUIPMENT

#### MN, MN-1 THRU -5

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<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<td>2-23/32 w x 8-15/16 lg</td>
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<td>Antenna Assembly NT-66044</td>
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<td>Rotary Converter NT-21861 (120 v DC/115 v AC) or Rotary Converter NT-21860 (32 v DC/115 v AC) or Transformer NT-30881 (450 v AC/115 v AC)</td>
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<td>3-1/4 x 3-1/2 x 75-1/4</td>
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UNCLASSIFIED

1.7 MN: 3
RADIO SET

FUNCTIONAL DESCRIPTION

Radio Set MN 120 v DC is a mobile two-way radio-telephone communication set intended to provide reliable, short-range communication on Navy vessels.

No field changes in effect at time of preparation (13 October 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 120 v DC.
FREQUENCY RANGE: 30 to 42 mc.
TYPE OF EMISSION: FM.
FREQUENCY DEVIATION: ±15 kc.
AUDIO RESPONSE
300 to 2750 CYCLES: ±1.5 db.
3500 CYCLES AND ABOVE: -30 db.
POWER OUTPUT
TRANSMITTER: 0 to 2 W adjustable.
RECEIVER: 1 W max.
SENSITIVITY: 1/2 uv.
OUTPUT IMPEDANCE
TRANSMITTER: 70 ohms.
RECEIVER: 8 ohms.

MANUFACTURER'S OR CONTRACTOR'S DATA

Fred M. Link, New York, New York.

Tube AND/OR CRYSTAL COMPLEMENT

(3) 6AC7
(2) 6SL7GT
(2) 6H6
(4) 6V6GT
(1) 6SG7
(1) 6X5GT
(1) 6SJ7
(2) 6K8

Total Tubes (16).

(2) for receiver  (1) for Transmitter

Total Crystals (3)

REFERENCE DATA AND LITERATURE

NAVSHIPS 95138: Technical Manual for RADIO TRANSMITTING and RECEIVING EQUIPMENT MN.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

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<th>QUANTITY PER EQUIPT</th>
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1.7 MN 120DC: 2
FUNCTIONAL DESCRIPTION

The Model MO-1 is a four channel mobile unit designed to provide a compact, two-way radio installation for use in Naval Craft, Combat Vehicles and other applications where space is at a premium. Both transmitter and receiver are crystal controlled and may be controlled from a remote location with the exception of the channel switching and emission selection circuits. It is designed to be used in conjunction with an interphone system, and provides audio sidetone to the headphones.

It may be operated from either a 6-volt or 12-volt direct current power source by use of the proper associated power equipment.

No field changes in effect at time of preparation (25 October 1957).

RELATION TO OTHER EQUIPMENT

The Navy Model MO-1 and Navy Model MAK are similar differing mainly in the frequency range.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 3 to 8 mc.
POWER OUTPUT: 25 W.
EMISSION: A2, A3.
FREQUENCY CONTROL: Crystal.
RECEIVING DATA
TYPE: Superheterodyne.
SENSITIVITY: 2.0 uv for 50 mw output across a 600 ohm load.
IF: 455 kc.
OUTPUT IMPEDANCE: 600 ohms.
POWER REQUIREMENTS: 6 or 12 v DC battery.
Radio Transceivers

RADIO TELEPHONE AND TELEGRAPH
TRANSMITTING AND RECEIVING
EQUIPMENT

MANUFACTURER'S OR CONTRACTOR'S DATA

Communications Company, Inc., Coral Gables, Fla.
Contract NXS-5884, dated 3 June 1942.

TUBE AND/OR CRYSTAL COMPLEMENT

6 Volt

(3) HY-69
(2) 6SK7WA
(2) 6V6Y
Total Tubes: (9)

(8) Quartz Crystal
Total Crystal: (8)

12 Volt

(3) HY-1269
(1) 12K8
(1) 12SQ7
Total Tubes: (9)

(8) Quartz Crystal
Total Crystal: (8)

REFERENCE DATA AND LITERATURE


EQUIPMENT SUPPLIED DATA

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<th>QUANTITY PER EQUIPT</th>
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<th>OVERALL DIMENSIONS (INCHES)</th>
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| 1                   | Power Assembly (6 Volt) consisting of:
|                     | Vibrator Power Assembly NT-20190                            |                             |               |
|                     | Dynamotor NT-21983                                          |                             |               |
|                     | or                                                           |                             |               |
|                     | Power Assembly (12 Volt) consisting of:
|                     | Vibrator Power Assembly NT-20193                            | 10-1/8 X 11 X 17            | 48.0          |
|                     | Dynamotor NT-21984                                          |                             |               |
| 1                   | Handset                                                     |                             | 1.4           |
| 1                   | Speaker                                                     |                             | 1.0           |
| 1                   | Set of Equipment Spares                                     |                             |               |
TRANSMITTING-REceiving Radio Telephone Equipment

FUNCTIONAL DESCRIPTION

The MQ is designed as a two-way communication from shore-to-ship or point-to-point. It is designed for radio telegraph or frequency shift operation in the 2000 to 3500 Kilocycles (KC) range with provisions for the use of a maximum of four (4) crystal-controlled pretuned frequencies within the bands.

No field changes in effect at time of preparation (4 March 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF FREQUENCY CONTROL: Crystal oscillator.

TYPE OF EMISSION: A3.

MODULATION CAPABILITY: 100%.

FIDELITY

TRANSMITTER: ±2 db from 200 to 3500 cps measures at 400 cps reference.

RECEIVER: Flat within ±2 db between 100 and 1500 cps.

SYSTEM DATA

TYPE: Superheterodyne.

AUDIO OUTPUT: 50 mw into 5 ohm load.

MODULATION: 30% at 400 cps.

SENSITIVITY: 15 uv.

SIGNAL-TO-NOISE RATIO: 4 to 1.

REFERENCE DATA AND LITERATURE


EQUIPMENT SUPPLIED DATA

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<td>Dynamotor</td>
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<td>Power Ass'y Consisting Of:</td>
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FUNCTIONAL DESCRIPTION

The Navy Models MQ-1 and MQ-2 are compact, low-power radiotelephone two-way communication equipments designed primarily for mobile marine applications. They are designed to cover the 2000 to 3500 kilocycle frequency range with provisions for the use of a maximum of four crystal-controlled pretuned frequencies within the band.

They are similar in frequency range, output, and emission, but have major electrical and mechanical differences. The Navy Model MQ-1 is designed to operate from a 6 or 12 volt direct current power source, while the Navy Model MQ-2 is designed to operate from a 6 volt direct current or 115 volt alternating current power source. The Navy Model MQ-1 is designed so that a suitable type of selective ringer may be installed to ring a bell on the ship where the MQ-1 is installed, and has remote control facilities except for frequency change.

No field changes in effect at time of preparation (8 April 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2000 to 3500 mc.
FREQUENCY CONTROL: Crystal oscillator.
POWER OUTPUT: 5 W nom.
EMISSION: A3.
MODULATION CAPABILITY: 100%.
FIDELITY
  TRANSMITTER: ±2 db from 200 to 3500 cps measured from 400 cps reference.
  RECEIVER: Flat within ±2 db between 100 and 1500 cps.

RECEIVE DATA
  TYPE: Superheterodyne.
  AUDIO OUTPUT: 50 mw into 5 ohm load.
  MODULATION: 30% at 400 cps.
  SENSITIVITY: 15 uv.
  SIGNAL-TO-NOISE RATIO: 4 to 1.

POWER REQUIREMENTS
  MQ-1: 6 or 12 v DC.
  MQ-2: 6 v DC or 115 v, 60 cps, single ph.

ANTENNA REQUIREMENTS
  TYPE: T, L, or vertical wire.
  VERTICAL TYPE LENGTH: 23 ft min.
  CAPACITY: Transmitter circuit will resonate 100 uf capacity and 5 ohms resistance min.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radiomarine Corporation of America, New York, N.Y.
Contract NXs-12088, dated 9 September 1942 (MQ-1).
Contract NXss-LL-23979 (MQ-2).
Approximate Cost: $500.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

MQ-1

(1) 6G6G
(1) 6K8
(1) 6L6WGB

MQ-2

(2) 6SS7
(1) 6ST7
(3) 6V6GT
Radio-Transceivers

MQ-1, -2

RADIOTELEPHONE EQUIPMENT

MQ-1

(1) 5U4G
(1) 6G6G
(1) 6L6WGB

Total Tubes: (10)

MQ-2

(1) 6SA7Y
(2) 6SK7WA
(1) 6SR7
(3) 6Y6GTY

(8) R-1/R-2

Total Crystals: (8)

MQ-1

(8) R-1/R-2

Total Crystals: (8)

REFERENCE DATA AND LITERATURE


EQUIPMENT SUPPLIED DATA

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<th>QUANTITY PER EQUIPT</th>
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<th>WEIGHT (lbs.)</th>
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<td>Plug</td>
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<td>Calibration Card</td>
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<td></td>
<td>1 Set of Equipment Spares</td>
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<td>Technical Manual NavShips 95144</td>
<td>6-1/2 x 7 x 12-3/8</td>
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<tr>
<td></td>
<td>MQ-2</td>
<td>1 Radio Transmitter-Receiver NT-43046</td>
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<tr>
<td></td>
<td>Set of Crystals</td>
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<tr>
<td></td>
<td>Cable</td>
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<td>120</td>
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<td>6 x 6 x 12</td>
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<td></td>
<td>Technical Manual NavShips 95145</td>
<td>1/4 x 8-1/2 x 11</td>
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</table>
RADIO SET

MZ-1

FUNCTIONAL DESCRIPTION

The MZ-1 is designed as a mobile type transmitting and receiving set. It provides two way communication with a similar fixed or mobile equipment operating on the same frequency. A single antenna is used which receives or transmits in accordance with the operation of an antenna relay in the transmitter. This equipment employs a dynamotor power supply operated from the 12 volt storage battery.

No field changes in effect at time of preparation (21 March 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TRANSMITTER DATA

TYPE OF EMISSION: A1 type, 40 W max; A3 type, 30 W max.
NUMBER OF BANDS: 3 bands.
FREQUENCY RANGE: 1500 to 12,000 kc.

RECEIVER DATA

TYPE OF EMISSION: A1, A3 types.
NUMBER OF BANDS: 3 bands.
FREQUENCY RANGE: 1500 to 12,000 kc.

OPERATING POWER RQMT: 12 v DC, internal battery.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and/or Crystal Data not available.

REFERENCE DATA AND LITERATURE

Nomenclature Card MZ-1 for Radio Set.

EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Dynamotor Assy NT No. 21881</td>
<td>7 X 7-5/8 X 12-7/8</td>
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<td>1</td>
<td>Headset NT No. 49507</td>
<td>3/8d X 2-1/32 dia</td>
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<tr>
<td>1</td>
<td>Radio Receiver NT No. 46159</td>
<td>11 X 11-3/4 X 11-13/16</td>
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<td>1</td>
<td>Radio Transmitter NT No. 52245</td>
<td>11-3/16 X 11-11/16 X 13-3/4</td>
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</table>
FUNCTIONAL DESCRIPTION

The Navy Model MZ-2 is designed as a complete radio transmitting and receiving set. It is designed for use in portable and mobile services. It was designed to be installed in a Willys Model MB 1/4 Ton 4 X 4 Truck. However, it may be used in other services where severe vibration and shock may be encountered.

No field changes in effect at time of preparation (20 February 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TRANSMITTER CHARACTERISTICS

TYPE OF SIGNALS EMITTED: CW or voice modulated.
NUMBER OF BANDS: 3 bands.
FREQUENCY RESPONSE: It is uniform ±3 db from 300 cps to 3000 cps.
AUDIO FREQUENCY DISTORTION: Less than 10% r.m.s. measured with 90% modulation at 400 cps.
RESIDUAL NOISE LEVEL: On the carrier is more than 40 db below the 100% modulation level.

POWER OUTPUT
VOICE: 20 watts.
CONTINUOUS WAVE: 40 watts.

RECEIVER CHARACTERISTICS

NUMBER OF BANDS: 3 bands.
TYPE OF CONTROL: Crystal controlled.
FREQUENCY RESPONSE: Within 5 db from 300 cps to 3000 cps.
BANDWIDTH: 6 kc at 6 db down, 11 kc at 20 db down and 19 kc at 40 db down.
AUDIO FREQUENCY DISTORTION: Less than 5.0% at 1.5 W; and 10% at 2.4 watts.

OPERATING POWER REQUIREMENTS: 12 v DC, 24 v DC, 32 v DC, 115 v DC, 115 v AC, 60 cps; and 230 v DC.
NOTE: Receiver requires 12 v AC or DC at 1.4 amps for the filaments and 225 v DC at 95 ma for the plates of the tubes.
Radio-Transceivers

MZ-2

MANUFACTURER'S OR CONTRACTOR'S DATA

Willys Motors, Inc., Toledo, Ohio.

TUBE AND/OR CRYSTAL COMPLEMENT

(5) 12A6  (4) 1625  (3) 12SK7  (1) 12SA7  (1) 12SQ7
Total Tubes: (14)
No Crystals used.

REFERENCE DATA AND LITERATURE


EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<tr>
<td>1</td>
<td>Radio Set MZ-2 Including:</td>
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<td></td>
<td>Antenna Ass'y Type 66118</td>
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<td></td>
<td>Reconnaissance Car Type 10182-8</td>
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<td></td>
<td>Radio Transmitting and Receiving Set Model TCS</td>
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</table>
RADIO RECEIVING EQUIPMENT

FUNCTIONAL DESCRIPTION

The RBZ is designed to serve as a portable radio receiver intended to be carried primarily in a special canvas vest carrying holder. The equipment is light and compact and derives all operating power from self-contained dry batteries which are carried in one of the two identical and interchangeable watertight plastic cases.

No field changes in effect at time of preparation (29 November 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2 to 5.8 mc.
INTERMEDIATE FREQUENCY: 455 kc.
OUTPUT IMPEDANCE: Approx 600 ohms.
LOW VOLTAGE BATTERY LIFE EXPECTANCY: 8 to 10 hrs continuous operation.
HIGH VOLTAGE BATTERY LIFE EXPECTANCY: 40 to 50 hrs depending on sensitivity which can be tolerated.

IMAGE REJECTION RATIO: 100 to 1.
POWER SOURCE REQUIRED: 1.5 v at 250 ma DC and 12.5 v DC at 5.5 ma.

MANUFACTURER'S OR CONTRACTOR'S DATA

Emerson Radio and Phonograph Corp, New York, N.Y.
Contract NXss 15891.
Approximate Cost: $70.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 1L4
(1) 1R5
(1) 1S5
(1) 1L4
Total Tubes: (5)
Radio-Receiving
RBZ

RADIO RECEIVING EQUIPMENT

REFERENCE DATA AND LITERATURE


EQUIPMENT SUPPLIED DATA

<table>
<thead>
<tr>
<th>QUANTITY PER EQUIPT</th>
<th>NAME AND NOMENCLATURE</th>
<th>OVERALL DIMENSIONS (inches)</th>
<th>WEIGHT (lbs.)</th>
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<td>Radio Receiver Unit NT-46203</td>
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<td>Helmet Antenna Lead - In NT-49238</td>
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