

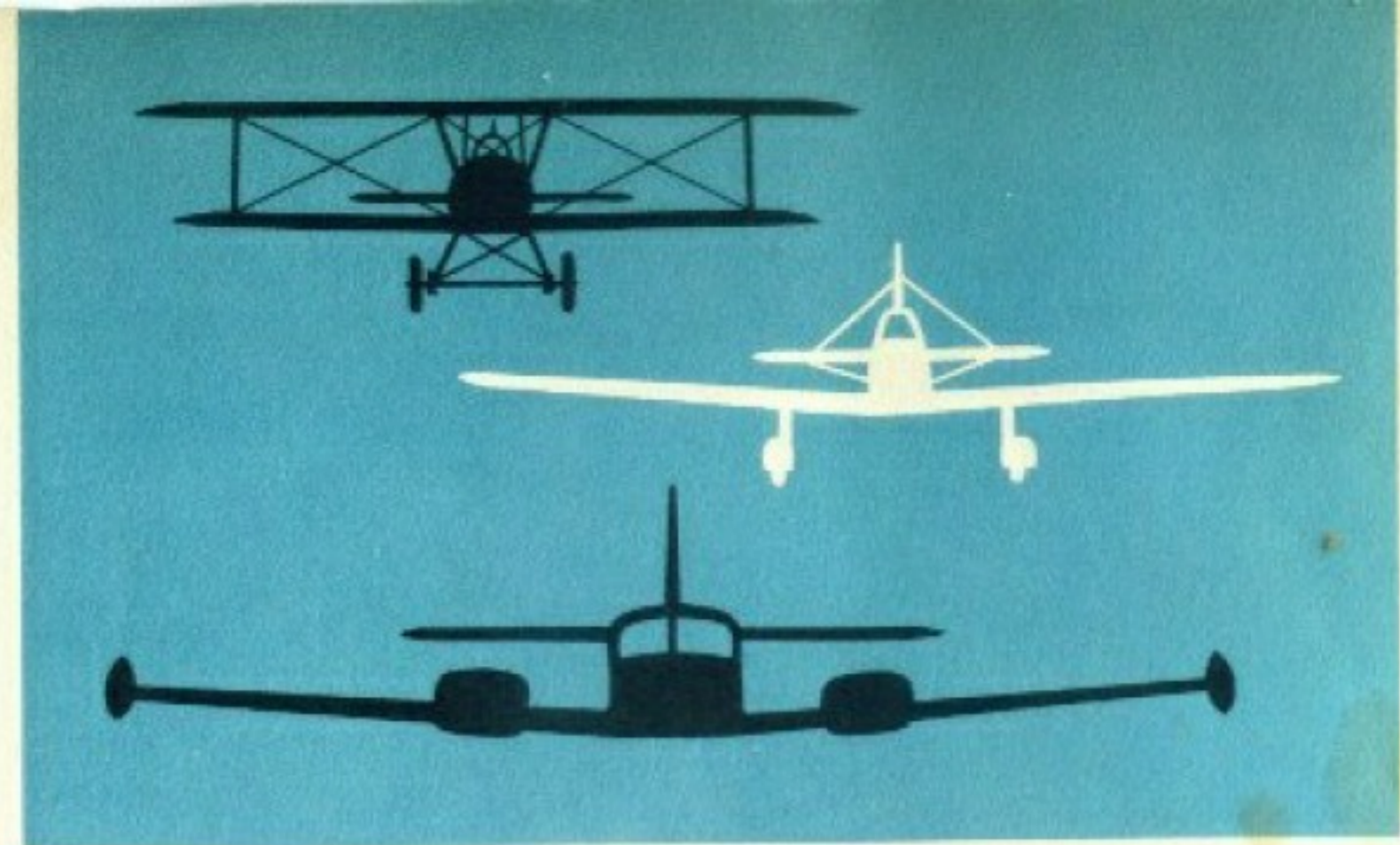
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CONDENSED  
CATALOG



*Aircraft Radio Corporation*

**NAVIGATION and  
COMMUNICATION  
EQUIPMENT  
FOR ALL AIRCRAFT**





*Since 1928 . . .*



*Entering its 32nd year of developing and manufacturing airborne communication and navigation systems, ARC continues to provide "Dependable Airborne Electronic Equipment . . . ." To insure built-in quality, reliability, and performance, only the finest materials and parts are used. Prototypes are subject to intensive flight and laboratory tests before production. During production, quality control is paramount. A pioneer in the application of radio to aviation, ARC accomplishments include many "firsts"—*

- The first air mail contract carriers used ARC equipment.
- The first radio beacon receiver, standardized by the Army Air Corps, was designed and manufactured by ARC.
- The first successful blind landing, flown by General James H. Doolittle, used equipment developed and installed by ARC.
- The first two-way radio telephone for fighter aircraft, standardized by the Army and Navy, was designed and supplied by ARC.

*The equipment described in this catalog represents the continued objective of ARC to produce the finest "Dependable Airborne Electronic Equipment . . . ."*

# Warranty

*Aircraft Radio Corporation (ARC) warrants each item of new equipment manufactured by it to be free from defects in material and workmanship under normal service use for which intended. ARC obligates itself under this warranty to replace or repair (at ARC discretion), at its factory, any ARC equipment, or major unit thereof (excluding vacuum tubes and transistors), which shall within one year after delivery to the original purchaser thereof be returned, transportation charges prepaid, to ARC with a statement from an authorized ARC Distributor or Dealer establishing the date of such delivery, which ARC examination shall disclose to have been defective in manufacture. This warranty shall not apply to any equipment, or major unit thereof, which, in the judgment of ARC, has been repaired or altered in any way so as adversely to affect its performance or reliability, or which has been subject to misuse, negligence or accident. This warranty is in lieu of all other guaranties or warranties express or implied. The obligation and responsibility of ARC for or with respect to defective equipment shall be limited to that expressly provided herein and ARC shall not be liable for consequential or other damage or expense whatsoever therefor or by reason thereof.*

*ARC reserves the right to make changes in design or additions to or improvements in its equipment without obligation to install such additions or improvements in equipment theretofore manufactured.*

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# Type 210 VHF Communication Equipment

*FCC Type Accepted  
Certified to FAA TSO C-37 and C-38, Category A  
Deutsche Bundespost Approval No. L-218/59*

A single-package sensitive receiver and powerful transmitter weighing only 12.2 pounds and sized smaller than  $\frac{1}{2}$  ATR. The Type 210 is a 360-channel (50-kc spacing) complete communication system with a frequency range of 118.00–135.95 mc—a major contribution to air safety on today's crowded airways.

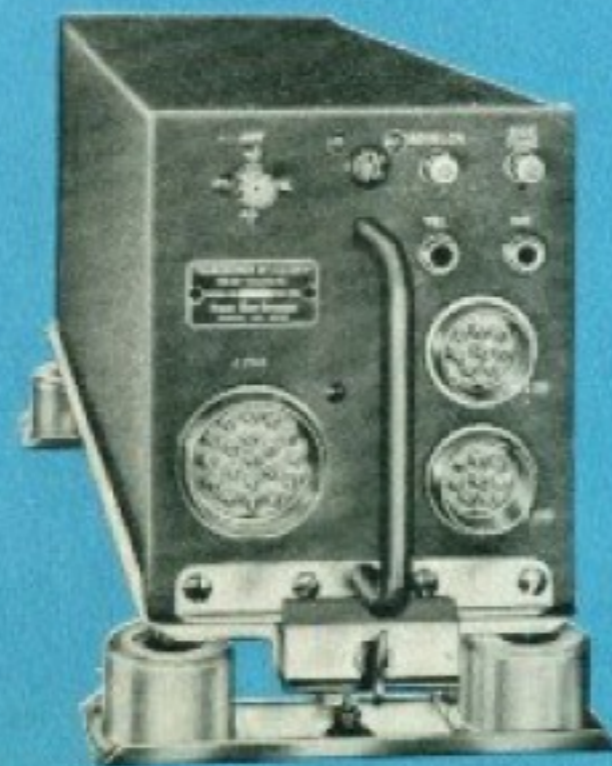
## FEATURES:

- *Mode-of-operation: SCS (single-channel simplex) or DCS (double-channel simplex)*
- *Complete system weighs only 22.2 pounds*
- *All crystals (56) supplied*
- *Receiver sensitivity of 1.5  $\mu$ v for 6 db S+N/N, 30% modulation, 1000 cps, at audio output of 150 mw minimum*
- *Transmitter power output of 15 watts (nominal)*
- *Adjustable squelch control*
- *Choice of edge-lighted, compact control units with large, easy-to-read markings and comfortable finger-tip controls—C-67A for console-panel or CC-10A for custom installation*
- *Meets requirements of MIL-T-5422 for temperature, humidity, vibration, shock, and altitude (30,000 feet)*

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Aircraft used for first blind flight, made by Jimmy Doolittle in 1929, was equipped with an ARC radio range receiver.



RT-11A RECEIVER-TRANSMITTER

CC-10A CUSTOM CONTROL UNIT



C-67A CONTROL UNIT



P-15A POWER UNIT

## Type 15F VHF Navigation Equipment

*Certified to FAA TSO C-36, C-38, and C-40, Category A  
Deutsche Bundespost Approval No. L-225/59*

ARC's latest VHF VOR-localizer-communication receiving equipment, providing 190 channels, with 100-kc separation, in a range of 108.00-126.90 mc. The Type 15F includes the electrically tuned, crystal-controlled R-34A Receiver, the B-13A-1 Converter with flag-emphasizer circuit and flag-adjustment potentiometers, and the DV-10A or DV-11A Dynaverter<sup>®</sup>, a transistorized power supply with high efficiency and excellent regulation characteristics.

For remote-control operation and for digital frequency selection, a choice of edge-lighted, panel-mounted control units is available. For control of the Type 15F alone, the ARC Type C-81A Control Unit, which combines all controls in a single unit, may be used; where a custom panel installation is desired, the ARC Type CC-11A Custom

Control Unit provides the frequency selection mechanism. The ARC Type C-88A Control Unit or ARC Type CC-12A Custom Control Unit will permit automatic and simultaneous glide slope frequency selection for ARC's new R-31A Glide Slope Receiver, or for any other glide slope receiver with ARINC control wiring. Combined with ARC's Type CD-1 or CD-2 Course Director, the Type 15F will also supply accurate steering data for en route VOR tracking and ILS approaches.

For efficient use of the available installation area, a dual-unit rack (as shown) or single-unit racks are available for the R-34A and B-13A-1. A dual-unit rack installation of the Type 15F weighs only 27.5 pounds.

### MODERNIZE YOUR OMNI EQUIPMENT

Without physical change and with only a minor external electrical change, the operational advantages of crystal control may be included in previously manufactured ARC VOR equipment. Only replacement of the existing tunable receiver and its control unit, and the fabrication of a 14-conductor cable assembly, are required. The cable assembly may be snaked through the casing of the existing mechanical linkage, which is no longer required. Cable ARC-23735 and two connectors ARC-23708 are used to fabricate the cable assembly.



**R-34A RECEIVER with DYNAVERTER  
and B-13A-1 CONVERTER on E-14  
RACK AND M-10 MOUNTING**



**A-13B ANTENNA**



**CC-11A CUSTOM CONTROL UNIT**

**IN-10 COURSE INDICATOR**



**C-81A CONTROL UNIT**

# Course Directors

## TYPE CD-1

A stabilized compass and steering-data computer system. Invaluable for IFR flying. Consists of a computer and a compass-slaved directional gyro which provide stabilized directional information. When used with VOR-localizer receiving equipment, the CD-1 gives precise steering data to the pilot, enabling him to intercept and remain on any selected VOR or localizer course, *even with unknown crosswinds*. The CD-1 thus eliminates the need for the usual mental calculations, trial cuts, and bracketing. When the CD-1 is used with the ARC Type 15F VHF Navigation Equipment, the S-10 is replaced by a C-90A Control Unit. The CA-10A Computer Amplifier operates from either a 14- or 28-volt dc primary power source; the external wiring is connected differently for each voltage to supply the heater circuit. The P-12 Power Unit uses ARC's newly developed, transistorized DV-10A (28 volts) or DV-11A (14 volts) Dynaverter®. Added equipment weight, with the G-12 replacing the DG installed in the airplane, is approximately 10 pounds.



CT-10 COMPASS TRANSMITTER



CA-10A COMPUTER AMPLIFIER



IN-11 METER



G-12 SLAVED GYRO



S-10 DIRECTOR CONTROL



P-12 POWER UNIT and DV-10A DYNAVERTER

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## TYPE CD-2

A steering-data computer system. Provides precise steering data to pilot on selected VOR or localizer course to intercept and remain on course even with a crosswind. Used with a stabilized source of heading information only, the CD-2 provides a convenient indication of any deviation from the desired heading. Designed to be installed in aircraft equipped with an ARC or other VOR-localizer receiver and any remote compass system meeting ARINC standards, such as Sperry, Bendix, Collins, or G.E. Plug-in modules and printed circuits are used in the CA-11A Computer Amplifier to simplify maintenance. Uses the S-10 Director Control as combined function selector and course selector instrument, or the C-90A Control Unit and IN-14 Indicator with ARC Type 15F Equipment only. Operates from aircraft's 115-volt, 400-cps power source. Weight of the CD-2 system is 4.2 pounds.



C-90A CONTROL UNIT



CA-11A COMPUTER AMPLIFIER



IN-14 COURSE INDICATOR



S-10 DIRECTOR CONTROL

# Type 21A Automatic Direction Finder

*U. S. Military Nomenclature:  
Direction Finder Set AN/ARN-59  
CAATC No. 1R4-9*

*United Kingdom Certificate Approval No. VC-78  
Deutsche Bundespost Approval No. L-219/59*

World-wide navigation aid with proven dependability—used extensively in all types of military and commercial aircraft. A lightweight, automatic direction finding set used for position plotting, homing, aural reception of AM signals, and aural identification of keyed CW stations. Operates in frequency range of 190–1750 kc in three bands: 190–400 kc, 400–840 kc, and 840–1750 kc. Light weight—*entire system weighs under 20 pounds*. Minimum loop drag—*streamlined loop housing protrudes only 2 inches outside the aircraft*. Power requirement—*only 2.8 amperes at 27.5 volts dc*. Also available for 14 volts dc. Does not require additional a-c power source. Highest level of reliability . . . easy maintenance due to careful mechanical design. Sub-assemblies wired, adjusted, sealed, and pretested before assembly. All a-f, i-f, and r-f coils hermetically sealed. Subminiature “premium” tubes used. I-f/a-f circuit parts mounted on hinged terminal board.

Edge-lighted control unit for remote-control tuning and all other operating functions—includes tuning meter and provision for reception of CW signals and for loop-only operation. Only one indicator needed for single- or dual-ADF installation.



R-30A RECEIVER



C-59A CONTROL UNIT



L-11 LOOP



IN-12 INDICATOR



IN-13A DUAL INDICATOR



P-14A POWER UNIT



# FES Systems

## Centralized Control Communication and Navigation Systems

A selection of the finest airborne electronic equipment. ARC's FES Systems offer the pilot communication and navigation facilities with maximum performance, reliability, and safety. Each system features a compact, edge-lighted control unit—convenient, at-hand control of all equipment functions. Suitable for any type of aircraft—single-engine, twin-engine, and multiengine.

### FEATURES

- *Primary and Standby VHF Communications*
- *Single- or Dual-omni Navigation*
- *Automatic Direction Finder*
- *Marker Beacon Receiver*
- *Glide Slope Receiver*
- *Course Director (Optional)*
- *Speaker Amplifier*
- *Crystal-controlled 360-Channel Transmitters and Receivers*
- *Centralized Control of All Operations*
- *Digital Direct-reading Frequency Indication*
- *Transistorized Power Supplies*

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Beacon receivers, designed and developed by ARC, were first installed on Douglas M-2 mail planes of National Air Transport.

**C-77 C CONTROL UNIT**



**C-70 D CONTROL UNIT**

### FES 1230 SERIES

A basic communication and navigation system. Typical system (FES-1233B) weight, less cabling, 87.6 pounds; typical current drain, 29 amperes for 14-volt dc input. Uses C-70D or C-70E Control Unit, which can be installed in standard glove or radio compartment. Choice of the following ARC equipments:

- Type 15F for VHF, omni, and localizer reception, and optional R-31A Glide Slope Receiver for simultaneous and automatic selection of glide slope frequencies
- Type 210 for 360-channel VHF reception and transmission—plus SCS-DCS operation—or T-25A Transmitter for 360-channel transmission only
- Type 21A for reliable, positive, automatic direction finding with low-frequency and broadcast stations
- R-20A or R-33A Marker Beacon Receiver for one-light or three-light marker reception, respectively
- F-13A Audio Amplifier for speaker and for interphone operation

### FES 1240 SERIES

An expanded communication and navigation system for executive aircraft. Total weight, less cabling, 120 pounds; standby current drain, for 28-volt dc input, 14.9 amperes. Uses C-77C Control Unit. Includes the following ARC equipment:

- Two Type 15F VHF Navigation Equipments for VHF, omni, and localizer reception
- R-31A Glide Slope Receiver, used with Type 15F for simultaneous and automatic glide slope reception
- Type 210 Equipment for 360-channel receiving and transmitting, with SCS-DCS feature, as primary communication system
- T-25A VHF Transmitter, 360 channels, used with Type 15F provides independent, secondary communication system
- Type 21A Automatic Direction Finder
- R-33A Marker Beacon Receiver—a three-light, transistorized marker receiver
- Added features: individual speaker switches, microphone selector switch, and sensitivity switch

EQUIPMENT	FES SYSTEM											
	1230	1230-1	1231	1231-1	1232	1232A	1232-1	1232A-1	1233	1233B	1233-1	1233B-1
CONTROL UNIT C-70D C-70E	•	•	•	•		•	•	•	•	•	•	•
TYPE 15E VHF NAVIGATION EQUIPMENT	•	•	•	•								
TYPE 15F VHF NAVIGATION EQUIPMENT					•	•	•	•	•	•	•	•
TYPE 210 VHF COMMUNICATION EQUIPMENT			•	•					•	•	•	•
T-25A VHF TRANSMITTER	•	•			•	•	•	•				
TYPE 21A AUTOMATIC DIRECTION FINDER	•	•	•	•	•	•	•	•	•	•	•	•
TYPE CD-1 COURSE DIRECTOR		•		•			•	•			•	•
F-13A AUDIO AMPLIFIER	•	•	•	•	•	•	•	•	•	•	•	•
R-20A MARKER BEACON RECEIVER	•	•	•	•								
R-31A GLIDE SLOPE RECEIVER						•		•		•		•
R-33A MARKER BEACON RECEIVER					•	•	•	•	•	•	•	•

## Receivers

### R-11A RECEIVER

CAATC No. 1360

A low-frequency receiver covering frequency range of 190-550 kc. Has high degree of selectivity and all other circuit features required for night instrument operation on low-frequency ranges. May be used with L-10A Loop for manual direction-finding or homing. Weight, with Dynaverter® and shock mounting, 7.6 pounds.

### R-19 RECEIVER

CAATC No. 1R4-6

A VHF receiver covering frequency range of 118-148 mc. Normally installed with one or more of ARC's VHF or UHF transmitters. Tuned precisely and quickly by the ARC "whistle-through" system. Squelch adjustment on receiver. Weight, with Dynaverter® and shock mounting, 7.6 pounds.

### R-20A MARKER BEACON RECEIVER

Deutsche Bundespost Approval No. L-221/59

An economical, high-quality navigation aid. Provides aural and one-light visual reception of all 75-mc marker beacon signals. (For

three-light marker beacon receiver, use ARC Type R-33A.) Weight, with shock mounting, 2.6 pounds.

### R-31A GLIDE SLOPE RECEIVER

Certified to FAA TSO C-34, Category A

Deutsche Bundespost Approval No. L-224/59

20 channels covering all existing and proposed glide slope frequencies. Input power only 0.7 ampere for 28-volt model and approximately 1.5 amperes for 14-volt model. Reliable-type subminiature tubes are used in the r-f section, and transistors are used in all other circuits. The R-31A weighs 6 pounds plus 1.4 pounds for the single-unit M-41A Mounting; decreased weight advantages are realized when installed with other equipments on multiple-unit ARC Series 40 Mountings.

When used with Type 15F Equipment, glide slope frequency is automatically and simultaneously selected by either the C-88A Control Unit or the CC-12A Custom Control Unit.

### R-33A MARKER BEACON RECEIVER

Certified to FAA TSO C-35, Category A

Deutsche Bundespost Approval No. L-222/59

An all-transistor, three-light, 75-mc marker beacon receiver. Double-

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R-11A RECEIVER

R-19 RECEIVER



R-20A MARKER BEACON RECEIVER



R-31A GLIDE SLOPE RECEIVER

conversion superheterodyne circuit. R-f sensitivity adjustment to accommodate various antennas. Provisions for individual trigger-level light adjustments. Aural output of 200 mw into 300-ohm load, controlled by potentiometer on front of receiver or by external audio level control. Modular construction. Uses ARC Series 40 Mounting. Requires 0.35 ampere from 28-volt dc source. Weighs only 3.5 pounds plus 1.4 pounds for single-unit M-41A Mounting; decreased weight advantages are realized when installed with other equipments on multiple-unit ARC Series 40 Mountings.

### R-34A RECEIVER

*Certified to FAA TSO C-36, C-38, and C-40, Category A*

Crystal-controlled VHF receiver for VOR, localizer, and communication facilities. 190 channels, spaced 100 kc apart, with range of 108.00–126.90 mc. Double-conversion superheterodyne. Electrically actuated, crystal-controlled tuning. Adjustable squelch sensitivity from 0.1 to 5  $\mu$ v. R-13B and R-32 Receivers of ARC Type 15D and 15E VHF Navigation Equipments may be replaced with R-34A, using same mounting facilities. Requires ARC Type C-81A or C-88A Control Unit, or ARC Type CC-11A or CC-12A Custom Control Unit, for remote-control tuning. DV-10A or DV-11A Dynaverter<sup>®</sup>, recommended as high-voltage supply. 14- or 28-volt dc operation.

## Power Supplies

**DV-10A DYNAVERTER<sup>®</sup>.** A completely transistorized dc-to-dc power supply. Input, 27 volts dc. Output, 270 volts dc at 150 ma. Weight, 1.6 pounds. A mechanical and electrical replacement for ARC Type D-10A Dynamotor with the advantage of higher efficiency and better voltage regulation.

**DV-11A DYNAVERTER<sup>®</sup>.** Same as DV-10A except input is 13.5 volts dc.

**DV-12A DYNAVERTER<sup>®</sup>.** A transistorized dc-to-dc power converter for use with ARC's T-25A Transmitter. Eliminates need for separate high-voltage power supply for T-25A—reduces load on receiver power supply which normally supplies T-25A. Plug-in module design for rear mounting on T-25A. Retrofit requires no internal wiring change and only minor external wiring change. Weighs only 1 pound. With 13.75 or 27.5 volts dc input, supplies rated output of 140 ma at 260 volts dc.

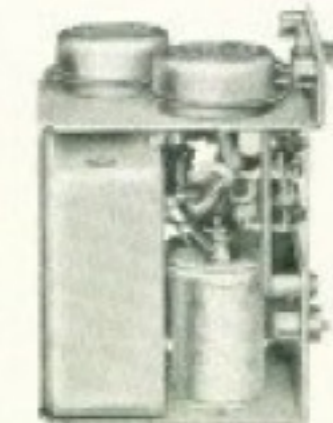
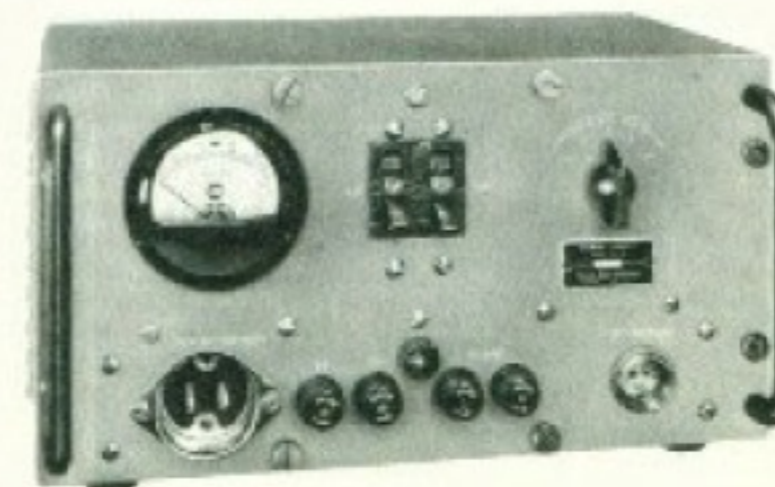
**P-13 POWER SUPPLY.** Provides low voltage at 27.5 volts dc and high voltage at 275 volts dc for operation of ARC's VHF and UHF Portable Communicators. Operates from a 115-volt, 50–60 cps power source. Supplies up to 5 amperes at 27.5 volts and up to 200 ma at 275 volts. Total weight, 32.4 pounds, including accessories and transit case.

R-33A MARKER BEACON RECEIVER

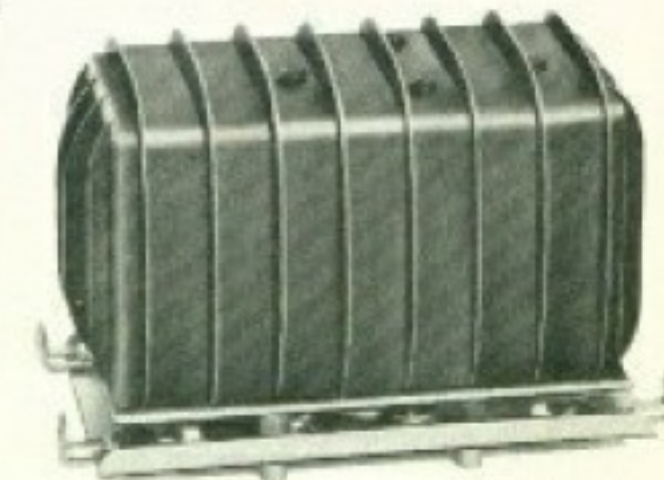


R-34A RECEIVER

P-13 POWER SUPPLY



DV-12A DYNAVERTER



DV-10A DYNAVERTER

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# Transmitters

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First air mail contract carriers, Pitcairn's "mailwing" biplanes, used ARC's radio range receiving equipment. Installation was made in 1928.

## T-25A VHF TRANSMITTER

*FCC Type Accepted*

*Certified to FAA TSO C-37, Category A*

A 360-channel VHF transmitter with a frequency range of 118.00–135.95 mc. High-level voice amplitude modulation. 7–10 watts output. Operates on all assigned frequencies in the band—a significant contribution to air safety. Compact over-all dimensions make it simple to install in many aircraft as a primary transmitter, or as a “back-up” to ARC’s Type 210 Equipment. High-voltage power may be obtained from an internal, rear-mounted, transistorized DV-12A Dynaverter®, or from a dynamotor or Dynaverter on associated equipment, or from a separate power supply. The T-25A weighs only 6.5 pounds. Frequency selection and operation are controlled remotely by ARC Type C-82A Control Unit, which includes a two-knob selector mechanism for individual selection of the megacycle channel and fractional megacycle channel. For custom installation, use ARC’s new Type CC-10A Custom Control Unit.

## T-22 VHF TRANSMITTER

*FCC Type Accepted*

*Certified to FAA TSO C-37, Category A*

20 channels divided between any two 2-mc bands in the frequency range of 118–127 mc. 2.5 watts, amplitude modulated. Weight, 6 pounds. Remotely controlled.

## MILITARY TRANSMITTERS

The following transmitters are not offered for commercial sale. They are available on special order to military agencies only.

## T-11B VHF TRANSMITTER

**(116–132 mc)**

5 channels in any 2-mc band. 2 watts, amplitude modulated. Weight, 3.4 pounds. Range, 100 miles at 10,000 feet or above. Normally used with ARC Type R-19 Receiver. Remotely controlled.

## T-13A VHF TRANSMITTER

**(125–148 mc)**

5 channels in any 2-mc band. 2 watts, amplitude modulated. Weight, 3.4 pounds. Range, 100 miles at 10,000 feet or above. Normally used with ARC Type R-19 Receiver. Remotely controlled.

## T-21 VHF TRANSMITTER

**(116–132 mc)**

10 channels in any 2-mc band. 2 watts, amplitude modulated. Weight, 3.5 pounds. Range, 100 miles at 10,000 feet or above. Normally used with ARC Type R-19 Receiver. Remotely controlled.

## T-23 VHF TRANSMITTER

**(125–148 mc)**

10 channels in any 2-mc band. 2 watts, amplitude modulated. Weight, 3.5 pounds. Range, 100 miles at 10,000 feet or above. Normally used with ARC Type R-19 Receiver. Remotely controlled.

## T-20 VHF TRANSMITTER

**(118–148 mc)**

20 channels divided between any two 2-mc bands. 2.5 watts, amplitude modulated. Weight, 6 pounds. Range, 100 miles at 10,000 feet or above. Normally used with ARC Type R-19 Receiver. Remotely controlled.

## TV-10A TRANSMITTER-CONVERTER (228–258 mc)

UHF transmitter-converter. Transmitter portion has 8 channels (up to 16 with two TV-10A's) in any two 4-mc bands. The frequency converter provides conversion of 228–258 mc signals to 118–148 mc for reception by the associated R-19 Receiver. Output, over 2 watts, amplitude modulated. Weight, 6.0 pounds. Range, more than 90 miles line-of-sight. The installation of any ARC VHF transmitter with the TV-10A and R-19 provides a complete 2-way voice communication system for both VHF and UHF. Provision made for precise “whistle-through” tuning.

T-25A VHF TRANSMITTER



C-82A CONTROL UNIT



CC-10A CUSTOM CONTROL UNIT



T-20 VHF TRANSMITTER



T-22 VHF TRANSMITTER

TV-10A TRANSMITTER-CONVERTER

T-11B VHF TRANSMITTER



## Portable Communicators FOR GROUND-TO-AIR COMMUNICATION

*Note: Not offered for commercial sale; available on special order to military agencies only.*

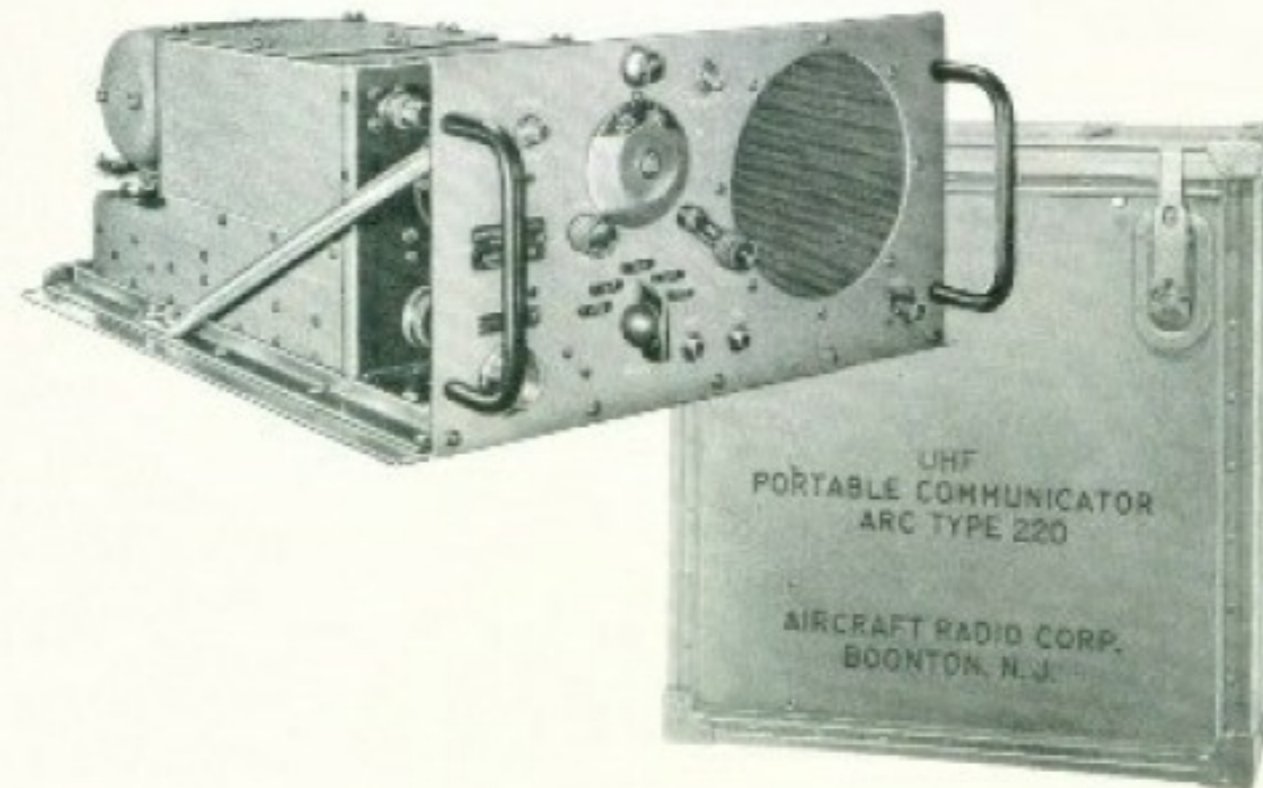
### ARC TYPE 12 VHF PORTABLE COMMUNICATOR (118-148 mc)

A transmitting-receiving set for amplitude-modulated signals. Choice of 5 frequencies in any 2-mc band. Antenna and all accessories, except primary power source, packed in durable carrying case. Complete radio station may be placed on the air in less than 5 minutes. Suitable for rugged field use. Total weight, including carrying case, 37 pounds. Available for 28-volt dc operation and, on special order, for 14-volt dc operation.

### ARC TYPE 220 UHF PORTABLE COMMUNICATOR (228-258 mc)

A transmitting-receiving set for amplitude-modulated signals. Choice of eight frequencies in any two 4-mc bands. Two watts output. Antenna and all accessories, except primary power source, packed in durable carrying case. Complete radio station may be placed on the air in less than 5 minutes. Suitable for rugged field use. Total weight, including carrying case, 40 pounds. Available for 28-volt dc power only.

ARC TYPE 12 VHF PORTABLE COMMUNICATOR



ARC TYPE 220 UHF PORTABLE COMMUNICATOR

## Antennas

**A-12 ANTENNA** (116-148 mc). (Not offered for commercial sale; available on special order to military agencies only.) A quarter-wave, base-fed, rod-type antenna for use on aircraft having speeds up to 200 mph, but which will be operated under no-icing conditions at any time. Single 3/4-inch hole mounting. Weight, 0.3 pound.

**A-15 ANTENNA** (116-148 mc). An inverted L-type antenna for use on aircraft having speeds up to 300 mph. Will withstand considerable icing. Single 1-inch hole mounting. Weight, 0.5 pound.

**A-16 ANTENNA** (228-258 mc). An inverted L-type antenna for use on aircraft with speeds up to 300 mph. Will withstand considerable icing. Single 1-inch hole mounting. Weight, 0.4 pound.

**A-17 ANTENNA COUPLER** (108-120 mc). For coupling V dipole rods of VOR antenna to 52-ohm

coaxial line. Weight, 0.1 pound.

**L-10A LOOP**. (Not offered for commercial sale; available on special order to military agencies only.) Diameter, 9 inches. Streamlined mounting. Coupling box, includes BNC connector for RG-58/U cable and mechanical linkage connection for control of loop rotation. Loop may be mounted on top or bottom of aircraft. Weight, 1.5 pounds. Use with ARC Type R-11A Receiver.

**A-13B ANTENNA**. CAATC No. 1R4-4. Two dipole antennas mounted on a streamlined pedestal. One dipole is designed for use with a glide slope receiver in the 329.3-335.0 mc band; the other is designed for use with a VHF VOR-localizer receiver in the 108-135 mc band. The glide slope antenna is a dipole mounted athwartships, and the VOR antenna is a V dipole mounted in the same rubber block with the glide slope antenna. Used on all types of aircraft. Weight, 3.6 pounds.

## Amplifiers

**F-11A AMPLIFIER**. CAATC No. 1R4-1. An isolation amplifier providing pilot and co-pilot with independent selection of up to ten audio input channels in any combination. Operates individual cockpit speakers or headsets. Reduces pilot discomfort and fatigue. Weight, including shock mounting, 8.3 pounds. Output, 2 watts in each of 2 channels. Output load impedance, 500 ohms. Choice of 14- or 28-volt dc model.

**F-13A AMPLIFIER**. An audio amplifier for loud-speaker operation. Amplifies output of one or more receivers. Headset operation optional. Output, 8 watts. Output impedance, choice of 4, 8, or 300 ohms. 14- or 28-volt dc operation—depends only on voltage rating of dynamotor or Dynaverter® installed. Weight, with dynamotor and shock mounting, 5.9 pounds, or 4.7 pounds with Dynaverter.

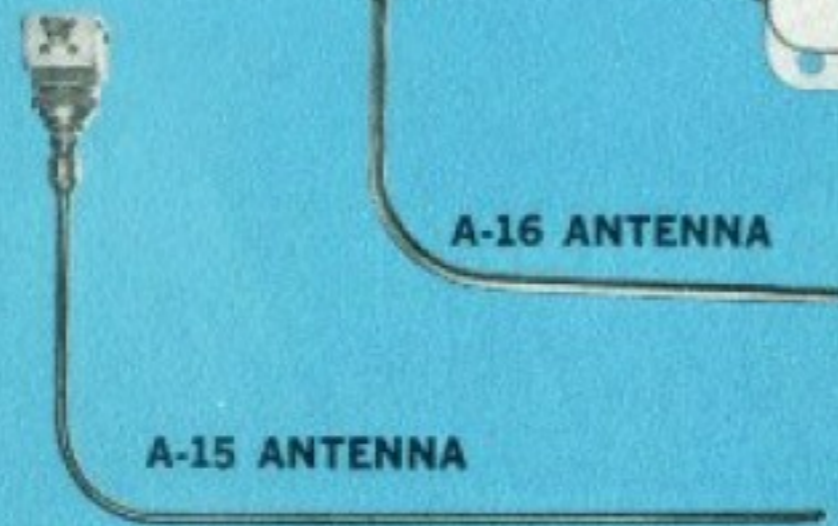
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A-13B ANTENNA



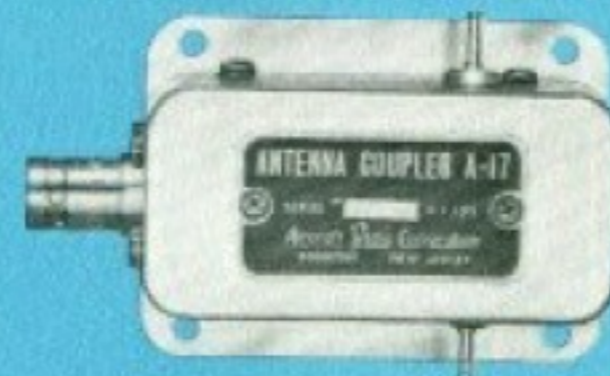
L-10A LOOP



A-15 ANTENNA



A-16 ANTENNA



A-17 ANTENNA COUPLER



A-12 ANTENNA



F-11A AMPLIFIER



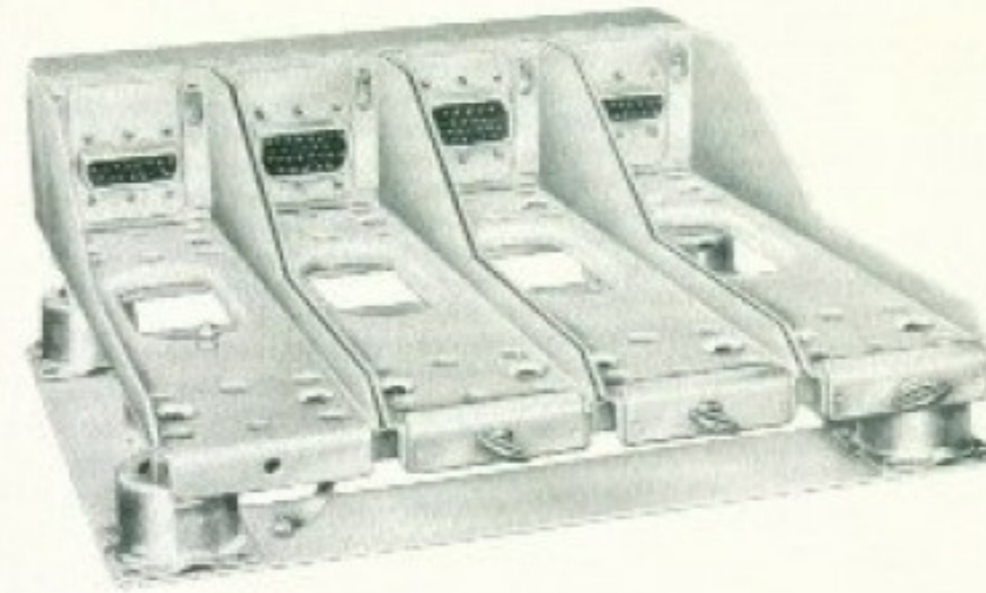
F-13A AMPLIFIER

**F-14A AMPLIFIER.** (Not offered for commercial sale; available on special order to military agencies only.) A single-tube "hot mike" amplifier for installation in military training aircraft as part of interphone system. Pilot and student may converse without "press-to-talk" switching. Incoming radio signals override the interphone. Weight, including shock mounting, 2.2 pounds. Output, 200 mw. Output load impedance, 300 ohms. Operates from 28-volt dc source only.

**F-15-1 AMPLIFIER.** A transistor audio amplifier for installation in aircraft. Uses two hermetically sealed silicon transistors to amplify voice signals from a low-impedance source. Enclosed by an aluminum cover. Single connector for input and output connections. Output, 200 mw into load of 300 ohms. Bridging impedance, looking back into amplifier, 1000 ohms. Operates from 28-volt dc source only. Weight, 0.4 pound.

## Series 40 Mountings

A new series of shock-mounted rack assemblies for mounting ARC modular equipment in single- or multiple-unit installations. Simple installation—only one connector per unit needed for all connections. Less space—takes up less area than usual individual rack-type mountings; various equipment combinations possible. Less weight—weight is reduced by using a single common mounting for multiple-unit installations. Easy to assemble—supplied in kit form to suit specific installations—includes rack assembly, coupling box assembly, specially designed connector, and mounting hardware.



### Engineering Data ARC MOUNTING KITS<sup>1</sup>

### ARC UNITS ACCOMMODATED

TYPE NO.	PART NO.	WEIGHT <sup>2</sup> (lb)	TOTAL QTY	TYPE NO.	WEIGHT (lb)	REQUIRED CONNECTOR KIT PART NO.	CONNECTOR POSITION & LOCATION CODE <sup>3</sup>
M-40A <sup>4</sup>	21756	0.55	1	CA-11A	2.7	22446	None
M-41A	21790	1.4	1	R-31A	6.0	22443	MI2
				T-25A	<sup>5</sup> 6.3	22366	MN3
M-41B	23740	1.4	1	CA-11A <sup>6</sup>	2.7	22445	SN3
				R-33A	<sup>7</sup> 3.5	22424	SN2
M-42A	22510	2.1	2	CA-11A <sup>6</sup>	2.7	22445	SN3
				R-31A	6.0	22443	MI2
				R-33A	<sup>7</sup> 3.5	22424	SN2
				T-25A	<sup>5</sup> 6.3	22366	MN3
M-43A	22700	3.1	3	CA-11A <sup>6</sup>	2.7	22445	SN3
				R-31A	6.0	22443	MI2
				R-33A	<sup>7</sup> 3.5	22424	SN2
				T-25A	<sup>5</sup> 6.3	22366	MN3
M-44A	23180	3.9	4	CA-11A <sup>6</sup>	2.7	22445	SN3
				R-31A	6.0	22443	MI2
				R-33A	<sup>7</sup> 3.5	22424	SN2
				T-25A	<sup>5</sup> 6.3	22366	MN3

<sup>1</sup> Includes required coupling box assembly. <sup>2</sup> Except for M-40A, weight includes connector kit(s). <sup>3</sup> Definitions: S—Small Connector, M—Medium Connector, L—Large Connector, N—Normal Position, I—Inverted Position. 1—High Location, 2—Center Location, 3—Low Location. <sup>4</sup> For

horizontal mounting of unit specified. <sup>5</sup> With DV-12A Dynaverter<sup>®</sup>, weight is 7.3 lb. <sup>6</sup> Vertical mounting of CA-11A requires following additional parts: 1 Snapslide Stud ARC-20916, 1 Split Washer ARC-4316, 1 Nut ARC-4041. <sup>7</sup> With optional filter and relay, weight is 3.8 lb.



F-14A AMPLIFIER



F-15-1 AMPLIFIER



## Test Equipment

### Bench Test Kits

A series of portable bench test kits for maintenance of ARC equipment. Compact—reliable—easily installed on bench or under shelf. Self-contained instruments. Designed to facilitate measurement, alignment, and trouble-analysis procedures, and bench-testing of units either individually or as a system. Each bench test kit consists of a major, central-control test unit (as shown) and the required accessory items, such as test probe, cable assembly, test rack, headset, and alignment tool.

#### BTK-15

Individual test kits for bench testing ARC Type 15C, 15D, 15E, and 15F Equipments. (Specify equipment when ordering.) Facilitates voltage measurements, receiver alignment, sensitivity measurements, navigational output measurements, and instrument accuracy checks.

#### BTK-17

For bench-testing ARC Type CD-1 Course Director. With optional accessories, Adapter Assembly ARC-23790 and Cable Assembly ARC-24109, can also be used for bench-testing ARC Type CD-2 Course Director. Requires 115-volt, 60-cps power for CD-1 testing and also 115-volt, 400-cps power for CD-2 testing. Facilitates complete testing of the computer amplifier, slaved gyro, compass transmitter, control unit, and all indicators.

#### BTK-18

For bench-testing, either individually or as a system, the following units of ARC Type 12 Equipment: R-19, R-20, R-20A Receivers; TV-10A Transmitter-Converter; K-13 Oscillator-Relay; and T-11A, T-11B, T-13, T-13A, T-21, T-23 Transmitters.

#### BTK-19

For bench-testing, either individually or as a system, the following units of ARC Type 12

Equipment: R-10A, R-11A, R-15, R-19, R-20, R-20A Receivers; K-13 Oscillator-Relay; and T-11A, T-11B, T-13, T-13A, T-20, T-21, T-23 Transmitters.

#### BTK-21

For bench-testing units of the ARC Type 21 and 21A Automatic Direction Finders. In addition, will measure loop compensation and permit charting of a specific loop-compensation schedule. Used with ADF receiver, power unit, and loop, simulates a complete ADF system. A primary power source of 14 or 28 volts dc, as applicable, is required.

#### BTK-25A

For bench-testing T-25A Transmitter, with dynamotor or Dynaverter<sup>®</sup> power supply, and C-82A Control Unit.

#### BTK-210

For bench-testing units of the ARC Type 210 VHF Communication Equipment.



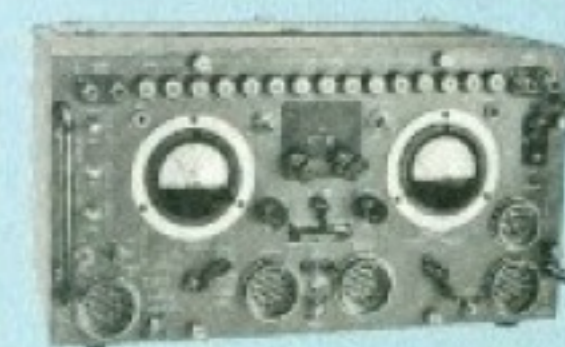
BTK-15 BENCH TEST KIT



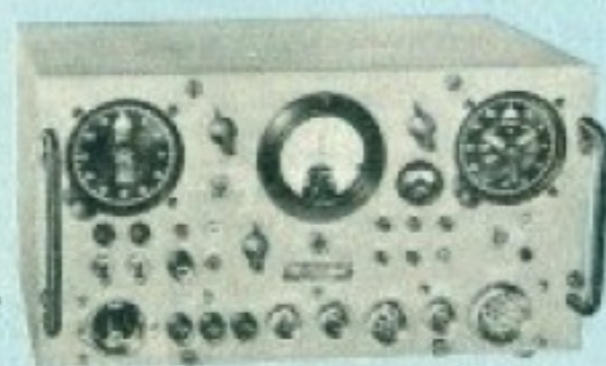
BTK-18 BENCH TEST KIT



BTK-21 BENCH TEST KIT



BTK-210 BENCH TEST KIT



BTK-17 BENCH TEST KIT



BTK-19 BENCH TEST KIT



BTK-25A BENCH TEST KIT

## Test Equipment Signal Generators

### H-12 SIGNAL GENERATOR (900-2100 mc)

Equal to military Signal Generator TS-419/U. Provides a stable, directly calibrated source of CW or pulsed RF. Internal circuits provide control of width and delay of internally generated pulses.

### H-14A SIGNAL GENERATOR (108-132 mc)

Single-package signal generator for bench-testing VOR and localizer receivers or for transmission of standard test signals to an entire airport area. By blanketing airport with a test signal, each receiver may be checked before every flight by pilot—signal generator need never leave the hangar radio room.

### H-16 STANDARD COURSE CHECKER

Measures the accuracy of the indicated VOR course in ARC Type H-14A Signal Generator to better than 1/2 degree. Has a built-in method of checking its own accuracy.



H-12 SIGNAL GENERATOR

H-14A SIGNAL GENERATOR



H-16 STANDARD COURSE CHECKER

## Accessories

**TERMINAL BOARDS.** Silicone-treated, ceramic insulated. Unaffected by prolonged moisture or temperature extremes. Four sizes . . . small 8-terminal to large 20-terminal.

**SNAPSLIDE FASTENERS.** Hold airborne radio equipment securely under maximum stresses. No tools required—simple push-pull action. Shake-proof . . . can only be released manually. Large and small sizes, with associated parts to match mounting plate thicknesses.

**CERAMIC-INSULATED CONNECTORS.** Silicone-treated . . . in sizes from 2 to 19 contacts. Withstand moisture, heat, and vibration. Particularly valuable when low and uniform contact resistance is required under shock and vibration and at very high temperatures. Each pin plug makes 8 points of contact with the mating jack.

**CONNECTOR KITS.** Rack-and-unit connectors used with ARC Series 40 Mountings and ARC

modular equipment. Feature "poke-home" contacts. Easy interchange or replacement of circuit wiring (connector need not be removed) using ARC-22001 and ARC-22002 Contact Removing Tools. Contacts can be wired before insertion into connector body. Available in three shell sizes and insert arrangements; mounting plate supplied permits a choice of from two to six different connector positions, depending on connector used.

**HOODED CONNECTOR KITS.** Plug-type connectors featuring ARC rack-and-unit connectors with "poke-home" contacts. Connector housed in two-piece aluminum casting with spring-release, quick-disconnect finger grips. Designed for use as cable termination. Three shell sizes and insert arrangements; 15, 28, or 63 contacts; male or female contacts. Mounting plate for mating connector supplied.

**CONNECTOR ARC-23708 AND CABLE ARC-23735.** For fabricating cable assembly used in retrofit of

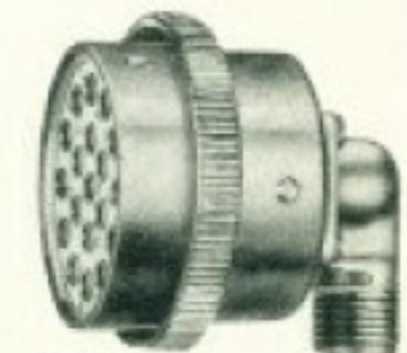
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TERMINAL BOARD

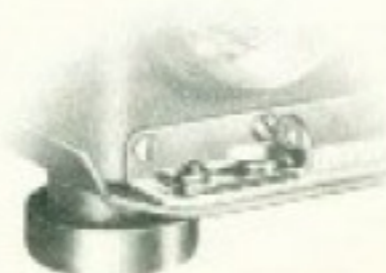


HOODED CONNECTOR KIT

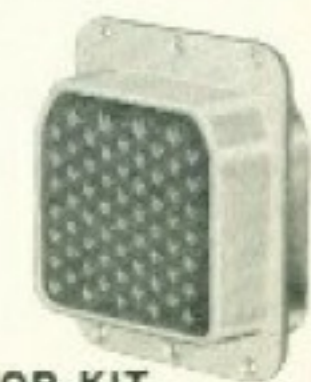
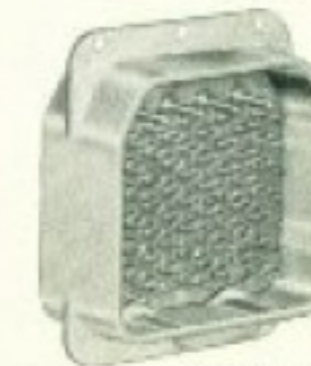


CONNECTOR ARC-23708

SNAPSLIDE FASTENER



CERAMIC-INSULATED CONNECTOR



CONNECTOR KIT



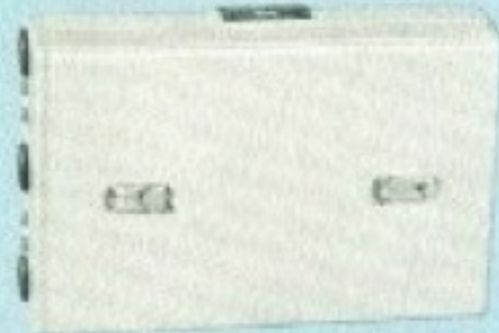
HEADSET ARC-11935



MICROPHONE ARC-11937



J-10 JACK BOX



J-13A JUNCTION BOX



COUPLING ARC-6357



MECHANICAL LINKAGE  
ARC-16158



COUPLING ARC-16888



COUPLING ARC-14603



K-11 MUTING RELAY



K-15 RELAY

K-18 RELAY



*Accessories Continued*

ARC Type 15D and 15E Equipments to accommodate crystal-controlled R-34A Receiver and digital-reading control unit. Connector includes right-angle fitting threaded for mechanical linkage nut; cable can be snaked through casing of existing mechanical linkage.

**HEADSET ARC-11935.** Headset attached to head-band, 66-inch Y-cord terminated in PL-55 plug, 600 ohms.

**MICROPHONE ARC-11937.** Microphone, hand-held, press-to-talk, aircraft carbon type with 6-foot, coiled, rubber-covered cord, terminated in PL-68 plug.

**J-10 JACK BOX.** Contains one microphone jack, one telephone jack, and screw-type terminals for connection to cable or cables entering through either of two grommets. Over-all dimensions, 2 $\frac{1}{8}$  x 2 $\frac{7}{8}$  inches. Weight, 0.17 pound. Installed with two No. 6-32 screws.

**J-13A JUNCTION BOX.** 30 terminals, with SPDT relay and 11 grommets for cables. Over-all dimensions, 7 $\frac{1}{16}$  x 5 x 2 $\frac{1}{8}$  inches. Weight, 1.5 pounds. Snapslide-secured access cover. Installed with two No. 6-32 screws. 14- or 28-volt dc models.

**J-15B JUNCTION BOX.** 56 terminals, with 11 grommets for cables. Over-all dimensions 10 $\frac{1}{8}$  x 7 $\frac{3}{8}$  x 2 $\frac{1}{8}$  inches. Weight, 2.7 pounds. Snapslide-secured access cover. Installed with four No. 6-32 screws. 14- or 28-volt dc models.

**MECHANICAL LINKAGE ARC-16158.** Specific lengths supplied assembled; or in bulk with shafting and casing, minimum lengths of 100 ft.

**Couplings**

**COUPLING ARC-6357.** Right-angle, for Mechanical Linkage ARC-16158 (MC-215).

**COUPLING ARC-16887.** Straight-through, wall-type, male-to-male. For use with Mechanical Linkage ARC-16158 (MC-215).

**COUPLING ARC-16887.** Straight-through, wall-type, male-to-female. For use with Mechanical Linkage ARC-16158 (MC-215).

**COUPLING ARC-14603.** T-type for use with Mechanical Linkage ARC-16158 when two points of tuning are used for tuning one receiver.

**Relays**

**K-11 MUTING RELAY.** Single-pole, double-throw assembly for switching low-powered audio or low-voltage dc circuits. Use K-16 with ceramic insulation for switching voltages over 35 volts, or where moisture or temperature extremes may be encountered. Contacts rated at  $\frac{1}{2}$  ampere, 115 volts. 14- or 28-volt dc.

**K-12 RELAY UNIT.** An assembly of relays and connectors designed to switch radio receiver and transmitter circuits between instructor and student in trainer aircraft.

**K-13 OSCILLATOR-RELAY UNIT.** A "whistle-through" unit for use with ARC Type 12 Communication Equipment. Provides a means for using a crystal-controlled transmitter as an r-f source for precise tuning of a vhf or uhf receiver. Weight, 1.1 pounds. 14- or 28-volt dc.

**K-15 RELAY.** Single-pole, single-throw assembly for switching low-powered ac or dc. Silicone-treated ceramic insulation. Contacts rated at 10 amperes, 30 volts. 14- or 28-volt dc.

**K-16 RELAY.** Single-pole, double-throw assembly for switching low-powered ac or dc. Contacts rated at  $\frac{1}{2}$  ampere, 115 volts. 14- or 28-volt dc.

**K-17 RELAY.** Double-pole, double-throw assembly for switching low-powered ac or dc. Silicone-treated ceramic insulation. Contacts rated at  $\frac{1}{2}$  ampere, 115 volts. 14- or 28-volt dc.

**K-18 RELAY.** Single-pole, double-throw, coaxial relay assembly in protected housing. BNC fittings. Over 60-db cross-talk factor. VSWR better than 1.2 for radio frequencies under 200 mc. 14- or 28-volt dc.

# AIRCRAFT RADIO CORPORATION

BOONTON, NEW JERSEY

LIST OF MAJOR UNITS AND ACCESSORIES

FOR: TYPE 15F VHF NAVIGATIONAL RECEIVING EQUIPMENT

ARC Type No.	ARC Part No.	Name (Description)	Unit Price
R-34A	21440	Receiver, (VHF, 190 channels, crystal controlled, 108.0 - 126.9 mc, less Dynaverter; choice for 14 v or 28 v supply)	1650.00
DV-11A(14v) DV-10A(28v)	21100 19840	Dynaverter Unit, recommended to replace D-10A (14 v or 28 v)Dynamotor; (choice for 14 v or 28 v supply)	180.00
B-13A-1	22900	Converter (choice for 14v or 28v supply)	630.00
E-14	15880	Rack (two-unit, for R-34A and B-13A-1; choice for 14v or 28v supply)	110.00
M-10	12901	Mounting (for Rack; shockproof)	24.00
IN-10	16706	Indicator, Course (3-1/8")	700.00
C-81A	21410	Control Unit (190 channel edge-lighted)	260.00
A-13B	15823	Antenna (VHF Navigational)	105.00
--	--	Complement of connectors includes one each plugs 14320, 14321, 15912; two each plugs 11337, 14050, 16115	27.60
		Instruction Book	N/C

AS LISTED ABOVE, TOTAL \$3686.60

This is the list of major units and accessories for a "standard" installation. There are variations of this "standard" such as use of single unit racks and mountings in place of the double listed herein. Some installations will have a custom control unit in place of the C-81A. Some installations will be made with the ARC Type C-88A control unit which combines control of the VOR/LOC receiver and the glide slope receiver. Some installations will be made with the ARC Type CD-1 Course Director and will therefore use the ARC Type IN-14 Indicator in place of the IN-10 listed herein. A dual installation of the Type 15F is strongly recommended if IFR operations are expected to be extensive. We recommend you consider the installation of the CD-1 Course Director at the time you specify your C & N requirements. To do so later will result in extra costs. Your ARC dealer will be pleased to quote you on the particular combination of units you require.

Ordering Information

Please order an equipment as follows: "One Type 15F, 14 volts" or "One Type 15F, 28 volts". It is not necessary to list all items. This list is for the purpose of defining what constitutes an equipment, and its price.

Open-wiring interconnection for Type 15F is recommended, and the "open-wire" is not listed as part of the equipment, as it is normally considered an installation item. Co-ax cable #11318 (RG-58/U) is not included in the above list because it is generally available in bulk at each dealer's shop.

Prices are f.o.b. Boonton, N.J., and are subject to change without notice.



# AIRCRAFT RADIO CORPORATION

BOONTON, NEW JERSEY

## PRICE LIST FOR ARC TYPE CD-2 COURSE DIRECTOR

ARC Type No.	ARC Part No.	Name (Description)	Unit Price
CA-11A	21800	Computer-Amplifier	\$490.00
-	21766	Connector, with 21767 hood	12.00
M-40A	21756	Mounting (flat type)	30.00
-	20045	Switch and Cable Assy	16.50

### CONTROLS

#### For 15E and prior, Using IN-14

C-60	18330	Control Unit	78.00
-	16115	Connector (19c, key left)	4.25

#### For ARC, Bendix, Collins, Not Using IN-14 as Equivalent (See Note)

S-10	20200	Director Control	235.00
-	14843	Connector (19c, key right)	4.25

#### For ARC 15F With IN-14

C-90	23460	Control Unit	78.00
-	14843	Connector (19c, key right)	4.25

Note: If ID-249 or equivalent (Omni-Mag) having extra synchro available, C-90 may be used in place of S-10

Prices are f.o.b. Boonton, N. J., and are subject to change without notice.





## Dealers and service in these areas . . .

### ARIZONA

Phoenix:  
*Sky Harbor Airport*  
Hawkes Aviation, Inc.

### ARKANSAS

Little Rock:  
*Adams Field*  
Kenneth Starnes Aviation Service, Inc.

### CALIFORNIA

Burbank:  
*Lockheed Air Terminal*  
Qualitron, Inc.  
Long Beach:  
*Municipal Airport*  
Air-Oasis Company  
Oakland:  
*Metropolitan Oakland Int'l Airport*  
Bayaire Avionics, Inc.  
San Jose:  
*Municipal Airport*  
San Jose Avionics Company  
Santa Monica:  
*Clover Field*  
Clover Field Radio Supply Co.  
Executive Radio & Aircraft Service, Inc.  
Van Nuys:  
*Van Nuys Airport*  
Norman Larsen Company

### COLORADO

Denver:  
*Stapleton Airfield*  
Aircraft Radio & Accessory Co., Inc.

### CONNECTICUT

New Haven:  
*New Haven Airport*  
Usher Aviation  
Windsor Locks:  
*Bradley Field*  
Kemp Communications

### DELAWARE

Wilmington:  
*New Castle County Airport*  
Atlantic Aviation Corporation

### FLORIDA

Fort Lauderdale:  
*Broward County Airport*  
Florida Aircraft Distributors, Inc.  
Miami Springs:  
*Miami International Airport*  
Florida Aircraft Radio & Marine, Inc.  
Peninsular Aircraft Radio, Inc.  
West Palm Beach:  
*West Palm Beach Int'l Airport*  
E. Farnell & Company  
GEORGIA  
Atlanta:  
*Fulton County Airport*  
Big Brothers Aircraft, Inc.  
*Atlanta Airport*  
Southern Airways Company

### ILLINOIS

Chicago:  
*Chicago Midway Airport*  
Bohling Aircraft Corporation  
*Sky Harbor Airport*  
Mid-States Aviation Corporation  
*Chicago O'Hare International Airport*  
Skymotive, Inc.  
East Alton:  
*Civic Memorial Airport*  
Walston Aviation  
Rockford:  
*Greater Rockford Airport*  
Butler Aviation  
Springfield:  
*Capitol Airport*  
Capitol Aviation, Inc.

### INDIANA

Indianapolis:  
*Wier Cook Airport*  
Roscoe Turner Aeronautical Corp.

### IOWA

Davenport:  
*Davenport Airport*  
Elliott Flying Service

### KANSAS

Kansas City:  
*Fairfax Airport*  
Wilson-Wylie Company, Inc.

### WICHITA:

*Wichita Airport*  
United Airplane Sales, Inc.  
Yingling Aircraft, Inc.

### LOUISIANA

Baton Rouge:  
*Ryan Airport*  
J. D. Hair, Distributor  
New Orleans:  
*New Orleans Airport*  
Trans-Aire Corporation  
Shreveport:  
*Downtown Airport*  
Currey Sanders Aircraft Co., Inc.

### MASSACHUSETTS

East Boston:  
*Logan Airport*  
Atlantic Aviation Corporation

### MICHIGAN

Detroit:  
*Detroit City Airport*  
*Willow Run Airport*  
Anderson Aircraft Radio Company  
Pontiac:  
*Pontiac Municipal Airport*  
Robbins Aviation Corp.

### MINNESOTA

Minneapolis:  
*Minneapolis-St. Paul Int'l Airport*  
Minnesota Airmotive, Inc.

### ROCHESTER:

*Lobb Field*  
Gopher Aviation, Inc.

### MISSOURI

St. Louis:  
*Lambert Field*  
Navco, Inc.  
St. Louis Flying Service

### MONTANA

Billings:  
*Logan Airport*  
Electronics Consultants Services

### NEW JERSEY

Newark:  
*Newark Airport*  
Airmar Radio Service, Inc.

### TETERBORO:

*Teterboro Airport*  
Atlantic Aviation Corp.  
Smith-Meeker Engineering Co.

### NEW MEXICO

Santa Fe:  
*Santa Fe County-Municipal Airport*  
Southwestern Skyways, Inc.

### NEW YORK

Amityville, L. I.:  
*Zabn's Airport*  
Dot Airtronics  
Buffalo:  
*Buffalo Airport*  
Buffalo Aeronautical Corporation  
Islip, L. I.:  
*MacArthur Airport*  
Airmar Radio Service, Inc.

### ROCHESTER:

*Rochester-Monroe County Airport*  
Page Airways, Inc.

### WHITE PLAINS:

*Westchester County Airport*  
International Aviation Industries  
Smith Meeker Engineering Co.

### NORTH CAROLINA

Charlotte:  
*Douglas Airport*  
Cannon Aircraft Executive Terminal, Inc.  
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*Smith-Reynolds Airport*  
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### OHIO

Akron:  
*Akron Airport*  
Chamberlain Aviation, Inc.  
Cincinnati:  
*Cincinnati Lunken Airport*  
Cincinnati Aircraft, Inc.  
Vandalia:  
*Dayton Airport*  
Ohio Aviation Company  
Willoughby:  
*Lost Nation Airport*  
General Aviation, Inc.  
Youngstown:  
*Youngstown Airport*  
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### OKLAHOMA

Oklahoma City:  
*Downtown Airport*  
Aerotron Radio Company  
*Will Rogers Field*  
Aircraftsmen, Inc.  
*Tulakee Airport*  
Sky Service, Inc.  
Tulsa:  
*Tulsa Airport*  
Aerotron Radio Company  
*Riverside Airport*  
Ross Aviation, Inc.  
*Tulsa Airport*  
Tulsair Distributors, Inc.

### OREGON

Hillsboro:  
*Hillsboro Airport*  
Aero Air, Inc.  
Portland:  
*Portland International Airport*  
Flightcraft, Inc.  
Troutdale:  
*Troutdale Airport*  
Skyways, Inc.

### PENNSYLVANIA

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*Harrisburg-York State Airport*  
L. B. Smith Aircraft Corp of Pa.  
Reading:  
*General Spaatz Airport*  
Reading Aviation Service, Inc.

### SOUTH CAROLINA

Charleston:  
*Charleston AFB/MUN Airport*  
Hawthorne Flying Service

### TENNESSEE

Memphis:  
*Memphis Airport*  
Memphis Aero Corporation  
Nashville:  
*Berry Field*  
Capitol Air Supply, Inc.  
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### TEXAS

Amarillo:  
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Brownsville:  
*Rio Grande Valley Int'l Airport*  
Matthews Electronics  
Dallas:  
*Addison Airport*  
Dal-Tex Aviation, Inc.  
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Associated Radio Company  
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Executive Aircraft Electronics, Inc.  
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*San Antonio International Airport*  
Airmews, Inc.  
Howard Aero Service  
Matthews Electronics  
Tyler:  
*Pounds Airport*  
Tyler Aircraft Radio Company

### VIRGINIA

Richmond:  
*Byrd Airport*  
Aero Industries, Inc.

### WISCONSIN

Oshkosh:  
*Winnebago County Airport*  
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### PUERTO RICO

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# Aircraft Radio Corporation

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