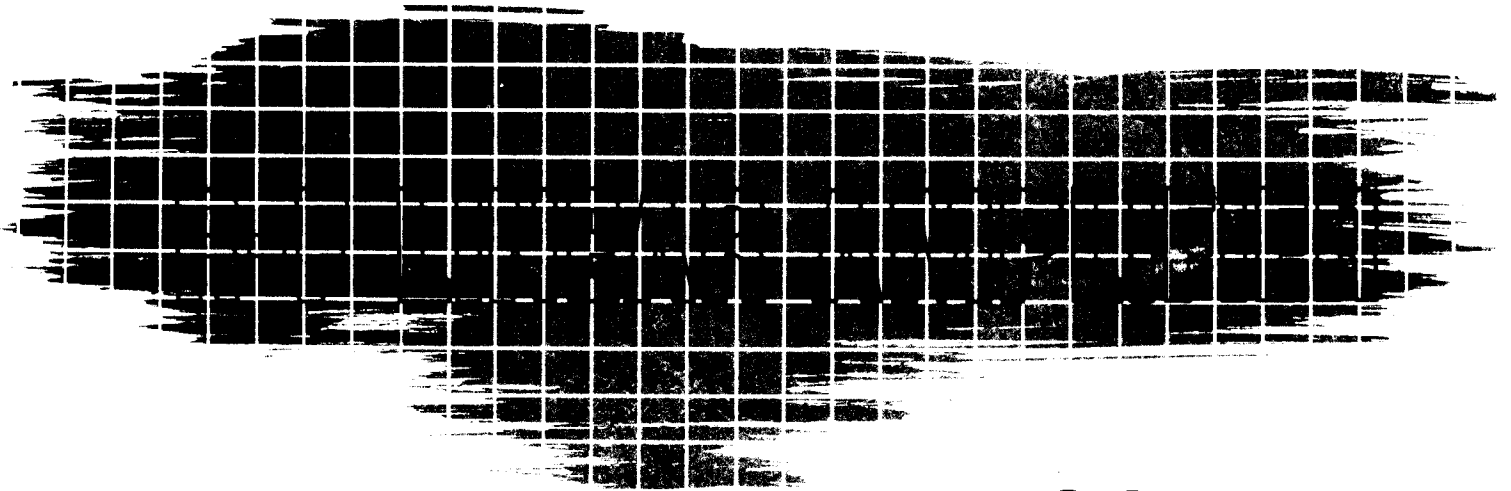
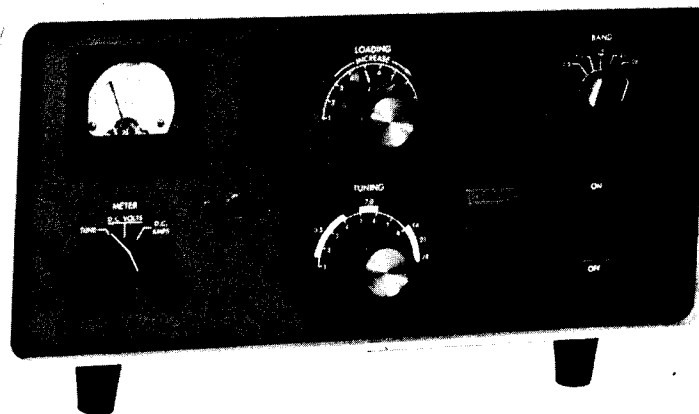


# INSTRUCTION BOOK



## 30L-1



**COLLINS RADIO COMPANY**



## COLLINS AMATEUR EQUIPMENT GUARANTEE

The Collins Amateur Equipment described herein is sold under the following guarantee:

Collins agrees to repair or replace, without charge, any equipment, parts, or accessories which are defective as to workmanship or materials and which are returned to Collins at its factory or its designated Service Agency, transportation prepared, provided:

- (a) Buyer presents properly executed Warranty Verification Certificate.
- (b) Notice of the claimed defect is given Collins or an authorized Service Agency, or an authorized Distributor, in writing, within 180 days from the date of purchase and goods are returned in accordance with Collins instructions.
- (c) Equipment, accessories, tubes, and batteries not manufactured by Collins or from Collins designs are subject to only such adjustments as Collins may obtain from the supplier thereof.
- (d) Any failure due to use of equipment for purposes other than those contemplated in normal amateur operations or in violation of Collins applicable Instruction Book shall not be deemed a defect within the meaning of these provisions.

This Warranty is void with respect to equipment which is altered, modified or repaired by other than Collins or Collins Authorized Service Agencies. However, alteration or modification in accordance with Collins Service Bulletins shall not affect this Warranty.

Collins reserves the right to make any change in design or to make additions to, or improvements in, Collins products without imposing any obligations upon Collins to install them in previously manufactured Collins products.

No other warranties, expressed or implied, shall be applicable to said equipment, and the foregoing shall constitute the Buyer's sole right and remedy under the agreements contained in these paragraphs. In no event shall Collins have any liability for consequential damages, or for loss, damage or expense directly or indirectly arising from the use of the products, or any inability to use them either separately or in combination with other equipment or materials or from any other cause.

**NOTICE:** With each equipment or set of equipments purchased, the distributor should furnish a Warranty Verification Certificate. It is necessary that this certificate accompany the equipment when it is returned for warranty repairs. Be sure that you get it from your distributor.

## WARRANTY REPAIRS

On the opposite page are listed the Service Agencies authorized to perform warranty repair on Collins Amateur Equipments.

If you should wish to return material or equipment direct to Collins under the guarantee, you should notify Collins, giving full particulars including the details listed below, insofar as applicable. If the item is thought to be defective, such notice must give full information as to nature of defect and identification (including part number if possible) of part considered defective. Upon receipt of such notice, Collins will promptly advise you respecting the return. Failure to secure our advice prior to the forwarding of the goods or failure to provide full particulars may cause unnecessary delay in handling of your returned merchandise.

### ADDRESS:

Collins Radio Company  
Amateur Product Office  
Cedar Rapids, Iowa

### INFORMATION NEEDED:

- (A) Type number, name and serial number of equipment
- (B) Date of delivery of equipment
- (C) Date placed in service
- (D) Number of hours of service
- (E) Nature of trouble
- (F) Cause of trouble if known
- (G) Name of distributor from whom the equipment was purchased.

Equipment returned to the Service Agency or Collins for warranty repair must be accompanied with the Warranty Verification Certificate.

## OUT-OF-WARRANTY REPAIR, MODIFICATIONS, ADDITION OF ACCESSORIES, ALIGNMENT, ETC.:

For information on service of this type write to the address shown below. If you wish to return your equipment for repairs, etc., without prior correspondence, be sure to include the following information attached to the equipment inside the packing carton:

- (1) Complete instructions detailing work to be performed.
- (2) Your return address.
- (3) Method of shipment by which the equipment should be returned.
- (4) Special instructions.

### DIRECT YOUR CORRESPONDENCE TO:

Collins Radio Company  
Service Repair Department  
Third Street Building  
Cedar Rapids, Iowa

### HOW TO ORDER REPLACEMENT PARTS:

When ordering replacement parts, you should direct your order to one of the listed Collins distributors.

Please furnish the following information insofar as applicable:

### INFORMATION NEEDED:

- (A) Quantity required
- (B) Collins part number (9 or 10 digit number) and description
- (C) Item or symbol number obtained from parts list or schematic
- (D) Collins type number, name and serial number of principal equipment
- (E) Unit subassembly number (where applicable)

**NOTE:** See Distributor List.

## COLLINS AUTHORIZED AMATEUR DISTRIBUTORS AND SERVICE AGENCIES

### ALABAMA

Ack Radio Supply Company  
3101 4th Avenue South  
Birmingham 5  
Phone: FAirfax 2-0588  
Rep: F. C. Atkerson  
SEE ALSO: Atlanta, Georgia

\*Beddow Engineering Services  
2424 Tenth Avenue South  
Birmingham  
Phone: ALpine 1-7582  
Rep: Dr. C. P. Beddow

### ALASKA

Yukon Radio Supply, Inc.  
(P.O. Box 406)  
645 I Street  
Anchorage  
Rep: A. E. Peterson

### ARIZONA

Elliott Electronics, Inc.  
418 N. 4th Avenue  
Tucson  
Phone: MAin 4-2473  
Rep: Jerry Flewelling

\*\*Southwest Electronic Devices  
(P.O. Box 3647)  
140 S. 2nd Street  
Phoenix  
Phone: ALpine 2-1743  
Rep: Herman A. Middleton

### ARKANSAS

Lavender Radio & TV Supply Co., Inc.  
(P.O. Box 1168)  
522 E. 4th Street  
Texarkana  
Phone: 2-4195  
Rep: Joe M. Lavender

Moory's Wholesale Radio & Appliance Co.  
12th & Jefferson  
DeWitt  
Phone: WHitney 6-2820  
Rep: Ed Moory

### CALIFORNIA

Amrad Supply, Inc.  
999 Howard Ave.  
Burlingame  
Phone: DIamond 2-5757  
Rep: Dan Rodriguez

\*Communication Receiver Service  
5016 Maplewood  
Los Angeles 4  
Phone: HOLlywood 2-2429  
Rep: Charles C. Messman

Elmar Electronics  
140 11th Street at Madison  
Oakland 7  
Phone: TE 4-3311 (TWX-OA73)  
Rep: Elvin Feige/M. L. Chivone

\*\*Henry Radio, Inc.  
(P.O. Box 64398)  
11240 W. Olympic Blvd.  
Los Angeles 64  
Phone: GRanite 7-6701  
Rep: Ted Henry

Quement Industrial Electronics  
(P.O. Box 527)  
161 San Fernando  
San Jose  
Phone: CYpress 4-0464  
Rep: Frank Quement

Radio Products Sales, Inc.  
1501 S. Hill Street  
Los Angeles 15  
Phone: RIchmond 8-1271  
Rep: Ken Raustin

Valley Electronic Supply Co.  
1302 W. Magnolia Blvd.  
Burbank  
Phone: VICTORIA 9-3944  
Rep: Frank Eckert/Bud Rand

Western Radio & TV Supply Co.  
(P.O. Box 1728)  
1415 India Street  
San Diego 1  
Phone: BELmont 9-0361  
Rep: A. W. Prather/Art Stewart

### COLORADO

Radio Products Sales Co.  
1237 - 16th St.  
Denver 2  
Phone: CHerry 4-6591  
Rep: Walter Nettles/Willard Wright

### CONNECTICUT

Corky's of Hartford, Inc.  
203 Ann Street  
Hartford  
Phone: JACKson 7-1881  
Rep: Edward C. Gedney

Radio Shack Corp. of Connecticut  
230 Crown Street  
New Haven 10  
Phone: SPRuce 7-6871  
Rep: E. G. Alberino  
SEE ALSO: Boston, Massachusetts

\*Huntress Electronics  
93 Talcott Road  
West Hartford 10  
Phone: ADams 6-0990  
Rep: Bob Resconsin

### DELAWARE

Willard S. Wilson, Inc.  
403-405 Delaware Avenue  
Wilmington 1  
Phone: OLYmpia 5-4321  
Rep: Willard S. Wilson

### DISTRICT OF COLUMBIA

Electronic Wholesalers, Inc.  
2345 Sherman Ave. N.W.  
Washington 1  
Phone: HUDson 3-5200  
Rep: Ray Avey

### FLORIDA

\*\*Amateur Radio Center, Inc.  
2805-7 N.E. 2nd Avenue  
Miami  
Phone: FRanklin 4-4101  
Rep: Wiley Gilkison

\*\*Broad Radio  
7231 Central Avenue  
St. Petersburg 10  
Phone: 72314  
Rep: Morton S. Broad

\*\*Electronic Wholesalers, Inc.  
61 N.E. 9th Street  
Miami 32  
Phone: FRanklin 7-2511  
Rep: Frank Gantz

Electronic Wholesalers, Inc.  
1301 Hibiscus Boulevard  
Melbourne  
Phone: PARKway 3-1441  
Rep: Frank Gantz

Grice Electronics, Inc.  
(P.O. Box 1911)  
300 E. Wright St.  
Pensacola  
Phone: HEMlock 3-4616  
Rep: F. G. Grice, Jr.

\*\*Kinkade Radio Supply, Inc.  
1719 Grand Central Avenue  
Tampa  
Phone: 8-6043  
Rep: E. T. Kinkade

### GEORGIA

Ack Radio Supply Co.  
331 Luckie St. N.W.  
Atlanta 13  
Phone: JA 4-8477  
Rep: T. E. Atkerson

Specialty Distributing Co., Inc.  
763 Juniper St. N.E.  
Atlanta 8  
Phone: TRinity 3-2521  
Rep: J. E. Eaton

### HAWAII

\*\*Honolulu Electronics  
819 Keeaumoku Street  
Honolulu 14  
Phone: 995-466  
Rep: Thomas Teruya

### ILLINOIS

Allied Radio Corp.  
100 N. Western Avenue  
Chicago 80  
Phone: HAymarket 1-6800  
Rep: Jack Schneider/Hal Eisenberg

Klaus Radio & Electric Company  
403 E. Lake St.  
Peoria  
Phone: RH 8-3401  
Rep: Clifford Morris

Newark Electronics Corporation  
223 W. Madison Street  
Chicago 6  
Phone: STate 2-2944  
Rep: Les Wilkins/A. L. Poncher

### INDIANA

Brown Electronics, Inc.  
1032 Broadway  
Fort Wayne  
Phone: ANthony 3382  
Rep: A. A. Brown

Graham Electronics Supply, Inc.  
122 S. Senate St.  
Indianapolis 4  
Phone: MEIrose 4-8487  
Rep: Dick Seigel/H. H. Thompson/  
G. M. Graham

Radio Distributing Co., Inc.  
(P.O. Box 1499)  
1212 High St.  
South Bend 15  
Phone: ATLantic 8-4665  
Rep: William A. Davidson

### IOWA

Bob and Jack's, Inc.  
4507 Forest Avenue  
Des Moines 11  
Phone: BLackburn 5-0873  
Rep: Robert M. Evans/Jack Landis

Radio Trade Supply Co.  
1224 Grand Avenue  
Des Moines 9  
Phone: ATLantic 8-7237  
Rep: Leo Vince Davis

World Radio Laboratories, Inc.  
3415-27 W. Broadway  
Council Bluffs  
Phone: 32-81851  
Rep: Alan McMillan/Leo Meyerson/  
C. H. Williams

### KANSAS

The Overton Electric Co., Inc.  
522 Jackson Street  
Topeka  
Phone: CEntral 3-1367  
Rep: S. D. Thacker

### KENTUCKY

Radio-Electronic Equipment Co.  
(P.O. Box 1212)  
480 Skain Avenue  
Lexington  
Phone: 3-1577  
Rep: A. A. Abraham

### LOUISIANA

\*\*Radio Parts, Inc.  
807 Howard Avenue  
New Orleans 12  
Phone: JACKson 2-0217  
Rep: Irvine J. Levi

### MASSACHUSETTS

DeMambro Radio Supply, Inc.  
1095 Commonwealth Avenue  
Boston 15  
Phone: ALgonquin 4-9000  
Rep: Frank DeMambro

Graham Radio, Inc.  
505 Main Street  
Reading  
Rep: Robert T. Graham, Sr.

Radio Shack Corp.  
730 Commonwealth Avenue  
Boston 17  
Phone: REgency 4-1000  
Rep: A. E. Coe

\*Two-Way Radio Engineers, Inc.  
109-115 Ward Street  
Boston  
Rep: Sherman M. Wolf

### MICHIGAN

\*Communication Service Company  
201 South Lincoln  
Charlotte  
Phone: 1770-W  
Rep: Bart Rypstra

M. N. Duffy & Co.  
2040 Grand River Avenue W.  
Detroit 26  
Phone: WOODward 3-2270  
Rep: M. N. Duffy/Bill Mains

Purchase Radio Supply  
327 E. Hoover Avenue  
Ann Arbor  
Phone: NORmandy 8-8696  
8-8262  
Rep: Roy J. Purchase

Warren Radio Company  
1710 South Westledge  
Kalamazoo  
Phone: FIESide 2-5720  
2-7127  
Rep: Frank Smith

### MINNESOTA

Lew Bonn Company  
1211 LaSalle Avenue  
Minneapolis 3  
Phone: FEderal 9-6351  
Rep: Bob Woodrow/Don Gies/Joe Hotch

\*\*Electronic Center, Inc.  
107 3rd Avenue N.  
Minneapolis 1  
Phone: FEderal 8-8678  
Rep: Ward Jensen

### MISSISSIPPI

Swan Distributing Company, Inc.  
(P.O. Box 2698)  
342 N. Gallatin St.  
Jackson  
Phone: FLEetwood 2-5516  
Rep: Leo A. Swan, Jr.

### MISSOURI

Walter Ashe Radio Company  
1125 Pine Street  
St. Louis 1  
Phone: CHEstnut 1-1125  
Rep: Joe Novak/Bill Dubord

Burstein-Applebee Co.  
1012-1014 McGee Street  
Kansas City 6  
Phone: BALtimore 1-1155  
Rep: R. H. Friesz/Bill Tagan

Henry Radio Company  
211 North Main  
Butler  
Phone: ORchard 9-3127  
Rep: Bob Henry/Helen DeArmond

### MONTANA

Electric City Radio Supply  
2815 - 10th Avenue South  
Great Falls  
Phone: GL 2-6236  
Rep: Frank Anderson

### NEW HAMPSHIRE

\*\*Evans Radio  
(P.O. Box 312)  
Bow Junction, Route 3A  
Concord  
Phone: CAPital 5-3358  
Rep: Roger Britton

### NEW JERSEY

Federated Purchaser, Inc.  
1021 U. S. Rt. 22  
Mountainside  
Phone: ADams 2-8200  
Rep: Hal Thorn

Hudson Radio & Television Corp.  
of New Jersey  
35 Williams Street  
Newark 2  
Phone: MARket 4-5154  
Rep: Joseph Prestia

5/1/61

\*SERVICE AGENCY ONLY

\*\*ALSO AUTHORIZED SERVICE AGENCY

**\*Warner Engineering Co., Inc.**  
239 Lorraine Ave.  
Upper Montclair  
Phone: Pioneer 6-7900  
Rep: Charles K. Atwater

**NEW MEXICO**

**\*Simms Communications, Inc.**  
1220 Morella  
Santa Fe  
Phone: YUcca 2-9502  
Rep: Preston W. Simms

**NEW YORK**

Adirondack Radio Supply  
(P.O. Box 88)  
185-191 W. Main St.  
Amsterdam  
Phone: Victor 2-8350  
Rep: Ward Hinkle

Ft. Orange Radio Distributing Co., Inc.  
904-16 Broadway  
Albany 7  
Phone: HEMlock 6-8411  
Rep: Harry Miller

Genessee Radio & Parts Co., Inc.  
2550 Delaware Avenue  
Buffalo 16  
Phone: DE 9661  
Rep: Martin Feigenbaum

Harrison Radio Corporation  
225 Greenwich Street  
New York 7  
Phone: BARclay 7-7777  
Rep: W. E. Harrison/Ben Snyder

Harvey Radio, Inc.  
103 W. 43rd Street  
New York 18  
Phone: JUdson 2-1500  
Rep: Harvey Sampson/George Zarrin

**NORTH CAROLINA**

Dalton-Hege Radio Supply Co., Inc.  
938 Burke Street  
Winston-Salem  
Phone: PARK 5-8711  
Rep: Wayne Yelverton

**\*\*Freck Radio & Supply Co.**  
38 Biltmore Avenue  
Asheville  
Phone: ALPine 3-3631  
Rep: T. T. Freck

**OHIO**

Custom Electronics, Inc.  
1918 South Brown Street  
Dayton 9  
Phone: BALdwin 3-3157  
Rep: Richard Sauer/Jim Shupe

Pioneer Electronic Supply Co.  
2103 E. 21st Street  
Cleveland 15  
Phone: SUPERior 1-5277  
Rep: J. Fred Ohman/Herb Farr

Selectronic Supplies, Inc.  
3185 Bellevue Road  
Toledo 6  
Phone: GREENwood 4-5477  
Rep: Glen Eversole

Steinberg's Inc.  
633 Walnut Street  
Cincinnati 2  
Phone: CHerry 1-1880  
Rep: Jule Burnett

**\*\*Universal Service**  
114 N. Third Street  
Columbus 15  
Phone: CAPitol 1-2335  
Rep: Francis R. Gibb

**OKLAHOMA**

General Electronics, Inc.  
1032 Classen Blvd.  
Oklahoma City  
Phone: FO 5-1448  
Rep: Fred F. Zelinger

Radio, Inc.  
1000 South Main Street  
Tulsa 19  
Phone: GIBson 7-9124  
Rep: E. R. Durham

**OREGON**

Portland Radio Supply Co.  
1234 S.W. Stark Street  
Portland 5  
Phone: CAPitol 8-8647  
Rep: C. B. Lucas

**PENNSYLVANIA**

Cameradio Company  
1121 Penn Avenue  
Pittsburg 22  
Phone: EXpress 1-4000  
Rep: Harry Kaplin

Radio Electric Service Company  
of Pa., Inc.  
N.W. cor. 75th & Arch Sts.  
Philadelphia 6  
Phone: WALnut 5-5840  
Rep: Edward Miller

**RHODE ISLAND**

W. H. Edwards Company, Inc.  
116 Hartford Avenue  
Providence 9  
Phone: GASpee 1-6158  
Rep: Sal Infantolino

**SOUTH DAKOTA**

Burghardt Radio Supply  
(P.O. Box 746)  
621 4th Street S.E.  
Watertown  
Phone: TURner 6-5749  
Rep: Stan Burghardt

**TENNESSEE**

Electra Distributing Company  
1914 West End Avenue  
Nashville 4  
Phone: ALPine 5-8444  
Rep: Richard B. Harris

W. & W. Distributing Company  
(P.O. Box 436)  
644-646 Madison Avenue  
Memphis  
Phone: JACKson 7-4628  
Rep: Mrs. S. D. Wooten, Jr.

**TEXAS**

Amateur Electronics, Inc.  
2802 Ross Avenue  
Dallas  
Phone: RIVERSide 8-9198  
Rep: Walter L. Jackson

**\*\*Busacker Electronic Equipment Company, Inc.**  
(P.O. Box 13204)  
1216 W. Clay Street  
Houston 19  
Phone: JACKson 6-2578  
Rep: Garth L. Johnson

Central Electronics  
4117 Maple Avenue  
Dallas  
Phone: LAKeside 6-8675  
Rep: Red Walden

**\*Communications Service, Inc.**  
3209 Canton Street  
Dallas 26  
Phone: RIVERSide 7-1852  
Rep: Cecil A. White, Jr.

Crabtree's Wholesale Electronics  
2608 Ross Avenue  
Dallas  
Phone: RIVERSide 8-5361  
Rep: R. B. Bryan/Russell Manship

Electronic Equipment & Engineering Co.  
(P.O. Box 3687)  
805 South Staples Street  
Corpus Christi  
Phone: TULip 3-9271  
Rep: R. N. Douglas

Hargis-Austin, Inc.  
(P.O. Box 716)  
410 Baylor Street  
Austin  
Phone: GREENwood 8-6618  
Rep: Mrs. Paul Hargis/Joe Fooshe

**\*\*Howard Radio Company**  
1475 Pine Street  
Abilene  
Phone: ORchard 2-9501  
Rep: R. L. Howard

McNicol, Inc.  
811 N. Estrella Street  
El Paso  
Phone: LO 5-3992  
Rep: C. C. McNicol

Modern Electronics Co.  
(P.O. Box 1361)  
2000 Broadway  
San Antonio 6  
Phone: CAPitol 7-7388  
Rep: H. O. Klumb

Radio & Television Parts Co.  
1628 N. Saint Mary's St.  
San Antonio 12  
Phone: CAPitol 7-7503  
Rep: Don FitzSimon

**WASHINGTON**

**\*\*C & G Radio Electronics Co.**  
2502-6 Jefferson Avenue  
Tacoma 2  
Phone: BRoadway 2-3181  
Rep: Lloyd Norberg/Cliff Osborne

C & G Radio Electronics Co.  
2221 - 3rd Ave.  
Seattle 1  
Phone: MAIn 4-4355  
Rep: L. R. Norberg

Northwest Electronics Distributors  
E. 730 First Avenue  
Spokane 3  
Phone: KE 4-2644  
Rep: J. P. McGoldrick

Pringle Radio Wholesale Company  
2101 Colby  
Everett  
Phone: ALPine 2-6303  
Rep: M. U. Baker

**WISCONSIN**

Harris Radio Corporation  
289 N. Main Street  
Fond du Lac  
Phone: WALnut 2-4670  
Rep: Harris E. Serman/Terry Serman

Amateur Electronic Supply  
3832 West Lisbon Avenue  
Milwaukee 8  
Phone: WESt 3-3262  
Rep: Terry Serman/Steve Potyandy

Satterfield Electronics, Inc.  
1900 S. Park Street  
Madison 5  
Phone: ALPine 7-4801  
Rep: A. W. Satterfield/W. E. Uhalt/  
Don Wentland

## COLLINS AUTHORIZED SERVICE AGENCIES

**ALABAMA**

**\*Beddow Engineering Services**  
2424 Tenth Avenue South  
Birmingham  
Phone: ALPine 1-7582  
Rep: Dr. C. P. Beddow

**ARIZONA**

**\*\*Southwest Electronic Devices**  
(P.O. Box 3647)  
140 S. 2nd Street  
Phoenix  
Phone: ALPine 2-1743  
Rep: Herman A. Middleton

**CALIFORNIA**

**\*Communication Receiver Service**  
5016 Maplewood  
Los Angeles 4  
Phone: HOLlywood 2-2429  
Rep: Charles C. Messman

**\*\*Henry Radio, Inc.**  
(P.O. Box 64398)  
11240 W. Olympic Blvd.  
Los Angeles 64  
Phone: GRANite 7-6701  
Rep: Ted Henry

**CONNECTICUT**

**\*Huntress Electronics**  
93 Talcott Road  
West Hartford 10  
Phone: ADams 6-0990  
Rep: Bob Resconsin

**FLORIDA**

**\*\*Amateur Radio Center, Inc.**  
2805-7 N.E. 2nd Avenue  
Miami  
Phone: FRanklin 4-4101  
Rep: Wiley Gilkison

**\*\*Broad Radio**  
7231 Central Avenue  
St. Petersburg 10  
Phone: 72314  
Rep: Morton S. Broad

**\*\*Electronic Wholesalers, Inc.**  
61 N.E. 9th Street  
Miami 32  
Phone: FRanklin 7-2511  
Rep: Frank Gantz

**\*\*Kinkade Radio Supply, Inc.**  
1719 Grand Central Avenue  
Tampa  
Phone: 8-6043  
Rep: E. T. Kinkade

**HAWAII**

**\*\*Honolulu Electronics**  
819 Keeaumoku Street  
Honolulu 14  
Phone: 995-466  
Rep: Thomas Teruya

**LOUISIANA**

**\*\*Radio Parts, Inc.**  
807 Howard Avenue  
New Orleans 12  
Phone: JACKson 2-0217  
Rep: Irvine J. Levi

**MASSACHUSETTS**

**\*Two-Way Radio Engineers, Inc.**  
109-115 Ward Street  
Boston  
Rep: Sherman M. Wolf

**MICHIGAN**

**\*Communication Service Company**  
201 South Lincoln  
Charlotte  
Phone: 1770-W  
Rep: Bart Rypstra

**MINNESOTA**

**\*\*Electronic Center, Inc.**  
107 3rd Avenue N.  
Minneapolis 1  
Phone: FEderal 8-8678  
Rep: Ward Jensen

**NEW HAMPSHIRE**

**\*\*Evans Radio**  
(P.O. Box 312)  
Bow Junction, Route 3A  
Concord  
Phone: CAPital 5-3358  
Rep: Roger Britton

**NEW JERSEY**

**\*Warner Engineering Co., Inc.**  
239 Lorraine Ave.  
Upper Montclair  
Phone: Pioneer 6-7900  
Rep: Charles K. Atwater

**NEW MEXICO**

**\*Simms Communications, Inc.**  
1220 Morella  
Santa Fe  
Phone: YUcca 2-9502  
Rep: Preston W. Simms

**NORTH CAROLINA**

**\*\*Freck Radio & Supply Co.**  
38 Biltmore Avenue  
Asheville  
Phone: ALPine 3-3631  
Rep: T. T. Freck

**OHIO**

**\*\*Universal Service**  
114 N. Third Street  
Columbus 15  
Phone: CAPitol 1-2335  
Rep: Francis R. Gibb

**TEXAS**

**\*\*Busacker Electronic Equipment Company, Inc.**  
(P.O. Box 13204)  
1216 W. Clay Street  
Houston 19  
Phone: JACKson 6-2578  
Rep: Garth L. Johnson

**\*Communications Service, Inc.**  
3209 Canton Street  
Dallas 26  
Phone: RIVERSide 7-1852  
Rep: Cecil A. White, Jr.

**\*\*Howard Radio Company**  
1475 Pine Street  
Abilene  
Phone: ORchard 2-9501  
Rep: R. L. Howard

**WASHINGTON**

**\*\*C & G Radio Electronics Co.**  
2502-6 Jefferson Avenue  
Tacoma 2  
Phone: BRoadway 2-3181  
Rep: Lloyd Norberg/Cliff Osborne

\*SERVICE AGENCY ONLY

\*\*ALSO AUTHORIZED SERVICE AGENCY

# **30L-1**

## **R-F LINEAR AMPLIFIER**

**INSTRUCTION BOOK**

**3rd EDITION, 15 AUGUST 1961**

**523-0122-00**

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1961

**CEDAR RAPIDS, IOWA, U.S.A.**

PRINTED IN THE UNITED STATES OF AMERICA



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SECTION I  
Installation

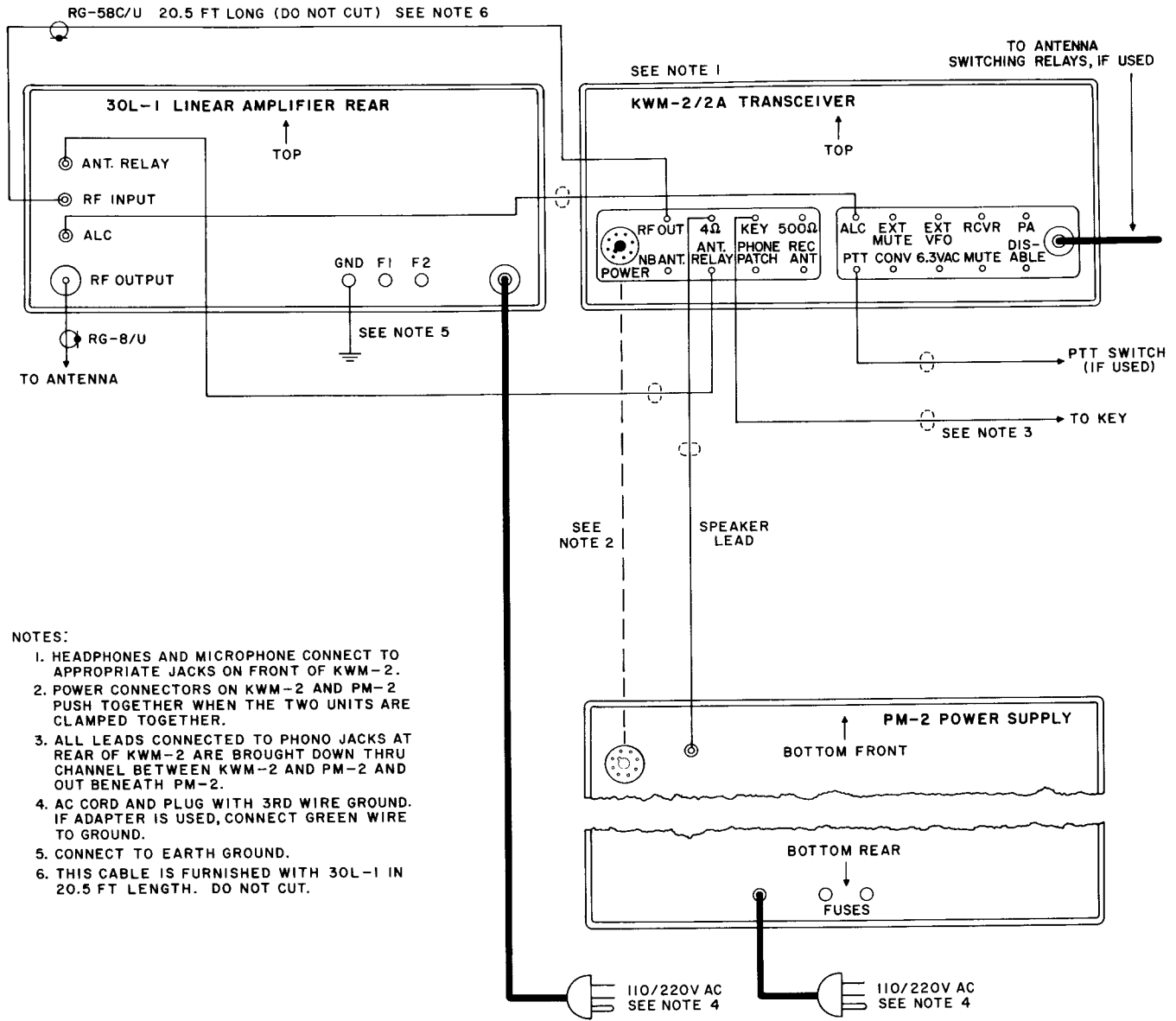


Figure 1-1. Interconnections with KWM-2/2A Traveling Station



## SECTION I INSTALLATION

### 1.1 UNPACKING.

Carefully lift the amplifier out of the packing material. Examine for visible damage. If the amplifier has been damaged in shipment, save box and packing material and notify the transportation company. Fill out and mail the equipment registration card. Check tuning controls and switches for freedom of action. Check

the equipment included with the amplifier against table 1-1.

Lift the amplifier cabinet lid. Loosen the ten screws in the r-f compartment cover, slide it forward, and lift off. Remove the packing material around the tubes. Replace the cover and tighten screws. Lower the lid.

TABLE 1-1. EQUIPMENT FURNISHED WITH 30L-1

QUANTITY	DESCRIPTION	FUNCTION	PART NUMBER
2	Shielded cables, 4 feet long, with phono plug on each end	Alc and antenna relay cables	426-2027-00
1	RG-58C/U cable, 20.5 feet long, with phono plug on each end	R-f input cable	426-5079-00
6	Fuses	Spares	264-4110-00
1	A-c power plug adapter	A-c power	368-0138-00
1	UG-21D/U coaxial plug	R-f output connector	357-9261-00
1	Number 6 Bristo wrench	Knob removal	024-9730-00
1	Number 8 Bristo wrench	Knob removal	024-0019-00
1	Coaxial plug (Amphenol type 82-835)	Right-angle cable plug	357-9113-00

### 1.2 POWER TRANSFORMER CONNECTIONS.

The 30L-1 is shipped with the transformer primary connected for 115 volts a-c. If 230-volt a-c operation is planned, the primary connections must be changed on terminal board TB1. Refer to figure 7-1. This board is located at the bottom of the power supply compartment. The a-c power cord is connected to this board. To obtain access, refer to paragraph 4.2.

**WARNING**

**DO NOT BLOCK INTERLOCK SWITCHES.** Dangerous voltages are present in this equipment. The high voltage is interlocked with the amplifier covers. Make no attempt to put the amplifier into service until all compartment covers are in place.

### 1.3 CABLING.

#### 1.3.1 TRAVELING STATION.

The 30L-1 is particularly applicable to traveling station use in conjunction with portable transceivers such as the KWM-2/2A. Refer to figure 1-1. **IN THIS SERVICE, MAKE SURE THE TRANSFORMER PRIMARY IS CONNECTED FOR PROPER LINE VOLTAGE.**

#### 1.3.2 HOME STATION.

Connect to KWM-2/2A, KWM-1, or S-Line as shown in figures 1-2, 1-3, and 1-4.

#### 1.3.3 KWM-1 SERIAL NUMBERS ABOVE 861.

If KWM-1 models above serial number 861 are used with the 30L-1, it will be necessary to bring out alc

SECTION I  
Installation

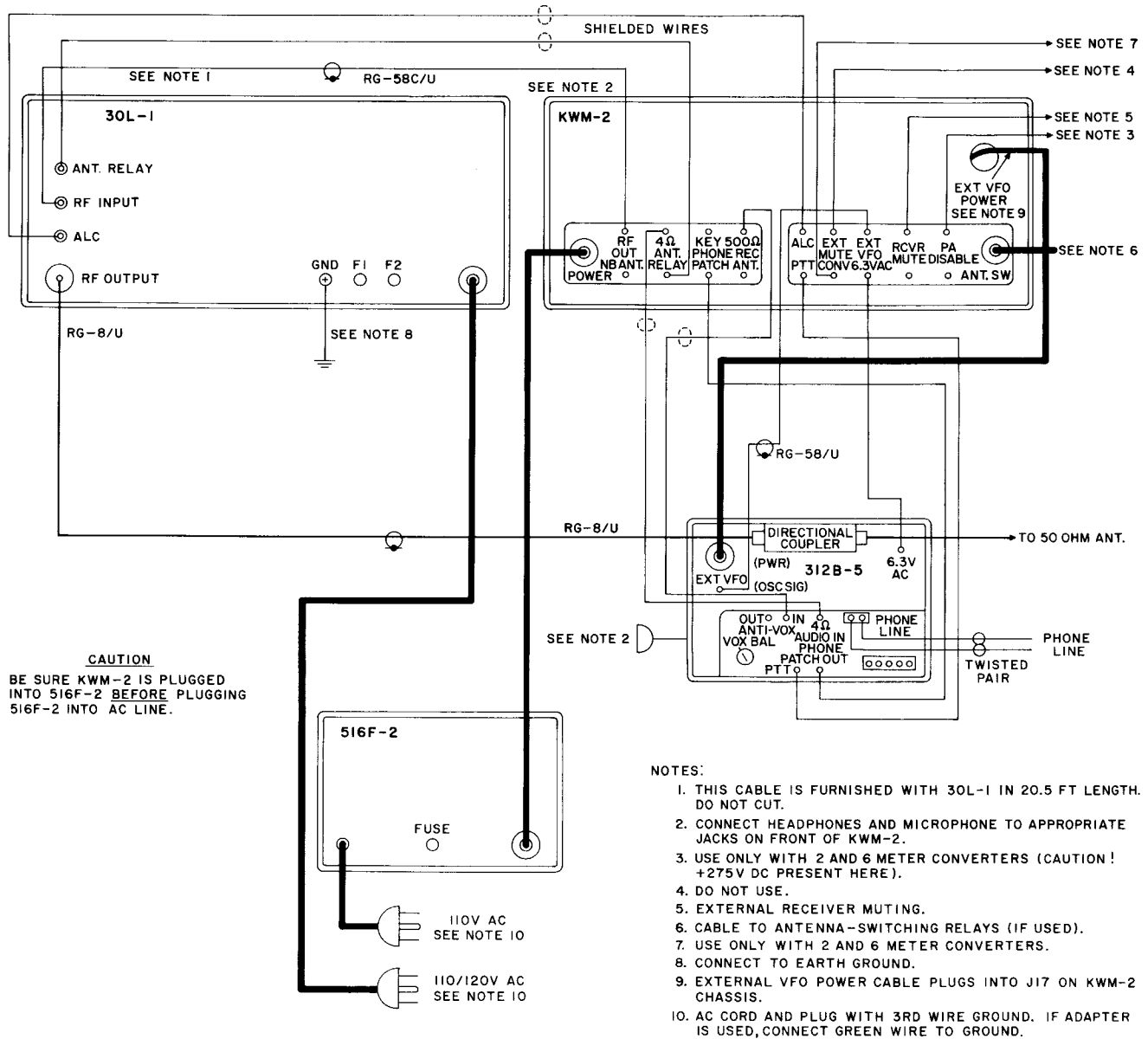


Figure 1-2. Interconnections with KWM-2/2A Home Station

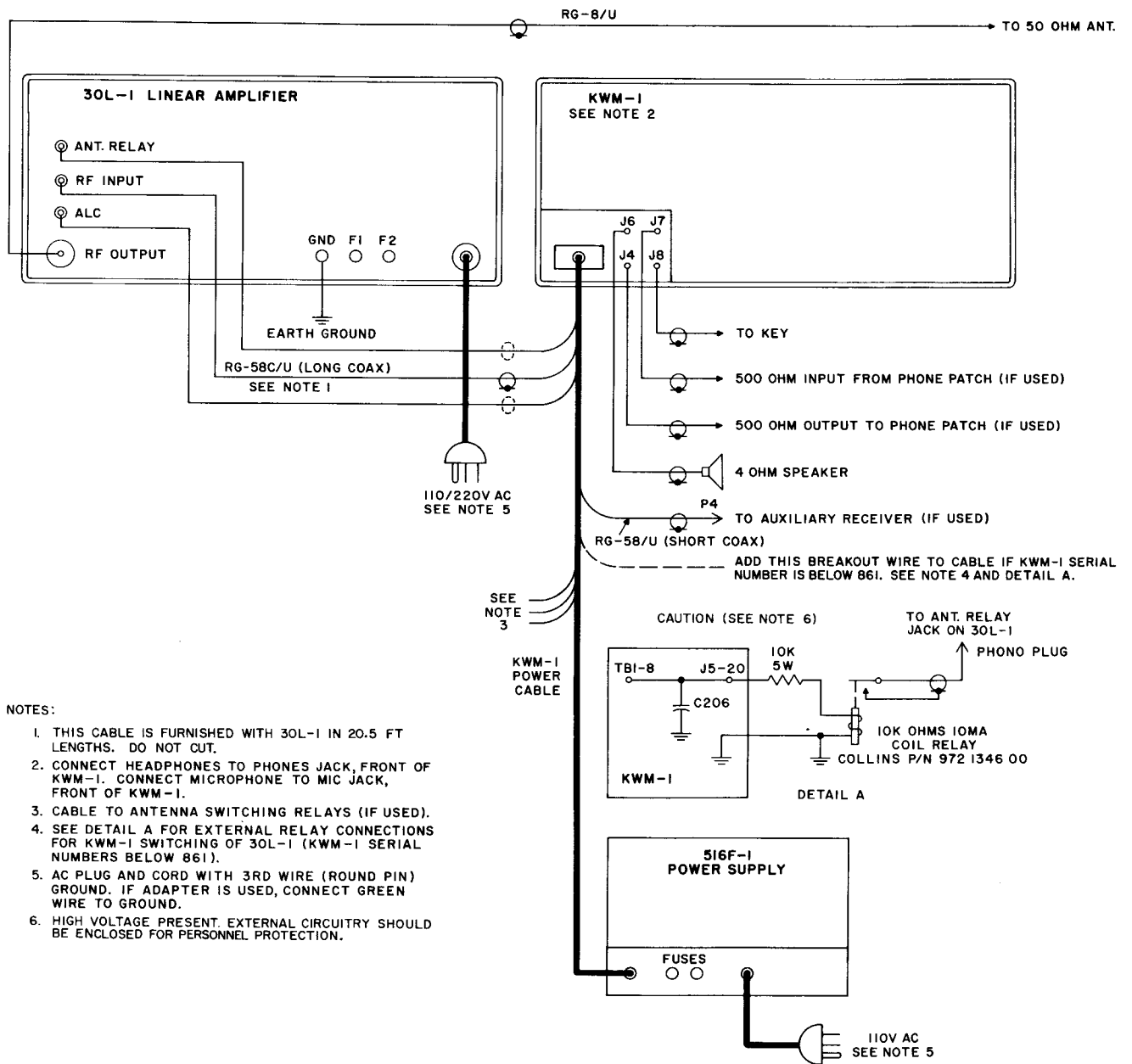
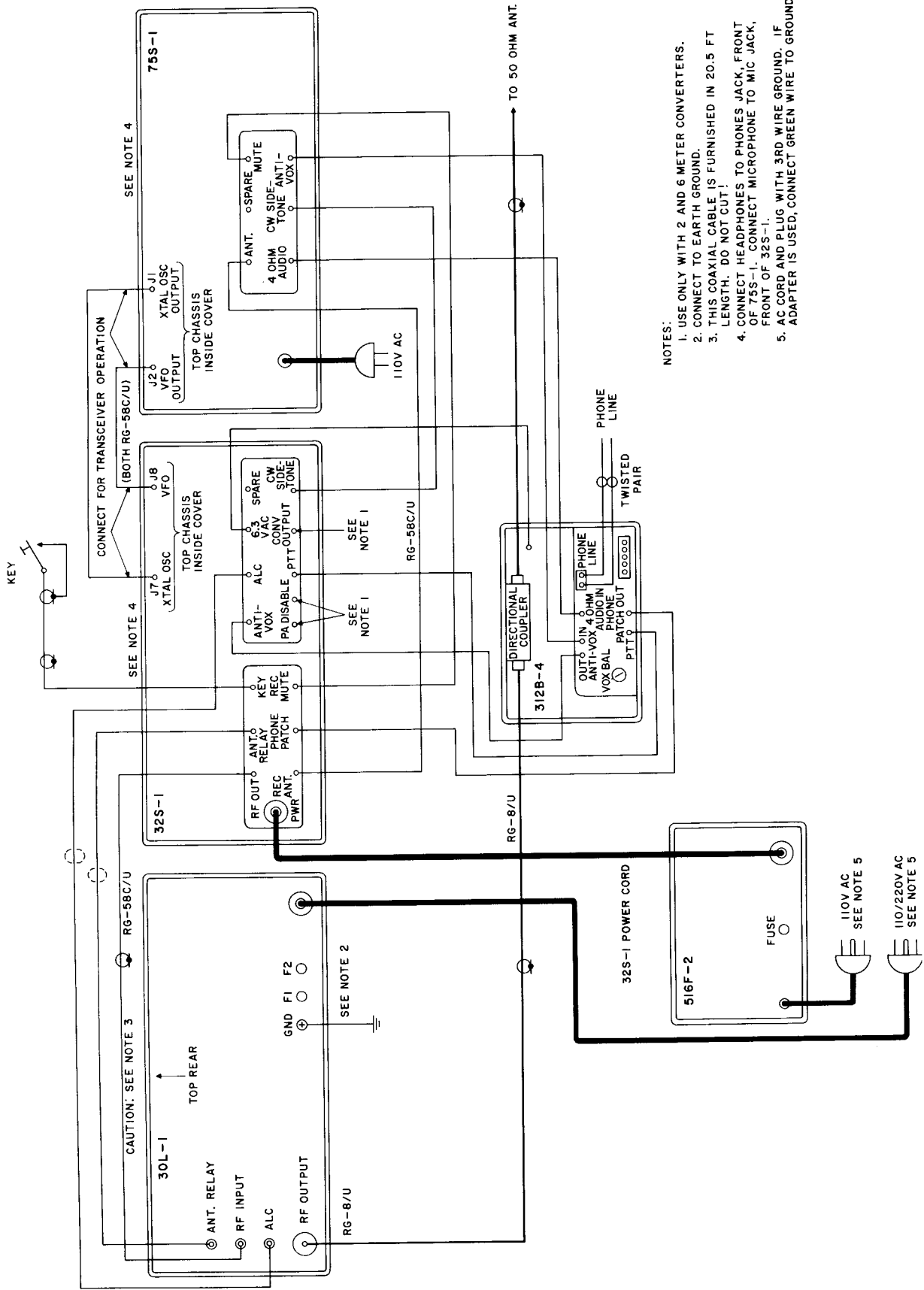


Figure 1-3. Interconnections with KWM-1

SECTION I  
Installation



- NOTES:
1. USE ONLY WITH 2 AND 6 METER CONVERTERS.
  2. CONNECT TO EARTH GROUND.
  3. THIS COAXIAL CABLE IS FURNISHED IN 20.5 FT LENGTH. DO NOT CUT!
  4. CONNECT HEADPHONES TO PHONES JACK, FRONT OF 75S-1. CONNECT MICROPHONE TO MIC JACK, FRONT OF 32S-1.
  5. AC CORD AND PLUG WITH 3RD WIRE GROUND. IF ADAPTER IS USED, CONNECT GREEN WIRE TO GROUND.

Figure 1-4. Interconnections with S-Line

and "ground-on-transmit" connections from the 516F-1 power cable plug, P-1, as shown in figure 1-3. Make the alc connection to terminal 19, and the "ground-on-transmit" connection to terminal 20. Use a shielded wire, and connect to 30L-1 ALC and ANT. RELAY jacks with phono plugs.

#### 1.3.4 KWM-1 SERIAL NUMBERS BELOW 861.

If models below serial number 861 are used with the 30L-1, it is necessary to make connections inside the KWM-1 for alc and antenna relay control.

- a. Use an ohmmeter to locate the feedthrough capacitor, C169, which is connected to pin 19 of J5.
- b. Connect a wire from this feedthrough capacitor to pin 7 of tube socket XV10.
- c. Using an ohmmeter, locate the feedthrough capacitor, C206, which is connected to terminal 20 of J5 in KWM-1.
- d. Connect a wire from terminal 8 of TB1 in KWM-1 to C206.
- e. Make corresponding breakout connection to P1 terminal 19 with shielded wire, and connect to the 30L-1 ALC jack with a phono plug.
- f. Refer to figure 1-3, Detail A. External to the KWM-1, connect a 10,000-ohm, 5-watt resistor and a relay coil in series from J5 terminal 20 to a ground on the rear of the KWM-1 chassis. Use a relay, such as Collins part number 972-1346-00, with a 10,000-ohm, 10-ma coil, and a set of normally open contacts.
- g. Connect the normally open contacts through a piece of shielded wire and a phono plug to the 30L-1 ANT. RELAY jack.

### WARNING

BE CAREFUL to protect the operator from the 260-volt B+ present on the relay coil and resistor connections. It is recommended that this circuitry be enclosed in a suitable shield box.

#### NOTE

The r-f cable supplied for connecting the 32S-1, KWM-2/2A, or KWM-1 to the 30L-1 is 20.5 feet long. DO NOT cut this cable. This length is optimum to maintain the low-distortion figure for which the equipment was designed.

#### 1.4 INSTALLATION WITH OTHER MAKES OF EXCITERS.

Connect the r-f output of the exciter to the RF INPUT jack on the 30L-1. Existing antenna switching equipment between receiver and exciter may be left intact. To transmit, a ground must be supplied to the ANT. RELAY jack on the 30L-1. This removes blocking bias from the 811A tubes and energizes the internal antenna relay. Due to the variety of circuits involved, specific instructions for use of alc can not be given. A detailed study of paragraph 3.7 will be helpful if it is desired to utilize the alc provisions in the 30L-1.

SECTION II  
Operation

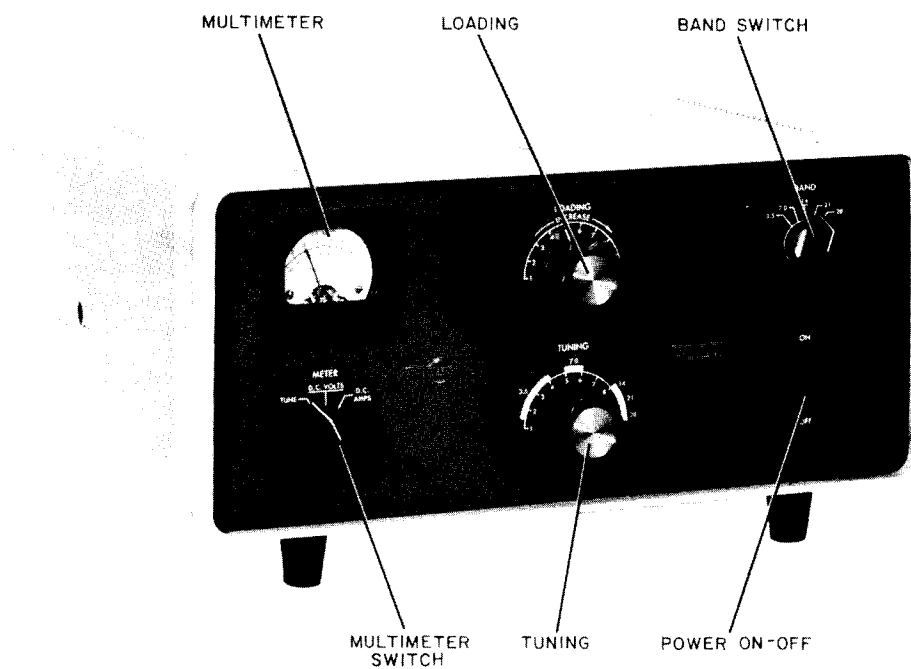


Figure 2-1. 30L-1 Operating Controls

## SECTION II OPERATION

### 2.1 OPERATION IN AMATEUR BANDS.

Table 2-1 shows normal and full-scale meter readings. If the exciter is a KWM-2/2A or S-line, set exciter BIAS ADJUST to produce an idling plate current of 50 ma. Tune and load according to exciter instruction book, *except load to only 200 ma plate current.*

a. Connect the antenna for the band in use to the RF OUTPUT jack on the 30L-1. (When the ON-OFF switch is in the OFF position, the transfer relay in the 30L-1 connects the antenna to the exciter.)

b. Make sure the ON-OFF switch in the 30L-1 is in the OFF position as shown in figure 2-1.

c. Tune and load the exciter into the antenna. If Collins exciter, switch back to TUNE position. Set MIC GAIN to off position.

d. Set the 30L-1 METER switch to the TUNE position.

e. Set BAND switch to same band as that of the exciter, LOADING control to 1 on the dial, and TUNING control to white area for the band in use.

f. Press the 30L-1 ON-OFF switch to the ON position.

g. Set MIC GAIN to about 3/4 of full scale. (When using exciters other than KWM-2/2A or S-Line types, set microphone gain or carrier insertion control to provide approximately 20 watts drive to the 30L-1.)

h. IMMEDIATELY adjust TUNING control for multimeter dip.

i. Alternately adjust TUNING and LOADING controls for zero multimeter reading. The meter will indicate zero at the dip when the amplifier is properly tuned and loaded. Always make the TUNING adjustment for meter dip as the last adjustment.

j. Switch the exciter to the desired sideband or to CW. The station is now ready to operate at rated power input.

k. If the antenna does not present a nearly 50-ohm resistive load, the exciter can be tuned and loaded into a 50-ohm dummy load, such as the DL-1. When switched to the input of the 30L-1, the exciter will then remain in tune.



DO NOT operate the 30L-1 into a load presenting a vswr greater than 2 to 1. The equipment may not function properly and damage may result. DO NOT operate the amplifier in continuous key-down condition at full input for more than 30 seconds. The power supply may be damaged. DO NOT use the 30L-1 in FSK, AM, or FM service. DO NOT use slow-blow fuses, or fuses larger than the 8-ampere type supplied.

1. Once the equipment has been tuned up on a given frequency, the 30L-1 may be switched in or out of the circuit at will be operating the ON-OFF switch. Output power from the amplifier is available instantly with no warm-up period required.

### 2.2 OPERATION WITH OTHER MAKES OF EXCITERS.

Tune according to the procedure outlined in paragraph 2.1. If alc is not used, be careful not to overdrive either the exciter or the final amplifier. Normal plate current meter readings for the 30L-1 are from 300 to 350 ma on voice peaks. Actual plate current under these conditions will peak at approximately 600 to 700 ma. Be sure the exciter is capable of producing the required drive without excessive distortion. If not, the amplifier may be operated at reduced level.

### 2.3 OPERATION OUTSIDE AMATEUR BANDS.

Operation outside amateur band limits requires retuning of the 30L-1 input circuits. This is necessary to present the proper load impedance to the exciter. For procedure, refer to paragraph 4.4.

TABLE 2-1. MULTIMETER SCALE VALUES

METER SWITCH SETTING	FULL-SCALE INDICATION	NORMAL INDICATION
TUNE	Not applicable	Zero when 30L-1 is properly loaded
D. C. VOLTS	2000 volts	1800 volts (No modulation) 1600 volts (At rated load)
D. C. AMPS	1.0 amp (1000 ma)	600 ma (Key down CW) 300-350 ma (SSB voice peaks) 130 ma (Keyed, no excitation)

SECTION III  
Principles of Operation

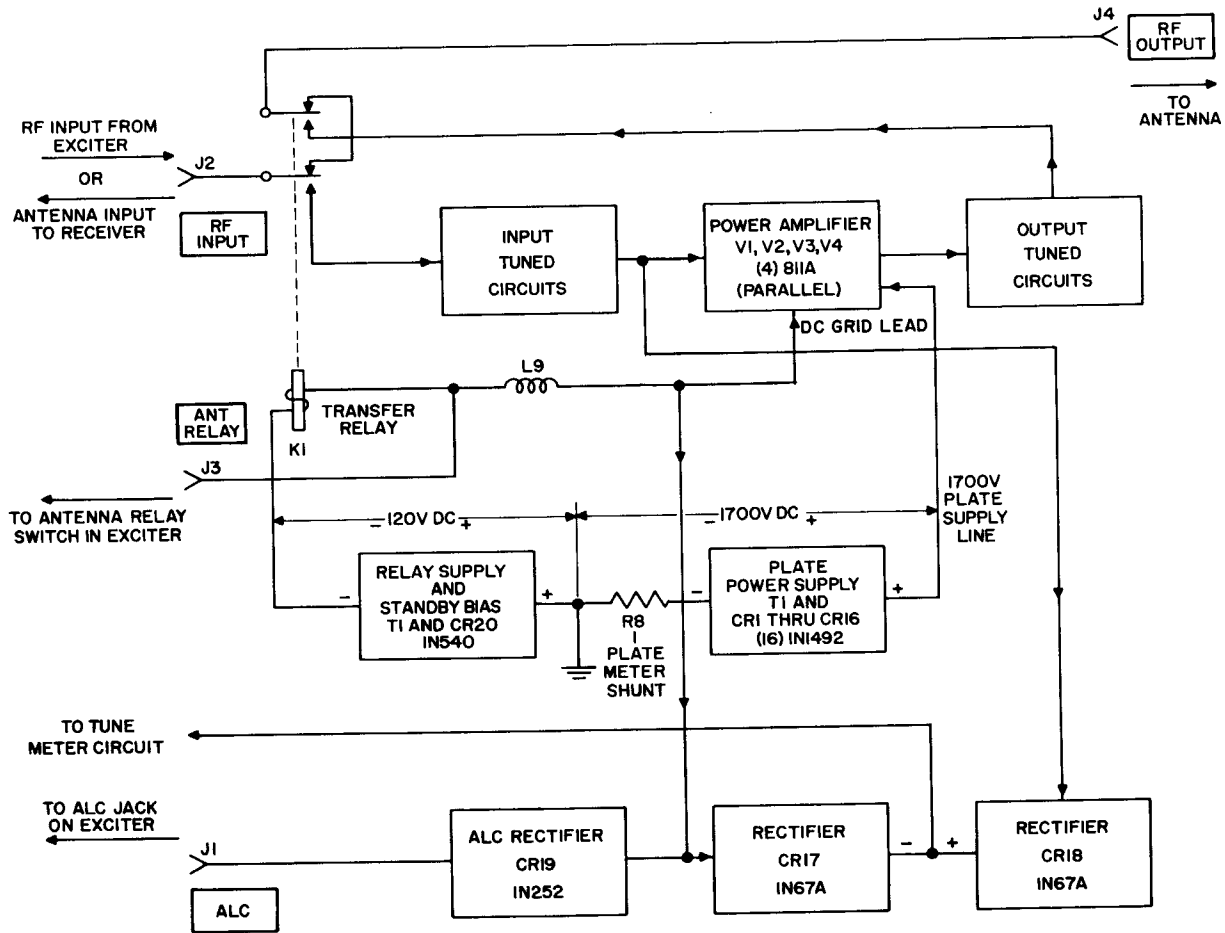


Figure 3-1. 30L-1 Block Diagram



## SECTION III PRINCIPLES OF OPERATION

### 3.1 GENERAL.

The 30L-1 is a portable r-f linear power amplifier, including plate power and bias supplies. It is capable of 1000 watts PEP input power in SSB or 1000 watts d-c input in CW service with any exciter (such as the KWM-1, KWM-2/2A, or 32S-1) capable of 70 watts PEP output. It covers the amateur bands between 3.5 and 29.7 mc. In addition, the amplifier may be operated outside the amateur bands over certain ranges of frequency. These ranges are specified in table 4-1. The power amplifier stage uses four 811A triodes connected in parallel with cathode drive.

### 3.2 INPUT CIRCUITS.

Refer to figures 3-1 and 7-1. Broadband pi-network circuits couple the exciting signal into the cathode circuits of the power amplifier tubes. In conjunction with the interconnecting r-f feed cable supplied, this presents a nearly constant 50-ohm load to the exciter. This aids in maintaining the low level of distortion products under modulation. For this reason, it is important not to alter the length of interconnecting cable supplied with the amplifier.

### 3.3 OUTPUT CIRCUITS.

The plate circuit of the power amplifier is tuned by a pi network consisting of C32, L9, L10, and C33. Capacitor C32 resonates the tank circuit at the frequency in use. It is adjusted by the TUNING control on the front panel. The four-gang capacitor, C33, is adjusted by the LOADING control to match the pi-network circuit to the impedance presented by the antenna and feed system in use. Output from the plate tank circuit is connected through the contacts of antenna changeover relay, K1, to the antenna when the control circuits are energized.

### 3.4 POWER SUPPLY CIRCUITS.

Two d-c power supplies and one a-c filament supply are included in the 30L-1. The amplifier may be connected to a 115-volt single-phase or to a 230-volt, three-wire, single-phase source. Where practical, the 230-volt, three-wire connection is recommended. Power transformer T1 has two primary windings. These windings are connected in parallel for 115-volt operation, and in series for 230-volt operation. The 6.3-volt secondary winding provides filament power for the 811A tubes through r-f choke L8. It also powers the pilot lamp in the meter. Another secondary winding applies voltage through surge resistor R9 to semiconductor rectifier CR20. This is a half-wave circuit connected to furnish blocking bias to the amplifier tubes under receive conditions and operating bias when transmitting. It also furnishes power for

changeover relay K1. Voltage from the third secondary winding is applied to two semiconductor rectifier strings connected in a full-wave voltage doubler configuration. These strings consist of CR1-CR8, C44-C51 in one string, and CR9-CR16, C52-C59 in the other. The parallel capacitors equalize the reverse voltages impressed across the diode junctions and protect against damage by transients. The output of this supply provides approximately 1600 volts d-c under load for the amplifier tube plates.

### 3.5 SAFETY INTERLOCK CIRCUITS.

The r-f and power supply compartment covers operate safety interlock switches for operator protection. Switch S5 is located in the power supply compartment. Switches S6 and S7 are located in the r-f compartment. Cover removal closes these switches and shorts the high voltage to ground. This arrangement protects the operator from accidentally coming in contact with high-voltage d-c which is present in either compartment.

### WARNING

DO NOT BLOCK INTERLOCK SWITCHES. Contact with voltages in this equipment can be fatal. Be sure to disconnect the a-c power plug before removing any of the covers.

### 3.6 POWER CONTROL CIRCUITS.

Refer to figure 3-2. The front-panel ON-OFF switch breaks one side of the a-c line in the OFF position. When operated to the ON position, a-c power is applied to the power transformer primaries and the tube-cooling fan B1. Overload protection is provided by eight-ampere fuses F1 and F2. These are used for both 115-volt a-c and 230-volt a-c operation.

### 3.7 ALC CIRCUITS.

Automatic load control (alc) is a compressor circuit operating at radio frequencies. In the 30L-1, the grid-to-plate capacities of the amplifier tubes in conjunction with capacitors C22, C23, C24, and C25 form capacitive voltage dividers. Under modulation, an r-f voltage is developed across these dividers and L3. It is coupled to the alc rectifier CR19 through capacitor C72. The r-f voltage is rectified and filtered to produce a negative d-c control voltage which is proportional to the modulation level. The load resistor for CR19 must be provided by the exciter alc circuits. This voltage is applied to the control grid of a low-level r-f amplifier tube or tubes in the exciter. The time constants of these circuits have a fast

SECTION III  
Principles of Operation

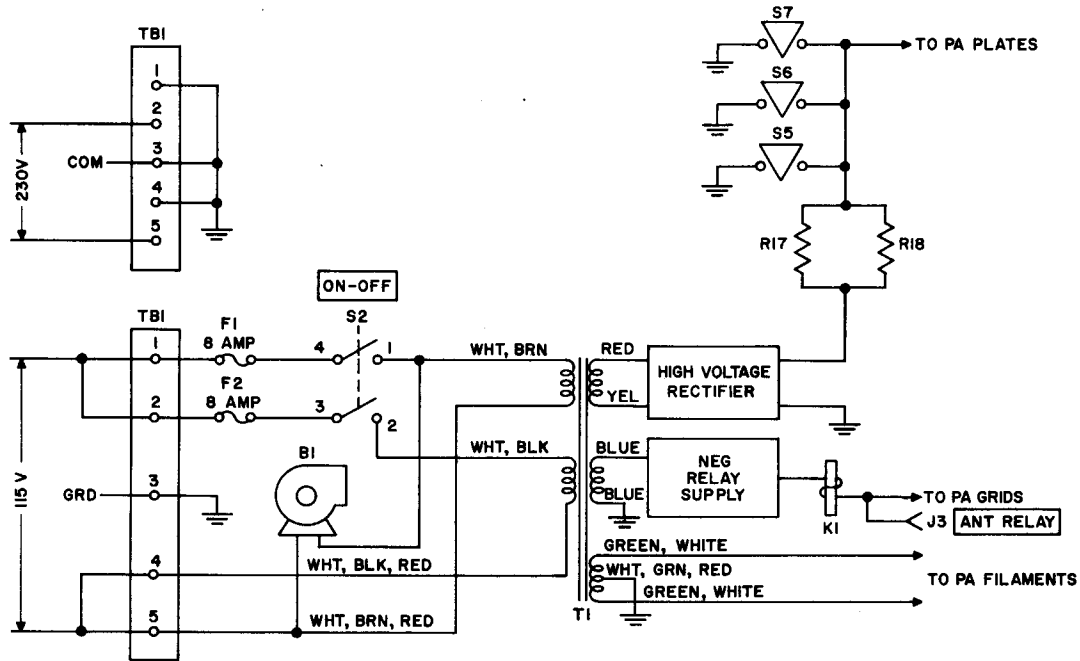


Figure 3-2. Control and Interlock Circuits

attack, slow-release characteristic. The alc threshold is controlled by the amount of reverse bias on CR19. This voltage is developed across R7 in the plate supply bleeder network, and varied by potentiometer R16. It is adjusted at the factory for optimum operation in conjunction with the internal alc circuits of exciters such as the KWM-1, KWM-2/2A, or 32S-1. Normally it will not need readjustment.

This system allows a high average level of modulation and optimum power output from the amplifier, within the rated limits of distortion.

### 3.8 METERING CIRCUITS.

One section of the METER switch, S3, selects the output voltage from a tuning and loading bridge circuit.

This circuit consists of the power amplifier tubes, CR17, CR18, and the associated load resistors and filter networks. The bridge is balanced when the plate circuit TUNING and LOADING controls are adjusted to present the proper load impedance to the power amplifier plates. The meter then will read zero.

The second section of the meter switch connects the meter to the plate supply through a four-megohm multiplier resistor to indicate the d-c voltage output. It is read on the D.C. KILOVOLT scale.

The third section of the meter switch connects the meter, through R10, across shunt, R8. This indicates power amplifier plate current. It is read on the D.C. AMPS scale.

## SECTION IV MAINTENANCE

### 4.1 GENERAL.

Adjustment of the r-f input circuits requires the following equipment:

- a. R-f wattmeter and directional coupler, such as are included in the 312B-4 or 312B-5 Station Controls, or the 302C-3 Directional Wattmeter.
- b. 50-ohm, 500-watt, nonreactive dummy load.

#### NOTE

For short-duration tests (key-down conditions not to exceed 30 seconds), it is permissible to use the DL-1 Dummy Load where applicable to the following procedures.

The filament circuit in the 30L-1 is fused with a length of number 30 wire in the center-tap ground return of the filament winding on T1. The fuse is connected between the two outer lugs of a terminal strip located near R11 in the power supply compartment (refer to figure 6-1). Under some conditions, the amplifier may appear to function normally even though this fuse has blown; however, this causes hum to appear on the output signal. Check for shorts in the filament circuit.

### 4.2 REMOVAL OF CABINET AND COVERS.

- a. Lift the cabinet lid, and remove the two Phillips-head screws located at the top-front edge of the

cabinet. Remove the four feet and the Phillips-head screw located midway between the rear feet. Push the amplifier forward from the rear until the front panel projects from the cabinet about a half inch. Grasping the front panel at the edges, carefully slide the amplifier out of the cabinet, making sure the a-c power cord clears.

- b. To remove the r-f compartment upper cover, loosen the ten screws about three turns, slide the cover toward the front panel, and lift off.

- c. To remove the power supply compartment upper cover, remove screws located about the edges of the cover.

- d. To remove the bottom cover, remove two round Phillips-head screws from each end of the cover and three flat-head screws near the middle of the cover, and lift off.

### 4.3 BLOWER LUBRICATION.

Every 1000 hours of operation (or 6 months, whichever comes first), lubricate the blower motor bearings with three or four drops of sewing machine oil. Do not overlubricate.

### 4.4 ALIGNMENT OF R-F INPUT CIRCUITS.

Remove the amplifier from its cabinet as outlined in paragraph 4.2. Do not remove any of the covers. To align for amateur band coverage, observe the following procedure:

- a. Connect the directional wattmeter between the exciter output and the 30L-1 R-F INPUT jack. Connect

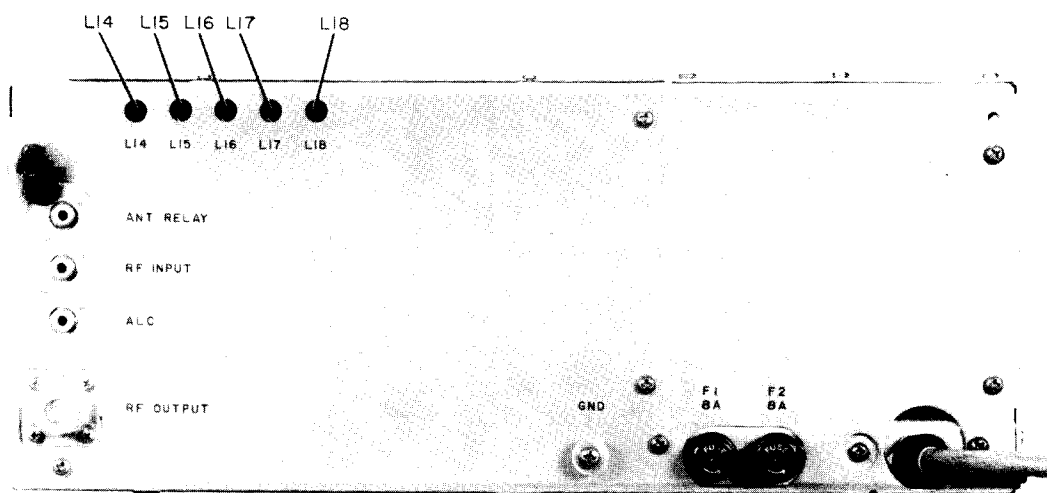


Figure 4-1. Location of Input Circuit Adjustments

SECTION IV  
Maintenance

the dummy load to the R-F OUTPUT jack on the 30L-1. Set up the equipment on 28.5 megacycles. Set the exciter EMISSION switch to LOCK KEY, and the 30L-1 METER switch to TUNE.

b. With 30L-1 power off, tune and load the exciter to approximately 30 watts output as indicated on the wattmeter (forward power).

c. Press the 30L-1 power switch to ON. Tune and load the 30L-1 into the dummy load. The exciter is now loaded into the 30L-1 input circuits. Retune and reload the exciter, if necessary, to 30 watts forward power output.

d. Watch the wattmeter in the exciter r-f output line, and with a nonmetallic tuning tool, tune L14 for minimum reflected power. Readjust the exciter as necessary to maintain 30 watts forward. Continue adjustment of L14 for minimum vswr (not to exceed 2.0 to 1, or 11 percent reflected power).

e. Repeat the above procedures at 21.3, 14.3, 7.2, and 3.9 mc, adjusting L15, L16, L17, and L18 respectively. These adjustments are accessible through the holes in the rear cover of the r-f compartment. Do not remove the cover. Refer to figure 4-1.

For general coverage, use the same procedure as above, except set exciter to a frequency which is in the middle of the desired band. Useful bandwidth at the new alignment frequencies is approximately the same as that for the amateur bands. Do not attempt alignment to place the new operating bands outside the ranges listed in table 4-1 for the BAND switch positions indicated. Also do not attempt amateur-band operation on a BAND switch position for which the tuned circuits have been realigned for out-of-band operation.

#### 4.5 METER LAMP REPLACEMENT.

To replace the meter lamp, remove the bracket to which the socket is fastened. It is held by a small machine screw located at the rear of the meter. Replace the lamp with a type 51 or equivalent.

#### 4.6 TUBE REPLACEMENT.

The tubes may be replaced without removing the amplifier cabinet by removing the r-f compartment

TABLE 4-1  
FREQUENCY COVERAGE ALLOWABLE  
BY REALIGNMENT

BAND SWITCH SETTINGS	LOWER LIMIT (mc)	UPPER LIMIT (mc)
3.5	3.4	5.0
7.0	6.5	9.5
14	9.5	16.0
21	16.0	22.0
28	22.0	30.0

top cover and installing new tubes from the top. The following is an alternate method which provides better access to the tube sockets.

Remove the cabinet, r-f compartment top cover, and bottom cover as outlined in paragraph 4.2. Disconnect plate connectors and remove old tubes. Install the upper pair of replacements from the top of the amplifier. Install the lower pair from the bottom. The locating pin on the base of each of the tubes should point away from the power supply compartment. Attach plate leads, making sure they clear other components. Replace covers and cabinet.

### WARNING

DO NOT BLOCK INTERLOCK SWITCHES. Dangerous voltages are present in this equipment. The high voltage is interlocked with the amplifier covers. Make no attempt to put the amplifier into service until the procedure outlined above has been completed.

## SECTION V SPECIFICATIONS

Size . . . . . 6-9/16 in. high, 14-3/4 in. wide, 13-3/4 in. deep (overall).

Weight . . . . . 38 pounds.

Frequency range . . . . . 3.5-29.7 mc, covering all amateur bands. By retuning input coils as necessary, the following general-coverage bands may be covered:

FREQUENCY BAND	TOTAL COVERAGE
3.5 mc	3.4-5.0 mc
7.0 mc	6.5-9.5 mc
14 mc	9.5-16.0 mc
21 mc	16.0-22.0 mc
28 mc	22.0-30.0 mc

Mode . . . . . SSB or CW

Type of Service . . . . . SSB - continuous voice modulation.  
CW - 50-percent duty cycle (continuous key-down conditions not to exceed 30 seconds duration).

Plate power input . . . . . CW - 1000 watts.  
SSB - Nominal PEP input of 1000 watts with speech. Third order distortion products at this level are at least 30 db down from signal.

Drive power requirements . . . . . 70 watts.

Primary power requirements . . . . . 230 volts a-c  $\pm 10\%$ , 3-wire, single phase, at 7.5 amperes max, or 115 volts a-c  $\pm 10\%$  at 15 amperes max, 50-400 cps. Operation from a line frequency other than 50-60 cps requires an auxiliary 60-cps supply for fan motor.

Input impedance . . . . . 52 ohms.

Output impedance . . . . . 52 ohms unbalanced with vswr not to exceed 2 to 1.

Noise level . . . . . 40 db down from output signal with 1-kw single-tone input.

Harmonic output . . . . . All harmonics at least 50 db down from output signal.

Vacuum tubes . . . . . Type 811A triodes (4).

Available accessories . . . . . Model 351E-4 mounting plate (Collins part number 522-1482-003). This plate can be used when installing the 30L-1 in an airplane, boat, or similar location requiring a rigid mount. A luggage-type carrying case is also available.

SECTION VI  
PARTS LIST

30L-1 R-F Linear Amplifier

ITEM	DESCRIPTION	COLLINS PART NUMBER	ITEM	DESCRIPTION	COLLINS PART NUMBER
LINEAR AMPLIFIER			522-2375-00		
B1	FAN: 115 v ac, 60 cps, single phase	547-3702-00	F1	FUSE, CARTRIDGE: 8 amp, 250 v dc; ferrule type terminal	264-4110-00
C1	CAPACITOR, FIXED, CERAMIC: 10,000 uuf +100% -20%, 500 v dc	913-3013-00	F2	FUSE, CARTRIDGE: same as F1	264-4110-00
C2	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00	J1	JACK, PHONO-TYPE: accommodates 1/8 in. plug; ceramic insulation	360-0088-00
C3	CAPACITOR, FIXED, ELECTROLYTIC: 100 uf -10% +100%, 450 v dc	183-1567-00	J2	JACK, PHONO-TYPE: same as J1	360-0088-00
C4	CAPACITOR, FIXED, CERAMIC: 10,000 uuf ±20%, 1000 v dc	913-3922-00	J3	JACK, PHONO-TYPE: same as J1	360-0088-00
C5	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00	J4	CONNECTOR, RF TYPE N: UG-58A/U	357-9003-00
C6	CAPACITOR, FIXED, CERAMIC: same as C4	913-3922-00	K1	RELAY: dpdt; 2 amps, coil resistance, 10,000 ohms	970-2140-00
C7	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00	L1	NOT USED	
C8	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00	L2	NOT USED	
C9	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00	L3	COIL, RADIO FREQUENCY: single layer wound, solenoid, #21 or #22 AWG copper wire 39.0 uh, 0.80 ohms dc	240-0189-00
C10	CAPACITOR, FIXED, ELECTROLYTIC: 10 uf -10%, +100%, 150 v dc	183-1568-00	L4	Part of Z1	547-3654-002
C11	NOT USED		L5	Part of Z2	547-3654-002
C12	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00	L6	NOT USED	
C13	CAPACITOR, FIXED, MICA: 47 uuf ±5%, 500 v dc	912-2792-00	L7	NOT USED	
C14	CAPACITOR, FIXED, MICA: 100 uuf ±5%, 500 v dc	912-2816-00	L8	COIL, RADIO FREQUENCY: single layer wound, no. 14 AWG, formvar insulation; 7.5 uh	240-1244-00
C15	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00	L9	COIL, RADIO FREQUENCY: single layer wound; 6.5 turns no. 8 AWG	547-3718-002
C16	CAPACITOR, FIXED, CERAMIC: 0.005 uf ±20%, 3000 v dc	913-4329-00	L10	COIL, RADIO FREQUENCY: single layer wound; 17 turns no. 14 AWG	547-3708-003
C17	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00	L11	COIL, RADIO FREQUENCY: 4 sections; 2.5 mh, 35 to 50 ohms, 0.125 amp	240-0059-00
C18	CAPACITOR, VARIABLE, CERAMIC: 8.0 uuf min 75.0 uuf max, 350 v dc	917-1075-00	L12	COIL, RADIO FREQUENCY: single layer wound, 44 uh at 2.5 mc inductance, 3.54 ohm dc resistance, 1.6 amps current capacity	240-0807-00
C19	CAPACITOR, FIXED, MICA: 270 uuf ±5%, 500 v dc	912-2846-00	L13	COIL, RADIO FREQUENCY: single layer wound, 2.2 uh, 1980 ma current; 0.20 ohms	240-0174-00
C20	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00	L14	COIL, RADIO FREQUENCY: single layer wound, 2 turns	547-3659-003
C21	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00	L15	COIL, RADIO FREQUENCY: single layer wound, 7 turns no. 22 AWG	547-3660-003
C22	CAPACITOR, FIXED, MICA: 220 uuf ±5%, 500 v dc	912-2840-00	L16	COIL, RADIO FREQUENCY: single layer wound, 8 turns no. 22 AWG	547-3661-003
C23	CAPACITOR, FIXED, MICA: same as C22	912-2840-00	L17	COIL, RADIO FREQUENCY: single layer wound, 14 turns no. 22 AWG	547-3662-003
C24	CAPACITOR, FIXED, MICA: same as C22	912-2840-00	L18	COIL, RADIO FREQUENCY: single layer wound, 8 turns no. 22 AWG	547-3663-003
C25	CAPACITOR, FIXED, MICA: same as C22	912-2840-00	L19	COIL, RADIO FREQUENCY: 1.5 uh	240-0173-00
C26 thru C30	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00	M1	METER, ELECTRICAL: 200-0-500 ua meter range, 190 ohms, ±2%, 2-1/2 in. sq	458-0592-00
C31	CAPACITOR, FIXED, CERAMIC: 1000 uuf ±20%, 5000 v dc	913-0101-00	O1	KNOB-METER	544-0779-004
C32	CAPACITOR, VARIABLE AIR: 15 uuf min 353.0 uuf max	920-0066-00	O2	KNOB-BAND	544-0779-004
C33	CAPACITOR, VARIABLE AIR: 14 uuf min 432 uuf max	921-0018-00	O3	KNOB, TUNING	547-3656-002
C34	CAPACITOR, FIXED, CERAMIC: same as C16	913-4329-00	O4	KNOB, LOADING	547-3656-002
C35	CAPACITOR, FIXED, CERAMIC: feedthrough type, 1000 uuf +80% -20%, 500 v dc	913-1292-00	R1	RESISTOR, FIXED, COMPOSITION: 4700 ohms ±10%, 1/2 w	745-1380-00
C36 thru C43	CAPACITOR, FIXED, CERAMIC: same as C35	913-1292-00	R2	RESISTOR, FIXED, WIRE WOUND: 25,000 ohms ±5%, 26 w	746-9155-00
C44	CAPACITOR, FIXED, CERAMIC: 1000 uuf +100% -20%, 500 v dc	913-3009-00	R3	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
C45 thru C59	CAPACITOR, FIXED, CERAMIC: same as C44	913-3009-00	R4	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
C60	CAPACITOR, FIXED, MICA: 82 uuf ±5%, 500 v dc	912-2810-00	R5	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
C61	CAPACITOR, FIXED, MICA: 200 uuf ±5%, 500 v dc	912-2837-00	R6	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
C62	CAPACITOR, FIXED, MICA: 510 uuf ±5%, 300 v dc	912-2867-00	R7	RESISTOR, FIXED, COMPOSITION: 1500 ohms ±10%, 2 w	745-5659-00
C63	CAPACITOR, FIXED, MICA: same as C22	912-2840-00	R8	RESISTOR, FIXED, WIRE WOUND: 1.0 ohms ±1%, 5 w	747-9716-00
C64	CAPACITOR, FIXED, MICA: same as C22	912-2840-00	R9	RESISTOR, FIXED, COMPOSITION: 82 ohms ±10%, 1 w	745-3307-00
C65	CAPACITOR, FIXED, MICA: 180 uuf ±5%, 500 v dc	912-2834-00	R10	RESISTOR, FIXED, FILM: 1,960 ohms ±10%, 1/4 w	705-7100-00
C66	CAPACITOR, FIXED, MICA: 330 uuf ±5%, 500 v dc	912-2852-00	R11	RESISTOR, FIXED, FILM: 4,000,000 ohms ±1%, 2 w	705-4260-00
C67	CAPACITOR, FIXED, MICA: same as C22	912-2840-00	R12	RESISTOR, FIXED, WIRE WOUND: 3,000 ohms, ±10%, 7 w	710-9011-00
C68	CAPACITOR, FIXED, MICA: 150 uuf ±5%, 500 v dc	912-2828-00	R13	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
C69	CAPACITOR, FIXED, MICA: same as C14	912-2816-00	R14	NOT USED	
C70	CAPACITOR, FIXED, MICA: same as C65	912-2834-00	R15	RESISTOR, FIXED, COMPOSITION: 10,000 ohms ±10%, 2 w	745-5694-00
C71	CAPACITOR, FIXED, CERAMIC: same as C35	913-1292-00	R16	RESISTOR, VARIABLE, COMPOSITION: 5,000 ohms ±20%, 0.3 w	376-0205-00
C72	Same as C13	912-2792-00	R17	RESISTOR, FIXED, COMPOSITION: 10 ohms ±10%, 2 w	745-5568-00
C73	Same as C14	912-2816-00	R18	RESISTOR, FIXED, COMPOSITION: same as R17	745-5568-00
C74	Same as C1	913-3013-00	R19	RESISTOR, FIXED, COMPOSITION: 39,000 ohms ±10%, 1/2 w	745-1419-00
CR1	DIODE: silicon; type 1N1492	353-1661-00			
CR2	DIODE: same as CR1	353-1661-00			
CR16 thru CR17					
CR17	DIODE: germanium; type 1N67A	353-0147-00			
CR18	DIODE: same as CR17	353-0147-00			
CR19	DIODE: silicon; type 1N252	353-2940-00			
CR20	DIODE: silicon; type 1N540	353-1546-00			

**SECTION VI**  
**Parts List**

30L-1 R-F Linear Amplifier

ITEM	DESCRIPTION	COLLINS PART NUMBER
R20	RESISTOR, FIXED, COMPOSITION: same as R19	745-1419-00
R21	RESISTOR, FIXED, COMPOSITION: 47 ohms ±10%, 1 w	745-3296-00
R22	RESISTOR, FIXED, COMPOSITION: same as R21	745-3296-00
R23	RESISTOR, FIXED, COMPOSITION: same as R21	745-3296-00
R24	RESISTOR, FIXED, COMPOSITION: same as R21	745-3296-00
R25	Part of Z1	745-5610-00
R26	Part of Z2	745-5610-00
R27	NOT USED	
R28	RESISTOR, FIXED, COMPOSITION: 47 ohms, ±10%, 1/2 w	745-1296-00
S1	SWITCH, ROTARY: 2 circuit (2 pole), 18 position, 1 section	259-1385-00
S2	SWITCH, ROCKER: dpst; 20 amps, 125 v ac, 10 amps, 250 v ac	266-6020-00
S3	SWITCH, ROTARY: 2 circuit (2 pole), 3 position, 1 section	259-1368-00
S4	SWITCH, ROTARY: 3 circuit (3 pole), 5 position, 1 section	259-1386-00

ITEM	DESCRIPTION	COLLINS PART NUMBER
S5	INTERLOCK ASSEMBLY: copper, silver plated; 11/16 in. by 3/4 in. by 1.312 in.	547-3632-002
S6	Same as S5	547-3632-002
S7	Same as S5	547-3632-002
T1	POWER TRANSFORMER:	662-0010-00
V1	ELECTRON TUBE: triode; type 811A	256-0053-00
V2 thru V4	ELECTRON TUBE: same as V1	256-0053-00
XF1	FUSE HOLDER: 15 amps-250 v	265-1019-00
XF2	FUSE HOLDER: same as XF1	265-1019-00
XV1	SOCKET, ELECTRON TUBE: 5 amps 2000 v rms	220-1451-00
XV2 thru XV4	SOCKET, ELECTRON TUBE: same as XV1	220-1451-00
Z1	SUPPRESSOR, PARASITIC: 4 turns no. 16 AWG wire, 100 ohms, 2 w resistor	547-3654-002
Z2	SUPPRESSOR, PARASITIC: same as Z1	547-3654-002

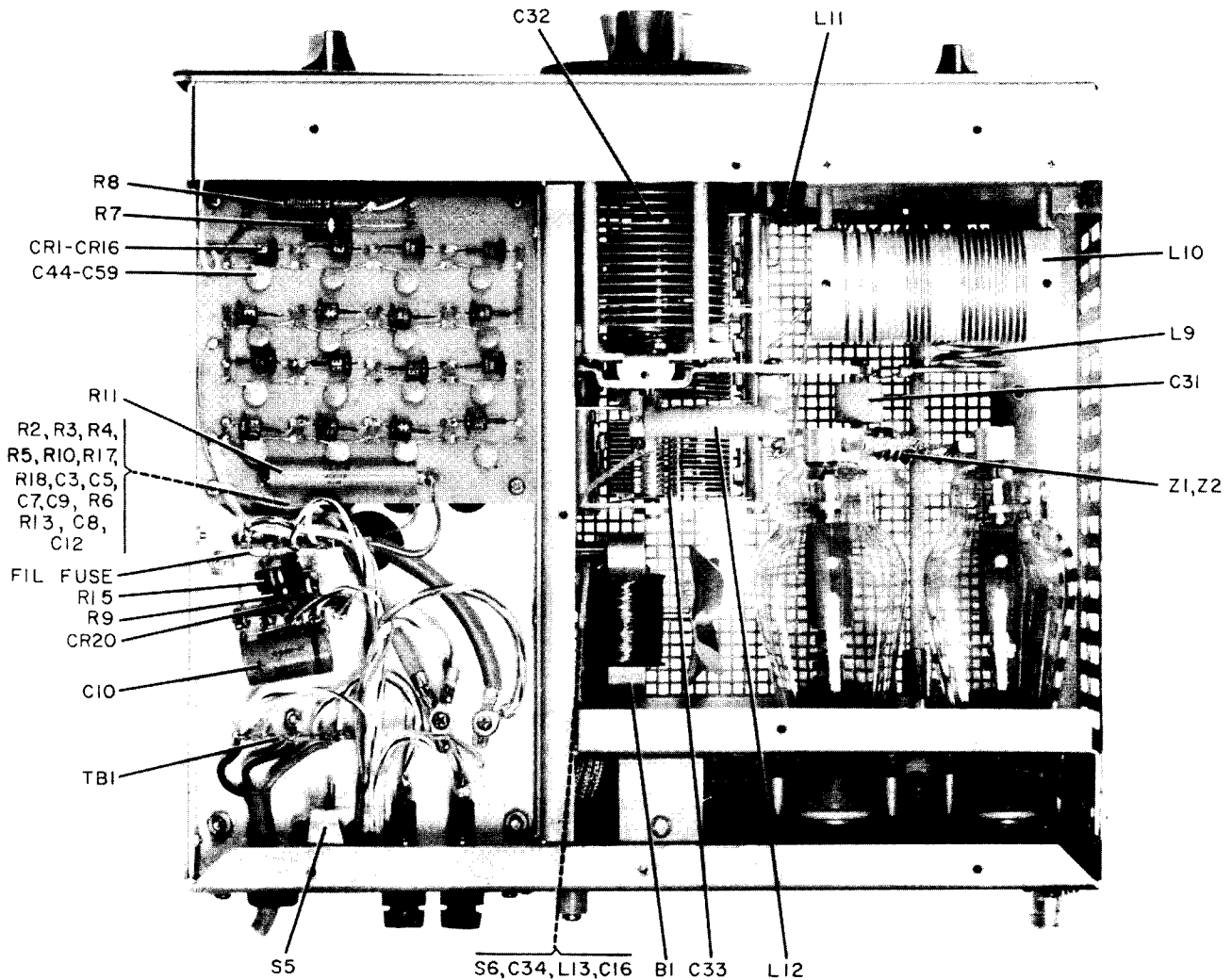


Figure 6-1. R-F and Power Supply Compartments, Parts Location

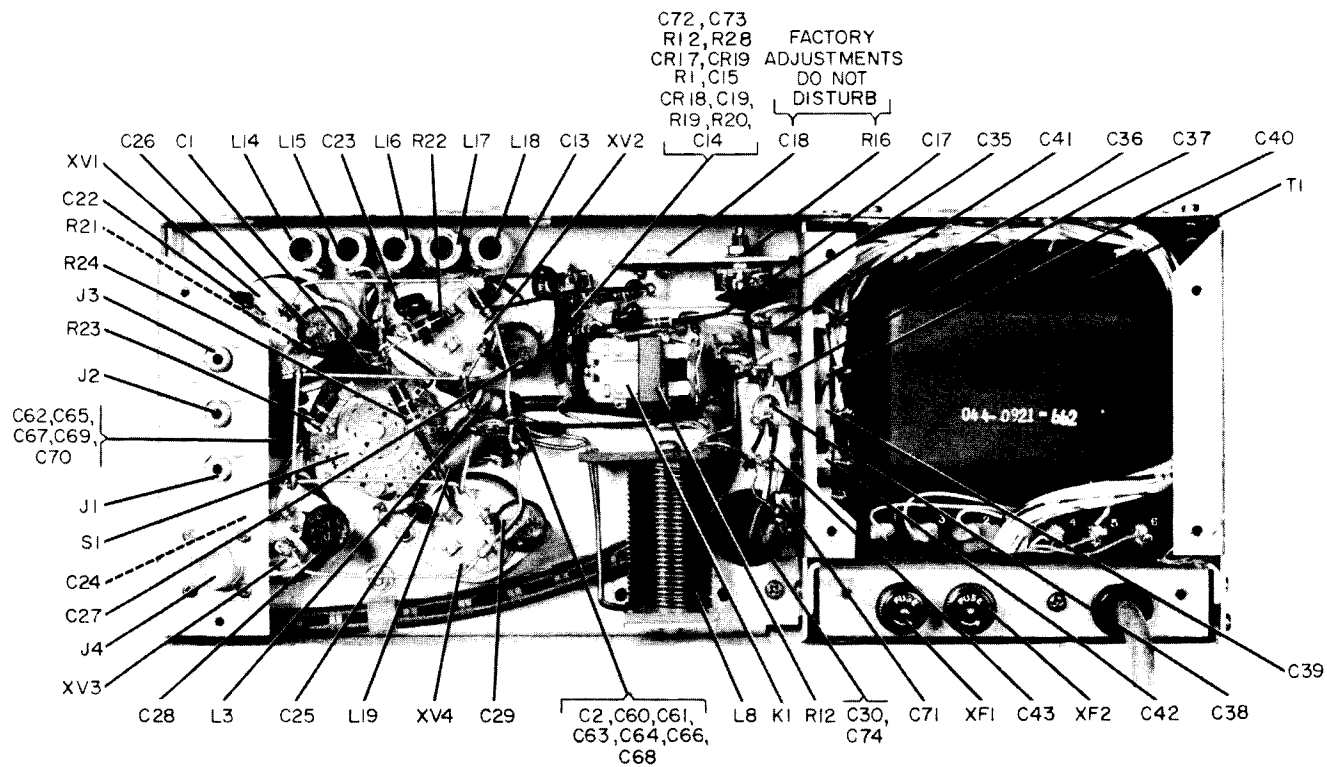


Figure 6-2. Input Circuitry, Parts Location



# ELECTRICAL WIRE CODE

## EXAMPLES

UNSHIELDED WIRE, MIL TYPE B #22 AWG, WHITE WITH RED AND GREEN TRACERS:

  D    
Type of Wire
  A    
Size of Wire
  9    
Color of Body
  25    
Color of Tracers
  4-1/4    
Length of Wire in Inches  
(Includes Stripping & Tinning)

SHIELDED WIRE (SINGLE), MIL TYPE C, #15 AWG, WHITE WITH RED AND GREEN TRACERS:

  R    
Type of Wire
  D    
Size of Wire
  S    
Shielded
  9    
Color of Body
  25    
Color of Tracers
  4-1/4    
Length of Wire in Inches  
(Includes Stripping & Tinning)

SHIELDED WIRE (MULTIPLE), MIL TYPE B, #22 AWG, WHITE, AND WHITE WITH RED TRACER:

  D    
Type of Wire
  A    
Size of Wire
  S    
Shielded
  (9)    
First Conductor
  (92)    
Second Conductor
  4-1/4    
Length of Wire in Inches  
(Includes Stripping & Tinning)

TYPE OF WIRE CODE		
LETTER	TYPE OF WIRE	FAMILY USUALLY FOUND IN
A	Cotton Braid Over Plastic (Formerly AN-J-C-48)	440 Plain 443 Shielded
B	Busbar, Round Tinned	421
C	MIL-W-16878 Type B (#20 and Larger) (600 Volts)	439
D	Miniature Wire, MIL-W-16878 Type B (#22 & Smaller)	439-7000 Series
E		
F	Extra Flexible Varnished Cambric	423
G		
H	Kel-F (Monochlorotrifluoroethylene)	422
J		
K	Neon Sign Cable (15,000 Volts)	423 0004 00
L	Silicone	425 0942 00
M		
N	Single Conductor Stranded (Not Rubber Covered)	422
P	Single Conductor Stranded (Rubber Covered)	423
Q		
R	MIL-W-16878 Type C (1000 Volts)	439 1000 Series
T	Teflon, MIL-W-16878 Type E (600 Volts)	439 4000 Series
V	MIL-W-16878 Type D (3000 Volts)	439 3000 Series
W	Teflon, MIL-W-16878 Type EE (1000 Volts)	439 0000 Series
X		
Y		
Z	Acetate Yarn Telephone Type	428

SIZE OF WIRE CODE	
LETTER	SIZE
A	#22 AWG
B	#20
C	#18
D	#16
E	#14
F	#12
G	#10
H	#8
J	#6
K	#4
L	#2
M	#1
N	#0
P	#00
Q	#000
R	#0000
T	#28
V	#26
W	#24
X	#19
Y	#30
Z	

COLOR CODE	
NUMBER OR LETTER	COLOR
0	Black
1	Brown
2	Red
3	Orange
4	Yellow
5	Green
6	Blue
7	Violet
8	Gray (Slate)
9	White
a	Clear
b	Tan
c	Pink
d	Maroon
e	Light Green
f	Light Blue



**COLLINS RADIO COMPANY**