INSTRUCTION BOOK

COLLINS RADIO COMPANY • CEDAR RAPIDS, IOWA

30L-1

R-F LINEAR AMPLIFIER

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 prepaired, 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.

1 June 1961

COLLINS AUTHORIZED AMATEUR DISTRIBUTORS AND SERVICE AGENCIES

ALABAMA

Ack Radio Supply Company
3101 4th Avenue South
Birmingham 5
Phone: FAirfax 2-0588
Attn: E. C. Atkerson

*Beddow Engineering Services
2424 Tenth Avenue South
Birmingham
Phone: ALpine 1-7582
Attn: Dr. C. P. Beddow
SEE ALSO: Atlanta, Georgia (Ack)

ALASKA

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

ARIZONA

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

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

ARKANSAS

Lavender Supply Company
(P. O. Box 1168)
518-520 E. 4th Street
Texarkana
Phone: 2-4195
Attn: Joe M. Lavender

Ed Moory's Radio & Appliance
12th & Jefferson
DeWitt
Phone: WHitney 6-2820
Attn: Ed Moory

CALIFORNIA

**Amrad Supply, Inc
999 Howard Avenue
Burlingame
Phone: Diamond 2-5757
Attn: Dan Rodriquez

Amrad Supply, Inc.
3425 Balboa Street
San Francisco
Phone: SKyline 1-4661
Attn: J. Steventon

*Communication Receiver Service
5016 Maplewood
Los Angeles 4
Phone: HOllywood 2-2429
Attn: Charles C. Messman

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

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

Mission Ham Supplies
5474 Mission Blvd.
Riverside
Phone: OV-30523
Attn: Wm. P. Hullquist

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

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

Scott Radio Supply, Inc.
266 Alamitos Avenue
Long Beach
Phone: HEmlock 6-1452/7-8629
Attn: Evelyn E. Scott

Valley Electronic Supply Company
1302 W. Magnolia Blvd.
Burbank
Phone: Victoria 9-3944
Attn: Frank Eckert/Bud Rand

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

COLORADO

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

CONNECTICUT

Hatry of Hartford, Inc.
100 High Street
Hartford
Phone: JAckson 7-1881
Attn: Edward C. Gedney

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

DELAWARE

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

DISTRICT OF COLUMBIA

Electronic Wholesalers, Inc.
2345 Sherman Ave. NW
Washington 1
Phone: HUdson 3-5200
Attn: Ray Avey

FLORIDA

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

**Broad Radio
7231 Central Avenue
St. Petersburg 10
Phone: 72314
Attn: H. G. Palin

**Electronic Wholesalers, Inc.
9390 NW 27th Avenue
Miami 47
Phone: OXford 6-1620
Attn: Philip Konter

Grice Electronics, Inc.
(P. O. Box 1911)
300 E. Wright St.
Pensacola
Phone: HEmlock 3-4616
Attn: F. R. Grice, Jr.

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

GEORGIA

Ack Radio Supply Co.
331 Luckie Street NW
Atlanta 13
Phone: JA 4-8477
Attn: T. E. Atkerson

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

HAWAII

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

IDAHO

Robbie's Radio & TV, Inc.
(P. O. Box 5021)
3715 State Street
Boise
Phone: 28892
Attn: W. A. Robinson, Jr.

ILLINOIS

Allied Radio Corp.
100 N. Western Avenue,
Chicago 80
Phone: HAymarket 1-6800
Attn: Jim Summerfield/Jason Thomas

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

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

INDIANA

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

Graham Electronics Supply, Inc.
122 S. Senate St.
Indianapolis 4
Phone: MElrose 4-8487
Attn: G. M. Graham/D. A. Hilts/
J. F. Simpson

Radio Distributing Co., Inc.
(P. O. Box 14999)
1212 High St.
South Bend 15
Phone: ATlantic 8-4665
Attn: William A. Davidson

IOWA

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

Radio Trade Supply Co.
1224 Grand Avenue
Des Moines 9
Phone: ATlantic 8-7237
Attn: Leo Vince Davis/Larry Woolis

World Radio Laboratories, Inc.
(P. O. Box 919)
3415 W. Broadway
Council Bluffs
Phone: 32-81851
Attn: Alan McMillan/Leo Meyerson/
C. H. Williams

KANSAS

The Overton Electric Co., Inc.
522 Jackson Street
Topeka
Phone: CEntral 3-1367
Attn: S. D. Thacher/Frank Thacher

LOUISIANA

**Radio Parts Inc.
1112 Magazine Street
New Orleans 13
Phone: 522-0217
Attn: Irvine J. Levi

MARYLAND

Uncle George's Radio Ham Shack Division
Electronics Distributors, Inc.
11324 Fern Street
Wheaton
Phone: LOckwood 5-2262
Attn: George J. Pasquale

MASSACHUSETTS

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

Graham Radio, Inc.
505 Main Street
Reading
Phone: 944-4000
Attn: Robert T. Graham, Sr.

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

*Two-Way Radio Engineers, Inc.
109-115 Ward Street
Boston
Phone: GArrison 7-3511
Attn: Sherman M. Wolf

MICHIGAN

*Communication Service Company
201 South Lincoln
Charlotte
Phone. 1770-W
Attn: Bart Rypstra

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

Purchase Radio Supply
327 E. Hoover Avenue
Ann Arbor
Phone: NOrmandy 8-8696/8-6262
Attn: Roy J. Purchase

Radio Supply & Engineering
90 Selden Avenue
Detroit 1
Phone: TEmple 1-3175
Attn: C. N. Houser

Warren Radio Company
1710 South Westnedge
Kalamazoo
Phone: Fireside 2-5720/2-7127
Attn: Frank Smith

MINNESOTA

Lew Bonn Company
1211 LaSalle Avenue
Minneapolis 3
Phone: FEderal 9-6351
Attn: Joe Hotch

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

MISSOURI

Walter Ashe Radio Company
1125 Pine Street
St. Louis 1
Phone: CHestnut 1-1125
Attn: Joe Novak

Burstein-Applebee Co.
1012-1014 McGee Street
Kansas City 6
Phone: BAltimore 1-1155
Attn: R. H. Friesz/Clyde Fritz

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

NEW HAMPSHIRE

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

NEW JERSEY

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

12/1/61

**ALSO AUTHORIZED DISTRIBUTOR
*SERVICE AGENCY ONLY

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

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

NEW MEXICO

*Simms Communications, Inc.
217 Camino Encantado
Santa Fe
Phone: YUcca 2-9502
Attn: Preston W. Simms

NEW YORK

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

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

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

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

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

NORTH CAROLINA

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

**Freck Radio & Supply Co.
36 Biltmore Avenue
Asheville
Phone: ALpine 3-3631
Attn: T. T. Freck

OHIO

Custom Electronics, Inc.
1916 South Brown Street
Dayton 9
Phone: BAldwin 3-3157
Attn: Richard Sauer, Jim Shupe

Pioneer Electronic Supply Co.
5403 Prospect Avenue
Cleveland 3
Phone: 432-0010
Attn: J. Fred Ohman/Herb Farr

Selectronic Supplies, Inc.
3185 Bellevue Road
Toledo 6
Phone: GReenwood 4-5477
Attn: Glenn Ingersoll

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

**Universal Service
114 N. Third Street
Columbus 15
Phone: CApitol 1-2335
Attn: Francis R. Gibb

OKLAHOMA

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

OREGON

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

PENNSYLVANIA

Cameradio Company
1121 Penn Avenue
Pittsburgh 22
Phone: EXpress 1-4000
Attn: Harry Kaplin

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

RHODE ISLAND

W. H. Edwards Company
116 Hartford Avenue
Providence 9
Phone: GAspee 1-6158
Attn: Sal Infantolino

SOUTH CAROLINA

Dixie Radio Supply
1900 Barnwell Street
Columbia
Phone: ALpine 3-5333
Attn: B. W. Krell

Wholesale Radio Supply Co.
(P. O. Box 2223)
515 East Bay St.
Charleston
Phone: RA 22634
Attn: Irving Sonenshine

SOUTH DAKOTA

Burghardt Radio Supply
(P. O. Box 746)
621 4th Street S. E.
Watertown
Phone: TUrner 6-5749
Attn: Stan Burghardt/Al Hodgin

TENNESSEE

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

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

TEXAS

All-State Electronics, Inc.
2411 Ross Avenue
Dallas 1
Phone: RI 1-3281
Attn: Walter Clayton/J. Howard Klein

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

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

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

Crabtree's Wholesale Radio
2008 Ross Avenue
Dallas
Phone: Riverside 8-5361
Attn: R. B. Bryan/Russell Manship

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

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

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

McNicol, Inc.
811 North Estrella Street
El Paso
Phone: LO 6-2936
Attn: C. C. McNicol

Radio & Television Parts Co.
1828 N. Saint Mary's St.
San Antonio 12
Phone: CApitol 6-5329
Attn: Charlie Hildebrand

WASHINGTON

**C & G Radio Electronics Co.
2502-6 Jefferson Avenue
Tacoma 2
Phone: BRoadway 2-3181
Attn: Lloyd Norberg

C & G Radio Electronics Co.
2221 Third Avenue
Seattle 1
Phone: MAin 4-4355
Attn: Dennis Ranier

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

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

WISCONSIN

Amateur Electronic Supply
3832 West Lisbon Avenue
Milwaukee 8
Phone: WEst 3-3262
Attn: Steve Potyandy/Terry Sterman

Harris Radio Corporation
280 North Main Street
Fond du Lac
Phone: WAlnut 2-4670
Attn: Terry Sterman/Harris E. Sterman

Satterfield Electronics, Inc.
1900 South Park Street
Madison 5
Phone: ALpine 7-4801
Attn: A. W. Satterfield/W. E. Uhalt

COLLINS AUTHORIZED SERVICE AGENCIES

ALABAMA

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

ARIZONA

**Southwest Electronic Devices
(P. O. Box 3647)
140 South 2nd St.
Phoenix
Phone: ALpine 2-1743
Attn: Herman A. Middleton

CALIFORNIA

**Amrad Supply, Inc.
999 Howard Avenue
Burlingame
Phone: Diamond 2-5757
Attn: Dan Rodriquez

*Communication Receiver Service
5010 Maplewood
Los Angeles 4
Phone: HOllywood 2-2429
Attn: Charles C. Messman

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

FLORIDA

**Amateur Radio Center, Inc.
2605-7 N. E. 2nd Avenue
Miami
Phone: FRanklin 4-4101
Attn: Wiley Gilkison

**Broad Radio
7231 Central Avenue
St. Petersburg 10
Phone: 72314
Attn: H. G. Palin

**Electronic Wholesalers, Inc.
9290 N. W. 27th Avenue
Miami 47
Phone: OXford 6-1620
Attn: Philip Kunter

**Kirkade Radio Supply, Inc.
1719 Grand Central Avenue
Tampa
Phone: 8-6043
Attn: E. T. Kirkade

HAWAII

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

LOUISIANA

**Radio Parts, Inc.
1112 Magazine Street
New Orleans 13
Phone: 522-0217
Attn: Irvine J. Levi

MASSACHUSETTS

*Two-Way Radio Engineers, Inc.
109-115 Ward Street
Boston
Phone: GArrison 7-3511
Attn: Sherman M. Wolf

MICHIGAN

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

MINNESOTA

**Electronic Center, Inc.
107 Third Avenue North
Minneapolis 1
Phone: FEderal 8-8678
Attn: Ward Jensen

NEW HAMPSHIRE

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

NEW JERSEY

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

NEW MEXICO

*Simms Communication, Inc.
217 Camino Encantado
Sante Fe
Phone: YUcca 2-9502
Attn: Preston W. Simms

NORTH CAROLINA

**Freck Radio & Supply Co.
Biltmore Avenue
Asheville
Phone: ALpine 3-3631
Attn: T. T. Freck

OHIO

**Universal Service
114 North Third Street
Columbus 15
Phone: CApitol 1-2335
Attn: Francis R. Gibb

TEXAS

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

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

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

WASHINGTON

**C & G Radio Electronics Co.
2502-6 Jefferson Avenue
Tacoma 2
Phone: BRoadway 2-3181
Attn: Lloyd Norberg

**ALSO AUTHORIZED DISTRIBUTOR
*SERVICE AGENCY ONLY

5TH EDITION, 15 JUNE 1962
523-0122-00

30L-1

R-F LINEAR AMPLIFIER

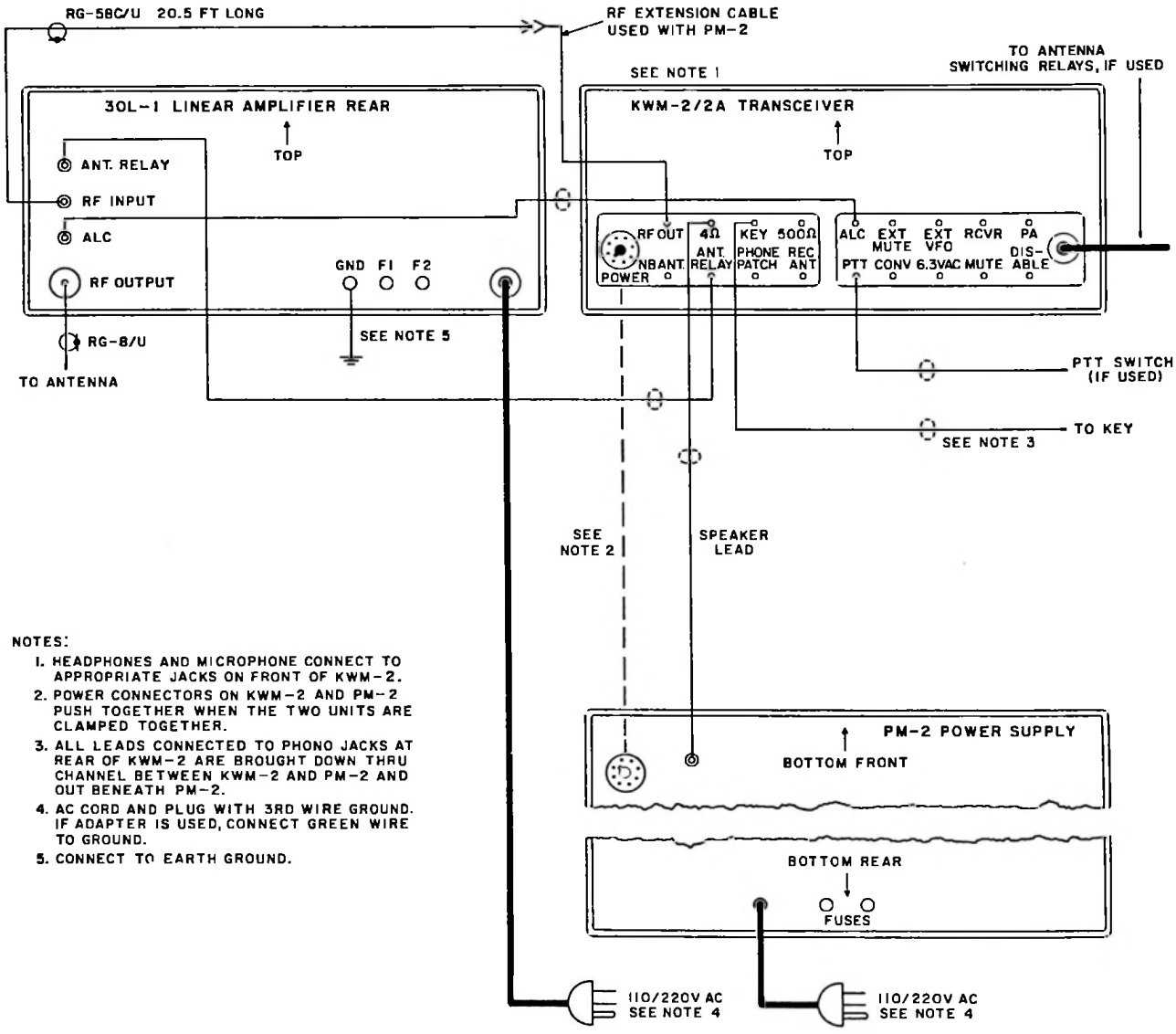
INSTRUCTION BOOK

CEDAR RAPIDS, IOWA, U.S.A.
PRINTED IN THE UNITED STATES OF AMERICA

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES



NOTES:

1. HEADPHONES AND MICROPHONE CONNECT TO APPROPRIATE JACKS ON FRONT OF KWM-2.
2. POWER CONNECTORS ON KWM-2 AND PM-2 PUSH TOGETHER WHEN THE TWO UNITS ARE CLAMPED TOGETHER.
3. ALL LEADS CONNECTED TO PHONO JACKS AT REAR OF KWM-2 ARE BROUGHT DOWN THRU CHANNEL BETWEEN KWM-2 AND PM-2 AND OUT BENEATH PM-2.
4. AC CORD AND PLUG WITH 3RD WIRE GROUND. IF ADAPTER IS USED, CONNECT GREEN WIRE TO GROUND.
5. CONNECT TO EARTH GROUND.

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, 8-ampere	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 7-2. 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.

Interconnections with other station equipments are described in the following paragraphs. Assembly instructions for type N connectors, such as the UG-21D/U, are shown in figure 7-1.

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.

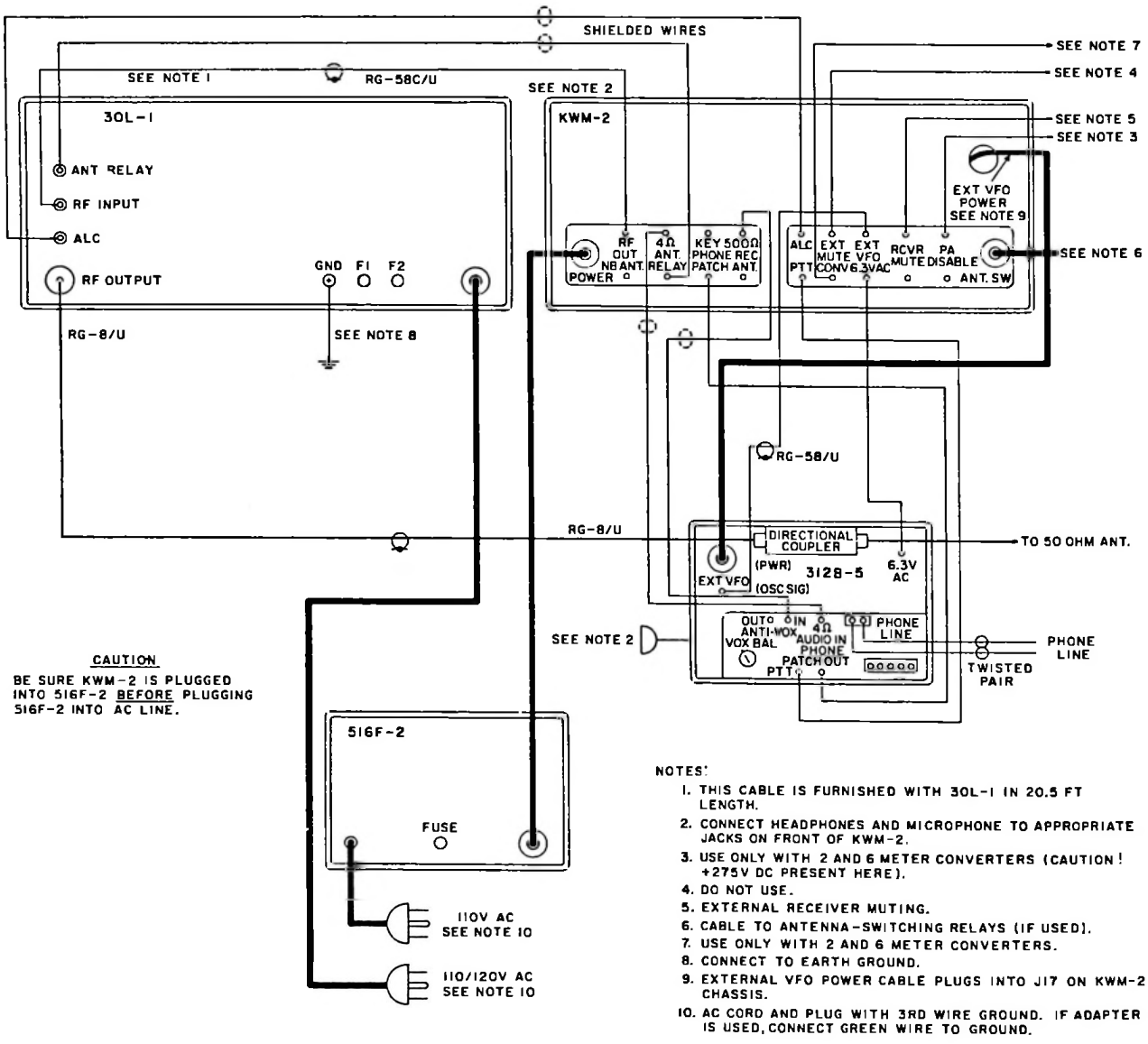
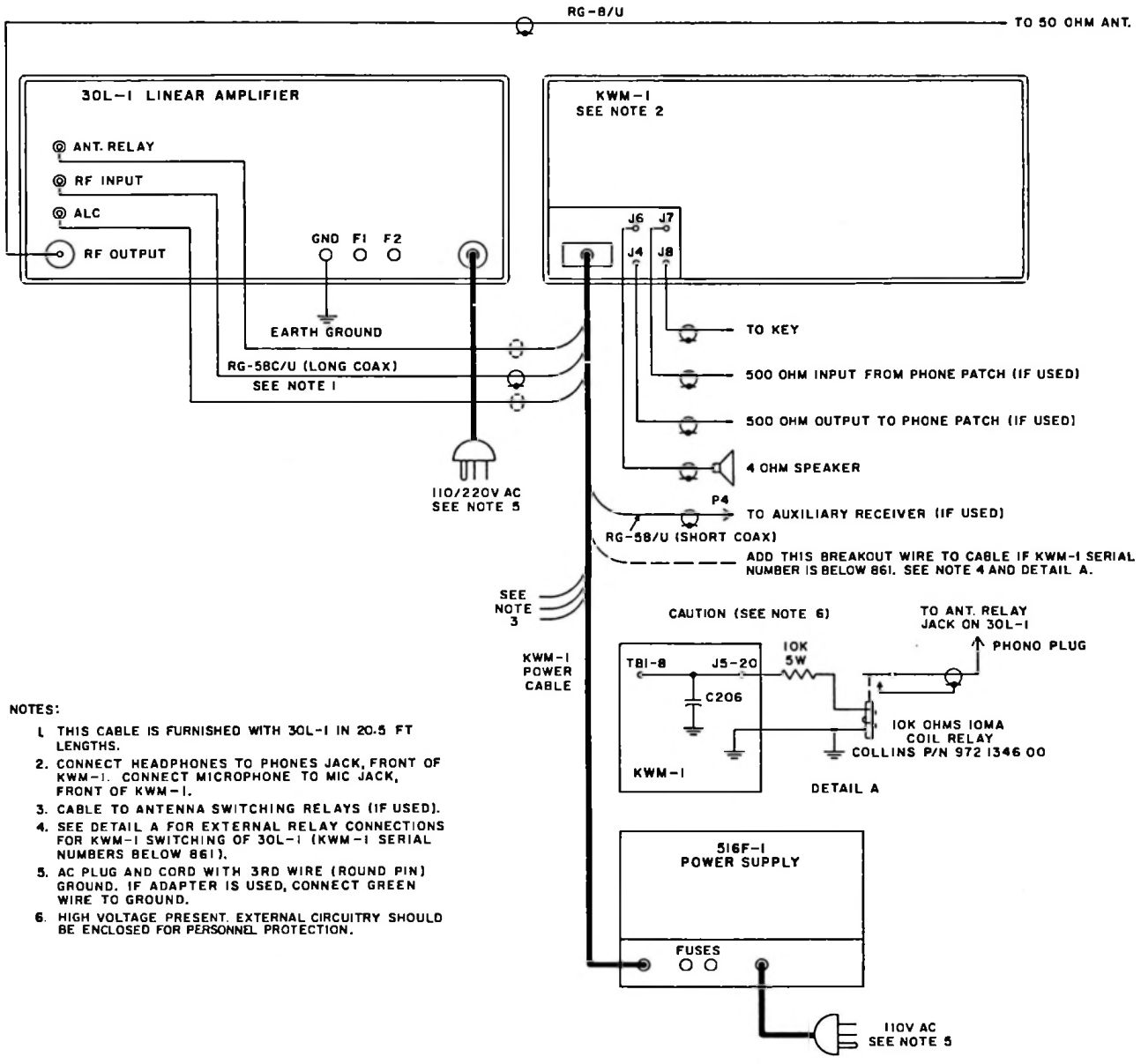


Figure 1-2. Interconnections with KWM-2/2A Home Station



NOTES:

1. THIS CABLE IS FURNISHED WITH 30L-1 IN 20.5 FT LENGTHS.
2. CONNECT HEADPHONES TO PHONES JACK, FRONT OF KWM-1. CONNECT MICROPHONE TO MIC JACK, FRONT OF KWM-1.
3. CABLE TO ANTENNA SWITCHING RELAYS (IF USED).
4. SEE DETAIL A FOR EXTERNAL RELAY CONNECTIONS FOR KWM-1 SWITCHING OF 30L-1 (KWM-1 SERIAL NUMBERS BELOW 861).
5. AC PLUG AND CORD WITH 3RD WIRE (ROUND PIN) GROUND. IF ADAPTER IS USED, CONNECT GREEN WIRE TO GROUND.
6. HIGH VOLTAGE PRESENT. EXTERNAL CIRCUITRY SHOULD BE ENCLOSED FOR PERSONNEL PROTECTION.

Figure 1-3. Interconnections with KWM-1

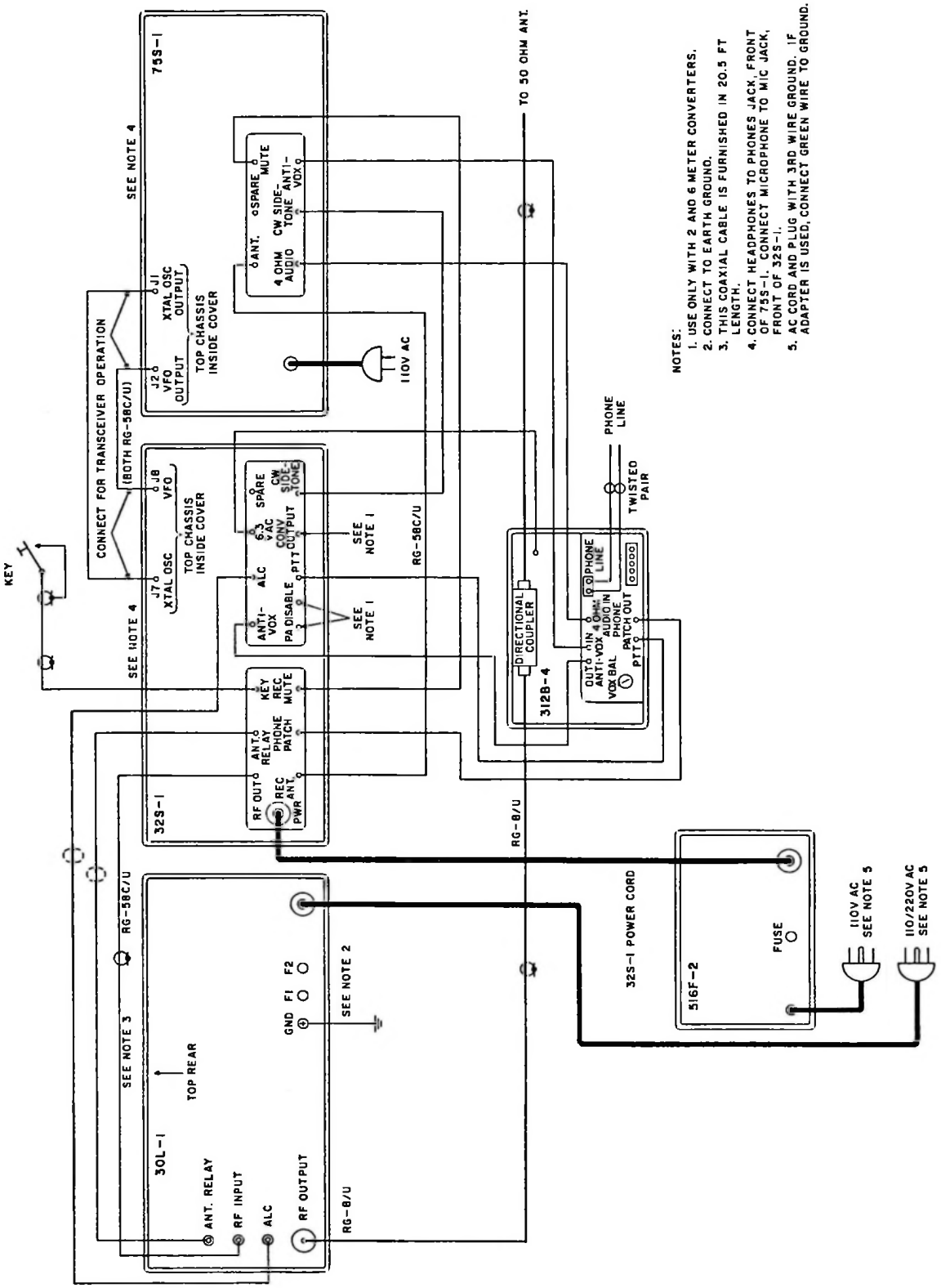


Figure 1-4. Interconnections with S-Line

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 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 to trace the wiring, 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-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. This length results in slightly lower system distortion than normally is obtained with other lengths of cable; however, a shorter length can be used for convenience.

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.

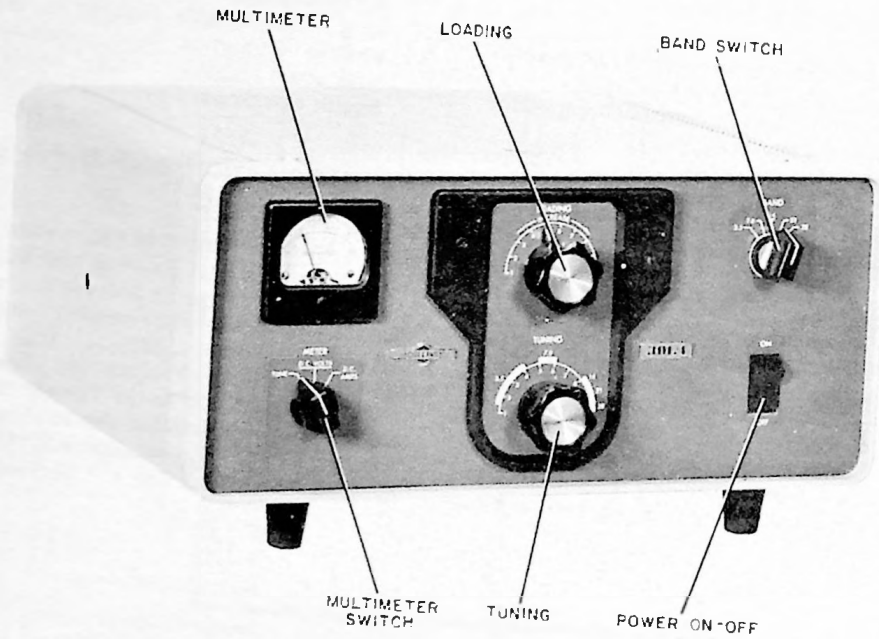


Figure 2-1. 30L-1 Operating Controls

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.

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 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.

d. If using a Collins exciter, switch back to TUNE position, and set MIC GAIN to off position.

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

f. 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.

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

h. 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.)

i. Immediately adjust TUNING control for multimeter dip.

j. 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.

k. Switch the exciter to the desired sideband or to CW, and reduce exciter MIC GAIN control to normal operating level. The station is now ready to operate at rated power input.

l. 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 by operating the ON-OFF switch. Output power from the amplifier is available instantly with no warm-up period required.

CAUTION

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.

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) 110 ma (Keyed, no excitation)

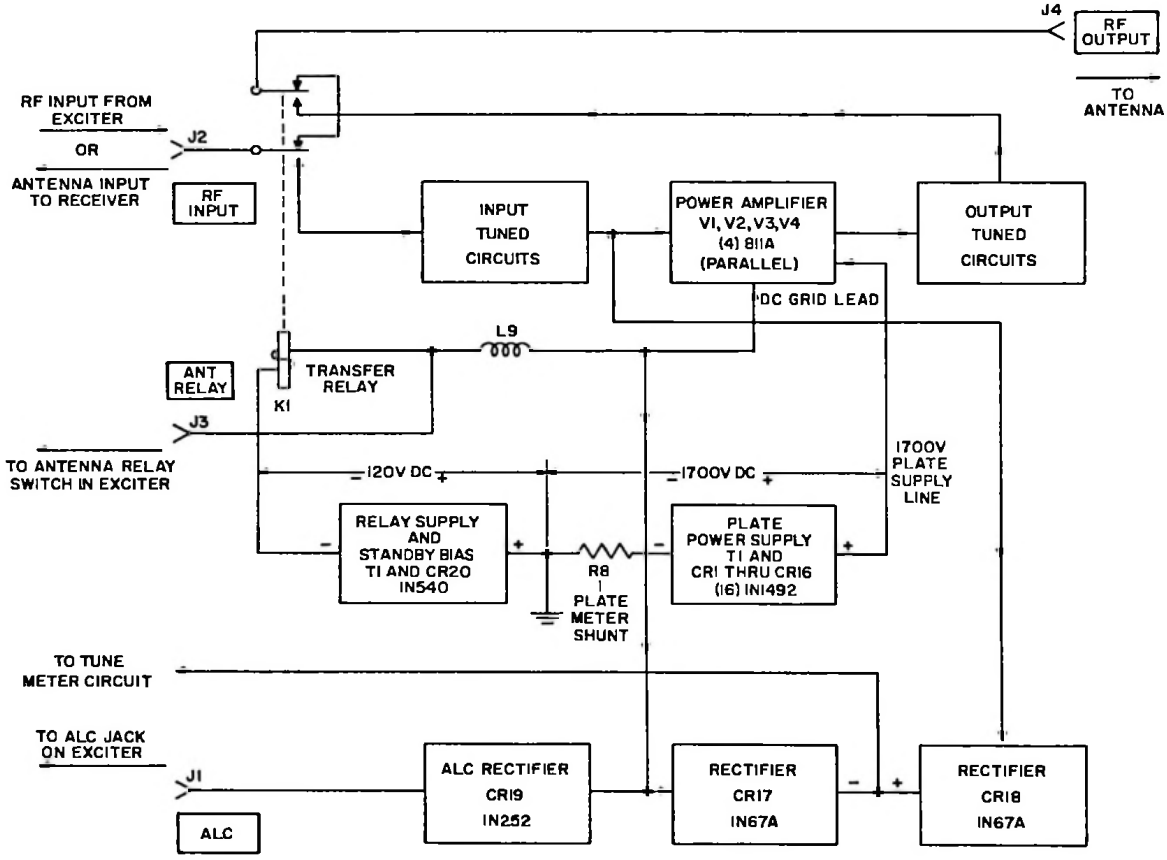


Figure 3-1. 30L-1 Block Diagram

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 7-2. Broadband pi-network circuits couple the exciting signal into the cathode circuits of the power amplifier tubes. The tuned input circuits provide increased efficiency, reduced distortion, and a better impedance match for the exciter than normally would be obtained with an untuned input. Tuning adjustments are not required except for operation outside the amateur bands.

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 capacitances 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

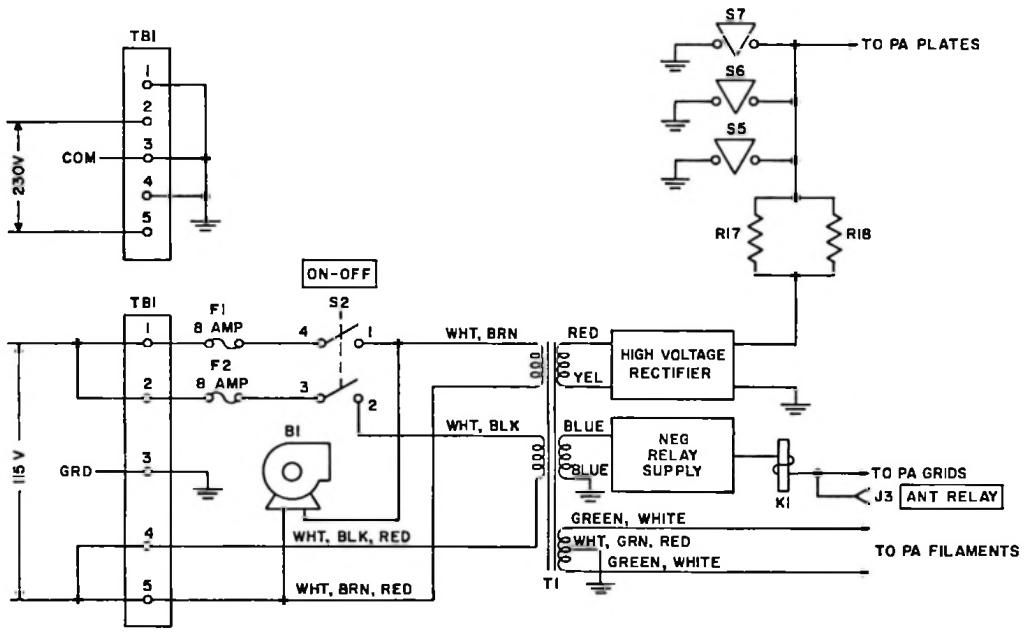


Figure 3-2. Control and Interlock Circuits

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.

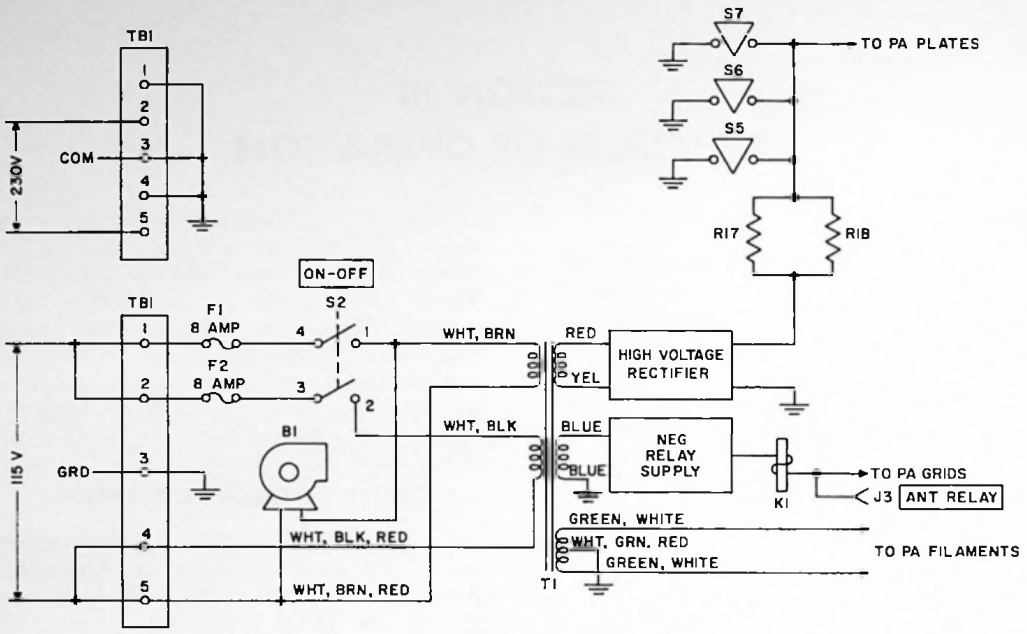


Figure 3-2. Control and Interlock Circuits

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. (For short tests where key-down conditions do not exceed 30 seconds, the DL-1 Dummy Load can be used when applicable.)

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 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 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).

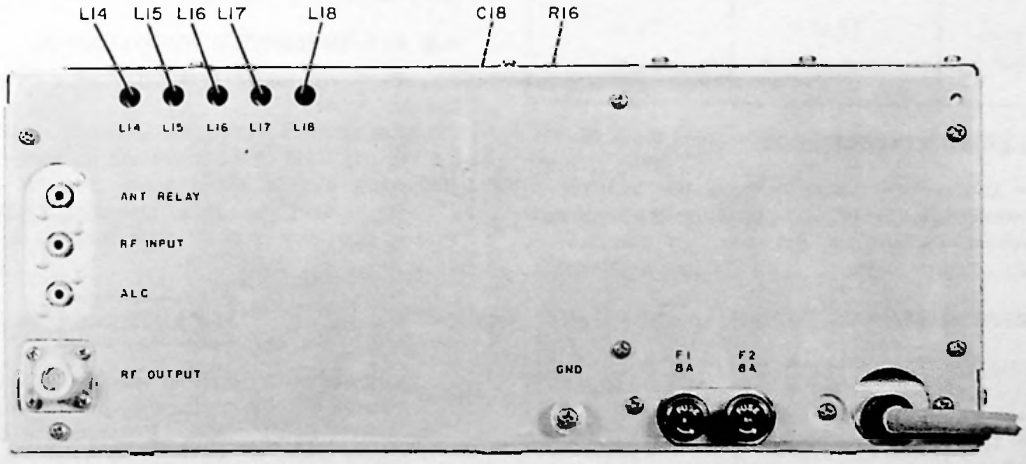


Figure 4-1. Location of Adjustments

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.

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

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 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.

4.7 TUNE METER ADJUSTMENT.

a. Make normal connections between exciter and 30L-1.

b. Connect 50-ohm dummy load to 30L-1 output jack.

c. Connect vertical input of a wide-band oscilloscope across dummy load.

d. Connect a two-tone audio oscillator of about 15 mv rms output to exciter input.

e. Using normal procedure, tune and load exciter and amplifier into dummy load at 3.9 mc. Leave 30L-1 METER switch in TUNE position, and remove excitation.

f. Using USB or LSB emission, and monitoring output waveform on oscilloscope, increase drive until output ceases to increase or peaks begin to flatten.

g. Make fine adjustments to drive level and 30L-1 tuning and loading for maximum output without peak flattening. Output voltage across dummy load should be not less than 450 volts peak to peak or 160 volts rms, and CW (single tone) plate current should not exceed 700 ma.

h. Switch exciter to TUNE (approximately 20 watts drive) and adjust C18 with insulated tuning tool to produce reading of zero on 30L-1 multimeter.

4.8 ALC THRESHOLD ADJUSTMENT.

a. Perform steps a, b, d, and e of paragraph 4.7. Omit step c.

b. Disconnect alc cable between exciter and 30L-1.

c. Using USB or LSB emission, increase drive until indicated alc is about 4 db (S-4) on exciter meter.

d. Reconnect alc cable, and adjust R16 with insulated tuning tool for a 3-db (one S-unit) increase in alc.

CAUTION

Adjustments to tune meter and alc circuits should not be made unless the need has been clearly determined. If trouble is experienced, check PA tubes and exciter first. Improper adjustments can result in damage to amplifier and a distorted output signal. Do not attempt to make adjustments without proper test equipment.

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 ±10%, 3-wire, single phase, at 7.5 amperes max, or 115 volts a-c ±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 on the amateur bands.
Noise level	40 db down from output signal with 1-kw single-tone input.
Harmonic output	All harmonics at least 40 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.

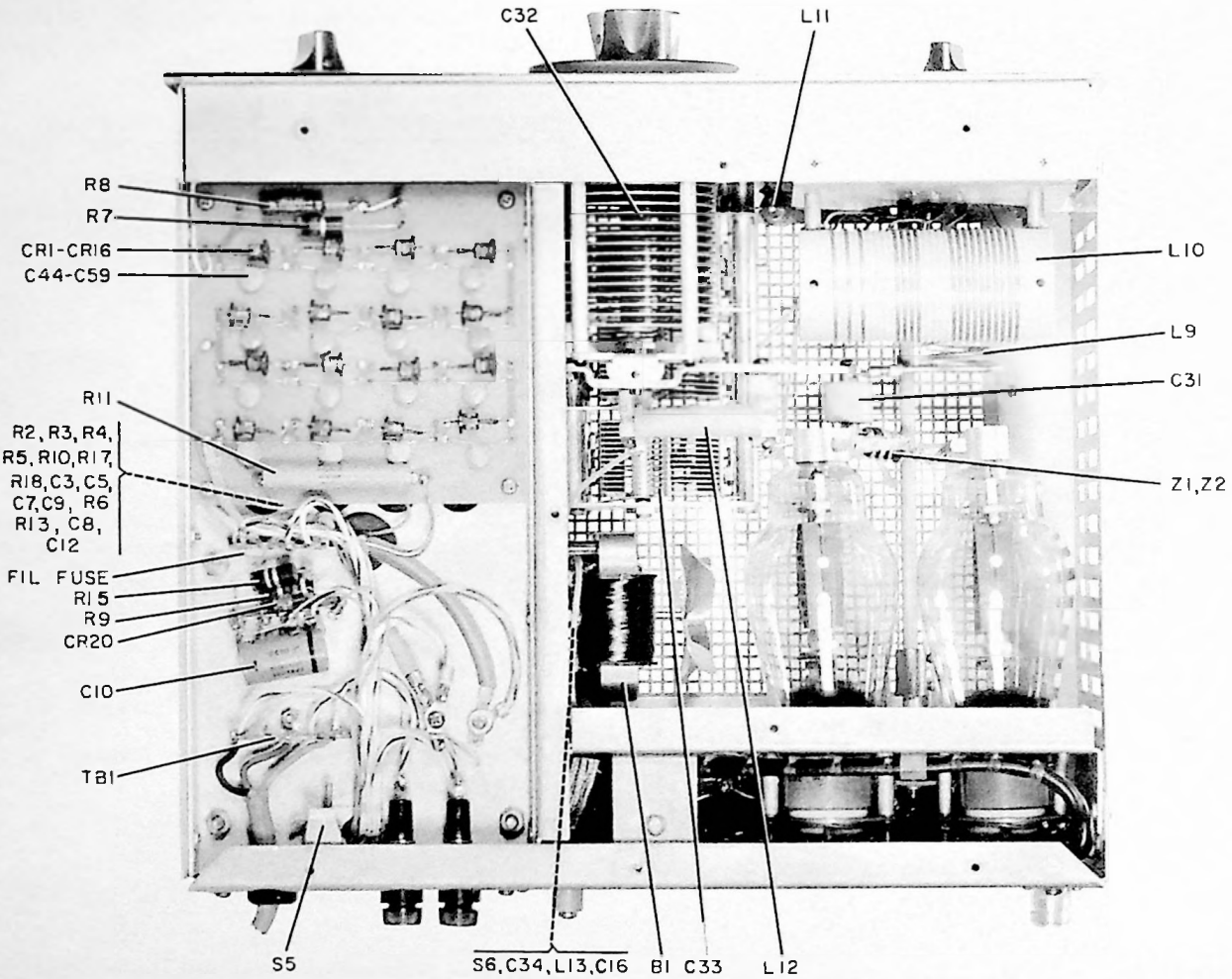


Figure 6-1. R-F and Power Supply Compartments, Parts Location

SECTION VI
PARTS LIST

30L-1 R-F Linear Amplifier

ITEM	DESCRIPTION	COLLINS PART NUMBER
	LINEAR AMPLIFIER	522-2375-00
B1	FAN: 115 v ac, 60 cps, single phase	547-3702-00
C1	CAPACITOR, FIXED, CERAMIC: 10,000 uuf +100% -20%, 500 v dc	913-3013-00
C2	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00
C3	CAPACITOR, FIXED, ELECTROLYTIC: 100 uf -10% +100%, 450 v dc	183-1567-00
C4	CAPACITOR, FIXED, CERAMIC: 10,000 uuf ±20%, 1000 v dc	913-3922-00
C5	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00
C6	CAPACITOR, FIXED, CERAMIC: same as C4	913-3922-00
C7	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00
C8	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00
C9	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00
C10	CAPACITOR, FIXED, ELECTROLYTIC: 10 uf -10%, +100%, 150 v dc	183-1568-00
C11	NOT USED	
C12	CAPACITOR, FIXED, ELECTROLYTIC: same as C3	183-1567-00
C13	CAPACITOR, FIXED, MICA: 47 uuf ±5%, 500 v dc	912-2792-00
C14	CAPACITOR, FIXED, MICA: 100 uuf ±5%, 500 v dc	912-2816-00
C15	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00
C16	CAPACITOR, FIXED, CERAMIC: 0.005 uf ±20%, 3000 v dc	913-4329-00
C17	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00
C18	CAPACITOR, VARIABLE, CERAMIC: 8.0 uuf min 75.0 uuf max, 350 v dc	917-1075-00
C19	CAPACITOR, FIXED, MICA: 270 uuf ±5%, 500 v dc	912-2846-00
C20	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00
C21	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00
C22	CAPACITOR, FIXED, MICA: 220 uuf ±5%, 500 v dc	912-2840-00
C23	CAPACITOR, FIXED, MICA: same as C22	912-2840-00
C24	CAPACITOR, FIXED, MICA: same as C22	912-2840-00
C25	CAPACITOR, FIXED, MICA: same as C22	912-2840-00
C26 thru C30	CAPACITOR, FIXED, CERAMIC: same as C1	913-3013-00
C31	CAPACITOR, FIXED, CERAMIC: 1000 uuf ±20%, 5000 v dc	913-0101-00
C32	CAPACITOR, VARIABLE AIR: 15 uuf min 353.0 uuf max	920-0066-00
C33	CAPACITOR, VARIABLE AIR: 14 uuf min 432 uuf max	921-0018-00
C34	CAPACITOR, FIXED, CERAMIC: same as C16	913-4329-00
C35	CAPACITOR, FIXED, CERAMIC: feedthrough type, 1000 uuf +80% -20%, 500 v dc	913-1292-00
C36 thru C43	CAPACITOR, FIXED, CERAMIC: same as C35	913-1292-00
C44	CAPACITOR, FIXED, CERAMIC: 1000 uuf +100% -20%, 500 v dc	913-3009-00
C45 thru C59	CAPACITOR, FIXED, CERAMIC: same as C44	913-3009-00
C60	CAPACITOR, FIXED, MICA: 82 uuf ±5%, 500 v dc	912-2810-00
C62	CAPACITOR, FIXED, MICA: 510 uuf ±5%, 300 v dc	912-2867-00
C63	CAPACITOR, FIXED, MICA: same as C22	912-2840-00
C64	CAPACITOR, FIXED, MICA: same as C22	912-2840-00
C65	CAPACITOR, FIXED, MICA: 180 uuf ±5%, 500 v dc	912-2834-00
C66	CAPACITOR, FIXED, MICA: 330 uuf ±5%, 500 v dc	912-2852-00
C67, C68	CAPACITOR, FIXED, MICA: same as C22	912-2840-00
C69	CAPACITOR, FIXED, MICA: 150 uuf ±5%, 500 v dc	912-2828-00
C70	CAPACITOR, FIXED, MICA: same as C65	912-2834-00
C71	CAPACITOR, FIXED, CERAMIC: same as C35	913-1292-00
C72	Same as C13	912-2792-00
C73	Same as C14	912-2816-00
C74	Same as C1	913-3013-00
C75	CAPACITOR, FIXED, MICA: same as C69	912-2828-00
C76	CAPACITOR, FIXED, MICA: 100 uuf ±5%, 500 v dc	912-2816-00
CR1	DIODE: silicon; type 1N1492	353-1661-00
CR2 thru CR16	DIODE: same as CR1	353-1661-00
CR17	DIODE: silicon; type 1N252	353-2940-00
CR18	DIODE: same as CR17	353-2940-00
CR19	DIODE: 1N458	353-0205-00
CR20	DIODE: silicon; type 1N540	353-1546-00

ITEM	DESCRIPTION	COLLINS PART NUMBER
F1	FUSE, CARTRIDGE: 8 amp, 250 v dc; ferrule type terminal	264-4110-00
F2	FUSE, CARTRIDGE: same as F1	264-4110-00
J1	JACK, PHONO-TYPE: accommodates 1/8 in. plug; ceramic insulation	360-0088-00
J2	JACK, PHONO-TYPE: same as J1	360-0088-00
J3	JACK, PHONO-TYPE: same as J1	360-0088-00
J4	CONNECTOR, RF TYPE N: UG-58A/U	357-9003-00
K1	RELAY: dpdt; 2 amps, coil resistance, 10,000 ohms	970-2140-00
L1	NOT USED	
L2	NOT USED	
L3	COIL, RADIO FREQUENCY: single layer wound, solenoid, #21 or #22 AWG copper wire 39.0 uh, 0.80 ohms dc	240-0189-00
L4	Part of Z1	547-3654-002
L5	Part of Z2	547-3654-002
L6	NOT USED	
L7	NOT USED	
L8	COIL, RADIO FREQUENCY: single layer wound, no. 14 AWG, formvar insulation; 7.5 uh	240-1244-00
L9	COIL, RADIO FREQUENCY: single layer wound; 6.5 turns no. 8 AWG	547-3718-002
L10	COIL, RADIO FREQUENCY: single layer wound; 17 turns no. 14 AWG	547-3708-003
L11	COIL, RADIO FREQUENCY: 4 sections; 2.5 mh, 35 to 50 ohms, 0.125 amp	240-0059-00
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
L13	COIL, RADIO FREQUENCY: single layer wound, 2.2 uh, 1980 ma current: 0.20 ohms	240-0174-00
L14	COIL, RADIO FREQUENCY: single layer wound, 4 turns	547-3659-003
L15	COIL, RADIO FREQUENCY: single layer wound, 6 turns no. 22 AWG	547-3660-003
L16	COIL, RADIO FREQUENCY: single layer wound, 8 turns no. 22 AWG	547-3661-003
L17	COIL, RADIO FREQUENCY: single layer wound, 14 turns no. 22 AWG	547-3662-003
L18	COIL, RADIO FREQUENCY: single layer wound, 6 turns no. 22 AWG	547-3663-003
L19	COIL, RADIO FREQUENCY: 1.5 uh	240-0173-00
M1	METER, ELECTRICAL: 200-0-500 ua meter range, 190 ohms, ±2%, 2-1/2 in. sq	458-0592-00
O1	KNOB-METER	544-0779-004
O2	KNOB-BAND	544-0779-004
O3	KNOB, TUNING	547-3656-002
O4	KNOB, LOADING	547-3656-002
R1	RESISTOR, FIXED, COMPOSITION: 4700 ohms ±10%, 1/2 w	745-1380-00
R2	RESISTOR, FIXED, WIRE WOUND: 25,000 ohms ±5%, 26 w	746-9155-00
R3	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
R4	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
R5	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
R6	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
R7	RESISTOR, FIXED, COMPOSITION: 1500 ohms ±10%, 2 w	745-5659-00
R8	RESISTOR, FIXED, WIRE WOUND: 1.0 ohms ±1%, 5 w	747-9716-00
R9	RESISTOR, FIXED, COMPOSITION: 47 ohms ±10%, 2 w	745-5596-00
R10	RESISTOR, FIXED, FILM: 1,960 ohms 1%, 1/4 w	705-7110-00
R11	RESISTOR, FIXED, FILM: 4,000,000 ohms ±1%, 2 w	705-4260-00
R12	RESISTOR, FIXED, WIRE WOUND: 2,000 ohms ±10%, 7 w	710-9010-00
R13	RESISTOR, FIXED, WIRE WOUND: same as R2	746-9155-00
R14	NOT USED	
R15	RESISTOR, FIXED, COMPOSITION: 10,000 ohms ±10%, 2 w	745-5694-00
R16	RESISTOR, VARIABLE, COMPOSITION: 5,000 ohms ±20%, 0.3 w	376-0205-00
R17	RESISTOR, FIXED, COMPOSITION: 10 ohms ±10%, 2 w	745-5568-00
R18	RESISTOR, FIXED, COMPOSITION: same as R17	745-5568-00
R19	RESISTOR, FIXED, COMPOSITION: 39,000 ohms ±10%, 1/2 w	745-1419-00

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: 39 ohms, ±10%, 1/2 w	745-1293-00
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
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

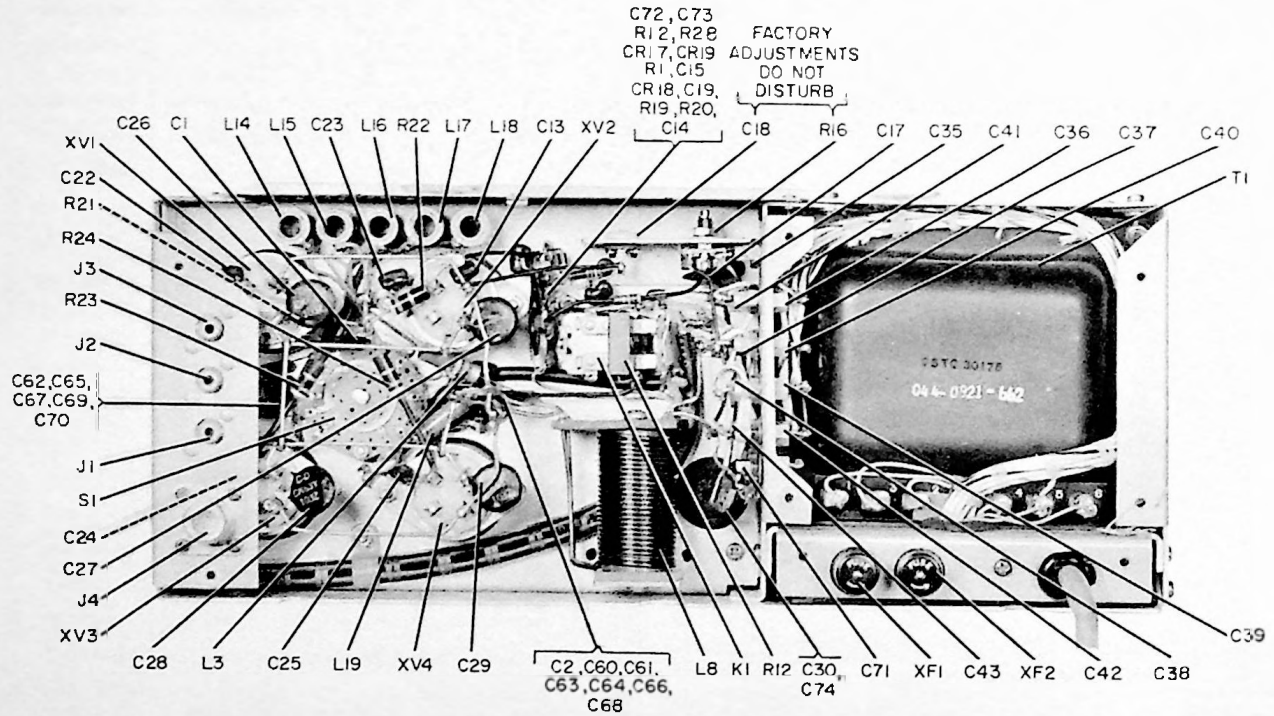
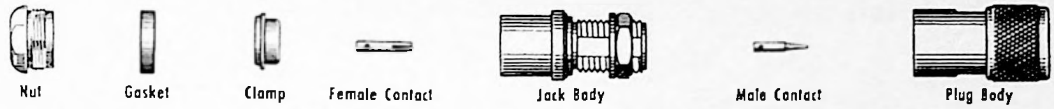


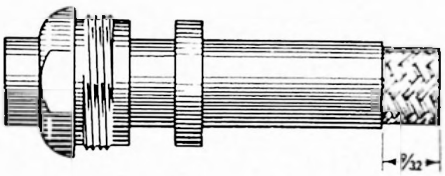
Figure 6-2. Input Circuitry, Parts Location

SECTION VII
ILLUSTRATIONS

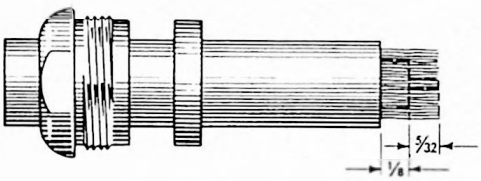
Connector Assembly Instructions

IMPROVED SERIES N

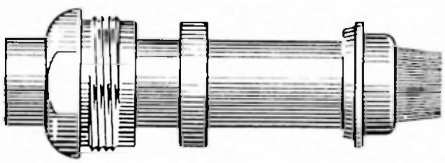




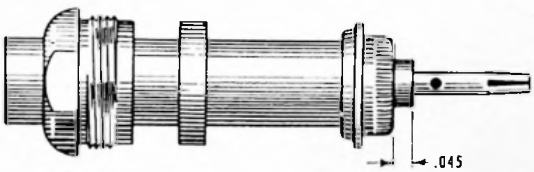
Place nut and gasket over cable and cut off jacket 9/32" from end.



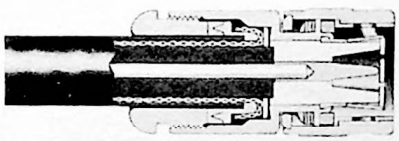
Comb out braid and fold out. Cut off cable dielectric flush 1/8" from end of jacket.

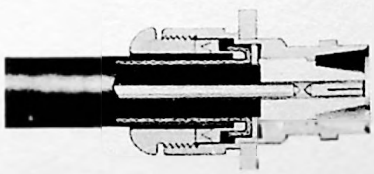


Pull braid wires forward and taper toward center conductor. Place clamp over braid and push back against cable jacket.



Fold back braid wires as shown, trim to proper length and form over clamp as shown. Solder contact to center conductor.





Insert cable and parts into connector body. Make sure sharp edge of clamp seats properly in gasket. Tighten nut.

Figure 7-1. Connector Assembly Instructions

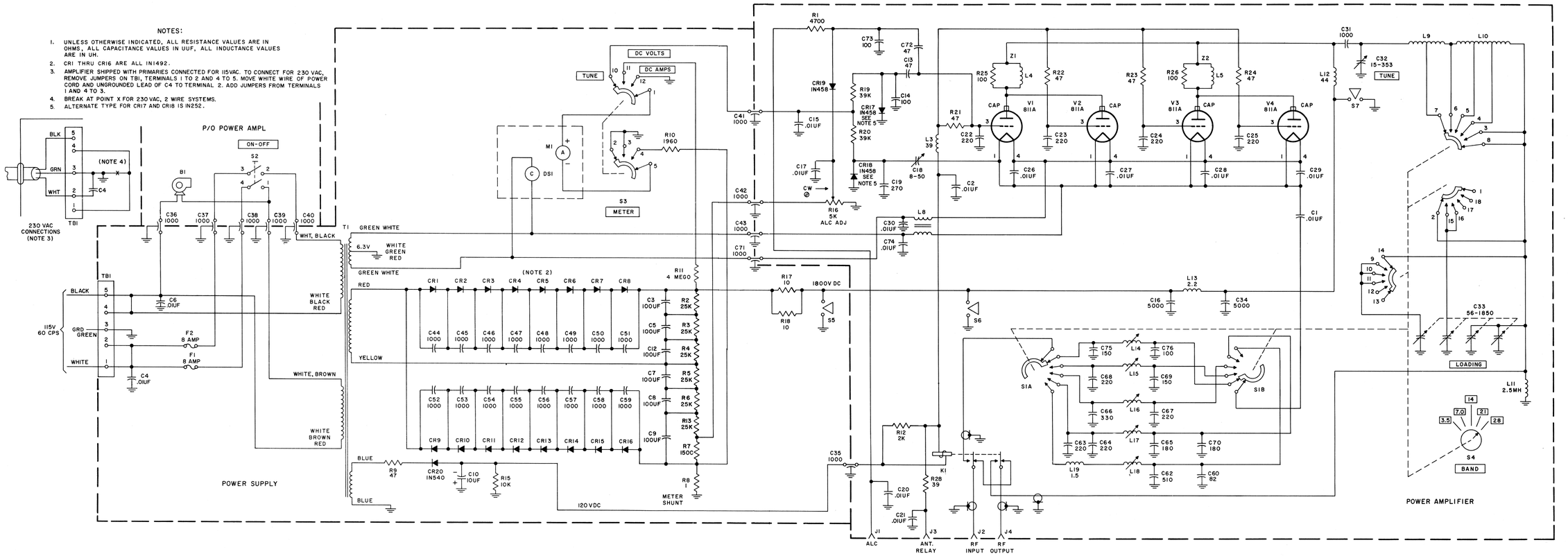


Figure 7-2. 30L-1 Schematic Diagram

ELECTRICAL WIRE CODE

EXAMPLES

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

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

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

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

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

D	A	S	(9)	(92)	——	4-1/4
Type of Wire	Size of Wire	Shielded	First Conductor	Second Conductor		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 (Monochloro-trifluoroethylene)	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