Gentner

Routing Distribution Amplifier

Installation and Operations Manual

Gentner Communications Corporation

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This manual was written and designed by Renee Gibson.

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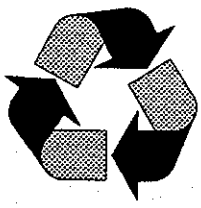

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This manual has been printed entirely on recycled paper.

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SECTION ONE -- THE BASICS

1.1 Introduction

This manual will provide you with all the information you need to properly use and maintain the Gentner Routing Distribution Amplifier (RDA). We urge you to read this manual thoroughly before attempting to use your RDA.

Please refer to this manual first if you have any questions or problems regarding the use of the RDA. If you can't find an answer in the manual, please contact:

Gentner Electronics Corporation
Customer Support
1825 Research Way
Salt Lake City, Utah 84119
Tel: (801) 975-7200
FAX: (801) 977-0087

Please check your RDA shipment to be certain that each item listed below is included. If any item is missing, notify Gentner immediately.

	ITEM	GENTNER PART NUMBER
1.	[1] RDA Unit Assembly	850-031-001
2.	[1] Operations Manual	800-031-001
3.	[1] Package of 16 Spare Input Selection Jumpers	678-250-002
4.	[4] Rack Screws	681-400-001
5.	[4] Rack Cups	684-400-001
6.	[1] Package of 80 Crimp Lugs	579-121-107
7.	Warranty Registration Card	400-600-000

1.2 Overview

The Gentner RDA performs the same functions as a traditional distribution amplifier, except that it provides you with a great deal more flexibility and capability. The RDA has eight mono inputs and 28 mono outputs. You can route any combination of inputs to any combination of outputs by adjusting the placement of Input Selection Jumpers, which are under the removable metal plate on the front panel of the unit.

All audio inputs and outputs are actively balanced, with a very low signal to noise ratio and low distortion. The RDA's computer routed printed circuit boards virtually eliminate cross-talk and ground loops.

Each input to the RDA has a specially designed Optimum Level Input Stage. This special input stage allows you to strike the best compromise between sufficient headroom and signal-to-noise ratio. This is done by coarse matching of the input level using DIP switches and then fine tuning each input with a front panel trimmer pot. The input level DIP switches and trimmer pots are located under the removeable metal plate on the front panel of the unit. This adjustment is made with the aid of Optimum Level bi-color LED's on the front panel. These LED's indicate when each input is operating within the optimum input level range.

You can adjust the output level of each output channel on the RDA with a trimmer pot. The output level trimmer pots are located under the removeable metal plate on the front panel of the unit.

All inputs and outputs to the RDA appear on the rear panel of the unit at barrier strips. You can optionally order the RDA with a pre-wired termination, including 66 blocks, Flexiblocks, or Christmas trees.

The Gentner RDA provides you with these benefits:

1. Easy routing and re-routing of audio signals in an inexpensive package.

2. The RDA's eight inputs and 28 outputs can eliminate the need for several traditional distribution amplifiers.

3. Advanced computer designed circuitry provides exceptionally low distortion, cross-talk, and signal-to-noise ratio.

4. Easy installation with simple barrier strip connections on rear panel of unit.

5. Simple and easy set-up with front panel Input Selection Jumpers and input level indicators.

The RDA's ease of use and capabilities make it suitable for use in the following applications:

1. Broadcast radio and television studios where occasional re-routing of audio signals is desired.

2. Recording studios where flexibility and versatility are required, and where rack space is at a premium.

3. Any audio facility which requires versatile audio routing and distribution. Use the RDA in zone paging systems and other sound installations.

4. Any audio facility which requires maximum audio routing capability at a reasonable price.

5. Use the RDA in many situations which might have previously required an expensive routing switcher. The RDA's flexibility makes it an ideal substitute for routing switchers in many applications.

6. Use the RDA to eliminate multiple traditional distribution amplifiers. The RDA's high number of inputs and outputs can allow you to replace several traditional distribution amplifiers with one compact and cost effective package.

7. Use the RDA to create a "Mix-Minus" audio feed from your console for remote broadcasts or telephone talk shows.

1.3 Brief Technical Description

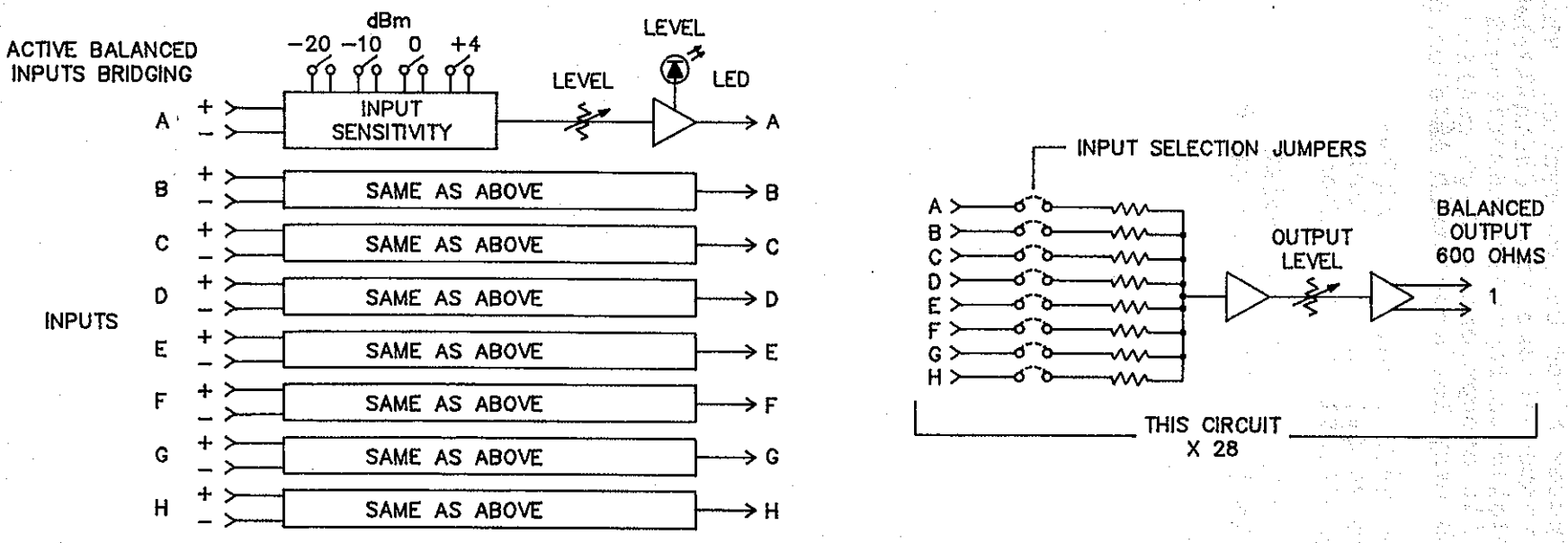
The RDA accepts eight balanced audio input signals, which all appear on the rear panel barrier strips. The inputs are actively balanced, bridging. The RDA will accept nominal input levels of between -20 dBm and +8 dBm. You select the nominal input level with a four position DIP switch. Each Input Channel has its own four position DIP switch. Each Input Channel also has a trimmer pot associated with it. You can use the trimmer pot to make fine adjustments to the nominal input level.

Each RDA input also has an Optimum Level LED indicator. This bi-color LED will activate green when the signal level reaches its optimum level, approximately 20 dBm below clipping. The LED will go red at maximum output level, the clipping threshold.

The RDA has 28 output channels. Each output signal appears on the rear panel barrier strips. The outputs are actively balanced.

Each output has eight Input Selection Jumpers associated with it. All eight inputs appear at each Output Channel. These eight Input Selection Jumpers allow you to select which input signal or signals you wish to combine at each output.

Each output also has a level trimmer pot associated with it. You can use this output level trimmer pot to adjust the relative level of each output. The nominal output level for each channel is +4 dBm, with 20 dB of headroom before clipping.



ROUTING DISTRIBUTION AMPLIFIER BLOCK DIAGRAM

FIGURE 1

The RDA's printed circuit boards have been designed with a sophisticated Computer Aided Design system. This design, and the latest advances in amplifier designs and components which are incorporated in the unit, has allowed the RDA's engineers to provide exceptionally high quality and flexible audio routing with very low cross-talk in a compact package.

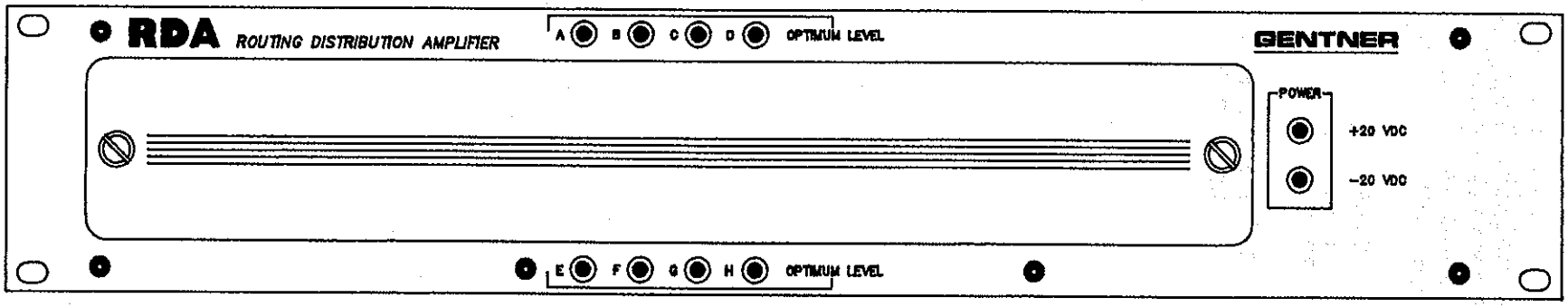
1.4 Physical Specifications

The RDA is enclosed in a rugged metal case, which may be mounted in a standard 19" equipment rack.

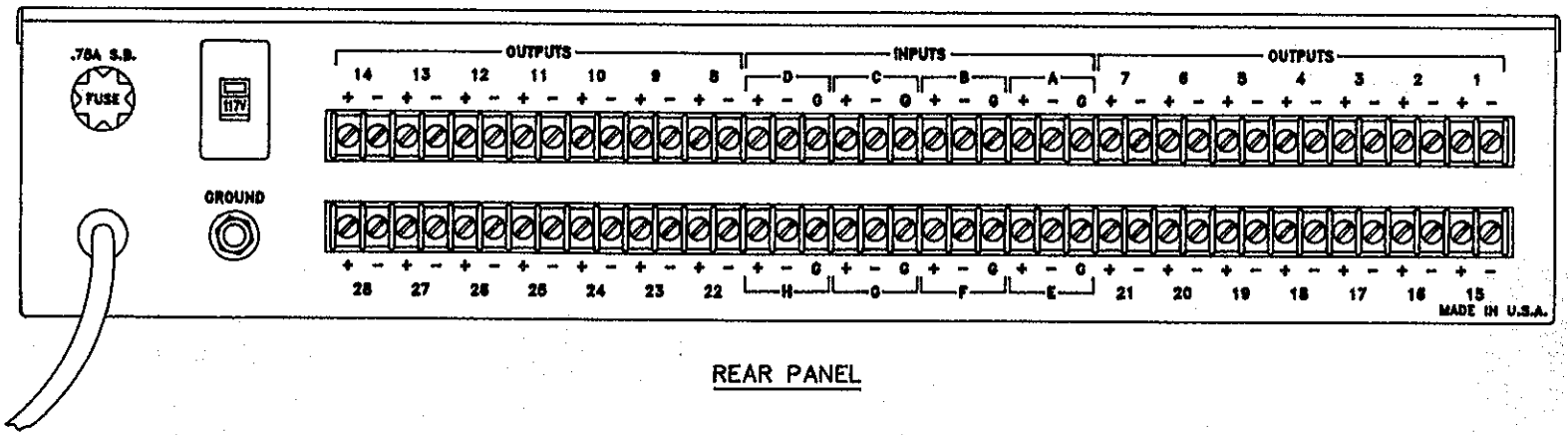
The RDA's outside dimensions are:

Height:	3.5" (8.89 cm)
Width:	17.2" (43.69 cm)
Depth:	11.8" (29.97 cm)

Weight (dry):	13 lbs/5.9 kgs
Shipping weight:	17 lbs/7.7 kgs



FRONT PANEL



REAR PANEL

FIGURE 2

All audio connections to the unit are made at two barrier strips located on the rear panel. All level adjustments and audio routing adjustments appear under a removable metal plate on the front panel of the unit.

1.5 Electrical Specifications

a. Power Requirements: 117/234 VAC; 50/60 Hz; 60 watts maximum.

b. Connectors: All connections except common ground are made at rear panel barrier strips. A binding post is provided for common ground connection.

c. Inputs: Eight total. Actively balanced, bridging; -20 dBm to +8 dBm nominal input level, adjustable with front panel trimmer pot. Each input equipped with double pole RFI filter.

d. Outputs: 28 total. Actively balanced, 600 ohm nominal output impedance, +4 dBm nominal output level (with 20 dB headroom before clipping), adjustable with front panel trimmer pot.

e. Total Harmonic Distortion: Less than .02%

f. Intermodulation Distortion: Less than .01%

g. Differential Phase Shift: Less than 15 degrees from 5 Hz to 20 kHz. Less than 5 degrees from 10 Hz to 10 kHz.

h. Signal-To-Noise Ratio: Better than 98 dB below threshold of clipping. Better than 78 dB below +4 dBm output level with +4 dBm input.

i. Cross-Talk: Better than 78 dB between any two channels, referenced to +4 dBm output level with +4 dBm input. Essentially equal to or less than the noise floor at all nominal levels with 20 dB of headroom.

j. Maximum Output at Threshold of Clipping: +24 dBm into 600 ohm termination; +30 dBm into greater than 20K ohm bridging termination.

k. Frequency Response: 10 Hz to 20 kHz, +/- .2 dB

l. Temperature Range: Gentner recommends the operation of the RDA in an environment of between +5 and +30 degrees Celsius.

1.6 Accessories

You can order the following custom terminations to make installation of the RDA easy and fast. Call the Gentner sales office.

a. "66" Block Termination: Two "66" blocks are required for the RDA. The "66" block terminations should be used with solid wire only.

b. Flexiblock Termination: Gentner's exclusive Flexiblock termination provides a gas-sealed connection. Flexiblock is an "insulation displacement" termination that accepts stranded or solid wire, 22 to 26 gauge. Two Flexiblocks are required for the RDA.

c. "Christmas Tree" Termination: A popular high-density termination requiring solder connections using either stranded or solid wire. Only one "Christmas Tree" termination is required for the RDA.

d. EasyTerm "66" Termination: Gentner's EasyTerm is a rack-mountable termination system with a hinged access panel. All wires are to EasyTerm from inside the rack. One EasyTerm "66" termination is required for the RDA.

e. EasyTerm FB Termination: Gentner's EasyTerm is a rack-mountable termination system with a hinged access panel. The EasyTerm FB utilizes the exclusive Gentner Flexiblock, which provides Gentner's exclusive Flexiblock termination provides a gas-sealed connection. Flexiblock is an insulation displacement termination that accepts stranded or solid wire, 22 to 26 gauge. Only one EasyTerm FB termination is required for the RDA.

SECTION TWO -- WARRANTY

2.1 Warranty Agreement

The Gentner Warranty Agreement on the following page is effective as of the date of receipt by the purchaser of the RDA. This warranty shall not be effective unless Gentner is notified in writing by the purchaser of the receipt of the unit and the unit's serial number.

You have been supplied with a Gentner Warranty Registration Card. Use this card to notify Gentner of your purchase of the RDA and the serial number of your unit.

WARRANTY

GENTNER COMMUNICATIONS CORPORATION (Manufacturer) warrants that this product is free of defects in both materials and workmanship. Should any part of this equipment be defective, Manufacturer agrees, at its option, to:

A. Repair or replace any defective part free of charge (except transportation charges) for a period of one year from the date of the original purchase, provided the owner returns the equipment to the Manufacturer at the address set forth below. No charge will be made for parts or labor during this period;

B. Furnish replacement for any defective parts in the equipment for a period of one year from the date of original purchase. Replacement parts shall be furnished without charge, except labor and transportation.

This Warranty excludes assembled products not manufactured by Manufacturer whether or not they are incorporated in a Manufacturer product or sold under a Manufacturer part or model number.

THIS WARRANTY IS VOID IF:

A. The equipment has been damaged by negligence, accident, act-of-God or mishandling, or has not been operated in accordance with the procedures described in the operating and technical instructions; or,

B. The equipment has been altered or repaired by other than Manufacturer or an authorized service representative of Manufacturer; or,

C. Adaptations or accessories other than those manufactured or provided by Manufacturer have been made or attached to the equipment which, in the determination of Manufacturer, shall have affected the performance, safety or reliability of the equipment; or,

D. The equipment's original serial number has been modified or removed.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, APPLIES TO THE EQUIPMENT, nor is any person or company authorized to assume any warranty for Manufacturer or any other liability in connection with the sale of Manufacturer's products.

Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction in the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

In case of unsatisfactory operation, the purchaser shall promptly notify Manufacturer at the address set forth below in writing, giving full particulars as to the defects or unsatisfactory operation, upon receipt of such notice, Manufacturer will give instructions respecting the shipment of the equipment, or such other matters as it elects to honor this warranty as above provided. This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage. All shipping costs shall be paid by customer.

This warranty extends only to the original purchaser and is not assignable or transferable.

Gentner

GENTNER COMMUNICATIONS CORPORATION
1825 West Research Way
Salt Lake City, Utah 84119
Telephone: (801) 975-7200
Facsimile: (801) 977-0087

2.3 Special Notices

The information contained in this manual is subject to change without notice. Gentner Electronics Corporation makes no warranty of any kind with regard to this material including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Gentner Electronics Corporation shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

2.4 Product Line Updates

Gentner Electronics will offer new products, options, and updates for its audio product line. As a registered owner of a Gentner audio product, you will be notified of new products, options, and updates when they become available.

You must return a completed Warranty Card in order to be notified of updates to the audio product line. (You may also notify us by letter if you prefer. Your letter must include the following information: RDA serial number; your name; the name of your organization; your address; the name of the company from whom you purchased your RDA; the date of purchase.)

Mail your Warranty Registration Card to:

Gentner Electronics Corporation
P.O. Box 27647
Salt Lake City, Utah 84127-0647

SECTION THREE -- INSTALLATION AND OPERATION

3.1 Unpacking Your RDA

Your RDA system should have arrived in a single carton. Carefully unpack your shipment and check for any damage. Also be sure that all the parts listed in Section 1.1 of this manual are included in your package.

3.2 Installing your RDA

You can easily mount the RDA in a standard 19" equipment rack. You can also mount the RDA in a road case, making it easy to transport and protecting it from the elements and other environmental hazards.

The RDA does not require an internal cooling fan. As long as the unit receives adequate ventilation, it will operate normally.

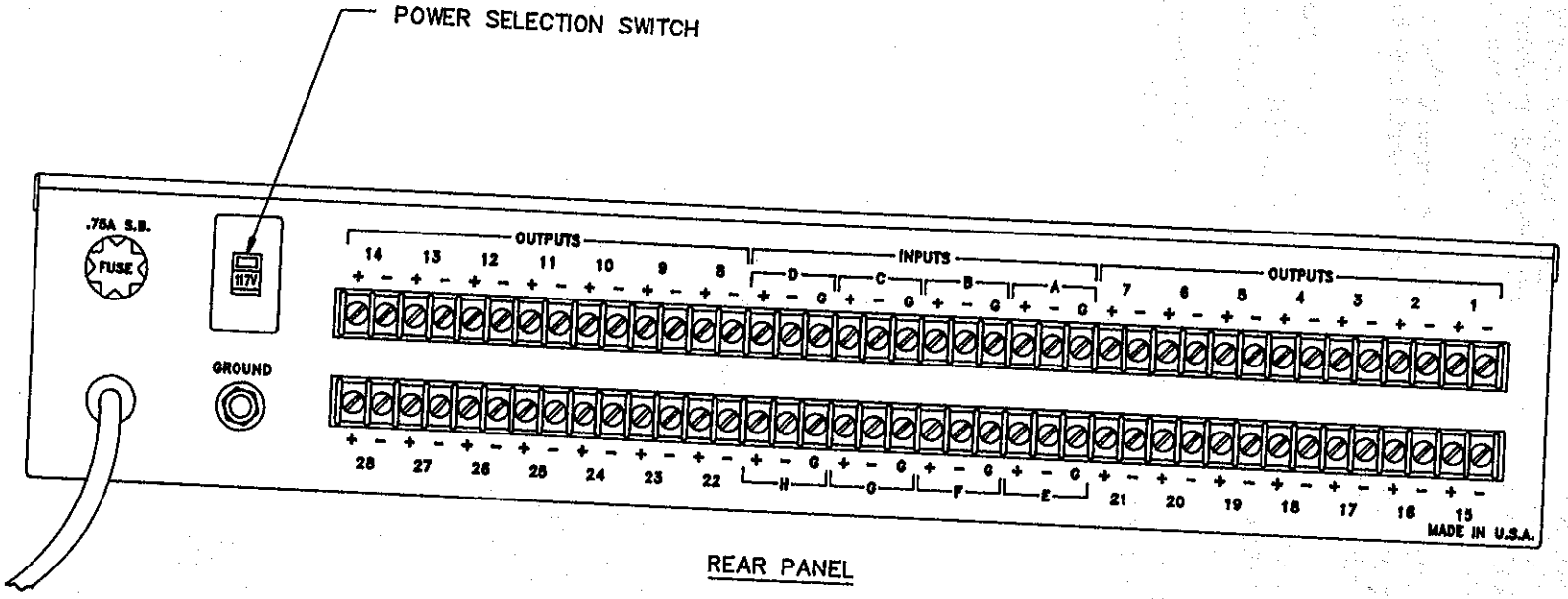
Be careful not to block any of the ventilation holes in the unit's chassis. Always be sure that a free flow of air gets to the unit while it is operating.

You have been supplied with a package of crimp lugs which you can use to wire your own termination to the rear panel of the RDA.

3.3 Setting Up the AC Power Input

Your RDA was shipped to you ready to use with a 117 VAC/60 Hz power source (unless otherwise marked on the unit's chassis.) You can easily alter the AC power input to accept a 234 VAC/50 Hz power input.

To change the RDA to 234 VAC/50 Hz operation, you must change the position of the Power Selection switch on the rear panel of the unit.



REAR PANEL

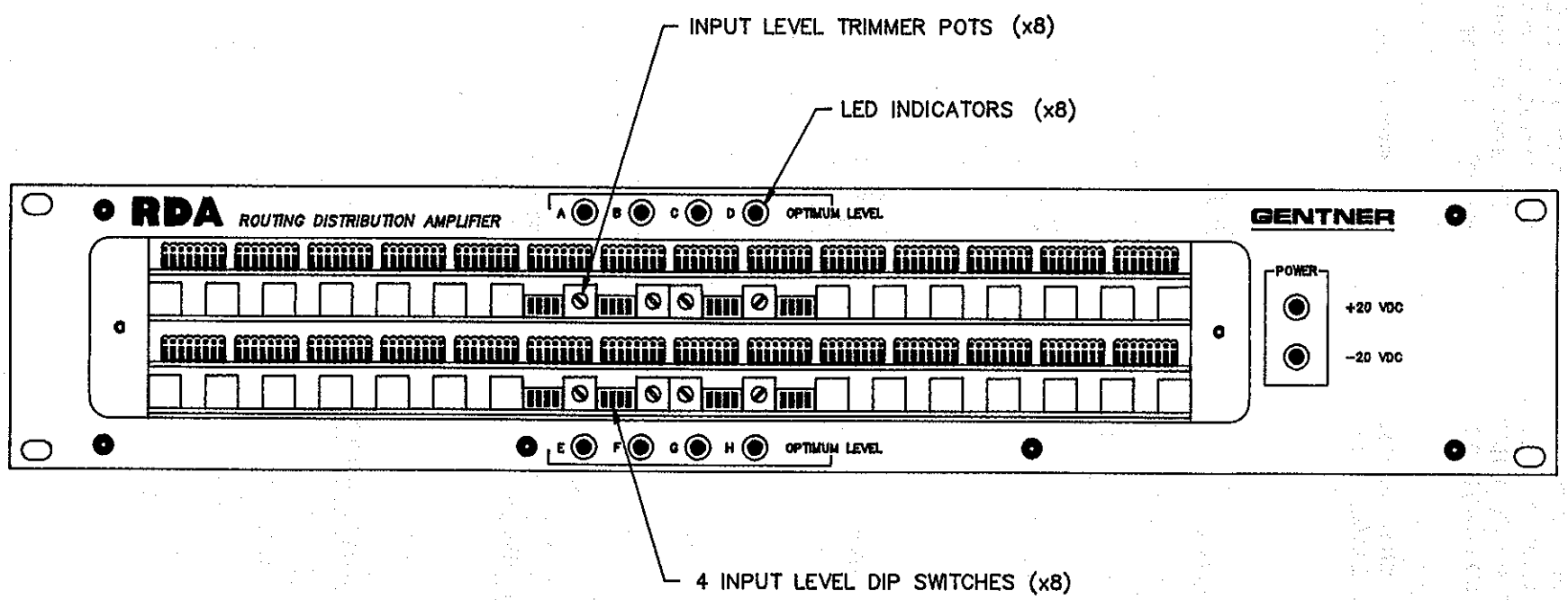
FIGURE 3

Be careful to use the Power Selection switch to select the correct power source for your installation. Attempting to operate the RDA with the Power Selection switch in the wrong position can cause severe damage to your unit and void your warranty.

3.4 Setting Nominal Input Levels on the RDA

Each of the RDA's eight Input Channels has a small trimmer pot and a four-position DIP switch associated with it. The pots and DIP switches are located under the removable metal plate on the front panel. Each of the eight inputs also has a bi-color LED level indicator on the front panel of the unit.

To set input levels, first remove the front panel by twisting the quick release tabs on either side of the removable panel.

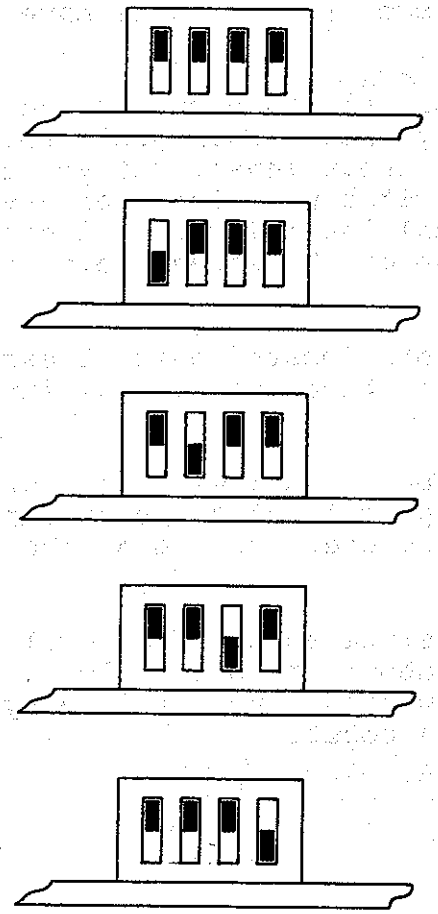


FRONT VIEW
WITH COVER PANEL REMOVED

FIGURE 4

Notice that each of the inputs has a four position DIP switch. This four position switch provides a coarse adjustment for each Input Channel. To set a rough nominal input level, you must set the DIP switch in the proper position.

Figure 5 shows the nominal input level settings available with the input level DIP switches.



INPUT LEVEL DIP SWITCH SETTING OPTIONS

FIGURE 5

Adjust the input level DIP switches to the value closest to your nominal input level. For example, if you are using a 0 dBm nominal input level, adjust the input level DIP switches for 0 dBm. If you are using a -16 dBm nominal input level, adjust the input level DIP switches for -20 dBm.

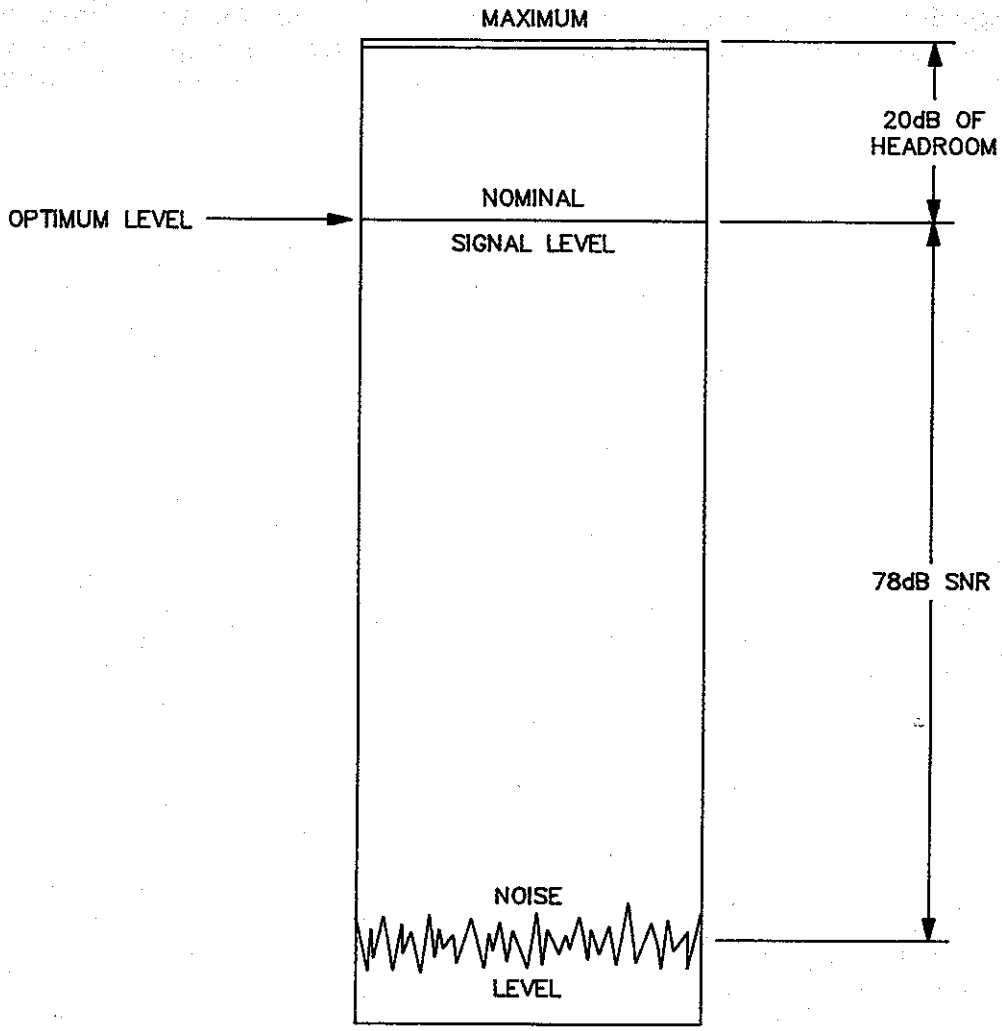
After you adjust the input level DIP switches, turn the input level trimmer pot either clockwise or counterclockwise to fine tune the nominal input level. Adjust the input level trimmer pot until the Optimum Level LED indicator turns green. The input level trimmer pots have a range of approximately +/- 5 dB.

It is recommended that you only have one of the DIP switch positions activated at any time. This will provide you with the most accurate nominal input level. If you accidently activate two of the DIP switch positions for any individual channel, the actual nominal input level will correspond approximately to the value of the lowest level position that is activated.

You can use the trimmer pots located next to each four position DIP switch to fine tune the nominal input level for each Input Channel.

The LED indicators for each channel will turn on and go green at 20 dB below clipping level for each input. The LED indicators will change from green to red at the clipping level for each input.

The RDA is designed to operate an Optimum Level of 20 dB below clipping and 78 dB above the noise floor. If the RDA is operated above or below this line, it is easy to see that compromises in performance occur.



RDA's 'OPTIMUM LEVEL' LED's
ENSURE THE BEST COMPROMISE
BETWEEN MAXIMUM SIGNAL
LEVEL AND NOISE LEVEL

FIGURE 6

The insure that your RDA is operating at Optimum Level, be sure to adjust each input level correctly with the four-position DIP switch and trimmer pot associated with each Input Channel. The RDA is operating at Optimum Level when the LED indicator for each input is green. A red LED indication means that the maximum input level has been reached.

3.5 Setting Nominal Output Levels for RDA

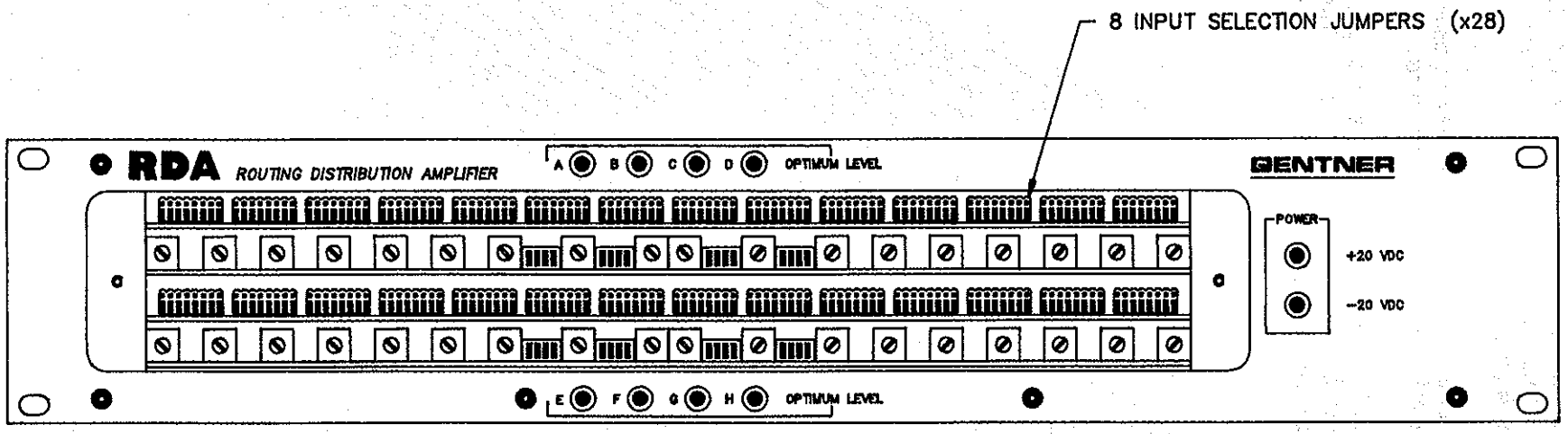
Each of the RDA's 28 Output Channels has a small trimmer pot associated with it. These pots switches are located under the removable front panel.

To set nominal output levels, first remove the front panel by twisting the quick release tabs on either side of the removable panel.

3.6 Routing Signals in the RDA

It is very easy to route and re-route signals in the RDA. Any combination of inputs can be routed to any combination of outputs.

Each Output Channel has eight Input Selection Jumpers associated with it. Use the Input Selection Jumpers to select Input Channels for to be routed to each Output.



FRONT VIEW
WITH COVER PANEL REMOVED

FIGURE 8

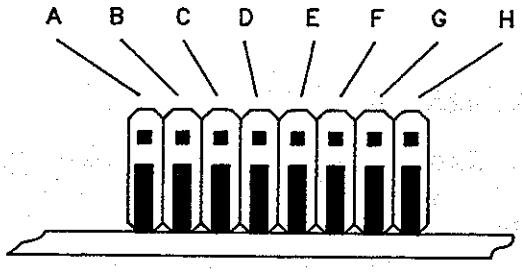
For example, to route Input Channel (A) to Output
(23), you would move Jumper (A) for Output Channel
the TOP position, and put all of the other Jumpers
Output Channel (23) in the BOTTOM position.

To route inputs (C), (E), and (H) to Output Channel
you would move Jumpers (C), (E), and (H) for Output
(10) to the TOP position, and put all of the other
in the BOTTOM position.

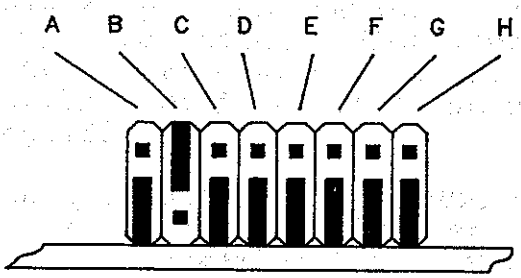
Remember, you can route any combination of inputs t
combination of outputs, simply by properly position
Input Selection Jumpers for each Output Channel.

> NOTE: You should always have all eight Input
> Jumpers in place on each Output channel. This
> minimizes cross-talk and noise in the RDA. Yo
> been provided with extra Input Selection Jumpe
> replace any that you may drop or lose.

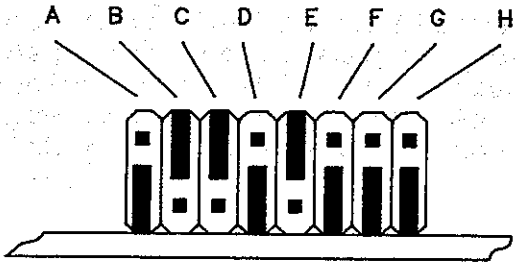
Refer to Figure 10 for examples on how to properly p
the Input Selection Jumpers.



OUTPUT WITH NO INPUT CHANNELS SELECTED



OUTPUT WITH JUMPER FOR INPUT CHANNEL 'B' SELECTED



OUTPUT WITH JUMPERS FOR INPUT CHANNELS 'B', 'C', AND 'E' SELECTED (B, C, AND E MIXED)

INPUT SELECTION JUMPERS

FIGURE 10

SECTION FOUR -- TYPICAL APPLICATIONS

4.1 Introduction

This section will provide you with several examples of how you can use the RDA system to quickly and easily route and re-route high quality audio signals in your facility.

4.2 Typical Broadcast Applications

The signal routing capability of the RDA adds a whole new dimension of flexibility to distribution amplifier applications in broadcasting facilities.

The RDA can be used in a standard distribution amplifier applications in which an input is amplified and fed to several outputs, with no mixing functions taking place. In this simple application, the RDA eliminates the problem common to standard distribution amplifiers where unused outputs are wasted. See Figure 11 for an example of how to use the RDA in place of several standard distribution amplifiers.

The flexibility of the RDA is most evident when inputs are routed to several different outputs and mixed with other inputs. Remember that any combination of inputs can feed any combination of outputs, and the configuration can be changed very quickly. Another typical application is shown in Figure 12.

Note that the RDA in Figure 12 is providing two "mix-minus" feeds for two telephone hybrids, as well as providing conferencing ability for two callers. The caller outputs from the telephone hybrids appear on RDA Inputs 5 and 6, with the send inputs of the hybrids connected to RDA Outputs 8 and 9.

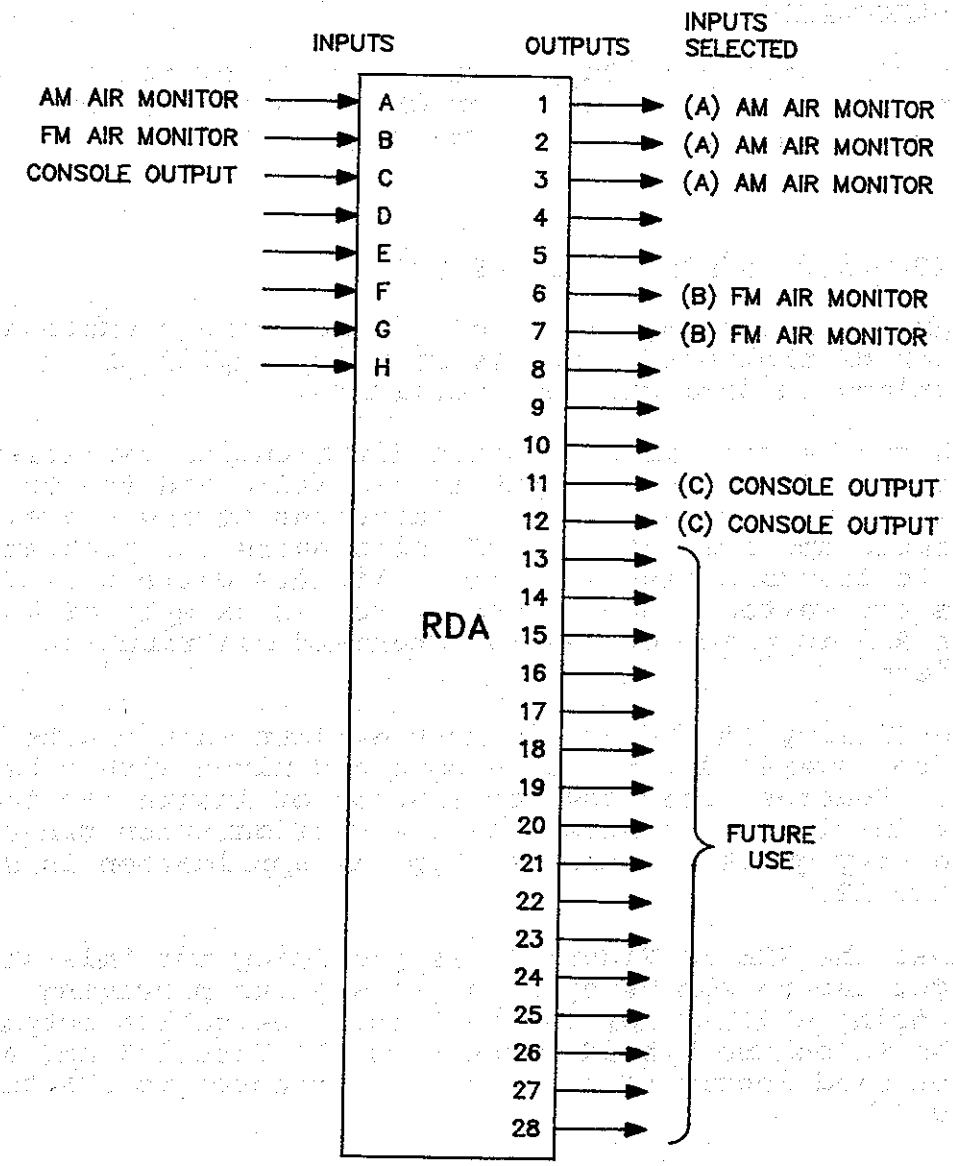

INPUTS
OUTPUTS
INPUTS SELECTED
AM AIR MONITOR
FM AIR MONITOR
CONSOLE OUTPUT
A
B
C
D
E
F
G
H
RDA
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
(A) AM AIR MONITOR
(A) AM AIR MONITOR
(A) AM AIR MONITOR
(B) FM AIR MONITOR
(B) FM AIR MONITOR
(C) CONSOLE OUTPUT
(C) CONSOLE OUTPUT
FUTURE USE

FIGURE 11

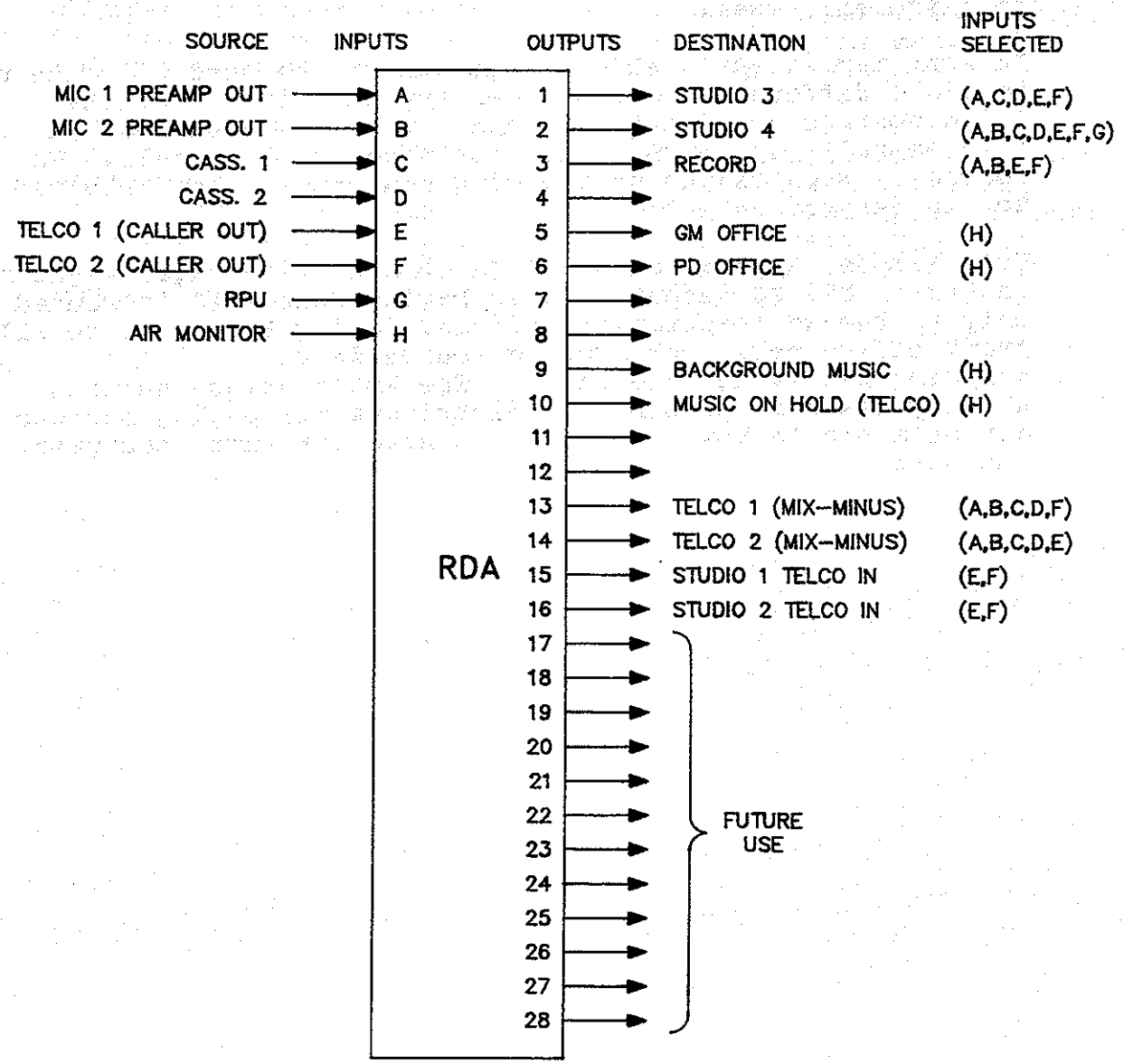

SOURCE
INPUTS
OUTPUTS
DESTINATION
INPUTS SELECTED
MIC 1 PREAMP OUT
MIC 2 PREAMP OUT
CASS. 1
CASS. 2
TELCO 1 (CALLER OUT)
TELCO 2 (CALLER OUT)
RPU
AIR MONITOR
A
B
C
D
E
F
G
H
RDA
1 STUDIO 3 (A,C,D,E,F)
2 STUDIO 4 (A,B,C,D,E,F,G)
3 RECORD (A,B,E,F)
4
5 GM OFFICE (H)
6 PD OFFICE (H)
7
8
9 BACKGROUND MUSIC (H)
10 MUSIC ON HOLD (TELCO) (H)
11
12
13 TELCO 1 (MIX-MINUS) (A,B,C,D,F)
14 TELCO 2 (MIX-MINUS) (A,B,C,D,E)
15 STUDIO 1 TELCO IN (E,F)
16 STUDIO 2 TELCO IN (E,F)
17
18
19
20
21
22
23
24
25
26
27
28
FUTURE USE

FIGURE 12

4.3 Typical Audio Installation Applications

The RDA is very useful for sound contractors and audio engineers who require distribution of multiple audio sour to different areas.

In zone paging applications, the RDA can be used to route to eight different audio sources anywhere in a facility. Audio sources are fed to the RDA inputs (as described in this manual), and outputs are connected to the desired PA sources. Each of the zone paging sources is then selected to the desired outputs.

For example, Paging Source #1 (a company-wide page) might routed to all 28 outputs, while Paging Source #2 is routed only to the administrative offices, Paging Source #3 to al front office personnel, Paging Source #4 to shipping/receiving, and so on. The RDA's unique summing ability makes it possible to distribute all paging sources out of a single box, reducing the need for extra equipment and wire.

4.4 Typical Recording Studio Application

The RDA provides recording studios with a maximum of audio distribution capability in a minimum of space. Four stereo channels can be routed to any of 14 destinations, using only two rack spaces. Because changes are quick and easy, the RDA can be used for highly specialized applications.

You can use the RDA to provide separate mix feeds to performing talent. Multiple musicians, producers and other personnel in the same room could all receive a different feed in their headsets, just by moving the appropriate Input Selection Jumpers at the RDA's Outputs. Combinations of other performers' audio, producer cues, etc. are easy to route.

SECTION FIVE -- THEORY OF OPERATION AND SCHEMATICS

5.1 Theory of Operation

The RDA consists of eight identical inputs and 28 identical outputs. This is accomplished by using two identical Amplifier PCB's (each containing 4 input and 14 output channels) and two identical Mixer PCB's (programmable for channels 1 through 14 or channels 15 through 28).

The inputs are labeled A, B, C, D, E, F, G, and H. Each input is active balanced with a bridging input impedance of 200K ohms. Each input channel has a two stage RFI filter. A four pole dip switch provides selection of nominal input levels of +8, +4, 0, -10, and -20 dBm. An input trimmer is used to vary the nominal input between the switch selectable levels. This level selection maintains the best possible dynamic range for the circuitry employed. A bi-color LED is used for nominal and clipping level indication.

The outputs are labeled one through 28. Each output is true 600 ohm balanced and has an eight input jumper selectable mixing circuit. Each output has a front panel trim pot to adjust output level. Single stage RFI protection is provided on all outputs.

The power supply PCB consists of a toroidal transformer, rectifiers, filter capacitors, and voltage regulators to provide +20 volts and -20 volts. From this supply, +15 volts, -15 volts, +5 volts, and a +1.1 volt voltage reference is derived on each amplifier PCB.

5.2 Circuit Description

For ease of explanation only one circuit will be described, input "A" to output 1.

Refer to RDA amplifier schematics sheet 2 of 10. A balanced signal is input at the rear panel barrier strip (TS1) at pins 15,16, and 17. Pin 15 is a ground for shielded inputs, pin 16 is the minus input, and pin 17 is the plus input. As both sides of the balanced input are identical, only the minus side will be described.

The minus side of the balanced audio passes through the two stage RFI protection; FB30, C116, L2, and C118. The audio then passes through the coupling capacitors C120 and 119. C119 provides excellent high frequency coupling and phase response; however, alone it contributes unacceptable "tilt" at low frequencies. A high quality non-polar 100uF capacitor limits this "tilt" effect to less than 1% on a 10 Hz square wave and provides excellent low frequency coupling. The minus audio is then attenuated by 2 dB through the resistor network R184, and 183. 2 dB of attenuation is needed to obtain maximum peak to peak swing, without clipping, in the instrumentation amplifier when the +8 dB input sensitivity is selected. U35, R231, R235, R236,R289, R288, and R287 form a balanced instrumentation amplifier. S1 is used to select R287, R288, and R289, the input gain resistors.

The balanced audio is then converted to unbalanced audio by the R240, R241, R242, R243, and U35 unbalancing amplifier. R303 and R290 divide the audio. R303 is adjusted for a portion of the audio to pass through the R239, R237, R238, and U35 non-inverting amplifier. When the input level and the input amplifier sensitivity are properly matched, 20 dB of headroom is maintained.

The output of U35 is routed to two places, the mixer PCB and the level indicator circuit.

Refer to RDA amplifier schematic sheet 4 of 10. Audio is coupled by C160 and divided across R208 and R209. When audio at U30A pin 3 exceeds 1.1 volts (optimum level), U30A comparator is in positive saturation. The +15 volts is current limited by R211 and input to U31B pin 2. When the "B" input of U31B is clocked by U30 the one shot is activated and turns on Q3 for a time period determined by R210 and C162. The collector of Q3 is tied to the green cathode of the bi-color LED making it glow green when a nominal input level is present.

When the audio level is high enough to exceed 1.1 volts at pin 5 of U30B (clipping), pin 10 of U31A is clocked positive which turns on Q4 and the red LED for the time constant determined by R214 and C164. The clear pin (3) of U31B is connected to the output of U31A (pin 12) to keep the green and red LED's from glowing simultaneously. R312 is for current limiting and connected to the common anode of the bi-color LED .

Refer to RDA amplifier schematics sheet 10 of 10. The input audio is routed to J5 pin 1 and J3 pin 1. J5 is connected to the other Amplifier PCB and J3 is connected to the matching mixer PCB. In this case the top mixer PCB and the bottom Amp PCB.

Refer to RDA mixer schematic sheet 1 of 5. The audio comes in on S1 pin 1 (J3 pin 1 on Amp PCB) and is routed through the programmable shunt U15 pins 1 and 16.

Refer to RDA mixer schematic sheet 2 of 5. The audio is then selected by JP1 and resistively summed with all other inputs selected. Note that the inputs not selected are grounded through the jumper. This is essential in keeping the crosstalk at a minimum. The summing is done by RP1, R1, R2, and U1 summing amplifier. It is then routed back to the amplifier PCB via S1 pin 11 (sheet 1 of 5) and J3 pin 11 (sheet 10 of 10 Amplifier PCB)

Refer to RDA amplifier schematics sheet 5 of 10. The audio is then divided through R13 (output level adjust), coupled by C8, and amplified by the R9, R10, and U2 non-inverting amplifier. R11 and R12 provide high frequency stabilization and input DC bias respectively. R7, R4, R3, R6, U1A and U1B convert the audio from unbalanced to balanced. R5 and R8 provide input DC bias. R1 and R2 provide a 600 ohm output impedance. C1, C2, FB1, and FB2 are for RFI protection. The balanced "A" audio is now present at the rear panel barrier strip (TS1) pins 1 and 2.

5.3 Schematics

Schematic diagrams for the RDA are presented on the following pages.

REVISIONS				
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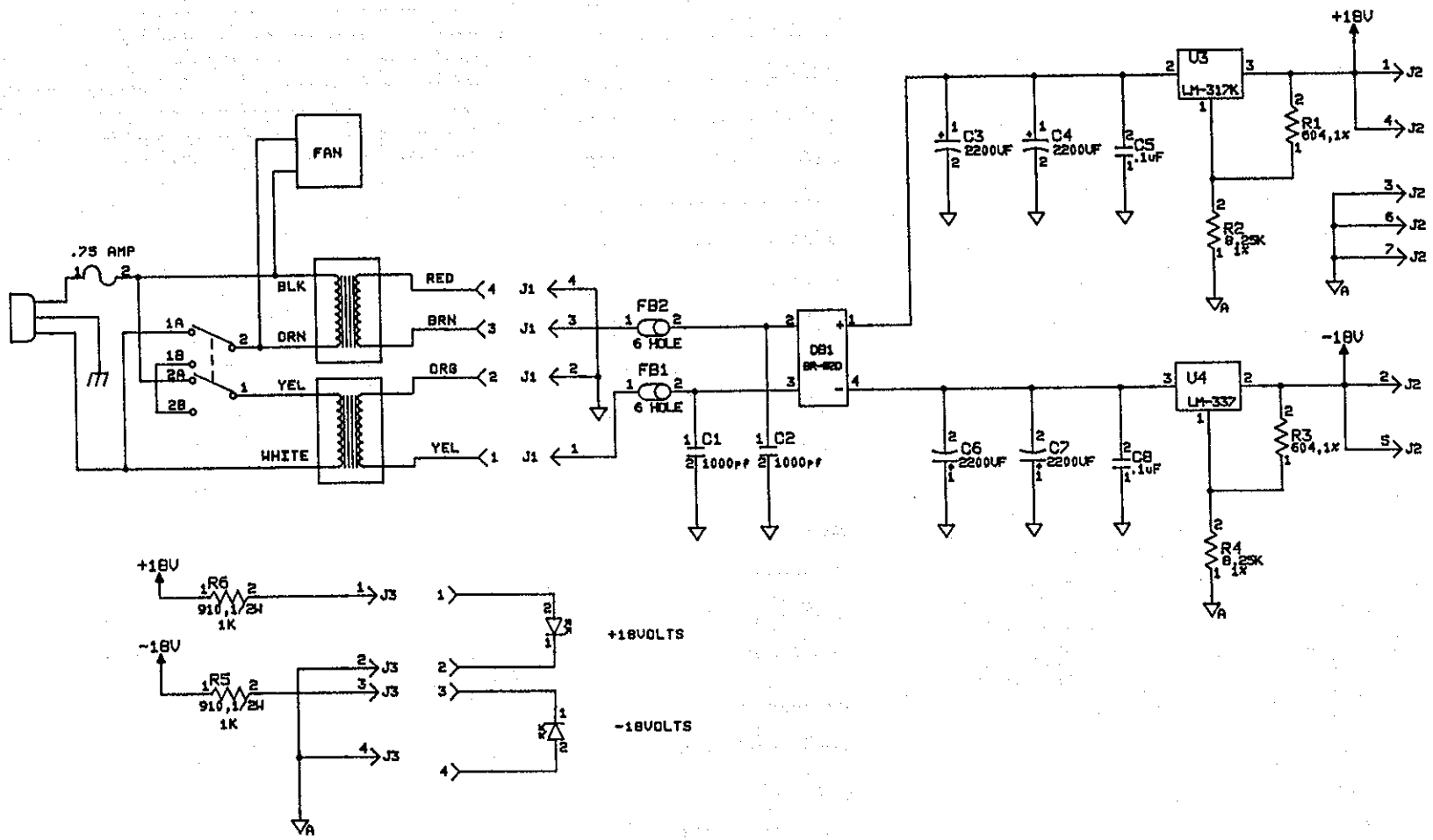

NOTES: UNLESS OTHERWISE SPECIFIED:

1. RESISTANCE VALUES ARE EXPRESSED IN OHMS, "K" DENOTES 1000 OHMS. CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARADS, (UF). INDUCTOR VALUES ARE EXPRESSED IN MICRO HENRIES, (UH).

2. STANDARD GROUND SYMBOLS :

DIGITAL GND

ANALOG GND

R.F.I. GND

SPECIAL GND

DIMENSIONS IN INCHES
DO NOT SCALE

TOLERANCES
.XX = ±.10 | .XXX = ±.010 | ∠'s = ±1°

DRAWN S.FINO	DATE 3/88	
CHECKED	DATE	
APPROVED	DATE	
PROJECTION		

GENTNER ELECTRONICS CORPORATION

TITLE
RDA POWER SUPPLY
ELECTRICAL SCHEMATIC

SHEET 1 OF 1

DOC. NO. 720-031-001

REV. A1

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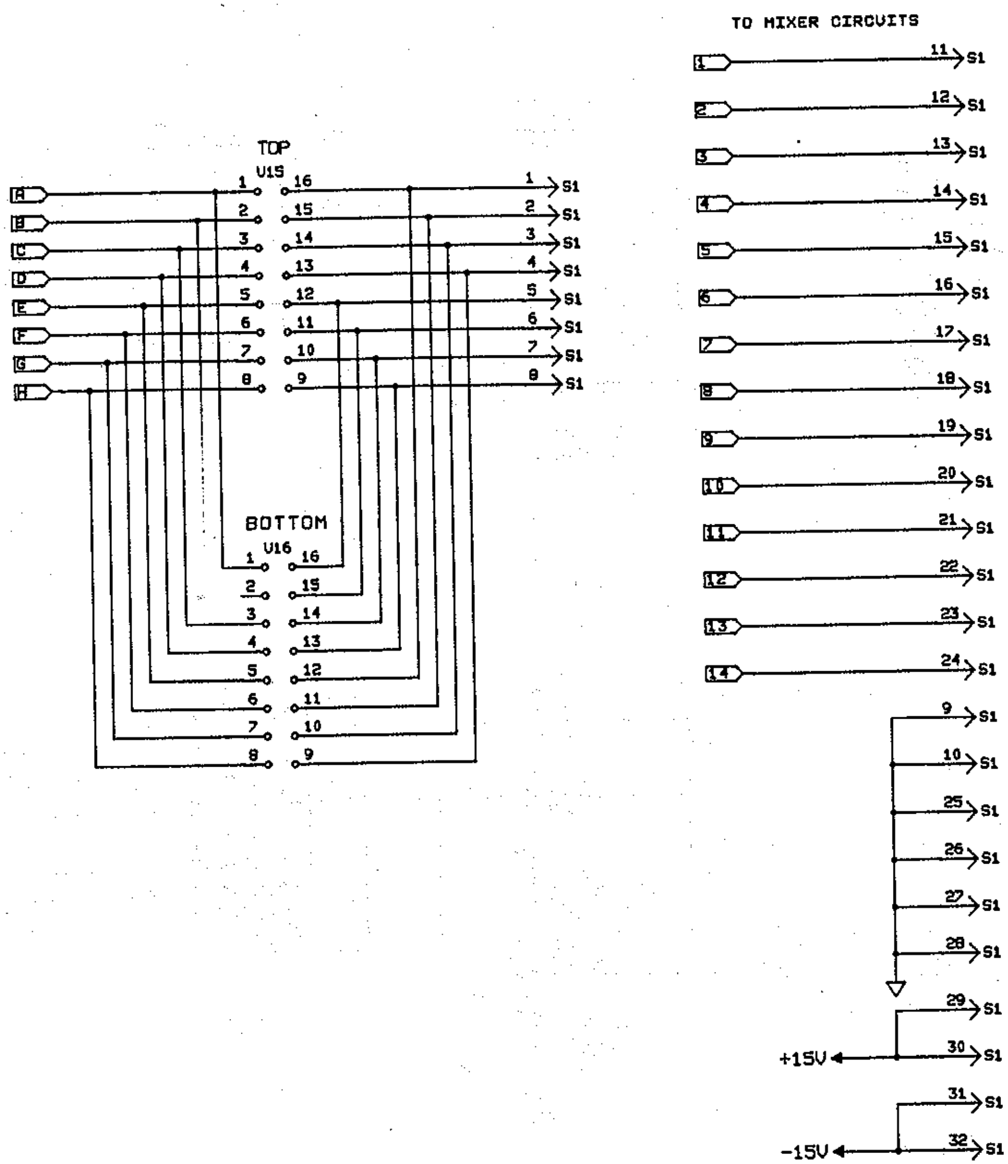


NOTES: UNLESS OTHERWISE SPECIFIED:

1. RESISTANCE VALUES ARE EXPRESSED IN OHMS, "K" DENOTES 1000 OHMS. CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARADS, (UF).

2. STANDARD GROUND SYMBOLS :
   - DIGITAL GND
   - ANALOG GND
   - R.F.I. GND
   - SPECIAL GND

SEE SEPARATE BILL OF MATERIALS

DIMENSIONS IN INCHES
DO NOT SCALE

TOLERANCES .XX = ±.03 .XXX = ±.010 ∠ ° = ±1°

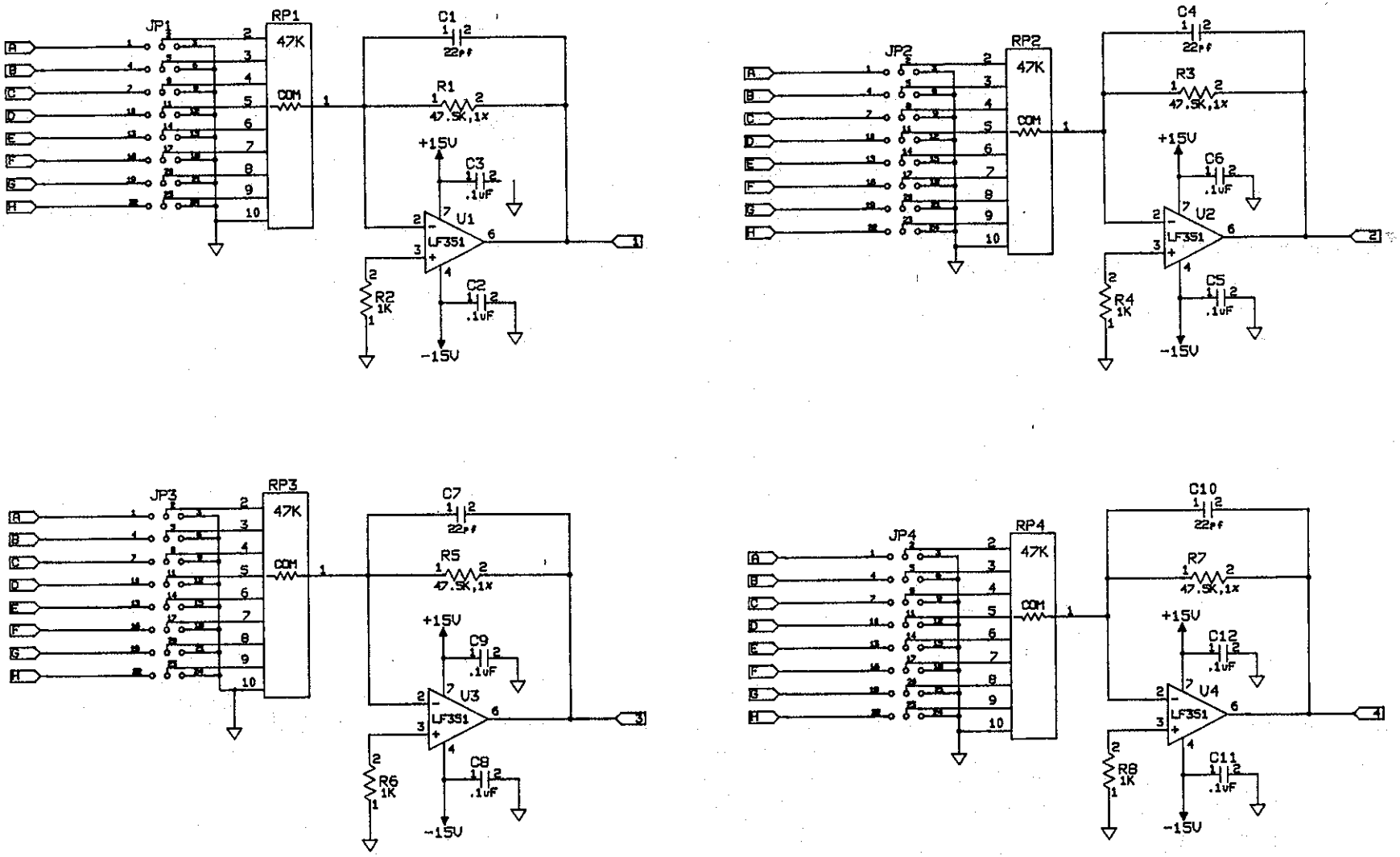
DRAWN S.PINO ADT DATE 4/88
CHECKED DATE
APPROVED DATE
PROJECTION

GENTNER ELECTRONICS CORPORATION

TITLE RDA MIXER
ELECTRICAL SCHEMATIC

SHEET 1 OF 5

DOC. NO. 710-031-002 REV. A1



MIXER CIRCUITS 1-4

	RDA MIXER	
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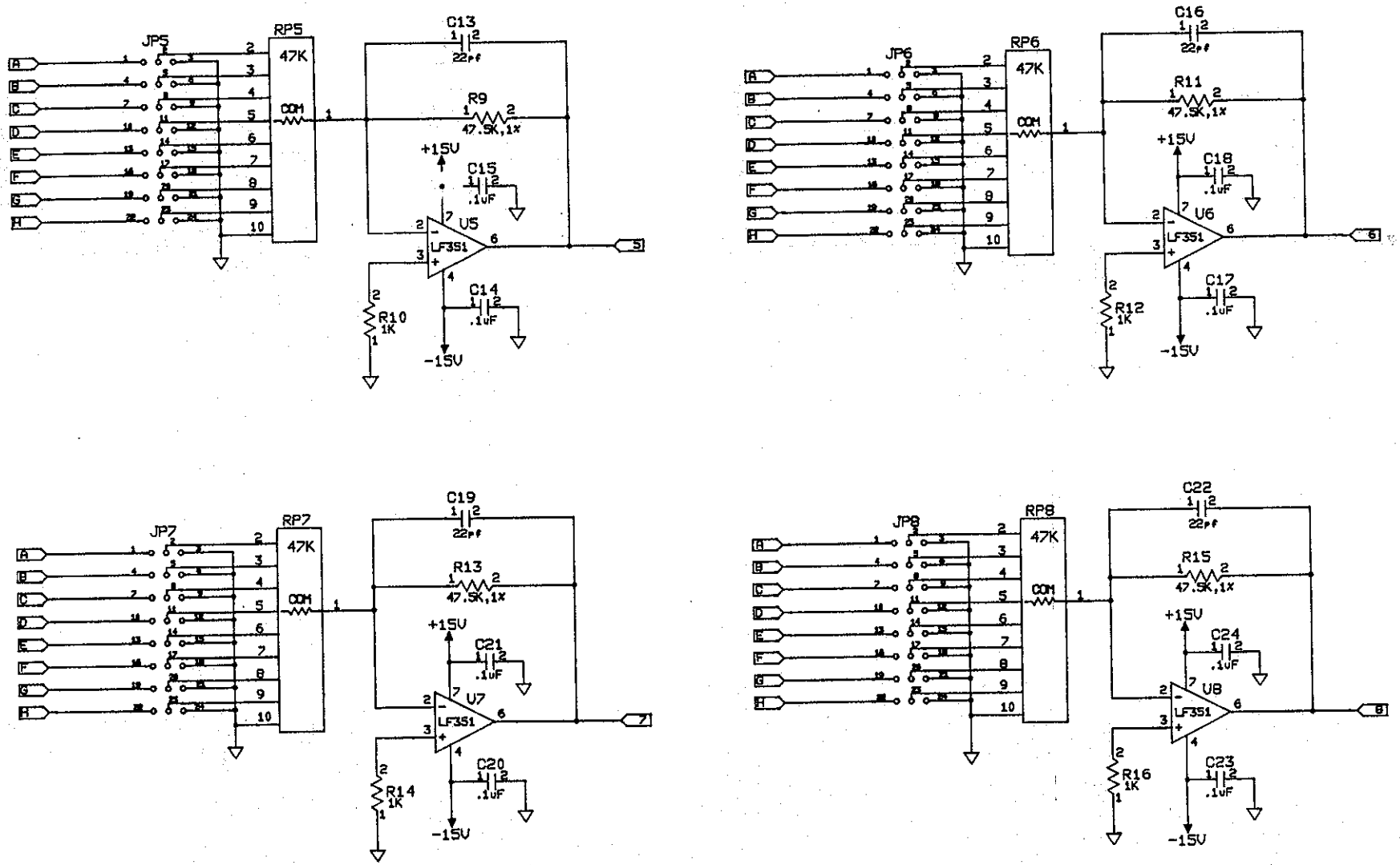
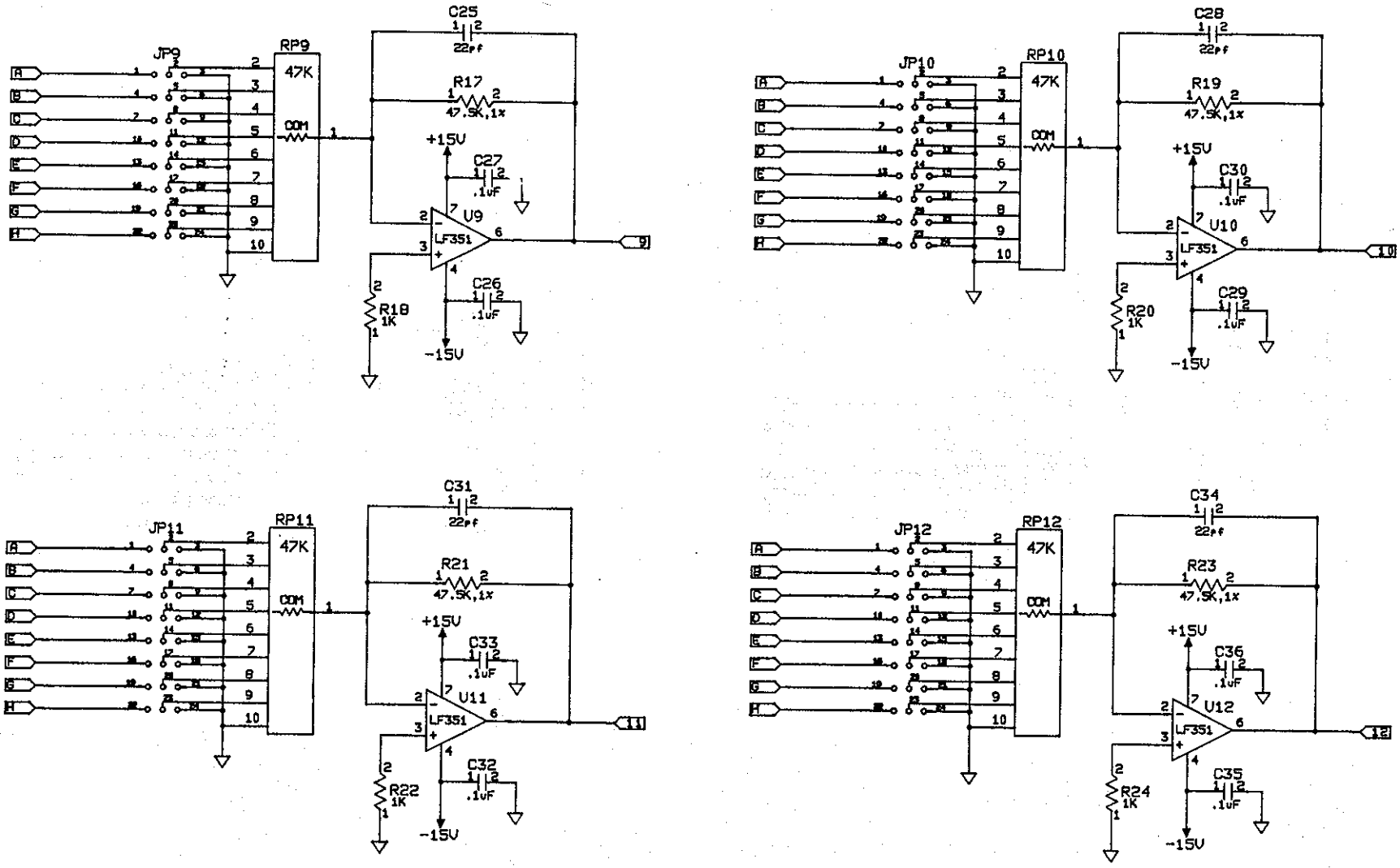


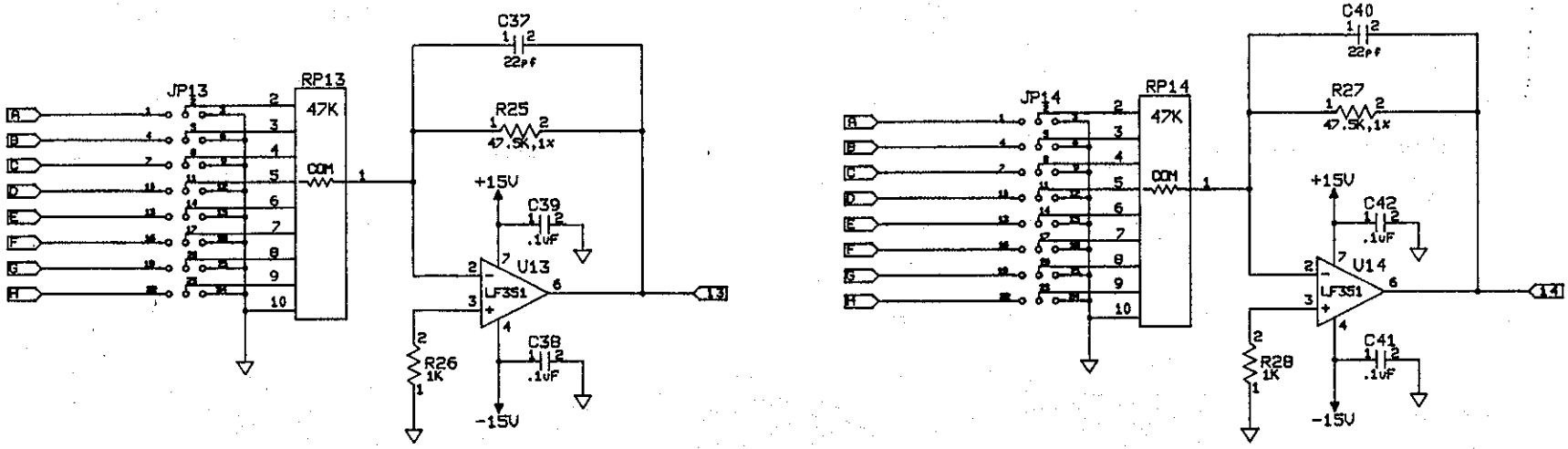
MIXER CIIRCUITS 5-8

RDA MIXER		
SHEET 3 OF 5	DOC. NO. 710-031-002	REV. A1



MIXER CIRCUITS 9-12

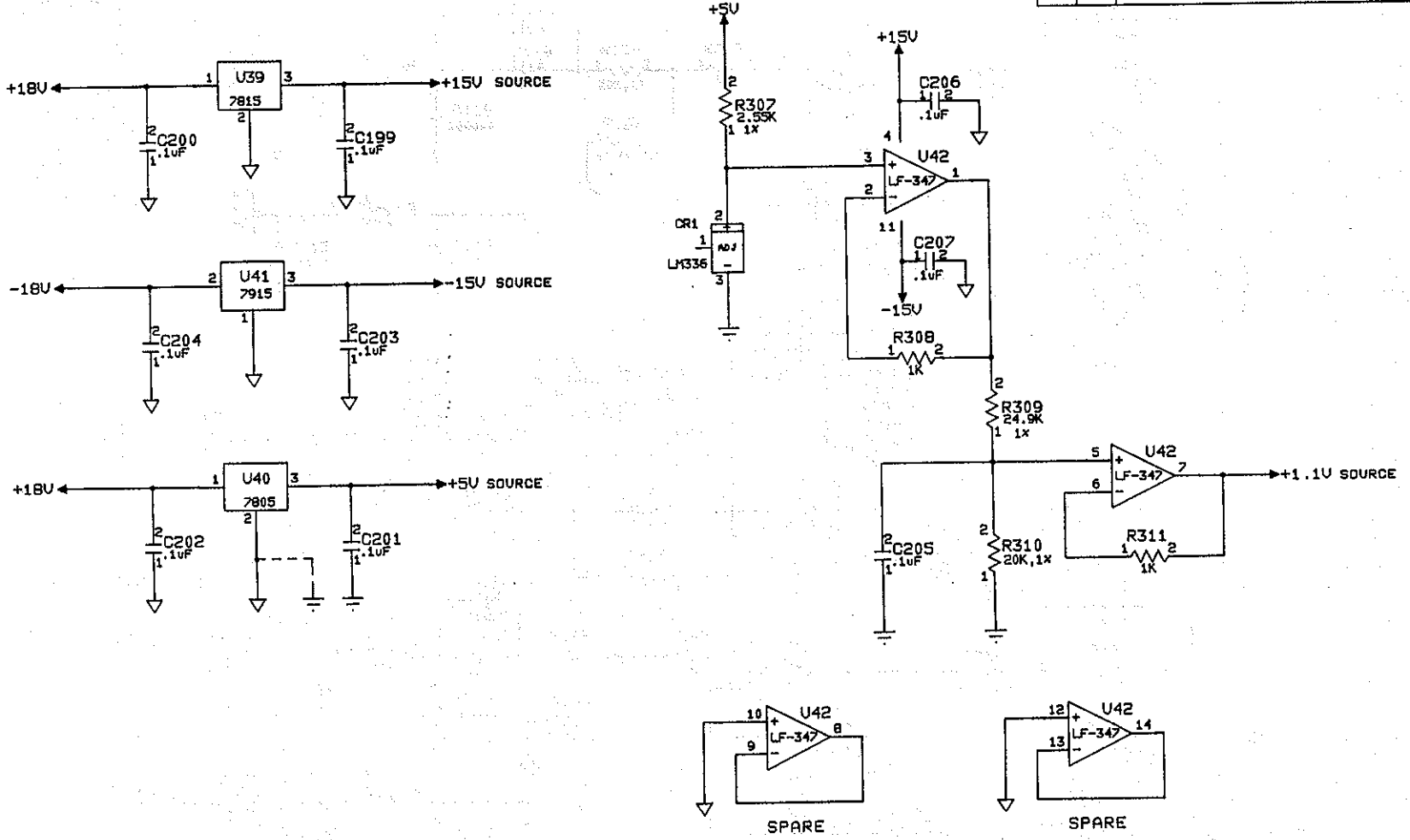
RDA MIXER		
SHEET 4 OF 5	DOC. NO. 710-031-002	REV. A1



MIXER CIRCUITS 13-14

RDA MIXER			
SHEET 5 OF 5	DOC. NO. 710-031-002	REV. A1	

8 7 6 5 4 3 2 1



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   CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARADS, (UF).
   INDUCTOR VALUES ARE EXPRESSED IN MICRO HENRIES, (UH).

2. STANDARD GROUND SYMBOLS :

   DIGITAL GND

   ANALOG GND

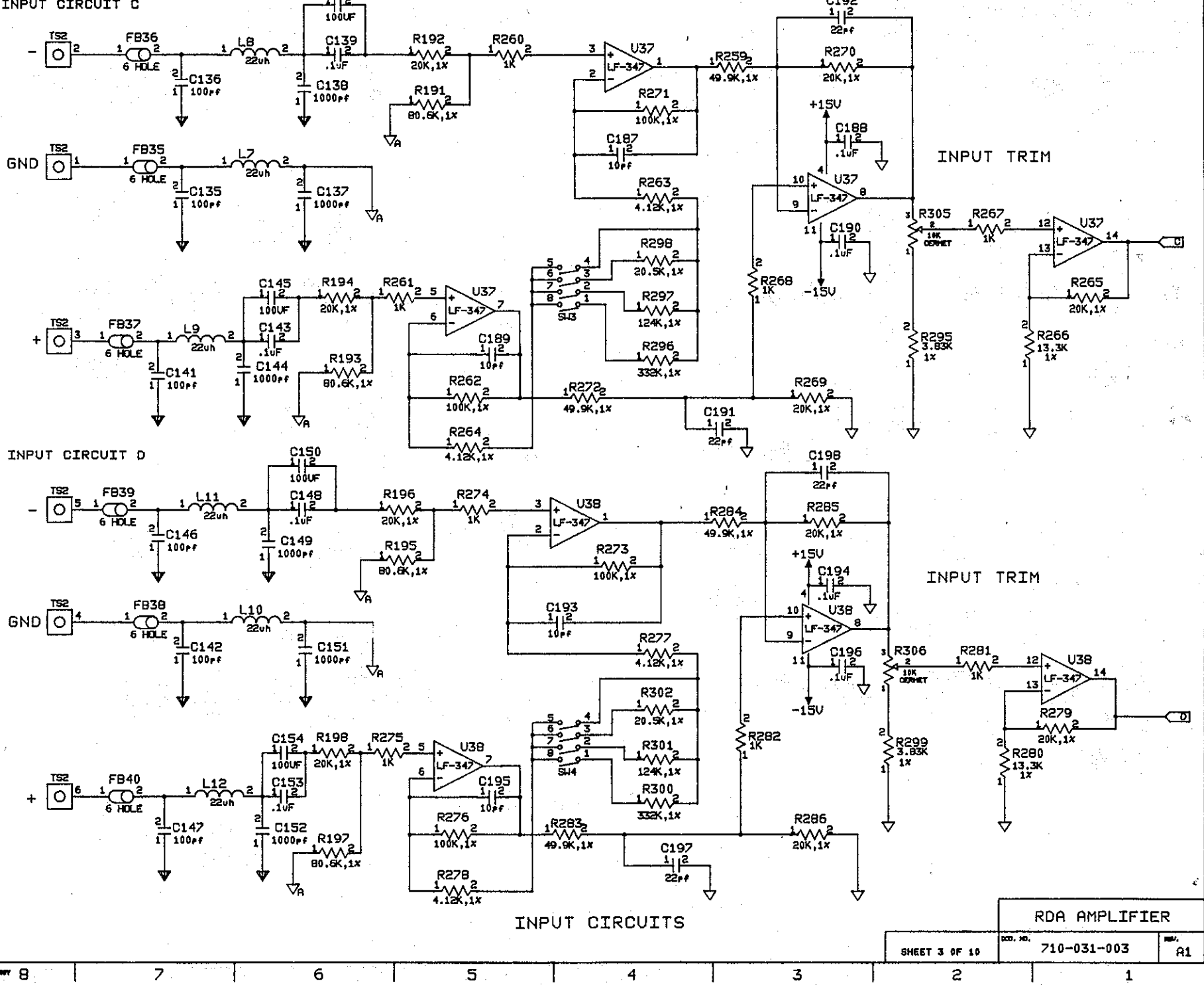
   R.F.I. GND

   SPECIAL GND

SEE SEPARATE BILL OF MATERIALS

DRAWN S.FIND ADT	DATE 7/98	GENTNER ELECTRONICS CORPORATION	
CHECKED	DATE	TITLE	RDA AMPLIFIER
APPROVED	DATE		ELECTRICAL SCHEMATIC
DIMENSIONS IN INCHES DO NOT SCALE	PROJECTION		
TOLERANCES .XX = ±.02 .XXX = ±.010 ∠'S = ±1°	SHEET 1 OF 10	DOC. NO. 710-031-003	REV. A1

INPUT TRIM
INPUT CIRCUIT B
INPUT TRIM
INPUT CIRCUITS
RDA AMPLIFIER
SHEET 2 OF 10
710-031-003
A1


INPUT CIRCUIT C
INPUT CIRCUIT D
INPUT TRIM
INPUT TRIM
INPUT CIRCUITS
GND
GND
+15V
-15V
+15V
-15V
6 HOLE
LF-347
SW3
SW4
RDA AMPLIFIER
SHEET 3 OF 10
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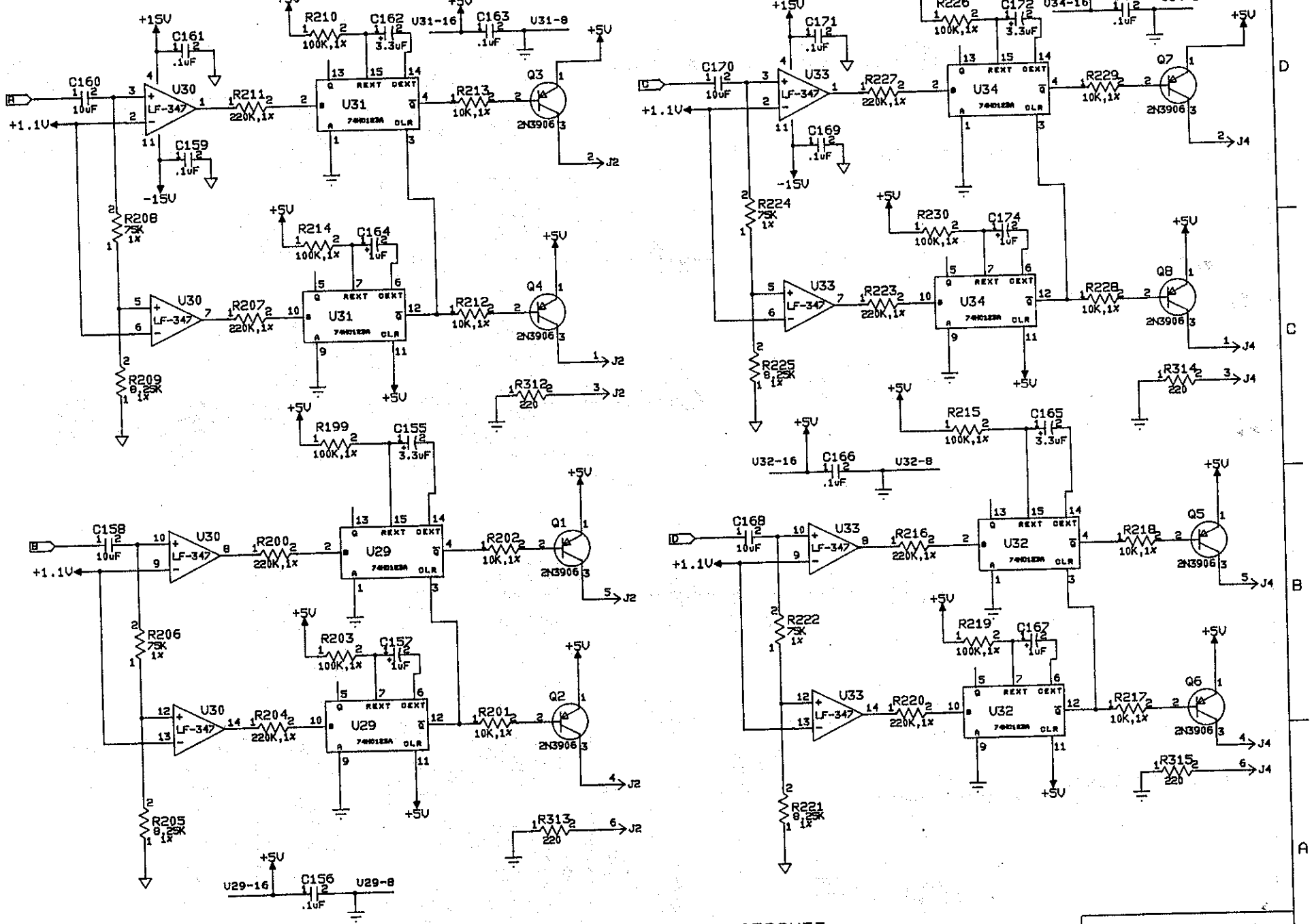
A1



LEVEL INDICATOR CIRCUIT

RDA AMPLIFIER		
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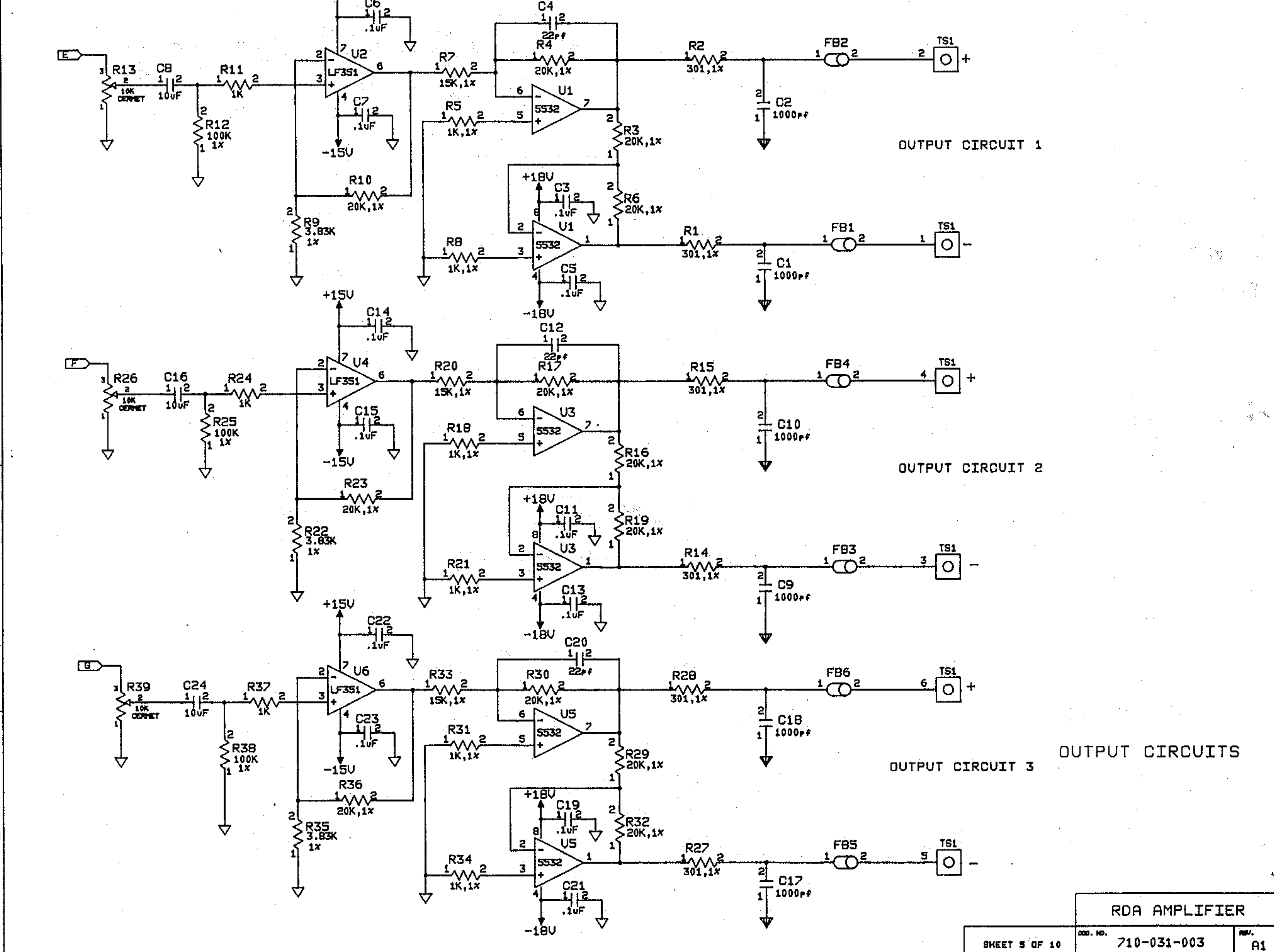

RDA AMPLIFIER

SHEET 5 OF 10

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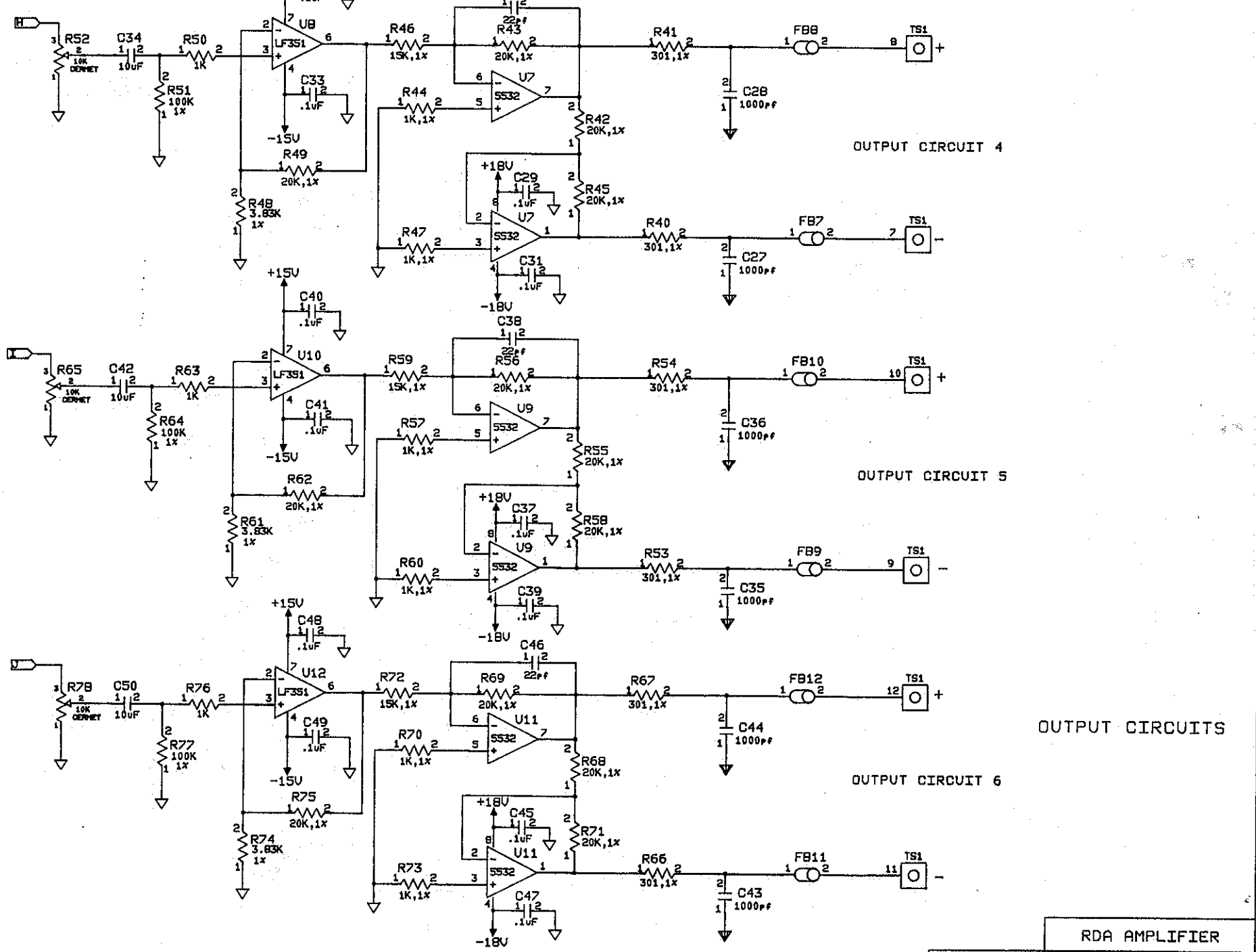
REV. A1


OUTPUT CIRCUIT 4
OUTPUT CIRCUIT 5
OUTPUT CIRCUIT 6
OUTPUT CIRCUITS
RDA AMPLIFIER
SHEET 6 OF 10
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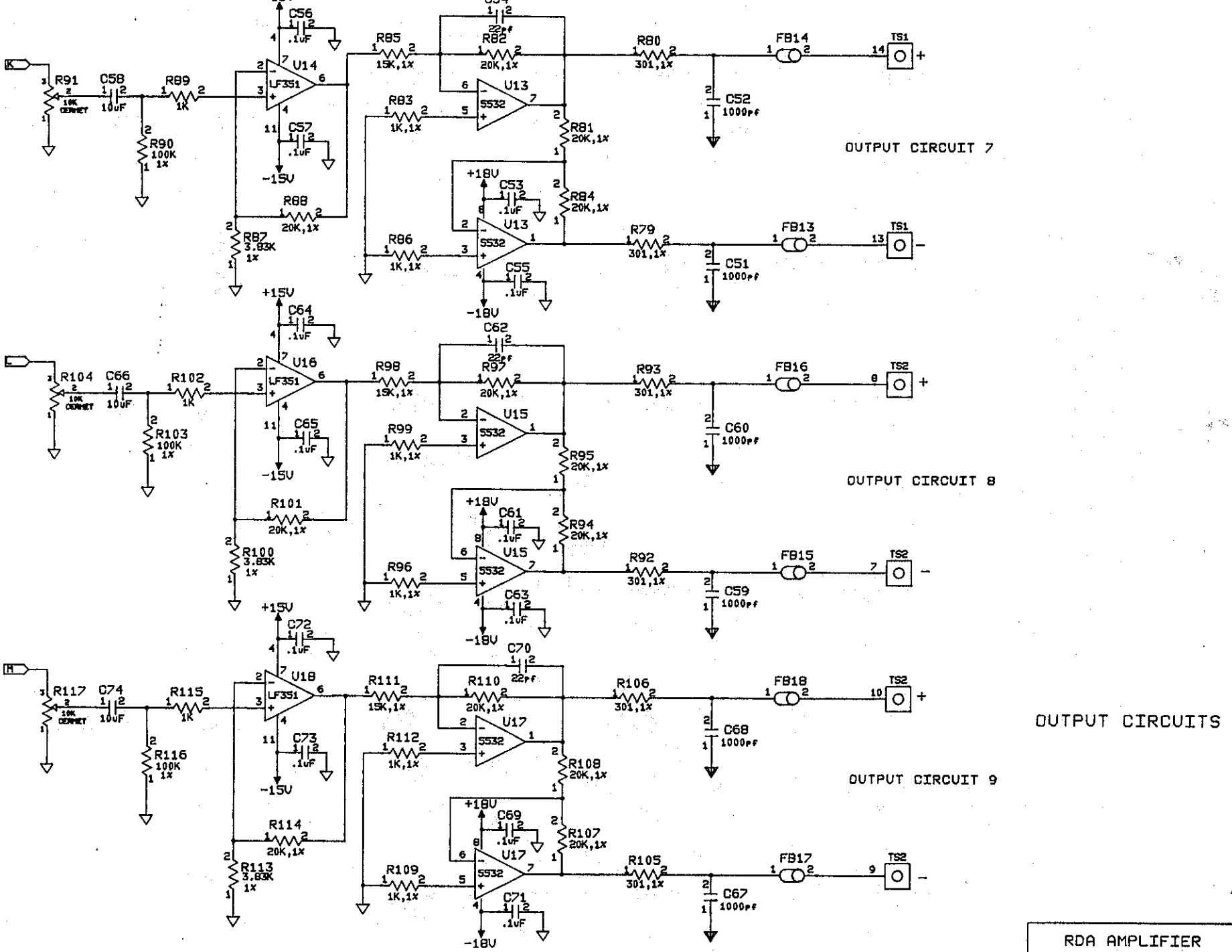
A1



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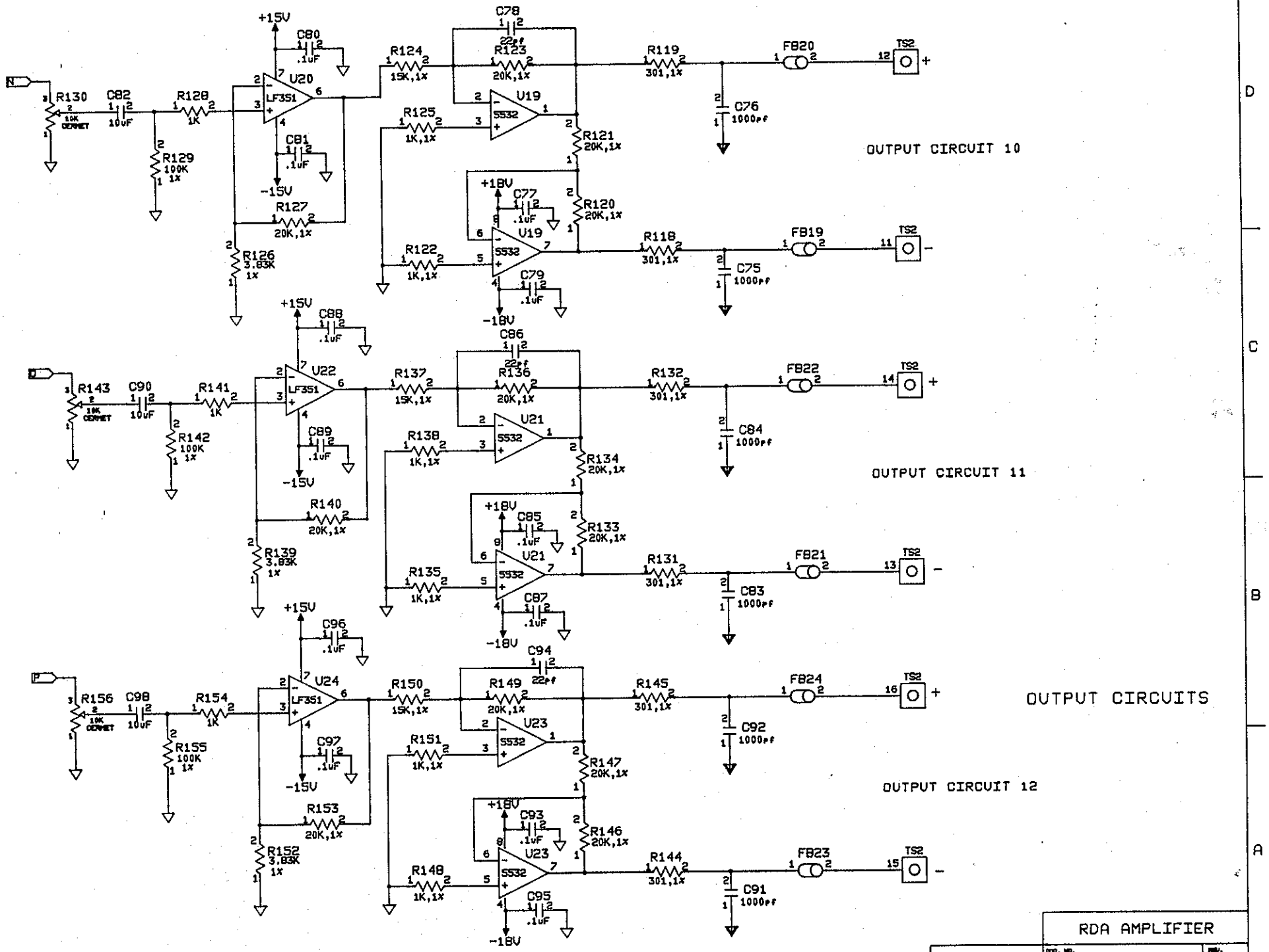

RDA AMPLIFIER

SHEET 8 OF 18	DOC. NO. 710-031-003	REV. A1

Gentner Communications Corporation
Professional Audio Products Division
1825 Research Way
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