

658A reverb

INSTRUCTION MANUAL
FAIRCHILD REVERBERTRON
Model 658A Reverberation Device

FAIRCHILD RECORDING EQUIPMENT CORPORATION
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1B764/R1068-2
Patent Pending

A T T E N T I O N

UNPACKING THE MODEL 658A REVERBERTRON

The MODEL 658A REVERBERTRON is packed and shipped in two separate sections: one section contains all the electronics, interconnected, including the connecting cables to enable easy acceptance of the input and output terminals of the electro-mechanical generators. The second piece contains the electro-mechanical generators.

To protect the generators during shipment, pieces of packing are placed in each unit to prevent damage from vibration during transit. Reach into the space between the main mounting channel and the electro-mechanical generators. The shock protective packing has been placed inside the space between the two units. At midpoint of each of the generators will be found the packing compressed into the generator.

To protect the shock system of the generators, the system is locked into place during shipment. Please look at the back of the unit and you will see clips taped to the metal frame of the generators. These restrain the shock mount system during transportation. THESE CLIPS AND THE PACKING MATERIAL REFERRED TO ABOVE MUST BE REMOVED BEFORE THE UNIT IS PLACED INTO OPERATION. When the clips have been removed, the unit will seem to float if excited. It is advisable to rack mount the unit before removing the packing pieces and the clips that protect the generators.

FAIRCHILD MODEL 658A

REVERBERTRON

DESCRIPTION

The FAIRCHILD MODEL 658A REVERBERTRON is a compact, high quality electro-mechanical reverberation device. It is packaged in two separate, rack mountable units:

- (1) THE DELAY GENERATOR: The delay generator package is a $19\frac{1}{4}$ "x19" rack panel with the delay generators mounted on an isolated subpanel. This isolated mounting system prevents building and floor vibration from being picked up by the mechanism.

The delay generator provides six different delay times which are tuned and blended to achieve a completely natural and live-sounding reverberation effect.

- (2) THE ELECTRONICS: The electronic package consists of the necessary amplifiers, power supply and control devices to permit the most flexible application and control of the reverberated signal. These electronic components are mounted in a standard FAIRCHILD INTEGRA $5\frac{1}{4}$ " high by 19" wide rack mounting frame (Model 662RM). Detailed information on the operation of the various units included in the electronic package may be found in the instruction manual material at the back of and forming a part of this manual.

The amplifiers used are standard FAIRCHILD INTEGRA MODEL 662 mike/line amplifiers. The power supply used is a FAIRCHILD INTEGRA Model 667AA, provided with a special front panel. The control unit, which is located in the center of the mounting frame, houses the necessary equalization, switching and mixing circuits, as well as a specially-modified FAIRCHILD INTEGRA Model 661 AUTO-TEN.

INSTALLATION

The Model 658A REVERBERTRON may be mounted in a standard rack with the electronic unit below the delay generator section. The RED CODED leads connect to the INPUT sockets on the delay generators. CAUTION: The unit will operate if the leads are reversed but performance will be impaired and damage to the unit may result. So, take care in connecting properly. The input sockets are the bottom sockets on the delay generator and are identified by the word INPUT stamped on the unit.

Any input cable may be connected to any one of the three delay generators. The same holds true of the output cables.

THE DELAY GENERATOR SECTION MUST ALWAYS BE MOUNTED VERTICALLY, RIGHT SIDE UP, AND APPROXIMATELY LEVEL.

If desired, the delay generator may be remotely located and extension cables fabricated to connect the two sections of the device. Whether in rack or remotely located, the delay generator section should not be operated in the presence of a strong magnetic field or hum may be introduced into the unit.

If remote location of the generators is used, then separate double conductor shielded wires should be used for extension cables as the output level of the delay generators is approximately -60 dbm.

When the delay generator section is mounted, it should be checked for free movement of the vibration isolating system. The cables must not be tightly clamped or clamped in such manner that they restrain free movement of the delay generator plate.

OPERATION

The MODEL 658A REVERBERTRON is designed to operate at normal line level and is adjusted to operate properly at this level. The overall system is adjusted to be unity, but may be varied slightly by adjusting the gain control on the 662 amplifier located at the far right of the rack mount. (See instruction manual attached on Model 662 for adjustments - page 2.) The gain adjustment on the other two 662 amplifiers are used for matching the level of direct and reverberated signal. Delay time selector switch must be in POS. 2 for this operation.

The input and output of the 658A REVERBERTRON appear on a terminal block on the rear of the control unit. The input of the 658A is 600 ohms unbalanced or balanced. Can be restrapped for 150 ohms.

TERMINAL 1 is the high side of the input
 TERMINAL 2 is the low side of the input
 TERMINAL 3 is the shield ground

The output, which may be used either balanced or unbalanced, appears on TERMINALS 4 and 5, while TERMINAL 6 is the output shield ground.

With the unit connected up and turned on, the controls may be adjusted for proper operation. Initially, the reverb time switch should be placed in POS. 2, and the reverb mix control adjusted for the desired amount of reverberation. The reverb mix control allows a smooth transition from a completely "dry" signal to a completely reverberated signal with no change in level.

Before attempting to operate the unit with the reverb time switch in POS 1 and 3, the level balance control must be adjusted. Feed normal program material into the unit and turn the reverb mix control to MAX. Then, switch the reverb time switch back and forth from POS. 1 to 3, and adjust the level balance control until the output level is the same in all positions of the reverb time switch.

Volume compression and expansion are used to achieve a variation in reverberation times, so the proper setting of the level balance control is dependent upon the signal level fed to the REVERBERTRON.

POSITION 1 selects the shortest reverberation time, under half a second.

POSITION 2 provides a widely used $1\frac{1}{2}$ second reverberation time.

POSITION 3 provides a reverberation time of about 5 seconds to simulate large, cavernous rooms or other special effects.

REVERBERATION FOCUS SYSTEM

The 658A contains a reverberation equalization system termed REVERB FOCUS. This "focus" system applies equalization at fixed frequencies in the reverberated channel only. The frequencies have been selected to give optimum effects. The frequencies used are 2 kc, 3kc and 5kc. Even though 2 and 3 kc ranges are close, there is a marked difference in the reverberated result. The 2 kc position produces a harder sound. 3 kc gives a slightly softer sound on vocals than the 2 kc position, and 5 kc a crisper sound on orchestra. The equalizer is out of the circuit in the OFF position. Use and choice of frequencies will be based on each individual program requirement. Frequency boost is continuously controlled through the db boost control with a maximum of 10 db of boost possible.

A WORD ABOUT TESTING THE 658A

Due to the generation of standing waves with attendant cancellations and re-enforcements, single frequency tones CANNOT be

used for making frequency response or level measurements on reverberation devices. This applies to all types of reverberation devices, whether a live room, tape or electro-mechanical in nature. All tests must be made with either warble tones or noise signals, or actual program material. Results obtained from single frequency tones will be meaningless and usually misleading.

ADJUSTMENT PROCEDURE

When a Reverbatron device is misaligned, realignment procedure for proper operation is as follows:

- (1) Feed signal generator into the input of 658A Reverbatron at +4 dbm level. Connect VU meter or VTUM across the output of the device. Turn mixing control completely counter-clockwise. To obtain unity gain out of the Reverbatron, adjust gain of the amplifier located on the right hand side of the unit until line level signal is measured on the meter.
- (2) Reconnect meter to the input terminals of the delay lines. Turn mixing control completely clockwise or to the right and read +8 dbm signal feeding the springs. Driver amplifier for the springs is the first amplifier on the left, and its gain should be adjusted to obtain 8 dbm driving signal by turning its gain trimmer until desired level is obtained.
- (3) Reconnect meter to the output of the Reverbatron and adjust the center amplifier to obtain +4 dbm output of fully reverberated signal.

It is recommended that white noise generator or program material be used for the adjustments described. See section on "Testing".

WARRANTY

See standard warranty policy attached to and forming part of this manual. To validate the warranty, complete and return the warranty registration card included in this manual. If there is any question on this, or any other FAIRCHILD professional product, please do not hesitate to contact our CUSTOMER SERVICE DEPARTMENT, FAIRCHILD RECORDING EQUIPMENT CORPORATION, 1040 45th Avenue, Long Island City, New York 11101.

SERVICE POLICY

A schematic diagram of the 658A REVERBERTRON is included with this manual for your reference files and any service problems

you may encounter. Schematic diagrams of the INTEGRA components used in this device will be found in the appropriate instruction manuals on the units included in this manual. If you wish to return the system to the factory at any time for service (and this is recommended), or if you have any doubt about the unit's operation, return to

SERVICE DEPARTMENT
FAIRCHILD RECORDING EQUIPMENT CORPORATION
10-40 45th Avenue, Long Island City, N. Y.
11101

with a brief description of the problem encountered. Please request return authorization.

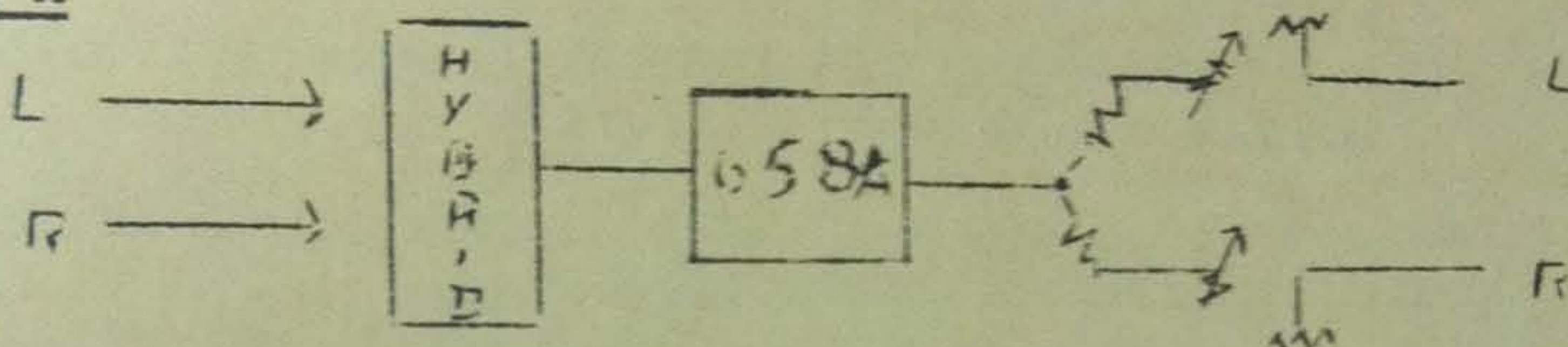
PATENT DATA

Portions of the REVERBERTRON are covered by US Patents 2,982,819 and 3,106,610; Canadian patent 1963; Brevet (Belgium) 580,444; Brevet (France) 1,234,876; Brevetto (Italy) 611,936.

Purchase of this device does not confer the right to use the system covered by US patents 2,967,447 and Canadian patent 655,242, for which a specific license is required. This patent covers the acoustical mix of a reverberated and non-reverberated signal and does not normally apply to broadcast or recording operations.

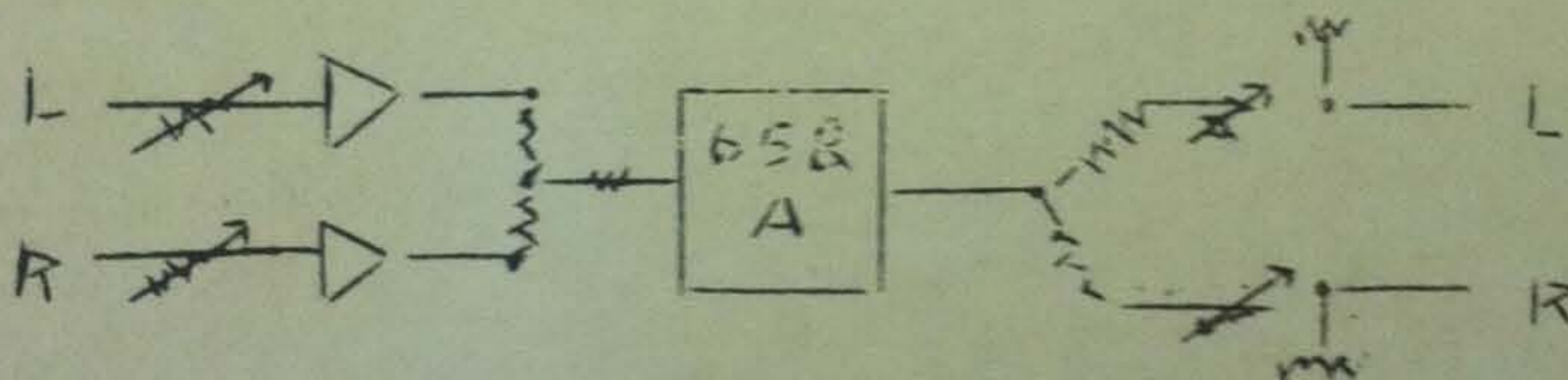
THE 658A REVERBERTRON IN STEREO USE

Two methods are recommended when using the 658A for a two channel console - one reverberation system serving both channels:

METHOD A

Mix left and right signal through hybrid (UTC LS 141) into the 658A. Check to be sure of adequate driving level. The hybrid must be tuned when installed.

Bridge output of the 658A using 100K resistors to 100k pots, with 600 ohm termination of the shunt leg, and return to console at input of the amplifier (output amplifier). Level approximately -41.

METHOD B

Feed left and right signal through level controls and amplifiers. The output should be mixed to feed through the 658A (200 ohm resistors - nominal 6 db loss). The output of the 658A is bridged as in Method A.

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Output option for higher signal level: bridge out with 33K or 47K ohms instead of 100K to 10K pots, again terminated 600 ohms in shunt leg. Exact value of resistor used will have to be selected to maintain required separation.

MANUAL ATTACHMENTS

Attached to and forming part of this instruction manual are the following individual instruction materials on the components used in the electronics package:

Instruction Manual INTEGRA 662 and 662TXI
Amplifiers with schematics

Instruction Manual on INTEGRA MODEL 667AA Power
Supply with schematic

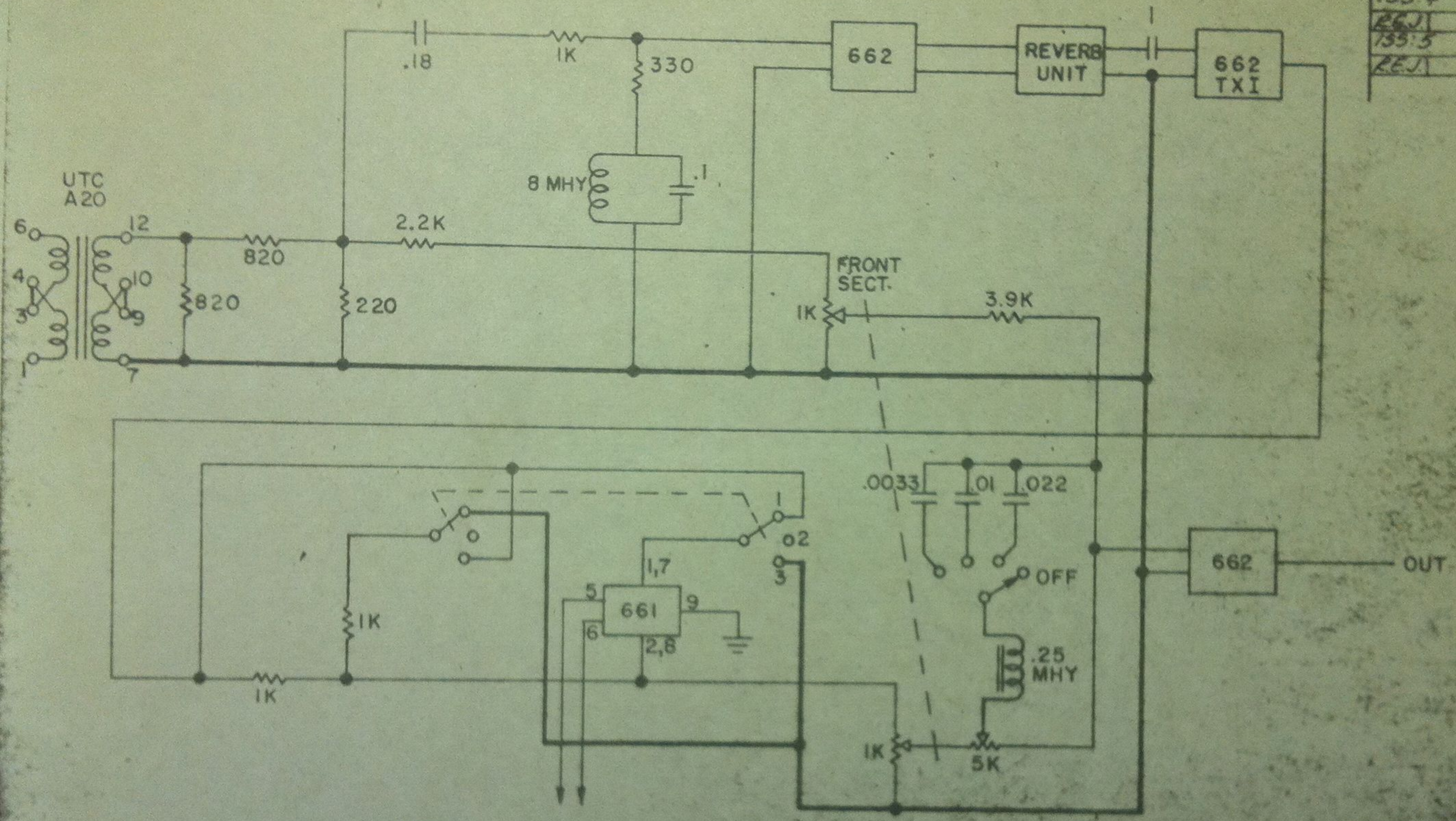
Instruction Manual on FAIRCHILD MODEL 661 AUTO-TEN
with basic schematic*

*The modified 661 AUTO-TEN used in the 658A electronics has no release control. The 50K variable resistor indicated on the basic schematic for this unit has been replaced with a 12K fixed resistor.

SCHEMATIC DIAGRAM 658A A96101

Warranty and warranty registration card

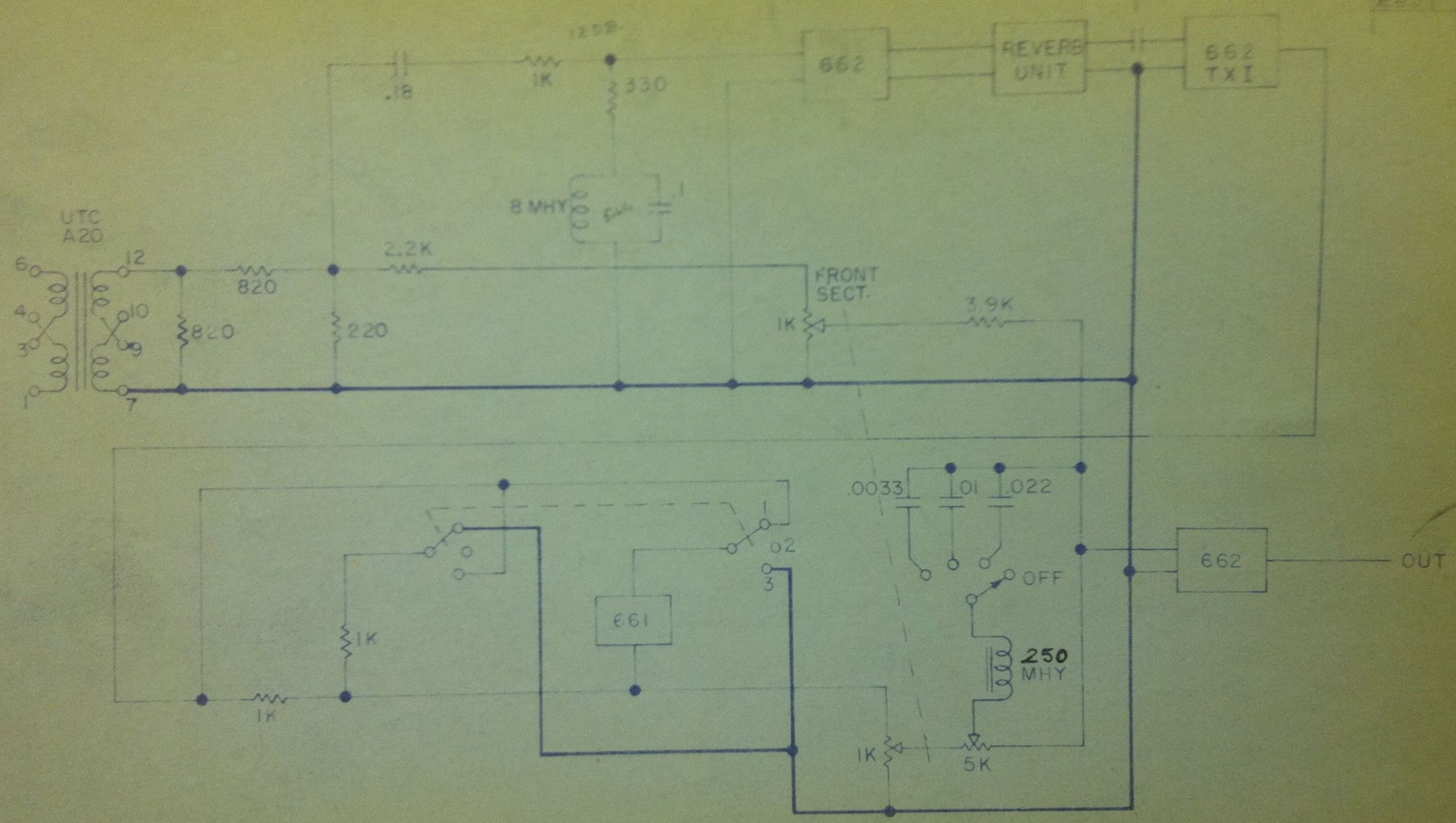
REJ	133.3	3-21
REJ	133.4	9-22
REJ	133.5	1-19-6
REJ		



ALL RESISTORS IN OHMS & 1/2 W UNLESS OTHERWISE SPECIFIED
 ALL CAPACITORS IN MF & 200V UNLESS OTHERWISE SPECIFIED

658 REVERBERTRON SCHEMATIC

1354
REJ



ALL RESISTORS IN OHMS & 1/2 W UNLESS OTHERWISE SPECIFIED
ALL CAPACITORS IN MF & 200V UNLESS OTHERWISE SPECIFIED

658 REVERBERTRON SCHEMATIC

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