J. P. SEEBURG CORPORATION . 1500 Dayton St., Chicago 22, Illinois

April 13, 1956
Bulletin DC56-15
Rec'd Apr 16/56

TO ALL SEEBURG DISTRIBUTORS:

Attention: Service Managers

The Part No. 402130 Switch Tie Strap that locks the program selector switches on the V-200 has been changed from a rigid bar to flexible blue spring steel. The change was made to alleviate a binding condition that is caused by irregularities in the selector frames and the switch mounting brackets.

It is recommended that the new type tie strap be installed in the V-200's in which this binding occurs and you are unable to relieve the condition by alignment of the switches.

The spring steel strap is available from our Parts Department. It may be used for replacement in units in the field where binding exists due to switch misalignment that cannot be corrected. It must be recognized, however, that the new strap will not improve operation if the mountings of the switch brackets are badly misaligned.

If you wish to do so, you may return the rigid strap for full credit against the flexible strap but we wish to make it quite clear that there is no need for indiscriminate replacement. The only reason for changing straps would be in a situation where binding cannot be corrected by proper alignment.

Sincerely yours,

J. P. SEEBURG CORPORATION

C. M. Smith

C. M. Smith
Manager of Field Service

CMS:BC

Rec. June 4/56 DC

June 1, 1956
Bulletin DC56-23

TO ALL SEEBURG DISTRIBUTORS:

Attention: Service Managers

The attached tabulation of DC resistances of the circuits of the 200TM1 Memory Unit will be found useful in service operations. All of the measurements are made from the plugs that terminate the cable and/or the read-out contacts on the unit. The values indicated are numerically small but are within the range of use of an ordinary volt-ohmmeter.

We do not believe this information has very much use or advantage in operators' normal service but additional copies are available if your own service personnel can use them.

Sincerely yours,

J. P. SEEBURG CORPORATION

C. M. Smith

C. M. Smith
Manager of Field Service

CMS:BC
encl.

DC RESISTANCE CHECK OF 200TM1 MEMORY UNIT CIRCUITS

1. Write-in circuits:

   a. Pin 33 to 1, 2, 3, etc. to 20 = 0.6 ohms

   b. Pin 31 to 21, 22, 23, etc. to 30 = 0.2 ohms

   c. Pin 31 to pin 33 = infinity

2. Read-out circuits:

   a. Contact rivet to read-out rail = 0.0 ohms
   (These circuits consist of approximately 1" of No. 30 wire and present a resistance value too low to measure with an ohmmeter.)

3. Out-put loop:

   a. Across plug = 2.6 to 3.0 ohms

   b. Center terminal of plug to pin 33 = 2.6 to 3.0 ohms

   c. With "ground wire" of loop disconnected from shell of plug and from shield braid: center terminal of plug to pin 33 = infinity

4. Write-in to Read-out circuits:

   a. Pin 31 to any read-out contact or to common read-out rail = infinity

   b. Pin 33 to any read-out contact or to common read-out rail = infinity

   Note - The common read-out rail of some Memory Units is internally connected to one or both mounting brackets. The operation of these units is normal in all respects but an ohmmeter will read zero (0) ohms when connected to pin 33 and the grounded bracket(s).

5. Letter Write-in circuit ground (in Unit):

   a. Pin 33 to Unit mounting brackets = 0.0
   (This circuit consists of approximately 2" of No. 30 wire and the wire in the cable. It presents a resistance value too low to be measured with an ohmmeter.)

6. Number Write-in circuits to out-put loop:

   a. Pin 31 to center terminal of out-put loop plug = infinity

J. P. SEEBURG CORPORATION . 1500 Dayton St., Chicago 22, Illinois

Rec June 6/56

Copies to HMW, JRJ, TE, RC, CW, NK, JK, CB, HF, HS, LD, AS

June 4, 1956
Bulletin DC56-24

TO ALL SEEBURG DISTRIBUTORS:

Attention: Service Managers

Examination of Memory Units returned from the field for repairs discloses that one unit in four has no fault except that one or more read-out circuits are burned out. There is no plausible way that tube or component failure in the Selection Receiver can pass enough current through these circuits to cause this damage. Experiment here, however, has shown that we can duplicate the type of damage found in the returned units by connecting the read-out circuit and the 6-volt record-playing indicator light circuit at the mechanism reversing switch. Such a connection can be made by careless manipulation of a contact tool or a meter test clip while power is turned on and can be the explanation of these burn-outs. Under these conditions the "R Zero" circuit is most likely to be in the circuit (and burned out) if the carriage is in the normal standby position. One or more random position circuits will be effected if the carriage is scanning. If you are using a test procedure that requires access to the reversing switch when power is turned on, we urge discontinuing the practice or using extreme care.

To avoid burning out the Memory Units we are now including a 5-ampere fuse in the selection system read-out circuit. It is a soldered-in pigtail type similar to those used in TV high voltage circuits and is mounted on the switch plate assembly at the lower end of the control cable terminal strip. It is in the circuit between the common rail contacts of the contact plunger block and the ground lug on the terminal strip.

The fuse is available from our Parts Department as No. 247850 Pigtail Fuse. You should have spares available in your parts stock and your service mechanics who are in contact with field equipment should have spares with them. If the fuse is found blown, it can be temporarily jumpered but the blown fuse should be recognized as evidence of a Memory Unit saved from damage that cannot be repaired without an exchange of units. Also, the circuits should be checked carefully for possible fault before the fuse is replaced or a jumper used unless it is known that the original fuse failure was due to carelessness with the power turned on.

Sincerely yours,

J. P. SEEBURG CORPORATION

C. M. Smith
C. M. Smith
Manager of Field Service

CMS:BC

Rec June 8/56.

June 6, 1956
Bulletin DC56-25

TO ALL SEEBURG DISTRIBUTORS:

Attention: Service Managers

Attached are copies of diagrams for the power and control wiring of the V-200 as associated with the Dual Credit Unit Type DCU5-L6 and the internal wiring of the DCU5.

The power and control wiring diagram can be used in conjunction with Figure 36a appearing on Service Manual Page 1264.

Sincerely yours,

J. P. SEEBURG CORPORATION

C. M. Smith
Manager of Field Service

CMS:BC
encl.

Rec June 9/56

June 7, 1956
Bulletin DC56-26

TO ALL SEEBURG DISTRIBUTORS:

Attention: Service Managers

Beginning with Selection Receiver Serial No. 53905, there will be a jumper soldered in place between terminals 3 and 4 of the mechanism control cable socket, J5. This jumper will shunt the "W" contacts on the clutch switch of the mechanism and render those contacts ineffective.

The "W" contacts were included in the original design of the Tormat Selection System to provide assurance that there would be no trip operation during record playing due to transients that could be inadvertently set up in the system. During subsequent experiment with the pilot units, the transient problems were overcome to an extent that these "W" contacts were no longer needed but they were left in because scheduled purchasing for production included them and it was thought that the additional "insurance" would not be amiss.

We have had reports of these contacts being incorrectly adjusted or having an accumulation of dirt that resulted in their not closing. The result was failure of the trip operation. In view of this development we feel that their elimination is in order and are accomplishing this by shorting them in the Selection Receiver.

We recommend that the contacts be shorted in units that are in the field but we do not believe it of sufficient importance to justify the addition of the jumper unless a Selection Receiver is conveniently at hand. If the contacts are shorted on field equipment, it should be done by adding the jumper in the Selection Receiver - - not by a jumper at the contacts on the mechanism. If this recommendation is followed, all units will be standard and have the additional advantage of eliminating two connecting conductors in the mechanism control cable.

Sincerely yours,

J. P. SEEBURG CORPORATION

C. M. Smith
Manager of Field Service

CMS:BC

J. P. SEEBURG CORPORATION . 1500 Dayton St., Chicago 22, Illinois

Rec. July 23/56

Copies to:
1 JRJ cal.
2 TE. cal.
3 R.C.-Ed.
4 BW Van.
5 JK. Winnipeg
6 MF Portage
7 AS Ind Okt
8 L.B. Leth.
9 CW Ed.
10 GL. Ed.

July 20, 1956
Bulletin DC56-29

TO ALL SEEBURG DISTRIBUTORS:

Attention: Service Managers

Current shipments of the V-200 are set up with the "S" contact of the mechanism clamp arm switch opened wide enough to be ineffective in normal operation. We recommend that this contact be adjusted in the field for effective use if it is so desired and that it be adjusted so it is ineffective on units now in the field if there is no objection to doing so.

This recommendation is made in the belief that problems due to insecure or incorrect record clamping are being misinterpreted as intermittent failure of the Format Selection System.

Sincerely yours,

J. P. SEEBURG CORPORATION

C. M. Smith

C. M. Smith
Manager of Field Service

CMS:BC

J. P. SEEBURG CORPORATION . 1500 Dayton St., Chicago 22, Illinois

Rec - July 23/56

July 20, 1956
Bulletin DC56-30

TO ALL SEEBURG DISTRIBUTORS:

Attention: Service Managers

Experience in the operation of the Format Selection System has indicated that incorrect adjustment of the detent switch (RO contacts) of the mechanism can be the direct cause of intermittent operation of the Format Selection System. The contacts and the actuator should be adjusted for the clearances indicated in the Service Manual AND PARTICULAR ATTENTION SHOULD BE GIVEN TO THE ADJUSTMENT OF THE BRACER BLADE FOR THE SHORT CONTACT BLADE. THIS BRACER BLADE MUST BEAR AGAINST THE SHORT BLADE WHEN THE CONTACTS ARE OPEN. PRESSURE MUST BE ENOUGH TO CAUSE THE CONTACT POINT OF THE SHORT BLADE TO MOVE NOT LESS THAN 1/32" WHEN THIS PRESSURE IS RELIEVED.

We wish to stress the importance of this switch adjustment. Tests have indicated that when the bracer blade is not supporting the contact blade there may be three to four "misses" of the read-out operation in a single scan operation of the carriage. It is recommended that the contact be checked and adjusted (if necessary) as a routine operation.

Sincerely yours,

J. P. SEEBURG CORPORATION

C. M. Smith

Manager of Field Service

CMS:BC

J. P. SEEBURG CORPORATION . 1500 Dayton St., Chicago 22, Illinois

Rec'd aug. 10/56 JPS

August 8, 1956
Bulletin DC56-31

TO ALL SEEBURG DISTRIBUTORS:

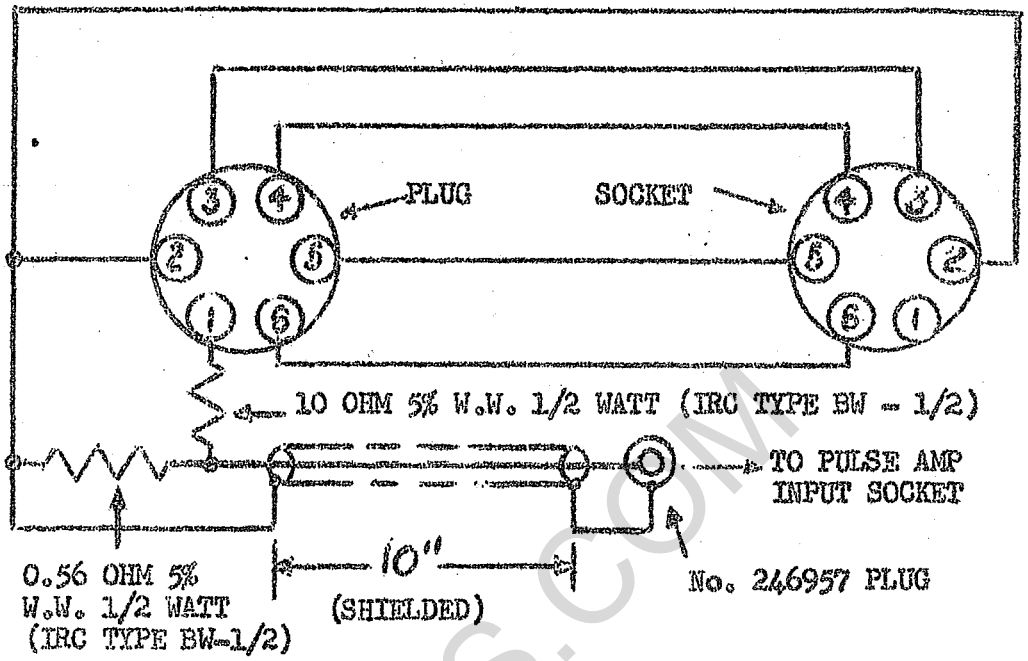
Attached is a description of a 2D21 test device that can be assembled from readily available parts and can be used in the V-200 on location. It tests the effective operation of the 2D21 tube in the read-out position in the Selection Receiver while using the pulse amplifier and trip circuit to "measure" the amplitude of the pulse developed by the tube and the associated circuit. If the circuit and the tube are normal, the trip solenoid on the mechanism will operate each time the read-out 2D21 is triggered. If the 2D21 is not acceptable for write-in or read-out service, the voltage developed across the 0.47 ohm resistor will not have sufficient amplitude to operate the trip circuit.

This test "adapter" will give a very positive and easily recognized indication of whether or not a 2D21 can operate in the write-in or read-out service of the V-200. It is inexpensive and easily made and it can be used successfully with a minimum of knowledge and instruction. It must be recognized, however, that the indicated tube condition is valid only if the read-out and the trip circuits (with which it is used) are normal.

This is not a "precision instrument" because it must take into consideration the tolerance limits of the components in the read-out circuit and in the trip circuit. You may be sure that any tube indicated as acceptable will operate in either write-in or read-out service and tubes that are indicated as not acceptable will be borderline or definitely not useable. Some tubes in this latter group will probably be satisfactory for many weeks of operation where line voltage conditions and the equipment are normal or above normal. If you wish to do so, you may save these "rejected" tubes for later test with a tube tester that is now being built for our distributors' use. The tester to which we refer is quite accurate and will enable 2D21 tests that will detect borderline tubes as well as indicate the good and bad tubes.

We are enclosing an instruction that is applicable to the more accurate tester but we do not anticipate shipment of them until the latter part of this week or the early part of next week. We will release more detailed information concerning the Type 2DT-1 Tester coincident with shipment. We suggest that in the meantime you assemble the test adapters for normal field operations because the 2DT-1 Tester will be essentially a permanent installation in your shop.

2D21 TEST ADAPTER



1. Remove 6-prong mechanism plug from Selection Receiver.

2. Plug test adapter into Selection Receiver.

3. Plug mechanism plug into adapter.

4. Remove "phono" plug connection of Memory Unit output from pulse amplifier.

5. Plug the shielded lead from the adapter into pulse amplifier.

6. Place 2D21 to be tested in read-out position.

7. Allow 15 seconds for 2D21 to heat and start carriage scanning.

The carriage will trip-to-play at each record space if the 2D21 tube is acceptable for use in either write-in or read-out position. If the carriage does not trip at each record, the tube is "bad" or is nearing the end of its useful life.

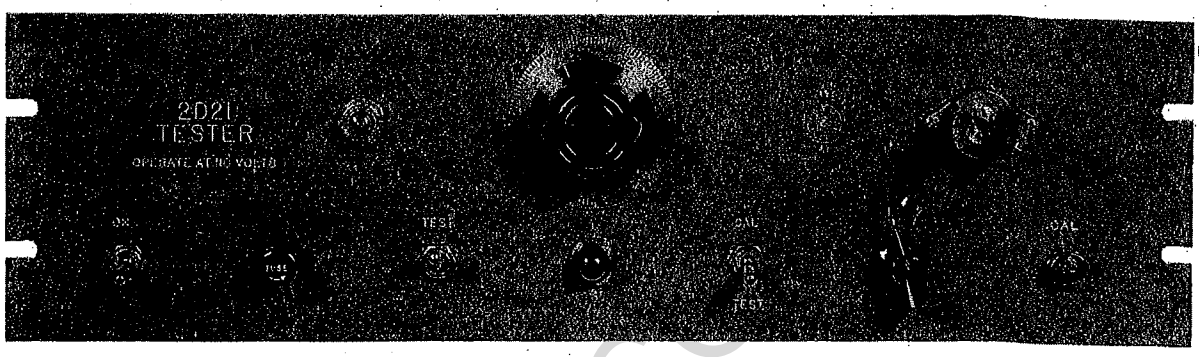
Note: In the use of this test it is assumed that the read-out and trip circuits are normal.

D056-32 Encl.

Seeburg

2D21 TESTER

Type 2DT-1



—SPECIFICATIONS—

Equipment Tested:	Type 2D21 Thyratron
Power Requirements:	110 Volts AC, 60 cycle, 30 watts
Panel Mounting:	Relay Rack with standard retma notching
Dimensions:	Width – 19'' Height – 5¼'' Depth (Back of Panel) – 8-3/8'' Depth to clear controls – 9¾''
Net Weight:	11½ Pounds

The Type 2DT-1 Tester is designed to test the Type 2D21 thyratron for use in Seeburg selection and control systems. It will detect complete failures and "borderline" tubes and give positive indication of the tube condition.

Two tests are provided. In one, the tube voltage drop is indicative of the quantity of electrons emitted by the cathode. In this test the tube delivers a peak current several times its rated current for a short pulse and with a relatively long inter-pulse period (low duty cycle). This test determines if the tube is acceptable for use in pulse operation. The second test is a measurement of control grid voltage at which the tube "fires"(ionizes). This test determines if the tube will "fire" when used in trip and stepper service but is not indicative of satisfactory operation unless the tube cathode emission capability is acceptable as indicated by the first test.

In both tests, the tube condition is referred to the position of the control, R42, which is established while using the neon light on the panel as an indicator.

The Tester is assembled on a 19" x 5¼" standard relay rack panel and may be installed in the Seeburg Test Panel or in any standard rack or cabinet. It is designed and calibrated for use at a line voltage of 110 and should be connected to an outlet that is controlled by a Variac or equivalent means of adjusting the supply voltage. Operation at more or less than 110 volts will give higher or lower cathode temperature of the tested tube and result in a corresponding change in the indicated tube condition.

The Tester should be calibrated as directed on this page when it is placed in service and should be checked periodically to compensate for aging of the tubes in it.

A biased diode proves a stable calibration reference voltage. The bias voltage is determined with reference to the diode used in the Tester and is adjusted to the required value at the factory with the sealed screw-driver operated control near the back of the chassis. The diode is quite stable and should not change its characteristics during the life of the instrument. The bias voltage is taken from the supply that is regulated by the OA2 tube, V5, and will not change significantly during the life of the tube or the replacement tubes. An adjustable control is used only to eliminate the requirement, in making the instrument, of selecting resistors that will give the bias voltage needed for the diode in the individual instrument. THE POSITION OF THE CONTROL MUST NOT BE CHANGED UNLESS THE ASSOCIATED FIXED RESISTORS IN THE DIVIDER NETWORK ARE CHANGED. The instrument should be returned to the Factory for basic calibration if these resistors or the position of the control are changed.

CALIBRATION

1. Connect the Tester line cord to a 110-volt, 60-cycle source. Turn on the power with the switch, S1, at the lower left, The pilot light and the instrument tube filaments should light.
2. Allow the instrument to warm up for at least fifteen minutes.
3. Set switch S4 to CALIBRATE (CAL).
4. Set switch S2 to 1.
5. Release lock nut of the CALIBRATE (CAL) control, R16.
6. Hold TEST switch, S3, in down position.
7. Adjust the position of CALIBRATE control, R16, so the neon indicator, I2, flashes at irregular intervals. The correct position of the control is such that a small change to the right (clockwise) will result in no flashes of the indicator light and a small change counter-clockwise will result in regular flashes at a rate of approximately two per second.
8. Release switch S3.
9. Lock R16 in position with the lock nut.
10. Set switch, S4, to TEST.

CIRCUIT DESCRIPTION

The tube to be tested is plugged into the socket J1 and has its heater current supplied by the 6.3 volt secondary of T1. When the switch S2 is in position 1, the plate current for the tube is supplied from the condenser C9. C9 is charged by the grounded-positive d. c. from transformer T2 and the 6X4. The supply is held constant at 150 volts by the OA2 voltage regulator V5 across which the divider R35 and R36 is connected. The condenser is charged to approximately 115 volts by the drop across R35. The drop across R36, approximately 35 volts, provides grid bias for the 2D21 that is sufficiently negative with respect to the cathode to prevent plate current flow.

The 12AX7, V2, is a free-running multivibrator developing about seven pulses per second when the Test switch, S3, is closed, Its output is shaped to pulses of short duration by C3 and R14 and is fed through R 7 to the grid of the tested tube. When the grid is driven positive, C9 is discharged through the tube plate circuit of L1, L2 and R15. The resulting negative pulse developed across R15 is coupled through C6 to the pulse transformer, T3, where it is stepped up and inverted in phase so it appears as a positive pulse at the transformer secondary terminals. The amplitude of this pulse is determined by the initial voltage across C9, the plate circuit components and the emissive capability of the tube cathode. The pulse amplitude, then, is a measure of the condition of the tube and is "sensed" by the flip-flop multivibrator 12AX7, V1.

The secondary of T3 is connected through the diode CR2 to the grid of the first section of V1. The diode is biased in opposition to the pulse polarity so no signal reaches the grid of V1 unless its peak amplitude exceeds the bias voltage by enough to start the switching action of the multivibrator. This bias is controlled by R42. It is set by turning the potentiometer to a position that biases the diode so the pulse developed by the 2D21 being tested will result in threshold operation of the multivibrator, V1. This position of R42, referred to its dial scale, is the index of the condition of the 2D21.

The neon light, I-2, indicates when V1 is operating. In the normal, no-signal condition of V1, the second section is conducting so the voltage drop through R13 holds the electrode voltage for the neon light below its ignition level. When V1 is switched by a pulse from the 2D21 under test, the voltage across I-2 rises and the light glows until V1 returns to the no-signal position.

The sensitivity or threshold of operation of the flip-flop multivibrator is established by adjusting the Calibration Control, R16, to a fixed reference signal level. This reference is provided by the bias on the diode CR1 and is used when the Calibrate-Test switch, S4, is in the Calibrate position. In this switch position, the output of the multivibrator, V2, is fed directly to the input of V1 and the peak amplitude is limited by the diode bias. This bias is adjusted at the Factory to a value that provides a known position of R42 for a 2D21 that will give a minimum acceptable pulse for operation in the Tormat Selection System.

In the test in which switch S2 is set to 2 the 2D21 tube in J 1 is connected to an anode supply of 155 volts a. c. supplied from transformer T1. The grid potential for the tube is controlled by the position of the test control, R42, which is switched into a voltage divider across the d. c. supply regulated by the OA2. The bias voltage at which the tube conducts is indicated by the control position at which the indicator I-2 is turned on. The indicator is operated by the voltage drop across resistor R15 when the tested tube is passing current.