

FORWARD

This document is based off of Seeburg Part No 50804 Issue 1. The look and feel of the document was preserved, and the page numbers have been preserved as much as possible. A Table Of Contents and Index of commonly looked up items has been added.

Many of the images in the document are located on the ImagesTS directory of the CD. These images are in bitmap format, and can be manipulated using any standard graphics program.

Although the information is based on the SHFA3 amplifier, the troubleshooting steps remain the same- I believe the major difference is the SHFA4 amplifier has an automatic volume control, which is controlled by tube V109. Removing this tube disables the AVC, and should be tried if there is a sound problem.

If your machine has not been serviced, you should have the amplifier recapped. This involves replacing the capacitors used in the amplifier. There are several people that sell kits. If you are not sure of your schematic reading, and soldering techniques, have the service done by an expert!

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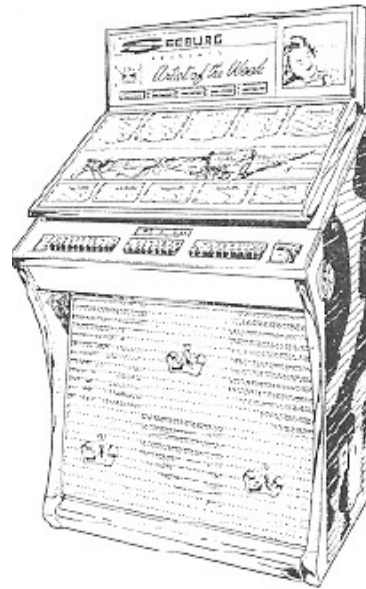
SEEBURG

TROUBLE SHOOTING GUIDE

AY1G0, Y100, AY160 & Y160 MODELS



100 Selections



160 Selections

<p>Cabinet Lights 25-watt 25Inch Cool White Fluorescent FS25 Starter</p>	<p>Format Selector Unit (Selection Receiver) Type SU3-Code A. With Remote Control Stepper Unit, Type RCS12, Or Format Junction Unit Type TJU2</p>										
<p>Mechanism AY160 and Y100. Type 160ST5 AY100 and Y100 Type 145ST7</p>	<p>Transistors in Stereo Units 2 - 2N591 in Monaural Models 1 - 2N391</p>										
<p>Format Memory Unit AY160 and Y160 Type 160TM1 AY100 and Y100 Type 100TM3</p>	<p>Tubes (in models with Remote Control Stereo & Auto-Speed Unit & SHFA3)</p>										
<p>Audio Amplifier Stereo Models Type SHFA3 Monaural Models Type C1HFA2</p>	<p>May not apply to your system!</p> <table> <tr> <td>4 - 6973</td><td>2 - 5U4G-GB</td></tr> <tr> <td>1 - 12AX7</td><td>2 - 2050</td></tr> <tr> <td>2 - 7199</td><td>1 - 6X4</td></tr> <tr> <td>3 - 6A2</td><td>2 - 6L6CC</td></tr> <tr> <td>1 - 6EU7</td><td>2 - 12BH7A</td></tr> </table>	4 - 6973	2 - 5U4G-GB	1 - 12AX7	2 - 2050	2 - 7199	1 - 6X4	3 - 6A2	2 - 6L6CC	1 - 6EU7	2 - 12BH7A
4 - 6973	2 - 5U4G-GB										
1 - 12AX7	2 - 2050										
2 - 7199	1 - 6X4										
3 - 6A2	2 - 6L6CC										
1 - 6EU7	2 - 12BH7A										
<p>Electrical Selector AY160 and Y160. Type TES165 AY100 and Y100. Type TES106</p>	<p>Fuses Main, 5 amp., Type MTU Amplifier, 1 amp., Type HDL Select-O-Matic Circuit, 3.2 amp., GMQ 3-2, 10 On Mechanism, Type GJV, 5 amp., Pig-Tail Fuse.</p>										

Introduction

This Trouble Shooting Guide is intended for use by the service mechanic in finding faults in the Seeburg AY160, Y160 AY100, and Y100 Models even though he may not be familiar with them. It follows a procedure that would be used by someone who is thoroughly familiar with these models and knows their control circuits as well as their sound equipment and mechanisms. The Guide should be used carefully by first associating the reported problem or service call in the left-hand column. Having found the general condition in this column, a test should then be made to determine the symptoms as detailed in the Symptoms Column. This is done by attempting to operate the phonograph and observing the results- After determining the symptoms, the units in which the trouble can be found are listed in the third column. The listed unit or units trail be changed to repair the phonograph or the unit can be repaired. If a single unit is involved, for example, an electrical selector only or a credit unit only, the fourth column indicates a reference to the Service Notes in which the actual trouble is pinpointed. These Service Votes are at the back of the Guide. If the Trouble can be in either of the two (or more) units, a Procedure Chart is used to pinpoint the cause. These Procedure Charts are listed in the fourth column and are detailed procedures that must be followed in exactly the sequence in which they are printed. They are the steps that would be taken by the expert service mechanic who is thoroughly familiar with the phonographs and there are no "short cuts" for them. It is of the utmost importance that none of these Procedure Steps are eliminated or bypassed

do exactly what the Procedure tells you to do. The following example will illustrate the proper method of using the Guide

The phonograph is an AY160 with a CAU1 credit unit..

The Service Call - "Can't make a selection -----
-the buttons won't stay down."

Upon arriving at the location, a preliminary check is made and it is found that the selector buttons fail to latch even though the credit lamp is lit but that selection can be made if a letter

and a number button are pressed at the same time.

Referring to the index of the Trouble Shooting Guide on Page 228, the fifth category is

Selector operates as soon as ONE selector button is pressed	See D , page 232.
Selector buttons stick down or selector buttons fail to latch	See E , page 233.
Credit lamp is lighted	

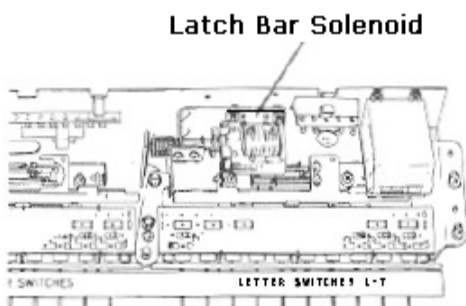
the closest to describing the trouble.

The index directs reference to group "E" on Page 233, there are four symptoms. The third symptom reproduced below best meets the conditions found in the phonograph, Symptoms 1, 2 and 4 do not apply-

2. Selector buttons stay down and no Selector operation occurs when certain letter or number buttons are operated.	1. Electrical Selector	See 12 of Electrical Selector (TES165) Service Notes
3. Selector buttons fail to latch. Selector operations can be made if a Letter and Number button are pressed at the same time	1. Electrical Selector 2. Credit Unit	Use Procedure Chart 12AY
4. Second Selector button pressed sometimes stays down	1. Electrical Selector 2. Credit Unit	Use Procedure Chart 13AY

"The Trouble Area " column shows that the trouble can be in either the electrical selector or the credit unit. The trouble can be corrected by replacing these two units or Procedure Chart 12AY can be used to determine in which unit the trouble lies.

PROCEDURE CHART		12AY
<p>TROUBLE: SELECTOR BUTTONS FAIL TO LATCH. SELECTOR OPERATIONS CAN BE MADE IF A LETTER AND A NUMBER BUTTON ARE PRESSED AT THE SAME TIME</p> <p>CAUSE OF TROUBLE IS IN Electrical Selector or Credit Unit.</p> <p>NOTE: This trouble can be caused by using a Dual Pricing Unit in place of a Credit Accumulator Unit (CAU1) or Single Pricing Unit.</p>		
<p>PROCEDURE</p> <p>1. Remove the cover from the back of the Electrical Selector and note if the latch bar solenoid is energized when the credit lamp is lighted.</p>		
<p>IF SOLENOID IS ENERGIZED see item 6 of Electrical Selector (TES165) Service Notes,</p>		
<p>IF SOLENOID IS NOT ENERGIZED proceed " follows:</p> <p>2. While watching solenoid, press in a letter and a number button at the same time and note if solenoid momentarily energizes</p>		
<p>IF SOLENOID MOMENTARILY ENERGIZES see item 16 of Credit Accumulator Unit (CAU1) Service Notes.</p> <p>IF SOLENOID DOES NOT MOMENTARILY ENERGIZE see 5 of Electrical Selector (TES165) Service Notes.</p>		



It is important that each test indicated is carefully followed and that each particular test should be fully completed before proceeding to the next test.

Following the directions as indicated in Chart 12AY it is noted that after removing the cover from the back of the electrical selector cover from the back of the back of the electrical selector the latch bar solenoid is not energized when the credit lamp is lit. Therefore, the paragraph IF SOLENOID IS ENERGIZED does not apply.

The paragraph "IF SOLENOID IS NOT ENERGIZED" does apply and directs that step 2 is to be used.







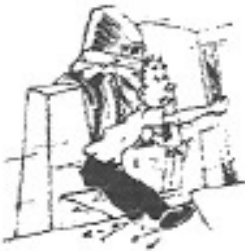
Proceeding as directed in step 2, it is noted that the solenoid is NOT momentarily energized when a letter and number button are pressed at the same time. Therefore, the paragraph "IF SOLENOID MOMENTARILY ENERGIZES" does not apply.



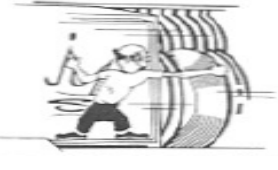




The paragraph "IF SOLENOID DOES NOT MOMENTARILY ENERGIZE" applies and Item 5 of the Electrical Selector Service Notes is to be used.

5. The latch bar solenoid winding is open	Selector buttons fail to latch when the credit lamp is on.
6. The latch bar linkage binds and prevents the latch from moving.	


Turning to item 5 of these notes on Page 264, it pinpoints the trouble as an open winding in the latch bar solenoid. Inspect the solenoid connections for a break, replace the solenoid or replace the entire Electrical Selector.

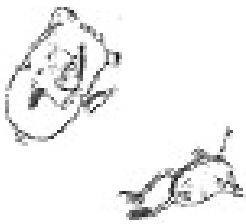
After the trouble is corrected and all plugs, jumpers and switches are returned to their normal position, make a final check of the phonograph by making a selection when the cabinet is locked up and in position to be played by a customer

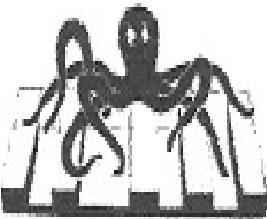
	Phonograph is dead.	See "A", Page 231
	Coins do not work right {Credit light does not light when money is deposited)	See "B" Page 231
	Able to operate Electrical Selector {select a record) too many or too few times for money.	See "C", Page 232
	Selector operates as soon as ONE Selector button is pressed	See "D1J, Page 232
	Selector buttons stick down or selector buttons fail to latch. Credit light is lighted	See "E", Page 233
	Carriage does not stop scanning.	See "F", Page 233
	Carriage scans past selected records.	See "G", Page 234


	Carriage "sits and spins". Will not move or play record.	See "H", Page 234
	Carriage does not scan after records are selected.	See "J", Page 235.
	Carriage plays wrong record or plays more than selected records.	See "K", Page 235
	Playing record is rejected or carriage trips to play when Electrical Selector is operated..	See "L". Page 236
	Incorrect record cycling	See "M", Page 236,
	Incorrect pickup arm operation.	See "N", Page 237,
	No Sound - Poor Sound	See "O", Page 237.


<<Page 230 Poics>>


 <p>A Phonograph is Dead</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. No power at house outlet	1. House wiring or fuses	Locate cause and correct
	2. Phonograph main fuse is blown	1. Mechanism 2. Tormat Selector Unit 3. Electrical Selector 4. Credit Unit 5. Auto-Speed Unit	Use Procedure Chart - 25AY


 <p>Coins do not work right -</p> <p>Credit light does not light when money is deposited</p> <p>B</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Coins "hang up" in slug rejector or fall into coin return cup.	1. Coin Equipment.	See 1, 2 or 3 of Coin Equipment Service Notes.
	2. Selector operations are normal but "Credit" lamp does not light	1. "Credit" Lamp. 2. Electrical Selector.	Use Procedure Chart - 1AY
	3. One type coin falls through to cash box without giving credit. (No Half Dollar Unit in phonograph)	1- Coin Equipment. 2. Credit Unit.	Use Procedure Chart - 2AY
	4. Only quarters fall through to cash box without giving credit. (Half Dollar Unit in phonograph)	1. Coin equipment. 2. Half Dollar Unit.	Use Procedure Chart - 3AY
	5. Only half dollars fall through to cash box without giving credit.	1. Coin equipment. 2. Half Dollar Unit.	Use Procedure Chart - 4AY
	6- Quarters and half dollars fall through to cash box without giving credit.	1. Half Dollar Unit.	See 10, 11, 12, 13, 14 or Half Dollar Unit (H DU1) Service Notes.
	7. All coins (all through to cash box without giving credit. Selector buttons will not latch.	1. Credit Unit. 2. Tormat Selector Unit. 3. Electrical Selector	Use Procedure Chart - 5AY
	8. Electrical Selector buttons remain stuck down after the last Selector operation.	1. Electrical Selector	See 3 & 4 of Electrical Selector (TES165) Service Notes.


 <p>Able to operate Electric al Selector (select a record) too many or too few times for money.</p> <p>C</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Wrong number of Selector operations for half dollar. (Half Dollar Unit in phonograph).	1. Half Dollar Unit.	See 15, 16, 17, 18 or 19 of Half Dollar Unit (HDU1) Service Notes.
	2. Wrong number of Selector operations for half dollar. (Single Pricing Unit in phonograph).	1. Credit Unit.	See 2, 3, 4 or 5 of Single Pricing; Unit {SPUD Service Notes.
	3I Three Selector operations for a quarter. Half Dollar Unit set to 4-for-quarter	1. Half Dollar Unit.	See 20 or 21 of Half Dollar Unit (HDU1) .Service Notes.
	4. Too few Selector operations for a quarter. No Half Dollar Unit in phonograph.	1 . Credit Unit	See 5, 6 or 13 Credit Accumulator Unit (CAU1) or 6. 7, 18 or 19 of Single Pricing Unit (SPU1) Service Notes.
	5. Selector operates as soon as ONE Selector button is pressed.	1. Electrical Selector 2. Credit Unit.	Use Procedure Chart - 7AY
	6- "Credit" light is lighted after correct number (if Selector operations.	1. Credit Unit.	Sec 15 of Credit Accumulator Unit (CAU1) of Service Notes.
	7. Selector operations can be made free (without money).	1. Coin Equipment. 2. Tormat Selector Unit. 3. Credit Unit. 4. Half Dollar Unit,	Use Procedure Chart - 8 AY
	8. All credits cancel when first selection is made.	1. Credit unit	See 13 of Credit Accumulator (CAU1) Service Notes or 18 of Single Pricing Unit (SPU1) Service Notes.

 <p>Selector operates as soon as ONE S elector button is pressed</p> <p>D</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	X X X X X X X X	1. Electrical Selector 2. Credit Unit	Use Procedure Chart - 7AY


 <p>Selector buttons stick down or selector buttons fail to latch.</p> <p>Credit lamp is lighted</p> <p>E</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Letter and Number Selector buttons stay down and no Selector operation occurs if ANY record is selected.	1. Tormat Selector Unit and Remote Control Stepper 2. Electrical Selector 3. Credit Unit 4. Half Dollar Unit	Use Procedure Chart - 11AY
	2. Selector buttons stay down and no Selector operation occurs when certain letter or number buttons are operated.	1. Electrical Selector	See 13 of Electrical Selector (TES165) Service Notes
	3. Selector buttons fail to latch. Selector operations can be made if a Letter and Number button are pressed at the same time.	1. Electrical Selector 2. Credit Unit	Use Procedure Chart - 12AY
	4. Second Selector button pressed sometimes stays down	1. Electrical Selector 2. Credit Unit	Use Procedure Chart - 13AY


 <p>Carriage does not stop scanning</p> <p>F</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Carriage scans continuously. Stops to play selected records and resume continuous scanning.	1. Credit Unit. 2. Tormat Selector Unit 3. Mechanism 4. Electrical Selector	Use Procedure Chart - 13AY


 <p>Carriage scans past selected records.</p> <p>G</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Carriage plays all left sides of selected records but scans past all right sides.	1. Mechanism	See 2, 3, 4 and 5 of Mechanism (160ST5) Service Notes
	2. Carriage plays all right sides of selected records but scans past all left sides.	1. Mechanism	See 2, 3, 4, and 5 of Mechanism (160ST5) Service Notes.
	3. Carriage plays all selected records except a complete Letter or a complete Number Group.	1. Electrical Selector 2. Mechanism	See 14 or 15 of Electrical Selector (TES165) Service Notes and 6A of Mechanism (160ST5) Service Notes
	4. Selector buttons fail to latch. Selector operations can be made if a Letter and Number button are pressed at the same time.	1. Credit Unit 2. Mechanism 3. Tormat Selector Unit and Stepper 4. Electrical Selector	Use Procedure Chart - 16AY
	5. Second Selector button pressed sometimes stays down	1. Tormat Selector Unit and Stepper 2. Mechanism 3. Electrical Selector 4. Credit Unit	Use Procedure Chart - 17AY


 <p>H</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Turntable spins with no record in play position	1. Mechanism	Use Procedure Chart - 18AY

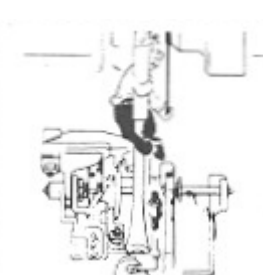
Carriage sits and springs. Will not move or play record.


 <p>J Carriage does not Scan after records are selected</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Selector operation seems normal but mechanism carriage does not scan when ANY record is selected	1. Credit Unit 2. Tormat Selector Unit 3. Mechanism 4. Electrical Selector 5. Auto-Speed Unit	Use Procedure Chart - 14AY

 <p>K Carriage plays wrong record or plays more than selected records.</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Carriage plays wrong record. Carriage trips and plays record one or more spaces past selected record	1. Mechanism	See 11, 12, or 13 of Mechanism (160ST5) Service Notes.
	2. Carriage plays an entire Letter group or entire Number group of records when certain Selector buttons are operated.	1. Electrical Selector 2. Mechanism 3. Tormat Selector Unit and stepper	Use Procedure Chart - 19AY
	3. Carriage scans ONLY ONCE instead of twice when a record is selected. Occasionally fails to play all selected records then plays left over records when another record is selected	1. Tormat Selector Unit	See 13 or 14 of Tormat Selector Unit (TSU3) Service Notes
	4. Carriage plays in succession all records without Selector operation.	1. Memory Unit connection	Seat Memory Unit output plug in Pulse Amplifier


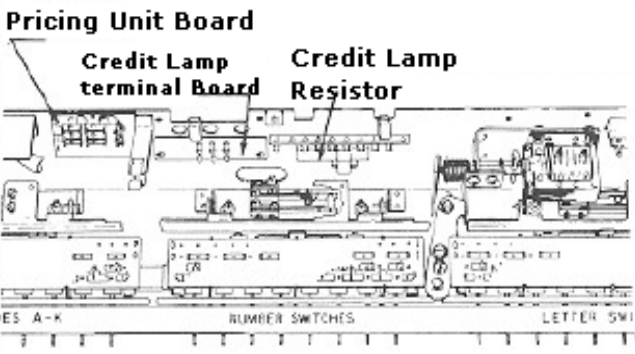
 <p>Playing record is rejected or carriage trips to play when Electrical Selector is operated</p> <p>L</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Carriage plays selected record only	1. Electrical Selector 2. Credit Unit 3. Tormat Selector Unit and Stepper	Use Procedure Chart - 26AY
	2. Carriage plays an entire Letter group or entire Number group of records when certain Selector buttons are operated	1. Electrical Selector 2. Mechanism 3. Tormat Selector Unit and Stepper	Use Procedure Chart - 19AY

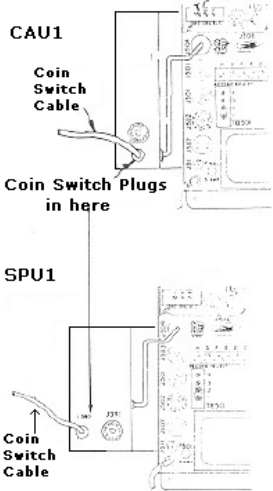
 <p>Incorrect Record Cycling</p> <p>M</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Carriage repeats record without scanning	1. Mechanism	See 15 or 16 of Mechanism (160ST5) Service Notes
	2. Carriage transfers a record in and out of magazine without playing it or scanning	1. Tormat Selector Unit 2. Mechanism 3. Auto-Speed Unit.	Use Procedure Chart - 20AY
	3. Carriage returns 45 and 33-1/3 rpm record without playing. Scans to next selected record.	1. Mechanism	See 11, 12, and 13 of Mechanism (160ST5) Service Notes
	4. Carriage returns 33-1/3 rpm records to magazine without playing. Scans to next selected record. 45rpm records play normal	1. Auto-Speed Unit	See 2 and 3 of Auto-Speed Unit Service Notes
	5. Turntable stops at the end of a record. Carriage will not scan.	1. Mechanism	See 20 or 21 of Mechanism (a60ST5) Service Notes
	6. Carriage transfers record from magazine but does not clamp it correctly. No Sound	1. Mechanism	See 22 or 23 of Mechanism (160ST5) Service Notes
	7. 33-1/3 rpm record comes up to play position and motor stops	1. Auto-Speed Unit.	See 4 of Auto-Speed Unit Service Notes

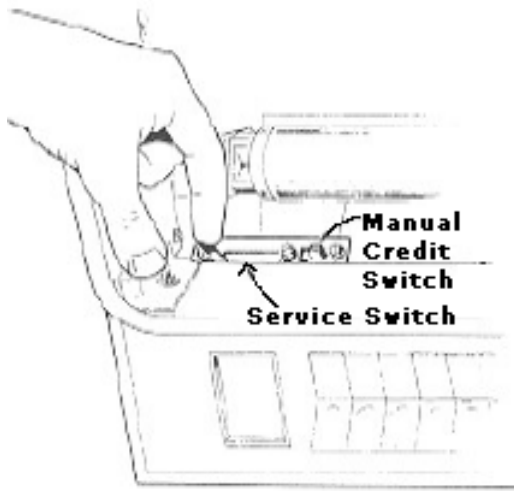
 <p>N Incorrect pickup arm operation</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Stylus falls off edge of record or lands in too far	1. Mechanism	See 24, 25, and 26 of Mechanism (160ST5) Service Notes
	2. Stylus skids across record to repeat record or to trip off or across first few grooves	1. Mechanism	See 27, 28, 29, or 30 of Mechanism (160ST5) Service Notes
	3. Record does not cut off at end of play	1. Mechanism	See 31 or 32 of Mechanism (160ST5) Service Notes

 <p>No Sound - Poor Sound</p> <p>O</p>	SYMPTOM	TROUBLE AREA	CORRECTION
	1. Record in playing position and tuning; stylus in record groove but no sound	1. Amplifier 2. Mechanism	Use procedure Chart - 21AY
	2. No stereo effect. One channel is dead	1. Amplifier 2. Mechanism 3. Speakers	Use procedure Chart - 22AY
	3. Sound distorted	1. Amplifier 2. Mechanism 3. Speakers	Use procedure Chart - 23AY
	4. Sound Volume is low or varies	1. Amplifier 2. Mechanism	Use procedure Chart - 24AY
	5. Music has slow pitch variations. Record speed varies	1. Mechanism	See 40, 41, 42, 43 or 44 of Mechanism (160ST5) Service Notes
	6. Music flutters . Tremelo	1. Mechanism	See 45, 46, 47, and 48 of Mechanism (160ST5) Service Notes
	7. Music is low in pitch on 45 and 33-1/3 rpm records. Record turning slowly	1. Mechanism	See 49, 50, and 51 of Mechanism (160ST5) Service Notes
	8. Music is low in pitch on 33-1/3 rpm records only. 45's OK	1. Auto-Speed Unit	See 5 and 6 of Auto-Speed Unit Service Notes
	9. Music is low in pitch on 45 rpm records only. 33-1/3's OK	1. Mechanism 2. Auto-Speed Unit	See 12 and 14 of Auto-Speed Unit Service Notes
	10. 33-1/3 rpm Records play too fast	1. Auto-Speed Unit 2. Mechanism	See 7, 8, 9, 10, and 11 of Auto-Speed Unit Service Notes

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Procedure Charts		PROCEDURE CHART	1AY
		<p>TROUBLE: Selector Operations Are Normal But Credit Lamp Does Not Light.</p> <p>CAUSE OF TROUBLE IS IN: Credit Lamp or Electrical Selector.</p> <p>PROCEDURE:</p> <ol style="list-style-type: none"> 1. Try a new credit lamp <p>IF NEW LAMP DOES NOT LIGHT WITH APPROPRIATE CREDIT proceed as follows:</p> <ol style="list-style-type: none"> 2. Remove the cover from the back of the Electrical Selector and check the connections to the pricing Unit Board and to the Credit Lamp Terminal Board. <p>IF CONNECTIONS ARE GOOD proceed as follows:</p> <ol style="list-style-type: none"> 3. See item 11 of Service Notes for the Electrical Selector (TES165) 	
			

		PROCEDURE CHART	2AY
		<p>TROUBLE: One Type Coin Falls Through To The Cash Box Without Giving Credit- Other Coins OK. (No Half Dollar Unit in phonograph.)</p> <p>CAUSE OF TROUBLE IS IN: Coin Equipment or Credit Unit.</p> <p>PROCEDURE:</p> <ol style="list-style-type: none"> 1. Check that coin switch plug is properly seated in the Credit Unit socket. 2. Inspect the coin equipment for items 4, 5 and 6 of AY and Y Model Coin Equipment Service Notes. <p>IF COIN EQUIPMENT IS OK see item 1 of Credit Accumulator Unit (CAU1) Service Notes or item 1 of Single Pricing Unit (SPU1) Service Notes.</p>	



TROUBLE: ALL COINS FALL THROUGH TO THE CASH BOX WITHOUT GIVING CREDIT.

CAUSE OF TROUBLE IS IN: Electrical Selector or Credit Unit or Selector Unit.

PROCEDURE:

1. Be sure phonograph is connected for power and main switch is turned on.
2. Operate the service switch to SCAN, noting if carriage scans.

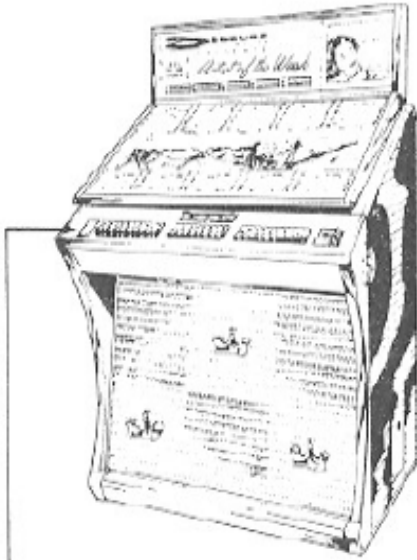
IF CARRIAGE MOTOR DOES NOT RUN see item 1 of Tormat Selector Unit (TSU1) Service Notes.

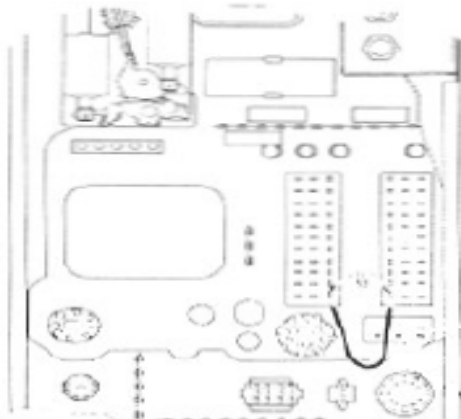
IF CARRIAGE MOTOR RUNS proceed as follows:

3. Turn off main power switch and turn it on again.
4. Deposit a quarter and note if only one Selector operation can now be made.

IF ONLY ONE SELECTOR OPERATION CAN BE MADE see items 1 and 2 of Electrical Selector (TES165) Service Notes.

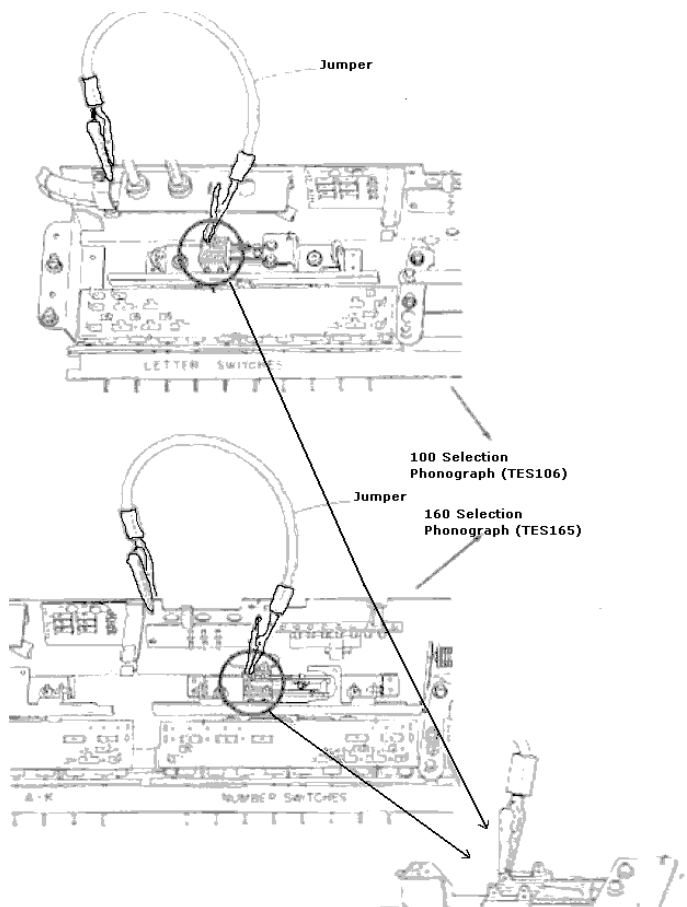
IF NO SELECTOR OPERATION CAN BE MADE see 2, 3 and 4 of Credit Accumulator Unit (CAU1) Service Notes or 8, 9 and 10 of Single Pricing Unit (SPU1) Service Notes

	PROCEDURE CHART	7AY
 <p>Credit Lamp</p>	<p>TROUBLE.: SELECTOR OPERATES AH SOON AS ONE BUTTON IS PRESSED.</p> <p>CAUSE OF TROUBLE IS IN: Electrical Selector or Credit Unit.</p> <p>PROCEDURE:</p> <ol style="list-style-type: none"> 1. Deposit a quarter and select A1 by pressing in the Letter and the number button at the same time. Hold down both buttons for several seconds and then release them. 2. Note if all credits are canceled while buttons are held down and if credit lamp is not lighted after buttons are released. <p>IF CREDIT LAMP IS LIGHTED see 9 and 10 of Electrical Selector (TES165) Service Notes.</p> <p>IF CREDIT LAMP IS NOT LIGHTED see item 7 of Credit Accumulator Unit (CAU1) Service Notes or item 11 of Single Pricing Unit (SPU1) Service Notes.</p>	
	PROCEDURE CHART	8AY
<p>TROUBLE: SELECTOR OPERATIONS CAN HE MADE FREE-(WITHOUT DEPOSITING MONEY)</p> <p>CAUSE OF TROUBLE IS IN: Tormat Selector Unit or Coin Equipment or Credit Unit or Half Dollar Unit</p> <p>PROCEDURE:</p> <ol style="list-style-type: none"> 1. Check if Selector operation can be made free only if a letter and a number button are pressed in at the same time. <p>IF SO see item 2 of Tormat Selector Unit (TSU3) Service Notes.</p> <p>IF NOT proceed as follows:</p> <ol style="list-style-type: none"> 2. Inspect the Coin equipment for item 7 of AY and Y Model Coin Equipment Service Notes <p>IF COIN EQUIPMENT IS OK proceed as follows:</p> <ol style="list-style-type: none"> 3. Check if Half Dollar Unit motor is continually turning. <p>IF MOTOR RUNS CONTINUALLY see item 22 of Half Dollar Unit (HDU1) Service Notes.</p> <p>IF THERE IS NO HALF DOLLAR UNIT OR IF MOTOR DOES NOT RUN CONTINUALLY sec item 11 of Credit Accumulator Unit (CAU1) Service Notes or items 6 and 7 of Single Pricing Unit (SPU1) Service Notes</p>		



Jumper Pin 33 to Pin 33

(Step 2)



TROUBLE: LETTER AND NUMBER BUTTON STAY DOWN AND NO SELECTOR OPERATION OCCURS IF ANY RECORD IS SELECTED

CAUSE OF TROUBLE IS IN: Tormat Selector Unit and Remote Control Stepper Unit or Electrical Selector or Credit Unit or Half Dollar Unit.

PROCEDURE:

1. Turn off the. main power switch and turn it on again. Try Selector Operation again and not if buttons again stay down.

IF BUTTONS DO NOT STAY DOWN see item 25 of Half Dollar Unit (HDU1) Service Notes.

IF BUTTONS STAY DOWN proceed as follows:
2, Remove the cover from rear of back door and MOMENTARILY connect a jumper wire from pin 33 to pin 33 of the two 33 pin sockets. Note if Selector operates when connection is made.

IF SELECTOR OPERATES see 3, 4, and 5 of Tormat Selector Unit (TSU3) Service Notes.

IF SELECTOR DOES NOT OPERATE proceed as follows:

3. Remove the cover from the back of the Electrical Selector.

%I On the TES106 momentarily connect a jumper wire from the Selector frame to the Letter Start Switch lug as shown

%I On the TES165 momentarily connect a jumper wire from the Selector frame to the Number Start Switch lug as shown

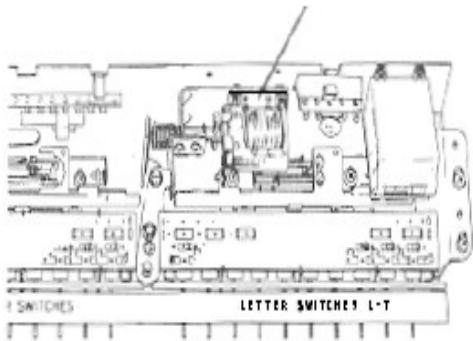
Note if Selector operates when connection is made.

IF SELECTOR DOES NOT OPERATE see]2 and 13 of .Single Unit Pricing Unite (SPU1) Service Notes and 23 of Half Dollar Unit (HDU1) Service Notes.

IF SELECTOR OPERATES see item 12 of Electrical Selector (TES165) Service Notes.

		PROCEDURE CHART	12AY
<p>TROUBLE: SELECTOR BUTTONS FAIL TO LATCH. SELECTOR OPERATIONS CAN BE MADE IF A LETTER AND A NUMBER BUTTON ARE PRESSED AT THE SAME TIME</p> <p>CAUSE OF TROUBLE IS IN Electrical Selector or Credit Unit.</p> <p>NOTE: This trouble can be caused by using a Dual Pricing Unit in place of a Credit Accumulator Unit (CAU1) or Single Pricing Unit.</p>			
<p>PROCEDURE</p> <p>1. Remove the cover from the back of the Electrical Selector and note if the latch bar solenoid is energized when the credit lamp is lighted.</p>			
<p>IF SOLENOID IS ENERGIZED see item 6 of Electrical Selector (TES165) Service Notes,</p>			
<p>IF SOLENOID IS NOT ENERGIZED proceed " follows:</p> <p>2. While watching solenoid, press in a letter and a number burton at the same time and note if solenoid momentarily energizes</p>			
<p>IF SOLENOID MOMENTARILY ENERGIZES see item 16 of Credit Accumulator Loit (CAUI) Service Notes.</p>			
<p>IF SOLENOID DOES NOT MOMENTARILY ENERGIZE see 5 of</p>			
<p>Electrical Selector (TES165) Service Notes.</p>			

Latch Bar Solenoid

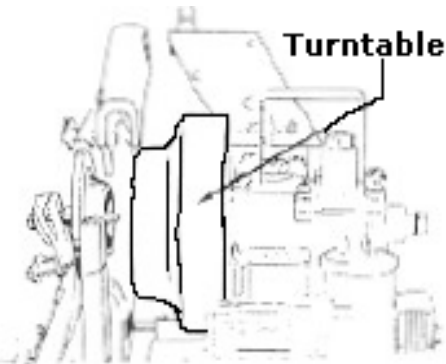
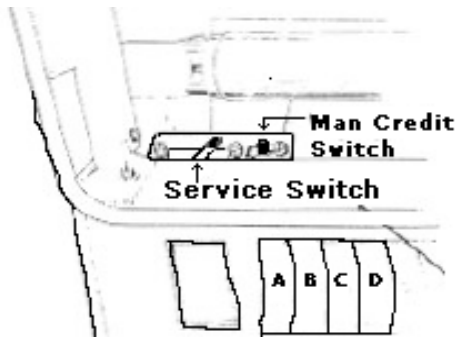


Electrical Selector (TES165) Service Notes.

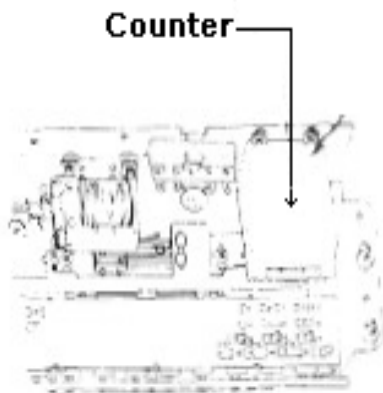
		PROCEDURE CHART	13AY
<p>TROUBLE: IN SELECTOR OPERATION, SECOND BUTTON PRESSED SOMETIMES STAYS DOWN.</p> <p>CAUSE OF TROUBLE IS IN: Electrical Selector or Credit Unit.</p>			
<p>PROCEDURE:</p> <p>1. Deposit a quarter and select A1 by pressing both buttons at the same time. Hold in both buttons a Jew seconds before releasing.</p> <p>Note if credit lamp is still lighted after buttons are released.</p>			
<p>IF CREDIT LAMP IS LIGHTED see item 7 of Electrical Selector (TES165) Service Notes.</p>			
<p>IF CREDIT LAMP IS NOT LIGHTED see item 13 of Credit Accumulator Unit (CAU1) Service Notes or item 11 of Single Pricing Unit (SPU1) Service Notes.</p>			

Credit Lamp





Carriage Turntable (Step 1)



Counter (Step 2)

TROUBLE: SELECTOR OPERATIONS SEEM NORMAL BUT CARRIAGE DOES NOT SCAN WHEN ANY RECORD IS SELECTED.

CAUSE OF TROUBLE IS IN: Credit Unit or Tormat Selector Unit or Mechanism or Electrical Selector or Auto-Speed Unit.

PROCEDURE:

1. Make sure Service Switch is in PLAY position. Note if carriage **TURNTABLE** moves **SLIGHTLY** when selector is operated.

IF SO see item 7 of Tormat Selector Unit (TSU3) Service Notes.

IF NOT proceed as follows:

2. Check if counter operates when selector operates

IF COUNTER DOES NOT OPERATE see item 14 of Single Pricing Unit (SPU1) Service Notes or item 17 of Credit Accumulator Unit (CAU1) Service Notes.

IF COUNTER OPERATES proceed as follows:

3. Open back door of phonograph and note if amplifier 5U4 tube is lighted. *

IF 5U4 TUBE IS LIGHTED see items 52 to 56 of Mechanism (160ST5) Service Notes and item 1 of Auto-Speed Unit Service Notes.

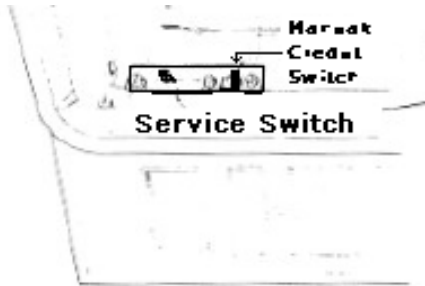
IF 5U4 TUBE IS NOT LIGHTED proceed as follows:

4. Remove cover from rear of back door and check items 6 and 8 of the Tormat Selector Unit (TSU1) Service Notes.

IF NO TROUBLE IS FOUND see items 19 and 20 of Electrical Selector (TES165) Service Notes.

* If phonograph is monaural (1 channel) or has been converted to stereo by adding C2HFA2 Amplifier, one or two 5Y3GT tubes will be found in place of one 5U4GB tube.

Note:: The 6.3 volts to light the filament for the 5U4GB is only applied when a record is playing.

		PROCEDURE CHART	15AY
 <p>PUT PICS HERE</p> <p>d ddd more pics more pics mor pics</p>	<p>TRouble: CARRIAGE SCANS CONTINUOUSLY. STOPS TO PLAY SELECTED RECORD THEN RESUMES SCANNING</p> <p>CAUSE OF TROUBLE IS IN: Credit Unit or Tormat Selector Unit or Mechanism or Electrical Selector</p> <p>PROCEDURE:</p> <p>1. Turn the Service Switch to OFF position and press the service credit button twice. Note if carriage stops.</p> <p>IF CARRIAGE STOPS see item 1 of Mechanism (160ST5) Service Notes.</p> <p>IF CARRIAGE DOES NOT STOP proceed as follows:</p> <p>2. Remove the 2-pin Credit Unit plug from the Tormat Selector Unit and note if carriage scans two more cycles and stops.</p> <p>IF CARRIAGE STOPS see item 15 of Single Pricing Unit (SPU1) Service Notes or item 18 of Credit Accumulator Unit (CAU1) Service Notes.</p> <p>IF CARRIAGE DOES NOT STOP proceed as follows:</p> <p>3. Remove the Service Switch plug from the Tormat Selector Unit and note if carriage scans two more times and stops.</p> <p>IF CARRIAGE STOPS see item 21 of Electrical Selector (TES165) Service Notes.</p> <p>IF CARRIAGE DOES NOT STOP proceed as follows:</p> <p>4. Remove the cover from the rear of the back door and check if the Play Control Subtract Solenoid is continuously energized.</p> <p>IF ENERGIZED see item 1 of Mechanism (160ST5) Service Notes.</p> <p>IF NOT ENERGIZED see items 9 and 10 of Tormat Selector Unit (TSU3) Service Notes.</p>		

		PROCEDURE CHART	16AY
<p>TRouble: CARRIAGE OCCASIONALLY SCANS PAST SOME SELECTED RECORDS</p> <p>CAUSE OF TROUBLE IS IN; Credit Unit or Tormat Selector Unit or Mechanism or Electrical Selector.</p> <p>PROCEDURE:</p> <p>1. Check Credit Unit for trigger switch leakage. Single Pricing Unit (SPU1) Service Notes item 17 or Credit Accumulator Unit (CAU1) Service Notes item 20.</p> <p>2. Check mechanism read-out timing. Mechanism (160ST5) Service Notes items 2 and 3.</p> <p>3. Check pulse amplifier. Tormat elector Unit (TSU3) Service Notes item 19.</p> <p>4. Electrical Selector (TES165) Service Notes item 17.</p> <p>5. If none of the above(thru 4) correct the trouble then there is a break in the mechanism cables.</p>			

TROUBLE: CARRIAGE SCANS TWICE AND STOPS WITHOUT PLAYING RECORD WHEN ANY RECORD IS SELECTED.	PROCEDURE CHART	17AY
CAUSE OF TROUBLE IS IN: Format Selector Unit and Stepper Mechanism Credit Unit Electrical Selector		
PROCEDURE: PERFORM FOLLOWING TESTS IN SEQUENCE TO LOCATE TROUBLE.		
<p>-A TEST-</p> <ol style="list-style-type: none"> 1. Check that all plugs are properly seated. 2. Check that all tubes are lighted. 3. Check for purple glow inside both OA2 tubes. (No glow can be caused by weak 6X4 tube) <p>IF A LOOSE PLUG OR BAD TUBE IS FOUND AND CORRECTED, CHECK NORMAL OPERATION OF THE PHONOGRAPH.</p> <p>IF NO TROUBLE IS FOUND, ESTABLISH SEVERAL FREE CREDITS ON THE PHONOGRAPH AND PERFORM B TEST. (Be sure the service switch is in the PLAY position for all tests).</p> <p>(NOTE) After any trouble is located and repaired, remove jumpers connect links to normal, replace all plugs and check the phonograph for normal operations)</p>		
<p>-B TEST-</p> <ol style="list-style-type: none"> 1. Remove cover from the test terminals 2. Remove the memory unit output plug from the pulse amplifier. 3. Connect one end of a jumper wire to C , leaving other end free. 4. Make any selection and while mechanism is scanning, momentarily connect the free end of the jumper wire to the input of the pulse amplifier. (Make connection down inside socket) Mechanism should immediately trip. <p>IF MECHANISM TRIPS: Reject record, allow mechanism to scan to stop. PERFORM C TEST.</p> <p>IF MECHANISM DOES NOT TRIP: Use L TEST to pinpoint Trouble</p>		

TROUBLE: CARRIAGE SCANS TWICE AND STOPS WITHOUT PLAYING RECORD WHEN ANY RECORD IS SELECTED.	PROCEDURE CHART	17AY
<p style="text-align: center;">-C TEST-</p> <ol style="list-style-type: none"> 1. Remove jumper wire from "C". 2. Momentarily connect the tip of the memory unit output plug to the tip of a good flashlight battery (D-Cell) with the case (negative) of the battery held against the corner of the pulse amplifier. (This is the same as making all selections on the Tormat) 3. Replace memory unit output plug into the pulse amplifier. 4. Make any selection. When selection is made, mechanism should immediately trip and play. 5. Reject record and note if next record plays. (If desired ALL records could be played) <p>IF MECHANISM TRIPS ON AT LEAST TWO RECORDS: Pull out memory unit output plug, reject record, allow mechanism to scan to stop and replace plug. Use G TEST to pinpoint trouble.</p> <p>IF MECHANISM SCANS OR PLAYS ONLY ONE RECORD use D TEST to pinpoint trouble.</p>		
<p style="text-align: center;">-D TEST- (Read Out) (Be sure service Switch is PLAY position for all tests)</p> <ol style="list-style-type: none"> 1. Remove mechanism access door on rear of phonograph. 2. Open link between G and H {Turn off power while removing links'} 3. Connect the Seeburg Test Lamp between "H" and "A". Lamp should glow brightly. (Be sure power is on) <p>IF LAMP GLOWS BRIGHTLY: PERFORM E TEST.</p> <p>IF LAMP IS DIM OR DOES NOT LIGHT: Proceed as follows:</p> <ol style="list-style-type: none"> 4. Pull our service switch plug from selector unit and note lamp. <p>IF LAMP NOW GLOWS BRIGHTLY: See item 16 of Electrical Selector (TES165) Service Notes:</p> <p>IF LAMP IS DIM OR DOES NOT LIGHT: See item 23 of Tormat Selector Unit (TSIJ3) Service Notes.</p>		
<p style="text-align: center;">-E TEST- (Read Out)</p> <ol style="list-style-type: none"> 1. Connect the Test Lamp between "G" and "H". 2. Make any selection and note that lamp flashes as mechanism scans past each record space. J. As mechanism scans back away from A1I, pull down on outside plunger of contact block. Lamp should go out or flash <u>very</u> dimly while plunger is held down. <p>IF LAMP FLASHES AT EACH RECORD SPACE AND GOES OUT WHILE PLUNGER IS HELD DOWN: PERFORM F TEST.</p> <p>IF LAMP DOES NOT FLASH AT EACH RECORD SPACE OR STAYS ON WHILE PLUNGER IS HELD DOWN: Check for defective carriage RO circuit.</p>		

TROUBLE: CARRIAGE SCANS TWICE AND STOPS WITHOUT PLAYING RECORD WHEN ANY RECORD IS SELECTED.	PROCEDURE CHART	17AY
<p>-F TEST- (Read Out)</p> <p>1. With G" and "H open, connect test lamp between "F" and "A".</p> <p>2. Momentarily connect a jumper wire between "Hf*" and "F". Lamp jr should flash when connection is made.</p> <p>IF LAMP FLASHES - RE PLACE TORMAT MEMORY UNIT (Output cable is open or shorted}</p> <p>IF LAMP DOES NOT FLASH: See item 23 of Tormat Selector Unit (TSU3) Service Notes</p>		
<p>-G TEST- (Write In)</p> <p>1. Connect a Seeburg Test Lamp between D and "A". Lamp should not glow, if lamp slows, PERFORM J TEST.</p> <p>2. While watching lamp, make any selection. Lamp should not flash.</p> <p>IF LAMP FLASHES: PERFORM H TEST.</p> <p>IF LAMP DOES NOT FLASH: PERFORM J TEST.</p>		
<p>-H TEST- (Write In)</p> <p>1. Connect test lamp between "K" and "A".</p> <p>2. While watching Lamp, make any selection</p> <p>IF LAMP FLASHES: PERFORM TEST #1A BELOW.</p> <p>IF LAMP DOES NOT FLASH: PERFORM TEST #1C BELOW.</p> <p><u>TEST #1A</u> Connect test lamp between R and A .Make any selection while watching lamp.</p> <p>IF LAMP FLASHES: PERFORM TEST #1B BELOW.</p> <p>IF LAMP DOES NOT FLASH CLEAN R CONTACT TIMING RELAY #2.</p> <p><u>TEST #1B</u> Connect test lamp between M and A . Select V8 (160 models) or K10 (100 models) while watching lamp.</p> <p>IF LAMP FLASHES REPLACE MEMORY TORMAT UNIT (Open Ground)</p> <p>IF LAMP DOES NOT FLASH : see items 14 and 15 of Electrical Selector (TES165) Service Notes.</p> <p><u>TEST #1C</u> Connect test lamp between T and A . Make any selection while watching lamp.</p> <p>IF LAMP FLASHES see items 14 and 15 of Electrical Selector (TES165) Service Notes.</p> <p>IF LAMP DOES NOT FLASH: CLEAN N CONTACT TIMING RELAY #2</p>		

TROUBLE: CARRIAGE SCANS TWICE AND STOPS WITHOUT PLAYING RECORD WHEN ANY RECORD IS SELECTED.	PROCEDURE CHART	17AY
<p>-J TEST- (Write In)</p> <ol style="list-style-type: none"> 1. Open link between "D" and "E". 2. Connect test lamp between "D" and "E". Lamp should show a dim glow or not glow at all. 3. IF LAMP IS LIGHTED BRIGHTLY: Pull out pricing unit plug from selection unit while watching lamp. <p>IF LAMP DIMS OR GOES OUT when pricing unit plug is pulled; see item 20 of Credit Accumulator Unit (CAU1) or item 17 of Single Pricing Unit (SPU1) service notes.</p> <p>IF LAMP REMAINS BRIGHT after pulling pricing unit plug, reinsert pricing unit plug in selection unit socket.</p> <ol style="list-style-type: none"> 1. Pull out stepper plug from selection unit if lamp dims, check for shorted P contact. 2. If lamp does not dim when stepper plug is pulled, see item 22 or 25 of Tormat Selector Unit (TSU3) service notes. <p>IF LAMP GLOWS DIMLY OR IS NOT LIGHTED, PERFORM K TEST.</p>		
<p>-K TEST- (Write In)</p> <ol style="list-style-type: none"> 1. Connect test link between E and F 2. Connect test lamp between "E" and "A". 3- While watching lamp, make any selection. Lamp should flash. <p>IF LAMP FLASHES: Repeat all tests. (Be sure you have not skipped part of the tests)</p> <p>IF LAMP DOES NOT Flash: Proceed as follows:.</p> <ol style="list-style-type: none"> 4. While watching lamp, press and release timing relay #1.. Lamp should flash <p>IF LAMP FLASHES see item 19 of Credit Accumulator Unit (CAU1) Service Notes or item 16 of Single Pricing Unit (SPU1) Service Notes.</p> <p>IF NO STEPPER: see item 19 of Credit Accumulator Unit (CAU1) Service Notes or item 16 of Single Pricing Unit (SPU1) Service Notes</p> <p>IF LAMP DOES NOT FLASH: Replace Tormat Selector Unit (Defective write-in electronics)</p>		

TROUBLE: CARRIAGE SCANS TWICE AND STOPS WITHOUT PLAYING RECORD WHEN ANY RECORD IS SELECTED.	PROCEDURE CHART	17AY
<p>-L TEST- (Trip)</p> <ol style="list-style-type: none"> 1. Remove jumper wire from C and connect to A 2. Make any selection While mechanism is scanning, momentarily free end of jumper wire to B Mechanism should trip. <p>IF MECHANISM TRIPS .</p> <ol style="list-style-type: none"> 1. Install new 12AXY tube in pulse amplifier. 2. Replace memory unit output plug into pulse amplifier and check normal operation of the phonograph. 3. If phonograph does not select, see item 19 or 24 of Tormat Selector Unit (TSU3) Service Notes. <p>IF MECHANISM DOES NOT TRIP:</p> <ol style="list-style-type: none"> 1. Install new 2050 tube in selection unit. 2. Repeat trip test. If mechanism does not now trip, check mechanism trip coil and circuit. 		

	PROCEDURE CHART	18AY
<p>TROUBLE: CARRIAGE "SITS AND SPINS . WILL NOT MOVE ON TO PLAY SELECTED RECORDS.</p> <p>CAUSE OF TROUBLE IS IN: Mechanism.</p> <p>PROCEDURE:</p> <p>1. Note if carriage clamp arm is in open or clamped position while "spinning.</p> <p>IF CLAMPED see item 10 of Mechanism (160ST5) Service Notes. (Be Sure there are records in all Magazine spaces.)</p> <p>IF NOT CLAMPED proceed as follows:</p> <p>2. Give carriage slight push to left and to right. Note if record is then brought out and played.</p> <p>IF RECORD COMES OUT see item 7 of Mechanism (160ST5) Service Notes.</p> <p>IF RECORD DOES NOT COME OUT proceed as follows:</p> <p>3. Note if the safety plunger is touching the stripper plate.</p> <p>IF SO see item 8 of Mechanism (160ST5) Service Notes.</p> <p>IF NOT see item 9 ai Mechanism (160ST5) Service Notes.</p>		

		PROCEDURE CHART	19AY
	<p>TROUBLE: PLAYS AN ENTIRE LETTER OR NUMBER GROUP OF RECORDS EACH TIME CERTAIN BUTTONS ARE OPERATED.</p> <p>CAUSE OF TROUBLE IS IN: Electrical Selector or Tormat Selector Unit or Mechanism Memory Unit</p> <p>PROCEDURE: Perform the following test to locate trouble.</p>		
	<p>- A - TEST</p> <p>1. "Take off all credits (if any)</p> <p>2. Conned one wire of a 28V Test Lamp to terminal 4 of the 3 pin socket J511 (updated from Erratum) and the other wire of the test lamp to Test Point A on the Tormat Selection Unit. Lamp should light to full (normal) brightness. Note brightness for reference in the following tests.</p> <p>3. Move test lamp connection from Test Point A to Test Point K on the Stepper or Junction Unit and note if lamp is lighted.</p> <p>IF LIGHTED: PERFORM B TEST TO LOCATE SHORT.</p> <p>IF NOT LIGHTED PROCEED AS FOLLOWS:</p> <p>4. Press in selector Buttons A and 1 at the same time. While buttons are held down, note if test lamp lights to full brightness as in 2 above.</p> <p>IF BRIGHTLY LIGHTED (as in 2) PERFORM E TEST TO LOCATE SHORT.</p> <p>IF DIMLY LIGHTED: Remove test lamp; use Procedure Chart 26, Items 1 to 6 to locate trouble.</p>		
	<p>- B - TEST</p> <p>1. Remove the Tormat Memory Unit 33-pin plug from the stepper or Junction Unit. Note if test lamp is lighted</p> <p>IF LIGHTED: PERFORM C TEST To LOCATE SHORT.</p> <p>IF NOT LIGHTED: PERFORM D TEST TO LOCATE SHORT</p>		
	<p>- C - TEST</p> <p>1, Remove the Electrical Selector 33-pin plug from the Stepper or Junction Unit. Note if test lamp is lighted</p> <p>IF LIGHTED the circuit between the number 31 pins of the 33-pin sockets is grounded. Repair or change Tormat Selector Unit, Stepper, or Tormat Junction Unit.</p> <p>IF NOT LIGHTED: The circuit connected to pin 31 of the Electrical Selector Plug is grounded. Repair or change Electrical Selector.</p>		

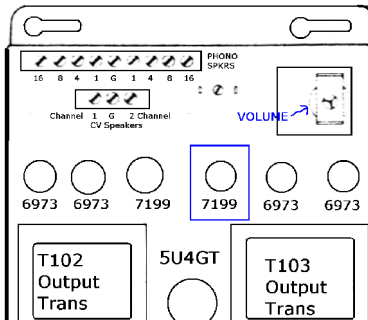
		PROCEDURE CHART	19AY
	<p>- D - TEST</p> <p>1. Move the test lamp connection from Test Point K to Test Point T. 2. FOR 160-SELECTION MODELS: While watching the test lamp, press in each of the number buttons one at a time, noting if lamp lights while any one of the number buttons is pressed. FOR 100-SELECTION MODELS: While watching the test lamp, press in each of the letter buttons one at a time, noting if lamp lights while any one of the letter buttons is pressed.</p> <p>IF LAMP LIGHTS: The circuit connected to the button is grounded in the Electrical Selector or in the Stepper or Junction Unit. PERFORM F TEST.</p> <p>IF LAMP DOES NOT LIGHT: Replace Tormat Memory Unit, (A circuit is grounded.)</p>		
	<p>- E - TEST</p> <p>1. Remove the Tormat memory Unit 33-pin plug from the Stepper or Junction Unit, 2. FOR 160-SELECTION MODELS: While watching the test lamp, press in each of the letter buttons, one at a time, noting if lamp lights while any one of the letter buttons is Pressed. FOR 100 SELECTION MODELS; While watching the test lamp, hold down selector button A and press in each of the number buttons one at a time, then hold down selector button B and again press in each of the number buttons one at a time. Note if the test lamp lights while A or B and any one of the number buttons is pressed</p> <p>IF LAMP LIGHTS: The circuit connected to the button is grounded in the Electrical Selector or in the Stepper or Junction Unit. PERFORM G TEST. IF LAMP DOES NOT LIGHT: Replace Tormat Memory Unit (A circuit is grounded.)</p>		
	<p>- F - TEST</p> <p>1. Move test lamp connection from Test Point T to Test Point K. 2. Replace the Tormat Memory Unit 33-pin plug in the Stepper or Junction Unit- 3. Remove Electrical Selector 33-pin plug and note if test lamp is lighted.</p> <p>IF LIGHTED: There is a short to ground in the Stepper or Junction Unit. Repair or replace Stepper or Junction Unit or entire Tormat Selector Unit.</p> <p>IF NOT LIGHTED: There is a short to ground in the Electrical Selector. Repair or replace.</p>		
	<p>- G - TEST</p> <p>1. Move test lamp connection from Test Point K to Test Point M. 2. Replace the Tormat Memory Unit 33-pin plug in the Stepper or Junction Unit. 3. Remove Electrical Selector 33-pin plug and note if test lamp is lighted.</p> <p>IF BRIGHTLY LIGHTED (as in 2 of A Test): There is a short to ground in the Stepper or Junction Unit. Repair or replace Stepper or Junction Unit or entire Tormat Selector Unit IF DIMLY LIGHTED: Replace Electrical Selector</p>		

	PROCEDURE CHART	20AY
<p>TROUBLE: CARRIAGE TRANSFERS A RECORD OUT OF AND BACK INTO MAGAZINE WITHOUT PLAYING IT OR SCANNING.</p> <p>CAUSE OF TROUBLE IS IN; Tormat Selector Unit or Mechanism or Auto-Speed Unit.</p> <p>PROCEDURE:</p> <p>I. Pull out Trip 2050 tube from the Tormat Selector Unit and note if carriage now plays record or scans.</p> <p>IF CARRIAGE SCANS OR PLAYS RECORD see 11 and 12 of Tormat Selector Units (TSU3) Service Notes or 13 of Auto-Speed Unit Service Notes.</p> <p>IF CARRIAGE CONTINUES CYCLING RECORD see 17 and 19 of Mechanism (160ST5) Service Notes.</p>		

	PROCEDURE CHART	21AY
<p>TROUBLE: RECORD IN PLAYING POSITION' AND TURNING, STYLUS IN RECORD GROVE BUT NO SOUND</p> <p>CAUSE OF TROUBLE IS IN: Amplifier or Mechanism</p> <p>Procedure:</p> <p>1. While record is turning pull out the mute squelch plug from the amplifier.</p> <p>IF SOUND NOW COMES THROUGH see item 33 of Mechanism (160ST5) Service Notes.</p> <p>IF NO SOUND COMES THROUGH replace plug and proceed as follows:</p> <p>2. While record is turning, open the back door and check if the 5U4 is lighted.</p> <p>If the 5U4* TUBE IS LIGHTED see 3 and 4 of Amplifier (SHFA3) Service Notes.</p> <p>IF THE 5U4* IS NOT LIGHTED See 1 and 2 of the Amplifier (SHFA3) Service Notes.</p> <p>* 5Y3 tube used if CHFA2 amplifier (monaural) is used.</p>		

TROUBLE: NO STEREO AFFECT, ONE CHANNEL IS DEAD

PROCEDURE: PERFORM FOLLOWING TESTS TO LOCATE TROUBLE.

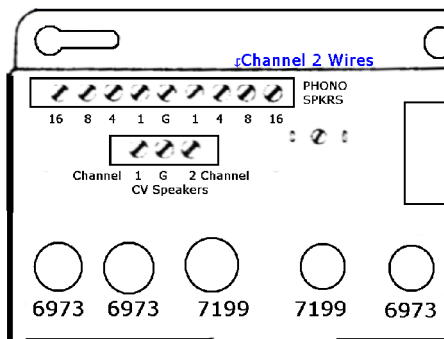


- A - TEST

1. Set volume control to 1/4 position And the balance control in mid position. Select several monaural (standard) records. With the phonograph playing remove 7199 tube from channel 1 noting if the sound is dead.

IF SOUND IS WEAK OR DEAD: Perform B test. Perform C test if no remote speakers are used. (Channel 2 is defective)

IF SOUND CONTINUES IN CHANNEL 2: Perform E test

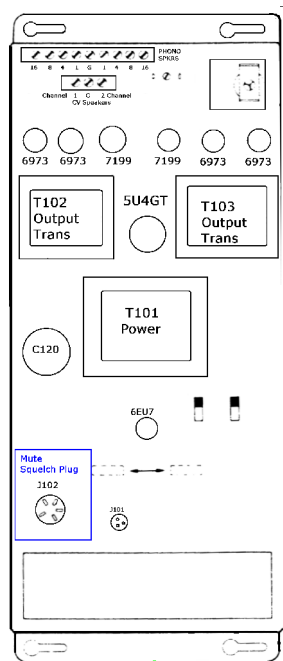


- B - TEST

1. Remove one wire from channel 2 speaker terminals. With phonograph playing remove 7199 tube from channel 1 noting if sound is dead.

IF SOUND IS WEAK OR DEAD: Reconnect speaker wire and perform C test.

IF SOUND CONTINUES IN CHANNEL 2: Locate and repair short in channel 2 remote speaker wiring. After repairing, balance amplifiers.

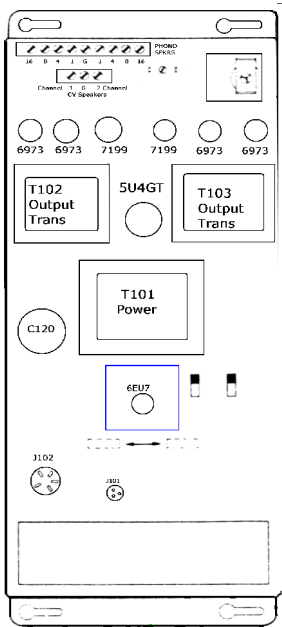


- C - TEST

1. With the phonograph playing, remove the mute squelch plug from the amplifier.
2. Remove 7199 tube from channel 1 noting if sound is dead.

IF SOUND IS WEAK OR DEAD: Replace mute-squelch plug and perform D test

IF SOUND CONTINUES IN CHANNEL 2: Adjust the mute switches on the mechanism. See Mechanism Service Notes, Item 33. After adjusting switches replace mute squelch plug and balance amplifiers

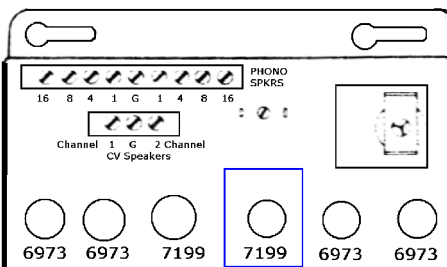


- D - TEST

1. Remove the 7199 tube from channel 1.
2. While the record is turning, substitute a new 6EU7 in the amplifier. Allow time for tube to warm up.
3. If phonograph starts playing put the 7199 tube back in channel 1 and balance the amplifier.
4. If the phonograph does not play substitute the 7199 in channel 2 with the good 7199 tube removed from channel 1. Allow time for tube to warm up.
5. If the phonograph starts playing after replacing the 7199 tube, install a new 7199 tube in channel 1 and balance the amplifiers.
6. If the phonograph does not play after trying the 7199 and 6EU7 tube, turn off power, remove the 6973 tubes from channel 1 and install in channel 2. Turn on power.

IF THE PHONOGRAPH PLAYS: Install new 6973 tubes in channel 1, replace the 7199 tube in channel 1, and balance the amplifiers.

IF THE PHONOGRAPH DOES NOT PLAY: Replace the amplifier. Balance the new amplifier.

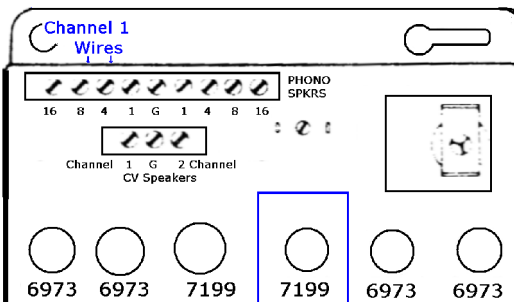


- E - TEST

1. With a record playing, remove 7199 tube from channel 2, noting if the sound is dead.

IF SOUND IS WEAK OR DEAD: Perform F test. Perform G test if no remote speakers are used. (Channel 1 is defective).

IF SOUND CONTINUES IN CHANNEL 1: Recheck previous tests made

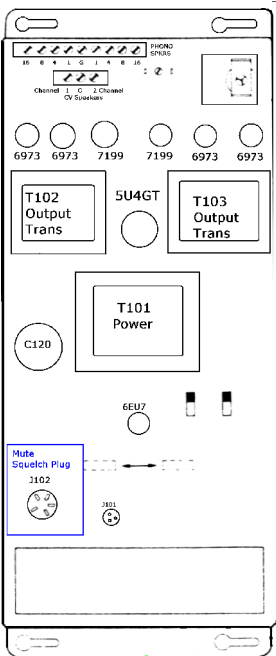


- F - TEST

1. Remove one wire from channel 1. speaker terminals,.
2. With phonograph playing, remove 7199 tube from channel 2, noting; if sound is dead.

IF SOUND IS WEAK OR DEAD: Replace speaker wire and perform G test.

IF SOUND CONTINUES IN CHANNEL 1: Locate and repair short in channel 1 remote speaker wires - After repairing, balance amplifiers,

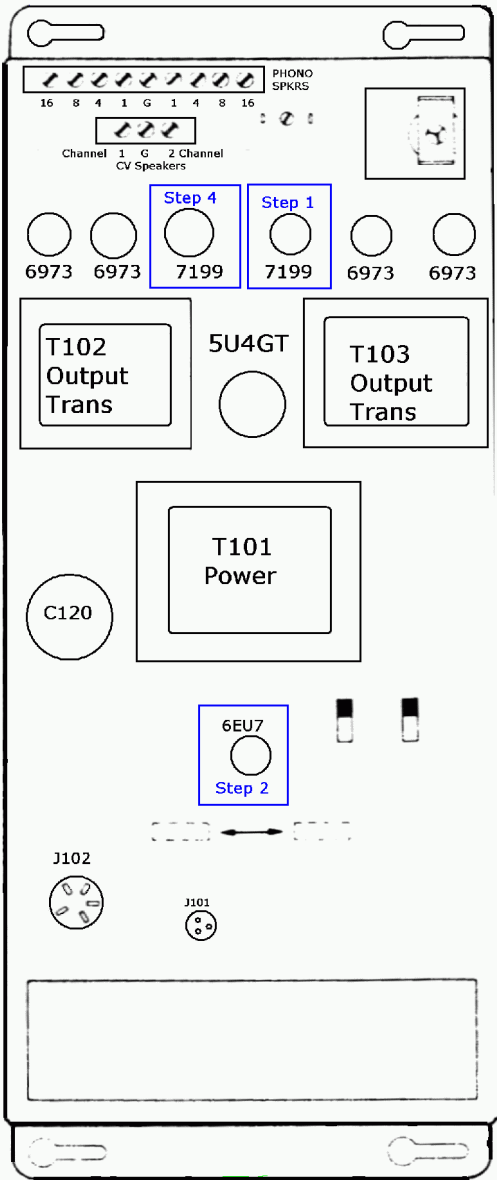


- G - TEST

1. With phonograph playing, remove the mute-squelch from the amplifier.
2. Remove 7199 tube from channel 2, noting if sound is dead.

IF SOUND IS WEAK OR DEAD: Replace the mute-squelch plug. Perform H test,

IF SOUND CONTINUES IN CHANNEL 1: Adjust the mute switches on the mechanism. See Mechanism Service Notes, Item 33, .After adjusting switches, replace the mute-squelch plug and balance the amplifiers.



- H - TEST

1. Remove 7199 tube from channel 2.
2. While a record is turning substitute a new 6EU7 in the amplifier. Allow time for the tube to warm up.
3. If the phonograph starts playing put the 7199 tube back in channel 2 and balance the amplifiers.
4. If the phonograph does not play substitute the 7199 tube in channel 1 with the 7199 tube removed from channel 2. Allow time for warm up.
5. If the phonograph starts playing after replacing the 7199 tube, install a new 7199 tube in channel 2 and balance the amplifier.
6. If the phonograph does not play after trying the 7199 and 6EU7 tubes turn off power, remove the 6973 tubes from channel 2 and install in channel 1. Turn on power.

IF THE PHONOGRAPH PLAYS: Install new 6973 tubes in channel 2, replace the 7199 tube in channel 2, and balance the amplifiers.

IF THE PHONOGRAPH DOES NOT PLAY: Replace the amplifier. Balance the new amplifier..