

37 RECEIVE-ONLY TYPING REPERFORATOR (ROTR) SET  
TROUBLESHOOTING

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1. GENERAL

1.01 This section provides troubleshooting information for the 37 Receive-Only Typing Reperforator (ROTR) Set which is used in No. 1 ESS-ADF (ADNET) and 85/86 Selective Calling Service.

1.02 The ROTR Teletypewriter is capable of operating as a primary receiver (Figure 1) in terminate only station arrangements or in the 86B2 originate/terminate station, or as an auxiliary receiver (Figure 2). To be used in a terminate-only station, the ROTR must interface with a Data Auxiliary Set (DAS) 820-type station controller equipped with a 108A, 108E, 109A or 109E Data Set, used in conjunction with the proper DAS 804R-Type Attendant Set. To be used as an auxiliary receiver, the ROTR must interface with the primary receiver. The station application and station arrangement determines the type of station controller, attendant set and specific cable assemblies required.

1.03 The ROTR teletypewriter logic interfaces the typing reperforator to the station controller or primary receiving device (RO or ASR), provides motor and tape feedout control, and controller interface or primary receiving device signals indicative of ROTR status. The

station controller with its associated attendant set performs the necessary line and supervisory control functions for the station. The station controller also provides regeneration of incoming signals. When used as an auxiliary receiver, the ROTR receives its signals from the primary receiver. Interfacing to this primary receiver requires the use of an auxiliary cable assembly.

1.04 . An interface cable (part of ROTR) and associated 50 pin micro-ribbon connector (P303) is provided for interfacing the ROTR teletypewriter to its associated 820-type station controller. The proper interface scheme is determined by the station arrangement. Refer to BSTSEA, Volume 1, for complete materials lists

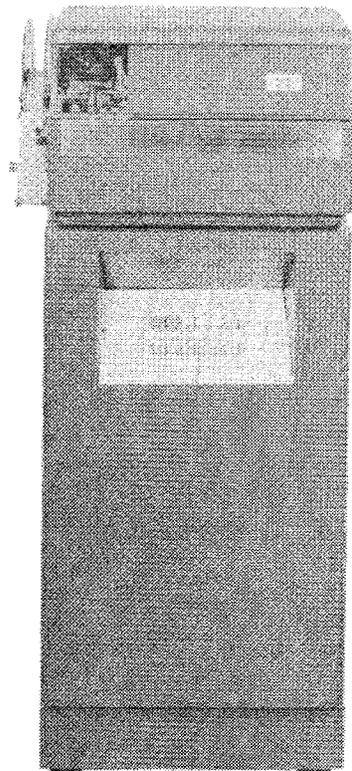


Figure 1 - 37 ROTR Primary Receiver with DAS804R-Type Attendant Set

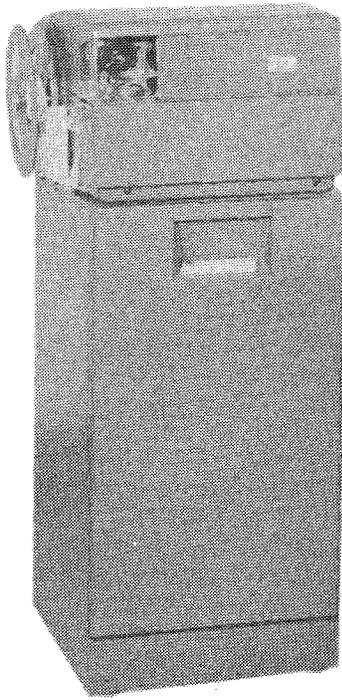


Figure 2 - 37 ROTR Auxiliary Receiver

for 85A2, 86A2, and 86B2 station control units, cabinets, associated attendant sets, cable assemblies, and proper interfacing scheme.

1.05 The information in this section includes test procedures to check set operation after installation, routine maintenance, or emergency maintenance. Each step of a test gives an action, the required verification, and a trouble analysis reference for use in case the set does not operate correctly. The trouble analysis reference enables one to analyze specific troubles and either gives a direct correction or references a specific adjustment found in an appropriate adjustment section.

1.06 The trouble call analysis procedure that is normally followed during a trouble call is shown in Figure 3. The testroom has sectionalized the trouble and the tests indicate the trouble to be at the station. The report is given to a station maintenance man who follows the procedures in Figure 3.

1.07 The information in this section contains test procedures which check teletypewriter set operation while disconnected from the station controller, attendant set, or auxiliary receiver.

1.08 Perform each operating test step by step. If the set does not operate properly and a correction is not given in Trouble Analysis, consider the following:

- (a) Use locally specified procedures (assistance, call supervisor, etc).
- (b) Replace defective apparatus.
- (c) Repair component using associated BSPs and wiring diagrams.
- (d) Temporarily restore any partial service if possible.

1.09 An ROTR set requires routine maintenance which consists of periodic lubrication of the teletypewriter set components. After 300 to 500 hours of operation, the unit should be relubricated to make sure all operating points receive lubrication. At this time all clutch gaps should be rechecked to insure that the gaps have not opened up after all parts have seated themselves. Refer to typing reperforator adjustment Section 574-330-700 for requirements. Thereafter, the teletypewriter set should be lubricated every 1500 hours of operation or 6 months, whichever occurs first. These figures are for normal operating conditions. More frequent servicing may be required for other than normal operating conditions. See the component lubrication sections for complete lubricating information.

Note 1: Gold-plated contacts should be cleaned at time of lubrication. The interval may be reduced, depending upon the signal circuit configuration, usage, and environment.

Note 2: Use twill jean cloth (KS2423) to clean gold-plated contacts. Do not use burnishers, files, etc, which will remove gold plating. Other materials and tools necessary to maintain this equipment can be found in Section 570-005-800.

1.10 To gain access to the typing reperforator for lubrication and adjustments, the cover must be raised or removed. For information on this operation and other component removal and replacement information, see Section 574-303-702. Disassembly and reassembly procedures for component mechanisms are given in the appropriate disassembly and reassembly sections.

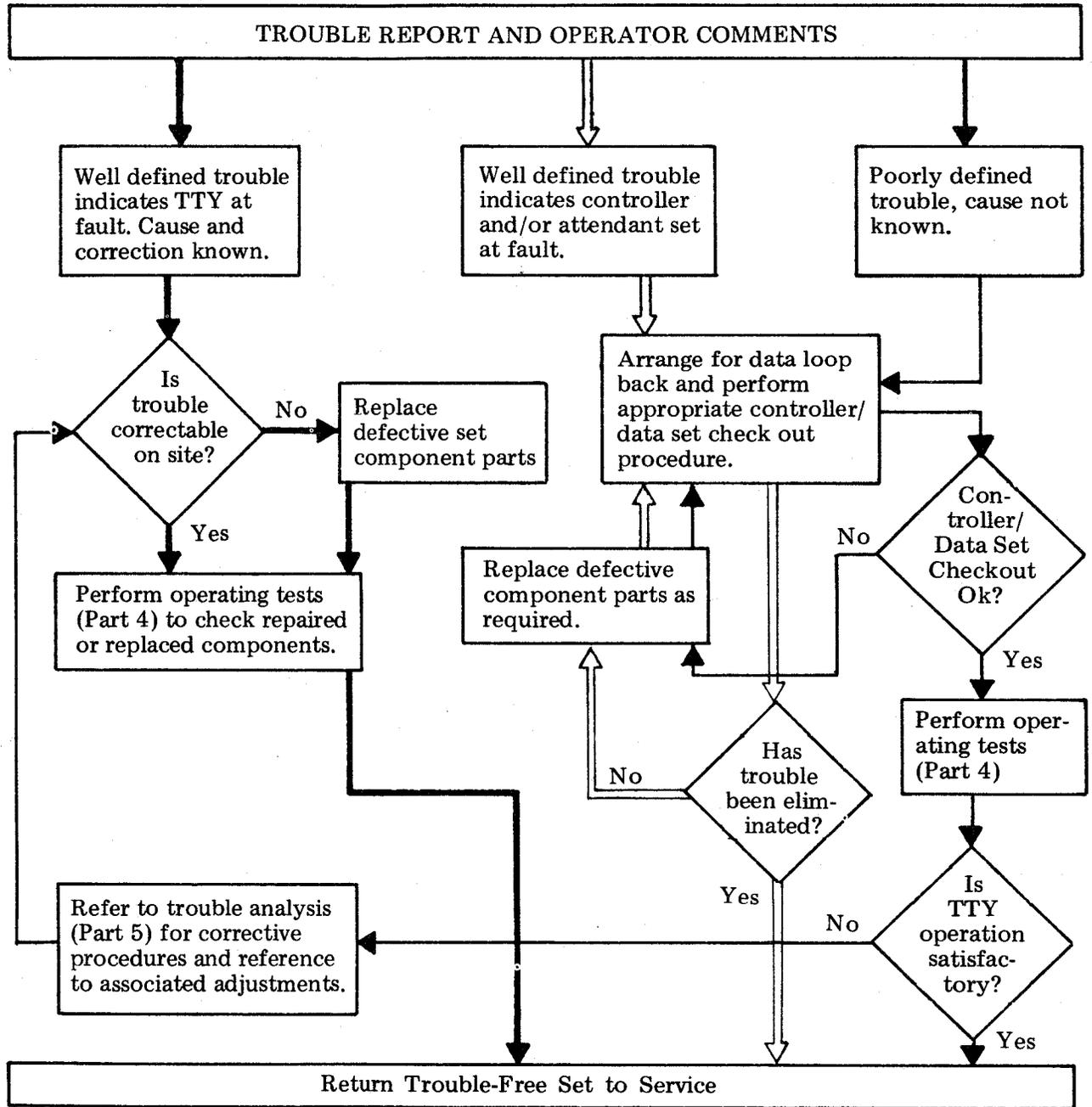


Figure 3 - Trouble Call Analysis Flow Chart

1.11 Some of the conditions which may be encountered in the troubleshooting procedures are explained below.

1.12 An open condition refers to a circuit through which current will not flow because of a broken or poor connection, defective contact mechanism, or defective semiconductor device. When a normally open circuit has current flowing through it, a shorted or closed condition

exists which may be caused by a sticking or improperly adjusted contact mechanism, or a shorted semiconductor device.

1.13 Running open is an abnormal condition created by a continuously spacing selector which causes continuous operation of the printing and perforating mechanism. Since there is no stop bit, the selector clutch does not latch.

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1.14 Running closed is an abnormal condition characterized by the selector armature held continuously marking, failing to respond to a signal. The cause may be missing start and spacing bits in the signal, or mechanical failure.

1.15 Mark hold is a normal reperforator condition during an idle line or no signal input condition. The selector armature is attracted, all clutches are latched, and the printing and reperforating mechanisms are at rest.

1.16 Garbling is an abnormal condition in which the response of the printing and reperforator mechanisms does not correspond with the signal input.

1.17 The test equipment used to properly troubleshoot the ROTR set is listed in Part 3, Test Equipment. Arrangements should be made to obtain pieces of test equipment that might not be available at the repair site.

2. REFERENCES

<u>ITEM</u>	<u>SECTION NUMBER</u>
85A2 Stations:	
Description and Operation	581-131-101
Installation	581-131-201
Maintenance	581-131-301
Test Procedures	581-131-501
86A2 Stations:	
Description and Operation	581-136-101
Installation	581-136-201
Maintenance	581-136-301
Test Procedures	581-136-501
86B2 Stations:	
Description and Operation	581-136-103
Installation	581-136-203
Maintenance	581-136-303
Test Procedures	581-136-503
Adjustments:	
Motor	570-220-700
Table	574-323-102
Typing Reperforator Cover	574-326-102
Typing Reperforator	574-330-700
Base	574-331-101
Disassembly and Reassembly:	
Removal and Replacement of Components (ROTR Set)	574-303-702
Typing Reperforator	574-330-702
Base	574-331-101

ITEM

SECTION NUMBER

Lubrication:	
Motor	570-220-701
Table	574-323-102
Typing Reperforator Cover	574-326-102
Typing Reperforator	574-330-701
Base	574-331-101

Wiring Diagrams and

Wiring Plans:

37 ROTR (YESU 814)	WDP0215
37 ROTR Card Set for 85/86 Service	WDP0216
Control Panel Wiring and Labels	8791WD
37 ROTR Set	W-E7JS1 (USOC)
Option Analysis Chart	8930WD

Note: WDP refers to Wiring Diagram Package. A WDP contains a group of WDs and SDs (Schematic Diagrams) that are applicable to the circuit card set or teletypewriter set.

Assembly Drawings:

37 ROTR Set	A-E7FS1 (USOC)
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Material Lists:

37 ROTR Set	M-E7JS1 (USOC)
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Bell System Repair

Specifications (BSRS):

General Requirements	456.051
Reperforator	456.166
Electrical Service Unit	456.167
Cabinets and Tables	456.168
Stations	456.942

3. TROUBLESHOOTING

3.01 The station test procedures should be followed prior to and after installation on the customer premises. The test procedures in this section should also be used after routine or emergency maintenance service. After the required services have been completed, the station arrangement should be completely tested before returning to service.

3.02 Using the Trouble Call Analysis Flow Chart (Figure 3) as a guide, determine whether the problem lies in the teletypewriter set or the controller and attendant set. If the problem is in the teletypewriter set, disconnect the set from the controller and attendant set to perform the test procedures.

3.03 Several factors affect the response of the terminal at the interface connector. Before starting with the Test Procedures, consider the following:

(a) Strap Options — Numerous programmable strap options are incorporated in the ROTR logic circuits. These options affect the terminal and interface responses. Refer to W-E7JS1 for proper strap option selection.

(b) Control Panel — An ROTR used as a primary receiver is equipped with a DAS 804R-Type Attendant Set containing a one or two row key strip. Refer to the appropriate W-plan. An ROTR used as an auxiliary receiver is equipped with a single row control panel which directly affects and responds to the ROTR logic. Refer to 8791WD for proper control panel wiring.

#### SAFETY PROCEDURES

3.04 Before plugging the ROTR power cord into the ac receptacle, verify the outlet is properly wired. With the VOM on the appropriate ac volts range, check for any voltage between power ground and the outlet mounting screw. Sequentially decrease the ac volts range to minimum while constantly monitoring the meter. If zero (0) volts is measured on all ac volts ranges, place the VOM on low ohms range, and measure continuity between power ground and the outlet receptacle mounting screw. With the power ground pin hole on the right (as viewed from the front of the ac receptacle) verify 0 v ac between power ground and the top (narrow) pin hole in the outlet receptacle.

Note: When performing the above tests, avoid contact with the metallic portions of the meter leads and avoid shorting the leads together when measuring the hot side of the ac line.

All of the above tests can be performed using an ac line checker such as the Woodhead 1750 or Dearborn 5012B or equivalent.

3.05 DO NOT UNDER ANY CIRCUMSTANCES REMOVE OR INSERT CIRCUIT CARDS WITH POWER APPLIED TO THE TERMINAL. Failure to remove ac power from the terminal while changing circuit cards can destroy the logic card assemblies.

3.06 DO NOT UNDER ANY CIRCUMSTANCES DISCONNECT THE REPERFORATOR BASE CONNECTOR WITH AC POWER APPLIED. This connector contains 115v ac and could present a shock hazard or fuse blowing problem if touched or shorted to the base or cabinet assembly.

3.07 ALWAYS REMOVE THE AC POWER CORD FROM THE WALL OUTLET RECEPTACLE WHEN PERFORMING CONTINUITY OR RESISTANCE MEASUREMENTS. For meter protection always discharge the filter capacitors in the power supply prior to any continuity or resistance measurements.

3.08 DO NOT UNDER ANY CIRCUMSTANCES INSERT OR REMOVE FUSES WITH AC POWER APPLIED TO THE SET. There is a possible shock hazard from metal parts on the fuse holder.

3.09 DO NOT UNDER ANY CIRCUMSTANCES SERVICE, LUBRICATE, OR ADJUST ANY ELECTROMECHANICAL DEVICES, MOTORS, OR GEARS WHILE THESE DEVICES ARE IN OPERATION. As an added precaution, remove rings and watches, and secure or remove any loose or dangling clothing articles which could become entangled in mechanical assemblies or rotating devices. Because of the hazard presented by long hair, a hat, cap, or hair net should be worn where there is danger of hair entanglement in machinery having exposed rotating or moving parts.

#### INTERFACE PIN ASSIGNMENTS

3.10 The 37 ROTR interface pin assignments (P303) are listed in Table A. The following nomenclature will be assigned to the interface and auxiliary receiver control signals.

High = +5.0 v dc to +5.5 v dc = Off = Logic Level "Space"

Low = 0 v to +0.5 v dc = On = Logic Level "Mark"

EIA Mark = -3.0 v dc to -25.0 v dc

EIA Space = +3.0 v dc to +25.0 v dc

3.11 The voltage levels present at the P303 connector interface leads are a function of the ROTR set logic, with the exception of Pin 24, Motor Control lead, and Pin 43, Receive Data lead. On the Primary ROTR receiver, Pin 24 and Pin 43 voltage levels are a function of the station controller, and on the Auxiliary ROTR receiver, Pin 24 and Pin 43 voltage levels are a function of

TABLE A  
ROTR SET INTERFACE

P303 PIN NO.	FUNCTION	COMMENTS
1,2,3	Circuit Ground	Common return path for all signal circuits.
11	Manual Tape Feedout Control	Normally at 0 v with key not operated. +5 v dc with TAPE FEEDOUT key operated.
14	Character Detected	Normally low (0 v); High to low transition occurring between the second bit and end of eighth bits, inclusive.
16	Send Data	Permanently held low in ROTR.
24	Motor Control	Run=Low Stop=High
25	Automatic Tape Feedout Control (Feedout Request)	Normally High. High to low transition remaining for 50 milliseconds minimum.
27	Tape Feedout in Process (Feedout indication)	Normally High. Low for duration of tape feedout.
30	Reader on, Taut Tape, Tape Available	Terminated to +5.25 v dc through a 680 ohm isolation resistor.
31	Low Tape	Normally high, low when Low Tape condition exists.
33	Mode (Unattended)	Permanently held Low in ROTR.
34	Mode (Off-Line)	Terminated to +5.25 v dc through a 680 ohm isolation resistor.
37	Spare	Permanently held low in ROTR.
42	Mode (Unattended)	Permanently held low in ROTR.
43	Receive Data	MARK = -3.0 v dc to -25.0 v dc SPACE = +3.0 v dc to +25.0 v dc
50	Frame Ground	_____

the primary receiver logic. When the P303 connector is disconnected from the station controller or primary receiver, Pin 43 voltage level will be at ground, and Pin 24 voltage level will be high.

3.12 The interface pin voltage level readings and the test procedures are intended to be made with the ROTR set disconnected from the station controller or primary receiver, ac power cord plugged in, and power turned on.

3.13 When a 37 ROTR Teletypewriter is used as an Auxiliary receiver, its control and data signals are derived from the electrical service unit (ESU) of the Primary receiver. To facilitate interconnection, an auxiliary cable assembly (TP327882) is used. Table B below contains a description and pin assignments for interfacing an Auxiliary ROTR to a Primary receiver.

**TEST EQUIPMENT**

3.14 The test procedures exercise the teletypewriter internal logic, reperforator, and controller interface. The majority of the interface signals can be checked on a static or dc basis using a 20k ohm per volt voltmeter.

Interface signals with dynamic timing requirements should be checked with an oscilloscope, if available.

3.15 Occasionally typing reperforator problems require the use of a test sentence generator and/or distortion measuring equipment. A 911 Test Set is recommended for this purpose. If the typing reperforator trouble is not repairable on customer premises or the source of trouble is not known, the reperforator should be replaced.

3.16 To facilitate ROTR testing, a WECO W50A Cord should be used, providing access to all interface signals on the P303 connector. For these test purposes only, one connector on the W50A Cord is connected to the P303 connector, and the other connector is not used.

3.17 The test equipment recommended for troubleshooting the ROTR set is listed below:

- (a) VOM (20k ohm/volt minimum)
- (b) Oscilloscope (if available)
- (c) Data source (150 wpm, 10 unit code), EIA interface.
- (d) Patch cords and WECO W50A Cord
- (e) Clip leads

**TABLE B**  
**AUXILIARY ROTR SET INTERFACE**

AUX RO P303 PIN	AUX CABLE J303 PIN	FUNCTION	COMMENTS
1,2,3	1,2,3	Circuit Ground	Common return path for all signal circuits.
24	24	Motor Control	Run=Low Stop=High
25	25	Automatic Tape Feedout Control (Feedout Request)	Normally High to Low transition. Remains Low until reset by Tape Feedout In Process.
27	27	Tape Feedout in Process (Feedout Indication).	Normally High. Low for duration of tape feedout.
43	43	Receive Data	Mark=Low Space=High

## 4. TEST PROCEDURES

4.01 The Test Procedures contain a step by step test procedure and specify the action required for a specific verification or response. A trouble analysis column is provided in case the equipment does not function properly. The trouble analysis enables the repairman to analyze a specific trouble, and gives a corrective action or references a specific adjustment found in the appropriate adjustment section.

4.02 The complete station arrangement should be tested prior to and after installation on customer premises using the station test procedure BSPs. Test Procedures in this BSP should be used for routine or emergency maintenance service. After maintenance services have been completed, the station arrangement should be completely tested before returning to service.

4.03 Operating tests for features and options not used may be omitted from the Test Procedures. Check the wiring plan and BSTSEA arrangements for the features and options used on your set.

4.04 If the ROTR Teletypewriter under test is equipped with a TP334932GF door with Attendant Unit mounting facilities (Primary Receiver), connect a patch cord between Pin 1 and Pin 11 of WECO W50A Cord. This action permanently grounds the Manual Feedout interface lead since the interface connector is disconnected from its associated station controller.

4.05 If the ROTR Teletypewriter under test is equipped with a TP334395GF door, Manual Feedout (XZ114 — Pin 16) is properly terminated by the FEEDOUT key on the door.

## 4.06 OPERATING TESTS

STEP	ACTION	VERIFICATION	TROUBLE ANALYSIS REFERENCES
FEEDOUT MOTOR CONTROL AND DC POWER			
1	Place S101 power switch in the NORMAL position.	ROTR motor on.  Reperforator feeds out pre-determined amount of tape leader.  All eight (8) levels marking (Delete character).  ROTR motor off after tape feedout cycle is completed.	1,2  3,25  4,5,6,44,45  7
2	If the ROTR under test is equipped with the TP334932GF door with Attendant Unit mounting facility, proceed as follows.  Momentarily remove patch cord from Pin 11 of WECO W50A Cord.	ROTR motor on.  Reperforator feeds out pre-determined amount of Delete tape leader.  ROTR motor off after tape feedout cycle is completed.	1,8  3,4,5,6,44,45  7

## 4.06 Continued

STEP	ACTION	VERIFICATION	TROUBLE ANALYSIS REFERENCES
3	<p>If step 2 was performed, locate variable resistor, R43, on Z114 and proceed as follows.</p> <p>Repeatedly perform step 2 while adjusting R43 for the desired length of tape leader.</p> <p><u>Note:</u> Clockwise rotation of R43 adjusting screw increases the duration of feedout cycle.</p>	<p>See step 2 verification.</p> <p>Desired length of Delete tape leader is obtained.</p>	<p>9,44,45</p>
4	<p>If the ROTR under test is equipped with the TP334395GF door with control panel, proceed as follows.</p> <p>Operate TAPE FEED key on control panel.</p>	<p>ROTR motor on.</p> <p>Reperforator feeds out pre-determined amount of Delete tape leader.</p> <p>ROTR motor off after tape feedout cycle is completed.</p>	<p>1,10</p> <p>3,4,5,6,44,45</p> <p>7</p>
5	<p>If step 4 was performed, locate variable resistor, R43 on Z114 and proceed as follows.</p> <p>Repeatedly perform Step 4 while adjusting R43 for the desired length of tape leader.</p> <p><u>Note:</u> Clockwise rotation of adjusting screw increases duration of feedout cycle.</p>	<p>See Step 4 verification.</p> <p>Desired length of Delete tape leader is obtained.</p>	<p>9,44,45</p>
6	<p>Installer Option No. 1 (ROTR used as Primary receiver)</p> <p>Option straps A,B,C installed on Z114.</p> <p>Connect patch cord between Pin 1 and Pin 24 of WECO W50A Cord.</p> <p>Momentarily connect Pin 25 of W50A Cord to Pin 1 with patch cord.</p>	<p>Reperforator motor on.</p> <p>Reperforator feeds out desired amount of Delete tape leader.</p>	<p>11</p> <p>3,4,5,6,9,12,44,45</p>

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## 4.06 Continued

STEP	ACTION	VERIFICATION	TROUBLE ANALYSIS REFERENCES
6 (cont)	<p>After feedout cycle is completed, again momentarily connect Pin 25 of W50A Cord to Pin 1 with patch cord.</p> <p>Momentarily remove patch cord from Pin 24.</p> <p>Connect patch cord between Pin 1 and Pin 24 of WECO W50A Cord.</p> <p>Momentarily connect Pin 25 of W50A Cord to Pin 1 with patch cord.</p> <p>After feedout cycle is completed, again momentarily connect Pin 25 of W50A Cord to Pin 1 with patch cord.</p> <p>Remove patch cord from Pin 24.</p> <p>Reconnect patch cord to Pin 24.</p> <p>Remove patch cord from Pin 24 while feedout cycle is in progress.</p>	<p>No tape feedout occurs.</p> <p>Reperforator motor off.</p> <p>No tape feedout initiated.</p> <p>Reperforator motor on.</p> <p>No tape feedout occurs.</p> <p>Reperforator feeds out desired amount of Delete tape leader.</p> <p>No tape feedout occurs.</p> <p>Reperforator motor off.</p> <p>Reperforator motor on. No tape feedout initiated.</p> <p>Feedout cycle initiated.</p> <p>Reperforator motor remains on until feedout cycle is completed.</p> <p>Reperforator motor off.</p>	<p>13</p> <p>13</p> <p>13</p> <p>3,4,5,6,9,12,44,45</p> <p>13</p> <p>14</p> <p>4,5,6,9,44,45</p> <p>7</p>
7	<p>Installer Option No. 2 (Auxiliary or Primary receiver) Option strap B installed on Z114.</p> <p>Connect patch cord from Pin 1 of W50A Cord to Pin 24.</p> <p>Remove patch cord from Pin 24.</p> <p>Repeat above actions and verifications.</p>	<p>Reperforator motor on.</p> <p>Feedout cycle initiated.</p> <p>Reperforator motor remains on until feedout cycle is completed.</p> <p>Reperforator motor off.</p>	<p>11</p> <p>14</p> <p>4,5,6,9,44,45</p> <p>7</p>

## 4.06 Continued

STEP	ACTION	VERIFICATION	TROUBLE ANALYSIS REFERENCES
8	<p>Installer Option No. 3 (Auxiliary receiver) Option straps A and B installed on Z114.</p> <p>Connect patch cord from Pin 1 of W50A Cord to Pin 24.</p> <p>Momentarily connect Pin 25 of W50A Cord to Pin 1.</p> <p>After feedout cycle is completed, again momentarily connect Pin 25 of W50A Cord to Pin 1 with patch cord.</p>	<p>Reperforator motor on.</p> <p>Feedout cycle initiated.</p> <p>Feedout cycle repeats.</p>	<p>11</p> <p>12,44,45</p> <p>15</p>
9	<p>Connect patch cord from Pin 1 of W50A Cord to Pin 24.</p> <p>Send test message (no function characters) to ROTR while a feedout is in process.</p> <p><u>Note:</u> Feedout may be initiated by TAPE FEED key on control panel, if so equipped, or by momentarily removing connection between Pin 11 of W50A Cord and Pin 1.</p>	<p>Reperforator motor ON.</p> <p>Feedout in process is terminated.</p> <p>All characters of test message are punched and typed correctly in tape.</p> <p>All characters of test message are punched and typed correctly in tape.</p>	<p>11</p> <p>16,17</p> <p>4,5,6,18 through 27,44,45</p> <p>4,5,6,18 through 27,44,45</p>
10	<p>If option strap D on Z114 is installed proceed as follows:</p> <p>Connect voltmeter between W50A Cord Pin 27 (+) and Pin 1 (-).</p> <p>With reperforator motor ON (Pin 24 of W50A Cord connected to Pin 1) manually operate the TAPE FEED key, if so equipped; or momentarily remove ground from Pin 11 of W50A Cord if ROTR has door with Attendant Unit mounting facilities.</p>	<p>Verify Pin 27 at +5 v dc.</p> <p>Feedout cycle initiated. Reperforator feeds out tape.</p> <p>Pin 27 of W50A Cord switches to 0 v upon initiation of feedout cycle.</p> <p>Pin 27 remains at 0 v until feedout is completed.</p> <p>Pin 27 at +5 v dc.</p>	<p>28</p> <p>3,4,5,6,44,45</p> <p>29</p> <p>28</p>

## SECTION 574-303-300

## 4.06 Continued

STEP	ACTION	VERIFICATION	TROUBLE ANALYSIS REFERENCES
11	Send a test message to ROTR containing printable upper and lower case characters and control characters.	<p>Reperforator punches and prints all non-control characters, in message (if print suppression of lower case characters is required, install strap between terminals 1 and 4 in function contacts).</p> <p>Reperforator punches all control characters, but suppresses printing (if printing is required, remove strap between terminals 3 and 6 in function contacts).</p>	<p>4,5,6,19 through 27, 45</p> <p>30,31</p>
LOW TAPE			
12	Remove tape supply.	<p>If ROTR door is equipped with TTY control panel, verify TAPE ALARM lamp on. Pin 31 (Low Tape) of W50A Cord at 0 v with respect to Pin 1.</p> <p>If ROTR door has Attendant Unit mounting facilities, verify Pin 31 of W50A Cord at 0 v with respect to Pin 1.</p>	<p>32</p> <p>33</p> <p>33</p>
13	Replace tape supply.	<p>If ROTR door is equipped with TTY control panel, verify TAPE ALARM lamp off. Pin 31 of W50A Cord at +5 v dc with respect to Pin 1.</p> <p>If ROTR door has Attendant Unit mounting facilities (Primary receiver), verify Pin 31 of W50A Cord at +5 v dc with respect to Pin 1.</p>	<p>34</p> <p>34</p>
CHARACTER DETECTED			
14	With data source disconnected from ROTR, connect XZ114 Pin 4 to XZ114 Pin 1 (Vcc) with clip lead.	Reperforator runs open. Null character processed by reperforator.	

## 4.06 Continued

STEP	ACTION	VERIFICATION	TROUBLE ANALYSIS REFERENCES
14 (cont)		Verify high going pulses (0 v/5 v/0 v) of at least 5 milliseconds duration on Pin 14 of W50A Cord with respect to Pin 1. The entire high going pulse occurring between the second and eighth bits of a character, inclusive.	35,36
15	Remove clip lead.	Reperforator selector mark hold.  Verify Pin 14 of W50A Cord at 0 v.	37
16	If option strap E on Z114 is installed, proceed as follows.  Remove tape supply.          Perform step 14.	If ROTR door is equipped with TTY control panel, verify TAPE ALARM on Pin 31 (Low Tape) of W50A Cord at 0 v with respect to Pin 1.  If ROTR door has Attendant Unit mounting facilities, verify Pin 31 of W50A Cord at 0 v with respect to Pin 1.  If XZ114 Pin 3 is at 0 v, verify 0 v on XZ115 Pin 4. With 0 v on XZ114 Pin 4, check XZ115 Pin 9 for -12.5 v dc with respect to XZ115 Pin 2.  If XZ115 Pin 9 is at +12.5 v dc, replace Z115, Receiving Device Card.  If XZ115 Pin 9 is at 0 v, an open circuit exists between XZ115 Pin 9 and the +12.5 v dc pull-up voltage of the motor control relay.  Remove ac power, verify continuity between XZ115 Pin 9 and motor control relay K101-Pin 3, located in the power supply.	32,33          33

## SECTION 574-303-300

## 4.06 Continued

STEP	ACTION	VERIFICATION	TROUBLE ANALYSIS REFERENCES
16 (cont)		Disconnect P103/J103 power supply connector and make resistance measurement of 440 ohms $\pm 10\%$ between K101 Pins 1 and 3. Replace K101 if required.  Verify Pin 14 of W50A Cord at 0 v.	38
17	Connect voltmeter between Pin 30 (+) of W50A Cord and Pin 1 (-).	Verify +5 v dc.	39
18	Connect voltmeter between Pin 34 (+) of W50A Cord and Pin 1 (-).	Verify +5 v dc.	40
19	Remove patch cord between Pins 24 and 1 of W50A Cord.  Place S101 power switch in the off position. Place VOM on low ohms range.	Reperforator motor off.  Verify continuity between Pin 1 of W50A Cord and Pins 16,33,37 and 42.	
20	With VOM on low ohms range.	Verify continuity between Pin 50 of W50A Cord and ESU frame.	
21	Place S101 power switch in the on position.	Reperforator motor on.  Feedout cycle initiated.  Reperforator feeds out desired amount of Delete tape leader.  Reperforator motor remains on after feedout cycle is completed.  Reperforator mark hold.	41,42 3 3,4,5,6,9 43 25
22	Place S101 power switch in the off position.  Install grounding strap between ESU base and cabinet assembly.	Verify continuity between the outlet receptacle mounting screw and any unpainted metallic portion of the cabinet assembly, reperforator base, and reperforator.	46

5. TROUBLE ANALYSIS

**CAUTION:** BEFORE REMOVING A CIRCUIT CARD OR FUSES, TURN OFF S101 OR REMOVE POWER CORD FROM WALL RECEPTACLE. DO NOT TURN ON POWER WITH A FUSE REMOVED.

5.01 The circuit card number includes its location in the ESU frame module.  
 Example Z114 is located in vertical row 1 and

horizontal position 14. When troubleshooting a logic level interface, an "off" state is indicated by approximately +5 v dc and an "on" state is indicated by 0 v to +0.5 v dc. Any signal level midway between indicates a defective logic element.

5.02 All reperforator adjustments can be found in Section 574-330-700. The appropriate paragraph is usually indicated in parenthesis. Figure 4 shows the YESU814 ROTR Electrical Service Unit.

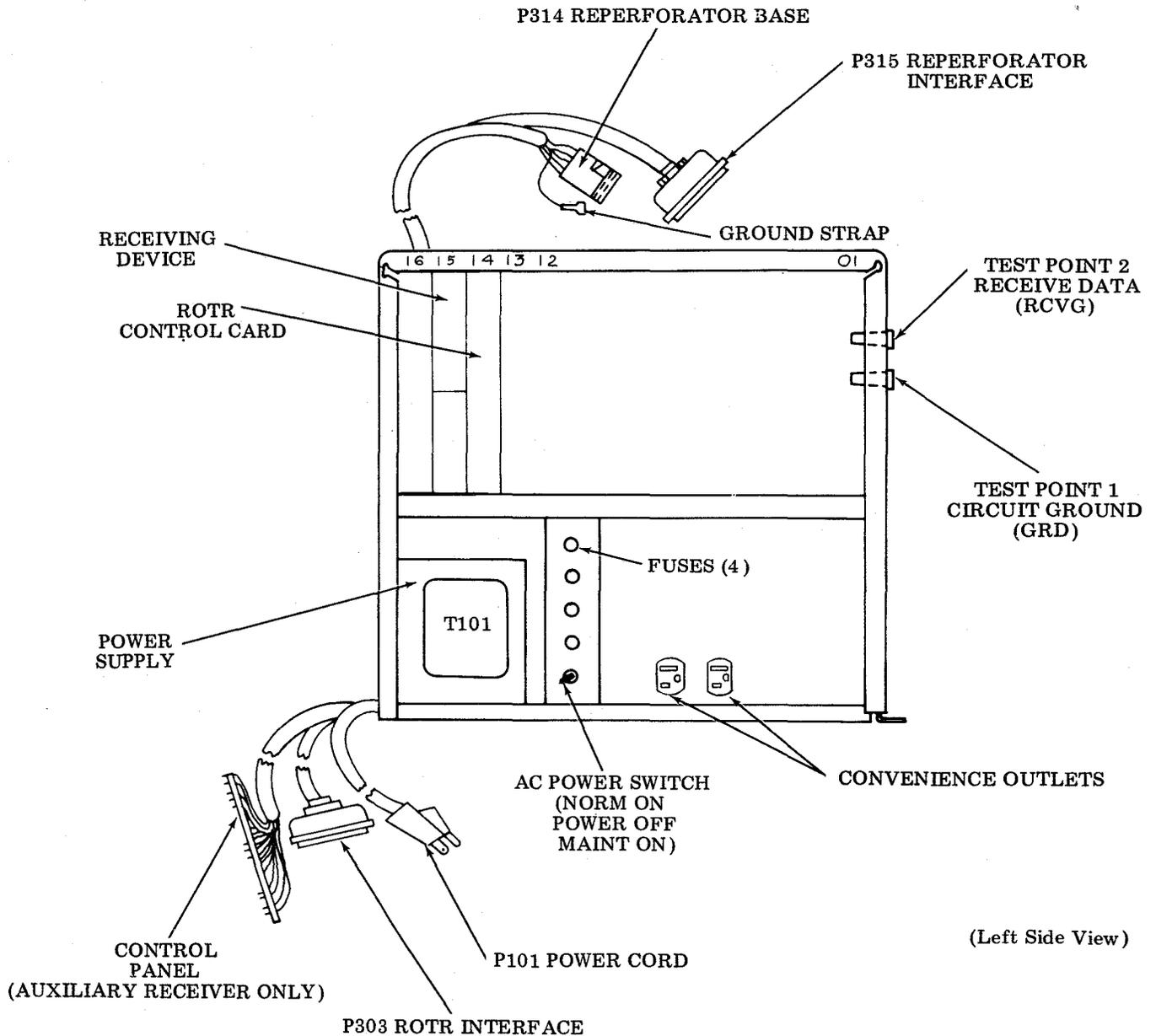


Figure 4 - 37 ROTR Electrical Service Unit

## 5.03 TROUBLE ANALYSIS

NO.	TROUBLE	CORRECTIVE PROCEDURE
1	Proper dc voltages absent	<p>Check ac power cord is plugged into wall receptacle.</p> <p>Check wall receptacle for presence of 115 v ac 60 Hz.</p> <p>Verify S101 not in off position.</p> <p>Check ac fuses F103 (4A SL-BL) and F104 (1A SL-BL).</p> <p>Check dc fuses F101 (2.5A, -12.5 v dc) and F102 (3A, +12.5 v dc).</p> <p><u>Note:</u> -12.5 v dc is used as a reference for the EC150 power supply regulator. If F101 blows, F102 will blow due to regulator crowbar action.</p> <p>If ac fuse, F103, repeatedly blows; verify all ac loads disconnected from J102 duplex outlet. With ROTR set power cord removed from the wall outlet check for short circuit between TB101 Pin 3 and TB101 Pin 1, or TB101 Pin 3 and frame ground.</p> <p>If ac fuse, F104 repeatedly blows, remove ac receptacle. With F104 removed, measure approximately 1.1 ohms across entire T101 transformer primary. Replace T101 or entire power supply as required.</p> <p>If the -12.5 v dc fuses repeatedly blow, remove ROTR set power cord from ac outlet. Discharge power supply filter capacitors C101 and C102, through a resistor. With F101 and F102 removed, measure resistance between XZ114, Pin 36 and XZ114, Pin 2. Resistance measurement should be greater than 5 ohms. Also make resistance measurement between XZ114, Pin 36 and frame ground. Make resistance measurements between XZ114, Pin 35 and XZ114, Pin 2, also between XZ114, Pin 35 and frame ground. Resistance measurement should be greater than 4.2 ohms. If a short is indicated, remove XZ114 and XZ115 and repeat above measurements to determine if the ESU wiring or circuit cards are at fault.</p> <p>If F101 (+12.5 v dc) fuse repeatedly blows and no short circuit exists, the EC150 regulator card and/or regulator pass transistors may be defective. Proceed as follows.</p> <p>Remove power cord from wall receptacle, discharge filter capacitors C101 and C102 through a resistance, disconnect emitter of Q1 power pass transistor from EC150 card, disconnect the base of Q3 current boost pass transistor from EC150 card, disconnect the emitter of Q3 from base of Q1, and remove F102 dc fuse. Check NPN transistors, Q1 and Q3, on low ohms</p>

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
1 (cont)		<p>range as follows. Check for diode characteristics between the base/emitter and collector/base junctions of Q1 and Q3. Each junction must be checked for conduction in one direction only and blocking (high resistance) in the other direction by reversing the ohmmeter leads. Also check for blocking (high resistance) between collector/emitter junctions of Q1 and Q3. Replace transistors as required. Re-connect transistor leads to circuit card, and replace EC150 Regulator Circuit Card in power supply.</p>
2	<p>ROTR motor remains off on ac power initialize (S101 in the NORMAL position).</p>	<p>Verify XZ114 Pin-3 at 0 v when placing S101 power switch in the NORMAL position. Pin 3 should remain at 0 v with respect to Pin 2 until the feedout cycle is completed at which time XZ114 Pin 3 is reset automatically to +5 v dc. If XZ114 Pin 3 remains at +5 v dc, replace Z114, ROTR Control Card.</p> <p>If XZ114 Pin 3 is at 0 v, verify 0 v on XZ115 Pin 4. With 0 v on XZ115 Pin 4, check XZ115 Pin 9 for -12.5 v dc with respect to XZ115 Pin 2.</p> <p>If XZ115 Pin 9 is at +12.5 v dc, replace Z115, Receiving Device Card.</p> <p>If XZ115 Pin 9 is at 0 v, an open circuit exists between XZ115 Pin 9 and the +12.5 v dc pull-up voltage of the motor control relay.</p> <p>Remove ac power, verify continuity between XZ115 Pin 9 and motor control relay, K101-Pin 3, located in the power supply.</p> <p>Disconnect P103/J103 power supply connector and make resistance measurement of 440 ohms <math>\pm 10\%</math> between K101 Pins 1 and 3. Replace K101 if required.</p> <p>Replace Z114, ROTR Control Card.</p> <p>See Trouble No. 1.</p> <p>See Trouble No. 42.</p>
3	<p>No tape feedout on ac power initialized and/or Manual Tape Feedout command.</p>	<p>Verify P315 reperfocator connector properly mated to J315 connector.</p> <p>If XZ114 Pin 27 remains at +12.5 v dc with respect to XZ114 Pin 2 immediately after ac power initialized or Manual Tape Feedout command. Replace Z114, ROTR Control card.</p>

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
3 (cont)		<p>If XZ114 Pin 27 is at -12.5 v dc with respect to XZ114 Pin 2 immediately after ac power initialization or Manual Tape Feedout command, feedout magnet armature is attracted; the reperforator adjustments are at fault. Check the following adjustments.</p> <p>Magnet Armature Hinge (3.06)</p> <p>Drive Arm Trip Lever (3.09)</p> <p>Adjusting Lever (3.08)</p> <p>If XZ114 Pin 27 is at 0 v immediately after ac power initialization or Manual Feedout command and feedout magnet armature is not attracted, an open circuit exists between XZ114 Pin 27 and the +12.5 v dc pull-up voltage of the feedout magnet in the reperforator. Proceed as follows.</p> <p>Remove ac power, verify continuity between XZ114 Pin 27 and P315 Pin 3.</p> <p>Verify continuity between XZ114 Pin 35 and P315 Pin 4.</p> <p>Disconnect P315/J315 connectors and measure resistance of 284 ohms <math>\pm 10\%</math> between J315 Pins 3 and 4.</p>
4	Faulty tape punching	<p>Check the following adjustments:</p> <p>Cam Follower Roller (2.08)</p> <p>Cam Follower Roller Adjustment (2.09)</p> <p>Punch Slide Downstop Position (2.11)</p> <p>Punch Slide Spring (2.11)</p> <p>Check punch pins for binds; clean punch block.</p> <p>Punch Pin Penetration (2.10)</p> <p>Latch Lever Clearance (2.13)</p> <p>Punch Slide Latch Spring (2.13)</p> <p>Reset Bail Trip Lever (2.12)</p> <p>The reset bail should trip before function clutch is tripped.</p>
5	Reperforator fails to feed tape out of punch block.	<p>Check the following adjustments:</p> <p>Cam Follower (2.08)</p> <p>Cam Follower Roller Alignment (2.09)</p>

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
5 (cont)		Punch Pin Penetration (2.10) Bias Spring (Punch Block) (2.17) Detent Lever and Feed Pawl (2.14) Feed Pawl and Detent Lever Springs (2.18)
6	Failure to meet ten (10) holes per inch requirement.	Check Tape Guide Assembly Spring and Bias Spring (Punch Block) (2.17). Check Ten Characters Per Inch adjustment (2.16). Check Lateral and Front to Rear Feed Wheel Position Detent (2.15).
7	Failure to end tape feedout cycle and ROTR motor remains on.	Replace Z114, ROTR Control Card.
8	Manual Feedout command from interface connector fails to turn on reperfocator motor. (Primary receiver).	With Pin 11 of W50A Cord connected to Pin 1, verify 0 v on XZ114 Pin 16 with respect to XZ114 Pin 2. If XZ114 Pin 16 is at 0 v, replace Z114 ROTR Control Card. If XZ114 Pin 16 is at +5 v with Pin 11 of W50A Cord connected to Pin 1, remove ac power and proceed as follows. Measure continuity between XZ114 Pin 16 and W50A Cord Pin 11. Measure continuity between XZ114 Pin 2 and W50A Cord Pin 1. Repair as required. Replace Z114, ROTR Control Card.
9	R43 has no effect on duration of feedout cycle.	Replace Z114, ROTR Control Card.
10	TAPE FEED key fails to turn on reperfocator motor. (Auxiliary receiver).	Verify 0 v on XZ114 Pin 16 with TAPE FEED key not operated. Verify +5 v dc on Pin 16 with TAPE FEED key held operated. Replace Z114, ROTR Control Card.
11	Motor Start signal from interface fails to turn on reperfocator motor.	Verify XZ114 Pin 3 is at 0 v with respect to XZ114 Pin 2. If XZ114 Pin 3 is at 0 v, verify 0 v on XZ115 Pin 4. With 0 v on XZ114 Pin 4, check XZ115 Pin 9 for -12.5 v dc with respect to XZ115 Pin 2. If XZ115 Pin 9 is at +12.5 v dc, replace Z115, Receiving Device Card. If XZ115 Pin 9 is at 0 v, an open circuit exists between XZ115 Pin 9 and the +12.5 v dc pull-up voltage of the motor control relay.

## SECTION 574-303-300

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
11 (cont)		<p>Remove ac power, verify continuity between XZ115 Pin 9 and motor control relay K101-Pin 3, located in the power supply.</p> <p>Disconnect P103/J103 power supply connector and make resistance measurement of 440 ohms <math>\pm 10\%</math> between K101 Pins 1 and 3. Replace K101 if required.</p> <p>If XZ114 Pin 3 remains at +5 v dc; replace Z114, ROTR Control Card.</p>
12	Interface Feedout command fails to initiate tape feedout.	<p>Verify option strap A connected on XZ114.</p> <p>Momentarily connect Pin 25 of W50A Cord to Pin 1 with patch cord. If a high to low (+5 v to 0 v) transition occurs, replace Z114, ROTR Control Card.</p> <p>If high to low transition does not occur, remove ac power and check continuity between XZ114 Pin 18 and P303 Pin 25. Repair as required.</p>
13	Repetitive feedout cycles initiated with Installer Option No. 1 implemented.	<p>Verify option strap C connected on XZ114.</p> <p>Replace Z114, ROTR Control Card.</p>
14	Feedout cycle not initiated by removal of interface Motor Start signal (no intervening feedout command between motor control cycle). Installer Option No. 1 or No. 2.	<p>Verify option strap B on Z114 is connected.</p> <p>Replace Z114, ROTR Control Card.</p>
15	No repetitive feedout cycles. Installer Option No. 3 implemented.	<p>Verify option strap C on Z114 is open.</p> <p>Replace Z114, ROTR Control Card.</p>
16	Tape Feedout In Process not terminated by space on Receive Data interface lead.	<p>Verify armature of feedout magnet de-energizes on the start bit (space) of the first character of the message.</p> <p>If armature does not de-energize, replace Z114, ROTR Control Card.</p>
17	Failure to end tape feedout cycle (feedout magnet de-energizes on start bit of first character)	<p>Check Magnet Armature Hinge and Armature Spring Adjustment (3.06)</p> <p>Check Drive Arm Trip Lever Adjustment (3.09)</p>
18	First character of test message is garbled (Feedout in process terminated. Remaining characters OK.)	<p>Check Reset Bail Latch Adjustment (3.10)</p>

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
19	Reperforator does not respond to received data. Selector is mark hold (selector magnet energized).	<p>Disconnect P315 on the reperforator. If punch runs open, proceed as follows:</p> <p>With data input, verify mark/space (+5 v/0 v) transitions on XZ114 Pin 7. If XZ114 Pin 7 is mark hold (+5 v dc), Replace Z114, ROTR Control Card.</p> <p>If mark/space transitions are observed on XZ114 Pin 7, verify mark/space transitions on XZ115 Pin 5. Replace Z115, Receiving Device Card.</p>
20	Selector clutch fails to release or latch.	<p>Check Selector Clutch Shoe Lever adjustment and Clutch "BIDREC" gap (2.01)</p> <p>Check Selector Clutch Drum Endplay (2.03)</p> <p>Check Selector Clutch Stop Arm adjustment (2.40)</p> <p>Check Selector Armature Downstop adjustment (2.38)</p> <p>Check Selector Magnet Bracket Adjustment (2.42)</p> <p>Check Clutch Shoe Lever Spring and Clutch Shoe Spring tensions (2.02)</p>
21	Failure to print.	<p>Check ribbon for ink, wear and proper installation.</p> <p>Check that print suppression magnet is released; replace ROTR Control Circuit Card (Z113).</p> <p>Check Print Suppression Mechanism adjustments (3.02)</p> <p>Check Print Suppression Contacts (3.03)</p> <p>Check Printing Latch adjustment (2.30)</p> <p>Check Print Hammer adjustment (2.33)</p>
22	Printing misalignment (vertical position)	<p>Check the following adjustments: if incorrect, readjust:</p> <p>Axial Corrector (2.26)</p> <p>Oscillating Bail Pivot (2.24)</p> <p>Axial Output Rack Guide Roller (2.25)</p> <p>Check for presence of TP156390 shims — one on the front and one on the rear of the typewheel.</p>
23	Printing misalignment (horizontal position)	<p>Check the following adjustments: if incorrect, readjust:</p> <p>Typewheel Positioning (2.32)</p> <p>Rotary Corrector Mesh (2.29)</p>

## SECTION 574-303-300

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
23 (cont)		<p>Typewheel Rack Clearance (2.28)</p> <p>Printing Latch — Final (2.30), (if readjusting, keep clearance to a minimum)</p> <p>Print Hammer (2.33)</p>
24	Incorrect or partial printing of characters with correct perforation of tape.	<p>Check the following adjustments: if incorrect, readjust:</p> <p>Push Bar Operating Blade Alignment (2.20)</p> <p>Push Bar Locking Blade (2.19)</p> <p>Transfer Lever Bracket (2.21)</p> <p>Guideplate (2.20)</p> <p>Push Bar Guide Bracket (2.25)</p> <p>Axial Corrector (2.26)</p> <p>Locking Blade Spring tension (2.23)</p> <p>Bellcrank Springs — No. 6 and 7 (2.22)</p>
25	Reperforator selector mechanism de-energized and reperforator runs open.	<p>Verify P315 is connected to J315 punch connects.</p> <p>Verify mark/space transitions on XZ114 Pin 7. If XZ114 Pin 7 is continuously spacing, remove ac power and XZ114 from connector. Reapply power. If selector is mark hold, replace Z114, ROTR Control Card.</p> <p>If selector runs open with Z114 removed, remove ac power check for short circuit between XZ114 Pin 7 and circuit ground and/or frame ground. Repair if required. If selector still runs open, remove ac power and proceed as follows.</p> <p>Disconnect P315 from J315 and verify continuity between XZ115 Pin 3 and P315 Pin 17. Verify continuity between XZ115 Pin 6 and P315 Pin 16. Repair as required.</p> <p>Make resistance measurement of 3-1/2 ohms <math>\pm 10\%</math> between J315 Pins 16 and 17. Replace coil if required.</p> <p>Replace Z115, Receiving Device Card.</p>
26	Erratic Selector Armature operation.	<p>Replace ROTR Control Card (Z114).</p> <p>Replace Receiving Device Card (Z115).</p> <p>Clean armature and pole face, if necessary.</p> <p>Check Selector Armature Downstop adjustment (2.38)</p>

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
26 (cont)		<p>Check Selector Magnet Bracket adjustment. (2.42)</p> <p>Check Range Finder Knob Phasing adjustment. (2.40)</p> <p>Check Selector Armature Spring adjustment (2.41); if incorrect, readjust and/or replace selector armature spring.</p>
27	Failure to meet selector margin requirements.	<p>Check Selector Armature adjustment (2.37)</p> <p>Check Range Finder Knob Phasing adjustment (2.40)</p> <p>Check Armature Spring adjustment (2.41); if incorrect; readjust and/or replace selector armature spring.</p>
28	Feedout Indication on Pin 27 of W50A Cord not at +5 v dc (no feedout in process).	Remove ac power and verify continuity between XZ114 Pin 26 and Pin 27 of W50A Cord. If continuity is present, replace Z114, ROTR Control Card.
29	No Feedout Indication of interface during feedout cycle.	<p>Verify option strap D on Z114 is connected.</p> <p>Replace Z114, ROTR Control Card.</p>
30	No Print Suppression on control characters (Tape punched ok).	<p>Verify print suppression magnet energizes. If magnet does not energize proceed as follows.</p> <p>Verify momentary contact closure (+5 v dc/0 v) transition on XZ114 Pin 21 with respect to Pin 2.</p> <p>Check for presence of strap between terminals 3 and 6 of function contacts in reperforator. Verify strap between terminals 1 and 4 disconnected.</p> <p>Verify operation of function contacts and auxiliary timing contacts in reperforator.</p> <p>Verify continuity between:</p> <p style="padding-left: 40px;">XZ114 Pin 2 and P315 Pin 9 P315 Pin 10 and P315 Pin 36 XZ114 Pin 21 and P315 Pin 35</p> <p>Check wiring to function contacts and auxiliary timing contacts. Refer to 4735WD.</p> <p>Verify 110 ohms <math>\pm 10\%</math> resistance of Print Suppress magnet on J315 Pins 14 (-) and 15 (+). Replace if required. If magnet resistance is correct, replace Z114, ROTR Control Card.</p>
31	Print Suppress magnet operates but no print suppression.	<p>Check Armature Extension Height Adjustment (3.02)</p> <p>Check Armature Extension Horizontal Adjustment (3.02)</p> <p>Check Print Suppression and Auxiliary Timing contacts adjustments (3.03) and (3.04), respectively.</p>

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
32	TAPE ALARM lamp off during a Tape Alarm	<p>Verify control panel connector is properly mated with control panel switch assembly.</p> <p>Check for defective lamp.</p> <p>Verify 0 v on XZ114 Pin 10 with respect to Pin 2. Verify +5 v dc on XZ114 Pin 5. Remove tape supply and verify +5 v dc on XZ114 Pin 10 and 0 v on XZ114 Pin 2.</p> <p>Check continuity between the following points, and repair if required.</p> <p style="padding-left: 40px;">XZ115 Pin 2 and P314 Pin 8 P314 Pin 9 and XZ114 Pin 5 P314 Pin 4 and XZ114 Pin 10</p> <p>Check contact wiring and adjustments. Refer to Section 574-330-700.</p> <p>Verify continuity between XZ114 Pin 25 and Blue-White colored wire on control panel connector. Verify continuity between XZ114 Pin 35 and Green colored wire on control panel connector. Repair as required.</p> <p>Replace Z114, ROTR Control Card.</p>
33	No Low Tape indication at interface (P303).	<p>Verify 0 v on XZ114 Pin 10 with respect to Pin 2. Verify +5 v dc on XZ114 Pin 5. Remove tape supply and verify +5 v dc on XZ114 Pin 10 and 0 v on XZ114 Pin 2.</p> <p>Check continuity between the following points, and repair if required.</p> <p style="padding-left: 40px;">XZ115 Pin 2 and P314 Pin 8 P314 Pin 9 and XZ114 Pin 5 P314 Pin 4 and XZ114 Pin 10</p> <p>Check contact wiring and adjustments. Refer to Section 574-330-700.</p> <p>Remove ac power, verify continuity between XZ114 Pin 6 and Pin 31 of W50A Cord.</p> <p>Replace Z114, ROTR Control Card.</p>
34	TAPE ALARM lamp on and/or interface Low Tape indication at 0 v with adequate tape supply.	<p>Check for continuity between XZ114 Pin 10 and XZ114 Pin 2.</p> <p>Check continuity between XZ114 Pin 10 and P314 Pin 4. Repair broken wire.</p> <p>Replace Z114, ROTR Control Card.</p>

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
35	No Character Detected indication at interface.	<p>Verify adequate tape supply if option strap E on Z114 (Character Detected Inhibit on Low Tape) is connected.</p> <p>Verify momentary contact closure to circuit ground on XZ114 Pin 11 with respect to XZ114 Pin 2.</p> <p>If an oscilloscope is not available to verify adequate contact closure time, check contact for proper adjustment per Section 574-330-700.</p> <p>If no contact closures are observed on XZ114 Pin 11, proceed as follows.</p> <p>Check contact adjustment per Section 574-330-700.</p> <p>Verify P315 is properly connected to mating connector J315.</p> <p>Verify continuity between the following pairs.</p> <p style="padding-left: 40px;">XZ114 Pin 11 and P315 Pin 8 P315 Pin 7 and XZ114 Pin 2 J315 Pin 8 and Contact Swinger J315 Pin 7 and Stationary Contact</p> <p>Verify continuity between XZ114 Pin 12 to Pin 14 of W50A Cord.</p> <p>Replace Z114, ROTR Control Card.</p>
36	Improper timing on Character Detected interface signal.	<p>Readjust contact assembly per Section 574-330-700.</p> <p><u>Note:</u> Proper timing must be obtained while receiving data at 150 wpm (10 unit code).</p> <p>Check for defective or broken return spring on contact assembly.</p> <p>Replace Z114 ROTR Control Card.</p>
37	Character Detected interface signal at +5 v dc with printer selector mark hold.	<p>Verify approximately +12 v dc between XZ114 Pin 11 and XZ114 Pin 2.</p> <p>If XZ114 Pin 11 is at 0 v, refer to Section 574-330-700 for proper contact adjustment.</p> <p>Replace Z114, ROTR Control Card.</p>
38	Character Detected not inhibited by Low Tape (Z114 Strap E connected).	<p>Verify strap C connected.</p> <p>Verify TAPE ALARM lamp on and/or Low Tape indication (0 v) on Pin 31 of W50A Cord.</p> <p>Replace Z114, ROTR Control Card.</p>

## SECTION 574-303-300

## 5.03 Continued

NO.	TROUBLE	CORRECTIVE PROCEDURE
39	Pin 30 of W50A Cord not at +5 v dc.	Verify continuity between Pin 30 of W50A Cord and XZ114 Pin 20.
40	Pin 34 of W50A Cord not at +5 v dc.	Verify continuity between Pin 34 of W50A Cord and XZ114 Pin 34.
41	Reperforator motor does not start with S101 in the ON position. Motor control with S101 in the NORMAL position ok.	Verify S101 is in the ON position. Verify S101 wiring per 8783WD. Repair as required. Replace S101 if required.
42	Reperforator motor does not start with S101 in the NORMAL or ON position.	Check ac power cord is plugged into wall receptacle. Check F103 (4A SL-BL) fuse in power supply. Check F104 (1A SL-BL) fuse in power supply. Operate thermal overload reset on YMU4 motor assembly (red button). Check all wiring to YMU4 motor assembly from power supply. Refer to 8783WD and 8796WD. Check wiring to S101 power switch. Refer to 8783WD. Replace defective YMU4 motor assembly. See Trouble No. 2. See Trouble No. 1.
43	Reperforator motor turns on when S101 is moved to the ON position but turns off after completion of feedout cycle.	Verify S101 wiring per 8783WD. Repair as required. Replace S101 if required.
44	Failure to punch Delete on feedout cycle.	Check Punch Slide Latch adjustment (3.07).
45	Erratic function clutch operation.	Check the following function mechanism adjustments: Clutch Shoe Lever (2.01) Clutch Trip Lever (2.04) Function Clutch Reset and Latchlevers (2.05) Trip Cam Follower Lever (2.06)
46	ROTR cabinet assembly not grounded.	Check for presence of grounding strap from ESU base to cabinet assembly. Verify ac outlet properly grounded. Check out ROTR power ground wiring.