43 KSR STATION
TROUBLESHOOTING

1. GENERAL

1.01   This section provides troubleshooting information for the 43 Teleprinter Basic KSR Station with an integrated Terminal Data Unit (TDU).

1.02   Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03   Troubleshooting is based on isolation of troubles to major components and the correction of troubles by replacement of these components or by reference to the component troubleshooting sections.

Note: Except for the 153A1 Terminal Data Unit which is a Western Electric component, all numbers shown in this section are Teletype Corporation part numbers.

1.04   Components troubleshooting sections are:

    574-501-300   43 Printer
    574-502-300   43 Operator Console
                   (Opcon)

1.05   Trouble isolation provided in this section is intended for use by the craftsperson at the same location as the station. Troubles may occur either during an installation, a routine maintenance visit or as the result of a customer trouble report.

1.06   Trouble isolation for the attendant is provided in the 999-300-126 How to Operate Manual and for the Test Center in Section 668-130-500.

1.07   To facilitate trouble correction, the recommended maintenance spares as listed in the Parts Section 574-500-800 should be available. In addition, parts for the repair of components as listed in Section 574-501-800, 574-502-800 and 574-503-800 for the printer, operator console and cabinets should be available.

1.08   Refer to the Disassembly/Reassembly Section 574-500-700 for component access and Engineering Options Section 574-500-210 for option switches and operation.

1.09   For location and identification of station components, refer to the Parts Section 574-500-800.

1.10   When replacement of the print head, logic card or opcon corrects the trouble, additional checks should be made to isolate and possibly correct the trouble without returning for repair.

    On the print head — check cable continuity.
    On the logic card — check TDU and power supply cables or fuse.
    On the opcon — check the cable and keyswitches per opcon troubleshooting.

1.11   When replacement of a component does not correct the trouble, the original component should be reinstalled before going to the next step of the trouble analysis. If there are no more steps provided, go to the last question.

1.12   Circuitry used in the operator console can be damaged by high static voltage discharge. The 346392 wrist strap is available to ground service personnel.

1.13   When returned to the WECo Service Center for repair, the set or components should be packed in the container in which the replacement is received. This includes the conductive (black) plastic bag used with the opcon for static protection.

1.14 Components returnable for repair and referred to in this section for replacement are:

> 153A1 Terminal Data Unit
> 43K101/CAA Operator Console
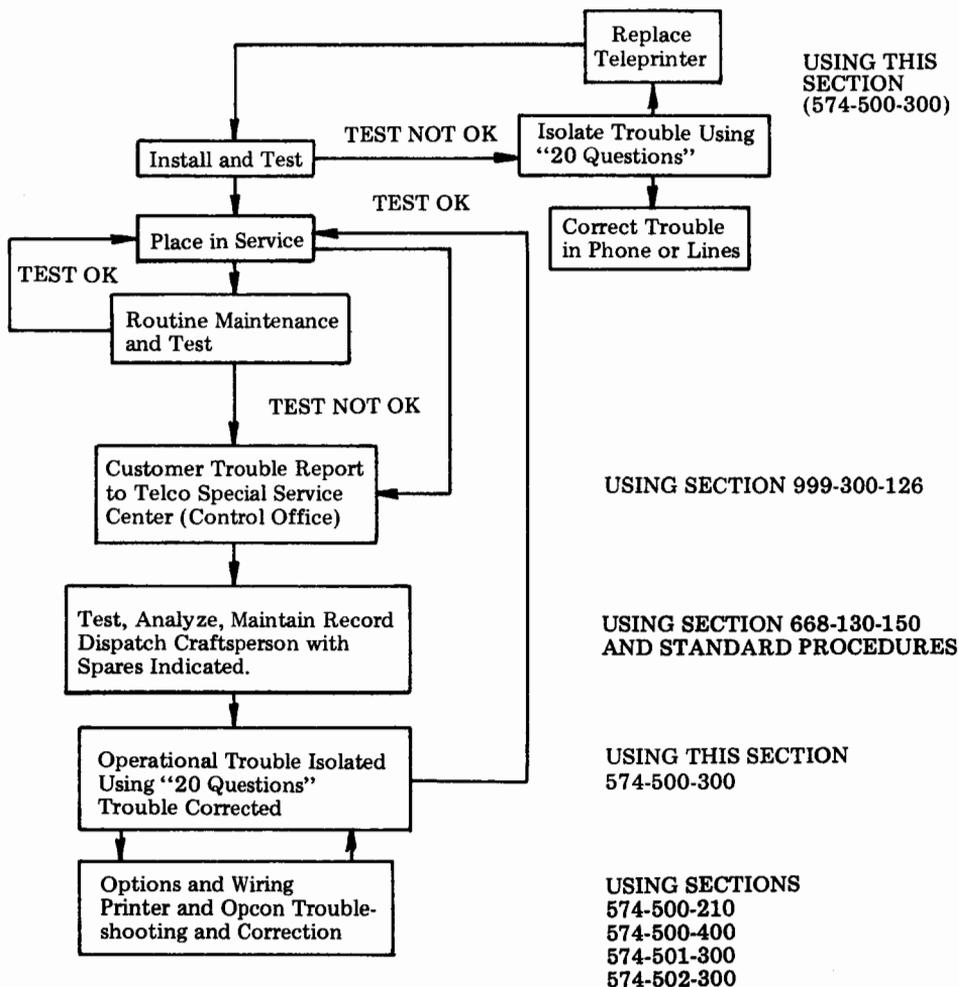> 410740 Logic Card
> 430700 Power Supply Card
> 430850 Print Head

1.15 Before disconnecting the internal cables or replacing circuit cards, turn off ac power. Make certain the power cord is connected to a properly polarized and grounded ac outlet.

1.16 Refer to 2. TROUBLESHOOTING DIAGRAM for the intended flow of troubleshooting procedures.

1.17 Trouble analysis is presented in the form of a "20 Questions" routine in 3. TROUBLESHOOTING GUIDE. The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

2. TROUBLESHOOTING FLOW DIAGRAM

USING THIS SECTION (574-500-300)

USING SECTION 999-300-126

USING SECTION 668-130-150 AND STANDARD PROCEDURES

USING THIS SECTION 574-500-300

USING SECTIONS
574-500-210
574-500-400
574-501-300
574-502-300

3. TROUBLESHOOTING GUIDE

QUESTIONS	YES	NO
1. Are any of the three communications mode indicators lit? (Power available and set power on.) (Depress other keys if proper indicator not lit.)	Go to 2.	Go to 1a.
1a. Is there any indication of power in the set? (Indicators flash when power is turned on and off, red lamp on power supply, etc.)	Go to 1b.	Check and replace set F1 fuse if blown. Replace power supply if fuse blows again. If not blown go to 1b.
1b. Is red lamp on power supply lit?	Check P107 opcon cable connector. Replace logic card. Replace opcon.	Disconnect power supply cable. Go to 1c.
1c. Does red lamp on power supply now light?	Unplug TDU, opcon and printer cables (6). Reconnect power supply cable. Go to 1d.	Check F2 fuse on power supply. Replace if blown. Replace power supply. Replace rear frame assembly.
1d. Does red lamp on power supply still light?	Go to 1e.	Replace logic card.
1e. Does red lamp on power supply go out after the TDU, opcon and printer cables are reconnected one at a time?	Replace the TDU, opcon or the printer component (refer to printer trouble-shooting) that caused lamp to extinguish.	Intermittent short. Check for foreign objects between circuit lands or terminals.
2. Does AUTO ANSW indicator light when power is turned on?	Go to 3.	Go to 2a.
2a. Does ALARM indicator: 1. Flash? 2. Light (cover closed and paper installed?)	1. Replace logic card. 2. Replace opcon or refer to printer trouble-shooting.	Go to 2b.
2b. Does AUTO ANSW indicator light when depressed?	Replace logic card.	Replace opcon.

QUESTIONS	YES	NO
3. Does LOCAL TALK indicator light when depressed?	Go to 4.	Go to 3a.
3a. Does AUTO ANSW indicator go out?	Replace logic card.	Replace opcon.
4. Does AUTO ANSW indicator light when depressed?	Go to 5.	Replace opcon.
5. Does test message print and perform properly while the PRINTER TEST key is depressed?	Go to 6.	Check option 431 and 432. Go to 5a.
5a. Is red lamp on power supply lit?	Go to 5c.	Disconnect power supply cable. Go to 5b.
5b. Does red lamp on power supply now light?	Reconnect power supply cable. Unplug print head and motor cables then reconnect one at a time to isolate cause of lamp not lit. Replace defective component (refer to printer troubleshooting).	Replace power supply.
5c. Does anything print or perform?	Go to 5d.	Place the No. 2 printer test bypass switch in ON position. If ok, replace opcon. Replace logic card.
5d. Does anything print?	**Go to 5e.**	Replace logic card. Refer to printer troubleshooting.
5e. Are characters properly formed?	Go to 5f.	Refer to printer troubleshooting. Replace logic card.
5f. Are the proper characters printed?	Go to 5g.	Replace logic card.
5g. Is print density acceptable? (Good ribbon)	May be undefined printing problem. Refer to printer troubleshooting. Replace logic card. Go to 5h.	Refer to printer troubleshooting.

QUESTION	YES	NO
5h. Does paper feed properly? (Paper supply free)	Go to 5i.	Check F3 fuse on logic card. Replace line feed motor if fuse blows again. Refer to printer trouble-shooting. Replace logic card.
5i. Does print head space and return properly?	Undefined problem in printer test functions. Refer to printer trouble-shooting.	Refer to printer trouble-shooting. Replace logic card.
6. Did ALARM indicator light during printer test?	Go to 7.	Go to 6a.
6a. Does ALARM indicator light when cover is opened?	Replace logic card.	Replace opcon.
7. Does ALARM indicator light when 1. paper is out and when 2. cover is opened?	Go to 8.	1. Check printer trouble-shooting. 2. Replace opcon. 3. Replace logic card.
8. Do all characters print and functions (except bell and margin set) perform when the keys on the keyboard are operated? (local talk mode)	Go to 9.	Replace opcon. Replace logic card.
9. Does signal bell ring on CTRL G?	Go to 10.	Go to 9a.
9a. Did signal bell ring during printer test.	Replace logic card. Replace opcon.	Check P106 bell connector. Refer to printer (bell) trouble-shooting. Replace logic card.
10. Does signal bell ring eight characters before right margin and at left and right margins?	Go to 11.	Replace logic card.
11. Are margins set and cleared properly?	Go to 12.	Check column indicator positioning adjustment. Replace logic card.

QUESTION	YES	NO
12. Does printer respond properly to keyboard operation in analog loop-back mode? (Entered from keyboard by ESC > sequence (data mode). Ended by ESC = sequence.)	Go to 13.	Check P301 connector to TDU. Replace 153A1 Terminal Data Unit. Replace logic card.
13. Did 1. ALARM indicator flash and 2. DATA indicator light during analog loop-back?	Go to 14.	1. Replace logic card. 2. Replace opcon.
14. Does telephone operate normally in both local talk mode and with set power off?	Go to 15.	Check that modular cords are properly connected at rear of teleprinter and phone. Go to 14a.
14a. Does telephone operate normally (dial tone, dial, talk, ring) when connected directly to line using modular cord that was connected to the teleprinter?	Check modular cord originally between set and phone. If ok Replace 153A1 Terminal Data Unit. Replace logic card.	Check tip and ring of phone line for 48 V dc. (use 150 V or higher scale). Check proper polarity (if no touch tone dial). Check phone resistance on hook (capacitors only) off-hook (600 ohms). Correct wiring of phone lines or replace phone as indicated.
15. Does DATA indicator flash when depressed in local talk mode? (Handset on hook.)	Go to 16.	Replace opcon. Replace logic card.
16. Does phone ring repeatedly in automatic answer mode?	Replace 153A1 Terminal Data Unit. Replace logic card.	Go to 17.
17. Does DATA indicator light following a received call in automatic answer mode?	Go to 18.	Remote station must also go to data mode. Check that modular cords are not reversed. Go to 28.
18. Are data messages properly sent and received in the data mode?	Go to 19.	Go to 18a.
18a. Do PARITY, DUPLEX and CPS keys alternately lock down then release up when depressed?	Go to 19.	Replace defective key switch.
19. Can any data be received	Go to 20.	Go to 28.

QUESTION	YES	NO
20. Does substitute character print on some characters. (PARITY key on)	Remote station may be sending incorrect parity or be at different speed. Go to 25.	Go to 21.
21. Does printer copy and data transmit properly in half-duplex? (DATA indicator lit.)	Go to 22.	Check option 434. Replace opcon. Replace logic card. Go to 28.
22. Is printer blinded to keyboard transmission in full duplex? (DATA indicator lit.)	Go to 23.	Replace opcon. Replace logic card.
23. Does the carriage return automatically when characters to the right of the right hand margin are received? (DATA indicator lit.)	Go to 24.	Check option 435. Replace logic card.
24. Does call disconnect on received EOT and when carrier is not received (in data mode)?	Go to 25.	Check option 433. Replace logic card. Replace TDU.
25. Is INTRPT indicator lit?	(Interrupt received) Go to 25a.	Go to 26.
25a. Does INTRPT indicator go off when depressed?	Go to 26.	Replace opcon. Replace logic card. Go to 28.
26. Does INTRPT indicator light briefly and bell ring when INTRPT key is depressed?	Go to 27.	Replace opcon. Replace logic card.

QUESTION	YES	NO
27. Does remote station receive interrupt?	Go to 29.	Go to 28.
28. Does station pass on-line end-to-end tests with Test Center?	Trouble (if any) is in remote station.	Perform distortion, dBm level, or other parameter tests including digital loop-back under control of Test Center to isolate trouble to line, TDU or logic card (904G Section 668-400-300).
29. Is trouble present but not defined by Questions 1 to 28?	Refer to printer or opcon troubleshooting for other symtoms. Replace opcon, power supply, TDU, logic card and/or print head to correct trouble.	