IBM 5218 Printwheel Printer
Maintenance Analysis Procedures
First Edition (March 1981)

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These Maintenance Analysis Procedures (MAPs) are to be used for servicing the IBM 5218 Printer. Customer engineers using these MAPs are assumed to have completed the course on the IBM 5218 Printer.

It is suggested that you start your call with the START OF CALL-ENTRY MAP, which leads to a repair action.

Related Publications

Related Information can be found in the following manuals:

IBM 5218 Maintenance Information Manual, SY20-8520
IBM 5218 Operator's Guide, GA23-1006
SAFETY

DANGER NOTICES

Through this manual, the word DANGER is used to inform the CE of an action that could cause a personal injury.

Ensure that you understand and observe the safety precautions printed on the CE Safety Practices card that is used in the country where you work. A copy of the card that is used by customer engineers who work in the United States follows.
CE SAFETY PRACTICES

All Customer Engineers are expected to take every safety precaution possible and observe the following safety practices while maintaining IBM equipment:

1. You should not work alone under hazardous conditions or around equipment with dangerous voltage. Always advise your manager if you MUST work alone.

2. Remove all power, ac and dc, when removing or assembling major components, working in immediate areas of power supplies, performing mechanical inspection of power supplies, or installing changes in machine circuitry.

3. After turning off wall box switch, lock it in the Off position or tag it with a "Do Not Operate" tag, Form 229-1266. Pull power supply cord whenever possible.

4. When it is absolutely necessary to work on equipment having exposed operating mechanical parts or exposed live electrical circuitry anywhere in the machine, observe the following precautions:
   a. Another person familiar with power off controls must be in immediate vicinity.
   b. Do not wear rings, wrist watches, chains, bracelets, or metal cuff links.
   c. Use only insulated pliers and screwdrivers.
   d. Keep one hand in pocket.
   e. When using test instruments, be certain that controls are set correctly and that insulated probes of proper capacity are used.
   f. Avoid contacting ground potential (metal floor strips, machine frames, etc.). Use suitable rubber mats, purchase locally if necessary.

5. Wear safety glasses when:
   a. Using a hammer to drive pins, riveting, staking, etc.
   b. Power or hand drilling, reaming, grinding, etc.
   c. Using spring hooks, attaching springs.
   d. Soldering, wire cutting, removing steel bands.
   e. Cleaning parts with solvents, sprays, cleaners, chemicals etc.
   f. Performing any other work that may be hazardous to your eyes. REMEMBER — THEY ARE YOUR EYES.

6. Follow special safety instructions when performing specialized tasks, such as handling cathode ray tubes and extremely high voltages. These instructions are outlined in CEMs and the safety portion of the maintenance manuals.

7. Do not use solvents, chemicals, greases, or oils that have not been approved by IBM.

8. Avoid using tools or test equipment that have not been approved by IBM.

9. Replace worn or broken tools and test equipment.

10. Lift by standing or pushing up with stronger leg muscles — this takes strain off back muscles. Do not lift any equipment or parts weighing over 60 pounds.

11. After maintenance, restore all safety devices, such as guards, shields, signs, and grounding wires.

12. Each Customer Engineer is responsible to be certain that no action on his part renders products unsafe or exposes customer personnel to hazards.

13. Place removed machine covers in a safe, out-of-the-way place where no one can trip over them.

14. Ensure that all machine covers are in place before returning machine to customer.

15. Always place CE tool kit away from walk areas, where no one can trip over it; for example, under desk or table.

16. Avoid touching moving mechanical parts when lubricating, checking for play, etc.

17. When using stroboscope, do not touch ANYTHING — it may be moving.

18. Avoid wearing loose clothing that may be caught in machinery. Shirt sleeves must be left buttoned or rolled above the elbow.

19. Ties must be tucked in shirt or have a tie clasp (preferably nonconductive) approximately 3 inches from end. Tie chains are not recommended.

20. Before starting equipment, make certain fellow CEs and customer personnel are not in a hazardous position.

21. Maintain good housekeeping in area of machine while performing and after completing maintenance.

   Knowing safety rules is not enough.
   An unsafe act will inevitably lead to an accident.
   Use good judgment — eliminate unsafe acts.

ARTIFICIAL RESPIRATION

General Considerations

1. Start Immediately — Seconds Count
   Do not move victim unless absolutely necessary to remove from danger. Do not wait or look for help or stop to loosen clothing, warm the victim, or apply stimulants.

2. Check Mouth for Obstructions
   Remove foreign objects. Pull tongue forward.

3. Loosen Clothing — Keep Victim Warm
   Take care of these items after victim is breathing by himself or when help is available.

4. Remain in Position
   After victim revives, be ready to resume respiration if necessary.

5. Call a Doctor
   Have someone summon medical aid.

6. Don’t Give Up
   Continue without interruption until victim is breathing without help or is certainly dead.

Rescue Breathing for Adults

1. Place victim on his back immediately.

2. Clear throat of water, food, or foreign matter.

3. Tilt head back to open air passage.

4. Lift jaw up to keep tongue out of air passage.

5. Pinch nostrils to prevent air leakage when you blow.

6. Blow until you see chest rise.

7. Remove your lips and allow lungs to empty.

8. Listen for snoring and gurglings — signs of throat obstruction.

9. Repeat mouth to mouth breathing 10-20 times a minute. Continue rescue breathing until victim breathes for himself.

   Thumb and finger positions
   Final mouth-to-mouth position
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001
(ENTRY POINT A)
- Check that the printer is plugged into the wall socket and turned on.
- Check that the 'POWER ON' light is on.
- Check that the ribbon is installed correctly.
- Check an earlier printout for good print quality.
- Check for damaged platen, bail, feed rollers, lead screw, print wheel, hammer, or index drive belt.
- Check for a loose or broken carrier.
- Check that the printer is cabled correctly.
- Check that the fan motor is turning and blowing air.
- Check for broken, bent or open cover.
- Check the selector motor pull back cable(128). Check the adjustment and inspect the cable for breaks.
- Correct the problem now, if possible.
- If any of the checks can not be performed because of some machine condition answer this question 'yes'.
- To verify the printer for correct operation answer this question 'yes'.

(Step 001 continues)
(Step 001 continued)

Are the checks correct?
Y N

002 Is the control panel 'POWER ON' light on?
Y N

003

Is the printer power switch set to '1'?
Y N

004
-SET PRINTER POWER SWITCH TO '1'.
WAIT 35 SECONDS UNTIL POWER ON
SEQUENCE IS COMPLETE.
GO TO PAGE 2, STEP 001,
ENTRY POINT A.

005 GO TO MAP 0100, ENTRY POINT A.

observed symptoms.

If the printer is not turned on, turn it on and start over in the MAP. If the printer is turned on go to the power MAP.
START OF CALL - ENTRY
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- Check that the screws that hold the ribbon motor drive assembly to the ribbon drive plate assembly are tight (226).

Are the screws tight?
Y N

- Check the ribbon installation on the ribbon cartridge (136).
- Check the adjustment of the ribbon cartridge latches (136).

Are the checks correct?
Y N

- Install the ribbon cartridge correctly or adjust the ribbon cartridge latches as necessary.
  See M1M (136).

Is the control panel 'RIBBON' light on?
Y N

5 C D

MAP 0010-4
Perform the repair action on the visible problem or, Go to the map below to isolate the visible problem.

For the ribbon or bad print quality,
GO TO MAP 0020, ENTRY POINT A.

For the index,
GO TO MAP 0030, ENTRY POINT A.

For the bail, feed rollers, or cam motor assembly,
GO TO MAP 0040, ENTRY POINT A.

For the print wheel or selection,
GO TO MAP 0050, ENTRY POINT A.

For the hammer,
GO TO MAP 0060, ENTRY POINT A.

For a code displayed, record the code and
GO TO MAP 0090, ENTRY POINT A.

For power on reset or power check,
GO TO MAP 0100, ENTRY POINT A.

For fan not turning,
GO TO MAP 0100, ENTRY POINT A.

(Step 012 continues)

(Step 012 continued)
For the escapement or carrier,
GO TO MAP 0110, ENTRY POINT A.

For the sheet feed,
GO TO PAGE 8, STEP 025,
ENTRY POINT AA.

For an intermittent,
GO TO MAP 0130, ENTRY POINT A.

013
GO TO MAP 0120, ENTRY POINT B.

014
(ENTRY POINT AB)
No ribbon cartridge should be installed if the machine is used in stencil mode.
Is the printer being used in the stencil mode?
Y N

015
- Ensure the ribbon sensor is covered by ribbon.
- Install a new ribbon cartridge if necessary.
Is the control panel 'RIBBON' light on?
Y N

7 6 6
G H J

MAP 0010-5
016
The ribbon cartridge empty or out of place
was the only problem.

017
- SET PRINTER POWER SWITCH TO '0'.
- Remove the retainer on the left carrier
cable A-A1A5(104).
- Disconnect the cable to the ribbon
sensor from the left ribbon cable.
- Connect jumper from pin 1 to pin 3(on
the carrier cable).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35
SECONDS UNTIL POWER ON SEQUENCE IS
COMPLETE.

Is the control panel 'RIBBON' light on?
Y N

018
Bad ribbon sensor.

019
- Remove the A-A1A5 cable from the A-A1
board.
- Leave the jumper installed.
- Connect a meter between pin 1 on one end
of the cable A-A1A5 and pin 1 on the
other end of the cable (104).
- The meter should read less than .5 ohm.
- Repeat the reading for pins 2, 3 and 4.
(Step 019 continues)
(Step 019 continued)
Are the meter readings correct?
 Y  N

020  
Bad cable A-A1A5.

021  
- Leave the jumper installed.
- Reinstall cable A-A1A5.
- Select 'DIAG MODE' (301)
- Select and run diagnostic test 25 while observing the LED display.
- The LED display show the test number 25, the sense code, and then the test number 25.

Is the sense code 00?
 Y  N

022  
Bad card A-A1C1.

023  
Bad control panel logic card.

024  
The 'RIBBON' light should be on.
GO TO PAGE 8, STEP 025, ENTRY POINT AA.
(ENTRY POINT AA)
- Observe the control panel LED display.
- If the LED display is blank record the fact that the code is blank.
- If a code is displayed on the LED display record the code.

Is the LED display blank (all segments off)?

Y N

Does the LED display flash repeatedly (all segments on, all segments off, all segments on and so forth)?

Y N

027
GO TO MAP 0090, ENTRY POINT A.

028
GO TO MAP 0120, ENTRY POINT B.
- If the tractor feed is installed remove it from the printer and disconnect the tractor feed cable.
- Set the manual paper insertion deflector on sheet feed to the hand feed position if the sheet feed is installed.
- Insert a blank sheet of paper by hand into the platen area one inch from the left edge of the platen.
- Disconnect the sheet feed cable if installed.
- Press the 'LOAD' switch on the control panel.
- Wait until printer stops.
- Again - Press the 'LOAD' switch on the control panel.
- If the load switch does not work or the bail does not close, ignore the paper jam and continue in this map until the maintenance statistics are printed if possible.

Is the LED display blank(all segments off)?

Y N
Does the LED display flash repeatedly (all segments on, all segments off, all segments on and so forth)?

Y N

031
Record the LED display.
GO TO MAP 0090, ENTRY POINT A.

032
GO TO MAP 0120, ENTRY POINT B.
- If the load switch does not work or the bail does not close, ignore the paper jam and continue in this map until maintenance statistics are printed if possible.
- The following sequence of control panel operations will cause the verify test to execute (310). Record these operations or come back to this step when verify test is run.
- While holding the 'STOP' switch on the control panel, press and release the 'PRINT TEST' switch, then release the 'STOP' switch.
- Observe the LED display and the indicator lights. All the lights should turn on then turn off. The statistics will be printed unless an error occurs.
- Keep this printout in case the problem is intermittent.
- Wait 15 seconds for the sequence to complete or wait until the printout stops.
- Record the LED display code or the fact that it is blank.

Is the LED display blank (all segments off)?

Y N
Does the LED display flash repeatedly (all segments on, all segments off, all segments on and so forth)?

Y N

Record the LED display.
GO TO MAP 0090, ENTRY POINT A.

GO TO MAP 0120, ENTRY POINT B.

- The control panel lights should have been observed on the preceding step. If these lights were not observed run the verify test over again.
- Observe the LED display including the periods.
- Observe the indicator lights.

Do all the control panel indicator lights and LED display segments come on then off except the 'POWER ON' light which remains on?

Y N

This is usually a power on diagnostic type failure.

This test to determine if the power on diagnostic routine can turn on and off all the lights.
Are the 'POWER ON' and 'ON LINE' lights the only lights that remain on?  
Y N

SET PRINTER POWER SWITCH TO '0'.  
SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Do all the control panel indicator lights and LED display segments come on then off except the 'POWER ON' light which remains on?  
Y N

Do all the control panel indicator lights and LED display segments turn on?  
Y N

1 1 1 1
7 5 4 4
S T U V

The power on diagnostic routine did not work. This test to determine if the power switch will force the power on diagnostic routine and not rely on the control panel switches.

This test to determine if the power on diagnostic routine started and turned the lights on but could not run far enough to turn the lights off.
START OF CALL - ENTRY

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041
Bad card A-A1D1.
---OR---
Bad control panel card.
---OR---

042
Does the 'RIBBON' light remain on?
Y N

043
Does the 'SET UP' light remain on?
Y N

044
Does the 'PRINTER EXCEPTION','READY', or 'RELEASE' lights remain on?
Y N

045
- Remove the sheet feed if installed.
- Remove the tractor feed if installed.
- Remove the printer top cover (200).

046
Bad card A-A1D1.
---OR---
Bad control panel logic card.

047
GO TO MAP 0100, ENTRY POINT A.

048
Bad control panel logic card.

049
Remove the cable from the paper sensor to the A-A1C1 card.
- Press the 'LOAD' switch on the control panel.

050
Is the control panel 'SET UP' light on?
Y N

051
Bad paper sensor.

052
Bad card A-A1C1.

052
GO TO PAGE 5, STEP 014, ENTRY POINT AB.
053 - Press the 'START' switch on the control panel.

Is the control panel 'READY' light on?
Y N

054 - Set printer power switch to '0'.
- Press and hold the 'START' switch on the control panel.
- While holding the 'START' switch on the control panel set the printer power switch to '1'.
- Observe the LED display while the printer is performing the power on sequence.
- Release the 'START' switch on the control panel.

Does the code 35 appear on the LED display any time during the power on sequence?
Y N

055 Bad card A-A1D1.
--- OR ---
Bad control panel switch assembly.

056 Bad card A-A1D1.
START OF CALL - ENTRY

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057
- Press the 'STOP' switch on the control panel.
Is the control panel 'READY' light off?

Y N

058
Bad card A-A1D1.
---OR---
Bad control panel switch assembly.

059
- Press the 'PRINT TEST' switch on the control panel.

Does the printer attempt to print?

Y N

060
Bad card A-A1D1.
---OR---
Bad control panel switch assembly.

061
The indications changed.
Go to the intermittent MAP.

This test to determine that the stop switch works and the ready light can be turned off.

This test to determine that the print switch works and that the printer can move. Any carrier, print wheel, index or hammer movement is an attempt to print.
The 'ON LINE' will remain on if the controller is running and connected to the printer. No problem has been found in the normal printer functions.

To continue to find a problem, GO TO MAP 0015, ENTRY POINT A.

No problem has been found with the normal printer functions. To continue to find a failure, GO TO MAP 0015, ENTRY POINT A.
# Operational Verify

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001
(ENTRY POINT A)

MAP Description:
THIS MAP DETERMINES THE GENERAL TYPE OF FAILURE AFTER THE NORMAL PRINTER FUNCTIONS WORK CORRECTLY AND SENDS THE CE TO THE CORRECT MAP.

Entry Conditions:
THE STEPS IN MAP 0010 MUST HAVE BEEN CORRECT.

Start Conditions:
NONE

Field replaceable units:
CARDS A-A1C1 AND A-A1D1, A-A1 BOARD, PRINT WHEEL, RIBBON CARTRIDGE, RIBBON SENSOR, CONTROL PANEL CARD, OPERATOR SWITCH ASSEMBLY, TOP REED CARD, PAPER SENSOR, AND
(Step 001 continued)

Is the sheet feed installed?

Y N

002
GO TO PAGE 7, STEP 019,
ENTRY POINT B.

003
-SET PRINTER POWER SWITCH TO '0'.
- Plug in the sheet feed cable if installed.
- Remove paper from platen area and sheet feed path if necessary.
- Set the manual paper insertion deflector on the sheet feed for normal sheet feed operation (700).
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Run verify test(307).
- Observe the sheet feed.

Is the sheet feed attachment operating correctly?

Y N

6 4
A B

THE LEFT CARRIER CABLE ASSEMBLY

A sheet of paper should feed from hopper 1 correctly.
The statistics should print.
The paper should stack correctly.
-SET PRINTER POWER SWITCH TO '0'.
- Disconnect the sheet feed cable.
- Remove the sheet feed from the printer.
- Check the cover adjustment (115).
Is the cover adjusted correctly?
Y N

Adjust the cover (115).

-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Reinstall the sheet feed on the printer.
- Set the manual paper insertion deflector to the hand feed position.
- Insert a sheet of paper into the platen area.
- Press the 'LOAD' switch on the control panel.
Does the paper feed correctly and advance to the first writing line?
Y N

-SET PRINTER POWER SWITCH TO '0'.
- Disconnect the sheet feed.
- Remove the sheet feed from the printer.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Insert a sheet of paper into the platen area.
- Press the 'LOAD' switch on the control panel.
Does the paper feed correctly and advance to the first writing line?
Y N

-GO TO MAP 0030, ENTRY POINT A.

GO TO MAP 0040, ENTRY POINT A.
Can the platen gear be turned easily while the index motor is detented (120)?
Y N

GO TO MAP 0630, ENTRY POINT H.

Tighten the set screws in the platen gear, the platen pulley and the index motor pulley (120,121,123).
If the platen gear can still be turned easily install the new parts.

Bad platen gear.
---OR---
Bad platen pulley.
---OR---
Bad index motor pulley.
Bad index motor belt.

GO TO MAP 0610, ENTRY POINT A.
A sheet of paper should feed from hopper 2 and stack correctly then the LED display will display the test number (41) or a code.

Does a sheet of paper feed from hopper 2 and stack correctly?

Y N

016
GO TO MAP 0610, ENTRY POINT A.

017
- Select mode 2.
- Select and run diagnostic test 12.
- Let the test run for one minute, then press 'STOP'.

Is the LED display 12?

Y N

018
Record the code then,
GO TO MAP 0090, ENTRY POINT A.
This tests the paper load operation, the 'LOAD' switch, the home switch, the position switch, the cam motor assembly, the index motor, the index motor drive belt, the platen, the feed roll assembly, and the spring comb assembly.

(ENTRY POINT B)

1. If the tractor feed is installed, remove the tractor feed and disconnect it.
2. If the 'DIAG MODE' light is on, press the 'CANCEL' switch three times to leave the 'DIAG MODE'.
3. Wait until the printer stops.
4. The paper loading should have been observed in a earlier step. If not hand feed a sheet of paper and press 'LOAD'.
5. All the paper holders should move away from the platen to let the paper pass by.
6. The rear paper feed rollers should move away from the platen. Then close on the paper.
7. The platen should advance the paper to the first print line.
8. The bail should open.

Does the paper load correctly?

Y N
020
- Press the 'CANCEL' switch on the control panel.
- Press and hold the paper up switch on the control panel.
Does the platen turn enough to move the leading edge of the paper to the first print line?
Y N

021
GO TO MAP 0030, ENTRY POINT A.

022
GO TO MAP 0040, ENTRY POINT A.

023
- Press and hold the paper up switch on the control panel.
Does the paper move up?
Y N

024
GO TO MAP 0030, ENTRY POINT A.

This determines if the problem is a cam or index problem.

This tests the paper up switch and the indexing.
- Press and hold the paper down switch on the control panel.
   This tests the paper down switch.

Does the paper move down?
Y N

Bad control panel switch assembly.

- Press the 'RELEASE' switch on the control panel.
Can the paper be removed?
Y N

GO TO MAP 0040, ENTRY POINT B.

- Press the 'START' switch on the control panel.
Is the control panel 'READY' light on?
Y N

Bad control panel card.
---OR---
Bad control panel switch assembly.
---OR---
Bad card A-A1D1.
OPERATIONAL VERIFY

PAGE 10 OF 16

031
- Press the 'STOP' switch on the control panel.
Is the control panel 'READY' light off?
Y N

032
- Bad control panel card.
-OR--
- Bad control panel switch assembly.
-OR--
- Bad card A-A1D1.

033
- Observe the carrier assembly.
- Press the 'CANCEL' switch on the control panel.
Does the carrier assembly move to the left, hit the side frame then move to the center of the printer?
Y N

034
- GO TO MAP 0110, ENTRY POINT A.

035
- Observe the CAM assembly on the right side of the printer (125)(100).
Is the cam home?
Y N

036
- GO TO MAP 0040, ENTRY POINT A.

037
(If the tractor feed attachment is not available answer this question 'YES')
- Install the tractor feed on the printer and plug in the tractor feed cable.
- Install paper in tractor.
- Press and hold the paper up switch on the control panel.
The paper should move through the tractor feed.
If it is not known if the tractor feed is operating correctly, go to map 0810 entry point A then return to map 0015 entry point C.
Is the tractor feed attachment operating correctly?
Y N

038
- GO TO MAP 0810, ENTRY POINT A.
This tests the 'PRINT TEST' switch and prints all the characters on the print wheel.

(ENTRY POINT C)
- If the 'DIAG MODE' light on, press the 'CANCEL' switch three times. Wait until the 'DIAG MODE' light turns off.
- Load a sheet of paper if necessary.
- Press the 'PRINT TEST' switch on the control panel.
- Press this switch as many times as necessary.
- Observe the left and right ribbon spools to ensure they both turn.
- Observe the print wheel to see if it moves.
- Observe the carrier to see if it moves.
- Press the index up switch if necessary to observe the print out.
- Observe the print out to see if it appears correct. Reference the Maintenance Information Manual (309) for a sample print out.

Are all the correct characters printed, is the print quality good and the checks correct?
Y N

Is the printout blank?
Y N

1 1 1
3 2 2
N P Q
Q 5218 A01 A02
1
1 OPERATIONAL VERIFY
PAGE 12 OF 16

041 Does the ribbon advance correctly?
   Y N
   042 GO TO MAP 0020, ENTRY POINT A.

043 Does the print wheel select the correct characters?
   Y N
   044 GO TO MAP 0050, ENTRY POINT A.

  - Observe the printout.
Is there enough escapement between characters?
   Y N
   046 GO TO MAP 0110, ENTRY POINT A.

047 Are the printed characters vertical (not tilted)?
   Y N
   048 GO TO MAP 0050, ENTRY POINT A.

049 Is there enough indexing between lines?
   Y N
   050 GO TO MAP 0030, ENTRY POINT A.

051 The problem is assumed to be bad print quality.
   Suspect a bad ribbon, print wheel, or a hammer failure.
   GO TO MAP 0020, ENTRY POINT A.

052 - Turn the ribbon by hand.
   - Press the 'PRINT TEST' switch on the control panel.
Is the printout blank?
   Y N
   053 GO TO MAP 0020, ENTRY POINT A.

054 GO TO MAP 0060, ENTRY POINT A.
OPERATIONAL VERIFY

PAGE 13 OF 16

055
(ENTRY POINT D)
- Remove the tractor feed if installed.
- Remove the sheet feed if installed.
- Remove the top cover.
- Turn the cam motor by hand (100).
Does the motor turn freely and the cam turn?
Y N

056
GO TO MAP 0040, ENTRY POINT A.

057
(ENTRY POINT E)
- Ensure the controller communications cable is connected to the printer and to the controller.
- Ensure the controller is powered on and running the communications hardware.
Is the control panel 'ON LINE' light on?
Y N

058
GO TO MAP 0070, ENTRY POINT A.
- Remove the ribbon cartridge.

Is the control panel 'RIBBON' light on?
Y N

- Observe the print cartridge

Is the print cartridge in place and clean?
Y N

- Clean or install a new print cartridge.

- Clean the ribbon sensor(100).

Is the control panel 'RIBBON' light on?
Y N

- Bad ribbon sensor.
---OR---
- Bad card A-A1C1.
---OR---
- Bad left carrier cable A-A1A5.

Install a ribbon cartridge assembly.
The dirty ribbon sensor was the problem.
- Observe the fan. Feel for air blowing.

Is the fan turning and air blowing?
Y N

| 066 |
| GO TO MAP 0100, ENTRY POINT A. |

067
- SET PRINTER POWER SWITCH TO '0'.
- Lift the operator access cover (200).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the LED display 06?
Y N

| 068 |
| - SET PRINTER POWER SWITCH TO '0'. |
| - Lift the top cover (200). |
| - SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE. |
| Is the LED display 06? |
| Y N |

This tests the fan and ac voltage. If the fan is not working intermittently electronic failures could occur because of heating.
Bad operator logic card.

---OR---

Bad cable from the control panel logic card to the cover interlock plug.

Bad cover interlock switch.

(ENTRY POINT G)
Install a ribbon cartridge assembly.
Lower the operator access cover.
No problem has been found.
If this MAP was entered to check the machine, it is working correctly.
If there was a problem on the machine it is intermittent,

This is the end of the normal good machine path.

GO TO MAP 0130, ENTRY POINT A.
RIBBON FEED ENTRY

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001
(ENTRY POINT A)

(Step 001 continues)

MAP Description:
THIS MAP DETERMINES THE GENERAL TYPE OF RIBBON FAILURE AND ISOLATES THE FAILURE.

Entry Conditions:
A PRINTOUT FROM THE PRINTER MUST BE AVAILABLE OR THE PRINTER MUST HAVE ABILITY TO PRINT OR A CODE MUST BE DISPLAYED.

Start Conditions:
Is the LED display blank (all segments off)?

Y N

002
Is the code 69?
Y N

003
The symptoms changed,
GO TO MAP 0130, ENTRY POINT A.

004
-SET PRINTER POWER SWITCH TO '0'.
- Remove the plug to the ribbon motor from the rear of the right carrier cable (105).
- Connect the CE multimeter from pins 12 and 10 of the cable plug to the ribbon motor (100).
- The meter should read from 150 to 190 ohms.
- Repeat the reading from pins 11 and 9.
(Step 004 continues)

FILE REPLACABLE UNITS:

This checks the ribbon motor for open or short circuit in the windings.
(Step 004 continued)
Are the meter readings correct?

Y N

005
Bad ribbon motor drive assembly (226).

006
- Connect the CE multimeter from pins 12 and 11.
- The meter should read more than a million ohms.

Are the meter readings correct?

Y N

007
Bad ribbon motor drive assembly (226).

008
- Check that the right carrier cable A-AlA4 is plugged in and seated correctly (104).
- Remove and inspect the right carrier cable plug A-AlA4.
- Check for broken or bent pins.
- Check for continuity of the right carrier cable (Less than .5 ohm resistance) between pin 12 on the carrier end and pin 1 on the A-AlA4 end (105). Repeat for
  1) pin 11 on the carrier end and pin 2

(Step 008 continues)
(Step 008 continued)
2) pin 10 on the carrier end and pin 3 on the A-AlA4 end, and
3) pin 9 on the carrier end and pin 4 on the A-AlA4 end.

Does the carrier cable check correctly?

Y N

009
Bad right carrier cable A-AlA4.

010
- Inspect the sockets for the A-AlBl card on the A-A1 board. Check for bent or broken pins.
- Inspect the board for foreign particles such as paper clips, staples, and so on.

Are the checks correct?

Y N

011

012
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Connect the meter from test points labeled TP15(GND) and TP7(+36) on the card A-AlCl. Set the meter to read 50 Vdc (104).

Does the meter read between 32.4 and 39.6 Vdc?

Y N

013
Bad card A-AlCl.
--- OR ---

014
Bad card A-AlCl.
--- OR ---
Bad card A-AlBl.

015
Does the ribbon cartridge have ribbon in it?

Y N
RIBBON FEED ENTRY

PAGE 5 OF 12

016
Install a new ribbon cartridge.
Suspect the ribbon sensor.
GO TO PAGE 11, STEP 080,
ENTRY POINT F.

017
- Check the adjustment of the carrier eccentric shafts (127).
Is the check correct?
Y N

018
Make the carrier eccentric adjustment (127).

019
- If a print out of the failure is not available run the print test to obtain a print out.
Is the print out blank?
Y N

020
Are all the correct characters printed (309)?
Y N

021
GO TO MAP 0050, ENTRY POINT A.

022
Is the spacing between characters consistent?
Y N

023
GO TO MAP 0110, ENTRY POINT A.

024
(ENTRY POINT AA)
Observe the print out of the failure.
Are the printed characters cut off at the top or at the bottom?
Y N

025
Are all of the printed characters faded?
Y N

026
Are two or more of the printed characters faded?
Y N

027
Is the right or left of the characters cut off?
Y N

1
2
E F

6 6 6 6 6
G H J K L

MAP 0020-5
- Observe the printout to determine if ink from the feed rolls is smudged on the paper.

Is there ink on the printout from the feed rolls?

Y N

029

- Observe the printout for the spacing between characters. The spacing between characters should be consistent.

Is the spacing between characters correct?

Y N

030

GO TO MAP 0110, ENTRY POINT A.

031

Is there enough space between lines?

Y N

032

GO TO MAP 0030, ENTRY POINT A.

No problem has been found. 
Suspect a print wheel or hammer. 
GO TO MAP 0050, ENTRY POINT A.

033

Clean the feed rolls, if this does not solve the problem, install new feed rolls (216).

035

GO TO MAP 0050, ENTRY POINT A.

036

GO TO STEP 037, ENTRY POINT C.

(ENTRY POINT C)

Is a ribbon belt tension spring installed (230)?

Y N

038

Install a new drive belt tension spring(230).

039

- Turn the ribbon advance knob.
Does the ribbon advance knob turn freely?

Y N

040

Bad ribbon plate assembly.
- SET PRINTER POWER SWITCH TO '0'.
- Turn the right ribbon advance knob (230).
Do the left and right ribbon spools turn?

Y N

- Remove the ribbon cartridge.
- Turn the right ribbon spool on the ribbon cartridge.
- Some resistance will be encountered as the detent moves from tooth to tooth.
Do the left and right ribbon spools turn?

Y N

Is the ribbon cartridge out of ribbon?

Y N

- Bad ribbon cartridge.

Suspect ribbon sensor.
GO TO PAGE 11, STEP 080, ENTRY POINT F.
RIBBON FEED ENTRY

PAGE 8 OF 12

052
(ENTRY POINT D)
- Turn the ribbon lift cam (134).
- Observe the right ribbon supply spool.
Does the right ribbon supply spool turn?
Y N

053
- Remove the ribbon cartridge.
- Turn the right ribbon spool on the ribbon cartridge just removed.
Does the right spool turn freely?
Y N

054
Bad ribbon cartridge.

055
Bad ribbon drive belt.

- Turn the ribbon advance knob.
- Check that the ribbon cartridge is
  installed correctly.
- Check that the ribbon is not broken.
Does the left ribbon supply spool turn?
Y N

057
Bad ribbon cartridge.

058
(ENTRY POINT E)
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Load a sheet of paper in printer.
- Press the 'PRINT TEST' switch on the control panel.
- Observe the ribbon motor.
Does the ribbon motor turn?
Y N

059
- Remove the ribbon cartridge.
- Place a sheet of paper in the printer.
- Press the 'PRINT TEST' switch on the control panel.
Does the ribbon motor turn?
Y N

060
- SET PRINTER POWER SWITCH TO '0'.
- Remove the A-A1A4 plug from the A-Al board(104).
- Connect the CE multimeter from pin 1 to pin 3 on the A-A1A4 end of the right carrier cable.
- The meter should read between 150 and 190 ohms.
- Repeat the measurements for pin 2 to (Step 060 continues)
(Step 060 continued)

Are the meter readings correct?
Y N

061
- Check that the right carrier cable is plugged in and seated correctly.
- Remove and inspect the right carrier cable plug A-AlA4 (104).
- Check for broken or bent pins.
- Check for continuity of the right carrier cable (less than 0.5 ohm resistance) between pin 12 on the carrier end and pin 1 on the A-AlA4 end (105). Repeat for
  1) pin 11 on the carrier end and pin 2 on the A-AlA4 end,
  2) pin 10 on the carrier end and pin 3 on the A-AlA4 end, and
  3) pin 9 on the carrier end and pin 4 on the A-AlA4 end.

Does the carrier cable check correctly?
Y N

062
- Bad right carrier cable A-AlA4.

063
- Bad ribbon motor drive assembly.

064
- Bad card A-AlCl.

065
- Bad ribbon cartridge.

066
- Press the 'PRINT TEST' switch on the control panel.

Does the ribbon left spool turn?
Y N

067
- Remove the ribbon cartridge.
- Press the 'PRINT TEST' switch on the control panel.

Does the ribbon cam shaft turn (134)?
Y N

068
- Bad ribbon motor drive assembly.

069
- Bad ribbon cartridge.
070  - Check the ribbon lift arm adjustment. (134)
Is the ribbon lift arm adjusted correctly?
Y N

071  Adjust the ribbon lift arm. (134)

072  Suspect a bad ribbon, print wheel,selection, or a hammer failure.
GO TO MAP 0050, ENTRY POINT A.

073  - Turn the ribbon lift cam (134).
Does the ribbon lift cam turn freely?
Y N

074  - Remove the ribbon motor drive assembly. (226)
  - Turn the ribbon lift cam(on the ribbon motor drive assembly).
Does the ribbon cam shaft turn freely?
Y N

075  Bad ribbon motor drive assembly.

076  Bad ribbon plate assembly.

077  - Observe the ribbon cam shaft (134).
  - Turn the ribbon lift cam.
Does the ribbon cam shaft turn?
Y N

078  - Tighten the set screw or install a new FRU.
Bad ribbon motor drive assembly.

079  - Leave the ribbon out of the machine.
  SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
  - Press the 'LOAD' switch on the control panel.
Is the control panel 'RIBBON' light on?
Y N

X Y
The metal card guide reflects light to the ribbon sensor.

080
ENTRY POINT F
- Set Printer Power Switch to '0'.
- Clean and inspect the metal card guide(137).
- Clean and inspect the ribbon sensor(100).
- Leave the ribbon out of the machine.
- Set Printer Power Switch to '1'. Wait 35 seconds until power on sequence is complete.
- Press the 'LOAD' switch on the control panel.

Is the control panel 'RIBBON' light on?
Y N

081
Install the ribbon drive belt tension spring removed earlier.
Install the ribbon cartridge removed earlier.

Bad out of ribbon sensor.
---OR---
Bad card A-AlC1.
---OR---
Bad left carrier cable A-AlA5.
The dirty ribbon sensor or the metal card guide was the problem.

Install a ribbon cartridge.
GO TO PAGE 8, STEP 058, ENTRY POINT E.

(ENTRY POINT B)
- Turn power off and on if necessary.
- Check that the ribbon does not touch the platen (136).
- Check that the ribbon does not bind to the print wheel.
- Check that the ribbon is not folded. It should cover the cut in area of the ribbon guide rollers.
- Check that the ribbon covers the top character on the print wheel for both the upper ribbon position and the lower ribbon position (134).

Are the service checks correct?

Y N

Make the necessary adjustments.
Reference the MIM sections (133, 134, 136).
- Turn the ribbon by hand.
- Press the 'PRINT TEST' switch on the control panel.

Is the printout blank?

Y N

088  GO TO PAGE 5, STEP 024,
     ENTRY POINT AA.

089  GO TO MAP 0060, ENTRY POINT A.
ENTRY POINTS

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<td>0130</td>
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001 (ENTRY POINT A)
- If power is off set the 'POWER' switch on the printer to 1 and wait 35 seconds for the power on diagnostics to complete.

MAP Description:
This MAP determines the general type of INDEX FAILURE and isolates to the failing FRUS.

Entry Conditions:
NONE
Start Conditions:
NONE

Field replaceable units:
(Step 001 continued)
Is the LED display blank (all segments off)?

Y  N

002

Is the code 71?

Y  N

003

Is the code 73?

Y  N

004

The symptoms changed.
GO TO MAP 0130, ENTRY POINT A.

005

- Select 'DIAG MODE'.
- Select and run diagnostic test 11.

Is the code 43?

Y  N

006

Is the code 11?

Y  N

007

The symptoms changed.
GO TO MAP 0130, ENTRY POINT A.
Bad A-A1F1 card.
---OR---
Bad A-A1C1 card.

- Connect a meter from the test point labeled '+5' to the test point labeled 'GND' on the A-A1F1 card (104). Does the meter read between 4.5 and 5.5 VDC?

Y    N

- Connect a meter between J4-2(+5) and J4-6(GND) on the power supply DC plug(234). Does the meter read between 4.5 and 5.5 VDC?

Y    N

Bad power supply.

Bad A-A1 board.

Bad A-A1F1 card.
---OR---
Bad A-A1B1 card.
014
- Select 'DIAG MODE' (301).
- Select and run diagnostic test 12.
- Observe the LED display.

Is the code 51?
Y N

015
- Run diagnostic test 11.
Is the code 41.
Y N

This test to determine if the selection motor has no current. If both the index and selection motor shows no current the problem could be reference voltage is missing or power on reset (POR) missing.
SET PRINTER POWER SWITCH TO '0'.
- Connect the meter between the following pins the index motor plug A-A1G3.
- The meter should read from 1.2 OHMS to 1.6 OHMS.
- Pins 1 and 4.
- Pins 1 and 3.
- Pins 2 and 5.
- Pins 2 and 6.

The FLUKE* meter model 8020A can read with this accuracy on the 200 ohms scale.

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MOUNTLAKE, WASHINGTON

Are the meter readings correct?
Y N

017
Bad index motor.
INDEX FEED ENTRY

PAGE 6 OF 15

018
Bad card A-A1F1.
---OR---
Bad card A-A1C1.

019
- Connect a meter between the test points labeled '+12' and 'GND' on the A-A1F1 card(104).

Does the meter read between 11.04 and 13.2 Vdc?
Y N

020
- Check for +12Vdc between pins J4-4 and J4-6 on the power supply plug J4 (234)(235).

Does the meter read between 11.04 and 13.2 Vdc?
Y N

021
Bad power supply.

022

023
Bad card A-A1C1.
---OR---
---OR---
Bad card A-A1F1.

024
- Run diagnostic test 11.
Is the code 41.
Y N

025
Bad card A-A1C1.
---OR---
Bad card A-A1F1.

026
- Connect a meter between the test points labeled '+12' and 'GND' on the A-A1F1 card(104).

Does the meter read between 11.04 and 13.2 VDC?
Y N

7 7
K L
Check for +12 Vdc between pins J4-4 and J4-6 on the power supply plug J4(234). Does the meter read between 11.04 and 13.2 VDC?

028
Bad power supply.

029

030
Bad card A-A1C1.
---OR---
---OR---
Bad card A-A1F1.
SET PRINTER POWER SWITCH TO '0'.
- Press and hold the paper up switch on the control panel.
- While holding the paper up switch on the control panel, set the printer power switch to '1'.
- Observe the LED display while the printer is performing the power on sequence.

Does the code 35 appear on the LED display any time during the power on sequence?
Y N

Bad operator panel switch assembly.

- Press the paper up switch on the control panel.
- Press as many times as necessary.

Does the platen advance correctly each time the switch is pressed?
Y N

- Press the paper up switch on the control panel.
- Press as many times as necessary.

Does the platen advance some times?
Y N
SET PRINTER POWER SWITCH TO '0'.
- Turn the platen by hand.
- Some resistance will be encountered as the motor moves from position to position.
Does the platen turn without much resistance?
Y N
- Loosen the screws that hold the index motor.
- Remove the index motor drive belt.
Does the platen turn freely?
Y N
Bad platen bearings.
Bad index motor.
Remove the top cover and install bypass jumper.
- Set Printer Power Switch TO '1'. Wait 35 seconds until power ON sequence is complete.
- Press the paper up switch on the control panel.
- Press switch as many times as necessary.

Does the index motor turn?

Y N

Loosen the screws that hold the index motor.
- Remove the index motor drive belt.
- Press the paper up switch on the control panel.
- Press switch as many times as necessary.

Does the index motor turn?

Y N
041
- Connect the meter between the following pins on index motor plug A-A1G3.
- The meter should read from 1.2 OHMS to 1.6 OHMS.
- Pins 1 and 4.
- Pins 1 and 3.
- Pins 2 and 5.
- Pins 2 and 6.

The FLUKE® meter model 8020A can read with this accuracy on the 200 ohm scale.

Are the meter readings correct?
Y N

042
Bad index motor.

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043
Bad card A-A1Fl.
---OR---
Bad card A-A1Cl.

044
Bad platen assembly.

- Check the set screws in the platen belt pulley (121).
- Attempt to turn the platen while holding the platen belt pulley.
Will the platen turn while holding the platen belt pulley?
Y N

046
- Check the set screws in the index motor belt pulley (123).
- Attempt to turn the index motor belt pulley.
Will the index motor belt pulley turn without the index motor turning?
Y N

The index motor should be electrically detented to do this step.
Check the drive belt tension.\(122\)
Is the index motor drive belt tight enough?
Y N

Adjust the index motor drive belt tension.\(122\)

Bad index motor drive belt.

Tighten the set screws in the index belt pulley.
If this does not hold the index motor tight to the index belt pulley, install new set screws.

Tighten the set screws in the platen pulley.
If this does not hold the platen tight to the pulley, install new set screws.
052
- Check the set screws in the platen belt pulley (121).
- Attempt to turn the platen while holding the platen belt pulley.
Will the platen turn while holding the platen belt pulley?
Y N

053
- Check the set screws in the index motor belt pulley (123).
- Attempt to turn the index motor belt pulley.
Will the index motor belt pulley turn without the index motor turning?
Y N

054
- Check the index motor drive belt tension (122).
Is the index motor drive belt tension correct?
Y N

055
Adjust the index motor drive belt tension (122).
INDEX FEED ENTRY

056
Bad index motor drive belt.

057
Tighten the set screws in the index belt pulley.
If this does not hold the index motor tight to the index belt pulley install new set screws.

058
Tighten the set screws in the platen pulley.
If this does not hold the platen tight to the pulley install new set screws.

059
- Check the index motor drive belt tension (122).
Is the index motor drive belt tension correct?
Y N

060
Attempt to adjust the tension. If the adjustment cannot be made, install a new belt and do the adjustment again.

061
- Check the index motor drive belt for breaks or wear.
Are the checks correct?
Y N

062
Bad index motor drive belt.

063
Bad feed roll assembly.
--- OR ---
Bad comb assembly.
Cam Motor Entry

Entry Points

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001
(ENTRY POINT A)

MAP Description:
THIS MAP DETERMINES THE TYPE OF PAPER LOAD
FAILURE AND ISOLATES THE FAILING FRUS.

Entry Conditions:
NONE
Start Conditions:
NONE

Field replaceable units:
A-A1F1, A-A1C1, CAM MOTOR ASSEMBLY, CAM HOME
SWITCH, CAM POSITION SWITCH, CAM IDLER GEAR,
CAM ASSEMBLY, CAM ASSEMBLY CABLE A-A1A3, AND
SPRING COMB ASSEMBLY.

Is the LED display blank (all segments off)?
Y N

Is the code 76 or 77?
Y N

The symptoms changed,
GO TO MAP 0130, ENTRY POINT A.
B 5218 A01 A02
C D  MAP 0040-3
2
CAM MOTOR ENTRY

PAGE 3 OF 16

004
(ENTRY POINT C)
Is the code 76?
Y N

005
Is the code 77?
Y N

006
The symptoms changed,
GO TO MAP 0130, ENTRY POINT A.

007
-SET PRINTER POWER SWITCH TO '0'.
-Remove the two wires on the cam home switch(100).
-Connect the two wires together.
-SET PRINTER POWER SWITCH TO '1'. WAIT
  35 SECONDS UNTIL POWER ON SEQUENCE IS
  COMPLETE.
Is the code 77?
Y N

008
Bad cam home switch.

009
-SET PRINTER POWER SWITCH TO '0'.
-Remove the A-A1A3 plug from the A-A1
  board(104).
-Check all wires in the A-A1A3 cable
  for an open circuit with a meter.
-The meter should read less than .5
  ohms on all wires in the cable.
Does the A-A1A3 cable check correctly?
Y N

010
Bad cable A-A1A3.

011
Bad cam home switch.
-OR-
Bad card A-A1C1.

012
-SET PRINTER POWER SWITCH TO '0'.
-Turn the cam motor by hand (211).
Does the cam motor turn freely?
Y N
013
- Remove the cam(212).
- If necessary in order to remove the cam, remove the cam motor assembly then after this step install the cam motor assembly.
Does the cam motor turn freely?
Y N

014
Remove the cam idler gear.
Does the cam motor turn freely?
Y N

015
Bad cam motor assembly.

016
Bad cam idler gear.

017
Bad cam assembly.
---OR---
Bad spring comb assembly.

018
Does the cam turn when the motor is turned?
Y N

019
Does the idler gear turn when the motor is turned?
Y N

020
Check that the motor mounting screws are tight and the motor gear is engaged with the idler gear.

Bad cam motor assembly.
---OR---
Bad idler gear.

021
Check that the idler gear is engaged with the cam and the screws are tight in the idler gear.

Bad cam assembly.
---OR---
Bad idler gear.
022
- Move the home magnet at least 13 MM (1/2 inch) from the cam home switch by turning the cam motor (100).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the cam turn?
Y N

023
- SET PRINTER POWER SWITCH TO '0'.
- Remove the plug from the cam home switch (100).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the cam motor turn?
Y N
SET PRINTER POWER SWITCH TO '0'.

- Remove the plug from the cam motor assembly (100).
- Install a jumper from one side of the connector on the cam motor assembly to the test point marked '+36' on the A-A1F1 card (104).
- Install a jumper from the other side of the connector on the cam motor assembly to the test point marked 'GND' on the A-A1F1 card.

This connects the cam motor directly to voltage to determine if the motor is good.

**CAUTION**

Failure to remove the plug from the cam motor assembly could cause damage to the A-A1F1 card.

SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the cam motor run?

Y N

---

025

Bad cam motor assembly.
- Leave the cam motor jumpers on.
- SET PRINTER POWER SWITCH TO '0'.
- Check all the wires in the cable A-A1A3 for an open circuit with a meter(104)(105).
- The meter should read less than .5 ohms on all wires in the cable.
Does the cam assembly cable check correctly?
Y N

- Leave the cam motor jumpers on.
- Remove the plug from the cam home switch(100).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Connect the meter between the two leads on the cam home switch.
- The meter should be on a low ohms scale.
Does the meter needle jump as cam passes the home position (the meter will change numbers if it is a digital meter)?
Y N

Bad cam assembly cable A-A1A3.
SET PRINTER POWER SWITCH TO '0'.
- Remove the plug from the cam motor assembly (100).
- Install a jumper from one side of the connector on the cam motor assembly to the test point marked '+36' on the A-A1F1 card (104).
- Install a jumper from the other side of the connector on the cam motor assembly to the test point marked 'GND' on the A-A1F1 card.

Failure to remove plug from the cam motor assembly could cause damage to the A-A1F1 card.

SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the idler turn?
Y N

Bad cam idler gear.
---OR---
Bad cam motor assembly.
- SET PRINTER POWER SWITCH TO '0'.
  - Leave the cam motor jumpers on.
  - Check all the wires in the cable A-A1A3 for an open circuit with a meter(104)(105).
  - The meter should read less than .5 ohms on all wires in the cable.

Does the cam assembly cable check correctly?

Y N

- Bad cam assembly cable A-A1A3.

036

- Leave the cam motor jumpers on.
  - Remove the plug from the cam home switch(100).

- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
  - Connect the meter between the two leads on the cam home switch.
  - The meter should be on a low ohms scale.

Does the meter needle jump as cam passes the home position (the meter will change numbers if it is a digital meter)?

Y N

039

Bad cam position switch.

040

Bad card A-A1F1.
---OR---
Bad card A-A1C1.
041
- SET PRINTER POWER SWITCH TO '0'.
- Press and hold the 'LOAD' switch on the control panel.
- While holding the 'LOAD' switch on the control panel, set the printer power switch to '1'.
- Observe the LED display while the printer is performing the power on sequence.

Does the code 35 appear on the LED display any time during the power on sequence?
Y N

042
Bad control panel switch assembly.
---OR---
Bad cable A-A1A3.

043
(ENTRY POINT D)
- Remove the top cover and bypass the cover interlock (101)
- Observe the cam motor.
- Press the 'CANCEL' switch on the control panel.
- Press the 'LOAD' switch on the control panel.

(Step 043 continues)

044
Is the LED display blank (all segments off)?
Y N

045
GO TO PAGE 3, STEP 004,
ENTRY POINT C.

046
(ENTRY POINT E)
- SET PRINTER POWER SWITCH TO '0'.
- Turn the cam motor (211).

Does the cam motor turn freely?
Y N

047
- Remove the cam (212).
- If necessary in order to remove the cam, remove the cam motor assembly then after this step install the cam motor assembly.

Does the cam motor turn freely?
Y N

1 1 1 1
3 2 1 1
- Remove the cam idler gear.
- Does the cam motor turn freely?
  Y N

- Check for worn or missing teeth on the cam idler gear.
- Check the idler gear bearings by holding the shaft while turning the cam idler gear.
- Are the checks correct?
  Y N

- Bad cam idler gear.

- Bad cam motor assembly.

- Bad cam assembly.

---OR---

- Bad spring comb assembly.
- Set Printer Power Switch to '0'.
- Remove the plug from the cam motor assembly (100).
- Install a jumper from one side of the connector on the cam motor assembly to the test point marked '+36' on the A-A1F1 card (104).
- Install a jumper from the other side of the connector on the cam motor assembly to the test point marked 'GND' on the A-A1F1 card.

**CAUTION**
Failure to remove plug from the cam motor assembly could cause damage to the A-A1F1 card.

- Set Printer Power Switch to '1'. Wait 35 seconds until power on sequence is complete.

Does the cam motor run?
Y N

055
Bad cam motor assembly.
056 - Check all wires in the cable A-A1A3 for an open circuit with a meter (104).
- The meter should read less than .5 ohms on all wires in the cable.
Does the cam assembly cable check correctly?
Y N

057 Bad cam assembly cable A-A1A3.

058 Bad card A-A1F1.

059 - Observe all the paper aligners.
- Press the 'LOAD' switch on the control panel.
- Do all the paper aligners move toward and away from the platen?
Y N

060 - Observe all the paper aligners.
- Press the 'LOAD' switch on the control panel.
- Do any of the paper aligners move toward and away from the platen?
Y N

061 - Observe the cam assembly.
- Press the 'LOAD' switch on the control panel.
Does the cam assembly turn?
Y N

062 - Observe the cam idler gear.
- Press the 'LOAD' switch on the control panel.
Does the cam idler gear turn?
Y N

063 Are the gears on the idler engaged with the cam motor gear?
Y N

064 Adjust the cam motor position.
065
Are the teeth on the cam motor gear worn?
Y N

066
Are the teeth on the cam idler gear worn?
Y N

067
Bad cam idler gear.
---OR---
Bad cam motor assembly.
---OR---
Bad cam assembly.

068
Bad cam idler assembly.

069
Bad cam motor assembly.

070
Bad cam idler gear.
---OR---
Bad cam assembly.

071
Bad feed roller assembly.

072
Bad feed roller assembly.

073
- Observe all the paper rollers.
  - Press the 'LOAD' switch on the control panel.
  - Do all the feed rollers move toward and away from the platen?
Y N

074
- Observe all the feed rollers.
  - Press the 'LOAD' switch on the control panel.
  - Do any of the feed rollers move toward and away from the platen?
Y N

075
- Observe the cam assembly.
  - Press the 'LOAD' switch on the control panel.
  - Does the cam assembly turn?
Y N
076   - Observe the cam idler gear.
- Press the 'LOAD' switch on the control panel.

Does the cam idler gear turn?

Y  N

077 Are the gear teeth on the idler engaged with those of the cam motor?

Y  N

078 Adjust the cam motor position.

079 Are the teeth on the cam motor worn?

Y  N

080 Are the teeth on the cam idler gear worn?

Y  N

081 Bad cam idler gear.
---OR---
Bad cam motor assembly.
---OR---
Bad cam assembly.

082 Bad cam idler assembly.

083 Bad cam motor assembly.

084 Bad cam idler gear.

085 Bad feed roller assembly.

086 Bad feed roller assembly.

087 - Observe the paper bail.
- Press the 'LOAD' switch on the control panel.

Does the paper bail move toward and away from the platen?

Y  N

088 Is there a spring installed on each side of the paper bail?

Y  N
Install a new spring or springs.

Is the paper bail cam follower in the cam opening?

Form the paper bail cam follower to align in the opening on the cam.

Install a new paper bail.

Is the LED display blank (all segments off)?

GO TO PAGE 3, STEP 004, ENTRY POINT C.

- SET PRINTER POWER SWITCH TO '0'.
  - Press and hold the 'RELEASE' switch on the control panel.
  - While holding the 'RELEASE' switch on the control panel, set the printer power switch to '1'.
  - Observe the LED display during the power on sequence.

Does the code 35 appear on the LED display any time during the power on sequence?

Bad control panel switch assembly.

--- OR ---
Bad cable from switch assembly to A-A1 board.

Is the sheet feed installed?

No problem has been found.
GO TO MAP 0130, ENTRY POINT A.

GO TO MAP 0660, ENTRY POINT A.
5218 A01 A02

PRINT WHEEL ENTRY

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PRINT WHEEL ENTRY

001
(ENTRY POINT A)
- SET PRINTER POWER SWITCH TO '0'.
- SET PRINTER POWER SWITCH TO '1', WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Lift the ribbon plate assembly.
- Push the selection home lever to the left then to the right(222).

MAP Description:
THIS MAP DETERMINES THE GENERAL TYPE OF PRINT WHEEL FAILURE AND ISOLATES THE BAD PART.

Entry Conditions:
NONE
Start Conditions:
NONE
Field replacable units:
PRINT WHEEL, UPPER CARRIER ASSEMBLY, SELECTION MOTOR ASSEMBLY, A-A1A4 CABLE, AND A-A1A5 CABLE.

CAUTION
The selection motor pull back cable could be broken if the print wheel is not home. This step checks the print wheel for home position.

Does the selection home lever move freely?
Y N

002
| Bad upper carrier assembly.

3
A
- Push the selection home lever to the right (222).
- Observe the tip of the selection home lever.
- Observe the home groove in the selection motor hub (132).

Does the selection home lever enter the home groove on the selection motor hub?

Y N

- Check the selection motor print hub for damage (130)
- Check that the set screws on the print hub are tight.

Are the checks correct?

Y N

- Tighten the set screws in the print hub, or install a new print hub if necessary (130).
- Do the print wheel hub to platen adjustment.
- Do the print wheel home adjustment (132)(127).
SET PRINTER POWER SWITCH TO '0'.
- Attempt to turn the print wheel by hand.

Does the print wheel turn freely?

Y N

Bad print wheel.
---OR---
Bad selection motor assembly.

- Remove the A-A1A4 plug from the A-Al board (104).
- Connect the CE meter between the pins listed below on the A-A1A4 end of the right carrier cable.
- The meter should read between .5 ohms and 1.5 ohms.
- Pins 7 to 12.
- Pins 8 to 11.
- Pins 9 to 10.

Are the meter readings correct?

Y N

This checks the selection motor for open or short circuit in the drive coils.
- Inspect the right carrier cable plug A-AlA4 for broken or bent pins (104).
- Check for continuity of the right carrier cable (Less than .5 ohm resistance) between pin 6 on the carrier end and pin 7 on the A-AlA4 end (105). Repeat for
  1) pin 5 on the carrier end and pin 8 on the A-AlA4 end,
  2) pin 4 on the carrier end and pin 9 on the A-AlA4 end,
  3) pin 3 on the carrier end and pin 10 on the A-AlA4 end,
  4) pin 2 on the carrier end and pin 11 on the A-AlA4 end, and
  5) pin 1 on the carrier end and pin 12 on the A-AlA4 end.

Does the carrier cable check correctly?

Y  N

010  Bad cable A-AlA4.

011  Bad selection motor assembly.
- Remove the A-AlA5 plug from the A-Al board (104).
- Connect the CE meter between the pins listed below on the A-AlA5 cable.
- The meter should read between 100 ohms and 170 ohms.
- Pins 8 to 12.
- Pins 9 to 12.
- Pins 10 to 12.
- Pins 11 to 12.
Are the meter readings correct?
Y N

- Connect the CE meter between pin 8 on one end of the cable A-AlA5 and pin 8 on the other end of the cable.
- The meter should read less than .5 ohm.
- Repeat the measurements for pins 9, 10, 11 and 12.
Are the meter readings correct?
Y N

- Bad cable A-AlA5.

- Bad selection motor assembly.
016
Bad card A-AlBl.

017
- Lower the ribbon plate assembly.
- Press the selector home push rod on the ribbon plate assembly to the right.

Does the plastic cap on the rod contact the ribbon plate assembly?
Y N

018
Bad upper carrier assembly.

019
- SET PRINTER POWER SWITCH TO '0'.
- If the print wheel is not home it will not come out. The lever on the left of the ribbon drive will go in all the way when the print wheel is home.
- Pull back the selection motor assembly by pressing selection home rod on the side of the ribbon plate assembly and holding while lifting the ribbon to the service position.
- Remove the print wheel cartridge(225).
- Lower the ribbon plate assembly.
- Check that the selection motor turns freely.
- Check for bent or broken print

(Step 019 continues)
characters.
- Check the print hub for damage or wear (130).
- Check the print hub set screws.
- Check the print hub to platen adjustment.
- Check for a worn drive hole.

Are the checks correct?
Y N

020
- Check that the pullback cable is attached at both ends and not broken.

Are the checks correct?
Y N

021
Bad pullback cable.

022
Is the selection motor free to turn?
Y N

023
Bad selection motor assembly.

024
Is the print hub worn or damaged (130)?
Y N
025
Bad print wheel.

026
Bad print hub.

027
- Install a print wheel.
- Lower the ribbon.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Lift the ribbon plate assembly without pressing the selection home push rod.
- Press the hammer forward. A pencil or other item may be necessary to press the hammer forward.

Is the pointed part on the rear of the print character inside the V notch on the hammer? Y N

028
Adjust the print wheel homing (132)(127).

029
(ENTRY POINT B)
Check both ends of the left and right carrier cables.(100)(151)
Are the cables plugged in and seated correctly?
Y N

030
Reconnect the cables.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Press the 'PRINT TEST' switch on the control panel.

If the printer still has a problem,
GO TO MAP 0010, ENTRY POINT A.

031
- Observe the code or status of the LED display recorded in an earlier step.
Was the LED display blank at the time the status of the LED display was recorded? Y N

032
Was the code 51?
Y N

1 1
6 2 9
L M N

MAP 0050-8
Was the code 54, 56, 57 or 58?

Y N

034
The problem cannot be found in this map.
GO TO MAP 0130, ENTRY POINT A.

035
- SET PRINTER POWER SWITCH TO '0'.
- Remove the A-AlA4 plug from the A-Al board(104).
- Connect the CE meter between the pins listed below on the A-AlA4 end of the right carrier cable.
- The meter should read between .5 ohms and 1.5 ohms.
- Pins 7 to 12.
- Pins 8 to 11.
- Pins 9 to 10.

Are the meter readings correct?

Y N

1 1
1 0
P Q

Code 57 and 58 have the same meaning except 58 occurs when 'ON LINE'.

This checks the selection motor for open or short circuit in the drive coils.
- Inspect the right carrier cable plug A-A1A4 for broken or bent pins (104).
- Check for continuity of the right carrier cable (Less than .5 ohm resistance) between pin 6 on the carrier end and pin 7 on the A-A1A4 end (105).
Repeat for:
   1) pin 5 on the carrier end and pin 8 on the A-A1A4 end,
   2) pin 4 on the carrier end and pin 9 on the A-A1A4 end,
   3) pin 3 on the carrier end and pin 10 on the A-A1A4 end,
   4) pin 2 on the carrier end and pin 11 on the A-A1A4 end, and
   5) pin 1 on the carrier end and pin 12 on the A-A1A4 end.
Does the carrier cable check correctly?
Y N

037
Bad cable A-A1A4.

038
Bad selection motor assembly.
039
- Remove the A-AlA5 plug from the A-Al board (104).
- Connect the CE meter between the pins listed below on the A-AlA5 cable.
- The meter should read between 100 ohms and 170 ohms.
- Pins 8 to 12.
- Pins 9 to 12.
- Pins 10 to 12.
- Pins 11 to 12.
Are the meter readings correct?
Y N

040
- Connect the CE meter between pin 8 on one end of the cable A-AlA5 and pin 8 on the other end of the cable (104).
- The meter should read less than .5 ohm.
- Repeat the measurements for pins 9, 10, 11 and 12.
Are the meter readings correct?
Y N

041
Bad cable A-AlA5.

042
Bad selection motor assembly.
---OR---
Bad card A-A1C1.

- Select 'DIAG MODE' (301).
- Select and run diagnostic test 11.

This test runs the escapement to determine if both the escapement and selection have no current.

Is the LED display 41?
Y N

If the LED display is 11, test 11 ran without errors.

The symptoms changed or two failures occurred,
GO TO MAP 0130, ENTRY POINT A.
- SET PRINTER POWER SWITCH TO '0'.
- Connect the meter to the test points on the A-AlBl card that are labeled +36 and GND.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Does the meter read between 32.4 VDC and 39.6 VDC?
Y N

048
Bad board A-Al.

To isolate the connector that is not making contact there are +36 VDC test points on the A-AlBl and A-AlF1 cards.
(Step 049 continued)
Are the meter readings correct?
Y N

050
- Inspect the right carrier cable plug A-AlA4 for broken or bent pins (104).
- Check for continuity of the right carrier cable (Less than .5 ohm resistance) between pin 6 on the carrier end and pin 7 on the A-AlA4 end (105). Repeat for
  1) pin 5 on the carrier end and pin 8 on the A-AlA4 end,
  2) pin 4 on the carrier end and pin 9 on the A-AlA4 end,
  3) pin 3 on the carrier end and pin 10 on the A-AlA4 end,
  4) pin 2 on the carrier end and pin 11 on the A-AlA4 end, and
  5) pin 1 on the carrier end and pin 12 on the A-AlA4 end.

Does the carrier cable check correctly?
Y N

051
Bad cable A-AlA4.

052
Bad selection motor assembly.
Reconnect A-AlA4 cable.
Bad card A-AlB1.
---OR---
Bad card A-AlCl.

-SET PRINTER POWER SWITCH TO '0'.
- Connect the meter to the power supply J4-1 (+36 VDC) and to J4-6 (ground)(234).
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the meter read between 32.4 VDC and 39.6 VDC?
Y N

Bad power supply.

Bad board A-Al.
---OR---
Bad card A-AlCl.
---OR---
Bad card A-AlFl.

To isolate to the connector that is not making contact there are +36 VDC test points on the A-AlB1 and A-AlFl cards.
PRINT WHEEL ENTRY

PAGE 16 OF 22

057
- Press the 'PRINT TEST' switch on the control panel.
- Observe the printout compare it to the sample printout in the MIM (309).
Are all the correct characters printed?
Y N

058
- SET PRINTER POWER SWITCH TO '0'.
- Remove the A-A1A4 plug from the A-A1 board (104).
- Connect the CE meter between the pins listed below on the A-A1A4 end of the right carrier cable.
- The meter should read between .5 ohms and 1.5 ohms.
- Pins 7 to 12.
- Pins 8 to 11.
- Pins 9 to 10.
Are the meter readings correct?
Y N

The print wheel is not home.
This checks the selection motor for open or short circuit in the drive coils.
- Inspect the right carrier cable plug A-AL4A for broken or bent pins (104).
- Check for continuity of the right carrier cable (Less than .5 ohm resistance) between pin 6 on the carrier end and pin 7 on the A-AL4A end (105).
Repeat for
  1) pin 5 on the carrier end and pin 8 on the A-AL4A end,
  2) pin 4 on the carrier end and pin 9 on the A-AL4A end,
  3) pin 3 on the carrier end and pin 10 on the A-AL4A end,
  4) pin 2 on the carrier end and pin 11 on the A-AL4A end, and
  5) pin 1 on the carrier end and pin 12 on the A-AL4A end.
Does the carrier cable check correctly?
Y N

060
Bad cable A-AL4A.

061
Bad selection motor assembly.
Remove the A-A1A5 plug from the A-A1 board(104).
- Connect the CE meter between the pins listed below on the A-A1A5 cable.
- The meter should read between 100 ohms and 170 ohms.
- Pins 8 to 12.
- Pins 9 to 12.
- Pins 10 to 12.
- Pins 11 to 12.
Are the meter readings correct?

Y N

Connect the CE meter between pin 8 on one end of the cable A-A1A5 and pin 8 on the other end of the cable.
- The meter should read less than .5 ohm.
- Repeat the measurements for pins 9, 10, 11 and 12.
Are the meter readings correct?

Y N

Bad cable A-A1A5.

Bad selection motor assembly.

This checks the selection motor for opens or short circuit in the feedback coils.
Bad card A-AlB1.

067
- Observe the printout and compare it to the sample printout in the MIM (309).
- Check that the characters are not tilted and that the spacing between characters is correct.

Are all the characters aligned correctly?

Y N

068
- SET PRINTER POWER SWITCH TO '0'.
- Remove the A-AlA4 plug from the A-Al board.
- Connect the CE meter between the pins listed below on the A-AlA4 end of the right carrier cable.
- The meter should read between .5 ohms and 1.5 ohms.
- Pins 7 to 12.
- Pins 8 to 11.
- Pins 9 to 10.

Are the meter readings correct?

Y N

The print wheel is not home. This checks the selection motor for open or short circuit in the drive coils.
- Inspect the right carrier cable plug A-AL4 for broken or bent pins (104).
- Check for continuity of the right carrier cable (Less than .5 ohm resistance) between pin 6 on the carrier end and pin 7 on the A-AL4 end (105).

Repeat for:
1) pin 5 on the carrier end and pin 8 on the A-AL4 end,
2) pin 4 on the carrier end and pin 9 on the A-AL4 end,
3) pin 3 on the carrier end and pin 10 on the A-AL4 end,
4) pin 2 on the carrier end and pin 11 on the A-AL4 end, and
5) pin 1 on the carrier end and pin 12 on the A-AL4 end.

Does the carrier cable check correctly?
Y N

070
Bad cable A-AL4.

071
Bad selection motor assembly
072
- Remove the A-AlA5 plug from the A-Al board (104).
- Connect the CE meter between the pins listed below on the A-AlA5 cable.
- The meter should read between 100 ohms and 170 ohms.
- Pins 8 to 12.
- Pins 9 to 12.
- Pins 10 to 12.
- Pins 11 to 12.
Are the meter readings correct?
Y N

073
- Connect the CE meter between pin 8 on one end of the cable A-AlA5 and pin 8 on the other end of the cable.
- The meter should read less than .5 ohm.
- Repeat the measurements for pins 9, 10, 11 and 12.
Are the meter readings correct?
Y N

074
Bad cable A-AlA5.

075
Bad selection motor assembly.

This checks the selection motor for open or short circuit in the feedback coils.
- Select diagnostic mode(301).
- Select and run the ribbon coverage test 48.
- Observe the line of underscores.
Do the underscores appear straight (not tilted)?
Y N

077
Adjust the print wheel alignment and check the carrier eccentric shafts (127)(132).

078
Bad card A-ALB1.

079
- Select 'DIAG MODE'(301).
- Run the ribbon coverage test.
  Diagnostic test 48.
- Observe the line of underscores.
Do the underscores appear straight (not tilted)?
Y N

080
Adjust the print wheel alignment and the carrier eccentric shafts (127)(132).

For a sample printout see mim section 304 test 48.
HAMMER ENTRY

ENTRY POINTS

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</table>

001
(ENTRY POINT A)
- Lift the ribbon cartridge to the service position (remove the bail if necessary).
- Push the rear of the hammer forward until it comes in contact with the print wheel (131).

Does the hammer move freely?
Y N

Field replaceable units:
A-A1A4 CABLE, CARDS A-A1B1, A-A1C1, HAMMER ASSEMBLY.
HAMMER ENTRY

PAGE 2 OF 8

002
Bad hammer assembly.

003
- Push the hammer forward until it comes in contact with the print wheel.
- Put pressure to the print wheel clockwise against the detent then counterclockwise against the detent.
- Observe the relative position of the hammer to print wheel.
- The 'V' in the hammer should hit the protrusion on the back of the print character.
- The pointed back of the print character should be inside the 'V' on the hammer.

Is the hammer position correct?

004
Adjust the hammer position (131) and the print wheel position (132).

005
- SET PRINTER POWER SWITCH TO '0'.
- Ensure the paper bail is against the platen. If it is not, advance the cam motor by hand until the paper bail is against the platen.
- If the print wheel is not home, lift the ribbon plate assembly, press the selection home lever to the right while turning the print wheel until the lever enters the home groove. This ensures print wheel is home so the print wheel cartridge can be removed and the alignment tool can be inserted (132).
- Check the distance from the hammer to the platen (131).
- After checking this adjustment remove the print wheel alignment tool and install the print wheel.

Is the distance correct?

006
Adjust the hammer to platen distance (131).
007
- Observe the code or status of the LED display recorded in an earlier MAP step. Was the LED display blank at the time the status of the LED display was recorded?
Y N

008
Was the code 60?
Y N

009
Was the code 61?
Y N

010
Was the code 63 or 64?
Y N

011
Was the code 65?
Y N

012
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
GO TO MAP 0130, ENTRY POINT A.

013
- SET PRINTER POWER SWITCH TO '0'.
- Remove the hammer coil connector from the center of the right carrier cable (105).
- Connect the meter between the two pins on the connector to the hammer coil.
- The meter should read between 2.0 and 3.0 OHMS.
Is the meter reading correct?
Y N

014
Bad hammer assembly.

015
- Remove the hammer feed back connector from the center of the left carrier cable A-A1A5 (105).
- Connect the meter between the two pins that are on the cable from the hammer feed back coils.
- The meter should read between 65 and 80 ohms.
(Step 015 continues)
(Step 015 continued)

Is the meter reading correct?
Y N

016
Bad hammer assembly.

017
- Reinstall the hammer coil connector in the center of of the right carrier cable.
- Inspect the right carrier cable connector A-A1A4 (104).
- Check for broken or bent pins.
- Check for continuity of the right carrier cable (Less than .5 ohm resistance) between pin 8 on the carrier end and pin 5 on the A-A1A4 end (105). Repeat for pin 7 on the carrier end and pin 6 on the A-A1A4 end.

Does the carrier cable check correctly?
Y N

018
Bad right carrier cable A-A1A4.

019
- Inspect the sockets for the A-AlB1 card on the A-Al board. Check for bent or broken pins.
- Inspect the board for foreign particles such as paper clips, staples, and so on.

Are the checks correct?
Y N

020
Bad board A-Al.

021
- OR-
Bad card A-AlB1.
Bad card A-AlC1.

022
- SET PRINTER POWER SWITCH TO '0'.
- Remove the hammer connector from the center of the right carrier cable (105). Connect the meter between the two pins on the connector to the hammer coil.
- The meter should read between 2.0 and 3.0 OHMS.

Is the meter reading correct?
Y N
(Step 027 continued)

Does the hammer move?

Y N

028

- SET PRINTER POWER SWITCH TO '0'.
- Remove the hammer connector from the center of the right carrier cable (105).
- Connect the meter between the two pins on the connector to the hammer coil.
- The meter should read between 2.0 and 3.0 OHMS.

Is the meter reading correct?

Y N

029

Bad hammer assembly.

030

- Inspect the right carrier cable connector A-AL4A (104).
- Check for continuity of the right carrier cable (less than .5 ohm resistance) between pin 8 on the carrier end and pin 5 on the A-AL4A end (105). Repeat for pin 7 on the carrier end and pin 6 on the A-AL4A end.

(Step 030 continues)
(Step 030 continued)
Does the carrier cable check correctly?
  Y N
  031
  Bad right carrier cable A-A1A4.
  032
  ---OR---
  Bad card A-A1C1.
  033
  - Check the left carrier cable(100).
  - Check that the cable is plugged in and seated correctly.
  - Check for broken or bent pins.
Are the checks correct?
  Y N
  034
  Bad cable A-A1A5.
  035

036
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Press the 'CANCEL' switch if necessary to clear the printer.
  - Press the 'PRINT TEST' switch on the control panel.
  - Observe the hammer.
Does the hammer move?
  Y N
  037
-SET PRINTER POWER SWITCH TO '0'.
  - Remove the hammer connector from the center of the right carrier cable (105).
Connect the meter between the two pins on the connector to the hammer coil.
  - The meter should read between 2.0 and 3.0 OHMS.
Is the meter reading correct?
  Y N
  038
  Bad hammer assembly.
- Inspect the right carrier cable connector A-A1A4 (104).
- Check for continuity of the right carrier cable (less than .5 ohm resistance) between pin 8 on the carrier end and pin 5 on the A-A1A4 end (105). Repeat for pin 7 on the carrier end and pin 6 on the A-A1A4 end.

Does the carrier cable check correctly? 
Y N

040
Bad right carrier cable A-A1A4.

041
---OR---
Bad hammer assembly.
---OR---
Bad card A-A1C1.

- SET PRINTER POWER SWITCH TO '0'.
- Remove the hammer feed back connector from the center of the left carrier cable (105).
- Connect the meter between the two pins on the hammer feed back coil.
- The meter should read between 65 and 80 ohms.

Is the meter reading correct? 
Y N

043
Bad hammer assembly.

044
- Remove the left carrier cable connector A-A1A5.
- Check the left carrier cable for continuity.
- Connect the meter from pin 1 on one end to pin 1 on the other end.
- Repeat the measurements for pins 2-12.
- The meter should read less than .5 ohm.

Is the meter reading correct? 
Y N

045
Bad left carrier cable A-A1A5.
HAMMER ENTRY

PAGE 8 OF 8

046
Bad card A-AlB1.
---OR---
Bad hammer assembly.
---OR---
Bad card A-AlC1.

047
- Select 'DIAG MODE'.
- Select and run diagnostic test 47.
- Observe the printout.

Is the print light on the larger characters?
Y N

048
- Select and run diagnostic test 45.
- Observe the printout. Look on the reverse side of the page to check for character penetration.

Is the print too heavy on small characters?
Y N

049
No problem was found in this MAP.
GO TO MAP 0130, ENTRY POINT A.
ENTRY POINTS

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EXIT POINTS

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MAP Description:
THIS MAP DETERMINES THE TYPE OF COMMUNICATIONS FAILURE AND ISOLATES THE BAD PART.

Entry Conditions:
NONE

Start Conditions:
NONE

Field replaceable units:
CARDS A-A1D1, AND A-A1E1
002
Bad card A-A1D1.
---OR---

003
- Install communication wrap jumper on the printer attachment panel.
- Press the 'CANCEL' switch on the control panel.
- Select and run diagnostic test 07.

Is the LED display 07?
Y N

004
Is the LED display 9A?
Y N

005
The symptoms have changed.
The problem must be intermittent.
GO TO MAP 0130, ENTRY POINT A.

006
- Remove the A-A1H1 cable from the A-A1 board.
- Connect a jumper from A-A1H1 pin 1 to A-A1H1 pin 3.
- Connect a jumper from A-A1H1 pin 2 to A-A1H1 pin 4.
- Select and run diagnostic test 07.

Is the LED display 07?
Y N

007
Bad card A-A1D1.

008
Bad cable from A-A1 board to the communications attachment panel.

009
Has the display writer operation been verified?
Y N

010
Check out the display writer.
GO TO MAP 5070, ENTRY POINT A.
011 - Install the communications wrap jumper on the system end of the printer cable.
- Select and run diagnostic test 07.
Is the LED display 07?
Y N

012 Is the LED display 9A?
Y N

013 The symptoms have changed.
The problem must be intermittent.
GO TO MAP 0130, ENTRY POINT A.

014 The wrap test works on the printer.
The wrap test fails at the end of the cable.

015 The wrap tests run correctly on the printer and on the display writer.
Install a new A-A1D1 card then return to the display writer again.
GO TO MAP 5030, ENTRY POINT A.
5218 A01 A02

CODE MATRIX TABLE

PAGE 1 OF 4

<table>
<thead>
<tr>
<th>ENTRY POINTS</th>
<th>EXIT POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FROM</strong></td>
<td><strong>EXIT THIS MAP</strong></td>
</tr>
<tr>
<td><strong>MAP NUMBER</strong></td>
<td><strong>ENTRY POINT</strong></td>
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<tr>
<td>0010</td>
<td>A</td>
</tr>
<tr>
<td>0015</td>
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MAP 0090-1
## Code Matrix Table

### Symptom FRU Table

<table>
<thead>
<tr>
<th>CODE</th>
<th>FRUS</th>
<th>CODE</th>
<th>FRUS</th>
<th>CODE</th>
<th>FRUS</th>
<th>CODE</th>
<th>FRUS</th>
<th>CODE</th>
<th>FRUS</th>
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<tbody>
<tr>
<td>03-04</td>
<td>A-AIDI CT PAN</td>
<td>39-40</td>
<td>A-AIDI CT PAN</td>
<td>53</td>
<td>A-AIB1 A-AIC1</td>
<td>73</td>
<td>A-AIFI A-AIC1</td>
<td>88</td>
<td>OR CT PAN .8.8 A-AIC1</td>
</tr>
<tr>
<td>07-29</td>
<td>A-AIDI CT PAN</td>
<td>42</td>
<td>A-AIDI CT PAN</td>
<td>55</td>
<td>A-AIB1 A-AIC1</td>
<td>74-75</td>
<td>A-AIFI A-AIC1 H REED SWIT</td>
<td>.8.8</td>
<td>CT PAN A-AID1</td>
</tr>
<tr>
<td>31</td>
<td>A-AIDI A-AIE1</td>
<td>43</td>
<td>A-AIF1 A-AIC1</td>
<td>59</td>
<td>A-AIDI CT PAN</td>
<td>80</td>
<td>A-AIC1</td>
<td>89</td>
<td>A-AIC1 A-AID1</td>
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<tr>
<td>32</td>
<td>A-AIDI</td>
<td>45</td>
<td>A-AIC1 A-AID1</td>
<td>62</td>
<td>A-AIDI CT PAN</td>
<td>81-84</td>
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<td>90</td>
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<td>33-34</td>
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<td>66-68</td>
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<td>85</td>
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<td>91-92</td>
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<td>A-AIDI CT PAN</td>
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<td>A-AIC1 A-AID1</td>
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<td>98-99</td>
<td>A-AIDI</td>
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(Step 001 continues)
### CODE MATRIX TABLE

**PAGE 3 OF 4**

(Step 001 continued)

**IS THE CODE FOUND IN THE 'SYMPTOM FRU' TABLE?**

<table>
<thead>
<tr>
<th>Y</th>
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**SYMPTOM GO TO MAP TABLE**

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<tr>
<td>01-02</td>
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<tr>
<td>05</td>
<td>0095,C</td>
</tr>
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<td>0095,D</td>
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<tr>
<td>30</td>
<td>0095,E</td>
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<td>0095,H</td>
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<td>41</td>
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<td>44</td>
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<tr>
<td>46</td>
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<tr>
<td>54</td>
<td>0050,A</td>
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<tr>
<td>56</td>
<td>0050,A</td>
</tr>
</tbody>
</table>

(Step 002 continues)
(Step 002 continued)
IS THE CODE FOUND IN THE 'SYMPTOM GO TO MAP' TABLE?
Y N
| 003 |
| GO TO MAP 0095, ENTRY POINT A. |

Go to the correct MAP listed in the 'SYMPTOM GO TO MAP' table.

POSSIBLE MAP EXIT POINTS
-----------------------------
-----------------------------
GO TO MAP 0020, ENTRY POINT A.
-----------------------------
GO TO MAP 0030, ENTRY POINT A.
-----------------------------
GO TO MAP 0040, ENTRY POINT A.
(Step 004 continues)

(Step 004 continued)
-----------------------------
GO TO MAP 0050, ENTRY POINT A.
-----------------------------
GO TO MAP 0060, ENTRY POINT A.
-----------------------------
GO TO MAP 0040, ENTRY POINT A.
-----------------------------
GO TO MAP 0095, ENTRY POINT C.
-----------------------------
GO TO MAP 0095, ENTRY POINT D.
-----------------------------
GO TO MAP 0095, ENTRY POINT E.
-----------------------------
GO TO MAP 0095, ENTRY POINT H.
-----------------------------
GO TO MAP 0110, ENTRY POINT A.

005
Install a new FRU for the first FRU listed. If the printer does not work correctly install new FRUS one at a time in the order listed. See the 'SYMPTOM FRU' table.
<table>
<thead>
<tr>
<th>MAP NUMBER</th>
<th>ENTRY POINT</th>
<th>PAGE NUMBER</th>
<th>STEP NUMBER</th>
<th>ENTRY POINT</th>
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<tbody>
<tr>
<td>0010</td>
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<td>001</td>
<td></td>
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<td>A</td>
<td>2</td>
<td>001</td>
<td></td>
</tr>
<tr>
<td>0090</td>
<td>C</td>
<td>10</td>
<td>043</td>
<td></td>
</tr>
<tr>
<td>0090</td>
<td>D</td>
<td>9</td>
<td>036</td>
<td></td>
</tr>
<tr>
<td>0090</td>
<td>E</td>
<td>14</td>
<td>064</td>
<td></td>
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<tr>
<td>0090</td>
<td>H</td>
<td>14</td>
<td>062</td>
<td></td>
</tr>
<tr>
<td>0610</td>
<td>B</td>
<td>7</td>
<td>019</td>
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</tr>
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<td>B</td>
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<td>019</td>
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<td></td>
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<td>0640</td>
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<td>006</td>
<td></td>
</tr>
<tr>
<td>0650</td>
<td>B</td>
<td>7</td>
<td>019</td>
<td></td>
</tr>
</tbody>
</table>
MAP Description:
THIS MAP DETERMINES BAD PART OR ADJUSTMENT BASED ON THE CODE FROM THE BASIC ASSURANCE TEST.

Entry Conditions:
NONE

Start Conditions:
A CODE MUST BE DISPLAYED ON THE OPERATOR PANEL.

Field replaceable units:

NOTE: For a description of the codes see MIM SECTION (305).
### TABLE OF VALID CODES

**NOTE:**

\[
\begin{align*}
\_6 & = 6 \\
\_B & = B \\
\end{align*}
\]

<table>
<thead>
<tr>
<th>XX-YY</th>
<th>IS</th>
<th>XX THROUGH YY</th>
<th>**********</th>
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<tbody>
<tr>
<td>01-02</td>
<td>60</td>
<td>71 81-83</td>
<td>93</td>
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<tr>
<td>05</td>
<td>61</td>
<td>73-79</td>
<td>84-87</td>
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<td>06</td>
<td>63-65</td>
<td>.8 .8</td>
<td>99</td>
</tr>
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<td>30-38</td>
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<td></td>
</tr>
<tr>
<td>53-58</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Is the code found in the 'TABLE OF VALID CODES'?

**Y N**

---

**004**

Bad control panel card.

--- OR ---

Bad card A-ALD1.

**005**

THE SYMPTOMS CHANGED,
GO TO MAP 0130, ENTRY POINT A.
006
(ENTRY POINT AC)

TABLE OF CE CODES

<table>
<thead>
<tr>
<th>NOTE:</th>
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<tbody>
<tr>
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<tr>
<td>_</td>
<td>= B</td>
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</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A0</td>
<td>C1-C6</td>
</tr>
<tr>
<td>05</td>
<td>CA</td>
</tr>
<tr>
<td>8A</td>
<td>CC</td>
</tr>
<tr>
<td>8C</td>
<td>D1-D5</td>
</tr>
<tr>
<td>9A</td>
<td>D7</td>
</tr>
<tr>
<td>9C</td>
<td>D8</td>
</tr>
<tr>
<td>9D</td>
<td></td>
</tr>
</tbody>
</table>

Is the code found in the 'TABLE OF CE CODES'? Y N

5 5
F G
Bad control panel card.

---OR---

Bad card A-A1D1.

008

Code 8A signifies a processing unit is not ready and a reset must be performed.

Is the LED display 8A?

Y  N

009

Is the LED display A0?

Y  N

010

Is the LED display C0?

Y  N

011

Is the LED display CC?

Y  N

012

Is the LED display D1?

Y  N
013
Is the LED display D2?
Y N

014
Is the LED display D3?
Y N

015
Is the LED display D4?
Y N

016
Is the LED display D6?
Y N

017
Is the LED display D7?
Y N

8 8 8 8 8
P Q R S T U

018
Is the LED display D8?
Y N

8 7
V W
(ENTRY POINT B)
Find the LED display in the vertical column
and do the service check or adjustment or
install a new FRU in the numbered order.

<table>
<thead>
<tr>
<th>CODES</th>
<th>SERVICE CHECKS, ADJUSTMENTS AND</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 8 9 9 9 C C C C C C C A</td>
<td>BAD FRUS</td>
</tr>
<tr>
<td>8 8 9 9 C C C C C C C A</td>
<td>START TO DO AGAIN</td>
</tr>
<tr>
<td>2 3</td>
<td>BAD COMMUNICATION ATTACHMENT PANEL</td>
</tr>
<tr>
<td>1</td>
<td>CONTROLLER COMMUNICATION PROBLEM</td>
</tr>
<tr>
<td>2 2</td>
<td>ESCAPEMENT MOTOR ASSEMBLY</td>
</tr>
<tr>
<td>1 1 1 2 1 3 2 3</td>
<td>3 BAD ANALOG2 CARD A-A1B1</td>
</tr>
<tr>
<td>1 1 1 2 1 3 2 3</td>
<td>1 BAD CARD A-A1D1</td>
</tr>
<tr>
<td>2</td>
<td>2 BAD PRINTER LOGIC CARD A-A1C1</td>
</tr>
<tr>
<td>5</td>
<td>5 BAD PATCH CARD A-A1E1</td>
</tr>
<tr>
<td>4</td>
<td>4 BAD ANALOG1 CARD A-A1F1</td>
</tr>
<tr>
<td>3 3 4 4 3 4 2 2 2 6</td>
<td>6 BAD BOARD A-A1</td>
</tr>
</tbody>
</table>
This is a recoverable error. Press start.
Return to the MAP that sent you here.

Close the top cover or bypass interlock.
Return to the MAP that sent you here.

Remove the paper.
Return to the MAP that sent you here.

Load in a sheet of paper by hand.
Return to the MAP that sent you here.

Load paper into the sheet feed hoppers.
Return to the MAP that sent you here.

Load paper into the tractor feed.
Return to the MAP that sent you here.

Is the output of ribbon sensor covered by ribbon?
Y N

Install a new ribbon cartridge and return to the MAP that sent you here.

Bad out of ribbon sensor.
---OR---
Bad card A-A1D1.
---OR---
Bad cable A-A1A4.

Wrong print wheel selection.
Return to the MAP that sent you here, and select the correct print wheel.

Wrong test selection.
Return to the MAP that sent you here, and select the correct test.

The open cover test worked correctly.
Return to the MAP that sent you here.
032
- Select 'DIAG MODE' (301).
- Select and run diagnostic test 10.
Is the code 10?
Y N

033
GO TO PAGE 7, STEP 019,
ENTRY POINT B.

034
The reset worked correctly.
Return to the MAP that entered this MAP.

035
The machine may have been turned off ]
---OR---
Not enough time was permitted to complete the basic assurance test ]
GO TO MAP 0010, ENTRY POINT A.

036
(ENTRY POINT D)
- Code 06 is cover open code. If the top cover is open, close the cover.
-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Is the LED display 06?
Y N

037
The cover was probably open. Go back to the map you came from.

038
-SET PRINTER POWER SWITCH TO '0'.
- Lift top cover and install cover bypass jumper.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Is the LED display 06?
Y N

039
Adjust or install new cover interlock switch.
040
- Check pins in cover interlock plug and CE jumper.
Is the plug and jumper OK?
Y N

041
Repair or install a new CE jumper or cable from control panel card to interlock plug.

042
Bad control panel logic card.
---OR---
Bad card A-AlD1.

043
(ENTRY POINT C)
Is the sheet feed installed?
Y N

044
-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Select diagnostic mode.
- Select and run diagnostic test 08.
Is the LED display 08?
Y N

045
Bad card A-AlD1.

046
Bad card A-AlCl.
- SET PRINTER POWER SWITCH TO 'O'.
- Disconnect the sheet feed plug from the attachment panel.
- Leave the sheet feed on the printer.
- Remove paper jam if necessary.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Insert a sheet of paper by hand into the platen area.
- Press the 'LOAD' switch on the control panel.

Does the paper move to the first writing line?
Y N

- Remove the sheet feed from the printer.
- Remove the printer cover (200).
- Install the cover interlock jumper.
- Attempt to hold back the platen while pressing and holding the paper up switch.

Can the platen be held back easily?
Y N

Does the platen move far enough to move the paper to the first print line?
Y N

- Remove the sheet feed.
- Attempt loading a sheet of paper again.

Does the platen move far enough to move the paper to the first print line?
Y N

GO TO MAP 0030, ENTRY POINT A.

Install sheet feed.
- SET PRINTER POWER SWITCH TO '0'.
- Plug in sheet feed.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

GO TO MAP 0610, ENTRY POINT A.
053
- Remove cover interlock jumper.
- Reinstall printer cover.
Is the printer cover adjustment correct (115)?
Y N

054
Do the cover adjustment.

055
Remove the sheet feed.
GO TO MAP 0040, ENTRY POINT A.

056
Loose set screws in the index motor drive pulley.
---OR---
Loose set screws in the platen pulley.
---OR---
Loose index motor drive belt.
---OR---
Bad index motor drive pulley.
---OR---
Bad platen pulley.
---OR---
Bad index motor drive belt.
057
- Select diagnostic mode (301).
- Select and run diagnostic test 26 while observing the LED display.
- The LED display will show the test number 26, then the sense code, then will return the test number 26.

Is the sense code 01?
Y N

058
Bad paper sensor.
---OR---
Bad card A-AlCl.

059
Is the cover adjustment correct (115)?
Y N

060
Do the cover adjustment (115).

061
- SET PRINTER POWER SWITCH TO '0'.
Plug in sheet feed.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
GO TO MAP 0610, ENTRY POINT A.
062
(ENTRY POINT H)
- Set Printer Power Switch to '0'.
- Remove the main printer cover (200).
- Remove the control panel assembly (202).
- Separate the control panel circuit card from the switch panel (203) and unplug the cable between them.
- Reconnect the cable from the A-Al1 board to the control panel circuit card.
- Set Printer Power Switch to '1'. Wait 35 seconds until power on sequence is complete.

Is the LED display 35?
Y N

063
Bad control switch panel.
--- OR ---
Bad control panel card.

064
Bad control panel cable.
--- OR ---
Bad control panel card.
--- OR ---
Bad card A-AlD1.

(Step 064 continued)
(ENTRY POINT E)
The 'EXCEPTION' handler received an error from another processing unit and could not interpret the error. The hardware test were then run and found no errors. Suspect an intermittent failure, a failure with more than one FRU or a micro code problem.

Bad card A-AlB1
--- OR ---
Bad card A-AlC1
--- OR ---
Bad card A-AlD1
--- OR ---
Bad card A-AlE1
--- OR ---
Bad card A-AlF1
--- OR ---
Bad power supply.

(Step 064 continues)
5218 A01 A02

POWER CHECK ENTRY

PAGE 1 OF 20

ENTRY POINTS

<table>
<thead>
<tr>
<th>FROM</th>
<th>MAP NUMBER</th>
<th>PAGE</th>
<th>STEP</th>
<th>STEP NUMBER</th>
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<tbody>
<tr>
<td>A</td>
<td>0010</td>
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<tr>
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EXIT POINTS

<table>
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<tr>
<th>EXIT THIS MAP</th>
<th>PAGE</th>
<th>STEP</th>
<th>MAP NUMBER</th>
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<tbody>
<tr>
<td>TO</td>
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<td>B</td>
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<td></td>
<td>17</td>
<td>071</td>
<td>0120</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>078</td>
<td>0130</td>
<td>A</td>
</tr>
</tbody>
</table>

MAP 0100-1
001
(ENTRY POINT A)

MAP Description:
THIS MAP DETERMINES THE GENERAL TYPE OF
POWER FAILURE AND ISOLATES THE FAILURE.

Entry Conditions:
THE POWER SUPPLY CHECK LIGHT IS ON OR THE
'POWER ON' LIGHT IS OFF ON THE OPERATORS
CONSOLE.

Start Conditions:
NONE

Field replaceable units:
NONE.

NOTE: The control panel 'POWER ON' light
turns off for an AC or DC power failure.
The power supply check light turns on for a
DC power failure only.

Is the control panel 'POWER ON' light on?
Y N
1 8 3
A B
POWER CHECK ENTRY

PAGE 3 OF 20

-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the carrier move?
Y N

-Listen for the fan motor running.
-Feel for air blowing out of the fan(100).

Is the fan motor running?
Y N

-SET PRINTER POWER SWITCH TO '0'.
-Remove and check the AC fuse in the power supply(234)(235).

Is the fuse good?
Y N

-Install a good fuse.

-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the control panel 'POWER ON' light on?
Y N

-SET PRINTER POWER SWITCH TO '0'.
-Install a good fuse.
-Remove the plug from the fan motor.

-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the control panel 'POWER ON' light on?
Y N

-SET PRINTER POWER SWITCH TO '0'.

-Install a good fuse.

Bad printer power supply.

Bad fan motor assembly.

The fuse was the only problem.
AC VOLTAGE IS PRESENT WITH PRINTER POWER OFF. CLIP ON LEADS OR HOLD ON INSULATOR.

- Disconnect the printer from the wall outlet.
- Connect the CE meter to each wire on the AC filter assembly on the side that goes to power cord (105)(205).
- Connect the printer to the wall plug.

Does the meter read between 100 and 150 volts AC?

Y N

---OR---

Bad printer AC line cord.

AC voltage not correct at wall plug.
DANGER

HIGH AC VOLTAGE PRESENT. CLIP ON LEADS OR HOLD ON INSULATOR.

- SET PRINTER POWER SWITCH TO '0'.
- Disconnect the printer from the wall outlet.
- Connect the CE meter to each black wire on the bottom of the printer power switch.
- Connect the printer to the wall plug.
  - SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the meter read between 100 and 150 volts AC?

Y N

014 Bad AC filter assembly.

015 Bad printer power switch.

DANGER

HIGH AC VOLTAGE PRESENT. CLIP ON LEADS OR HOLD ON INSULATOR.

- SET PRINTER POWER SWITCH TO '0'.
- Disconnect the printer from the wall outlet.
- Connect the CE meter to the two black wires on the AC plug on the power supply (234).
- Connect the printer to the wall plug.
  - SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the meter read between 100 and 150 volts AC?

Y N

017 Bad AC cable from the printer power switch to the power supply.
DANGER

HIGH AC VOLTAGE PRESENT. CLIP ON LEADS OR HOLD ON INSULATOR.

- Disconnect the printer from the wall outlet.
- SET PRINTER POWER SWITCH TO '0'.
- Connect the CE meter to the two black wires on the AC plug on the fan assembly.
- Connect the printer to the wall plug.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Observe the power supply check light(101).

Is the power supply check light on?

Y N

Is the control panel 'POWER ON' light on?

Y N

- Connect a meter on connector J4(on the power supply) between pins 2 and 7 (234).

Does the meter read between 4.5 VDC and 5.5 VDC?

Y N

Bad printer power supply.
SET PRINTER POWER SWITCH TO '0'.
- Remove the A-A1A2 connector from the A-A1 board.
- Connect a meter between A-A1A2 pin 7 and A-A1A2 pin 8 on the A-A1 board(104).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the meter read between 4.5 VDC and 5.5 VDC?
Y N


- Connect the meter from A-A1A2 pin 1 on the cable to the other end of the cable pin 1.
- The meter should read less than .5 ohms.
- Repeat the reading for pins 2 through 12.

Are the meter readings correct?
Y N

Bad cable A-A1A2.
Bad control panel logic card.

The power supply check resets when power is turned off then back on. Go to the intermittent MAP.

-SET PRINTER POWER SWITCH TO '0'.
- Observe the control panel lights.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Do all the control panel lights come on?
Y N

-SET PRINTER POWER SWITCH TO '0'.
- Remove the power supply dc cable J4 at the supply (234).
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?
Y N

This disconnects the power supply from the load to determine if the load or the power supply is causing the power check.
POWER CHECK ENTRY

Page 9 of 20

033
- Set Printer Power Switch to '0'.
- Reconnect the power supply dc cable.
- Set Printer Power Switch to '1'. Wait 35 seconds until power on sequence is complete.

Is the power supply check light on?

Y N

034
- Set Printer Power Switch to '0'.
- Reconnect the power supply dc cable.
- Reconnect cable A-A1A2.
- Set Printer Power Switch to '1'. Wait 35 seconds until power on sequence is complete.

Is the power supply check light on?

Y N

035
- Set Printer Power Switch to '0'.
- Reconnect cable A-A1A3.
- Set Printer Power Switch to '1'.
- Wait 35 seconds until power on sequence is complete.

Is the power supply check light on?

Y N

The load should be causing the power check. This disconnects the control panel, the cam motor assembly, the selection motor windings, and the hammer solenoid from the power supply to determine if they are causing the power check.

The control panel, the cam motor assembly, the selection motor windings, or the hammer solenoid should be causing the power check. This reconnects the control panel to determine if it is causing the power check.

The cam motor assembly, the selection motor windings, or the hammer solenoid should be causing the power check. This reconnects the cam motor assembly to determine if it is causing the power check.
POWER CHECK ENTRY

PAGE 10 OF 20

036
- SET PRINTER POWER SWITCH TO '0'.
- Remove the front plug from the right carrier cable (105).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?
Y N

037
Bad hammer assembly.

038
Bad selection motor assembly.

039
- SET PRINTER POWER SWITCH TO '0'.
- Disconnect connector on the cam motor assembly (211).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?
Y N

040
Bad cam motor assembly.

The selection motor windings, or the hammer solenoid should be causing the power check. This disconnects the hammer solenoid and reconnects the selection motor windings to determine which one is causing the power check.

The cam motor or the A-A1A3 cable should be causing the power check. This disconnects the cam motor to determine if it is causing the power check.
POWER CHECK ENTRY

PAGE 11 OF 20

041
Bad A-A1A3 cable.

042
-SET PRINTER POWER SWITCH TO '0'.
- Disconnect the A-A1A2 cable from the control panel card.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?

043
Bad control panel card.

044
Bad A-A1A2 cable.

045
-SET PRINTER POWER SWITCH TO '0'.
- Disconnect A-A1A5 and A-A1A7 cables.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

(Step 045 continues)

The control panel card or the cable to the control panel should be causing the power check. This disconnects the control panel card to determine if it is causing the power check.

The control panel, the cam motor assembly, the selection motor windings, and the hammer solenoid are not causing the power check. This disconnects the selection feedback, the hammer feedback, the paper sensor and the ribbon sensor to determine if they are causing the power check.
5218 A01 A02
POWER CHECK ENTRY

PAGE 12 OF 20

(Step 045 continued)

Is the power supply check light on?

Y N

046
- Set Printer Power Switch to '0'.
- Reconnect cable A-A1A5.
- Set Printer Power Switch to '1'. Wait 35 seconds until Power On Sequence is complete.

Is the power supply check light on?

Y N

047
Bad paper sensor.

048
- Set Printer Power Switch to '0'.
- Remove the front plug from the left carrier cable (105).
- Set Printer Power Switch to '1'. Wait 35 seconds until Power On Sequence is complete.

Is the power supply check light on?

Y N

049
Bad ribbon sensor.

The selection feedback, the hammer feedback, the paper sensor or the ribbon sensor should be causing the power check. This reconnects the selection feedback, the hammer feedback and the ribbon sensor to determine if they are causing the power check.

The selection feedback, the hammer feedback or the ribbon sensor should be causing the power check. This disconnects the ribbon sensor to determine if it is causing the power check.
POWER CHECK ENTRY

Is the power supply check light on?

Y N

Bad hammer assembly.

Bad selection assembly.

- SET PRINTER POWER SWITCH TO '0'.
- Reconnect A1A5 and A1A7 cables.
- Disconnect A1G2 cable. (If there is no cable plugged in A1G2 answer this question 'YES')
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?

Y N
- SET PRINTER POWER SWITCH TO '0'.
  - Disconnect the sheet feed from the attachment panel.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?

Y N

- SET PRINTER POWER SWITCH TO '0'.
  - Reconnect the cable from the attachment panel to the sheet feed.
  - Disconnect sheet feed analog card connector J7.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?

Y N

056
Bad sheet feed analog card.

057
Bad cable from the attachment panel to the sheet feed.

-SET PRINTER POWER SWITCH TO '0'.
- Remove card A-A1F1.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?
Y N

Bad card A-A1F1.

-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the power supply check light on?
Y N


None of the motors, sensors or feed back are causing the power check.
This disconnects the A-A1F1 card to determine if it is causing the power check.

The A-A1F1 card is not causing the power check.
This disconnects the A-A1B1 card to determine if it is causing the power check.
The A-A1B1 card is not causing the power check. This disconnects the A-A1C1 card to determine if it is causing the power check.

The A-A1C1 card is not causing the power check. This disconnects the A-A1E1 card to determine if it is causing the power check.
POWER CHECK ENTRY

SET PRINTER POWER SWITCH TO '0'.
- Remove card A-A1D1.
SET PRINTER POWER SWITCH TO '1'.
WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Is the power supply check light on?
Y N
Bad card A-A1D1.
Bad printer power supply.  
---OR---  
Bad A-A1 board.
Bad printer power supply.
GO TO MAP 0120, ENTRY POINT A.

Is the control panel 'POWER ON' light on?
Y N
- Disconnect the A-A1A2 connector from the A-A1 board.
- Connect the meter between pins 7 and 8 on the A-A1 board at connector A-A1A2.

Does the meter read between 4.5 VDC and 5.5 VDC?
Y N


- Reconnect the A-A1A2 connector.
- Connect a meter between pins 7 and 8 on the control panel (pin one is on the bottom).

Does the meter read between 4.5 VDC and 5.5 VDC?
Y N

- Bad cable A-A1A2.

- Bad control panel card.
Plug in, repair or install a new fan motor plug.

Bad fan motor.

Connect the CE multimeter to the probe points in the following table. Record the measurements.

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>LOW RANGE</th>
<th>HIGH RANGE</th>
<th>PROBE POINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>+5 VDC</td>
<td>4.8</td>
<td>5.5</td>
<td>A-ALB1 CARD TEST POINTS +5V AND GND MIM 104</td>
</tr>
<tr>
<td>+12 VDC</td>
<td>11.04</td>
<td>13.2</td>
<td>A-ALB1 CARD TEST POINTS +12V AND GND</td>
</tr>
<tr>
<td>+36 VDC</td>
<td>32.4</td>
<td>39.6</td>
<td>A-ALB1 CARD TEST POINTS +36V AND GND</td>
</tr>
<tr>
<td>-24 VDC</td>
<td>19.2</td>
<td>30.48</td>
<td>POWER SUPPLY J4-6 GND AND J4-8(-24V) MIM 234</td>
</tr>
</tbody>
</table>

Are the measurements correct?

Y N

Bad power supply.
This map should not have been entered.
GO TO MAP 0010, ENTRY POINT B.

GO TO PAGE 6, STEP 021, ENTRY POINT B.
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ESCAPEMENT-CARRIER

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ENTRY POINTS

<table>
<thead>
<tr>
<th>MAP NUMBER</th>
<th>ENTRY POINT</th>
<th>PAGE NUMBER</th>
<th>STEP NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>0010</td>
<td>A</td>
<td>1</td>
<td>001</td>
</tr>
<tr>
<td>0015</td>
<td>A</td>
<td>1</td>
<td>001</td>
</tr>
<tr>
<td>0090</td>
<td>A</td>
<td>1</td>
<td>001</td>
</tr>
</tbody>
</table>

001 (ENTRY POINT A)

EXIT POINTS

<table>
<thead>
<tr>
<th>EXIT THIS MAP</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAGE NUMBER</td>
<td>STEP NUMBER</td>
</tr>
<tr>
<td>16</td>
<td>077</td>
</tr>
<tr>
<td>2</td>
<td>005</td>
</tr>
<tr>
<td>0015</td>
<td>0130</td>
</tr>
<tr>
<td>G</td>
<td>A</td>
</tr>
</tbody>
</table>

MAP Description:

This map determines the general type of escapement failure and isolates the failure.

Entry Conditions:
NONE
Start Conditions:
NONE

Field replaceable units:
NONE.
002
Is the code 41?
Y N

003
Is the code 44?
Y N

004
Is the code 46?
Y N

005
THE CODE CHANGED OR WAS OBSERVED WRONG.
GO TO MAP 0130, ENTRY POINT A.

006
Is there a left hand margin switch?
Y N

007
(ENTRY POINT B)
-SET PRINTER POWER SWITCH TO '0'.
- Move the carrier away from the left hand margin.
- Set printer power switch to '1'.
(Step 007 continues)

008
-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Does the leadscrew coupler turn(101)?
Y N

009
- Check the set screws in the leadscrew coupler(217).
Are the set screws tight enough?
Y N

010
Tighten the set screws.

011
Bad leadscrew coupler assembly.
012
- Set Printer Power Switch to '0'.
- Set Printer Power Switch to '1'. Wait
  35 Seconds until Power on Sequence is
  Complete.

Does the lead screw turn at all?
N

013
- Check the set screws in the
  leadscrew coupler(217).

Are the set screws tight enough?
N

014
- Tighten the set screws.

015
- Bad leadscrew coupler assembly.

016
- Bad lower carrier assembly.

017
- Bad card A-AlC1.
  ---OR---
- Bad card A-AlD1.

018
- Set Printer Power Switch to '0'.
- Move carrier away from the left hand
  margin.
- Set printer power switch to '1'.

Does the carrier go to the left hand margin
and stay?
N

019
- Does the escapement motor turn?
  N

020
- The motor could be bad or there could be
  a bind on the leadscrew.
  Bad escapement motor assembly.
  ---OR---
  Bad leadscrew.
  ---OR---
  Bad lower carrier assembly.

021
- Go to Page 2, Step 007,
  Entry Point B.

022
- Bad left hand margin switch.
Is there a left hand margin switch?

- Observe the carrier and the lead screw for an obstruction.

Is an obstruction binding the carrier movement?

- Select 'DIAG MODE'(301).
- Select mode 3.
- Select and run diagnostic test 11.
- Observe the leadscrew coupler .(217)
- Press the 'STOP' switch after making the observation.

Does the leadscrew coupler turn at all?

- SET PRINTER POWER SWITCH TO '0'.
- Loosen the left set screws in the leadscrew coupler assembly.
- Turn the lead screw by hand.

Does the lead screw turn freely?

Bad lead screw.
---OR---
Bad lower carrier assembly.
---OR---
Bad lead screw bearing.

- Turn the leadscrew coupler.
- Some resistance will be encountered as the motor moves from position to position.

Does the leadscrew coupler turn(101)?

Bad escapement motor assembly.

- Tighten the set screws.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the escapement motor turn at all?
031
- Connect the meter between test point (REFERENCE) and test point (GROUND) on the A-A1B1 card(104).
- The meter should read between 4.5 volts DC and 5.5 volts DC.
Is the meter reading correct?
Y N

032

033
- Connect the meter between test point (REFERENCE) and test point (GROUND) on the A-A1F1 card(104).
- The meter should read between 4.5 and 5.5 volts DC.
Is the meter reading correct?
Y N

034
---OR---
SET PRINTER POWER SWITCH TO '0'.
- Remove the escapement motor cable connector A-AlGl from the A-Al board.
- Connect a FLUKE* meter on the low ohms scale between pins 1 and 2 of the escapement motor connector. Record the reading.
- The meter should read between .6 ohms and .8 ohms.
- Repeat for pins 2 and 3.
- Repeat for pins 4 and 5.
- Repeat for pins 5 and 6.

The FLUKE* meter model 8020A has enough accuracy on the 200 ohm scale. This checks for an open or short circuit in the escapement motor winding.

Are the meter readings correct?

Y N

*TRADEMARK OF JOHN FLUKE MFG. CO. INC. MOUNTLAKE, WASHINGTON
Bad escapement motor assembly.

Bad card A-AlFl.

Bad lead screw.

---OR---

Bad lower carrier assembly.

- Press the 'CANCEL' switch three times to leave diagnostic mode.
- Lift the top printer cover(200).
- Connect a meter between TP8 (+12) and TP10 (GND) on the A-AlCl card(104).
- The meter should read between 11.04 and 13.2 VDC.

Is the meter reading correct?

Y N

Bad power supply.

Bad board A-Al.
CAUTION
Do not touch the meter leads together. Damage could occur to the feedback emitter or the A-AlCl card.

- Set the scale to read 5 Vdc.
- Remove the escapement motor connector from the rear of the A-Al board (A-AlG1)
- Connect the meter between TP11 and TP15 (ground) on the A-AlCl card (104).
- Leave the power on to obtain a voltage reading.
- Turn the lead screw very slightly clockwise then counterclockwise while observing the meter.
- The meter should read between 0 and .5 volts DC for some leadscrew positions and between 3.0 and 5.0 volts DC for others.
- Repeat the reading with meter between TP12 and TP15 (ground).

Are the meter readings correct?

Y  N

1 9

V W
Connect the meter between pin 5 on the escapement normal feedback connector to TP15 (ground)(104).

- The meter should read between 4.5 and 5.5 volts DC.

Are the meter readings correct?

Y N

Bad card A-AlCl1.

- SET PRINTER POWER SWITCH TO '0'.

- Move the escapement feedback connector from the normal socket (right from front of printer) to the test socket(101)(104). These sockets are on the top of the A-AlCl1 card.

- Connect the meter between feedback connector pins 3 and TP15(ground).

- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

- The code 44 is normal for this step.

- The meter should read between 0.0 and +0.5 volts DC for some leadscrew positions then between +2.0 and +5.0 volts DC for others.

- Turn the lead screw very slightly while (Step 046 continues)
(Step 046 continued)
  observing the meter.
  - Repeat the procedure with the meter connected between pins 4 and TP15 (ground).
Are the meter readings correct?
Y N
047
Bad escapement motor assembly.
048
Bad card A-AlCl.
---OR---
Bad escapement motor assembly.
---OR---
Bad leadscrew.

The escapement motor feedback could have one or more openings covered or bent that would not be found by the test. The leadscrew could have a bind or burr in only one spot that would not be found by the test.
049
Bad card A-AlCl.
---OR---
Bad escapement motor assembly.
---OR---
Bad lead screw.

The escapement motor feedback could have one or more openings covered or bent that would not be found by the test. The leadscrew could have a bind or burr in only one spot that would not be found by the test.

050
Remove the obstruction.

051
-SET PRINTER POWER SWITCH TO '0'.
- Unplug the left hand margin switch from the A-Al board.
- Move the carrier to the center of the lead screw.
- Set the printer power switch to '1'.
Does the carrier move to the left margin (ignore error code 46 if it appears)?
Y N

052
Bad A-AlCl card.
---OR---
Bad A-Al board.

1
2
X
Bad left hand margin switch.
SET PRINTER POWER SWITCH TO '0'.
- Remove the escapement motor connector from the A-Al board (A-AlG1).
- Connect a FLUKE* meter on the low ohms scale between pins 5 and 6 of the connector on the escapement motor. Pin 1 is on the right from the front of the printer. Record the reading. Repeat for pins 5 and 4. Repeat for pins 3 and 2. Repeat for pins 2 and 1. The meter should read between .6 ohms and .8 ohms.

The FLUKE* meter model 8020A has enough accuracy on the 200 ohm scale to read this resistance. This checks for an open or short circuit in the escapement motor winding.

Are the meter readings correct?

Y   N

1  1
4  4
Y   Z
Bad escapement motor assembly.

Bad card A-A1F1.
---OR---
Bad card A-A1C1.

SET PRINTER POWER SWITCH TO '0'.
SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Observe the carrier movement.

Does the carrier move to the left side frame then to the center of the platen?
Y N

Does the printer have a margin switch?
Y N

Bad lead screw.
---OR---
Bad lower carrier assembly.

Bad left margin switch.
---OR---
Bad lead screw.
---OR---
Bad lower carrier assembly.

Run the 'VERIFY' test or observe a earlier printout.
Look for not enough room between characters.
Is the spacing correct?
Y N

Leave power on to detent the escapement motor.
Turn the lead screw clockwise then counterclockwise(101).
Does the leadscrew coupler turn the same as the lead screw?
Y N
- Check the set screws in the lead screw end of the leadscrew coupler. (217) Are the screws tight enough?  
  Y  N

064
Tighten the escapement motor coupling set screws.

065
Bad leadscrew coupler assembly.

066
- Turn the leadscrew coupler clockwise and then counterclockwise. Does the escapement motor turn the same as the leadscrew coupler?  
  Y  N

067
- Check the right leadscrew coupler set screws. (217) Are the set screws tight enough?  
  Y  N

068
Tighten the right escapement set screws. (217)

069
Bad leadscrew coupler assembly.

070
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Lift the ribbon assembly.
- Hold the carrier assembly by the frame just above the lead screw.
- Put hard pressure to the right then to the left.
Does the carrier have any visible movement?  
  Y  N

071
Does the printer have a left hand margin switch?  
  Y  N

072
GO TO PAGE 2, STEP 007, ENTRY POINT B.

073
Bad leadscrew.  
---OR---
Bad escapement motor.  
---OR---
Rad A-A1F1 card.
- Check the lead screw follower, mounting screws and eccentric shaft set screws (219)(126).
Is this check correct?

Y N

Tighten the screws or adjust the lead screw follower or the eccentric set screws.

Bad lower carrier assembly.
---OR---
Bad lead screw.

This MAP should not have been entered.
To continue isolation,
GO TO MAP 0015, ENTRY POINT G.
POWER CHECK AFTER POR

ENTRY POINTS

FROM | ENTER THIS MAP
-------

MAP NUMBER | ENTRY POINT NUMBER
0010 | B 8 026
0100 | A 1 001

001
(ENTRY POINT A)
- SET PRINTER POWER SWITCH TO '0'.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

MAP Description:
THIS MAP ISOLATES THE POWER CHECK AFTER THE OPERATOR LIGHTS COME ON. THIS MAP ISOLATES THE POWER ON RESET FAILURE WHEN THE LIGHTS COME ON, THEN OFF, THEN ON AND REPEATS THIS SEQUENCE.

Entry Conditions:
THE 'POWER ON' LIGHT GOES OFF AFTER ALL THE OPERATOR LIGHTS COME ON, OR POWER ON RESET SEQUENCE REPEATS ITSELF.

Start Conditions:
NONE

Field replaceable units:
NONE.

(Step 001 continues)
(Step 001 continued)

Is the control panel 'POWER ON' light off?
Y N

002
Bad escapement motor assembly.
---AND---
Bad card A-A1F1.

003
- SET PRINTER POWER SWITCH TO '0'.
- Remove cable A-A1A4.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the control panel 'POWER ON' light off?
Y N

004
Bad selection motor assembly.
---AND---

This removes the escapement motor to determine if it is causing the power check.

This removes the selection motor to determine if it is causing the power check.
5218 A01 A02
POWER CHECK AFTER POR

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005
- SET PRINTER POWER SWITCH TO '0'.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Is the control panel 'POWER ON' light off?
Y N

006
Bad index motor assembly.
---AND--
Bad card A-A1F1.

007
- SET PRINTER POWER SWITCH TO '0'.
- Remove card A-A1F1.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Is the control panel 'POWER ON' light off?
Y N

This remove the index motor to determine if it is causing the power check.
With this card removed it causes a 71 error. Test 12 forces the micro code to run the A-A1B1 functions to determine if it is causing the power check. If a power check does not occur the A-A1F1 that was removed was causing the power check.

Is the control panel 'POWER ON' light off?
Y  N

009
Is the code 51?
Y  N

010
Bad card A-A1F1.

011
Bad card A-A1F1.
---OR---
Bad card A-A1C1.

012
POWER CHECK AFTER POR

&page

- SET PRINTER POWER SWITCH TO '0'.

- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Install a jumper from A-A1B1D1 to ground.
- Remove the jumper from A-A1B1D1 to ground.

Is the control panel 'POWER ON' light off?

Y N

O14

O15

- SET PRINTER POWER SWITCH TO '0'.
- Remove card A-A1C1.

- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the control panel 'POWER ON' light off?

Y N

O16
Bad card A-A1C1.

This removes the A-A1B1 to determine if it is causing the power check. The jumper forces the power on reset which causes the micro code to run.

This removes the A-A1C1 to determine if it is causing the power check.
Is there a card installed in A-A1E1?
Y N

018
-SET PRINTER POWER SWITCH TO '0'.
- Remove card A-A1D1.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Is the control panel 'POWER ON' light off?
Y N

019
Bad card A-A1D1.
020
Bad power supply.

021
-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Is the control panel 'POWER ON' light off?
Y N

This removes the A-A1D1 to determine if it is causing the power check.

This removes the A-A1E1 to determine if it is causing the power check.
POWER CHECK AFTER POR

022

023
- SET PRINTER POWER SWITCH TO '0'.
- Remove card A-A1D1.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Is the control panel 'POWER ON' light off?

Y N

024
Bad card A-A1D1.

025
Bad power supply.

This removes the A-A1D1 to determine if it is causing the power check.
POWER CHECK AFTER POR

026
(ENTRY POINT B)
-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35
SECONDS UNTIL POWER ON SEQUENCE IS
COMPLETE.

Does the LED display flash repeatedly (all
segments on , all segments off, all segments
on)?
Y N

027
Bad escapement motor assembly.
---AND--
Bad card A-A1F1.

028
-SET PRINTER POWER SWITCH TO '0'.
- Remove cable A-A1A4.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35
SECONDS UNTIL POWER ON SEQUENCE IS
COMPLETE.

Does the LED display flash repeatedly (all
segments on , all segments off, all segments
on)?
Y N

This removes the escapement motor to
determine if it is causing the power on
reset check.
The LED display is flashing if all segments
turn on, off, on, off----.

This remove the selection motor to determine
if it is causing the power on reset check.
Power Check After POR

029
Bad selection motor assembly.
---AND---

030
- SET PRINTER POWER SWITCH TO '0'.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the LED display flash repeatedly (all segments on, all segments off, all segments on)?
Y N

031
Bad index motor assembly.
---AND---
Bad card A-A1F1.

This remove the index motor to determine if it is causing the power on reset check.
POWER CHECK AFTER POR

PAGE 10 OF 14

032
- SET PRINTER POWER SWITCH TO '0'.
- Remove card A-A1F1.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Does the LED display flash repeatedly (all segments on, all segments off, all segments on)?
Y N

033
- Select 'DIAG MODE'.
- Select and run diagnostic test 12.

Does the LED display flash repeatedly (all segments on, all segments off, all segments on)?
Y N

034
Is the code 51?
Y N

With this card removed it causes a 71 error. Test 12 forces the micro code to run the A-A1B1 functions to determine if it is causing the power on reset check. If a power on reset check does not occur the A-A1F1 that was remove was causing the power on reset check.
Bad card A-A1F1.


---OR---
Bad card A-A1C1.


-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Install a jumper from A-A1B1D1 to ground.
- Remove the jumper from A-A1B1D1 to ground.
Does the LED display flash repeatedly (all segments on, all segments off, all segments on)?

Y N

POWER CHECK AFTER POR

040
- Set Printer Power Switch to '0'.
  - Reconnect card A-A1BI.
  - Remove card A-A1C1.
- Set Printer Power Switch to '1'. Wait 35 seconds until Power on sequence is complete.

Does the LED display flash repeatedly (all segments on, all segments off, all segments on)?
Y N

041
Bad card A-A1C1.

042
Is there a card installed in A-A1E1?
Y N

- Set Printer Power Switch to '0'.
  - Remove card A-A1D1.
- Set Printer Power Switch to '1'. Wait 35 seconds until Power on sequence is complete.

(Step 043 continues)

This removes the A-A1C1 to determine if it is causing the power on reset check.

This removes the A-A1D1 to determine if it is causing the power on reset check.
5218 A01 A02

POWER CHECK AFTER POR

PAGE 13 OF 14

(Step 043 continued)
Does the LED display flash repeatedly (all segments on, all segments off, all segments on)?

Y N

044
Bad card A-A1D1.

045
Bad power supply.

046
-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the LED display flash repeatedly (all segments on, all segments off, all segments on)?

Y N

047

This removes the A-A1E1 to determine if it is causing the power on reset check.
048
- SET PRINTER POWER SWITCH TO '0'.
- Remove card A-A1D1.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Does the LED display flash repeatedly (all segments on, all segments off, all segments on)?
Y N
| 049
| Bad card A-A1D1.
| 050
Bad power supply.

This removes the A-A1D1 to determine if it is causing the power on reset check.
### ENTRY POINTS

<table>
<thead>
<tr>
<th>MAP NUMBER</th>
<th>ENTRY POINT</th>
<th>PAGE NUMBER</th>
<th>STEP NUMBER</th>
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<td>056</td>
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<td>058</td>
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<td>21</td>
<td>060</td>
</tr>
<tr>
<td>22</td>
<td>062</td>
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</table>
001
(ENTRY POINT A)
- Obtain all error code, maintenance statistics printout, printouts that were being printed at the time of the error, and symptoms that are available.
- Obtain as much information as possible from the customer.
- Connect a meter to all the probe points in the table and record the readings.

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>LOW</th>
<th>HIGH</th>
<th>PROBE POINT</th>
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<tr>
<td>+5 VDC</td>
<td>4.8</td>
<td>5.5</td>
<td>A-A1B1 CARD TEST POINTS +5V AND GND MIM 104</td>
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<tr>
<td>+12 VDC</td>
<td>11.04</td>
<td>13.2</td>
<td>A-A1B1 CARD TEST POINTS +12 AND GND</td>
</tr>
<tr>
<td>+36 VDC</td>
<td>32.4</td>
<td>39.6</td>
<td>A-A1B1 CARD TEST POINTS +36 AND GND</td>
</tr>
<tr>
<td>-24 VDC</td>
<td>19.2</td>
<td>30.48</td>
<td>POWER SUPPLY J4-6 GND AND J4-8(-24V) MIM 234</td>
</tr>
</tbody>
</table>

(Map 0130-2 continues)
INTERMITTENT - UNUSUAL

PAGE 3 OF 25

(Step 001 continued)
Are the meter readings correct?
Y N

002
- Check all voltages at the power supply DC plug.
Are the meter readings correct?
Y N

003
Bad power supply.

004
---OR---

005
Was the LED display recorded earlier blank?
Y N

006
Use this as the code and
GO TO STEP 008,
ENTRY POINT B.

007
Is the LED display blank now?
Y N

1 3
A B

(ENTRY POINT B)

TABLE OF VALID CODES

NOTE: | | |
- = 6 | = B |
| | |

<table>
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<th>XX-YY</th>
<th>IS</th>
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<td>63-65</td>
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<td>43-47</td>
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<tr>
<td>53-58</td>
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(Step 008 continues)
(Step 008 continued)
Is the code found in the 'TABLE OF VALID CODES'?

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**TABLE OF CE CODES**

**NOTE:**

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<tr>
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<td>8A</td>
<td>CC</td>
</tr>
<tr>
<td>8C</td>
<td>D1-D5</td>
</tr>
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<td>9A</td>
<td>D7</td>
</tr>
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<td>D8</td>
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<td>9D</td>
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Is the code found in the 'TABLE OF CE CODES'?

<table>
<thead>
<tr>
<th>Y</th>
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</tr>
</thead>
<tbody>
<tr>
<td>010</td>
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</tbody>
</table>

---OR---
Bad operator panel logic card.
---OR---
Bad card A-A1D1.
---OR---
---OR---
Bad cable from the operator panel to the A-A1 board.
---OR---
Find the code and install new FRUs in the numbered order. The same number signifies to install the new FRUs at the same time.

<table>
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<tr>
<th>CODES</th>
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<tbody>
<tr>
<td>8 9 9</td>
<td>SERVICE CHECKS, ADJUSTMENTS AND BAD FRUS</td>
</tr>
<tr>
<td>A 1 D 1 2 3 4 5 6 A</td>
<td>START TO DO AGAIN</td>
</tr>
<tr>
<td>2 3</td>
<td>BAD COMMUNICATION ATTACHMENT PANEL</td>
</tr>
<tr>
<td>1</td>
<td>CONTROLLER COMMUNICATION PROBLEM</td>
</tr>
<tr>
<td>2 2</td>
<td>ESCAPEMENT MOTOR ASSEMBLY</td>
</tr>
<tr>
<td>3</td>
<td>BAD ANALOG2 CARD A-A1B1</td>
</tr>
<tr>
<td>1</td>
<td>BAD CARD A-A1D1</td>
</tr>
<tr>
<td>2</td>
<td>BAD PRINTER LOGIC CARD A-A1C1</td>
</tr>
<tr>
<td>5</td>
<td>BAD PATCH CARD A-A1E1</td>
</tr>
<tr>
<td>4</td>
<td>BAD ANALOG1 CARD A-A1F1</td>
</tr>
<tr>
<td>6</td>
<td>BAD BOARD A-A1</td>
</tr>
</tbody>
</table>
012
Is the code 01, 02, 05, 78 or 79?
 Y  N

013
(ENTRY POINT C)
Is the code 00 through 34.
 Y  N

014
Is the code 35 through 45.
 Y  N

015
Is the code 46 through 57.
 Y  N

016
IS THE CODE 60 THROUGH 71.
 Y  N

017
IS THE CODE 73 THROUGH 79.
 Y  N

018
Is the code 80 through 99.
 Y  N

019
The code changed.
Use the new code and
GO TO PAGE 2, STEP 001,
ENTRY POINT A.
Find the code and install new FRUs in the numbered order. The same number signifies to install the new FRUs at the same time.

<table>
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<td>BAD HAMMER ASSEMBLY</td>
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<td>BAD ANALOG1 CARD A-A1F1</td>
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<td>BAD CONTROL PANEL LOGIC CARD</td>
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Find the code and install new FRUs in the numbered order. The same number signifies to install the new FRUs at the same time.

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<td>3456789</td>
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<tr>
<td>211111</td>
<td>BAD HOME REED SWITCH</td>
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<td>32</td>
<td>BAD POSITION REED SWITCH</td>
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<tr>
<td>52</td>
<td>BAD CAM ASSEMBLY</td>
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<td>4</td>
<td>BAD CAM MOTOR ASSEMBLY</td>
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<td>BAD PLATEN FEED CAM IDLER GEAR</td>
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<td>BAD CABLE A-A1A3</td>
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<td>BAD PRINTER LOGIC CARD A-A1C1</td>
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<td>BAD SHEET FEED ATTACHMENT CABLE</td>
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Find the code and install new FRUs in the numbered order. The same number signifies to install the new FRUs at the same time.

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Find the code and install new FRUs in the numbered order. The same number signifies to install the new FRUs at the same time.
Find the code and install new FRUs in the numbered order. The same number signifies to install the new FRUs at the same time.

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Find the code and install new FRUs in the numbered order. The same number signifies to install the new FRUs at the same time.

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GO TO MAP 0660, ENTRY POINT A.

Is a statistics print out available?
Y N

Is the problem print quality?
Y N

Is the problem communicating to the controller?
Y N

Is the problem index, escapement, ribbon, hammer, cam, selection, etc.?
Y N

(ENTRY POINT D)
Run tests for at least one minute in loop mode 2 to obtain one of the symptoms called out in this map.
Then,
(Step 031 continues)
Some of the tests that could be run in MODE 2 are listed below.
DIAGNOSTIC TEST 10
DIAGNOSTIC TEST 11
DIAGNOSTIC TEST 12
DIAGNOSTIC TEST 13
DIAGNOSTIC TEST 18
DIAGNOSTIC TEST 22
DIAGNOSTIC TEST 38

(Step 031 continued)

GO TO PAGE 2, STEP 001,
ENTRY POINT A.

032
Visually inspect the problem area for loose connections, broken parts, foreign particles, and so on.
If a repair action IS NOT performed,
GO TO PAGE 13, STEP 031,
ENTRY POINT D.

033
- Remove the controller cable from the printer attachment panel.
- Install communications wrap connector to the printer attachment panel.
- Select 'DIAG MODE'.
- Select mode 2.
- Select and run diagnostic test 07.
- Run test for five minutes or until an error code is displayed.
(Step 033 continues)
(Step 033 continued)
- An 07 will be displayed unless an error occurs.
Is an error code displayed?
Y N

034
No error was found in the printer communications.
Suspect communication cable or controller.
Wrap connector will connect to cable at the controller end.

035
Record the error code and
GO TO PAGE 3, STEP 008,
ENTRY POINT B.

036
(ENTRY POINT E)
- Make all the mechanical adjustments to the index, selection motor, escapement, hammer, platen, the upper and lower carrier assemblies and ribbon.
Are the adjustments correct?
Y N

037
Attempt to make the adjustment. If the adjustment cannot be made install a new mechanical part and then adjust it.

038
Are all the printed characters light or faded?
Y N

039
Are the correct characters printed?
Y N

040
Bad print wheel.
---OR---
Bad selection motor.
---OR---
Bad hammer.
---OR---

041
Are the characters aligned correctly?
Y N

1 1 1
7 6 6
V W X
042
Bad print wheel.
---OR---
Bad selection motor.
---OR---

043
Are the tops or bottoms of the characters light or faded?
Y N

044
Are the right or left of the characters light or faded?
Y N

045
The print quality problem is not a normal problem.
GO TO PAGE 13, STEP 031, ENTRY POINT D.
Bad ribbon.
---OR---
Bad ribbon drive plate.
---OR---
Bad platen.
---OR---
Bad index motor.
---OR---
Bad card A-A1F1.

Bad ribbon.
---OR---
Bad print wheel.
---OR---
Bad platen.
---OR---
Bad hammer.
---OR---
SAMPLE OF STATISTICS PRINT

These are addresses. Ignore these characters.

\[\text{LABEL C0} \quad \text{LABEL C2} \quad \text{LABEL D0}\]
\[\text{LABEL C1} \quad \text{LABEL C3} \quad \text{LABEL D1}\]
\[\text{LABEL D2} \quad \text{LABEL D4}\]
\[\text{LABEL D3} \quad \text{LABEL D5}\]
\[\text{LABEL D8} \quad \text{LABEL DC}\]
\[\text{LABEL DD}\]

Above is a sample of the statistics print out from the printer. The desired data can be found by first finding the two character label for that data. The data is always four characters in length and follows immediately after the associated label.

NOTE - The exact location of the labels and the associated data in the print out being analyzed may differ from that of the above sample (if the micro code is different). (Step 049 continues)
(Step 049 continued)
However, a label will always be followed by exactly four characters of data, and then another label.

This step checks to see if a hard error has occurred.
- Observe the statistics print out.
- Find the four characters between the labels 'DC' and 'DD'.
- Ignore the last two characters after the label 'DC'.
Are the first two characters after the label 'DC' both zero?
Y N

050
Use these two characters as the code, then
GO TO PAGE 3, STEP 008,
ENTRY POINT B.

051
- Observe the statistics print out.
- Find the four characters between the labels 'D8' and 'D9'.
- Ignore the last two characters after the label 'D8'.
(Step 051 continues)

This step determines if a 'SOFT ERROR' is recorded.
(Step 051 continued)
Are the first two characters after the label 'D8' both zero?
Y N
052
Use these two characters as the code and then,
GO TO PAGE 3, STEP 008,
ENTRY POINT B.
053
Is the print quality good?
Y N
054
GO TO PAGE 15, STEP 036,
ENTRY POINT E.
055
- Observe the statistics print out.
- Find the four characters between the labels 'C0' and 'C1'.
Are all four characters between the labels 'C0' and 'C1' zero?
Y N
056
Some command from the controller is not valid.
GO TO MAP 5070, ENTRY POINT A.

This step determines if a 'COMMUNICATION COUNT' is recorded for a command reject error.
057
- Observe the statistics print out.
- Find the four characters between the labels 'C1' and 'C2'.
Are all four characters between the labels 'C1' and 'C2' zero?
Y N

058
This is a frame error from the controller.
GO TO MAP 5070, ENTRY POINT A.

059
- Observe the statistics print out.
- Find the four characters between the labels 'C2' and 'C3'.
Are all four characters between the labels 'C2' and 'C3' zero?
Y N

060
This is an overrun error from the controller.
GO TO MAP 5070, ENTRY POINT A.

This step determines if a 'COMMUNICATION COUNT' is recorded for a frame error.

This step determines if a 'COMMUNICATION COUNT' is recorded for an overrun error.
061 - Observe the statistics print out.
- Find the four characters between the labels 'C3' and 'D0'.
Are all four characters between the labels 'C3' and 'D0' zero?
Y N

062 This is a parity error from the controller.
GO TO MAP 5070, ENTRY POINT A.

063 - Observe the statistics print out.
- Find the four characters between the label of 'D0' and 'D1'.
Are the four characters between 'D0' and 'D1' all zero?
Y N

064 Follow the escalation procedure.
This step determines if an 'AUTO RECOVERABLE COUNT' is recorded for a 64 error. The 'AUTO RECOVERABLE COUNT' should be between the labels 'D1' and 'D2'.

Are all four characters between the labels 'D1' and 'D2' zero? Y N

Follow the escalation procedure.

This step determines if an 'AUTO RECOVERABLE COUNT' is recorded for a 55 error. The 'AUTO RECOVERABLE COUNT' should be between the labels 'D2' and 'D3'.

Are all four characters between the labels 'D2' and 'D3' zero? Y N

Follow the escalation procedure.
- Observe the statistics print out.
- Find the four characters between the labels 'D3' and 'D4'.
Are all four characters between the labels 'D3' and 'D4' zero?
Y N

070
Follow the escalation procedure.

071
- Observe the statistics print out.
- Find the four characters between the labels 'D4' and 'D5'.
Are all four characters between the labels 'D5' and 'D5' zero?
Y N

072
Follow the escalation procedure.

073
Is the sheet feed installed?
Y N

This step determines if an 'AUTO RECOVERABLE COUNT' is recorded for a 37 error.

This step determines if an 'AUTO RECOVERABLE COUNT' is recorded for a 45 code.
No intermittent or unusual problem has been found in the statistics print. To continue to find a problem, go to page 13, step 031, entry point D.

To find an intermittent problem with the sheet feed, go to map 0650, entry point A.
START OF CALL - Sheet feed entry

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<td>A 2 001</td>
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<td>0095</td>
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</table>

MAP 0610-1
001
(ENTRY POINT A)

MAP Description:
THIS MAP DETERMINES THE GENERAL TYPE OF SHEET FEED FAILURE AND SENDS THE CE TO CORRECT MAP. ALL CHECKS IN STEP 003 MUST BE COMPLETED BEFORE THE CE CONTINUES INTO THE FOLLOWING STEPS. THE CHECKS NEED VISUAL AND HAND TOUCHING INSPECTIONS. ALL VOLTAGES MUST BE IN 10% TOLERANCE. ALL RESISTANCE MEASUREMENTS MUST BE IN 10% TOLERANCE.

Entry Conditions:
NONE
Start Conditions:
NONE

Field replaceable units:
Analog Card, J7 Cable Assembly, Drive Pulleys, Rocker Springs, Cone Rollers, Printer A-A1C1 Card.

Is the sheet feed attached?
Y N

002
GO TO MAP 0015, ENTRY POINT B.
- IF YOU ARE UNFAMILIAR WITH THIS MAP READ THE SUPPLEMENTARY INFORMATION ON THE RIGHT SIDE OF THIS PAGE.
- Request description and examples of problem from the operator.
- Visually inspect for loose/broken parts, operator errors, etc.
- Check that paper and side/rear restraints in tray are correct. Detent for trays and detent screws are correct. See Sheet Feed Maintenance Information Manual (723) and Chapter 3 of the Operators Guide.
- Check that rails are tight and have no loose screws (766).
- Check mounting screws of all wire racks and ensure that all mounting points are tight and rack positions are correct (780).
- Check the supplies and environments meets that specified in Appendix A of the Operators Guide.
- If the cause of failure can be determined and adjusted or repaired, adjust or repair and verify the adjustment or repair.
- Remove the paper from the printer. Press the 'RELEASE' switch, if necessary, to remove the paper.

(Step 003 continues)
START OF CALL - Sheet feed entry

PAGE 4 OF 10

(Step 003 continued)

- Put the hand insertion paper deflector in automatic sheet feed operation position.
- If machine is on DO NOT SET POWER SWITCH TO '0' until instructed by the map.
- If machine is off, set power switch to '1'.

Do the above checks fail to find the cause of the problem?

Y N

004 Repair problems found in step 003 above.

005 Is the control panel 'POWER ON' light on?

Y N

006 GO TO MAP 0100, ENTRY POINT A.

007 Is the LED display blank?

Y N

008 Is the code 05?

Y N

009 Is the code 01 or 02 or 78 or 79?

Y N

010 Symptom has changed.

GO TO MAP 0130, ENTRY POINT A.

011 GO TO MAP 0620, ENTRY POINT A.

012 Did the paper leading edge reach the sequencer area(700)?

Y N

013 GO TO MAP 0630, ENTRY POINT A.

014 GO TO MAP 0640, ENTRY POINT A.
START OF CALL- Sheet feed entry

- Set Printer Power Switch to '0'.
- Set Printer Power Switch to '1'. Wait 35 seconds until Power On Sequence is complete.
- Put the printer in 'DIAGNOSTIC MODE'(301).
- Select and run Test Unit 24 to check sheet feed status(306).
- Observe the LED display on the operator panel.
- If you are unfamiliar with HEX DEcimal Number, read the supplementary information at the right of this page and also observe the figure at right to distinct a SIX from a BEE.

Is the code AX, bX, 0X, 1X, 2X, 3X, 8X, OR 9X,?

Y N

- Check sheet feed connector to see if it is plugged into the printer attachment panel correctly(763).
- Disconnect sheet feed J7 cable from the sheet feed analog card and printer attachment panel.
- Use a meter to check the cable for continuity(705).

(Step 016 continues)
START OF CALL - Sheet feed entry

PAGE 6 OF 10

(Step 016 continued)
Is the cable and connector check correct?
Y N

017
Repair or reinstall J7 cable and connector as necessary. Plug the sheet feed J7 cable into the sheet feed and the printer attachment panel correctly.

018
GO TO MAP 0095, ENTRY POINT B.

019
- Remove jammed paper from sheet feed, if necessary
- Press the 'CANCEL' switch on the control panel.
- Select and run Test Unit 40 for hopper 1(lower).
- Wait until test is complete.
Does a single sheet insert and eject correctly?
Y N
020
- Remove jammed paper from sheet feed and run test 40 again, if necessary.
- Read the supplementary information at right.

Does the lower picker separator motor and the upper picker separator motor run at the same time when you run test 40(701)?
Y N

021
- Remove jammed paper from the sheet feed path.
- Run Test Unit 40 to determine the location of paper jam.
- Repeat the above steps as many times as needed in order for you to answer the following question.

Does the paper always jam or stop at the same approximate location in the paper path when test 40 is repeated?
Y N

888
H JK
START OF CALL - Sheet feed entry

PAGE 8 OF 10

022
Check and reinstall rocker springs 1, 2-3, and 4(701).
---OR---
Check and reinstall Drive rollers C2 & C3(701).
---OR---
Check and reinstall pulleys P1, P2 & P4(701).
If the problem remains unsolved after new parts are installed.
GO TO MAP 0650, ENTRY POINT A.

023
Is the paper leading edge past roller C2(701)?
Y N

024
Sheet Feed failure is in the insert path.
GO TO MAP 0620, ENTRY POINT A.

025
Does the leading edge of the paper reach the sequencer area(700)?
Y N

026
Sheet feed failure is in the eject path.
GO TO MAP 0630, ENTRY POINT A.

---

F H L

027
GO TO MAP 0640, ENTRY POINT A.

028
- Remove jammed paper, if necessary.
- Meter from connector pin J7-2(GND) to connector pin J7-8(705).
- Run test 40 again while metering between J7-8 and J7-2(GND).
Does meter read 2.5 to 5.0 Vdc?
Y N

029
Bad printer A-A1C1 card.

030
Bad sheet feed analog card(763).

031
- Press the 'CANCEL' switch on the control panel.
- Select and Run Test Unit 41 for hopper 2(upper).
- Wait until test is complete.
does a single sheet insert and eject correctly?
Y N

---

1 0 9

M N

MAP 0610-8
- Remove jammed paper and run test unit 41 again, if necessary.

The lower motor normally should not run when you run test 41 unless the motor drive circuit is shorted.

Do the upper and lower picker separator motors run at the same time when you run test unit 41(701)?

Y N

- Remove jammed paper and run test 41 again to determine the location of paper jam.
- Also observe both pick separator motors while test 41 is running.
- Repeat the above procedure as many times as needed in order for you to answer the following question.

Does paper always jam or stop at the same approximate location in the paper path when test 41 is repeated?

Y N
START OF CALL- Sheet feed entry

PAGE 10 OF 10

034
Check and reinstall rocker spring 5-6(701).
---OR---
Check rollers C4, C5 & C6(701) for damage.
---OR---
Check Pulleys P4, P5, & P6(701) for damage and loose setscrews.
If problem remains unsolved after new parts are installed.
GO TO MAP 0650, ENTRY POINT A.

035
GO TO MAP 0630, ENTRY POINT E.

036
- Remove jammed paper, if necessary.
- Meter connector pin J7-9 to pin J7-2 voltage(705).
- Run test 41 again while metering between J7-9 and J7-2(GND).
Does the meter read 2.5 to 5.0 Vdc?
Y N

037
Bad printer A-A1C1 card.

038
Bad sheet feed analog card(763).
ENTRY POINTS

<table>
<thead>
<tr>
<th>FROM</th>
<th>ENTER THIS MAP</th>
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<tbody>
<tr>
<td>MAP NUMBER</td>
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<td>C</td>
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EXIT POINTS

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<td>016</td>
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<tr>
<td>11</td>
<td>083</td>
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</table>
001
(ENTRY POINT A)
- SET PRINTER POWER SWITCH TO '0'.
  - Remove jammed paper from the sheet feed.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35
  SECONDS UNTIL POWER ON SEQUENCE IS
  COMPLETE.
- Run verify test(307).
- While pressing and holding the 'STOP'
  switch, press and release the 'PRINT
  TEST' switch, and then release the 'STOP'
  switch.
- Observe the LED display.

Error Code 78 and printer exception light ON
indicate the wrap test to the sheet feed
analog circuits failed when executing sheet
feed basic assurance test(307).
Error Code 79 and printer exception light ON
indicate sensor made at POR(307).

Is the LED display blank?

Y N


1 8 3 A B

MAP Description:
THIS MAP DIAGNOSES THE MOTOR AND SENSOR.

Entry Conditions:
NONE
Start Conditions:
NONE

Field replaceable units:
J7 Cable Assembly, Cable from Attachment
Panel to A-A1 Board, Sheet Feed Analog Card,
Motors, Sensors, Printer A-A1 Board.
**TABLE OF VALID CODES**

<table>
<thead>
<tr>
<th>XX-YY</th>
<th>IS</th>
<th>XX THROUGH YY</th>
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<tbody>
<tr>
<td>01-02</td>
<td>60</td>
<td>71</td>
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<tr>
<td>05</td>
<td>61</td>
<td>73-79</td>
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<tr>
<td>06</td>
<td>63-65</td>
<td>8.8</td>
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<td>30-38</td>
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**NOTE:**

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<th>_ = B</th>
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<tbody>
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</tbody>
</table>

- Is the code found in the table of valid codes?  
  - Y  
  - N

- Is the code 78?  
  - Y  
  - N

- Is the code 79?  
  - Y  
  - N

- Is the code 01?  
  - Y  
  - N

- Is the code 02?  
  - Y  
  - N

- Is the code 05?  
  - Y  
  - N
009
Is the code 06?
Y N

010
The symptom has changed.
GO TO MAP 0130, ENTRY POINT A.

011
Is the printer top cover open?
Y N

012
GO TO MAP 0095, ENTRY POINT B.

013
Is printer cover interlock switch jumper on?
Y N

014
close the top cover or install CE jumper to bypass the cover interlock.
GO TO MAP 0010, ENTRY POINT A.

015
GO TO MAP 0095, ENTRY POINT C.

016
GO TO MAP 0630, ENTRY POINT A.

017
GO TO PAGE 8, STEP 046, ENTRY POINT D.

018
(ENTRY POINT C)
- SET PRINTER POWER SWITCH TO '0'.
- Remove jammed paper from sheet feed.
- Push the manual paper insertion deflector in automatic sheet feed operation position.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Put printer in 'DIAGNOSTIC MODE'(301).
- Select test unit 40.
- Press the 'START' on the operator panel.

Does the motor 1(lower) run?
Y N

019
- SET PRINTER POWER SWITCH TO '0'.
- Remove the left hand cover from the sheet feed(760).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Connect connector pin J4-4(GND) to connector pin J7-9 with a jumper(705).

(Step 019 continues)
Does the motor 1(lower) run?

Y N

020
- Remove the jumper cable from connector J7 and connector J4(705).
- Connect connector pin J5-2 to connector pin J4-4(GND) with a jumper(705).

Does the motor 1(lower) run?

Y N

021
- Remove jumper cable from connectors J5 & J4(705).
- Check for +36Vdc across connector pin J4-4(GND) and the plus(white lead) side of the connector at the lower motor circuit board(705).

Is the voltage present?

Y N

022
Is +36Vdc present across J4-4(GND) and J7-5(705)?

Y N

023
- Check the printer attachment panel connector for short circuit and loose pins(105).

Is printer attachment panel connector correct?

Y N

024
Bad printer attachment panel connector.

025
- Measure +36Vdc at the printer attachment panel connector(105).

Is +36Vdc present at the printer attachment panel connector?

Y N

026
Bad printer cable from printer attachment panel to A-A1 board.

027
Bad cable from sheet feed to printer attachment panel(763).
SHEET FEED CONTROL

PAGE 6 OF 18

028
Is +36Vdc present across test points J5-1 and J4-4 (GND) on the sheet feed analog card (705)?

Y N

029
Bad sheet feed analog card (763).

030
Bad motor 1 (lower) cable assembly (701).

031
- SET PRINTER POWER SWITCH TO '0'.
- Disconnect connector J5 from the sheet feed analog card (705).
- Reconnect connector J5 to sheet feed analog card after the checks are completed.
- Check motor 1 (lower) coil resistance in five positions at the J5 connector.
- Turn shaft approximately 72 degrees between each measurement.
- Shaft can be turned by turning shipswheel (728) by hand.
Is motor 1 (lower) resistance 13 ohms to 22 ohms?

Y N

032
Is motor 1 (lower) resistance less than 13 ohms for any of the 5 positions?

Y N

033
Bad motor 1 (lower) (764).

--- OR ---
Bad motor 1 cable assembly (701).

034
Bad motor 1 (lower) (764) and sheet feed analog card (763).

035
Bad motor 1 (lower) (764).

036
Bad sheet feed analog card (763).

037
- SET PRINTER POWER SWITCH TO '0'.
- Remove sheet feed and printer cover from printer.
- Jumper attachment panel connector pin 2 to pin 7 on printer side of panel (105).
- Remove jumper after this step is completed.
- Reconnect the sheet feed cable back to the printer attachment panel.
(Step 037 continues)
(Step 037 continued)
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the motor 1(lower) fail to run?
Y N

- SET PRINTER POWER SWITCH TO '0'.
- Disconnect sheet feed cable J7 from the sheet feed analog card and the printer attachment panel(763).
- Check cable from attachment panel to printer A-A1 board for continuity, short circuit and loose connections(105).

Is cable correct?
Y N

- Bad cable from printer attachment panel to A-A1 board.

- Remove printer A-A1C1 card from A-A1 board(104).
- Check printer A-A1 board for physical damage.

Is A-A1 board damaged?
Y N

- SET PRINTER POWER SWITCH TO '0'.
- Disconnect sheet feed cable from printer attachment panel and sheet feed analog card(763).
- Meter sheet feed cable for continuity(705).

Is sheet feed cable check correct?
Y N

- Bad sheet feed J7 cable(763).

- Bad printer A-A1 board(104).
046
(ENTRY POINT D)
- SET PRINTER POWER SWITCH TO '0'.
- Remove jammed paper from sheet feed.
- Push the manual paper insertion
deflector in automatic sheet feed
operation position.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35
SECONDS UNTIL POWER ON SEQUENCE IS
COMPLETE.
- Put the printer in 'DIAGNOSTIC
MODE'(301).
- Select and Run test Unit 41.
Does the motor 2(upper) run(701)?
Y N

047
- SET PRINTER POWER SWITCH TO '0'.
- Remove the left hand cover from the
sheet feed(760).
- SET PRINTER POWER SWITCH TO '1'. WAIT
35 SECONDS UNTIL POWER ON SEQUENCE IS
COMPLETE.
- Connect Jumper from connector pin
J4-4(GND) to connector pin J7-8(705).
Does the motor 2(upper) run(701)?
Y N

048
- Remove the jumper from J7 and J4
connectors(705).
- Connect connector pin J5-4 to connector
pin J4-4(GND) with a jumper cable(705).
Does the motor 2(upper) run?
Y N

049
- Check for +36Vdc across connector pin
J4-4 and the plus(white lead) side of
the connector at the upper motor
circuit(705).
Is the voltage present?
Y N

050
- Check voltage between connector pin
J4-4(GND) and connector pin
J7-5(705).
Is +36Vdc present between J7-5 and
J4-4(GND)?
Y N
- Check printer attachment panel connector for continuity, short circuit and pin damage (105). Is printer attachment panel connector check correct?
  Y N

 052 - Bad printer attachment panel connector.

 053 - Measure +36Vdc at the attachment panel plug (105). Is +36Vdc present at the attachment panel? Y N

 054 - Bad cable from printer attachment panel to A-A1 board.

 055 - Bad sheet feed cable J7 (763).

 056 - Is +36Vdc present at sheet feed analog card connector pin J4-4 (GND) to connector pin J5-3 (705)? Y N

- SET PRINTER POWER SWITCH TO '0'.
- Remove jumper cable from connector J5 and J4 (705).
- Disconnect connector J5 from sheet feed analog card. Reconnect after check is complete (705).
- Check motor 2 (upper) coil resistance in five positions at the J5 connector.
- Turn shaft approximately 72 degrees between each measurement.
- Shaft can be turned by turning shipswheel (728) by hand.

 060 - Is motor 2 (upper) resistance less than 13 ohms for any of five positions?
  Y N

1 1 1 0 0 0 A A A G H J
061
Bad motor 2(upper)(764).
---OR---
Bad motor 2(upper) cable(701).

062
Bad motor 2(upper)(764) and sheet feed analog card(701).

063
Bad motor 2(upper)(764).

064
Bad sheet feed analog card(763).

065
-SET PRINTER POWER SWITCH TO '0'.
- Remove sheet feed and printer cover from printer.
- Connect the attachment panel connector pin 3 to pin 7(105) on the printer side of the attachment panel with a jumper cable(Remove jumper after this step is completed).
- Reconnect the sheet feed cable to printer attachment panel(763).
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

(Step 065 continues)

Does the motor 2(upper) fail to run?

Y N

066
-SET PRINTER POWER SWITCH TO '0'.
- Disconnect sheet feed cable from the sheet feed analog card and the printer attachment panel.
- Check the cable from the attachment panel to A-A1 board for continuity, short circuit and loose connections(105).

Is printer cable check correct?

Y N

067
Bad printer cable from printer attachment panel to printer A-A1 board.

068
- Remove the printer A-A1C1 card from the printer(104).
- Check A-A1 board for physical damage.

Is A-A1 board damaged?

Y N

069
Bad printer A-A1C1 card(104).
070
Bad printer A-Al board(104).

071
- Set printer power switch to '0'.
- Disconnect the sheet feed cable from sheet feed and the printer attachment panel.
- Meter sheet feed cable for continuity(705).

Is J7 cable check correct?
Y N

072
Bad sheet feed J7 cable(763).

073
Bad A-Al board.

074
Is the LED display 41?
Y N

075
Is code 05?
Y N

076
Is code 01 or 02 ?
Y N

077
Is code 78?
Y N

078
Is code 79?
Y N

079
Go to MAP 0130, ENTRY POINT A.

080
Go to PAGE 12, STEP 085, ENTRY POINT B.

081
Go to PAGE 14, STEP 102, ENTRY POINT E.

082
Go to MAP 0630, ENTRY POINT A.

083
Go to MAP 0630, ENTRY POINT B.
(Step 087 continued)

Does the LED display indicate code 79?

Y N

088
Bad upper sensor(729).

089
-SET PRINTER POWER SWITCH TO '0'.
- Remove jammed paper, if needed.
- Disconnect connector J2 from the sheet feed(705).
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Reconnect connector J2 to the sheet feed after the test is completed(705).

Does the LED display indicate code 79?

Y N

090
Bad lower sensor(729).
091
- SET PRINTER POWER SWITCH TO '0'.
- Remove wire J7-12 and J7-11 from sheet feed J7 connector(705).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Run verify test(307).
- Reinstall wires J7-12 and J7-11 back to J7 connector after test is completed(705).

Does the LED display indicate code 79?
Y N

092
- SET PRINTER POWER SWITCH TO '0'.
- Remove wire J7-12 from J7 connector(705).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Run verify test(307).
- Reinstall wire J7-12 back to J7 connector after test is completed(705).

Does the LED display indicate code 79?
Y N

094
Bad printer A-A1 board(104).
---OR---
Bad printer A-A1C1 card(104).
---OR---
Bad printer cable from printer attachment panel to printer A-A1 board(104).

095
Bad sheet feed J7 cable(763).
- SET PRINTER POWER SWITCH TO '0'.
- Remove wire from position 6 on sheet feed attachment panel connector(705).
- Reinstall sheet feed attachment panel cable to printer attachment panel.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Run verify test(307).
- Reinstall wire back to sheet feed attachment panel connector position 6 after test is completed.

Does the LED display indicate code 79?

Y N

097
Bad printer A-Al board(104).
---OR---
Bad printer A-AlCl card(104).
---OR---
Bad printer cable from printer attachment panel to printer A-Al board(104).

098
Bad sheet feed cable(763).

099
- Remove connector J7 from sheet feed analog card(705)
- Check cable J7 for continuity and pin connections (705).

Does cable check correctly?

Y N

100
Bad sheet feed J7 cable.

101
Bad sheet feed analog card(763).

102
(ENTRY POINT E)
Is hopper 1(lower) motor running continuously?

Y N

103
Is Hopper 2(upper) motor running continuously?

Y N

111
7 6 5
A A A
U V W
5218 A01 A02

SHEET FEED CONTROL

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104
- Connect J7 cable to the sheet feed and the printer attachment panel connector.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Meter connector pin J7-4 to connector pin J4-4(GND) for +12Vdc(705).
Is the voltage present?
Y N

105
Bad printer cable from the printer attachment panel to the A-A1 board.

106
- Meter connector pin J7-13 to connector pin J4-4(GND) for +5.0Vdc(705).
Is voltage 4.5 to 5.5Vdc?
Y N

107
Bad cable from printer attachment panel to printer A-A1 board.

108
- Meter connector pin J7-2(GND) to pin J7-10(705).
Is voltage 0.0 to 0.5VDC?
Y N

109
- SET PRINTER POWER SWITCH TO '0'.
- Remove J7 cable connector from the sheet feed analog card(705).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Meter connector pin J7-10 to J7-2(GND) voltage on J7 cable(705).
Is voltage 2.0 to 5.5Vdc?
Y N

110
Bad printer card A-A1C1(104).

111
Bad sheet feed analog card(763).
112 - Connect a jumper cable from connector pin J4-4 (GND) to connector pin J7-9 (705).
- Meter voltage from pin J7-10 to pin J4-4 (705).
Is voltage 2.0 to 5.5 Vdc?
Y N
113 Bad sheet feed analog card (763).
114 - Meter the printer cable from printer attachment panel to printer A-A1 board for continuity (105).
Is the printer cable correct?
Y N
115 Bad printer cable from attachment panel to A-A1 board.
116 Bad printer card A-A1Cl (104).

117 - SET PRINTER POWER SWITCH TO '0'.
- Remove J7-8 wire from J7 connector (705).
- Reconnect J7-8 to J7 connector after the test is completed.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Does hopper motor 2 (upper) run continuously?
Y N
118 - SET PRINTER POWER SWITCH TO '0'.
- Disconnect sheet feed attachment panel connector from printer attachment panel.
- Remove pin 4 from the connector using a pin removal tool (IBM P/N 2108398).
- Reconnect sheet feed attachment connector to printer attachment panel.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
Does hopper motor 2 (upper) run continuously?
Y N
111 1 1 1
7 7 7
A B B
Z A B

MAP 0620-16
SET PRINTER POWER SWITCH TO '0'.
- Disconnect sheet feed attachment panel connector from printer attachment panel.
- Remove pin 3 from the connector using a pin removal tool (IBM P/N 2108398).
- Reconnect sheet feed attachment connector to printer attachment panel.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the motor 1 (lower) run continuously?

Y N

- SET PRINTER POWER SWITCH TO '0'.
- Disconnect sheet feed attachment panel connector from printer attachment panel.
- Remove pin 3 from the connector using a pin removal tool (IBM P/N 2108398).
- Reconnect sheet feed attachment connector to printer attachment panel.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Sheets feed J7 cable has short circuit.

Bad sheet feed analog card (763).
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SHEET FEED OPERATION

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001
(ENTRY POINT A)
- Remove jammed paper from sheet feed, if needed.
- Check paper position in both input trays.
- Push the manual paper insertion deflector into the automatic sheet feed operation position.
- SET PRINTER POWER SWITCH TO '0'.
(Step 001 continues)

MAP Description:
THIS MAP DETERMINES THE SHEET FEED DETAILED FEED CHECK.

Entry Conditions:
NONE

Start Conditions:
NONE
(Step 001 continued)
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Put the printer in 'DIAGNOSTIC MODE' (301).
- Select and Run Test Unit 42 for the (lower) hopper 1 (303).
- Press the START key on the control panel, this should feed the paper to 1.5 to 2 inches past the First Writing Line.

Did a sheet of paper feed from hopper 1 (lower) to 1.5 to 2 inches past the first writing line?

Y | N

002
Does the LED indicate 05?

Y | N

003
- Remove jammed paper from the sheet feed.
- SET PRINTER POWER SWITCH TO '0'.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Put the printer in 'DIAGNOSTIC MODE' (301).
- Select and Run Test Unit 42.
- Observe the hopper 1 (lower) paper (Step 003 continues)
(Step 003 continued)

Does the hopper 1(lower) paper picker separator contact the paper?

Y N

- Check that the position adjustment of the lower input tray is correct and that the detent screws are not loose(723).

Are the lower tray and detent checks correct?

Y N

- Adjust tray and/or detent and screws(723).

- Press the hopper 1(lower) paper picker(separator) wheel down(725).
- Remove the jammed paper.
- Select and Run test unit 42, if necessary.

Does the hopper 1(lower) paper picker(separator) contact the paper?

Y N

- Remove paper from sheet feed path, if necessary.
- Press 'CANCEL' 3 times.
- While pressing 'INDEX UP' switch, observe the cone roll C2 and C3(701).

Did the cone rollers C3 and C2 move?

Y N

- Does the printer platen gear turn?

Y N
-SET PRINTER POWER SWITCH TO '0'.
- Disconnect sheet feed cable from printer attachment panel(763).
- Remove the sheet feed from printer.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Press 'INDEX UP'.

Does the printer platen gear turn?

Y N

012
GO TO MAP 0030, ENTRY POINT A.

013
Bad timing belt(701).
-----OR-----
Bad sequencer gear(701).
-----OR-----
Bad sequencer pulley(701).
-----OR-----
Bind in Cl cone roller shaft(701).
-----OR-----
Tight shaft end play(721).
-----OR-----
Bad lower drive gear train(701).

014
Bad timing belt(701).
-----OR-----
Bad lower drive gear train(701).
-----OR-----
Sheet feed not attached correctly.
-----OR-----
Loose timing belt adjustment(720).

015
-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Remove the sheet feed left side cover(760).
- Remove the jammed paper.
- Select and Run Test Unit 42, if necessary.
- Observe the second sheet restraint solenoid(726).

Is the second sheet restraint solenoid being pulled downward to the down(picked) position during test 42?

Y N

6 5
J K
Sheet Feed Operation

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016
- Push the second sheet restraint solenoid down by hand.
- Observe hopper 1(lower) and hopper 2(upper) second sheet restraint
  pawls(767 and 768).
Are both pawls moving below the paper path?
Y N

017
- Check the second sheet restraint assembly adjustment(726).
Is the second sheet restraint adjustment correct?
Y N

018
- Adjust the second sheet restraint assembly(726).

019
- Check the gate control linkage for binds(748).
Is gate control linkage binding?
Y N

020
- Bad second sheet restraint solenoid assembly(769).

021
- Bad gate control linkage(748).

022
- SET PRINTER POWER SWITCH TO 'O'.
- Connect the meter from pin J6-1(positive) on the sheet feed analog
  card to pin J6-2 on the sheet feed analog card(705).
- Remove the jammed paper from the sheet feed.
- Set meter to 200 Vdc.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35
  SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Select and Run Test Unit 42.
- Measure for 25.0 to 40.0 Vdc while motor
  1(lower) is running.
Is the meter reading correct?
Y N

023
- SET PRINTER POWER SWITCH TO 'O'.
- Disconnect connector J6 from the sheet feed(705).
- Meter second sheet restraint solenoid
  connector pin J6-1 to pin J6-2 for
  resistance(705).
(Step 023 continues)
Sheet Feed Operation

(Step 023 continued)

Is resistance in the range of 49 ohms to 76 ohms?  Y N

024
Bad second sheet restraint solenoid and sheet feed analog card (769 and 763).

025
Bad sheet feed analog card (763).

026
- Disconnect connector J6 from sheet feed analog card (705).
- Meter second sheet restraint solenoid connector pin J6-1 to pin J6-2 for resistance (705).

Is resistance less than 6 ohms?  Y N

027
Is the second sheet restraint solenoid adjustment correct (726)?  Y N

028
Adjust second sheet restraint solenoid (726).

029
Bad second sheet restraint solenoid (769).

030
Bad sheet feed analog card and bad second sheet restraint solenoid (763 and 769).

031
- SET PRINTER POWER SWITCH TO '0'.
- Lift the splitter to up position.
- Insert a paper under sensor from front of sheet feed.

Does the paper easily slide between the sensor 1 (lower) block and sensor backup guide (729)?  Y N

032
Remove obstruction from the sensor area.
Check and adjust wire rack (780).
Check and adjust sensor backup guide (729).
Check and adjust sensor block (729).
SHEET FEED OPERATION

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033
- With the paper covering the lower sensor.
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the LED indicate code 79?

Y N

034
The problem is in the electrical area.
GO TO PAGE 12, STEP 080,
ENTRY POINT C.

035
- Check the hopper 1(lower) sensor housing location(729).
Is the lower sensor housing blocking the paper path?

Y N

036
- Check lower inner wire rack position(731).
Is the lower wire rack blocking the paper path?

Y N

037
Is the paper curled?

Y N

038
Is the paper tray clear of obstructions and burrs?

Y N

039
Remove obstructions or burrs and check paper stack in both trays to see if they are correct.
---OR---
Install a new paper tray.

040
- Push the second sheet restraint solenoid down by hand(726).
- Observe the movement of the second sheet restraint pawls(767 and 768).
Are both pawls pushed out of the paper path?

Y N

8 8
STU
S T V W X 5218 A01 A02
7 7 7 7 7

SHEET FEED OPERATION

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041
- Check the second sheet restraint assembly adjustment(726).
- Is the second sheet restraint assembly adjustment correct?
  Y N

042
- Make adjustment of second sheet restraint assembly(726).

043
- Bad second sheet restraint pawl and bellcrank assembly(167 and 168).

044
- No problem has been found.
  GO TO MAP 0660, ENTRY POINT A.

045
- Put in a new supply of paper.
  GO TO PAGE 1, STEP 001, ENTRY POINT A.

046
- Adjust lower inner wire rack position(731).

047
- Adjust hopper 1(lower) sensor housing(729).

048
(ENTRY POINT F)
  - Remove the jammed paper.
  - Select and run test 42 again if necessary.
  - Measure the time that the hopper motor 1 runs.
  Does hopper motor 1(lower) run for more than 5 seconds?
    Y N

049
(ENTRY POINT B)
  - Remove the jammed paper.
  - Remove the left side cover(760).
  - Select and Run Test Unit 42 again, if necessary.
  - Observe the second sheet restraint solenoid(726).
  Does the second sheet restraint solenoid remain in downward(picked) position after test 42 is completed?
    Y N

050
- Does the leading edge of the paper pass cone roller C2(701)?
    Y N
Is roller C2(701) broken or off the shaft?
Y N

Is backup roller for C2(701) damaged or off?
Y N

Is backup roller in close contact with C2?
Y N

Bad spring of rocker 2 and 3(701)
---OR---
Bad pulley P4(773) or roller C4(775).

GO TO PAGE 12, STEP 080,
ENTRY POINT C.

Install new C2 backup roller(776).

Install new C2 roller(775).
SHEET FEED OPERATION

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062
Adjust the printer cover position(115) and check for any obstruction which may block the paper from entering into the printer cover.
Check lower inner wire rack adjustment(731).

063
Did paper reach printer rear feed roller?
Y N

064
(ENTRY POINT H)
- Check binds of the sheet feed drive gears(701).
- Check C1 and backup rollers(701)
- Check rocker assemblies(1,2,3) and springs(701)
- Check setscrews of P1, P2 P2 and P3 pulleys(701)
- Check drive belt(720) and idle pulley position(720).
- Check printer acoustic filter adjustment.
Are the checks correct?
Y N

065
Make adjustment or install new parts.

Y N

066
- Select 'DIAGNOSTIC MODE'(301).
- Select test 26.
- Run test 26 while observing the LED display.
Does the LED display indicate code 01?

067
Bad paper sensor(729).
---OR---
Bad A-A1C1 card.

068
- Remove sheet feed from printer.
- Check the drive gear train for binding in gears or pulleys or any obstruction which may prevent the drive train from turning. You can perform this check by turning the lower drive gear by two fingers(701).
Is the gear train bound?

069
This indicates an intermittent problem in the printer.
GO TO MAP 0130, ENTRY POINT A.
070
Make adjustment to remove binding or install new parts.

071
Bad printer feed roller assembly(100).
---OR---
Bad printer comb assembly(100).
---OR---
Bad printer cam assembly(100).
---OR---
Bad paper holder(100).
---OR---
Bad paper bail(100).

072
Install new rocker 2 or 3 or both and/or their spring(701).

073
- SET PRINTER POWER SWITCH TO '0'.
  - Remove the left sheet feed cover(760), if necessary.
  - SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
  - Remove jammed paper.
  - Select and Run Test Unit 42 again, if necessary.

(Step 073 continues)

Does the second sheet restraint solenoid remain in the downward(picked) position after test 42 is completed?

Y N

074
Binding in second sheet restraint mechanism.
Adjust second sheet restraint assembly(726).

075
- Disconnect connector J6 from the sheet feed analog card(705).
- Observe the second sheet restraint solenoid linkage movement.

Does the linkage and/or solenoid return to the correct released position?

Y N

076
- Disconnect the second sheet restraint linkage at the clevis(726).
Does the solenoid return to the released position?

Y N
077
Bad second sheet restraint solenoid
assembly(769).
---OR---
Bound second sheet restraint upper
bellcrank(726).

078
Bound second sheet restraint lower
bellcrank(726).

079
Bad sheet feed analog card(763).

080
(ENTRY POINT C)
- Check that the timing belt(720) and
drive train including all pulleys and
gears(701) are not loose.
- Check that all pulleys are tight on
shaft and setscrews are not loose.
Is the drive belt and train correct?
Y N

081
Adjust or install a new new timing
belt(720) and/or transport and aligner
pulleys(730) and/or gears(701) and their
setscrews.
087
- SET PRINTER POWER SWITCH TO 'O'.
- Set meter to 200K ohm setting.
- Measure resistance between connector pin J2-3 and connector pin J7-4(705).
  Is the resistance 16K to 32.3K ohms?
  Y N

088
- Bad sheet feed analog card(763).

089
- Bad lower hopper sensor(729).

090
- Measure voltage between connector pin J7-12 and and connector pin J4-4(705).
  Is the voltage 2.0 to 5.5Vdc?
  Y N

091
- SET PRINTER POWER SWITCH TO 'O'.
- Disconnect sheet feed cable J7 from the sheet feed analog card(763) and the printer attachment panel.
- Check sheet feed cable J7 for continuity and short circuit(705).
  Is the sheet feed cable J7 check correct?
  Y N

092
- Bad sheet feed J7 cable(763).

093
- Bad sheet feed analog card(763).

094
- SET PRINTER POWER SWITCH TO 'O'.
- Disconnect the sheet feed J7 cable from the sheet feed analog card and the printer attachment panel connector(763).
- Check sheet feed cable J7 for continuity and short circuit(705).
  Is the sheet feed cable J7 check correct?
  Y N

095
- Bad sheet feed J7 cable(763).

096
- Check cable from printer attachment panel to A-A1 board for continuity and short circuit(105).
  Is the printer cable check correct?
  Y N

097
- Bad printer cable from the printer attachment panel to the A-A1 board.
SHEET FEED OPERATION

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- Remove A-A1C1 card from printer(104).
  - Check physical damage of the A-A1 board.
  
  Is the A-A1 board damaged?
  
  Y
  N

  099
  Bad A-A1C1 card.

  100
  Bad A-A1 board.

  101
  - Select and run Test Unit 44.
  - Observe the paper movement in the eject path.

  Did the paper eject and stack correctly?
  
  Y
  N

  102
  Does the leading edge of the paper pass the lower eject roller C1(701)?
  
  Y
  N

  103
  Is the lower drive gear broken(701)?
  
  Y
  N

  104
  Is lower drive gear setscrew loose(701)?
  
  Y
  N

  105
  Is setscrew of P1 pulley loose(701)?
  
  Y
  N

  106
  Is the P1 rocker spring off(701)?
  
  Y
  N

  107
  Bad C1 roller(775).
  ---OR---
  Obstruction in paper path.

  108
  Reinstall a P1 pulley rocker spring(701).

  109
  Tighten P1 pulley setscrew(730).

  110
  Tighten the lower drive gear setscrew(701).

  111
 Bad gear(701).
**Sheet Feed Operation**

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112 Does the paper pass roller C4(701)?
   Y N

113 Is the setscrew of P4 pulley loose(701)?
   Y N

114 Is the P4 pulley rocker spring off(701)?
   Y N

115 Bad roller C4(775).
   ---OR---
   Obstruction in eject paper path.

116 Reinstall P4 pulley rocker spring(701).

117 Tighten the P4 pulley setscrews(730). Also check setscrews of pulleys P2 & P6(701).

**Entry Point E**

**MAP 0630-15**

118 Bad Sequencer and stack.
   If pulley P4 and its setscrew is not loose and the paper path is free of obstruction(701).
   GO TO MAP 0640, ENTRY POINT A.

119 (ENTRY POINT E)
   - Remove the jammed paper if necessary.
   - Select Test Unit 43 for hopper 2(upper)
   - Press the 'START' key on the control panel, this should feed the paper to 1.5 to 2 inches past the writing print line.

Did a sheet of paper feed from hopper 2 to 1.5 to 2 inches past the first writing line?
   Y N

120 Does the LED display indicate 05?
   Y N

**MAP 0630-15**
121
- Remove the jammed paper.
- Select and Run Test Unit 43 again, if necessary.
- Observe the hopper 2(upper) paper picker separator (701).

Does the hopper 2(upper) paper picker/separator contact the paper?
Y N

122
- Check that the adjustment of detents of the upper input tray are correct and the detent screws are not loose (723).

Are the upper tray and detent checks correct?
Y N

123
- Adjust or install a new tray and/or detent and their screws (723).

124
- Press the hopper 2(upper) paper picker/separator wheel down (725).
- Remove the paper.
- Select and Run Test Unit 43 again, if necessary.

Does the hopper 2(upper) paper picker/separator contact the paper?
Y N

125
- Check picker separator lift mechanism (725).
- Adjust if necessary.

126
Bad hopper 2(upper) paper picker separator (764).

127
- Is code 02?
Y N

128
- Symptom has changed.
- GO TO MAP 0650, ENTRY POINT A.

129
- GO TO PAGE 17, STEP 130, ENTRY POINT G.
ENTRY POINT G:
- Remove the jammed paper and run test 43 again if necessary.
- Measure the time that the hopper motor 2(upper) runs.
- Observe the second sheet restraint solenoid(726).

Does the hopper motor 2(upper) run for more than 5 seconds?

Y N

- Remove the jammed paper.
- Select and run test Unit 43 again, if necessary.
- Observe the second sheet restraint movement(726).

Does the second sheet restraint solenoid remain in the downward(picked) position after test 43 is completed?

Y N

- Does paper leading edge pass cone roller C5(701)?

Y N

- Is roller C5 broken or off the shaft(701)?

Y N

- Is C5 backup roller damaged or off(701)?

Y N

- Are C5 backup rollers in contact with C5 roller?

Y N

- Bad rocker 5 and 6 spring(701)

---OR---

- Bad rocker 5 or 6(701)

- GO TO PAGE 20, STEP 156, ENTRY POINT D.

- Install a new C5 backup roller(776).

- Install a new C5 roller(775).
- Check position of rocker 5 and 6(701). Are the rocker 5 and 6 correct? Y N
- Install a new rocker 5 and/or rocker 6 and/or their spring(701).
- Does the leading edge of the paper pass roller C1(701)? Y N
- Check C1(701) and backup rollers(701).
- Check rocker 1 and spring 1(701).
- Check setscrews for pulley P1 and P4(701).
- Check drive belt(720) and Idle pulley position(720).
- Check for obstructions in paper path.
- Does paper leading edge completely enter printer cover? Y N
- Adjust printer cover position and check lower inner wire rack adjustment(731).
SET PRINTER POWER SWITCH TO '0'.
- Remove the left sheet feed cover(760).
- SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Remove jammed paper.
- Select and Run Test Unit 43 again, if necessary.

Does the second sheet restraint solenoid remain in the downward(picked) position after test 43 is completed(726)?
Y N

150
Binding in second sheet restraint mechanism.
Adjust second sheet restraint assembly(726).

151
- Disconnect J6 connector from analog card(705).
- Observe solenoid linkage movement(726).
Does the linkage or solenoid return to the correct released position?
Y N

152
- Disconnect the second sheet restraint linkage at the clevis(726).
Does the second sheet restraint solenoid return to the released position?
Y N

153
Bad second sheet restraint solenoid assembly(769).

---OR---
Bound second sheet restraint upper bellcrank(726).

154
Bound second sheet restraint lower bellcrank(726).

155
BAD sheet feed analog card(763).
SHEET FEED OPERATION

156
ENTRY POINT D
- Check timing belt(720) and drive train(720).
- Check that all pulleys are tight on shaft and all setscrews are not loose(701).
- Check loose idler(701) and belt tension(720).

Are the timing belt and train checks correct?

157
Y N

Adjust or install a new timing belt(720) and/or a new drive train including pulleys and gears and setscrews(701 and 730).

158
- SET PRINTER POWER SWITCH TO '0'.
- Lift the splitter in up position.
- Insert a paper under sensor 2(upper) from front of sheet feed.

Does paper easily slide between the sensor 2(upper) block and sensor backup guide(729)?

159
Y N

Remove obstruction from sensor area.
Check and adjust wire rack, sensor backup guide and sensor block.

160
- With a paper covering the upper sensor. -SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.

Does the LED display indicate code 79?

161
Y N

- Remove jammed paper from sheet feed.
- Check voltage at pin J4-1 to pin J4-4(GND) on the sheet feed analog card(705).

Is voltage 1.0 to 1.5Vdc?

162
Y N

- SET PRINTER POWER SWITCH TO '0'.
- Disconnect sensor connector J4 from sheet feed analog card(705).
- Measure resistance between connector pin J4-1 and connector pin J7-4 on the sheet feed analog card(705).

(Step 162 continues)
(Step 162 continued)
Is resistance 324 ohms to 396 ohms?
Y N

163
Bad sheet feed analog card(763).

164
Bad hopper 2 (upper) sensor(729).

165
- Ensure that the upper sensor is covered by paper.
- Measure voltage between connector pin J4-4 (GND) and connector pin J4-3 (705).
Is voltage 0.0Vdc to 3.9Vdc?
Y N

166
- SET PRINTER POWER SWITCH TO '0'.
- Set meter to 200K ohm setting.
- Measure resistance between connector pin J4-3 and connector pin J7-4 (705).
Is resistance 16K to 32.3K ohms?
Y N

167
Bad sheet feed analog card(763).

168
Bad hopper 2 (upper) sensor(729).
SET PRINTER POWER SWITCH TO '0'.
- Disconnect sheet feed cable from the
  sheet feed and the printer attachment
  panel(763).
- Check sheet feed cable for continuity
  and short circuit(705).
Is cable check correct?
Y N

Bad sheet feed cable assembly(763).

Check printer cable from printer
attachment panel to A-A1 board for
continuity and short circuit(105).
Is printer cable check correct?
Y N

Bad printer attachment panel to A-A1 board
cable.

Disconnect the printer A-A1C1 card
from the A-A1 board(104).
- Check physical damage of the A-A1
  board.
Is the printer A-A1 board damaged?
Y N

Bad printer A-A1C1 card(104).

Bad printer A-A1 board(104).

Is the cone roller C6 moving(701)?
Y N

Install a new roller C6(775) and/or
tighten pulley P6 setscrew(730).

Check the hopper 2(upper) sensor housing
position(729).
Is the sensor housing blocking the paper
path?
Y N
183
- Check center inner wire rack(780).
Is the rack blocking the paper path?
Y N

184
Is the paper curled?
Y N

185
Is the paper tray clear of obstructions and burrs?
Y N

186
Remove obstruction or burr and check paper stack in both tray to see if they are correct.
---OR---
Install new paper tray.

187
No problem has been found.
GO TO MAP 0660, ENTRY POINT A.

188
Put in a new supply of paper.
GO TO PAGE 1, STEP 001, ENTRY POINT A.

MAP 0630-23
5218 A01 A02

EJECT PATH OPERATION

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ENTRY POINTS

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<th>ENTER THIS MAP</th>
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<tr>
<td>MAP</td>
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<tr>
<td>0630</td>
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EXIT POINTS

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<tr>
<td>PAGE STEP MAP</td>
<td>ENTRY NUMBER NUMBER POINT</td>
</tr>
<tr>
<td>2</td>
<td>004</td>
</tr>
</tbody>
</table>

001
(ENTRY POINT A)

MAP Description:
THIS MAP DETERMINES IF PAPER IS SENT THROUGH THE UPPER EJECT PATH CORRECTLY.

Entry Conditions:
NONE

Start Conditions:
NONE

Field replaceable units:
ANALOG CARD, SEQUENCER SOLENOID, RATCHET, SOLENOID ARMATURE, SEQUENCER GATE SEQUENCER DRIVE ROLLER, CLUTCH DISK, REED SWITCH, GATE DOWN STOP, UPPER AND LOWER KICK ROLLERS, SEQUENCER CYLINDERS.

(Step 001 continues)
(Step 001 continued)
Is the paper correctly aligned (the left edge in the groove of the block) when it reaches the sequencer (700) area?
Y N
002
- Check the roller C1 and C4 for wear or damage (701).
- Check pulleys P1 and P4 for loose set screws (701).
- Check for burrs in the wire rack and block paper guide.
- Check back up rollers for contact, verify their rockers are free, and that the rocker springs are on (701).
Are the above checks correct?
Y N
003
Adjust, repair, or install new parts.
004
GO TO MAP 0650, ENTRY POINT A.
005
Does the paper stop with the leading edge turned over in the sequencer and with the trailing edge not ejected?
Y N
Does the paper leading edge pass the eject rollers (700)?

Y N

Check the eject rollers for loose set screws, binds, or missing parts and repair.

- Read the supplementary information at the right, if you are unfamiliar with this map.
- Remove covers and pivot out the sheet feed analog card (760, 761, 762, 763).
- Inspect ratchet magnet armature to ratchet engagement and ratchet set screw (742, 743).
- Hand operate gate, check gate stops on down stop in correct position (745).
- Check sequencer paper opening alignment and position relative to the gate and stripper fingers (740 and 743).
- Latch the gate.
- Check that sequencer drive roller is centered in the grooves of the drive roller, and that setscrews on both are tight (744).
- Check that drive roller tension spring (Step 008 continues)

A machine inspection is to be performed before getting into the sequencer map. If you are unfamiliar with the adjustments and checks, see the MIMs listed.

NOTE you are instructed to check only a part of the adjustments referenced. THESE CHECKS ARE IMPORTANT since BADLY ADJUSTED PARTS CAUSE RANDOM SYMPTOMS AND BRANCHES INTO THE WRONG LEGS OF THE MAPS.

SEQUENCER MAGNET TO RATCHET. Check that the armature is fully engaged with the ratchet tooth. Hold the ratchet and attempt to turn the sequencer shaft to verify that the ratchet setscrew is tight (742, 743).

GATE AND CYLINDER ALIGNMENT. Trip the gate latch (701) to lower the gate (700). Verify visually that the gate moves all the way down, stops on the down stop (745) approximately 0.2MM to 0.7MM of the bottom
(Step 008 continued)

- Use the MIM references in the supplementary information to determine the cause of problems you have found.

- Use the MIM references in the supplementary information to determine the cause of problems you have found.

of the paper openings of the sequencer cylinders. With the ratchet against the armature verify that the paper opening in the cylinders are aligned and 0.3MM to 1.0MM from the gate(740). Visually check the cylinders to ensure they clear the openings in the stripper fingers. Latch the gate when checks are complete. Problems see MIM(740,743,745,749).

Verify that with the armature fully engaged in the ratchet that the drive roller(702) is centered in the notch of the drive wheel(702). Ensure set screw tightness by attempting to turn the drive roller and drive wheel while holding the shafts. Ensure the tension spring(702) is in place.

Hand operate magnet armature(701). The trip spring (702) should turn drive wheel into engagement with drive roller. Engage armature and ratchet when checks are complete.

If there is part or adjustment which did not pass the visual check correct the problem using MIM referenced or the MIM for that part of the machine.
009
Have you identified the cause?
Y N

010
If the above checks were not correct but you have not identified the cause, the MAPS can be used, HOWEVER THE SEQUENCER RATCHET SHOULD BE CHECKED FOR CORRECT ENGAGEMENT TO THE ARMATURE BEFORE RUNNING TEST UNIT 40. RANDOM POSITION OF THE SEQUENCER CAUSES RANDOM SYMPTOMS AND MAKES USE OF THE MAPS DIFFICULT.

GO TO STEP 012,
ENTRY POINT B.

011
Adjust, repair or install new parts

012
(ENTRY POINT B)
Does the magnet(701) pick at the correct time during test 40 or verify test(it should pick as the paper enters the sequencer paper opening)(741)?
Y N

013
Does the sequencer magnet pick at any time?
Y N

014
- Observe the sequencer cylinders on either side of the reed switch pawl(Actuator)(700).
- Run test 40.
Does the paper enter the paper openings in the sequencer cylinders and get 0 to 2mm of being completely in the paper openings?
Y N

015
Go to entry point d of this map.

016
Does the reed switch pawl(700) move freely when operated by hand?
Y N

017
Adjust the sequencer cylinder or the reed switch assembly to remove the bind or install new reed switch(741)
Does the sequencer magnet pick when the reed switch pawl (actuator) is pushed fully down?
Y N

When hand operated does the sequencer magnet armature clear the ratchet by 0.2MM to 0.5MM and is it free of mechanical binds?
Y N

Adjust or install new part to remove binds.

Disconnect connector J1(705) to disconnect the reed switch.
With the printer power switch in the '1' position, short the reed switch pins J1-1 to J1-2 at the sheet feed analog card.(705)
This simulates a closing reed switch. The magnet should pick each time the pins are shorted. If the pins are shorted for more than 4 seconds, a time out will occur and the magnet will drop.

Does the sequencer magnet pick when the pins are shorted?
Y N

- Set voltmeter to '200' volts range, and meter the voltage from connector pin J4-4(GND) to J3-2(705).
Does the voltage read 36Vdc?
Y N

- Meter the voltage from J4-4(GND) TO J3-1(705).
Does voltage measure 36Vdc?
Y N

- Bad sheet feed analog card.(763)

- Bad sequencer magnet.(771)
EJECT PATH OPERATION

PAGE 7 OF 12

026
- Turn printer power to '0'.
- Disconnect sequencer magnet connector J3 and measure coil resistance at connector point J3-1 to J3-2 (705).
Does the coil resistance measure between 130 ohms to 197 ohms?
Y N

027
Does the coil measure less than 66 ohms?
Y N

028
Bad sequencer magnet (771).

029
Bad magnet and sheet feed analog card (763,771).

030
Bad sheet feed analog card (763)

031
Bad reed switch (741) and reed switch cable J1 (705).

032
Reed switch adjustment is bad (741).

---OR---
Paper does not have strength to operate reed switch. See customer guide for supplies specifications.

033
Is the voltage continuously present across sequencer magnet when power is on?
Y N

034
The logic sees an wrong signal from the reed switch. Adjust or install new reed switch (741).

---OR---
Observe the reed switch and reed switch pawl (actuator). If the switch pawl is being hit by the gate; the wire rack, the stripper or reed switch should be adjusted to prevent this interference.

---OR---
There is an intermittent short circuit on the reed switch cable J-1 (705)
EJECT PATH OPERATION

- Set printer power switch to '0'.
- Disconnect sequencer magnet.
- Check for a short circuit on the coil by measuring resistance of the magnet lead J3-2 to test point J4-4 on the sheet feed analog card (705).
  Does the resistance measure less than 200 ohms?
  Y N

- Bad sheet feed analog card (763).

- Bad sequencer magnet cable (705).

Does the sequencer ratchet turn one half revolution and correctly engage the armature during test 40 (run test 40 again if necessary)?
  Y N

- Does the sequencer magnet armature clear the ratchet by 0.2MM to 0.5MM when hand operated?
  Y N

- Adjust sequencer magnet (742).

- Hit cancel three times and then press index up.
- Observe the upper kick roller shaft. Does the upper kick roller shaft (703) turn while indexing?
  Y N

- Binding shaft or loose set screws. Adjust end play if necessary (721).

- Check the drive wheel and roller adjustments (744).

Are the adjustments correct and the set screws tight?
  Y N

- Adjust drive roller and wheel (744) install new drive wheel if necessary. Visually verify the sequencer ratchet adjustment (743) has not been changed. Adjust if necessary.
EJECT PATH OPERATION

PAGE 9 OF 12

Does the sequencer drive tensioner spring put approximately 20 to 40N (2 to 4 LB) force at the drive roller (702)?

Y N

Adjust spring tension or install new spring (751).

Does the trip spring turn the drive wheel and the drive roller into engagement (702)?

Y N

Weak trip spring. Adjust or install new part (751) ---OR--- binding shaft because of the wrong end play (721) or adjustment of sequencer to stripper fingers (740).

Is the gate cam preventing the shaft from turning (702)?

Y N

At this point all of the drive train for the sequencer shaft has been checked. If the sequencer still does not turn correctly, check adjustments again and use normal escalation procedures.

Adjust gate cam (746).

Does the reed switch operate before the paper is in the sequencer cylinder paper openings (741)?

Y N

(ENTRY POINT D)

Does the gate operate and go fully down to the down stop (745) as paper is inserted from the hopper and remain down until after the paper has reached the sequencer (700)?

Y N
Are the second sheet restraint solenoid (726) and gate latch linkage (748) correctly adjusted and returning smoothly?  
Y N

Adjust, repair or install new parts.

Is the gate cam correctly adjusted (746)?  
Y N

Adjust the gate cam (746).

Does the gate operate freely (721) and is the gate down stop (745) correctly adjusted?  
Y N

Adjust, repair or install new parts.

AT this point the gate and all its linkage has been checked, check gate adjustments and use normal escalation procedures.
- Check that the clamp hub moves freely in the sequencer cylinder and that the clamp actuator spring is present and has not been damaged.

Does the clamp work correctly?

Y N

Repair or install new part.

At this point the adjustments which would prevent a paper jam at the sequencer entry have been checked. Check again for burrs, bent gate or bent sequencer shaft or any other obstructions. Follow normal escalation procedures.

At this point the static checks on the sequencer do not indicate a cause for a jam in the sequencer. Run test 40 and observe for dynamic jams. Correct the cause or follow normal escalation procedures.
Is the gate latch correctly, adjusted, free of wear or binds and is the spring present and attached (748)?

Y N

Make necessary adjustments or repairs.

Is the gate correctly adjusted (749) and is the screw tight?

Y N

Make necessary adjustments or repairs.

Is the gate cam adjustment (746) correct and set screw tight?

Y N

Make necessary adjustments.
### ENTRY POINTS

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<th>ENTRY POINT</th>
<th>PAGE NUMBER</th>
<th>STEP NUMBER</th>
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<tr>
<td>0610</td>
<td>A</td>
<td>2</td>
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</tr>
<tr>
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<td>A</td>
<td>2</td>
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</tr>
<tr>
<td>0630</td>
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</tr>
<tr>
<td>0640</td>
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<td>2</td>
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<th>EXIT THIS MAP</th>
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<tr>
<td>7</td>
<td>017</td>
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<td>024</td>
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<td>10</td>
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<td>9</td>
<td>025</td>
</tr>
<tr>
<td>10</td>
<td>031</td>
</tr>
</tbody>
</table>
(ENTRY POINT A)

- Obtain all error code, error log printout, printouts that were being printed at the time of the error, and symptoms that are available.
- Obtain as much information as possible from the customer.
- Perform a visual inspection for broken or loose parts.
- If the cause of failure can be determined and repaired, repair as needed and verify the repair.

Did the operator perform the normal problem determination and correction procedure?

Y    N

002
Instruct the operator on correct problem determination procedures. See chapter 4 of Sheet feed OPERATOR GUIDE.

003
Is the failure symptom an operator prompt or error code?

Y    N

7    3
A    B

MAP Description:
THIS MAP DETERMINES THE GENERAL TYPE OF INTERMITTENT FAILURE SYMPTOM AND SENDS THE CE TO THE CORRECT MAP USING THE SYMPTOM INDEX AND AVAILABLE ERROR CODES.
Entry Conditions:
NONE
Start Conditions:
NONE

Field replaceable units:
NONE.
004 Is the symptom a printer problem?
   Y   N

005 Is the failure a communication problem?
   Y   N

006 Is the failure an application that was processed differently than the operator expected?
   Y   N
<table>
<thead>
<tr>
<th>Major Symptom</th>
<th>Minor Symptom</th>
<th>Mechanical checks and repair action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectionable or unexpected characteristics (no error code)</td>
<td>Paper ejects into output tray without being sequenced.</td>
<td>Reed switch closes too soon(741). Front edge of sequencer cylinder paper openings not in line(740). Sequencer cylinder #1 to clamp hub out of adjustment(740). Clamp spring broken, overextended or loose(740).</td>
</tr>
<tr>
<td></td>
<td>Paper damage to top edge of sheet.</td>
<td>Gate down stop too high(745). Ratchet adjusted such that sequencer cylinder paper opening to gate gap is not correct(743). Front edge of sequencer cylinder paper openings not in line(740). Reed switch closes too late(741). Gate end play too small(721).</td>
</tr>
<tr>
<td></td>
<td>Intermittent failure of flip strips to feed out completely.</td>
<td>Ratchet adjusted such that sequencer cylinder paper opening to gate gap is not correct(743). Lower kick roller end play is too small(740).</td>
</tr>
</tbody>
</table>

Is the symptom found in the table? Y N
<table>
<thead>
<tr>
<th>Major Symptom</th>
<th>Minor Symptom</th>
<th>Mechanical checks and repair action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectionable or unexpected characteristics (no error code).</td>
<td>Intermittent, more than one sequencer cycles.</td>
<td>Reed switch lever adjusted too low with upstop screw(741). Reed switch lever rubbing side of cylinder(741). End play too loose on sequencer cylinder shaft(721).</td>
</tr>
<tr>
<td>Sequence cycle during insert cycle.</td>
<td></td>
<td>Reed switch lever adjusted too high with upstop screw(741).</td>
</tr>
<tr>
<td>Objectionable paper skew.</td>
<td></td>
<td>Lower inner wire rack too far forward(731). Back up roller or its C-clip missing or its rocker spring broken(776).</td>
</tr>
<tr>
<td>Debris on paper in output tray.</td>
<td></td>
<td>Sequencer cylinder rubbing stripper fingers(740).</td>
</tr>
<tr>
<td>Noisy</td>
<td>Picker separator noisy</td>
<td>Picker separator disk drive not in line contact (may be caused by upper bearing coming loose or motor bracket out of pivot opening in picker separator bracket(728). Picker separator lift mechanism adjusted too low, bottomed against lift bracket or drive disk(725).</td>
</tr>
</tbody>
</table>

Is the symptom found in the table?  

Y  N
<table>
<thead>
<tr>
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<th>Mechanical checks and repair action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noisy</td>
<td>Belt jumps teeth.</td>
<td>Timing belt too loose(720).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>End play tight on upper kick roller shaft(721).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>End play tight on sequencer pulley shaft(721).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>End play tight on cone roller shaft(730).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower kick roller end play too small(740).</td>
</tr>
<tr>
<td></td>
<td>Squeaking</td>
<td>Lower kick roller end play out of adjustment(740)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No lubrication on drive gear studs(Preventive maintenance).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No lubrication on timing belt idler pulley studs(Preventive maintenance)</td>
</tr>
<tr>
<td></td>
<td>Grinding</td>
<td>Sequencer clutch drive roller rubbing side of drive wheel groove(744).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sequencer clutch pivot arm down stop adjusted too low(744).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>End play too loose on sequencer cylinder shaft(721).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>End play too loose on sequencer pulley shaft(721).</td>
</tr>
<tr>
<td></td>
<td>Can not close tray without</td>
<td>Picker/separater lift spring broken or binds in lift mechanism(725).</td>
</tr>
<tr>
<td></td>
<td>damaging paper</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paper burnished on left edge</td>
<td>Rollers binding on picker/separater wheel(764).</td>
</tr>
</tbody>
</table>

Is the symptom found in the table?  

Y  N
INTERMITTENT- ENTRY

PAGE 7 OF 10

010
Follow normal escalation procedures.

011
Perform mechanical checks and repair as described in the symptom index table.

012
Perform mechanical checks and repair as described in the symptom index table.

013
Perform mechanical checks and repair as described in the symptom index table.

014
- The operator must have performed the following steps before requesting CE for service.
- Run the job again and verify the failure.
- Run a known job similar to the one that failed.
- Attempt the failing job on another system, if possible and verify that the job runs correctly.
- Follow normal escalation procedures if an application problem is suspected.
- Answer the following question 'NO' if (Step 014 continues)

(Step 014 continued)

another machine is not available.

Does the job fail in the same way on another machine?
Y N

015
Go to step 007 of this map.

016
Follow normal escalation procedures.

017
Go to MAP 0070, ENTRY POINT A.

018
Go to MAP 0030, ENTRY POINT A.

019
Is an error code recorded or displayed?
Y N

020
Is a statistics printout available?
Y N

021
Turn machine back to operator and request him to keep failure records next time when request CE for service.

1
0 8
N P

MAP 0650-7
Above is a sample of the statistics print out from the printer. The desired data and label can be found by first finding the two character label for that data. The data is always four characters in length and follows immediately after the associated label.

NOTE - The exact location of the labels and the associated data in the print out being analyzed may differ from that of the above sample (if the micro code is different). (Step 022 continues)
(Step 022 continued)

However, a label will always be followed by exactly four characters of data, and then another label.

- Observe the statistics printed between the labels 'DC', and 'DD', and ignore the last two characters after the label 'DC', both zero.

- Are the first two characters after the label 'DC', both zero?

- Y N

- Use these two characters as the code.

- Y N

- Run test 40 and 41 loop for 5 minutes.

- Y N

- Is there a paper jam during test runs?
N 5218 A01 A02
7
INTERMITTENT ENTRY
PAGE 10 OF 10

029
(ENTRY POINT B)
TABLE OF VALID CODES

<table>
<thead>
<tr>
<th>X</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Y</td>
</tr>
</tbody>
</table>

NOTE: 

<table>
<thead>
<tr>
<th>= 6</th>
<th>= B</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>XX-YY</th>
<th>IS</th>
<th>XX THROUGH YY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Xerus XXXXXXX</td>
</tr>
<tr>
<td>01-02</td>
<td>60</td>
<td>71 81-83 93</td>
</tr>
<tr>
<td>05</td>
<td>61</td>
<td>73-79 84-87 98</td>
</tr>
<tr>
<td>06</td>
<td>63-65</td>
<td>8.8</td>
</tr>
<tr>
<td>30-38</td>
<td>69</td>
<td>89</td>
</tr>
<tr>
<td>41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43-47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53-58</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Step 029 continues)

(Step 029 continued)
Is the code found in the 'TABLE OF VALID CODES'? 
Y N

| 030 | GO TO MAP 0130, ENTRY POINT C. |
| 031 | GO TO MAP 0660, ENTRY POINT A. |
### ENTRY POINTS

<table>
<thead>
<tr>
<th>FROM</th>
<th>ENTER THIS MAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAP NUMBER</td>
<td>ENTRY POINT NUMBER</td>
</tr>
<tr>
<td>SAME</td>
<td>B</td>
</tr>
<tr>
<td>SAME</td>
<td>E</td>
</tr>
<tr>
<td>0040</td>
<td>A</td>
</tr>
<tr>
<td>0650</td>
<td>A</td>
</tr>
</tbody>
</table>

### EXIT POINTS

<table>
<thead>
<tr>
<th>EXIT THIS MAP</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAGE NUMBER</td>
<td>STEP NUMBER</td>
</tr>
<tr>
<td>13</td>
<td>037</td>
</tr>
<tr>
<td>2</td>
<td>005</td>
</tr>
<tr>
<td>13</td>
<td>031</td>
</tr>
</tbody>
</table>

### MAP Description:

This MAP determines intermittent problems with error code known and/or failure symptom observed and verifies sheet feed operation after repair actions is completed.

### Entry Conditions:
NONE

### Start Conditions:
NONE

### Field replaceable units:
ANALOG CARD, J7 CABLE ASM, SOLENOIDS, SENSORS, MOTORS, PULLEYS, ROCKER SPRINGS, CONE ROLLERS, PRINTER A|C1 CARD.
(Step 001 continued)
Is the printer exception light on and the LED display with error code 79?
Y N

002
Is the printer exception light on and the LED display with error code 78?
Y N

003
Is code 01 or 02?
Y N

004
Is code 05?
Y N

005
GO TO MAP 0130, ENTRY POINT C.
<table>
<thead>
<tr>
<th>Major Symptom</th>
<th>Minor Symptom</th>
<th>Mechanical checks and repair action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insert cycle ran with no paper in</td>
<td></td>
<td>Side restraint in paper tray broken or not correctly positioned (Operators Guide). Tray detent not</td>
</tr>
<tr>
<td>the paper path</td>
<td></td>
<td>correctly adjusted or tray detent parts broken or loose (723).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paper curl out of specification (Operators Guide/Appendix A). Picker/separater support pad out of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>adjustment or shock absorbers broken (724). Paper sensor housing horizontally too far to the rear</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(729).</td>
</tr>
<tr>
<td>Jammed after cone roller C3 or C6</td>
<td></td>
<td>Paper sensor housing vertical adjustment is not correct (729). Pulley set screws are loose (730).</td>
</tr>
<tr>
<td>(701)</td>
<td></td>
<td>Back up roller or its C-clip missing or its rocker spring broken (776).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wire rack are loose or broken (780 and 731). Paper sensor backup guide out of adjustment (729).</td>
</tr>
<tr>
<td>Jammed as paper enters printer</td>
<td></td>
<td>Printer cover out of adjustment (115). Lower inner wire rack out of adjustment (731). Spliter out of</td>
</tr>
<tr>
<td>covers</td>
<td></td>
<td>adjustment (732).</td>
</tr>
</tbody>
</table>

Is the symptom found in the table?  

Y N
<table>
<thead>
<tr>
<th>Major Symptom</th>
<th>Minor Symptom</th>
<th>Mechanical checks and repair action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jammed at start of eject path (paper leading edge past first writing line and starts entering sheet feed eject path)</td>
<td></td>
<td>Manual insertion deflector not in correct location or broken (Operators Guide) (779). Picker/seperator lift mechanism adjusted too low (bottomed against lift bracket or drive disk) (725). Not enough gap between printer acoustic filter and cover (115). Side restraint in paper tray broken or not correctly positioned (Operators Guide). Lower inner wire rack too far forward (731). Tray detent not correctly adjusted or tray detent parts broken or loose (723). Picker/seperator support pad out of adjustment or shock absorbers broken (724). Back up roller or its C-clip missing or its rocker spring broken (776).</td>
</tr>
</tbody>
</table>

Is the symptom found in the table?  
Y  N
<table>
<thead>
<tr>
<th>Major Symptom</th>
<th>Minor Symptom</th>
<th>Mechanical checks and repair action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermittent</td>
<td></td>
<td>Drive train gear studs loose from left mounting plate(777). Drive train gears broken(701). End</td>
</tr>
<tr>
<td>index stalls</td>
<td></td>
<td>play tight on cone roller shaft(730). End play tight on upper kick roller shaft(721). End play</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tight on sequencer pulley shaft(721). Lower kick roller end play too small(740). Timing belt too</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tight(720). Left mounting plate loose(777). Printer index problem(Map 0030, entry point A).</td>
</tr>
<tr>
<td>Jammed at sequencer</td>
<td>Sequencer magnet(701)</td>
<td>Reed switch lever adjusted too low with up stop screw, magnet does not unpick(741). End play too</td>
</tr>
<tr>
<td></td>
<td>picked</td>
<td>loose on sequencer cylinder shaft(721). Sequencer cylinder rubbing stripper fingers(740). Reed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>switch lever touching side of sequencer cylinder(741). Sequencer clutch tension spring broken or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>over extended(702). Sequencer clutch drive wheel or roller loose on shaft(744). Sequencer pulley or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gear loose(701). Sequencer clutch pivot arm down stop adjusted too high(744). Sequencer clutch trip</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spring to drive roller interference(751). Gate cam to gate gap too small(746).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sequencer clutch drive roller rubbing side of drive wheel groove(744).</td>
</tr>
</tbody>
</table>

(Step 008 continues)
### Major Symptom | Minor Symptom | Mechanical checks and repair action
---|---|---
Jammed at Sequencer | Sequencer magnet failed to pick | Gate down stop out of adjustment (745). Front edge of sequencer cylinder paper openings not in line (740). Ratchet adjusted such that sequencer cylinder paper opening to gate gap is out (743). Reed switch closes too late (741). Sequencer magnet out of adjustment (742). End play tight on gate (721). Gate latch clevis adjusted for too small a gap between the latch and latch plate (748). End play too loose on sequencer cylinder shaft (721). Sequencer cylinder #1 to clamp hub out of adjustment (740). Reed switch lever rubbing side of cylinder (741). Wire rack loose or broken (780 and 731). Sequencer clamp spring rubbing side of cylinder (741).

Jam caused by not complete sequencer cycle of preceding sheet | Bird in second sheet restraint solenoid (probably solenoid down stop) (701). Gate latch spring broken loose (748). Gate to latch plate radially maladjusted such that the latch does not reset correctly (748). End play too loose on gate (721). End play not correct on second sheet restraint pawl (721). Upper kick roller set screw loose (750). No lubrication on gate latch pivot stud (Pre.Main).

(Step 009 continues)
(Step 009 continued)

Is the symptom found in the table?

Y N

010
Follow normal escalation procedures.

011
Perform mechanical checks and repairs as described in symptom index table.
GO TO PAGE 13, STEP 033,
ENTRY POINT E.

012
Perform mechanical checks and repairs as described in symptom index table.
GO TO PAGE 13, STEP 033,
ENTRY POINT E.

013
Perform mechanical checks and repairs as described in symptom index table.
GO TO PAGE 13, STEP 033,
ENTRY POINT E.

014
Perform mechanical checks and repairs as described in symptom index table.
GO TO PAGE 13, STEP 033, ENTRY POINT E.
<table>
<thead>
<tr>
<th>Major Symptom</th>
<th>Minor Symptom</th>
<th>Mechanical checks and repair action</th>
</tr>
</thead>
</table>

Is the symptom found in the table?

Y N
<table>
<thead>
<tr>
<th>Major Symptom</th>
<th>Minor Symptom</th>
<th>Mechanical checks and repair action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper separated so slowly it did not reach cone roller C3 or C6 in time (701)</td>
<td>Picker/seperator feed slow or does not feed at all.</td>
<td>Side restraint in paper tray not correctly positioned (Operators Guide). Picker/seperator lift mechanism adjusted too low (bottomed against lift bracket or drive disk) (725). Picker separator drive disk not in line contact (may be upper bearing coming loose or motor bracket out of pivot openings in picker/seperator bracket) (728). Tray detent not correctly adjusted or tray detent parts broken or loose (723). Picker/seperator motor broken, worn out, run very slowly (764).</td>
</tr>
<tr>
<td>Major Symptom</td>
<td>Minor Symptom</td>
<td>Mechanical checks and repair action</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Picker/separater failed to feed</td>
<td></td>
<td>Paper placed behind non-textured surface of paper (Operators Guide).</td>
</tr>
<tr>
<td>last several</td>
<td></td>
<td>Picker/separater lift mechanism adjusted too high(725).</td>
</tr>
<tr>
<td>sheet in tray</td>
<td></td>
<td>Tray detent not correctly adjusted or tray detent parts broken or loose(723).</td>
</tr>
</tbody>
</table>

Is the symptom found in the table?  
Y  N

018  
Follow normal escalation procedures.
Perform mechanical checks and repairs as described in symptom index table.
GO TO PAGE 13, STEP 033,
ENTRY POINT E.

Perform mechanical checks and repairs as described in symptom index table.
GO TO PAGE 13, STEP 033,
ENTRY POINT E.

Perform mechanical checks and repairs as described in symptom index table.
GO TO PAGE 13, STEP 033,
ENTRY POINT E.

Check sheet feed connector J7 and Attachment panel connector for loose connections and damaged pins. Are the J7 and attachment panel connector correct?

Repair or reinstall connectors.

Reinstall sheet feed analog card.

Reinstall printer A1C1 card if analog card was reinstalled earlier.
GO TO PAGE 13, STEP 033,
ENTRY POINT E.

Was the paper in the printer area?

Go to map 0620, entry point A to check sensors.
If no problem could be found, follow normal escalation procedures.

- Remove jammed paper from printer area.
- Press 'CANCEL' switch on operator panel.
- Run 'VERIFY' test (307).

Does the verify test run correctly?

Is the sheet feed attached correctly?
029
Attach the sheet feed correctly.
GO TO STEP 030,
ENTRY POINT B.

030
(ENTRY POINT B)
-SET PRINTER POWER SWITCH TO '0'.
- Remove both input trays from sheet feed.
- Ensure that the paper is aligned correctly with the protruded up molded section at the front of the tray. See chapter 3 of Sheet Feed Operators Guide.
- Ensure that there is no paper in the paper path.
- Run verify test(307).

Does the verify test run correctly?
Y N

031
GO TO MAP 0130, ENTRY POINT C.

032
GO TO STEP 033, ENTRY POINT E.

033
(ENTRY POINT E)
-SET PRINTER POWER SWITCH TO '0'.
-SET PRINTER POWER SWITCH TO '1'. WAIT 35 SECONDS UNTIL POWER ON SEQUENCE IS COMPLETE.
- Put printer in 'DIAGNOSTIC MODE'.
- Select and run test 40 loop mode.

Does the paper insert and eject correctly?
Y N

034
Follow normal escalation procedures.

035
- Select and run test 41 loop mode.

Does the paper insert and eject correctly?
Y N

036
Follow normal escalation procedures.

037
GO TO MAP 0010, ENTRY POINT A.
START OF CALL - Tractor feed entry

ENTRY POINTS

| FROM | MAP NUMBER | ENTRY PAGE | STEP NUMBER | 0015 | A | 1 | 001 |

EXIT POINTS

<table>
<thead>
<tr>
<th>EXIT THIS MAP</th>
<th>PAGE STEP</th>
<th>MAP ENTRY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TO</td>
<td>NUMBER NUMBER</td>
<td>NUMBER POINT</td>
</tr>
<tr>
<td>2 002</td>
<td>0010</td>
<td>B</td>
</tr>
<tr>
<td>6 057</td>
<td>0015</td>
<td>C</td>
</tr>
<tr>
<td>2 006</td>
<td>0100</td>
<td>A</td>
</tr>
</tbody>
</table>

MAP Description:
THIS MAP DETERMINES THE GENERAL TYPE OF TRACTOR FEED FAILURE AND ISOLATES TO THE FAILING FRUS.

Entry Conditions:
NONE

Start Conditions:
NONE

Field replaceable units:
GUIDE ASM, tractor FEED ASM. GEARS, PULLEY ASM, PLATE ASM, BELT, LEVER, TRACTORS, CABLE ASM.

Is the tractor feed attached?
Y N

2 2
A B
START OF CALL - Tractor feed

PAGE 2 OF 6

GO TO MAP 0010, ENTRY POINT B.

003
- Request the problem or failure symptom from the operator.
- Request example and any other information concerning the problem.
- Make a visual inspection for problem, loose or broken parts, etc.
- Check if the paper loaded correctly.
- Check that the supplies and environments meet to specifications as described in appendix A of the Sheet Feed Operators Guide.
- If the failure cause can be determined and repaired, repair as needed and verify repair.
- If machine is on DO NOT TURN OFF UNTIL INstructed by map.
- If machine is off, turn on.

Are the checks correct?

Y N

004
Repair problems.
START OF CALL - Tractor feed

PAGE 3 OF 6

011
- Set Printer Power Switch to '0'.
- Set Printer Power Switch to '1'. Wait 35 Seconds until Power On Sequence is Complete.
- Press printer index up switch.

Does the drive shaft turn correctly?
Y N

012
- Set Printer Power Switch to '0'.
- Disconnect the tractor cable connector from the printer attachment panel.
- Remove the tractor from the printer.
- Remove the left cover.
- Reinstall the tractor to printer.
- Reconnect the tractor cable connector to the printer attachment panel.
- Set Printer Power Switch to '1'. Wait 35 Seconds until Power On Sequence is Complete.
- Observe the intermediate gear while press and hold the printer index switch.

Does the intermediate gear turn?
Y N
START OF CALL - Tractor feed

PAGE 4 OF 6

020
Adjust the idler for correct belt tension.

021
- Check drive shaft pulley teeth?
  Are teeth correct?
  Y N

022
Bad pulley.

023
- Check drive shaft pulley setscrews.
  Are the setscrews tight?
  Y N

024
Tighten the setscrews.

025
- SET PRINTER POWER SWITCH TO '0'.
  - Disconnect tractor connect from printer.
  - Remove the tractor from the printer.
  - Check the drive shaft bushings for binding.
  Is the bushing check correct?
  Y N

026
Reinstall bushing.

027
Are the side plates loose from the frame?
  Y N

028
Reinstall drive shaft

029
Reinstall tractor.

030
Bad belt.

031
- Pull the tensioner release lever to 'LOAD' position.
  Does the tensioner release lever push the tensioner to the 'LOAD' position?
  Y N

032
Bad tensioner release lever.
START OF CALL - Tractor feed

PAGE 5 OF 6

033 - Load forms into the tractor.
- Ensure that the tensioner release lever is in the +P position.
- Run print test.

Is the form indexing correctly?
Y N

034 Does form feed straight?
Y N

035 - Check the alignment of paper pin holes to both left and right tractor pins.

Is the alignment correct?
Y N

036 - Align the paper pin holes to both tractor pins correctly.

037 Do the tractor covers on both tractors close correctly?
Y N

038 - Reinstall springs on tractor covers.

039 Reinstall both the left and right tractor unit.

040 Printer index problem.
Go to printer map 0030, A

041 Is the line to line spacing correct?
Y N

042 - Check the tensioner spring.

Is the spring check correct?
Y N

043 Bad spring.

044 Is the form input end free from drag?
Y N

045 Adjust form input to be free from any drag.

N P Q

MAP 0810-5

6 6

R S

MAP 0810-5
START OF CALL - Tractor feed

046
Is the drive gear correct?
Y N

047
Adjust drive gear or reinstall a new drive gear.

048
Is the belt drive gear correct?
Y N

049
Adjust the belt drive gear or reinstall a new belt drive gear.

050
Printer index problem.
Go to printer map 0030,A

051
Does the form feed correctly?
Y N

052
- Check tractor forms guide ASM installation position.
Is the position correct?
Y N

053
Install tractor forms guide ASM correctly.

054
Bad forms guide assembly.

055
Does the form stack correctly?
Y N

056
Adjust front to rear location of the paper stand.

057
GO TO MAP 0015, ENTRY POINT C.
IBM 5218 Printwheel Printer
Maintenance Analysis Procedures

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Corrections or clarifications needed:

<table>
<thead>
<tr>
<th>Page</th>
<th>Comment</th>
</tr>
</thead>
</table>

Please indicate your name and address in the space below if you wish a reply.

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________

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