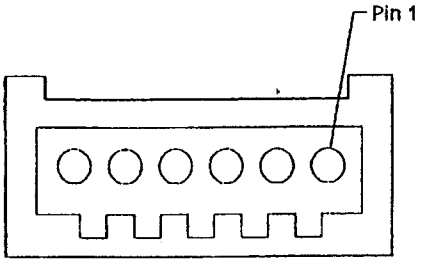
Notes



MOTOR CONNECTOR

Are the measurements correct?

Yes **No**

009

Are any motor pins shorted to the motor housing?

Yes **No**

010

The ribbon lift/feed motor is failing.

011

Single board machines:

The function board and the ribbon lift/feed motor are failing.

Two-board machines:

The motor control board and the ribbon lift/feed motor are failing.

012

Were you sent to this diagnostic from the error indications diagnostic?

Yes **No**

013

Go to Step 015 on page 2-194.

014

Single board machines:

The function board is failing.

Two-board machines:

The motor control board is failing.

— or —

The function board is failing.

---

019 (continued)
– or –
The function board is failing.
– or –
Go to "MAP 0490: Ribbon and Correcting Tape" on page 2-190.

008

(From step 005)
The SAPI connector number varies by machine model. Choose the correct connector for the machine:

WW10 single board WW15, 1500, 3000 all WW35 all WW50, 5000 single board WW70, 7000 single board	J3 J3 J3 J3 J3
WW10 two board	J4
WW30 all WW50 two board	J8 J8
WW70 two board	J9

CAUTION:
Do not short SAPI connector pins 1 and 2 on the function board unless the switch and sensor test is activated.

- Be sure the switch and sensor test is activated.
- Disconnect the SAPI connector from the function board.
- Short SAPI pins 1 and 2 together on the system board.

WW10, 15, 1500, 3000 - Does the LANG LED go on and off as you short the pins?
WW30, 35, 50, 70, 3500, 5000, 7000 - Does the KYBD indicator go on and off as you short the pins?

Yes **No**

009

The function board is failing.

010

The SAPI switch cable is failing.

Notes

012

(From step 008)

- Turn the machine off.
- Check for binds in the selection motor.

Is the selection motor good?

Yes **No**

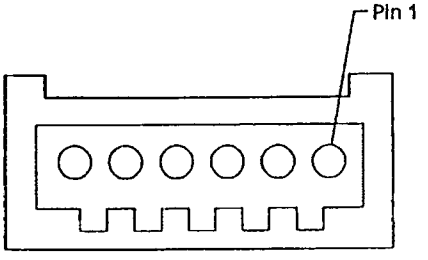
013

The selection plate assembly is failing.

014

- Turn the machine off.
- Disconnect the Selection motor cable from the selection motor.
- Set the meter on **X1**.
- Carefully zero the meter.
- Measure the resistance of the selection motor between the pins indicated (these are critical measurements).
- To ensure accurate measurements, the motor should be at room temperature. The resistance may be higher if the motor is hot.

Meter Connections On the Motor Connector	Reading
Pin 1 to Pin 5	11 to 15 ohms
Pin 2 to Pin 6	11 to 15 ohms
Pin 1 to Pin 2 or 6	Infinity
Pin 2 to Pin 1 or 5	Infinity
Pin 1 to Motor Housing	Infinity
Pin 2 to Motor Housing	Infinity
Pin 5 to Motor Housing	Infinity
Pin 6 to Motor Housing	Infinity



MOTOR CONNECTOR

Are the measurements correct?

Yes **No**

015

(Step **015** continues)

024 (continued)
– or –
The selection plate assembly is failing.

Two-board machines: The 22-pin cable is failing.
The motor control board is failing.
– or –
The function board is failing.
– or –
The selection plate assembly is failing.

Condition	Action
When Code + 7 is pressed the typewriter responds correctly. Sheetfeed does not feed from the selected bin but will feed from the other bin.	Go to "MAP 0550: Sheetfeed, Electrical" on page 2-206.
When Code + 7 is pressed the typewriter responds correctly, but the sheetfeed does not open the typewriter paper bail.	Mechanical, Check for: • Broken solenoid spring • Broken or binding solenoid lever • Broken or worn gears. Electrical: • Go to "MAP 0550: Sheetfeed, Electrical" on page 2-206.
When Code + 7 is pressed the typewriter responds correctly, but the exit feed rollers do not rotate.	Check the sheetfeed drive belt. Check for worn or broken gears.
When Code + 7 is pressed the typewriter responds (platen turns), but there is no response when Code + 8 is pressed.	Go to "MAP 0550: Sheetfeed, Electrical" on page 2-206.

007 (continued)
Is there a short?
Yes **No**

008

The logic board assembly is failing.

009

Repair the plug if possible.
– or –
The logic board assembly is failing.

010

(From step 006)
– Turn the machine off.
– Set the meter to the RX1 scale and carefully zero the meter.
– Disconnect the power cable from the sheetfeed drive motor.
– Measure the resistance of the motor between pins one and three at the connector on the motor board.
Is the resistance less than 25 ohms?
Yes **No**

011

– Connect the sheetfeed drive motor.
Go to Step 013.

012

The sheetfeed drive motor assembly is failing.

013

(From step 011)
– Disconnect the solenoid cable from the power cable.
– Measure the resistance of the solenoid between pin 1 and pin 3 on the solenoid cable connector.
Is the resistance less than 40 ohms?
Yes **No**

014

The logic board is failing.
– or –
The sheetfeed drive motor is failing.
– or –
The solenoid assembly is failing.

015

The solenoid assembly is failing.

016

(From steps 002 and 005)
(Step 016 continues)

026 (continued)
- If your machine is a Wheelwriter 30, 35, 50, 70, 3500, 5000, or 7000 go to Step 033.
- If your machine is a Wheelwriter 10, 15, 1500, or 3000 check the printer option for proper operation.
- Hold Code and press 5. The typewriter should go into the print mode.
- Hold Code and press 5 to exit.

Does the printer option operate correctly?

Yes **No**

027

Go to the Maintenance Information manual for the machine you are working on.

028

ROS module U10, PN 1432213 must be installed on the printer option board for sheetfeed operation.

Is ROS module U10, PN 1432213 installed on the printer option board?

Yes **No**

029

Install the ROS module.

030

Is the ROS module installed correctly, facing the correct direction, with no bent pins, and with all pins in the socket?

Yes **No**

031

Install the module correctly.

Note: If the module was installed in the wrong direction, it may be damaged.

032

The printer option board is failing.

033

(From step 026)

Is a printer option installed on your machine?

Yes **No**

034

The typewriter function board is failing.

035

ROS module U10, PN 1432209 must be installed on the printer option board for sheetfeed operation.

Is ROS module U10, PN 1432209 installed on the printer option board?

Yes **No**

036

Install the ROS module.

Condition	Action
• The correct bin is selected when Code + 8 is pressed. • The typewriter responds correctly when Code + 7 is pressed. • The sheetfeed operates correctly when bin 2 is selected. • When bin 1 is selected: The sheetfeed motor does not turn. The sheetfeed solenoid does not activate. An out-of-paper indicator appears.	The feedtrip sensor is failing, or the logic board assembly is failing.
The machine will not select the correct bin.	The feedtrip sensor is failing, or the logic board assembly is failing.
• The correct bin is selected when Code + 8 is pressed. • The typewriter responds correctly when Code + 7 is pressed. • The sheetfeed motor turns on and feeds a sheet of paper. • The paper buckles up against the feedstop sensor. • The 3.5 second sheetfeed timeout occurs. • The sheetfeed motor stops turning. • The paper does not feed into the typewriter. • An out-of-paper indicator appears.	The feedtrip sensor is failing, or the logic board assembly is failing.

058

(From step 057)

– Disconnect the solenoid.

– Measure the resistance of the solenoid between the two pins on the plug.

Is the resistance less than 30 ohms?

Yes **No**

059

The logic board assembly is failing.

060

The sheetfeed solenoid is failing.

061

(From step 057)

– Disconnect the sheetfeed drive motor.

– Measure the resistance of the motor between the two pins at the connector on the motor board.

Is the resistance less than 20 ohms?

Yes **No**

062

The logic board assembly is failing.

063

(Step **063** continues)

Notes

010 (continued)

Two battery machines:
Does the voltage measure between 2.3 V dc and 3.2 V dc?
Three battery machines: Does the voltage measure between 3.3 V dc and 4.8 V dc?.

Yes **No**

011

– Check the continuity of the battery holder.
Does it have continuity?

Yes **No**

012

The battery holder is failing.

013

The batteries are failing.

014

(From steps 004 and 005)
Is the Spell Check modules (U201, U700, U801—two board machines; U3 or U800—single board machines) socketed?

Yes **No**

015

The function board is failing.

016

Single board machines: The Spell Check module (U3 or U800) is failing.
– or –
The system board is failing.

Two-board machines: The Spell Check modules (U201, U700, U801) is failing.
– or –
The function board is failing.

017

(From page 2-216)
Did you come here from Map 0160: Error Code?

Yes **No**

018

Go to Step 024 on page 2-218.

019

– Turn the machine off.
(Step **019** continues)

Notes

007 (continued)

Does the Supplemental Dictionary lose words?

Yes **No**

008

Go to Step 013.

009

– Measure the voltage between J7-1 (black) and J7-3 (red) on the J7 plug.

Two battery machines: **Does the voltage measure between 2.3 V dc and 3.2 V dc?**

Three battery machines: **Does the voltage measure between 3.3 V dc and 4.8 V dc?**

Yes **No**

010

– Check the continuity of the battery holder.

Does it have continuity?

Yes **No**

011

The battery holder is failing.

012

The batteries are failing.

013

– W.T. only - Carefully remove the spell check module (U3 or U800) from the system board. If there is a jumper in J6, remove it.

Does the U.S. Spell Check work properly?

Yes **No**

014

The system board is failing.

015

– U.S. only - Go to "MAP 0100: Start" on page 2-4.

– Check the continuity of the J6 jumper.

Does it have continuity?

Yes **No**

016

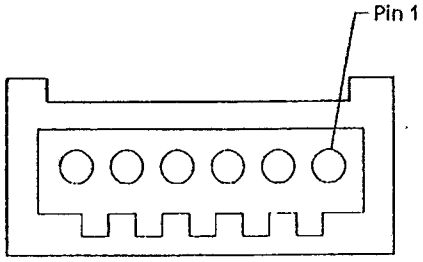
The J6 jumper is failing.

017

The U3 or U800 module is failing.

Notes

Meter Connections	Reading
Pin 1 to Pin 3	3 to 5 ohms
Pin 2 to Pin 4	3 to 5 ohms
Pin 1 to Pin 5	4 to 6 ohms
Pin 2 to Pin 6	4 to 6 ohms
Pin 1 to Pins 2, 4, 6	Infinity
Pin 2 to Pins 1, 3, 5	Infinity
Any pin to Motor Housing	Infinity



MOTOR CONNECTOR

Is the resistance correct?

Yes **No**

007

Are any motor pins shorted to the motor housing?

Yes **No**

008

The transport motor is failing.

009

Single board machines: The transport motor and the function are failing.
Two-board machines: The transport motor and the motor control board are failing.

010

– Check all the lines of the transport motor cable for continuity.

Is there continuity?

Yes **No**

011

The transport cable is failing.

012

Are you here because:

- **Wheelwriter 10, 15, 1500, 3000 - error indication of 6 beeps and the 1,2,3 LEDs flashing?**
- **Wheelwriter 30, 35, 50, 70, 3500, 5000, 7000 - error code 215?**

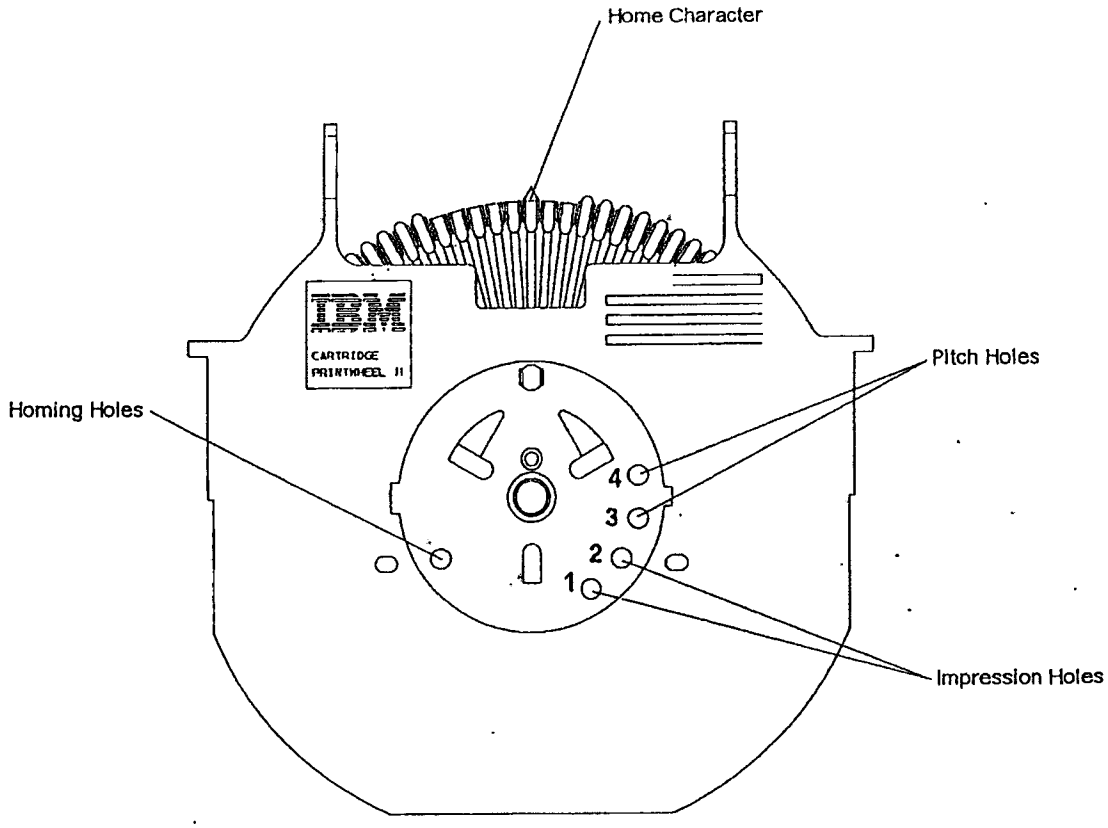
Yes **No**

Diagnostic Aids

Printwheel Hole Code Chart

- Holes 1 and 2 control impression.
- Holes 3 and 4 control pitch.

1	2	3	4	Pitch	Impression
				10	Light
O				10	Medium
	O			10	Heavy
		O	O	12	Light
O		O	O	12	Medium
	O	O	O	12	Heavy
			O	15	Light
O			O	15	Medium
	O		O	15	Heavy
		O		PS	Light
O		O		PS	Medium
	O	O		PS	Heavy



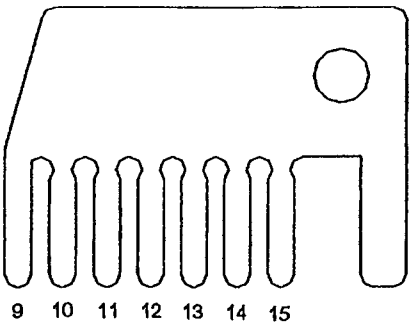
Keyboard Name	09	10	11	12	13	14	15
Spain		O				O	
Sweden/Finland		O	O	O			
Switzerland (French)			O			O	
Switzerland (German)		O	O			O	
Turkey		O	O	O		O	
United Kingdom				O		O	
United States							

Keyboard Identification Hole Chart, Wheelwriter 1500, 3000

Keyboard Name	09	10	11	12	13	14	15
Belgium/France		O	O				
Brazil		O		O		O	
Bulgaria			O				
Canada (Bilingual)				O			
Croatia/Slovenia (WW 1500)		O		O	O	O	
Croatia/Slovenia (WW 3000)		O	O	O	O	O	
Czech Republic		O	O	O			
Denmark		O		O			
Germany/Austria		O					
Greece (Greek)					O	O	
Hungary		O			O	O	
Italy (Metric index)		O			O		
Italy (Inch index)					O		
Japan (English)		O	O		O		
Latin American, Period				O	O		
Latin American, Comma		O		O	O		
Netherlands			O	O	O		
Norway		O	O	O	O		
Philippines			O		O	O	
Poland			O	O	O	O	
Portugal						O	
Romania		O	O		O	O	
Russia Cyrillic				O	O	O	
Serbia		O		O	O	O	
Slovakia			O		O		

Keyboard Name	09	10	11	12	13	14	15
Romania		O	O	O		O	
Russian Cyrillic			O		O		
Serbia			O	O			
Slovakia		O		O		O	
South Africa			O	O		O	
Spain		O				O	
Sweden		O	O	O			
Switzerland (French)			O			O	
Switzerland (German)		O	O			O	
Turkey		O	O	O		O	
United Kingdom (all except WW70, 7000)				O		O	
United Kingdom (WW70, 7000 only)							
United States							
(*) WW70, 7000 use only the U.S. and U.K. Keyboards							

5. Turn the machine back around to the operator position.
6. Using a small pair of pliers, remove the tabs on the comb (as shown in the figure below) to match the keyboard identification holes for the country you are changing to (see "Keyboard Identification Hole Charts" on page 2-228).



Power On Reset (POR) Sequence, Wheelwriter 10, 15, 1500, 3000

Power On Reset Sequence
Turn the machine on.
All LEDs are turned on
Keyboard is verified. Invalid keyboard causes error code on indicator panel.
Printwheel moves.
Carrier moves.
Platen moves up and down one line.
Ribbon lifts.
Print hammer energizes. (May be difficult to see this.)
Carrier moves to the right.
Printwheel and ribbon home.
Carrier homes.
If a printwheel or transport sense error is detected, error indicators are turned on.
All LED indicators turn off.
Destructive RAM test performed on correction buffer. If test fails, error indicators turn on.
If spell check is installed and activated, the machine will beep two times. The sound will depend on how the operator has set Code + 4.
Machine beeps one time.
Carrier moves to the left margin.
Battery status is determined. Dead or low battery causes error code.
Line space indicator last selected by the operator turns on.

Play-In-Loop Test, Wheelwriter 10, 15, 1500, 3000

To run the play-in-loop test:

1. Type the test phrase or words you want to use into the correction buffer.
2. Press and hold both the Code and Shift keybuttons then press the Tab Clear keybutton.
3. The words will play-in-loop until you stop it.
4. Press any keybutton to stop the play-in-loop test.

Note: The machine will perform a SAPI operation when you exit the test.

Play-In-Loop Test, Wheelwriter 30, 35, 50, 3500, 5000

The play-in-loop test is run using document storage. To create the play-in-loop test phrase:

1. Open a document for your test phrase by pressing STORE + nn (nn = any number 1 to 99).
2. Type the test phrase or words you want to use into storage. Any machine function may be used to test the machine, such as; bold, continuous underscore, stop codes, or pitch/wheel changes.
3. Press and hold both the Code and Shift keybuttons then press the Tab Clear keybutton to close the document storage.

To run the play-in-loop test:

1. Press PLAY + the storage number of the test phrase.
2. The words will play-in-loop until you stop it. Press any keybutton to stop the play-in-loop test. To resume the play-in-loop test, press the END keybutton. To cancel the play-in-loop test, press the PLAY keybutton.
3. To store the play-in-loop document, press the STORE keybutton.
4. To erase the play-in-loop document, press DEL + nn.
5. You may also store your play-in-loop document on a diskette if the diskette option is installed.

Note: The machine will perform a SAPI operation when you exit the test.

Play-In-Loop Test, Wheelwriter 70, 7000

To run the play-in-loop test:

1. Go to typewriter mode.
2. Type the play-in-loop phrase you want. ***Do not press CRTN at the end of your phrase.***
3. Press Code + Shift + Tab Clear.
4. Press the exit key to stop play-in-loop.

Sensor and Switch Test, Wheelwriter 30, 35, 3500

The sensor and switch test cannot be run from the Store mode.

To run the sensor and switch test:

1. Press and hold the Code and Shift keybuttons then press the Tab Set keybutton.
2. Press any keybutton to stop the sensor and switch test.

To check the homing sensor: (ARTN)

- When you activate the sensor and switch test, ARTN should come on the display.
- Slowly push the homing sensor flag in. ARTN should go off. ARTN should come on as you release the flag.

To check the SAPI (paper bail) switch: (KYBD)

- Activate the sensor and switch test.
- Pull the right paper bail all the way forward. KYBD should appear on the display as the SAPI switch closes and go off as the paper bail is released.

To check Spelling RAM: (STORE)

- If STORE is on the display during the sensor and switch test, the Spelling RAM is installed and working.

To check the End-of-Ribbon Sensor: (BOLD)

- Activate the switch and sensor test.
- Pass a piece of paper between the ribbon LED and sensor.
- BOLD should go on and off as the paper passes between the LED and the sensor.

To check the Out-of-Paper Sensor: (CONT)

- Activate the switch and sensor test.
- Pass a piece of white paper between the platen and out-of-paper sensor.
- CONT should go on and off as the paper passes between the platen and the sensor.

To check for Low Battery: (CAPS)

- Activate the switch and sensor test.
- Disconnect the battery from J4 on the function board.
- CAPS should appear on the display when you disconnect the battery, and turn off when you connect the battery.
- Reconnect the battery.

To check the Pinwheel Form Feeder Present:

1. ***When the pinfeed/sheetfeed sensor switch cable is connected to the printer option board.***
   - Activate the switch and sensor test.
   - Manually depress the pinfeed sensor switch (larger of the two) until you hear it activate.
   - TADJ should appear on the display as the switch is activated.
2. ***When the pinfeed/sheetfeed sensor switch cable is connected to the function board.***
   - Activate the switch and sensor test.
   - Manually depress the pinfeed sensor switch (larger of the two) until you hear it activate.
   - SUSPND should appear on the display as the switch is activated.

To check the Sheetfeed Option Present:

1. ***When the pinfeed/sheetfeed sensor switch cable is connected to the printer option board.***
   - Activate the switch and sensor test.

To check the Sheetfeed Option Present:

1. ***When the pinfeed/sheetfeed sensor switch cable is connected to the printer option board.***
   - Activate the switch and sensor test.
   - Manually depress the pinfeed sensor switch actuators until both switches activate.
   - CENTER should appear on the display as the switch is activated.
2. ***When the pinfeed/sheetfeed sensor switch cable is connected to the function board.***
   - Activate the switch and sensor test.
   - Manually depress the pinfeed sensor switch actuators until both switches activate.
   - PLAY should appear on the display as the switch is activated.

Diskette Diagnostic Tests

CAUTION:
You must use a scratch diskette to run these tests. You must prepare or format the diskette before you run the test. This will destroy all data on the diskette. Be sure to use a diskette that does not contain useful data. To prepare or format a diskette:

- WW30, WW35, WW50, WW3500, and WW5000 – Select PREPARE from the menu and prepare a diskette.
- WW70, WW7000 – Select FORMAT A DISKETTE from the word processor menu and format a diskette.

To enter the diskette diagnostic test routine:

1. Hold down the Code and Shift keybuttons then press the = keybutton.
2. A test menu will appear on the display. The menu has the following choices:
   - TEST -- Test diskette hardware
   - MEASURE -- Measure diskette signals
   - WRITE PROTECT -- Test write-protect and change line
3. To select a test, move the cursor to the test and press CRTN.
4. Press the erase key to stop a test and return to the service menu.

Diskette Diagnostic Tests:

TEST – This diagnostic test consists of the following:

- Diskette speed test
- Diskette controller test
- Diskette format test
- Diskette write/read track 0 and 79 test
- Diskette random sector/track read/write test

If this test is successful the routine returns to the test menu. If any errors occur during the diskette tests, an error displays indicating the nature of the problem. If an error code occurs, the following appears on the display:

(error symbol) NNN XY PRESS crtn to continue

Press CRTN to return to the service menu, then refer to "MAP 0170: Error Codes" on page 2-48 To run the test:

1. Select TEST from the service menu.
2. Insert scratch diskette and press the CRTN key.

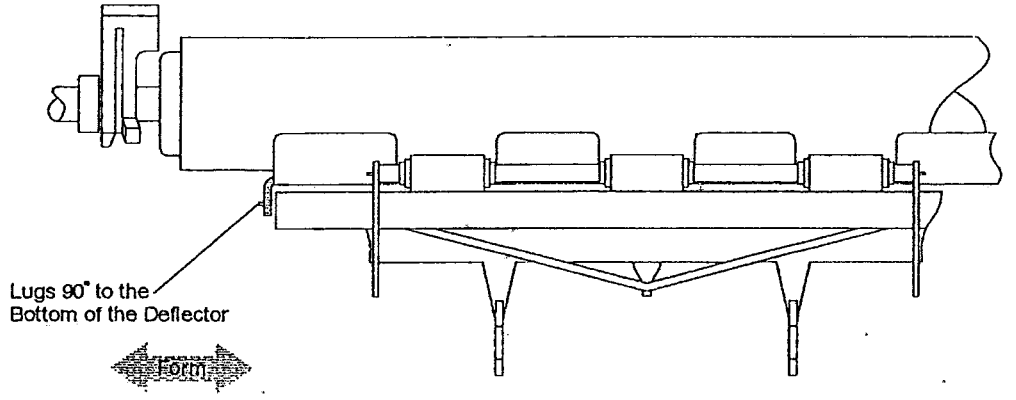
If successful the routine will return you to the service menu. If TEST fails an error code will be displayed. If you want to continue press crtn otherwise go to "MAP 0170: Error Codes" on page 2-48

MEASURE – This test runs a fixed set of operations repetitively, ignoring all errors. You do not need to run this test to service the diskette drive on this machine. Instead, go to "MAP 0130: Diskette Option" on page 2-24. If you should enter this test accidentally, press the erase key to stop.

Repair Information

Deflector Adjustment

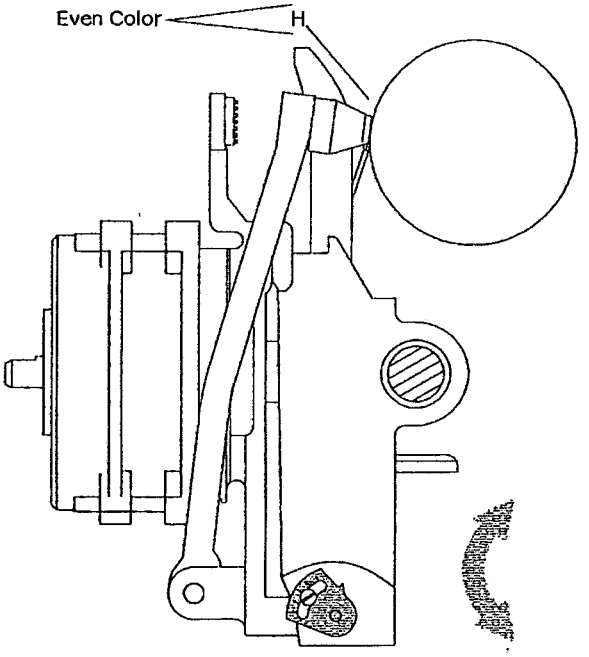
Form the deflector lugs so they are 90° to the bottom of the deflector.



(Front View)

Even Top and Bottom Printing Adjustment

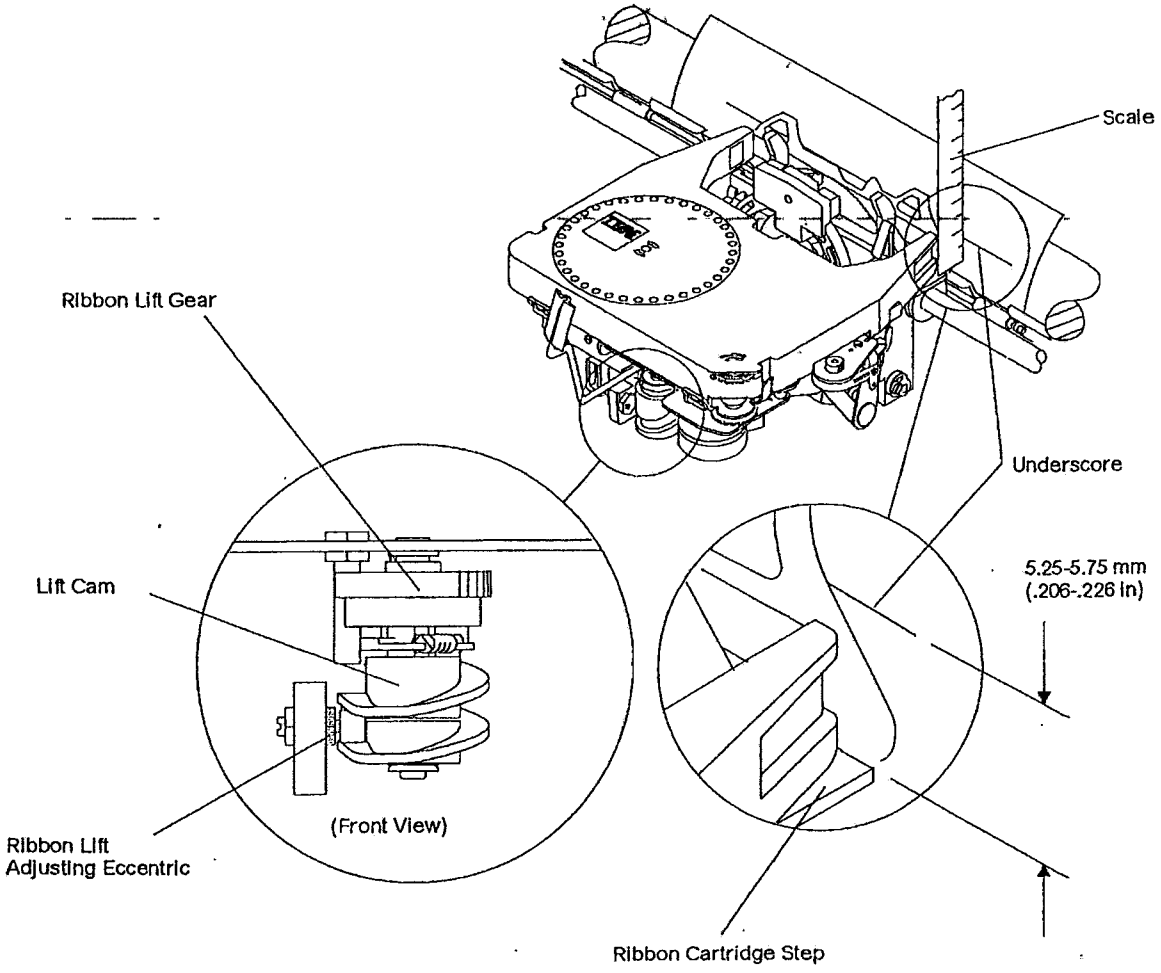
1. Check the platen bushings for wear before you make this adjustment.
2. Adjust the selection plate eccentrics for even top and bottom printing.



(Right Side View)

Ribbon Lift Adjustment

1. Turn the machine on and leave it while you make this adjustment.
2. Remove the correction cartridge and reinstall the ribbon cartridge by itself.
3. Type a line of underscores.
4. Backspace the carrier until at least 10 mm (0.4 in) of the line of underscores is visible to the right of the cardholder.
5. Rotate the ribbon lift gear counterclockwise until the lift cam stops turning.
6. Use a scale to measure the vertical distance between the top of the step on the ribbon cartridge and the line of underscores. The distance should be 5.25 to 5.75 mm (.206 to .226 in).
7. Adjust the ribbon lift adjusting eccentric for a clearance of 5.25 to 5.75 mm (.206 to .226 in) between the step on the cartridge and the line of underscores. **The highest point of the ribbon lift eccentric must be forward of the centerline of its mounting screw.**
8. Check the ribbon lift knock-off adjustment and correct it if necessary. See page 3-4.

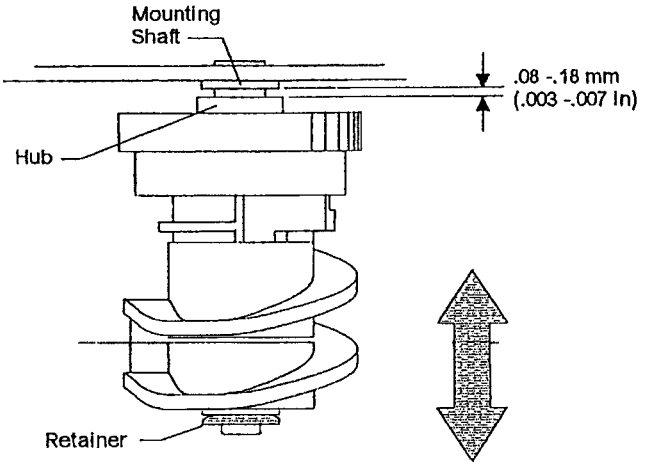


Ribbon Lift Cam End-Play Adjustment

Make this adjustment whenever you replace the retainer.

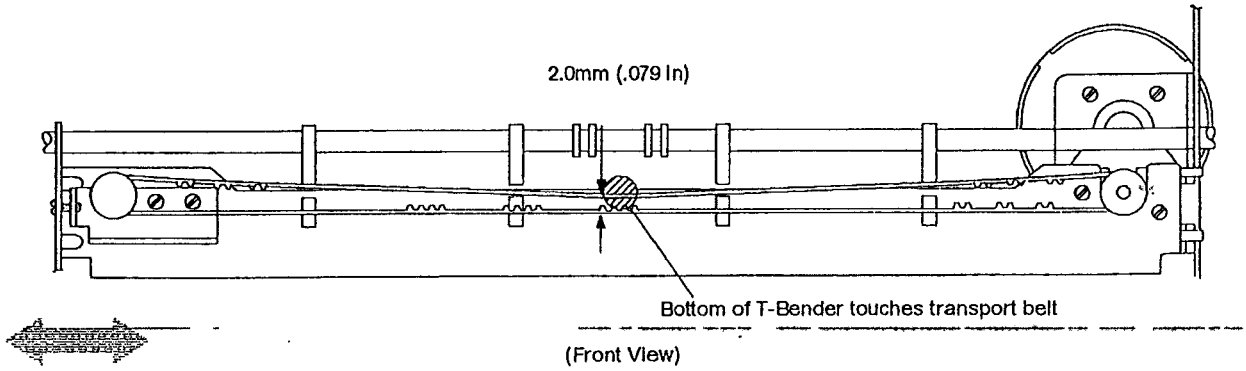
1. Adjust the ribbon lift cam retainer up or down for a clearance of .08 to .18 mm (.003 to .007 in) between the shoulder of the mounting shaft and the hub on the top of the gear.

Note: The retainer can only be pushed in one direction. To make the adjustment, place a feeler gauge between the shoulder of the mounting shaft and the hub on the top of the gear, then push the retainer up on the shaft until the parts are pushed against the feeler gauge.

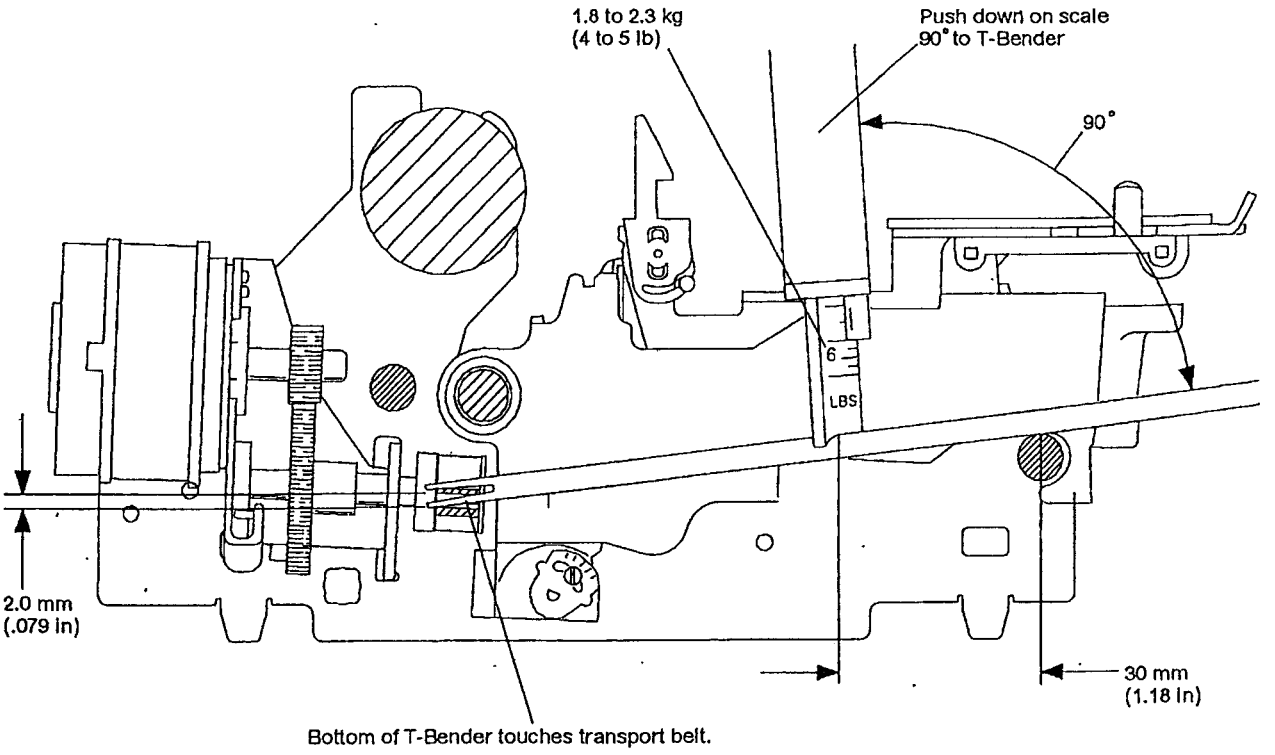


Transport Belt Adjustment

1. Move the carrier all the way to the right.
2. Set the keyboard height to its lowest position.
3. Loosen the idler pulley bracket mounting screws.
4. Slide the T-Bender on the top transport belt at the center of the belt.
5. Rest the T-Bender on the carrier shaft.
6. Hold the scale 90 degrees to the T-Bender. Put 1.8 to 2.3 kg (4 to 5 lb) pressure on the T-Bender 30 mm (1.18 in) from the center of the carrier shaft.
7. Turn the adjusting screw in or out so the bottom of the T-Bender touches the transport belt.



(Front View)



(Side View)

Center Cover Removal

1. Remove the line cord.
2. Pivot the carrier pointer to the left.
3. Push the bottom end of the (4) cover latches in with a tool to release them.
4. Lift the cover up and to the front to remove it.

Feed Roller Assembly Removal

1. Remove the:
   - Center Cover
   - Platen
   - Deflector
   - Move the carrier away from the assembly you want to remove.
   - Feed roller assembly retainer on non U.S. machines only.
2. Push down the feed roller assembly until the lower ends of the roller assemblies release from the transport bracket.
3. Rotate the feed roller assembly forward, then lift it out of the machine.

Frame Assembly Removal

1. Remove the:
   - Center cover
   - Platen
   - Deflector
   - Feed roller assemblies
   - Carrier
   - Semi-automatic paper insertion (SAPI) switch
2. Disconnect the index motor cable from the index motor.
3. Disconnect the transport motor cable from the transport motor.
4. Disconnect the ground straps.
5. Release the front frame latches and lift the front of the frame and rest it on top of the frame latches.
6. Release the rear frame latches and lift the frame out of the bottom cover.
7. Remove the frame assembly.

Note: When installing the frame, be careful not to trap any of the wires under the frame or in the frame latches.

Homing LED Removal

1. Remove the carrier.
2. Disconnect the homing LED connector.
3. Remove the retainers that hold the LED cable to the carrier frame.
4. Remove the homing LED mounting screw.
5. Remove the homing LED.

LED Indicator Panel Assembly Removal (WW10, 15, 1500, 3000)

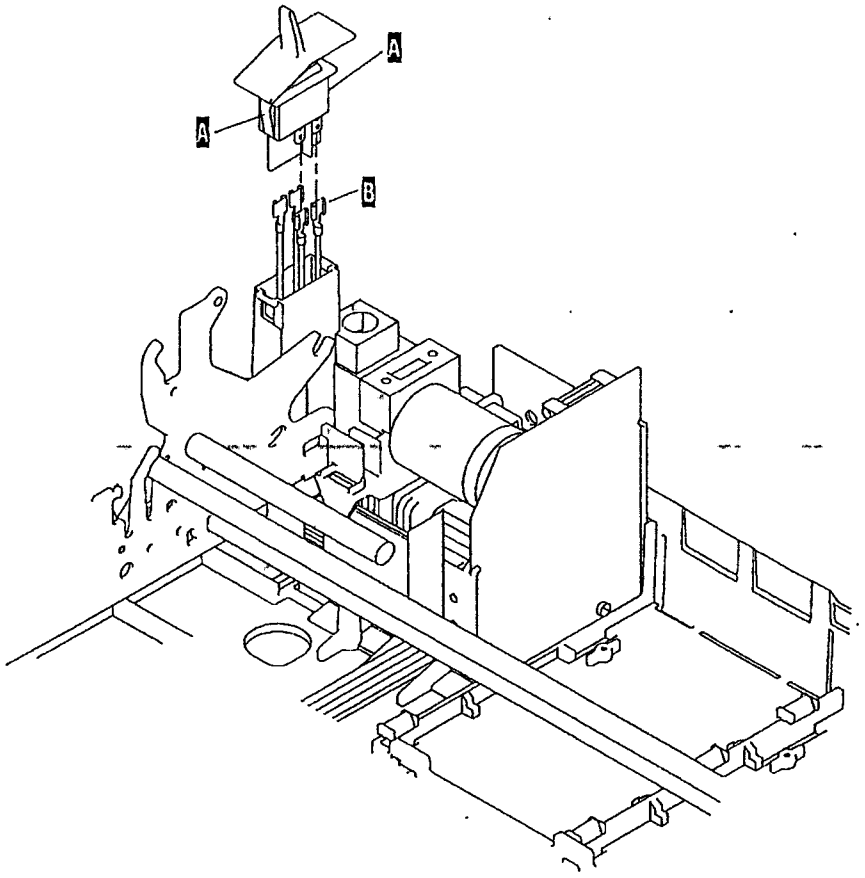
1. Remove the center cover.
2. Move the carrier to the left frame.
3. Disconnect the indicator panel cable (J5) from the function board.
4. Pull the bottom of the 2 retainers on the rear of the keyboard cover to the rear to release the keyboard cover.
5. Lift the rear of the keyboard cover slightly, then slide it toward the front and away from the machine.
6. Unlatch the LED panel from the keyboard and remove it.

Keyboard Removal

1. Remove the center cover.
2. Unlock the ZIF connectors (if applicable) and remove the keyboard connectors (J1, J2) from the function board.
3. (WW10, 15, 1500, 3000) Disconnect the indicator panel connector (J5) from the function board.
4. Pull the bottom of the 2 retainers on the rear of the keyboard cover toward the rear of the machine to release the keyboard cover.
5. Lift the rear of the keyboard cover slightly, then slide the cover toward the front and away from the machine.
6. Pivot the rear of the keyboard up and lift it out of the machine.

On/Off Switch Assembly Removal

1. Disconnect the machine from the AC outlet.
2. Remove the center cover.
3. Push switch latches in **A** and lift the switch assembly up from the switch tower.
4. Disconnect the wires **B**.
5. Remove the switch.



Paperfeed Motor Assembly Removal

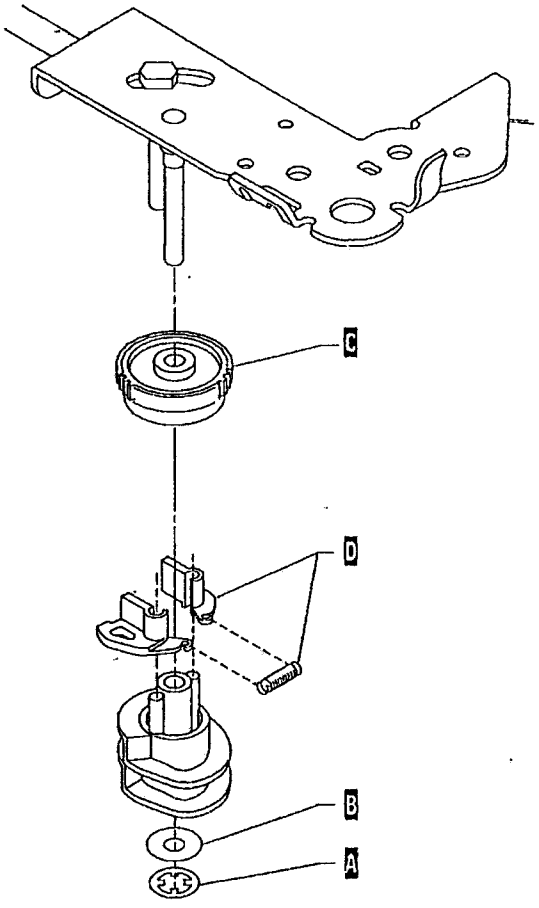
1. Remove the:
   - Top cover and Platen
   - Paperfeed motor tension spring
   - Two front paperfeed motor mounting screws.
2. Disconnect the paperfeed motor cable from the paperfeed motor.
3. Move the paperfeed motor to the rear and lift it out of the machine.

Ribbon Lift Cam Removal

1. Remove the carrier.
2. Remove the ribbon plate from the carrier. Be careful not to lose the cam follower roller.
3. Remove the retainer from the bottom of the ribbon lift cam mounting shaft **A**. Do not try to lift the retainer straight off the shaft. Carefully pry the retainer extensions away from the shaft and lift. When you reassemble the lift cam, use a new retainer.
4. Hold the ribbon feed gear and lift the entire assembly up. A washer **B** on the top side of the gear may fall out. Place it aside.
5. Turn the assembly over and lift off the gear **C**.
6. Remove the pawls and pawl spring if necessary **D**.

To assemble:

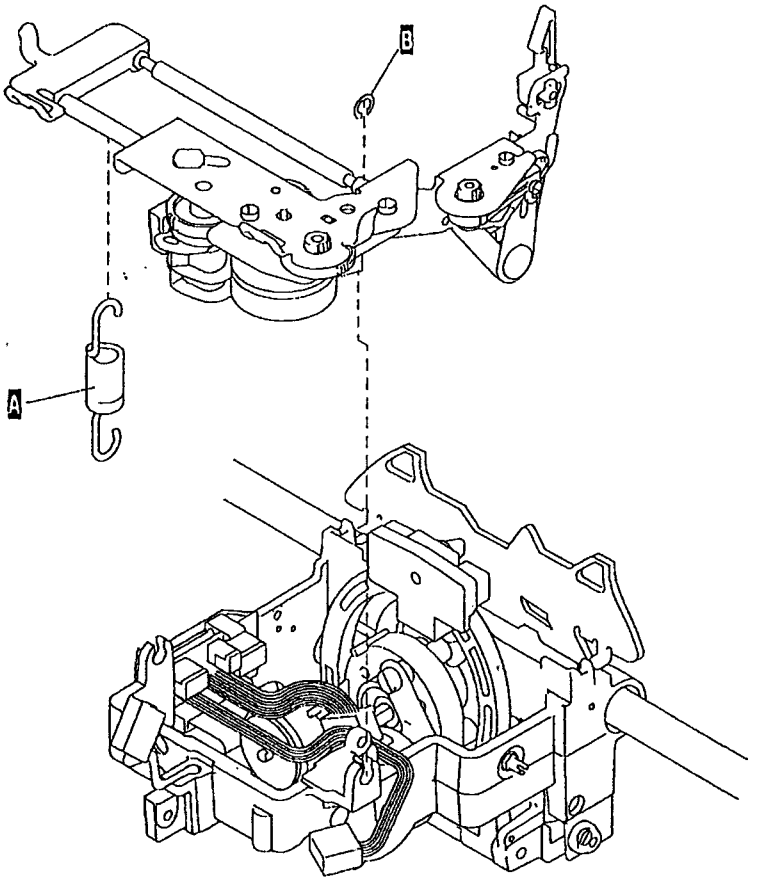
1. Place the pawls on the cam. The black pawl goes on the post near the step in the cam. Connect the spring if necessary.
2. Place the ribbon feed gear on the cam.
3. Hold the assembly and carefully lower it on the mounting shaft. You may have to tap the side of the pawls and cam to move them into place on the shaft.
4. Install the retainer and make the ribbon lift cam end-play adjustment on page 3-7.



Ribbon Plate Removal

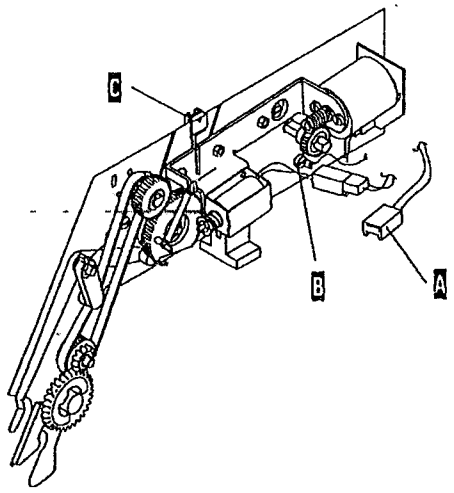
1. Remove the ribbon and correcting tape.
2. Remove the ribbon plate load spring **A**.
3. Note the direction of the high point on the C-clip **B**, then remove it from the pivot shaft.
4. Slide the ribbon plate to the right until you can lift it off the carrier.
5. Disconnect the ribbon feed motor connector.

Note: Check the ribbon lift adjustment on page 3-5 after you install the ribbon plate.

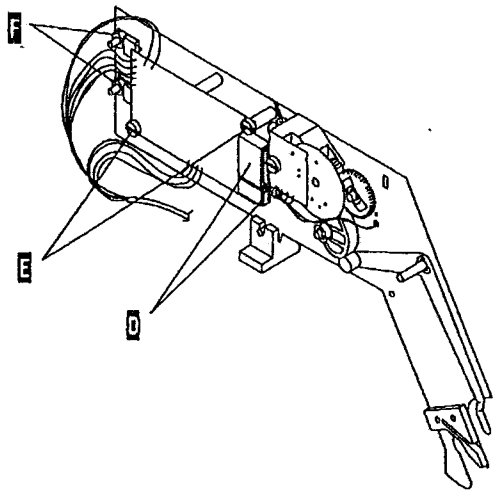


Sheetfeed Logic Board/Power Cable Removal

1. Turn the machine off.
2. Disconnect the sheetfeed power cable from the typewriter.
3. Remove the sheetfeed from the typewriter.
4. Remove the left side cover from the sheetfeed.
5. Remove the right side cover and disconnect the bin selector switch cable **A** from the power cable.
6. Slide the bottom cover to the rear and remove it.
7. Remove the screw **B** holding the logic board/power cable assembly ground terminal to the right frame.
8. Remove the power cable assembly from the cable clamp on the rear of the sheetfeed.
9. Remove the envelope connector **C** from the right side frame.
10. Disconnect the motor and solenoid connectors.
11. Remove the cable from the cable clamps on the right side frame.



12. Disconnect sensor connectors J1 and J2 **D** from the logic board.
13. Remove the two screws **E** that mount the logic board to the left side frame.
14. Carefully remove the nuts **F** that mount the voltage regulator modules to the left side frame.
15. Remove the logic board/power cable from the sheetfeed.



Selection Plate Assembly Removal

1. Remove the printwheel, ribbon, and the correcting tape.
2. Disconnect the two selection plate load springs.
3. Remove the carrier.
4. Disconnect the hammer solenoid and selection motor connectors.
5. Disconnect the homing sensor cable from the homing sensor.

   Note: Mark the position of the eccentrics. Also notice that the eccentric for the left side has the longest shoulder. Remember to check the Even Top And Bottom Printing Adjustment, page 3-3, when you install the eccentrics.

6. Remove the 2 selection plate eccentrics.
7. Remove the selection plate through the bottom of the carrier.

Note: A replacement selection plate assembly contains a print hammer solenoid with 2 shims. You may remove 1 shim to adjust for gray impression. Put the removed shim back on the solenoid if removing it causes partial lift off. Do not remove shims from other than new replacement selection plate assemblies.

Transport Motor Removal

1. Remove the center cover.
2. Disconnect the transport motor cable from the transport motor.
3. Grasp the motor and turn it to release the motor tabs from the bracket.

Transport Assembly Removal

1. Remove the:
   - Top cover
   - Keyboard cover
   - Carrier.
2. Remove the transport belt from the carrier.
3. Remove the transport motor.
4. Remove the two idler pulley bracket mounting screws.
5. Remove the transport belt adjusting screw.
6. Remove the shipping retainer from the new transport motor bracket.
7. See the transport bracket installation, page 3-26.
8. Check the transport belt adjustment, page 3-9.

Handling ESD-Sensitive Parts

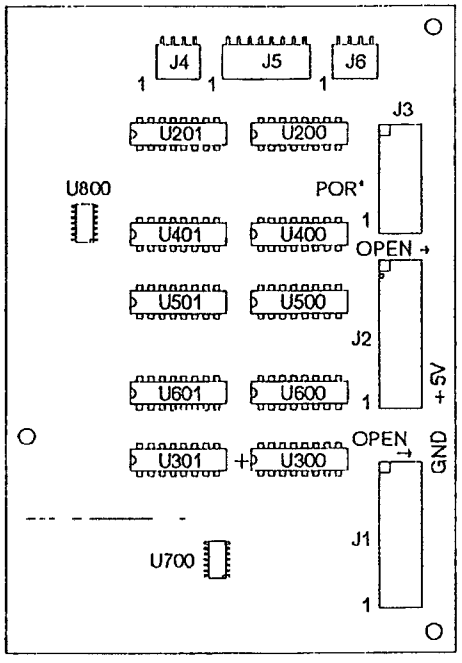
Many products use parts that are known to be sensitive to electrostatic discharge (ESD). To prevent damage when you work with ESD-sensitive parts, observe the following instructions; do these in addition to all the usual precautions such as switching off power before removing logic cards.

- Keep the ESD-sensitive part in its original shipping container (a special "ESD bag") until you are ready to install the part into the machine.
- Make the least possible movements with your body to prevent an increase of static electricity from clothing fibers, carpets, and furniture.
- Put the ESD wrist strap on your wrist. Ensure the machine is turned off. Connect the wrist band to the keyboard ground wire (level 1) or the printer board bracket (level 2). This discharges any static electricity in your body to the machine.
- Hold the ESD-sensitive part by its edge connector shroud (cover); *do not touch its pins.* If you are removing a pluggable module, use the correct tool.
- Do not place the ESD-sensitive part on the machine cover or on a metal table; if you need to put down the ESD-sensitive part for any reason, first put it into its special bag.

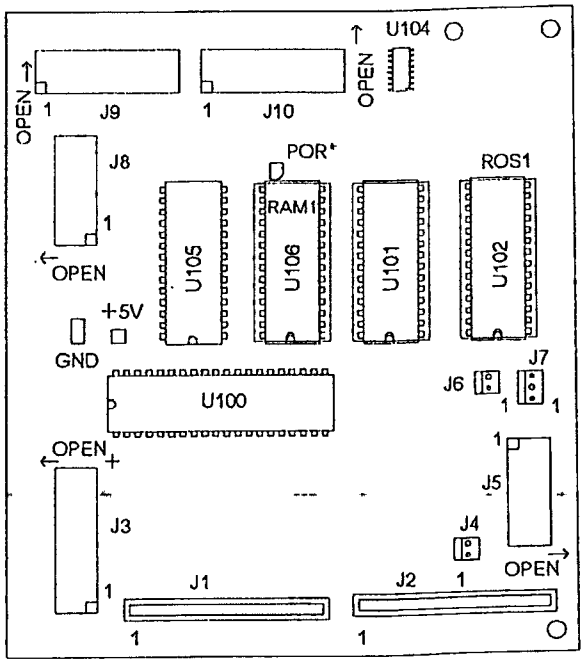
  Machine covers and metal tables are electrical grounds. They increase the risk of damage because they make a discharge path from your body through the ESD-sensitive part. (Large metal objects can be discharge paths without being grounded.)
- Prevent ESD-sensitive parts from being accidentally touched by other personnel such as CSRs or customers. Reinstall machine covers when you are not working on the machine, and do not put unprotected ESD-sensitive parts on a table.
- If possible, keep all ESD-sensitive parts in a grounded metal cabinet (case).
- Be extra careful in working with ESD-sensitive parts when cold-weather heating is used because low humidity increases static electricity.

Parts/Test Point Locations

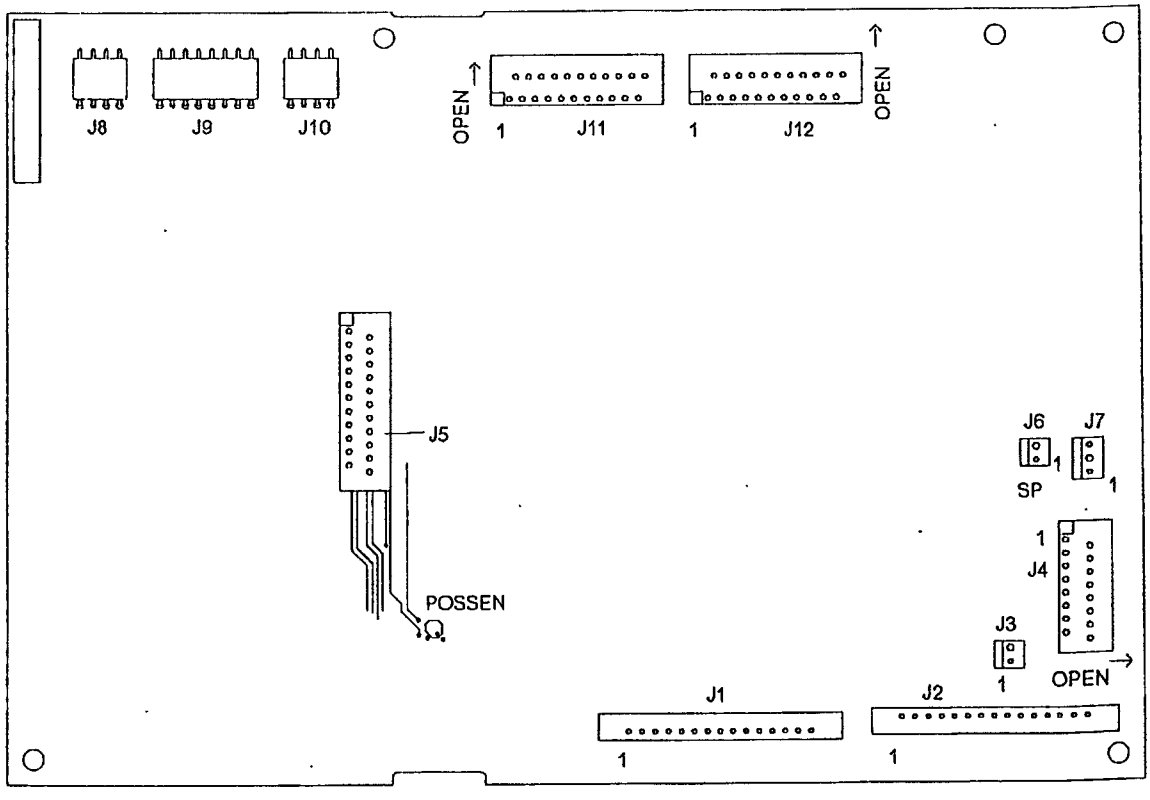
Motor Control Board, Wheelwriter 10, 30, 50, 70



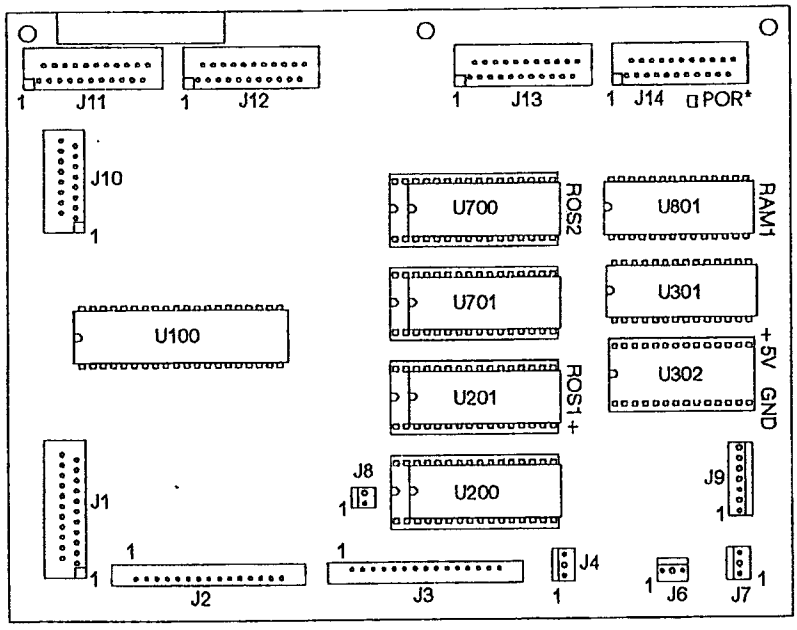
Function Board, Wheelwriter 10 Typewriter (Two Board Version)



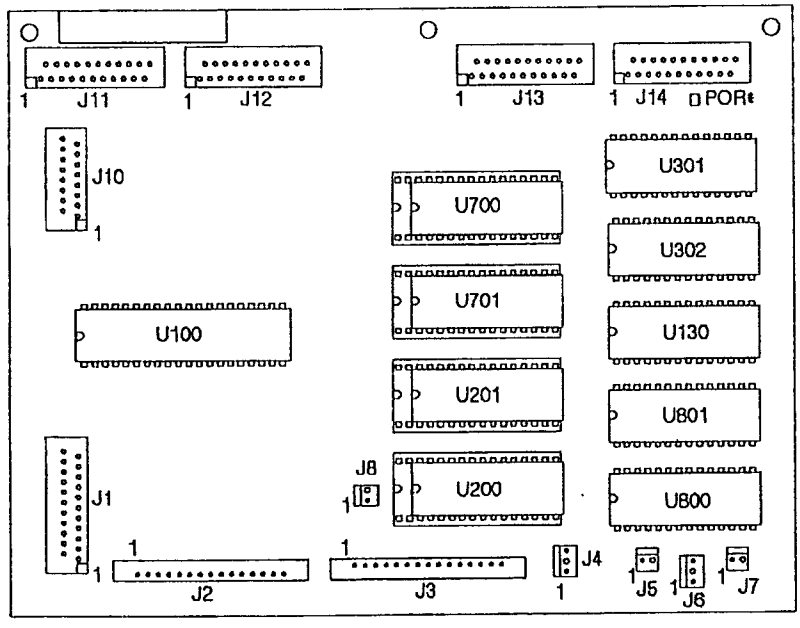
System Board, Wheelwriter 10 Typewriter (Single Board Version, SMT Level 1)



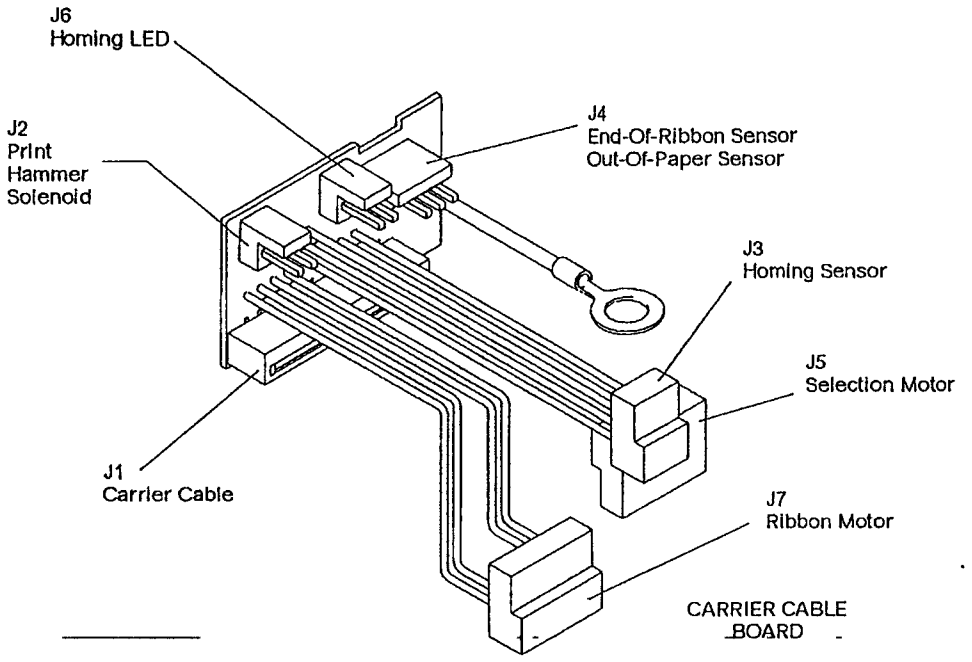
Function Board, WW30, WW50 (Two Board Version)



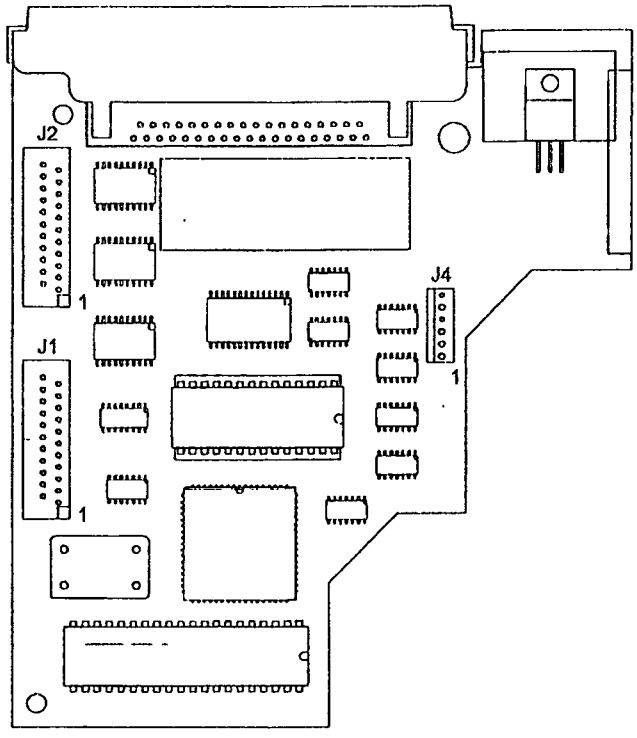
Function Board, WW70 (Two Board Version)



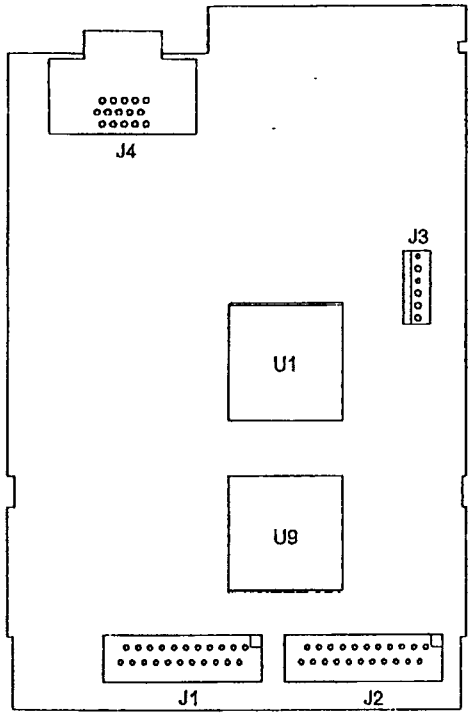
Carrier Cable Board



Diskette Control Board



CRT Display Control Board



Preventive Maintenance

Lubrication Guide

CAUTION:
Cleaning fluids will damage the typewriter covers.

Part	Lubricant
Carrier rail wipers	No. 10
Deflector brackets (transport brkt. contact area)	No. 23
Feed ratchet stud contacting bracket	No. 10
Homing LED area	Do not lubricate
Paperfeed motor	
- Gear	No. 23
- Idler plate (contact surface)	No. 23
- Mounting plate (contact surface)	No. 23
- Mounting studs	No. 10
Paperfeed roller shafts (pivot points)	No. 23
Paperfeed roller tension spring	
- Where it contacts feed roller bracket	No. 23
- Where it contacts feed roller release shaft	No. 23
Paperfeed shaft (pivot points)	No. 23
Paper release bellcrank pin	No. 23
Paper release cams	No. 23
Paper release lever cam slot	No. 23
Print hammer pivot pins	No. 23
Print hammer (printwheel contact surface)	Do not lubricate
Print hammer solenoid (rear contact surface)	No. 23
Ribbon lift cam pawl studs	No. 23
Ribbon lift gear (inside teeth)	No. 23
Upper part of ribbon lift cam mounting shaft	No. 23
Lower part of ribbon lift cam mounting shaft	No. 10
Between ribbon lift cam and washer	No. 23
Ribbon drive gears and mounting studs	No. 23
Ribbon lift cam track	No. 23
Ribbon lift cam roller and stud	No. 23
Tape feed actuator (pivot)	No. 10
Tape feed actuator (top)	No. 23
Tape feed link (both ends)	No. 10
Tape feed ratchet contacting ribbon plate	No. 23
Tape feed stud	No. 23
Transport belt	Do not lubricate

Safety Inspection Guide

General Guidelines

The purpose of this safety inspection guide is to aid you in identifying possible unsafe conditions on machines that are being inspected for a Maintenance Agreement. Each machine has needed items installed to provide the operators and service personnel with an acceptable level of safety. This guide lists only these items. Good judgment should be used to identify possible safety conditions not covered by this safety inspection guide.

If any unsafe conditions are present, you must find out how serious the hazard could be and if you can continue before you correct the hazard.

A copy of current Service Memorandums (SMs), ECAs (Engineering Change Announcements), and Feature/Model changes, along with the machine history, should be reviewed.

Check the following items:

- Damaged, missing, or changed parts, especially in the area of the on/off switch and the power supply.
- Damaged, missing, or changed covers, especially in the area of the top cover and the power supply.
- Possible safety exposure from any non-IBM attachments.

Index

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