
OKIDATA[®]
Service Manual

ML380
Dot Matrix Printer

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Chapter 0 About This Manual

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1.1 OVERVIEW

1.1.01 General Information

The Microline 380 is an 80 column, impact dot matrix printer using a 24 pin printhead. It emulates the Epson LQ printer.

A push tractor is standard. An optional pull tractor is available.

Font and Character Pitch selection is available through the operator panel, printer menu, or through software (using control codes).

A Centronics Parallel interface is standard. An RS232-C serial module is available as an option.

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1.2 PHYSICAL SPECIFICATIONS

1.2.01 Dimensions

Width: 15.67 inches (398 millimeters)

Depth: 4.72 inches (120 millimeters)

Height: 13.58 inches (345 millimeters)

NOTE: *Dimensions DO NOT INCLUDE the platen knob, acoustic cover, and paper separator.*

1.2.02 Weight

17.9 pounds (8.1 kilograms)

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1.3 POWER REQUIREMENTS

1.3.01 Input Power

120 VAC: +5.5 / -15%

220/240 VAC: +5.5 / -15%

Single-phase AC

1.3.02 Power Consumption

Operating: 90 VA

Idle: 30 VA

1.3.03 Power Frequency

120 VAC: 50/60 Hz +/- 2%

220/240 VAC: 50/60 Hz +/- 2%

1.4 ENVIRONMENTAL CONDITIONS

1.4.01 Acoustic Rating

57 dBA

1.4.02 Altitude

10,000 feet (3,050 meters)

1.4.03 Ambient Temperature and Relative Humidity (RH)

While operating: 41 to 95 degrees Fahrenheit (5 to 35 degrees Celsius)

Operating humidity: 20% to 80% RH

While in storage: -40 to 158 degrees Fahrenheit (-40 to 70 degrees Celsius)

Storage humidity: 5% to 95% RH

1.4.04 Impact

Non-operating: 3 G or less

1.4.05 Vibration

Operating: 0.3 G (5 to 150 Hz) or less (except at resonating frequency)

Non-Operating: 1 G (5 to 150 Hz) or less (except at resonating frequency)



1.5 AGENCY APPROVALS

1.5.01 Listings

UL No: UL Standard No. 478 and 114

CSA No: CSA Standard C22.2 No. 154

FCC: FCC Certified per Part 15, Subject J, Class B

VDE: VDE 0806, 0875 Class B, and 0836

BS: BS 5850 / 6204

IEC: 435 / 380

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1.6 OPERATIONAL SPECIFICATIONS

1.6.01 Character Matrix Sizes

Table of Print Speed and Character Matrix

Mode	LQ	Utility	HS Utility
Speed	63 cps (12 cpi)	192 cps (12 cpi)	240 cps (15 cpi)
Matrix (H x V)	30 x 18	9 x 17	7 x 16

1.6.02 Characters Per Line

Maximum Characters Per Line	Characters Per Inch
80	10
96	12
120	15
137	17.1
160	20

1.6.03 Character Pitches

5, 6, 8.5, 10, 12, 15, 17.1, 20 characters per inch

Characters Per Inch = cpi

The character pitches are selected through the following methods.

Operator panel (front panel controls)

Menu Select Mode (Menu Mode)

Control codes in the software

Special Microline 380 drivers

1.6.04 Character Sets

Standard ASCII

EPSON Character Set

IBM Character Set I and II

Foreign Language Sets (14)

Line Graphics

Zero / Slashed Zero

1.6.05 Emulation

Epson LQ

1.6.06 Fonts

Letter Quality

Courier
Letter Gothic
Prestige
Orator
Roman
Helvette

Draft

Utility

Special Font Effects

Emphasized / Enhanced
Outline
Shadow
Double Height
Double Width

1.6.07 Front Panel Switches

SELECT / Exit
FEED / Group
TOF / PARK / Item
FONT / Set
PITCH / Print

1.6.08 Graphics Resolution

Graphics Resolution
Maximum: 180 x 360 dpi
Minimum: 60 x 72 dpi

1.6.09 Interface*Standard**

Parallel

Optional

RS232C Serial, 19.2 Kbytes Super-Speed (Ready/Busy, X-ON / X-OFF)

NOTE:

When the serial interface module is installed, the printer's parallel interface connector is NOT accessible.

1.6.10 Line Feed Increments**Fixed**

6 lines per inch (lpi) [0.167 inch (4.23 millimeters)]
8 lines per inch (lpi) [0.125 inch (3.175 millimeters)]

Variable

n/60 inch
n/180 inch

1.6.11 Line Feed Time

2.2 inches per second

1.6.12 Menu Mode

Print: Prints the entire menu.
Group: Selects Group Function
Item: Selects Item
Set: Selects Item Value
Exit: Exits Menu Mode, Enters Select

1.6.13 Paper Feed Methods

Standard

Friction Feed (Top)
Push Tractor (Rear)

Optional

Pull Tractor (Bottom / Rear)
Single-Bin Cut Sheet Feeder (Top)
CSF 3800

1.6.14 Paper Feed Paths

Top Feed (Standard)
Rear Feed (Standard)
Bottom Feed (by using an Optional feed mechanism)
Special Features
Paper Park
Semi-Automatic Sheet Feeding
Paper Tear Off

1.6.15 Paper Loading

Semi-Automatic Sheet Feeding
Opening the paper bail arm activates the semi-automatic sheet feeder (SASF)

1.6.16 Paper Out Detection

Distance from end of paper
Rear Feed: 2.3 inches (57 millimeters)
Bottom Feed: 1.4 inches (36 millimeters)
Top Feed: 1 inch (25 mm)

1.6.17 Paper Tear Capabilities

Paper Tear-Off (sharp edge on access cover)

1.6.18 Print Method**Printhead Type****General Information**

Impact Dot Matrix
24 pin printhead
.0079 inch (.20 millimeter) diameter pins

Overheat Protection

When printhead temperature is between 90 and 129 degrees Celsius (ALARM 1), the printer stops bi-directional printing. Uni-directional printing begins.

If the temperature continues to rise (130 degrees Celsius, ALARM 2), printing stops.

Printing will resume when the printhead temperature drops below the ALARM 1 threshold.

NOTE:

Refer to Section Two for more information on printhead operation.

Printhead Gap Information

Two items factor into printhead gap information.

1. Printhead Gap Adjustment

This is a SERVICE ADJUSTMENT made by a technician.

It is covered in Section 3.3 of this Service Handbook.

The Adjustment measures 0.016, +/- 0.002 inches (0.41, +/- 0.05 mm).

2. Printhead Gap Adjust

The printhead gap is modified by moving the printhead gap lever, located on the left side of the housing.

To move the lever, pull it towards the printer housing and push the lever towards the front of the printer.

The settings are 1, 2, 3, 4, and 5.

Use 1 for single sheet.

Use 2 for multiple sheets or forms (thickness: 2 sheets).
Use 3 for multiple sheets or forms (thickness: 3 sheets).
Use 4 for multiple sheets or forms (thickness: 4 sheets).
Use 5 for envelopes and extra thick paper.

1.6.19 Print Modes

Letter Quality
Utility

1.6.20 Print Speed

Print Mode	Character Pitch				
	10 cpi	12 cpi	15 cpi	17.1 cpi	20 cpi
LQ	50 cps	60 cps	75 cps	85 cps	100 cps
Utility	150 cps	180 cps	112.5 cps	128.25 cps	150 cps

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1.7 PAPER SPECIFICATIONS

CAUTION: *Use Bottom Feed and/or optional Pull Tractor for card stock and labels.*

1.7.01 Types

Card Stock

Length: 3 to 14 inches (76.2 to 356 millimeters)

Number of Copies: Original

Paper Feed Path: Bottom

Printhead Gap Information: Refer to the Printhead Gap Information, Section 1.6

Thickness: .008 inches (0.2 millimeters) Maximum

Weight: 100 lbs. (375 g/m²) Maximum

Width: 5 to 8 inches (127 to 203 millimeters)

Continuous Form

Length: 3 to 14 inches (76.2 to 356 millimeters)

Number of Copies: Original, Original + 2 Interleaf Original + 2 Carbonless

Paper Feed Path: Rear or Bottom

Printhead Gap Information: Refer to the Printhead Gap Information, Section 1.6

Thickness: Single 0.0028 to 0.0039 inches (0.07 to 0.1 millimeters)

Multi 0.01 inch (.25 millimeter) Maximum

Weight:

Single Part 14 - 22 lb. (52.5 to 82.5 g/m²)

Multi-Part, Carbonless 9 - 11 lb. (35 to 40 g/m²)

Multi-Part, Interleaf Paper 10 - 12 lb. (38 to 45 g/m²) Carbon 9 lb. (35 g/m²)

Width: 3.5 to 10.5 inches (89 to 267 millimeters)

Cut Sheet

Number of Copies: Original, Original + 2 Interleaf Original + 2 Carbonless

Paper Feed Path: Top

Printhead Gap Information: Refer to the Printhead Gap Information, Section 1.6.

Note: Multi-part cut sheet paper CANNOT be used.

Weight: 14 to 22 lbs. (52.5 to 82.5 g/m²)

Width: 7.2 to 10 inches (182 to 254 millimeters)

Length: 3 to 14 inches (76.2 to 356 millimeters)

Thickness: 0.0028 to 0.0039 inches (0.07 to 0.1 millimeters)

Envelopes

Number of Copies: Original

Paper Feed Path: Bottom

Printhead Gap Information: Refer to the Printhead Gap Information, Section 1.6.

Size:

Single Feed

Minimum: 6.5 x 3.6 inches (16.5 x 9.1 centimeters)

Maximum: 9.5 x 4.1 inches (24.1 x 10.4 centimeters)

Continuous

Non-overlap type

Thickness: .016 inches (41 millimeters) Maximum

Weight: 17 to 24 lbs. (64 to 90 g/m²) Maximum

Labels

Length: 3 to 14 inches (76.2 to 356 millimeters)

Number of Copies: Original

Paper Feed Path: Bottom

Printhead Gap Information: Refer to the Printhead Gap Information, Section 1.6.

Weight: N/A

Width: Carrier 3.5 to 8.5 inches (88 to 261 millimeters)

Thickness: .01 inches (0.25 mm) Maximum (including backing)

CAUTION:

Use Bottom Feed and/or optional Pull Tractor for card stock and labels.

DO NOT use fabric labels.

DO NOT print on the edge or perforation of the label.

DO NOT use Paper Park with labels.

Transparency

NOTE:

Roller marks may mar the transparency under high temperature / high humidity conditions.

Length: 3 to 14 inches (76.2 to 356 millimeters)

Number of Copies: Original

Paper Feed Path: Top

Printhead Gap Information: Refer to the Printhead Gap Information, Section 1.6.

Weight: 12 to 24 lbs. (45 to 90 g/m²)

Width: 8.5 to 11 inches (216 to 280 millimeters)

Thickness: 0.004 inches (0.1 millimeters)

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1.8 MEMORY SPECIFICATIONS**1.8.01 EEPROM**

256 Kbit EEPROM

Used to store Menu data

Located at Q18 of the main control board

1.8.02 ROM

Program ROM

256 Kbit

Located at Q2 of the main control board

Resident Character Generator ROM

1 Mbit

Masked to the CPU

1.8.03 RAM

32 Kbyte

Located on the main control board

Used as

Receive Buffer

Printer Buffer

Scratch Pad

1.9 CONSUMABLES

1.9.01 Ribbon

CAUTION: *Using a non-Okidata ribbon may damage the printhead and void any warranties.*

Material
Cartridge Fabric

Types
Black Nylon Ribbon
Life (On average, at 10 characters per inch, Utility Mode)
Black Ribbon 2 million characters

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1.10 OPTIONS

1.10.01 Cut Sheet Feeders

CSF-3800

Single Bin with envelope capability

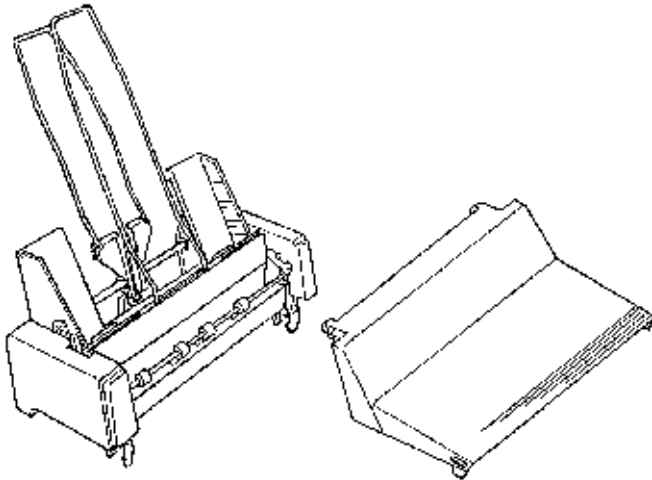
Paper Width: 7.2 to 8.5 inches

182 to 216 millimeters

Paper Length: 10.1 to 11.7 inches

257 to 297 millimeters

Capacity: 50 sheets (20 lb.)

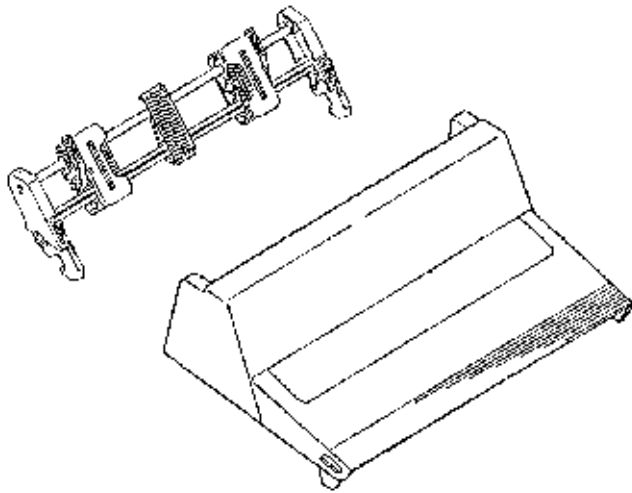


1.10.02 Pull Tractor Kit

Bottom Feed

Rear Feed (For Push/Pull Operation)

Paper Types: Continuous Feed and Labels



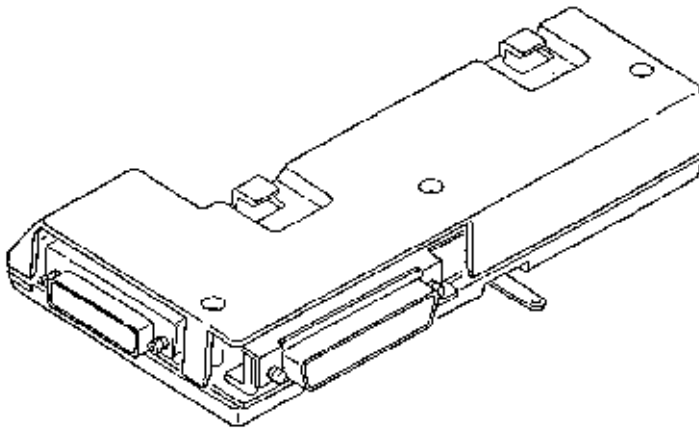
1.10.03 Serial Interface

Super-Speed 19.2K RS-232C

Ready/Busy/X-On/X-Off Protocols

Can be configured through the Menu

When the serial interface module is installed, the printer's parallel interface connector is NOT accessible.



1.11 RELIABILITY

1.11.01 Mean Time Before Failure (MTBF)

Approximately 4,000 hours: 25% duty cycle / 35% page density

1.11.02 Mean Time To Repair (MTTR)

Approximately 15 minutes to major sub-assembly level

1.11.03 Printer Life

Approximately 12,000 hours of power-on time: 25% duty cycle / 35% page density

1.11.04 Printhead Life

Average 200 million characters in 10 cpi utility mode @ normal 25% duty, 35% page density

1.11.05 Ribbon Life

Approximately 2 million characters in 10 cpi mode

1.11.06 Warranty (Limited)

One year, parts, labor, and printhead

1.11.07 Service

Authorized Okidata Service Centers

2.1 ELECTRICAL OPERATION

2.1.01 General Information

The control board consists of the microprocessor and its peripheral circuits, the drive circuits, DC power supply circuit and interface connector. The switches and LED's of the operator panel are mounted on this board.

The power to the control board is supplied by the power supply unit. The power to the other electrical parts is distributed via the connectors on the control board.

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2.1.02 Microprocessor and Peripheral Circuits

Microprocessor (Q5: 83C154GS-551-V1K)

The microprocessor is the nucleus of the control circuit. Its peripheral circuits operate under program control by this microprocessor. The I/O ports of the microprocessor are connected to the address bus, data bus, and control lines.

Program ROM (Q2)

The program ROM (256 Kbit) contains the control program for the printer. The microprocessor operates by execution of this program.

RAM (Q4)

The RAM stores received data (to be printed). (32 Kbytes)

CGROM (Q3)

1 MBit ROM which stores the resident character fonts.

EEPROM (Q18)

This 256-bit serial Electrically Erasable and Programmable ROM stores the Menu Mode data.

LSI (Q7: LC92018B-283)

This LSI switches the phase of the space motor, and generates the timing of print dots for each print density. The LSI performs the following functions.

Space Pulse Motor Control

To obtain the carriage speed instructed by the microprocessor, the LSI generates the pulse switch timing and overdrive time.

Dot Timing generation

Parallel Interface Control

LF Motor Control

LED Drive

General Purpose Input Port

Used to read Operator Board Switches.

LSI (Q6: LC92011B-284)

This LSI drives the 24 pin printhead and controls memory. The following describes the function of the LSI.

Printhead Drive Control

Head Pin Counting Function

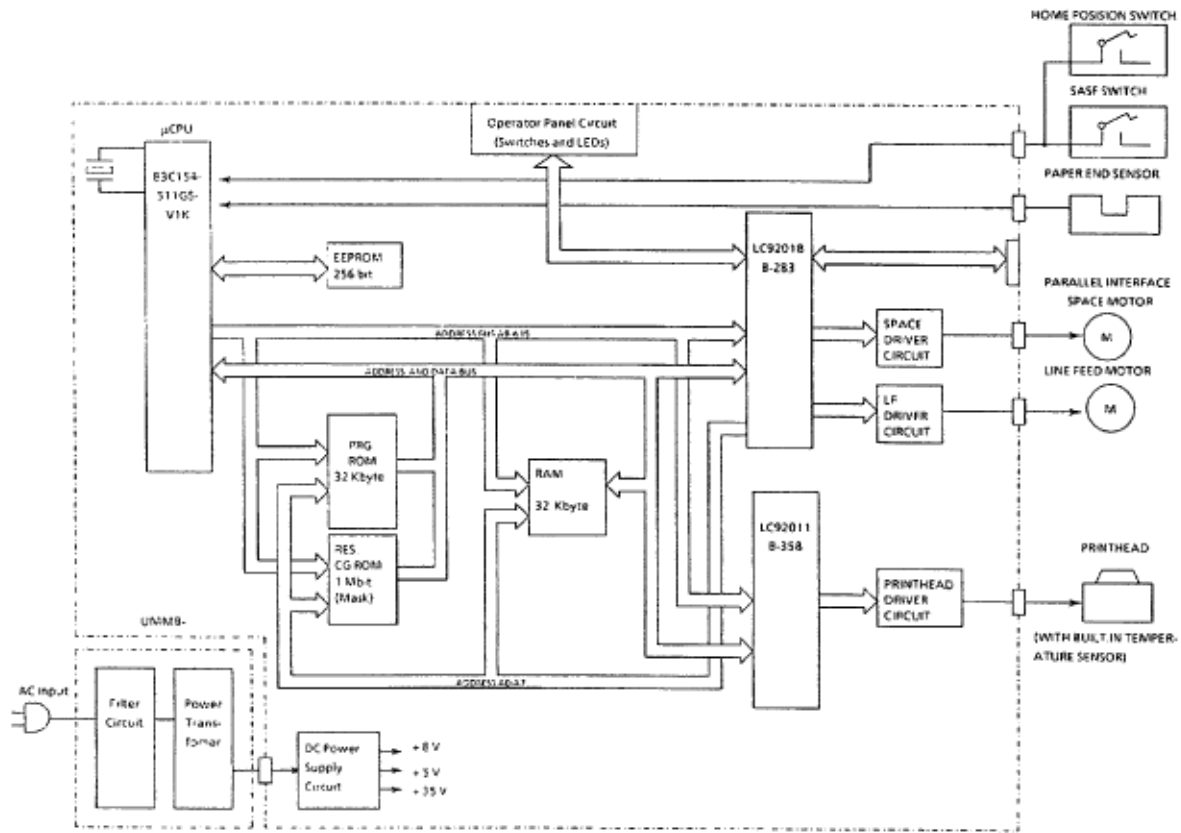
Counts the number of printwires to be driven then, changes the duration of the HD ON signal accordingly.

Memory Control

Extends the addressable memory by switching banks in/out.

LED Drive Output Port

Microline 380 Block Diagram



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2.1.03 Initialization

The printer is initialized whenever it is powered ON or when the I-PRIME signal is received at the parallel interface. Initialization is started when the RST-P signal is sent from the reset circuit (Q8:Pin 1) to Q5, Q6 and Q7.

When RST-P is generated, ROM program execution starts with the mode setting of Q5, Q6 and Q7. Next, ROM and RAM are checked for errors, RAM is initialized and the carriage is homed. The program finally establishes the Interface signals (output level of ACK, BUSY, etc.), switches the SELECT indicator ON, and informs the host computer that the printer is ready to receive data.

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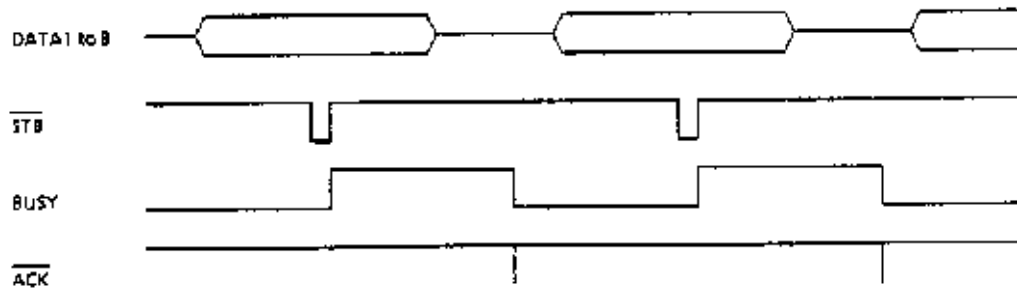
2.1.04 Interface Control

Parallel Interface

The data from the interface is received through connector (CN-1) and the Interface LSI (Q7) latches this data in sync with the STB signal.

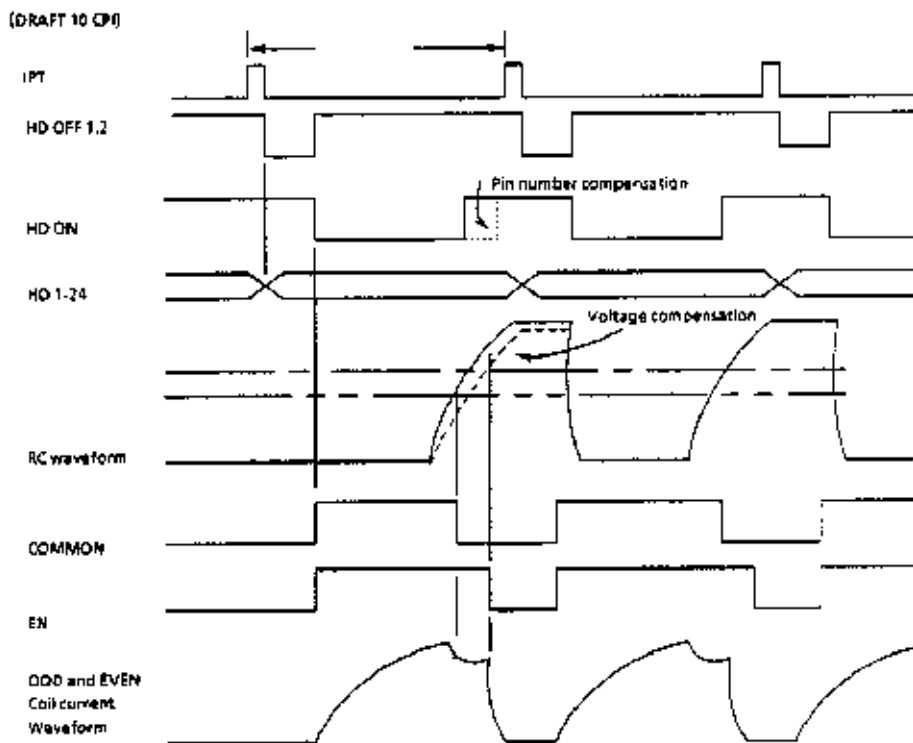
The BUSY signal is switched ON as the data is processed. When processing is completed, the BUSY signal is switched OFF and an ACK signal is sent to the host to request more data.

The BUSY signal is also switched ON when the printer is not able to receive data (buffer is full, printer is deselected or an error condition exists).



2.1.05 Printhead Drive Circuit

This circuit is used to drive the 24 print wires. The signals HD1 through HD24 control the individual print wires. The HD ON signal (even/odd trigger) enables the drive circuit when printing is desired. The head drive duration is determined by an RC integrating circuit which modifies the HD ON pulsewidth. The pulsewidth of the HD ON signal varies with the number of pins being driven. The drive time increases as more pins are driven, and decreases as fewer pins are driven. The RC circuit compensates for the fluctuation of drive voltage (+35 vdc).



2.1.06 Spacing Drive Circuit

The space motor is driven by a two-phase pulse motor.

The phase signals (Phase 1, Phase 2, Phase 3 and Phase 4) and the basic pulse signals are output from the LSI (Q7). The pulse signals are modified by the drive voltage compensation circuit and sent back to the LSI (Q7).

The space overdrive signals (Phase 1DVOV, Phase 2 DVOV, Phase 3DVOV and Phase 4DVOV) switch Q16 and Q17 ON, setting up the proper phase relationship of analog space motor drive signals (SP Phase 1 through SP Phase 4). These signals are then sent to the space motor.



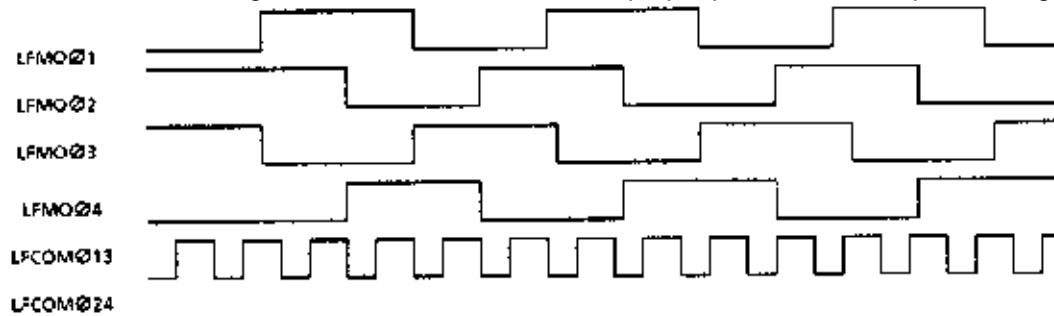
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Chapter 2 Principles of Operation

2.1.07 Line Feed Circuit

The line feed motor shaft is held stationary by + 8 vdc (the holding current is approximately 30 ma) whenever in a stopped position.

During line feed operation, the line feed motor is driven in accordance with the LF OVD signal. The signals LFMO Phase 1 through LFMO Phase 4 establish the proper phase relationship for driving the motor.



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2.1.08 Alarm Circuits

Fault Alarm Circuit (in Power Supply Unit)

This protective circuit causes the AC fuse to open when a fault occurs in the printhead drive circuit or line feed drive circuit, thus preventing component failure.

To accomplish this, the circuit monitors the overdrive signal of each drive circuit. If the duration of any drive circuit exceeds a predetermined time, the appropriate signal (HEAD ALM, LF ALM1 or LF ALM2) will be sent to the fault alarm circuit. The fault alarm circuit generates the ALM signal (high), which switches on an SCR.

This causes the secondary coil (40 volts) of the main transformer to short-circuit, causing an overcurrent to flow through the primary coil and open the AC fuse.

Printhead Overheat Alarm Circuit

In order to protect the printhead coils, this circuit monitors the printhead temperature by using a thermistor contained in the printhead. The CPU senses this circuit every time a line is printed.

Whenever printing, the printhead temperature increases. If the head temperature reaches approximately 90 degrees - 129 degrees Celsius, a head overheat ALARM 1 is generated. When ALARM 1 is detected, bi-directional printing stops. Uni-directional printing begins.

If the printhead temperature continues to increase (130 degrees Celsius), ALARM 2 is generated. Printing stops until the head temperature decreases. When the head temperature drops below the ALARM 1 threshold, printing resumes.

Low DC Voltage Detection Circuit

The + 35 vdc drive voltage is monitored for a low voltage condition during each print operation. If the + 35 vdc drops, the negative terminal input voltage of the comparator (Q8) decreases, the comparator reverses state, and the DC LOW-P signal is switched ON.

When the signal DC LOW-P is active, printing is accomplished by using twelve of the twenty-four printwires in a dual-pass print.

2.1.09 Paper End Detection Circuit

PAPER END is detected by a photosensor. When the printer detects an out-of-paper condition, the PEN signal goes low, printing is stopped, and the ALARM LAMP is switched ON.

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2.1.10 Power Supply

The power supply consists of the power transformer, the filter board and the DC power supply circuit on the control board.

The AC input voltage is transformed into 8.6 VAC and 46 VAC by the power transformer. These AC voltages are converted to + 8 vdc, + 5 vdc and + 35 vdc levels by the DC power supply circuit on the control board. The + 5 vdc is a regulated voltage.

Filter Board

The filter board consists of the power switch, AC fuse and AC noise filter.

Power Transformer

If the internal temperature of the power transformer rises abnormally, the built-in temperature fuse will open to prevent any damage to other electrical components.

NOTE:

If the temperature fuse in the transformer opens, the transformer must be replaced.

Power Supply Circuit

Converts the AC Voltage input to + 8 vdc, + 5 vdc and + 35 vdc and supplies it to the control board. This circuit also regulates the + 5 vdc.

2.2 MECHANICAL OPERATION

2.2.01 Printhead Mechanism

The Microline 380 uses a highly efficient stored energy type printhead. Power is not consumed until the printwires are activated, thereby extending the printhead life to approximately 200 million characters.

The printhead uses 24 printwires (two columns of 12 wires each). Each wire is welded to an armature. Behind this armature is a spacer ring.

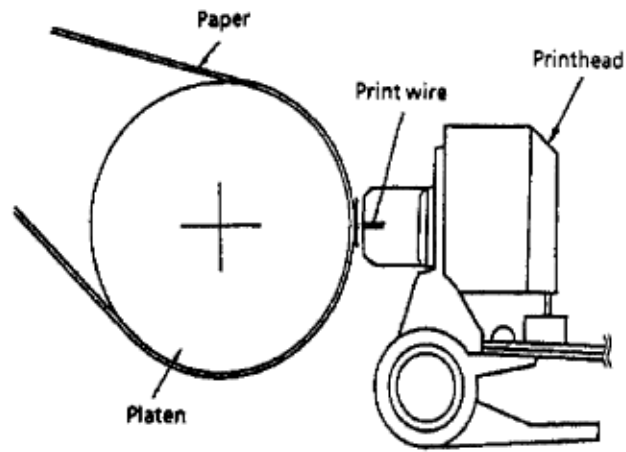
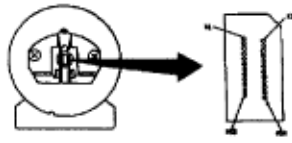
Each of the 24 printwire armatures have a permanent magnet behind them. The magnets attract the armatures, drawing the printwires into the wire guide, thus keeping the wires inside the printhead. A coil is wrapped around each of the permanent magnets.

When a dot is to be printed, current is passed through the appropriate coil. This creates a magnetic field which counters the magnetic field of the permanent magnet. The armature can then spring forward and the print wire (which is attached to the armature) strikes the ribbon and imprints a dot on the paper.

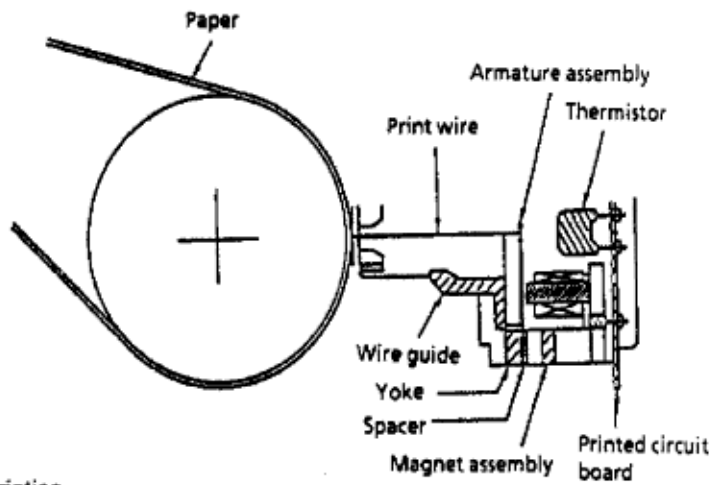
When current is removed from the coil, the magnetic field of the permanent magnet attracts the armature, causing the printwire to retract into the wire guide once again.

The printhead contains a built-in thermistor used to monitor the printhead temperature. The printhead is composed of the following parts.

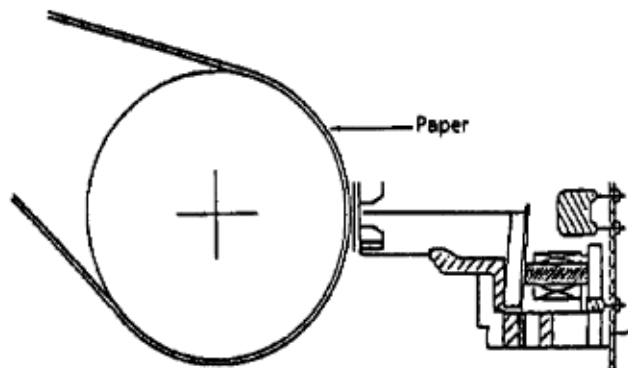
- Wire Guide
- Print Wires
- Armature Assembly
- Yoke
- Spring
- Spacer
- Magnet Assembly
- Thermistor
- Printed Circuit Board



(1) When printing



(2) When not printing



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2.2.02 Spacing

Spacing is performed when the main shaft (installed in parallel with the platen), and carriage (mounted on the space rack) are driven by the pulse motor.

Spacing involves the parts listed below.

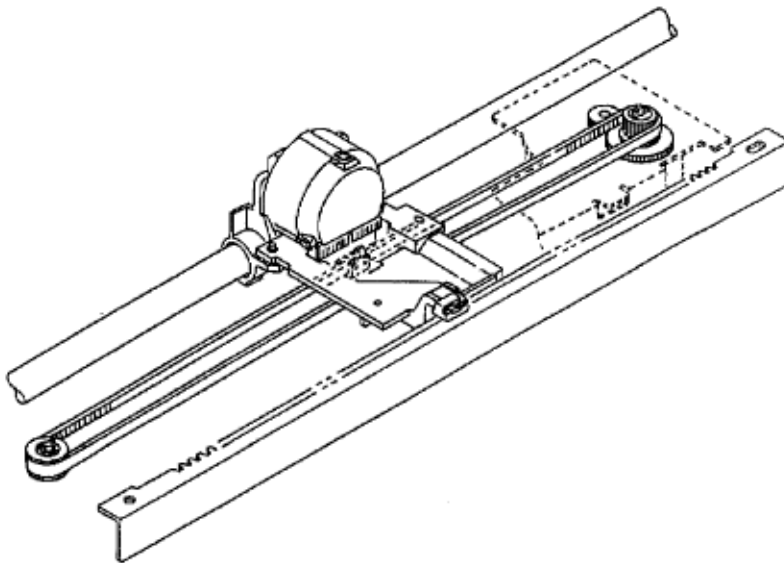
- Pulse Motor
- Drive Pulley
- Idle Pulley
- Carriage Shaft
- Carriage Frame
- Space Rack

Spacing Operation

The carriage containing the printhead moves parallel to the platen along the main carriage shaft and space rack. Power from the space motor is transferred via the mini-pitch belt, which is attached to the bottom of the carriage frame. When the pulse motor rotates clockwise (as viewed from above), the driving force is transmitted to the mini pitch belt through the drive pulley, and the carriage moves from left to right. The carriage is designed to move 0.8 inch when the pulse motor performs one rotation.

Head Gap Adjusting

The head gap adjusting mechanism adjusts the gap between the platen and printhead. This is accomplished by moving the adjusting lever on the left side of the printer mechanism. When the lever is moved, the carriage shaft rotates. Since the carriage shaft is attached to the printer mechanism with eccentric collars, as the carriage shaft rotates, the distance between the platen and carriage shaft changes.



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2.2.03 Ribbon Drive

The ribbon drive mechanism moves the ribbon in synchronization with the space motor operation.

The ribbon drive mechanism consists of the following items.

Ribbon Drive Gear assembly

Space Rack

Ribbon Cartridge

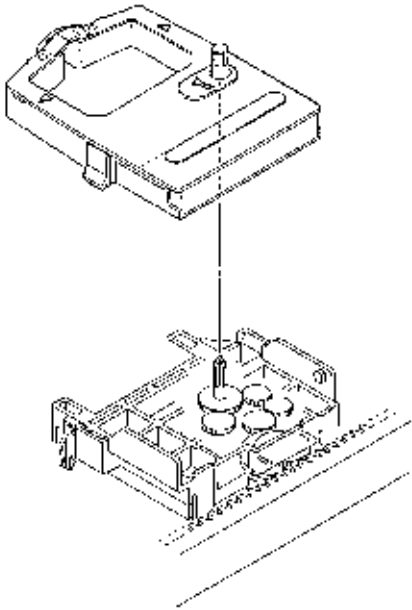
Ribbon Cartridge

An endless ribbon with a single direction feed is used. Ink is supplied from an ink tank, which is built into the ribbon cartridge.

Ribbon Feed Operation

The rotation of the space pulse motor is transmitted to the drive gear in the ribbon cartridge through the space rack and ribbon feed gear assembly, thereby feeding the ink ribbon.

The feed direction of the ribbon is maintained by switching the rotational direction of the gears in the ribbon drive assembly. This ensures uni-directional ribbon movement when bi-directional printing is used.



2.2.04 Paper Feed

Paper feeding is performed by turning the platen and the pin tractor. The tractor is driven by the line feed pulse motor.

The paper feed mechanism consists of the following items.

- Pulse motor with gears
- Idler Gear
- Change Spring
- Change Gear
- Platen
- Tractor Feed Unit
- Pressure Roller Assembly

Friction Feed

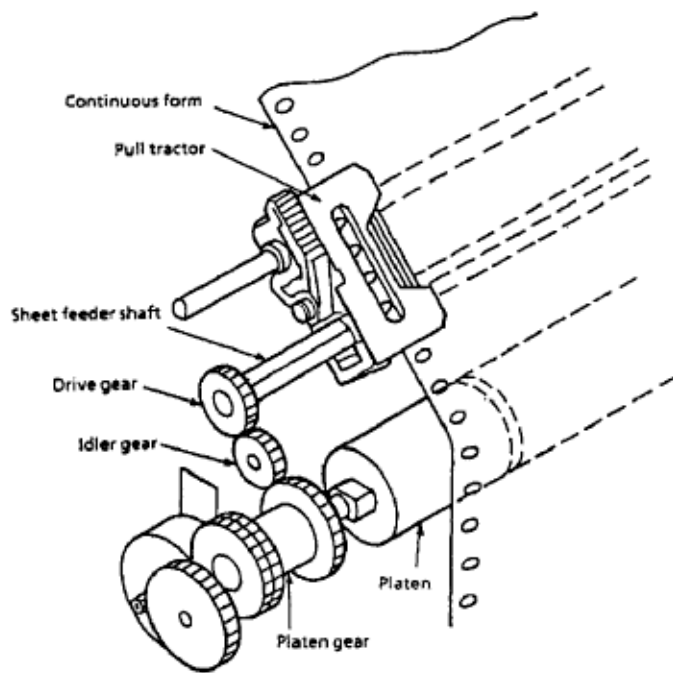
When the release lever is set to the FRICTION FEED position, the change gear is disengaged from the tractor gear. At the same time, the release lever applies pressure to push the pressure rollers against the platen, allowing paper to be fed.

Tractor Feed

When the release lever is set to the TRACTOR FEED position, the release lever allows the reset spring to push the change gear toward the tractor gear. At the same time, the release lever pushes the pressure rollers away from the platen, allowing paper to be fed by the tractors.

NOTE:

Drive power from the line feed motor is transferred from the platen to the idler gear and then to the change gear.



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2.2.05 Paper-End Detection

Continuous Sheet Paper-End

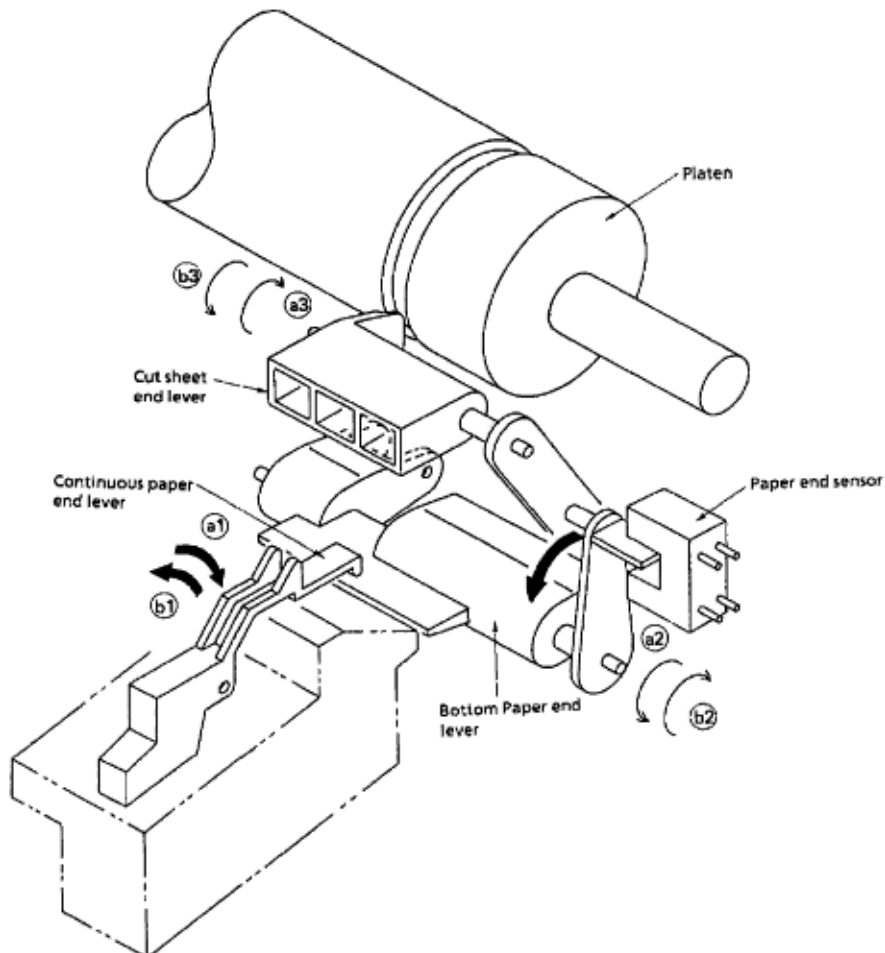
When continuous sheet paper is installed, the paper moves the continuous sheet paper-end lever to A1 and the sensor is switched ON. When out of continuous sheet paper, the paper-end lever moves to position B1 and the sensor is switched OFF indicating a paper-end condition.

Bottom Feed Paper-End

When paper is installed, it moves the bottom paper-end lever to position A2 and the sensor is switched ON. When a paper out condition exists, the bottom paper-end lever moves to position B2 and the sensor is switched OFF, indicating a paper-end condition.

Cut-Sheet Paper-End

When cut-sheet paper is installed, the paper moves the cut-sheet paper-end lever to position A3 and the sensor is ON. At the end of printing, the cut-sheet paper-end lever moves to position B3 and the sensor is switched OFF, indicating a paper-end condition.



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2.2.06 Semi-Automatic Sheet Feeder (SASF)

The Semi-Automatic Sheet Feeder (SASF) is used to automatically set the print start position when using cut-sheet or continuous sheet paper.

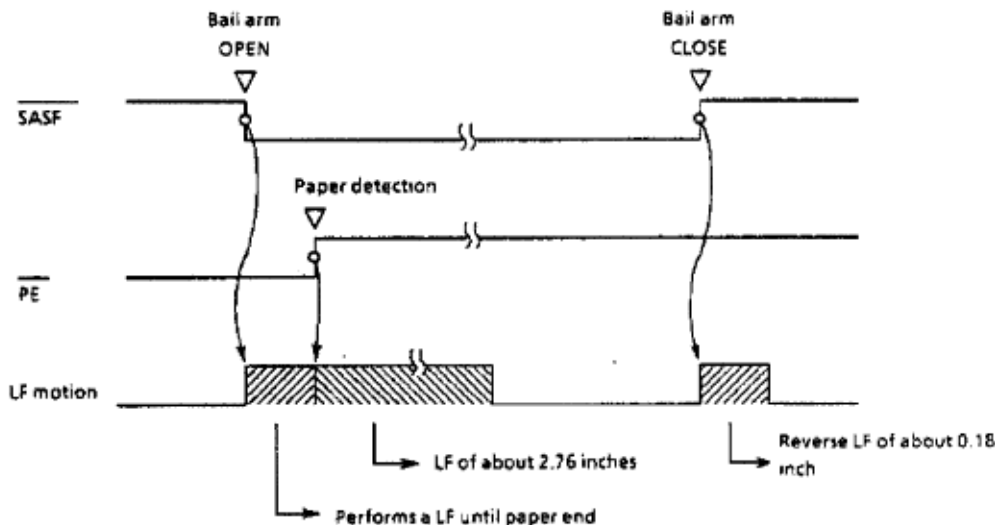
The procedure is as follows.

Cut-Sheet SASF

1. Push the paper release lever to the cut-sheet side (rear of printer).
 2. Insert the paper from behind the platen.
 3. Open the paper bail arm (pull toward the front of the printer). This activates the SASF switch.
 4. Line feed operation will feed the paper 2.76 inches.
- If the paper does not move, the SASF motion becomes invalid and is treated like an ordinary paper-end.
5. Once the paper bail arm is closed, a reverse line feed of about 0.18 inches is performed. This moves the paper to the print start position.

Continuous Sheet (Rear Feed) SASF

1. Push the paper release lever to the continuous sheet side (front of the printer).
 2. Insert the paper into the push tractor.
 3. Open the paper bail arm (pull toward the front of the printer). This activates the SASF switch.
 4. Line feed operation will feed the paper 3.6 inches.
- If the paper does not move within 2.4 inches of motion, the SASF motion becomes invalid and this is treated like an ordinary paper-end.
5. Once the paper bail arm is closed, a reverse line feed of about 0.18 inches is performed. This moves the paper to the print start position.



2.2.07 Paper Park

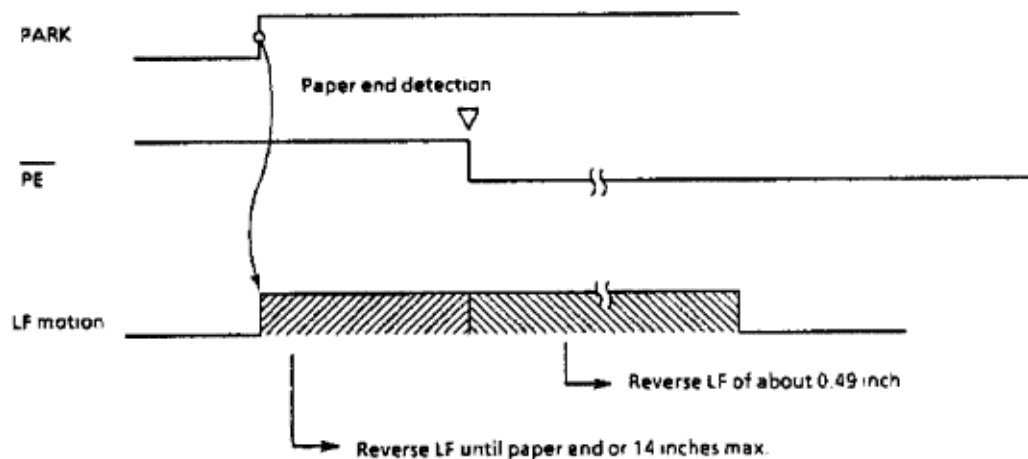
Paper park operates as follows.

1. Press PAPER PARK.
2. Reverse line feed retracts the paper until a PAPER-END condition exists

or

14 inches of paper have been fed.

3. When the PAPER-END condition exists, the printer retracts 0.49 inches of paper. The paper is still installed on the push tractor, but cut sheet paper may now be fed.



3.1 OVERVIEW

3.1.01 General Information

This section lists the parts replacement, adjustment, cleaning, lubrication, and shipping procedures. Disassembly should not be performed unless absolutely necessary. **NEVER** perform disassembly on a malfunctioning printer until you have followed the failure analysis procedures in Section Four of this Service Handbook.

Follow the procedures listed in *Adjustments and Service Settings*. Adjustments may be required when either consumable or parts are replaced. Failure to perform these procedures could result in unnecessary service calls.

Proper performance of maintenance and cleaning will help to achieve the best possible print quality from the printer.

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3.1.02 Maintenance Tools

The following tools are required to service the printer.

- #2 Phillips Screwdriver (with magnetic tip)
- Straight-slot Screwdriver
- Needle Nose Pliers (4 Inch)
- Awl or large, opened paper clip
- Wire Cutters
- Digital Multimeter
- Feeler Gauge (capable of measuring .014 inches)
- Shop Vacuum
- Clean, soft, and lint-free Cloth
- All-Purpose Cleaner
- Contact Kleen (Okidata P/N 51802301)
- Platen Cleaner
- Machine Grease
- Machine Oil

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3.1.03 Maintenance Precautions

1. Do not disassemble the unit if it is operating normally.
2. Before starting disassembly and assembly, always turn the AC power switch OFF and pull out the AC plug.
3. Detach the interface cable, if installed.
4. Do not remove parts unnecessarily. Try to keep disassembly to a minimum.
5. Use the recommended maintenance tools.
6. When disassembling, follow the listed sequence. Failure to follow the correct sequence may result in damaged parts.
7. Since screws, collars and other small parts are easily lost, they should be temporarily attached to the original positions.
8. When handling circuit boards use extreme care. Integrated circuits (microprocessors, ROM, and RAM) can be destroyed by static electricity.
9. Do not place printed circuit boards directly on conductive surfaces.
10. Follow the recommended procedures when replacing assemblies and units.
11. Perform the printhead gap adjustment procedure when any of the following occur. [Refer to Section 3.3 of this Service Handbook.](#)

Print Quality is darker on one side of the document.

Parts are replaced.

[Printhead \(3.2.02\)](#)

[Space Rack \(3.2.04\)](#)

[Carriage Frame \(3.2.13\)](#)

12. Perform the space belt tension adjustment procedure when the following parts are installed. [Refer to Section 3.3 of this Service Handbook.](#)

[Space Belt \(3.2.06\)](#)

[Space Motor Assembly \(3.2.22\)](#)

3.2 DISASSEMBLY/ASSEMBLY PROCEDURES

General Information

This section contains the printer disassembly procedures. Only the removal procedures are explained here. Reverse the procedure for the installation.

At the bottom of each procedure is a listing of the parts covered in that procedure. The Okidata part number, item description, comment (RSPL, Option, Consumable) and cross-reference to Appendix B is provided for each part. Items included in the Recommended Spare Parts List are indicated by the acronym RSPL. N/A will appear where a part number is not available.

Part Item Comment Appendix B Number Description Reference

This Service Handbook lists the disassembly procedures for major components of the unit. Okidata DOES NOT recommend disassembling a unit which is operating normally. If you decide to perform disassembly during this training, Okidata recommends that you perform *only* the disassembly procedures for RSPL items. All other procedures are provided to assist you in identifying parts. It is not likely that you will perform these procedures while servicing the unit.

Be sure to read all notes, cautions, and warnings, as they contain important information regarding disassembly / assembly.

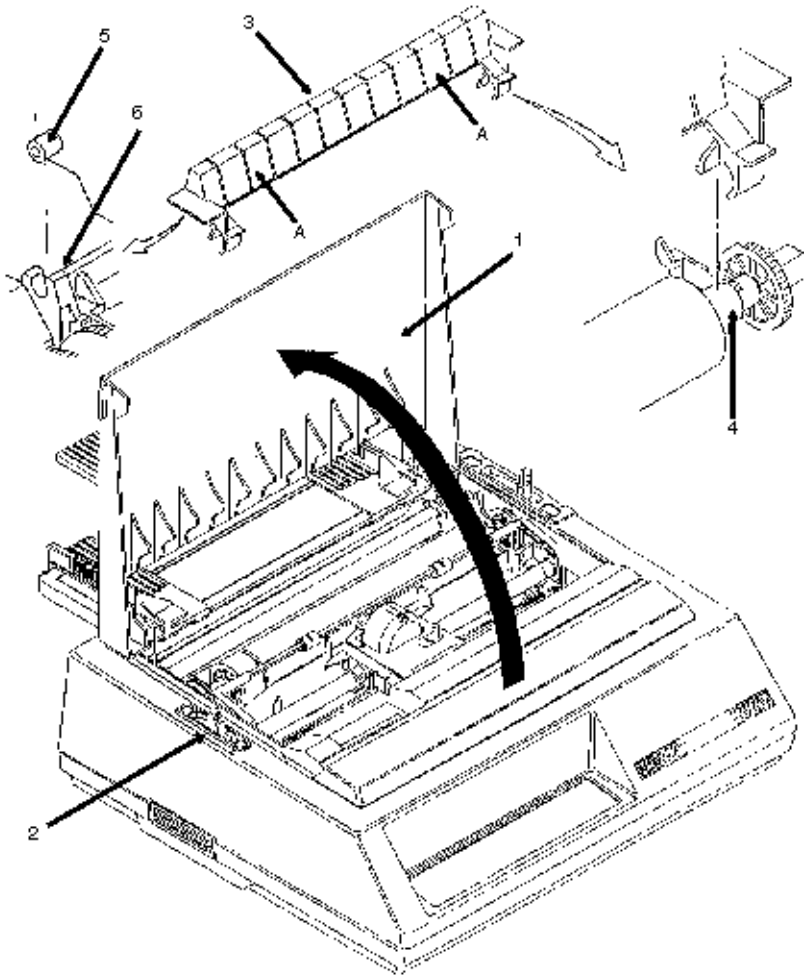
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3.2.01 Paper Separator

1. Raise the access cover (1).
2. Move the bail lever (2) toward the front of the printer.
3. Push the paper separator (3) at location A and release it from the platen shaft (4).
4. Lift the paper separator to detach the guide pins (5) from the printer mechanism (6).

P/N N/A AC Cable B.2.03 

P/N 53511401 Separator: Paper RSPL B.2.03 




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3.2.02 Printhead

1. Move the bail lever (1) to back of the printer.
2. Remove the ribbon cartridge (2).
3. Grasp the tab of the head clamp (3), lift up and swing it 90° in the direction of Arrow A to unlock the printhead (4).
4. Lift the printhead from the carriage frame (5).

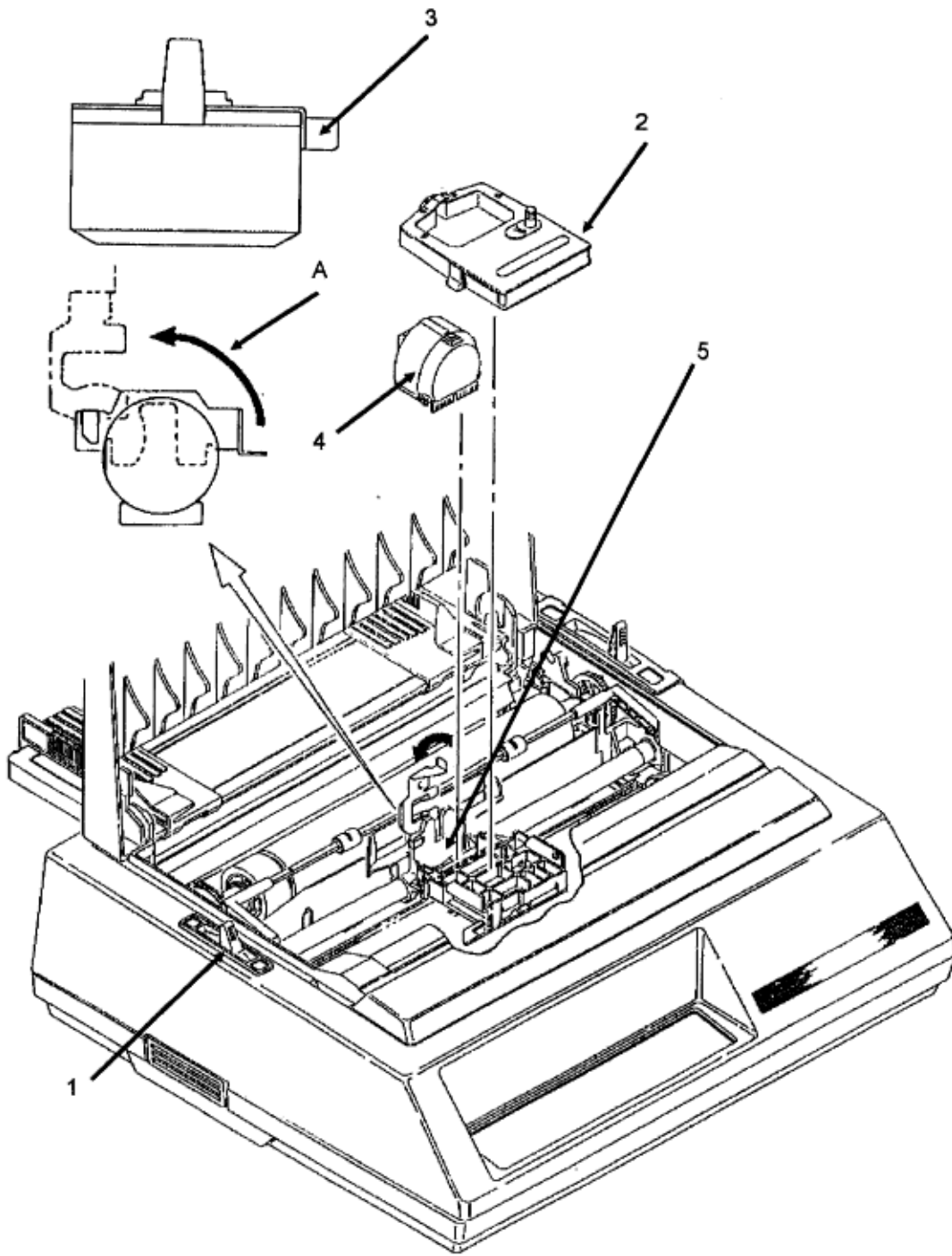
NOTE:

Perform the printhead gap adjustment procedure after installing this part.

[Refer to Section 3.3 of this Service Handbook](#) 

[P/N 52104001 Ribbon: Cartridge Consumable B.2.08](#) 

[P/N 50079301 Printhead RSPL B.2.03](#) 



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3.2.03 Upper Cover Assembly

1. Perform this procedure: 3.2.01.

2. Remove the platen knob (1).
3. Raise the sheet separator (2), and pull it out diagonally in the direction of Arrow A.
4. Do the following to avoid interference when removing the upper cover assembly.
Close the covers of the tractor assemblies (3).
Slide the assemblies to the center of the printer unit.
5. Remove the two screws (4). The screws are at the back of printer, on the bottom.
6. Lift the rear part of the upper cover (5), pull it forward, and remove it.
7. Raise the access cover (6) 90° and remove it from the upper cover.

P/N 50071101 Separator: Sheet (Assembly) RSPL B.2.02 

P/N 50071201 Separator: Sheet B.2.02 

P/N 53510201 Support: Sheet B.2.02 

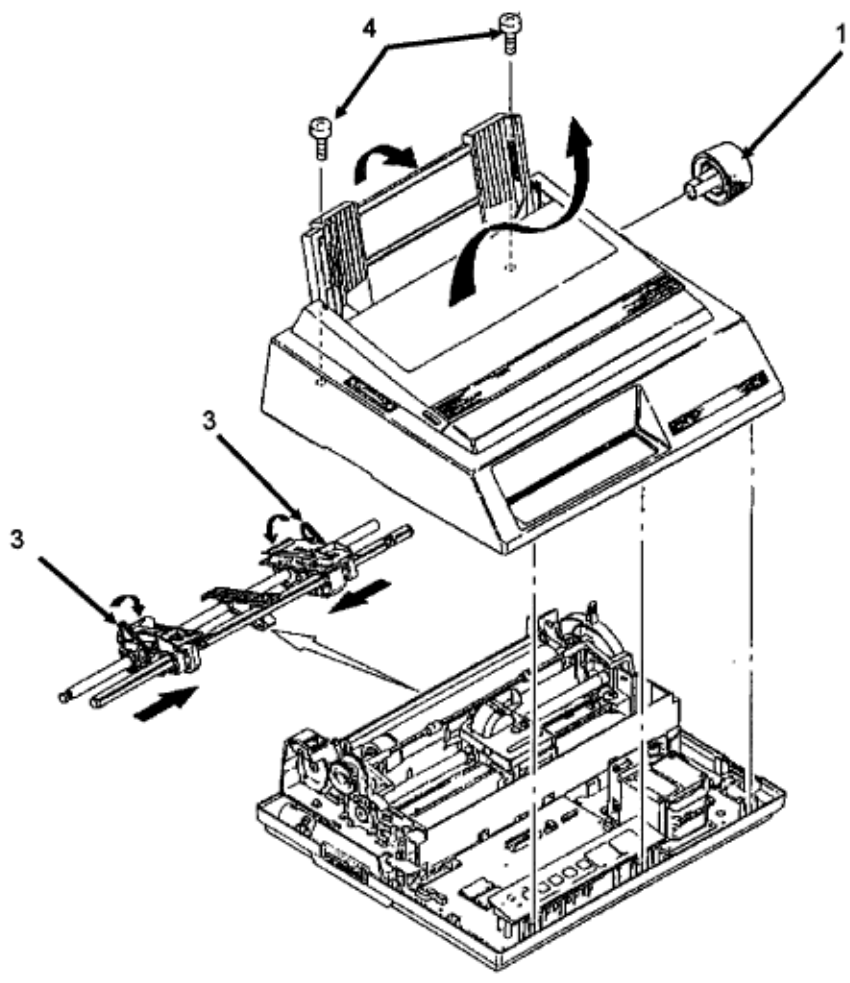
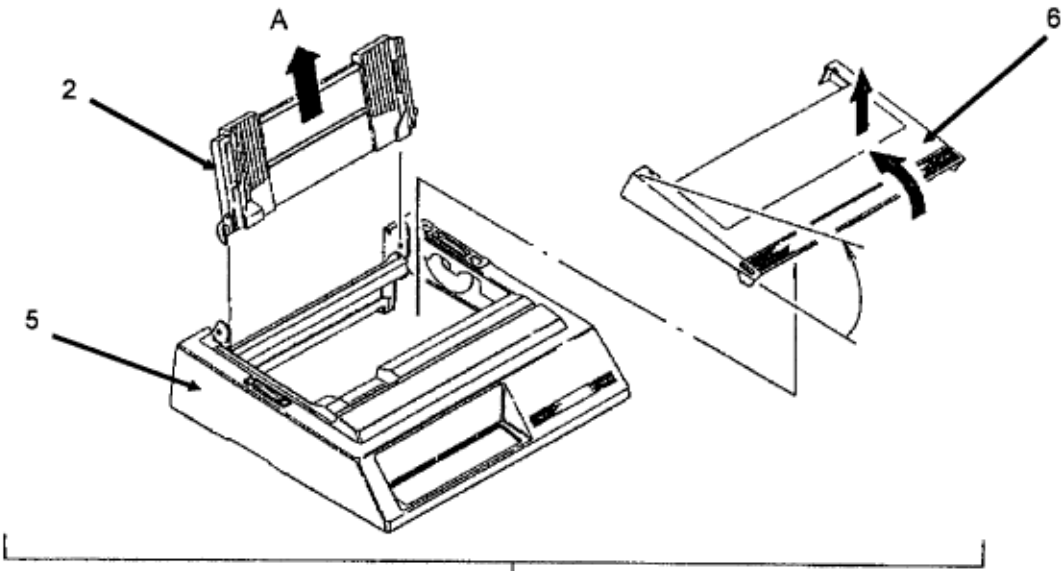
P/N 51901101 Knob: Platen RSPL B.2.03 

P/N 53510401 Guide: Sheet (L) B.2.02 

P/N 53510301 Guide: Sheet (R) B.2.02 

P/N 53510101 Cover: Access RSPL B.2.02 

P/N 53510001 Cover: Middle RSPL B.2.02 



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3.2.04 Space Rack

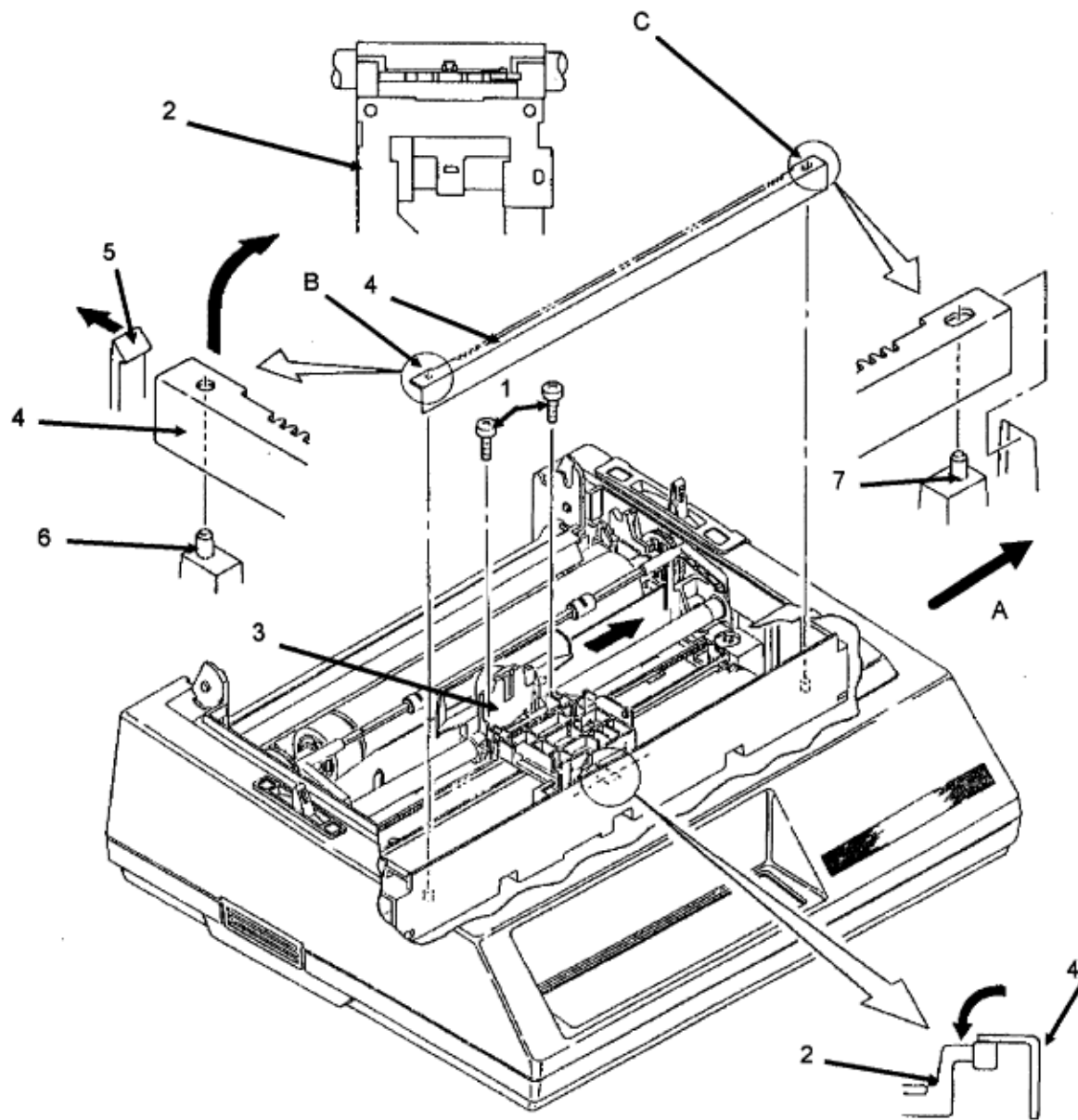
1. Perform this procedure: 3.2.02.
2. Remove the two screws (1) on the carriage plate (2). Do not remove the ribbon feed gear assembly.
3. Slide the carriage frame (3) in the direction of Arrow A, leaving the carriage plate in place.
4. Set the carriage plate under the space rack (4).
5. Release the claw (5).
6. Remove the B side of the space rack from the guide pin (6), and lift the space rack.
7. Remove the C side of the space rack from guide pin (7), and remove the space rack.

NOTE:

Perform the printhead gap adjustment procedure after installing this part.

[Refer to Section 3.3 of this Service Handbook.](#) 

[P/N 53510801 Rack: Space RSPL B.2.04](#) 

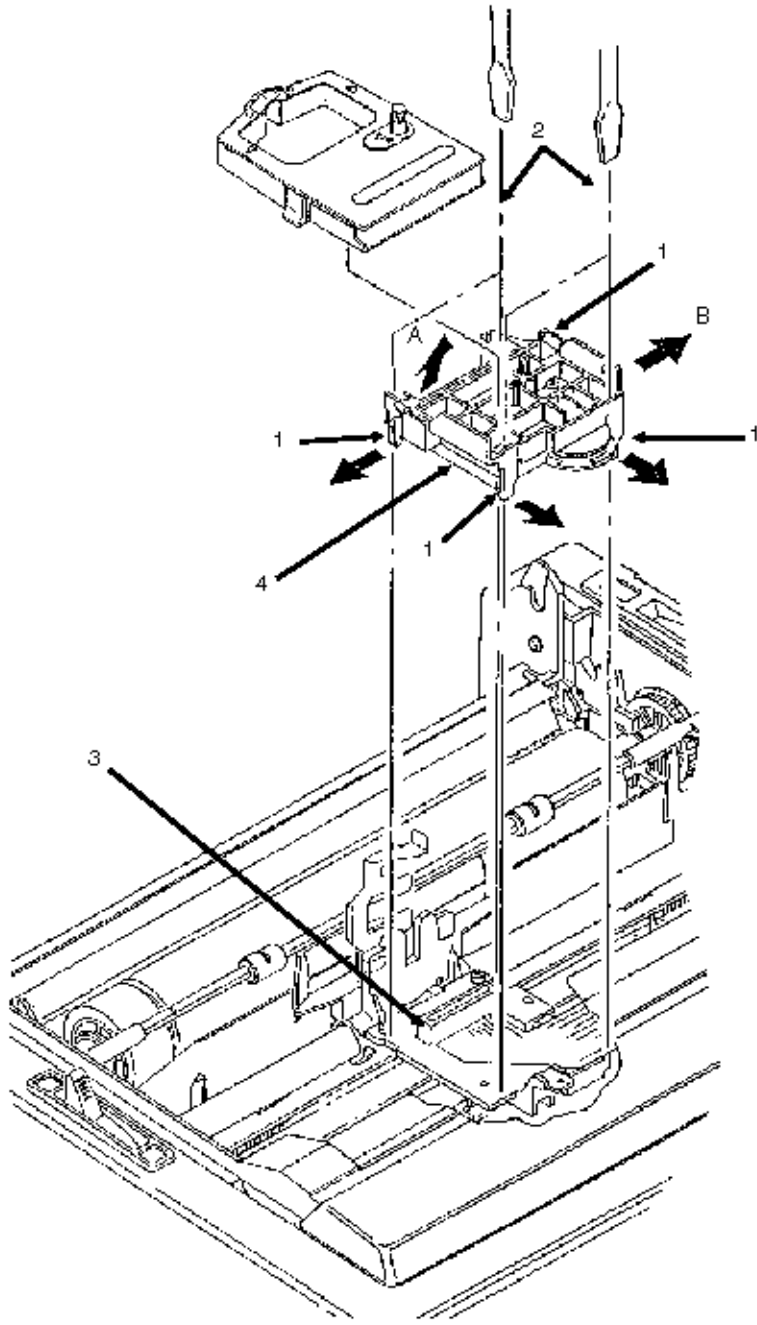


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3.2.05 Ribbon Feed Gear Assembly**1. Perform this procedure: 3.2.02.** 

2. Release the four claws (1).
3. Insert a screwdriver into the grooves (2) and pry the claws away from the carriage plate (3).
4. Lift the ribbon feed gear assembly (4) in the direction of arrow A. Slide it in the direction of Arrow B, and remove it.

P/N 50071501 Gear: Ribbon Feed (Assembly) RSPL B.2.06 



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3.2.06 Mini-Pitch (Space) Belt

1. Perform these procedures: [3.2.02](#) and [3.2.05](#).

2. Use pliers to remove the belt tension spring (1).
3. Loosen the screw (2).
4. Remove the belt (3) from the idle pulley (4).
5. Remove the head connector assembly (5) from the carriage plate (6).
6. Remove the carriage plate.
7. Detach the belt from the space motor assembly gear (7).
8. Remove the belt clamp (8) mounted to bottom of the carriage plate.
9. Use a screwdriver to push the claw of the belt clamp in the direction of arrow A. Then, remove the belt clamp and belt by lowering the claw in the direction of arrow B.

NOTE:

Perform the space belt tension adjustment procedure after installing this part.

Refer to Section 3.3 of this Service Handbook.

P/N 50904801 Spring: Coil RSPL B.2.04

P/N 51304001 Belt: Mini-Pitch (Space Belt) RSPL B.2.06

P/N N/A Screw: Self Tapping B.2.04

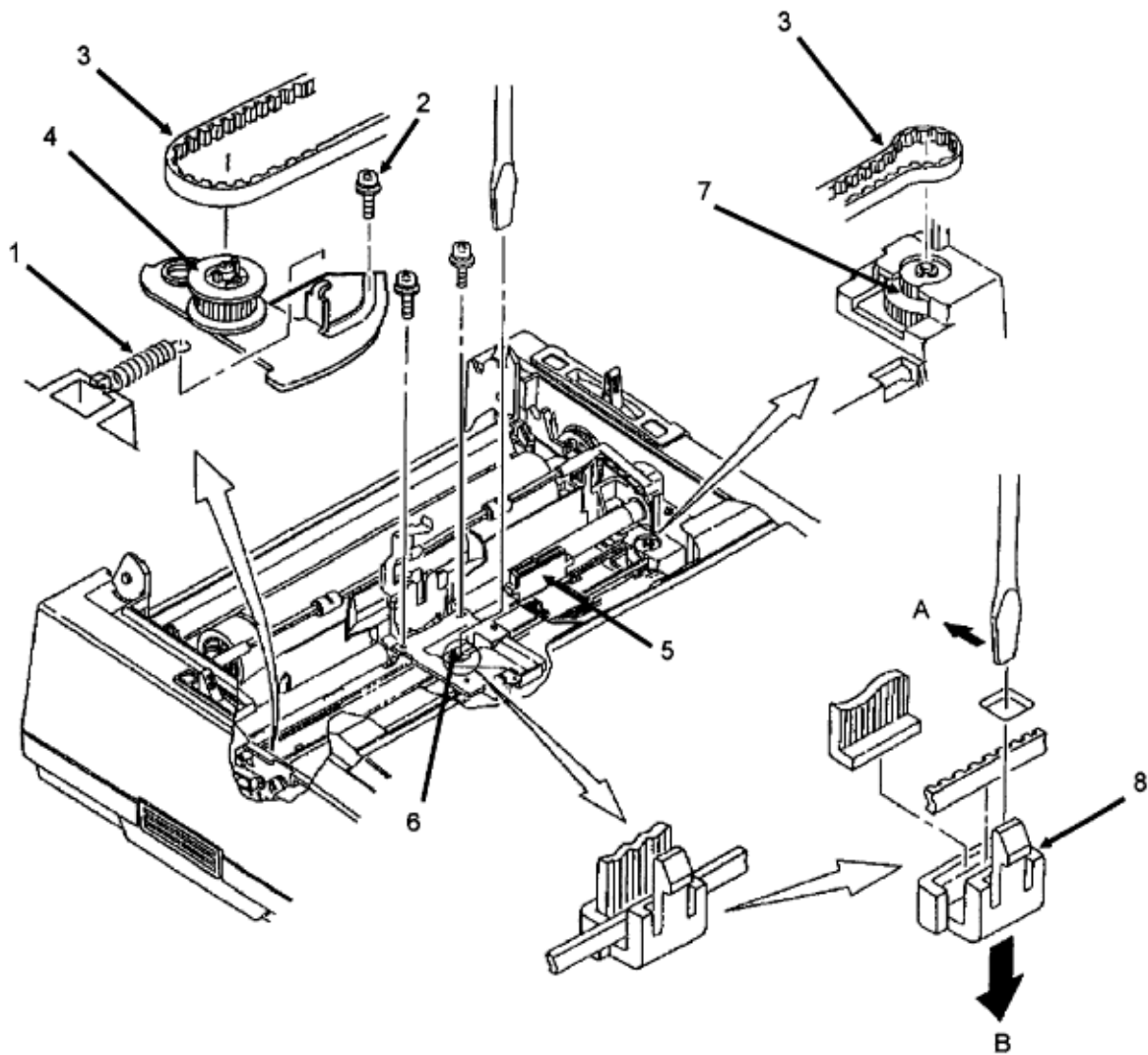
P/N 51004001 Slider RSPL B.2.06

P/N 51219201 Pulley: Idle RSPL B.2.04

P/N 53330401 Plate: Carriage RSPL B.2.06

P/N 50704701 Clamp: Belt RSPL B.2.06

P/N 53330301 Bracket: Idle Pulley RSPL B.2.04



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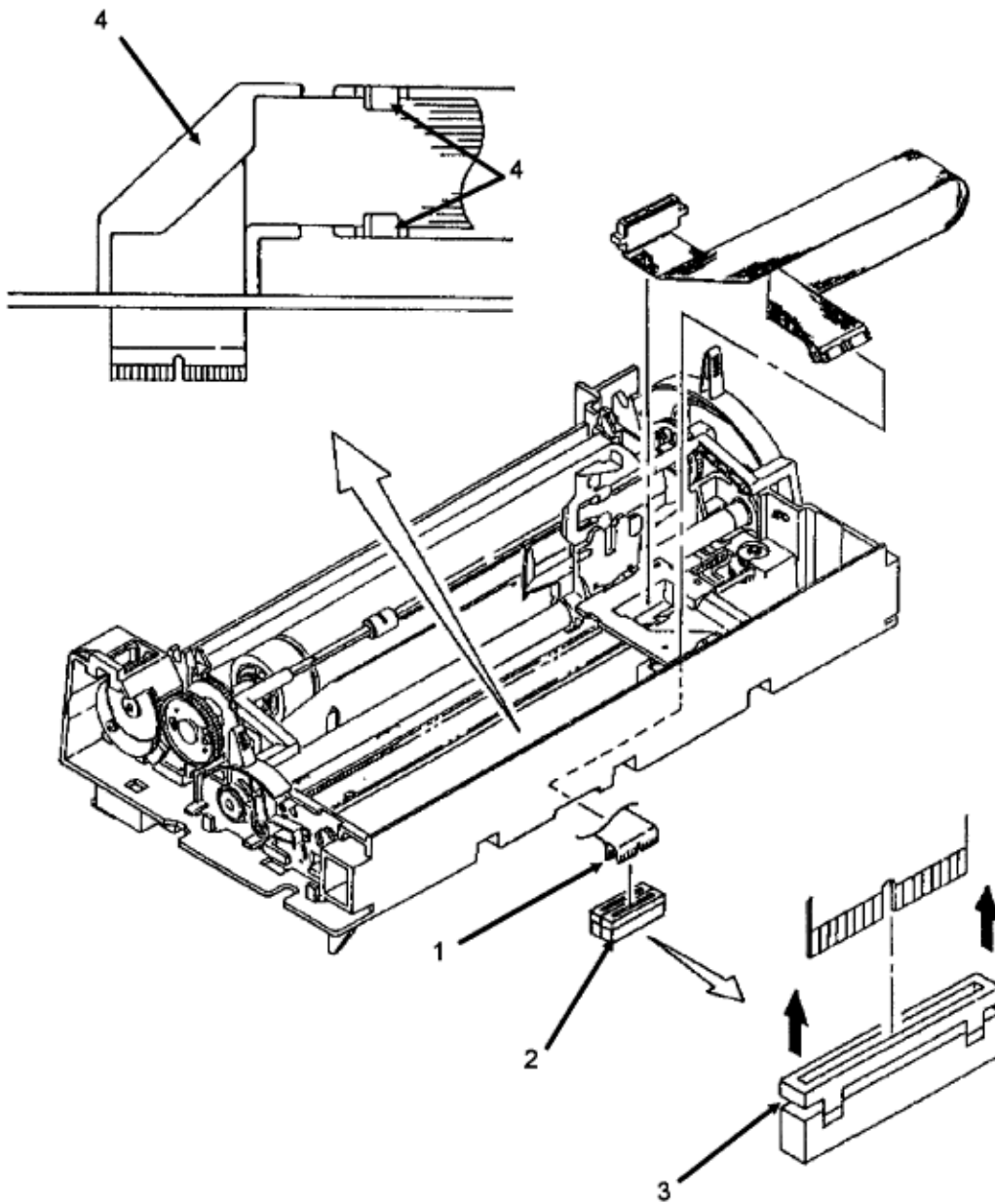
3.2.07 Head Connector Assembly

1. Perform these procedures: [3.2.01](#), [3.2.02](#), [3.2.03](#), [3.2.05](#), and [3.2.06](#).

2. Remove the two head cables (1) from the connectors (2) on the control board. When cable clamp (3) is lifted, the head cables can be removed.

3. Pull the head cables under the cable guides (4), and remove the head cables.

[P/N 56725301 Connector: Head \(Assembly\) RSPL B.2.06 Head Cable](#)



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3.2.08 Main Control Board (UMMB)

1. Perform these procedures: 3.2.01  and 3.2.03 .

2. Remove the five connectors (1) connected to the control board (2).

3. Remove the five screws (3).

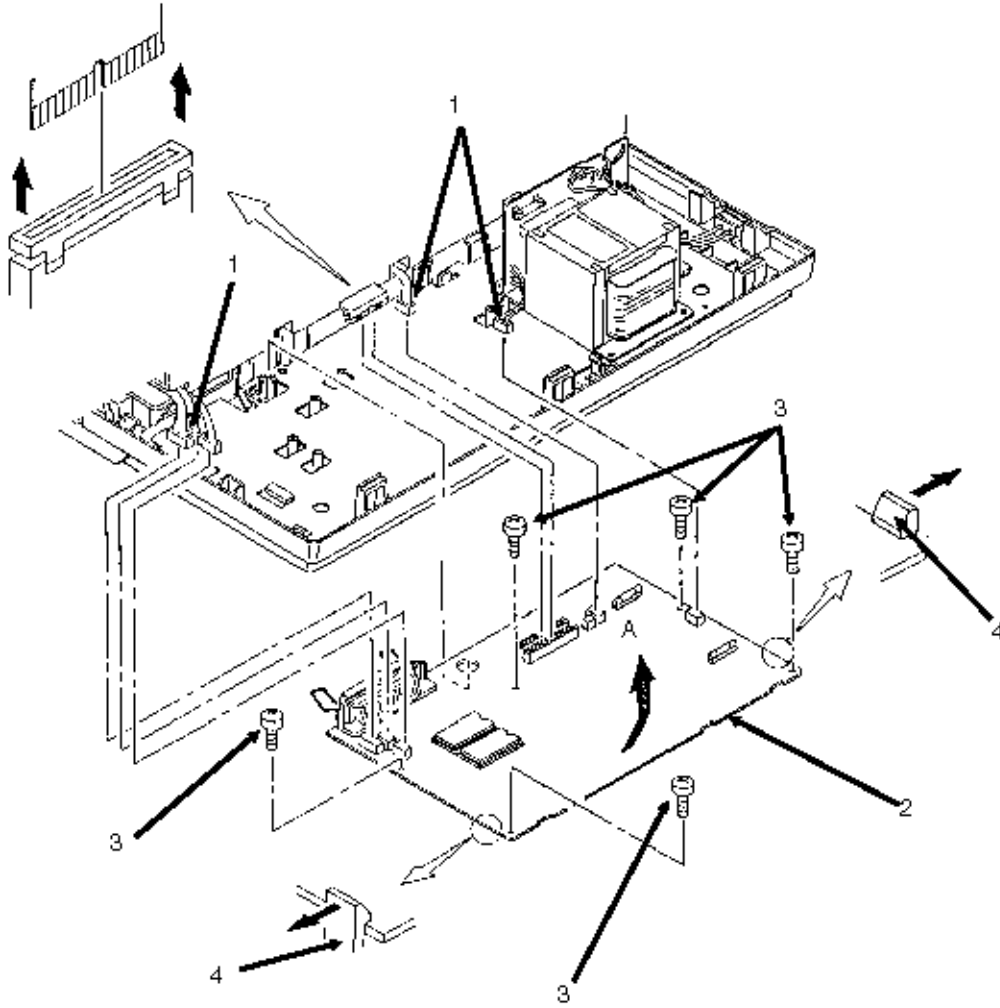
4. Release the two claws (4), and move the control board in the direction of arrow A to remove.

P/N 55047801 PCB: UMMB (Main Control) RSPL B.2.03  w/o ROM

P/N 55938501 IC: EEPROM BR93CS46-Z-NW RSPL B.2.03 

P/N 56304201 Fuse: 125V 1.6A RSPL B.2.03 

P/N 56304301 Fuse: 125V 2.5A RSPL B.2.03 



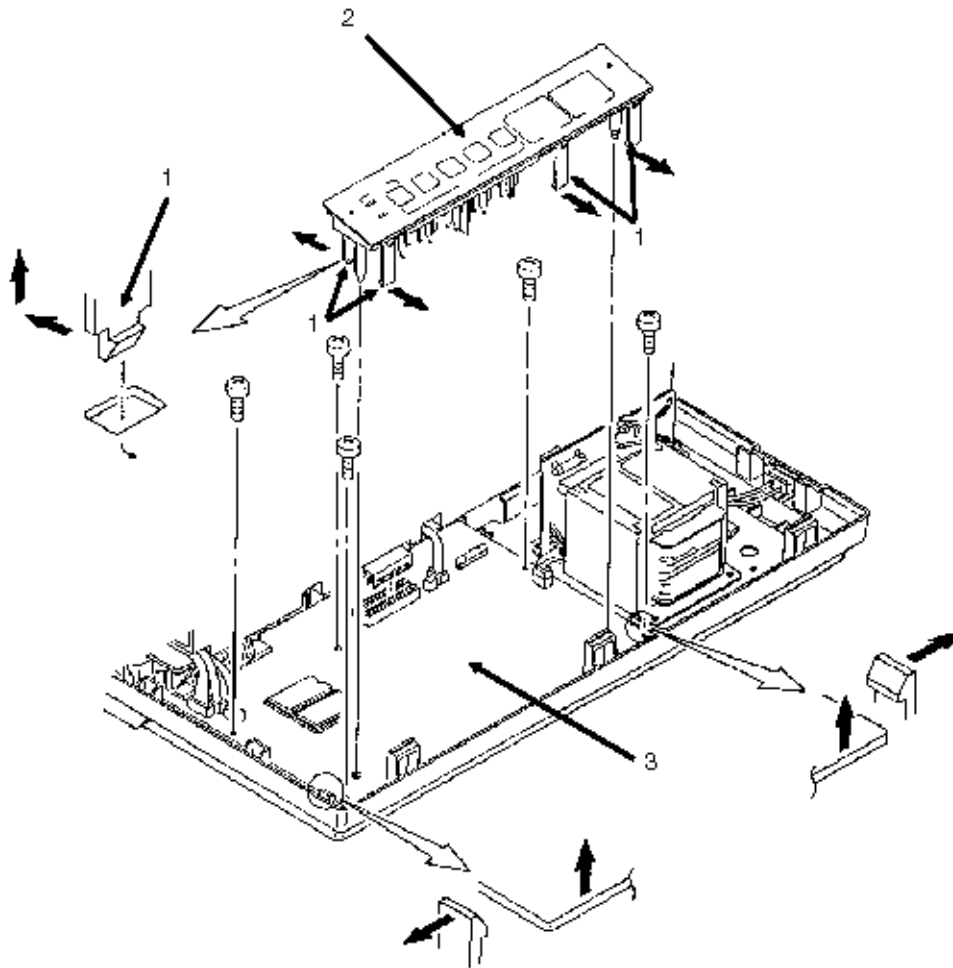
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3.2.09 Operation Panel

1. Perform these procedures: [3.2.01](#) and [3.2.03](#).

2. Use a screwdriver to release the six claws (1) on the operation panel (2) and remove the operation panel from the control board (3).

[P/N 53524301 Sheet: Operation Panel RSPL B.2.03](#)



3.2.10 Line Feed Motor

1. Perform these procedures: [3.2.01](#) and [3.2.02](#).

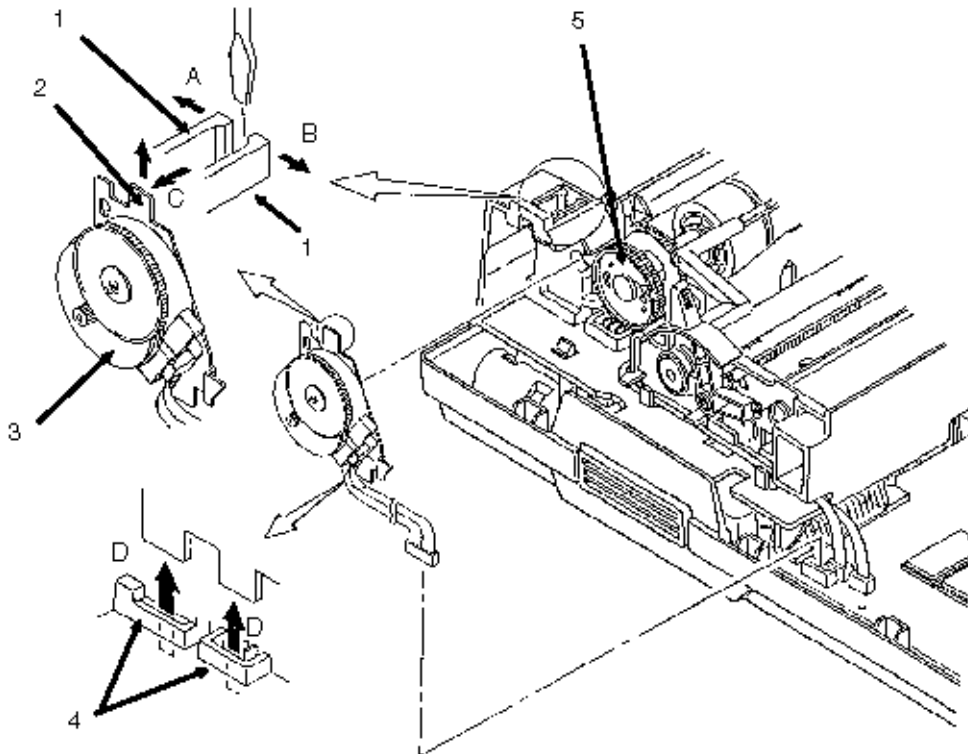
2. Use a screwdriver to open the lock levers (1) in the directions of arrows A and B, and push the bracket (2) of the line feed motor (3) in the direction of arrow C.

3. Pull the line feed motor out of the guide holes (4), in the direction of arrow D.

NOTE:

After installation, check that the platen gear (5) engages firmly and rotates smoothly.

P/N 56507801 Motor: Line Feed RSPL B.2.04

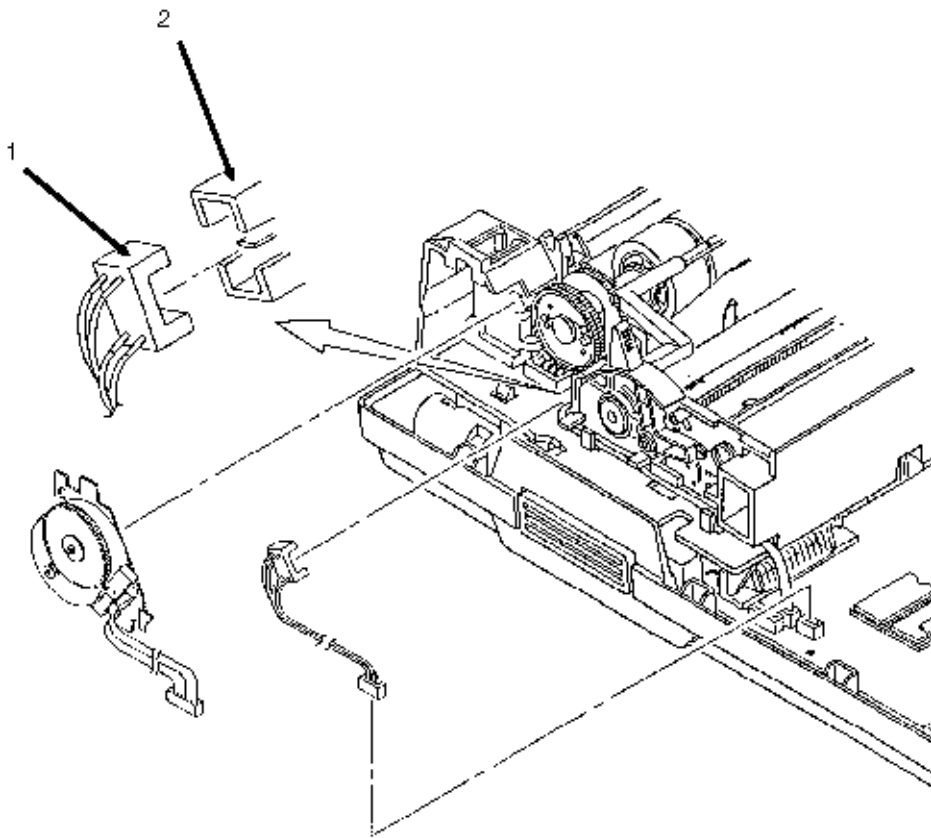


3.2.11 Photosensor Assembly (Paper End)

1. Perform these procedures: [3.2.01](#), [3.2.02](#) and [3.2.10](#).

2. Pull the paper end sensor (1) from the sensor guide (2).

[P/N 56106901 Photosensor: \(Assembly\) RSPL B.2.04 Paper End](#)



3.2.12 Bail Arms

1. Perform these procedures: [3.2.01](#), [3.2.02](#), [3.2.10](#), and [3.2.11](#).

2. Use pliers to remove the left bail arm spring (1).
3. Push claw (2) downward, pull it out of guide hole (3) of main frame and remove the left bail arm (4).
4. Remove the left bail arm from the bail bar (5).
5. Use pliers to remove the right bail arm spring.
6. Push claw downward, pull it out of guide hole of main frame and remove the right bail arm.
7. Remove the right bail arm from the bail bar.

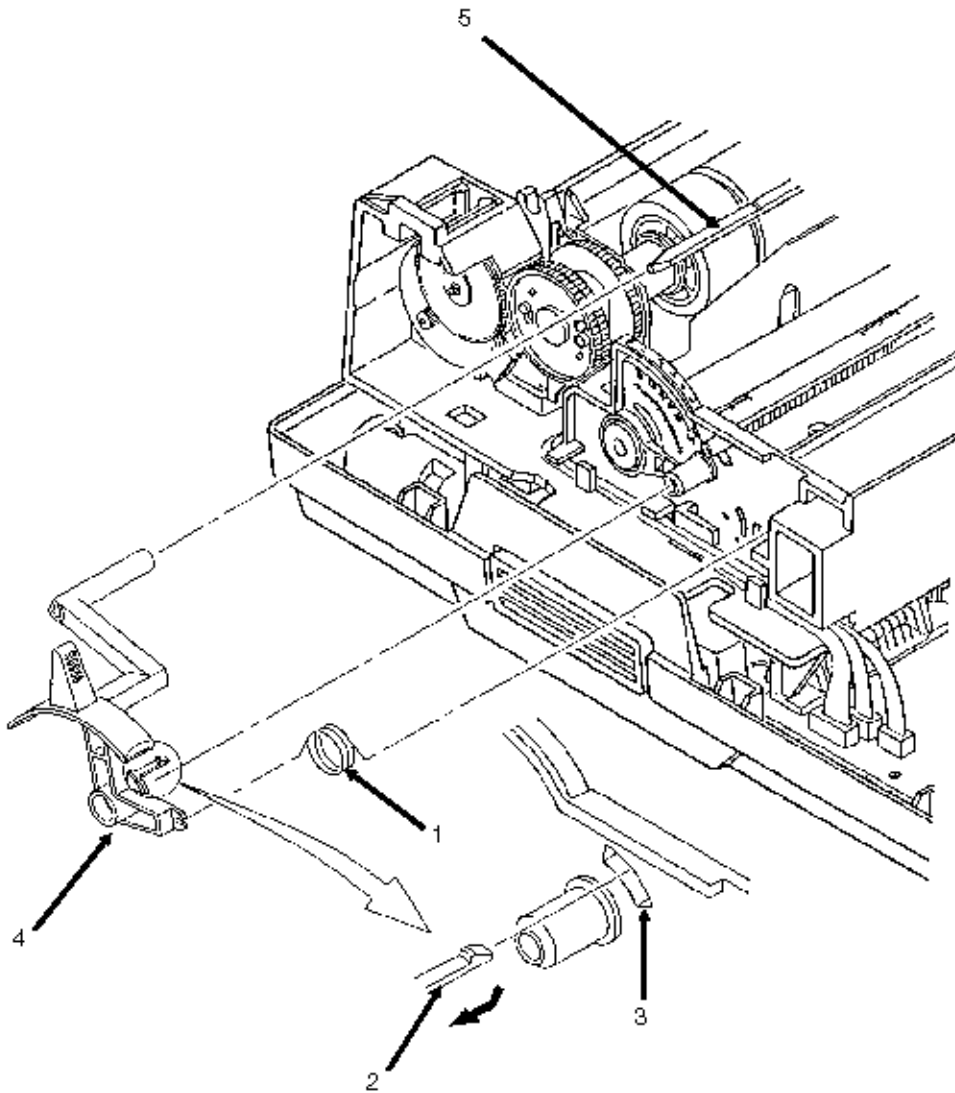
[P/N 50911801 Spring: Bail Arm \(L\) RSPL B.2.04](#)

[P/N 53511001 Bail Arm \(L\) RSPL B.2.04](#)

[P/N 50911701 Spring: Bail Arm \(R\) RSPL B.2.04](#)

[P/N 53511101 Bail Arm \(R\) RSPL B.2.04](#)

[P/N 51110501 Shaft: Indicator \(Assembly\) RSPL B.2.04 Bail Bar](#)



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3.2.13 Carriage Frame

1. Perform these procedures: [3.2.01](#), [3.2.02](#), and [3.2.03](#).

2. Open the supporting point A, and remove the head clamp (1).

3. Insert a screwdriver into the groove of carriage frame (2), and remove ribbon protector (3).

4. Turn the white left adjust bushing (4) to the lower end, and remove it.

5. Turn the black right adjust bushing (5) to the lower end, and remove it.

6. Turn the blue adjusting lever (6) to the lower end.

7. Slide the carriage shaft (7) to the right.

8. Remove the shaft and the adjusting lever.

9. Pull the carriage shaft in the direction of arrow B, and remove it from the carriage frame (8). Be careful not to lose the eccentric collar (9). When installing the eccentric collar, place notched section (10) toward the carriage shaft.

NOTE:

Perform the printhead gap adjustment procedure after installing this part.

Refer to Section 3.3 of this Service Handbook.

[P/N 50702901 Clamp: Head RSPL B.2.06](#)

[P/N 53056201 Protector: Ribbon RSPL B.2.06](#)

[P/N 53330201 Frame: Carriage RSPL B.2.06](#)

[P/N 51606501 Bushing: Adjust \(L\) RSPL B.2.04](#)

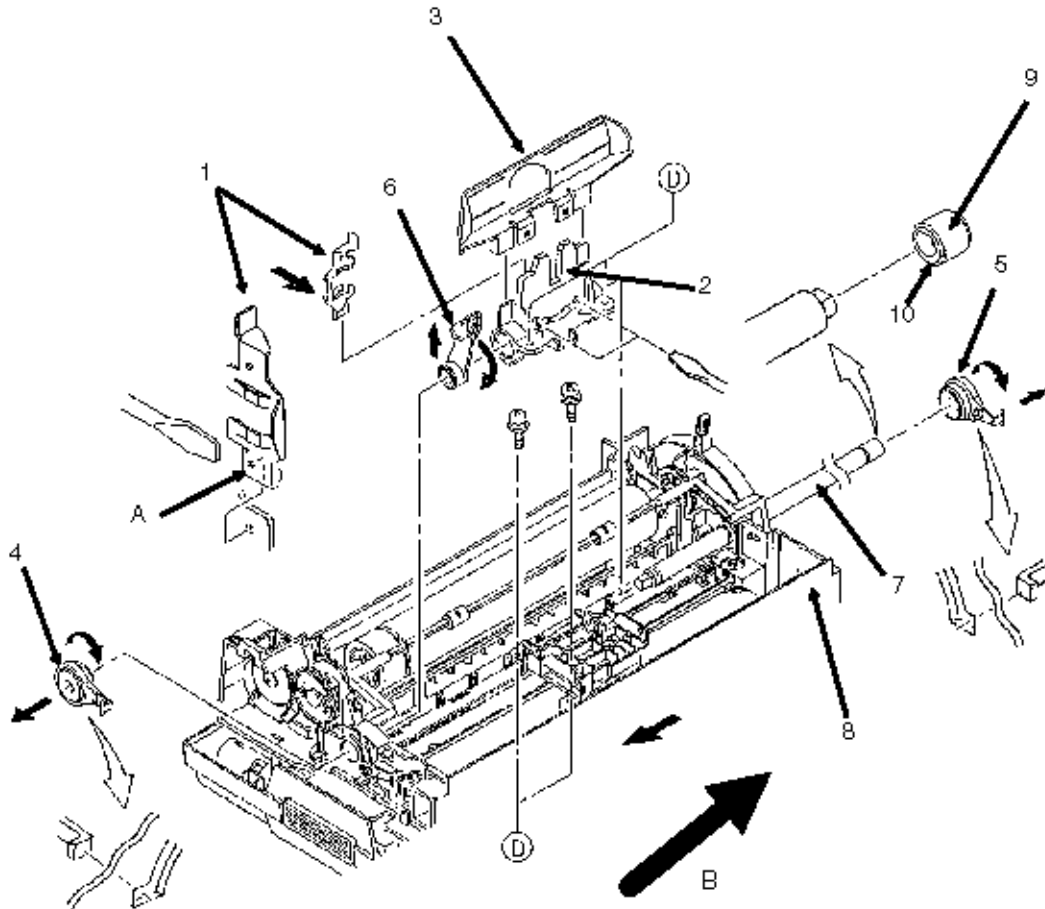
[P/N 51606601 Bushing: Adjust \(R\) RSPL B.2.04](#)

[P/N 53510701 Lever: Adjust RSPL B.2.04](#)

[P/N 51110401 Shaft: Carriage RSPL B.2.04](#)

[P/N 50704601 Collar: Eccentric RSPL B.2.04](#)

[P/N N/A Code: Earth B.2.04](#)



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3.2.14 Platen Assembly

1. Perform these procedures: [3.2.01](#)  and [3.2.03](#) .

2. Pull lock levers (1) in the direction of arrow A, and raising them at an angle of 90°. This releases the platen assembly (2) from the main frame (3).

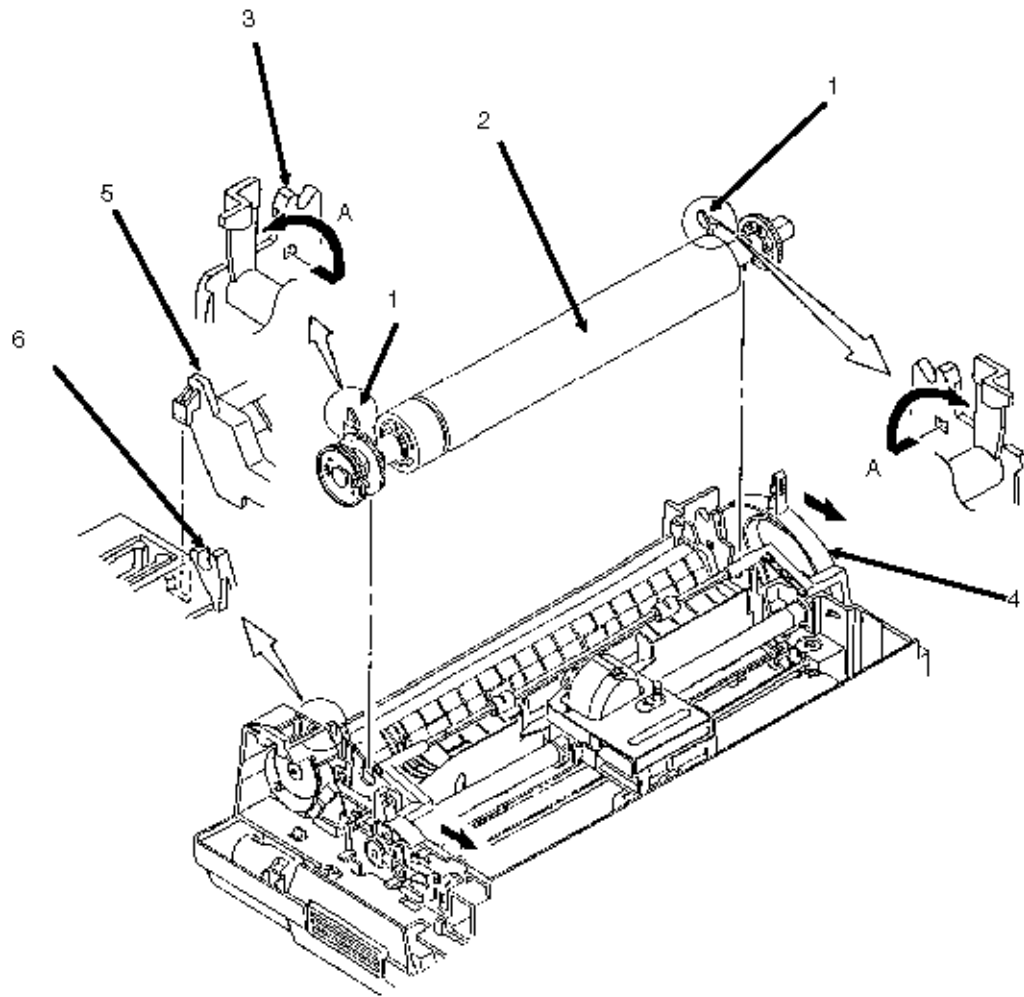
3. Lift the A side of the platen assembly until the B side clears the release lever (4).

NOTES:

After installation, check that the platen gear engages firmly with the line feed motor gear and that the platen rotates smoothly.

Set the release lever to OPEN (front) and check that the groove (5) of the paper chute firmly engages with the groove (6) of the main frame. Then, lock the platen assembly.

[P/N 50061305 Platen: \(Assembly\) RSPL B.2.04](#) 



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3.2.15 Pressure Roller Assembly

1. Perform these procedures: 3.2.01 , 3.2.03  and 3.2.14 .

2. Remove the paper chute (1). Be careful not to damage the grounding strap.
3. Open the claw (2), and remove the paper release lever (3).
4. Remove the change gear (4) and the spring (5).
5. Remove the idle gear (6).
6. Remove the boss (7) from the guide hole (8) of the main frame (9), and remove the release link (10).
7. Pull part A of the pressure roller assembly shaft (11) out of the main frame, in the direction of arrow B.
8. Pull the C part of the pressure roller assembly shaft out of the main frame in the direction of arrow D.
9. Remove the shaft.

NOTES:

Installation

Position the tab (12) of the paper chute firmly with the groove (13) of the main frame.

Engage the cut-sheet paper end lever (14), attached to bottom of paper chute, to the bottom paper end lever (15) under the main frame, and install the paper chute.

The Kit: Idler/Change Gear (ML300) includes the change and idler gears. Order this kit when replacing these parts.

P/N 50071701 Chute: Paper (Assembly) RSPL B.2.05 

P/N 53511201 Lever: Release RSPL B.2.05 

P/N 51219101 Gear: Change RSPL B.2.05 

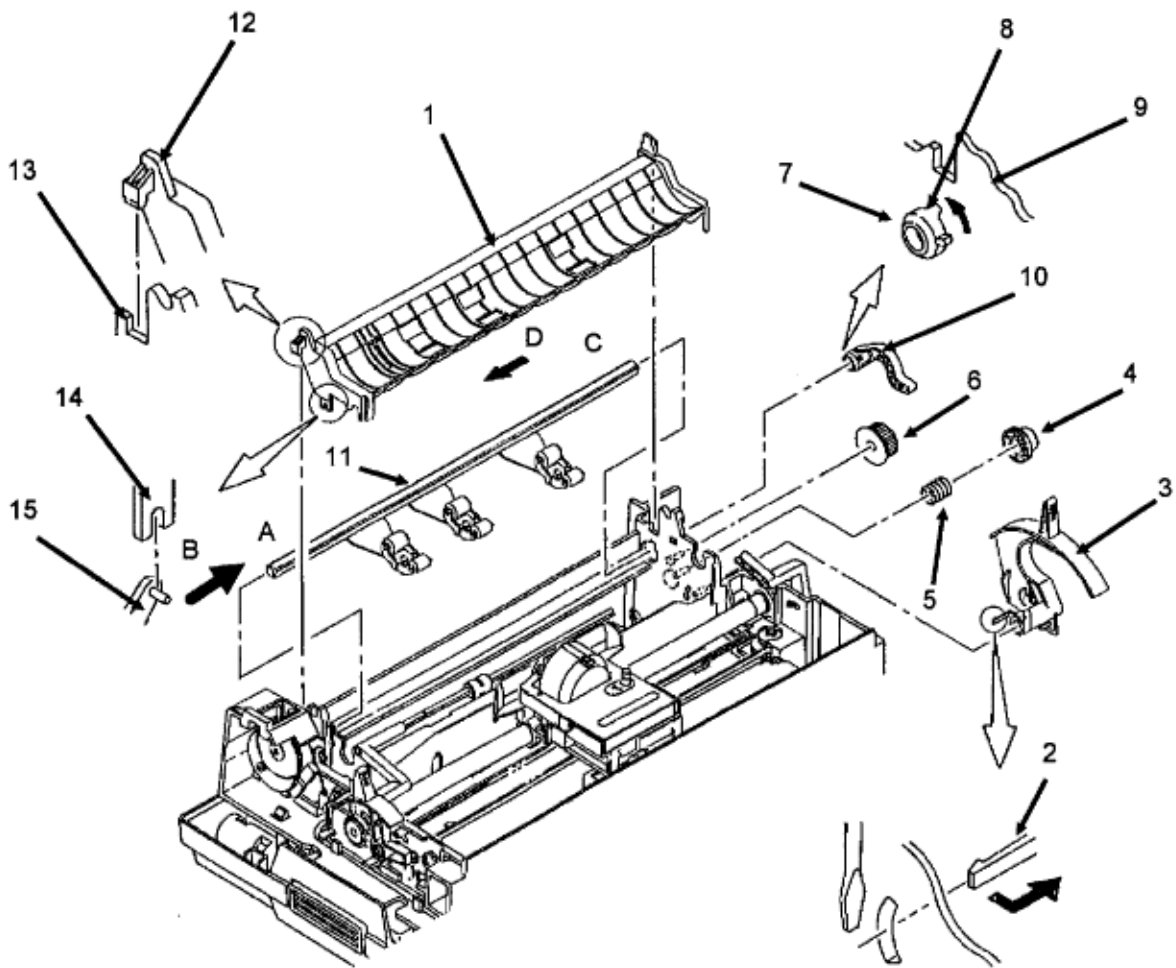
P/N 50915101 Spring: Change Gear RSPL B.2.05 

P/N 58227501 Kit: Idler/Change Gear (ML300) RSPL B.2.05 

P/N 51216001 Gear: Idler B.2.05 

P/N 53511301 Link: Release RSPL B.2.05 

P/N 50071601 Roller: Pressure (Assembly) RSPL B.2.05 



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3.2.16 Paper Pressure Guide

1. Perform these procedures: [3.2.01](#), [3.2.02](#), [3.2.03](#) and [3.2.05](#).

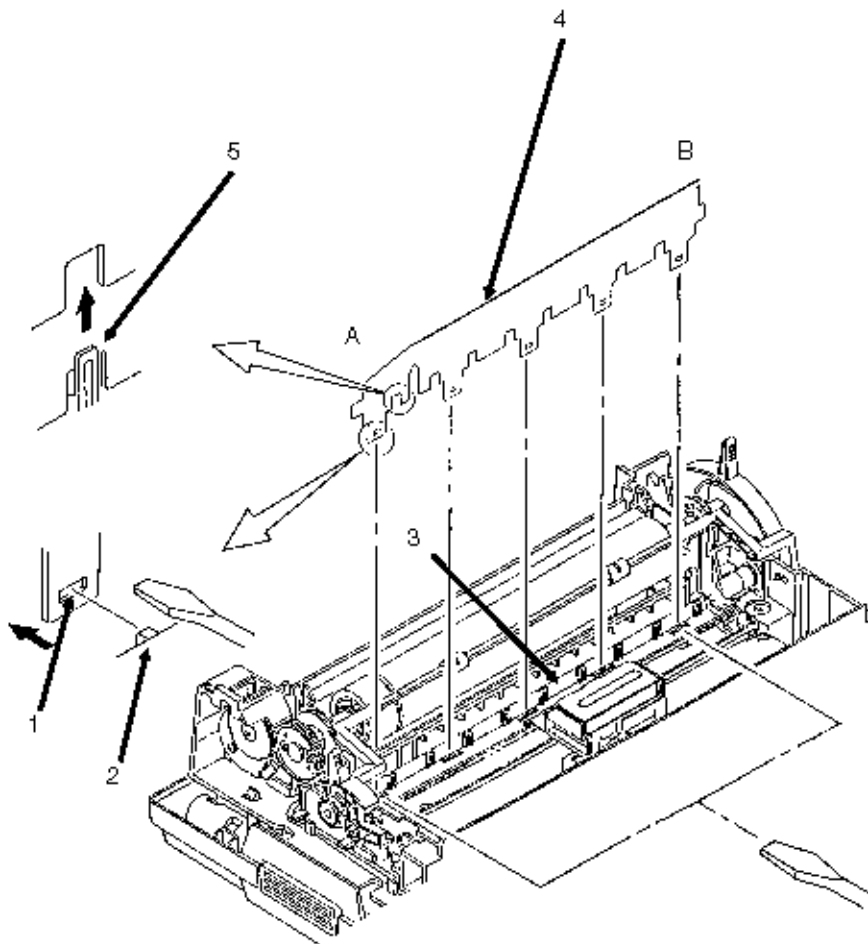
2. Working from the underside of the printer mechanism and using a screwdriver, detach the connection hole section (1) from the projection (2) of the main frame (3). Begin at point A and end at point B.

3. Remove the paper pressure guide (4).

NOTE:

On installation, be sure to install the projections and guide plates (5) simultaneously.

P/N 50911501 Guide: Paper Pressure RSPL B.2.05



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3.2.17 Tractor Assembly

NOTE:

Horizontal movement of the left tractor is restricted by a stopper on the lower cover.

1. Perform these procedures: [3.2.01](#) and [3.2.03](#).

2. Remove the tractor drive shaft locking clamp.
3. Open the claw (1), and remove the drive gear (2) from the groove (3) of the drive shaft (4).
4. Release the right groove (5) of the drive shaft from the guide (6) of the main frame.
5. Shift the groove in the direction of Arrows A and B. This releases the left part of the drive shaft from the guide hole (7) of the main frame.
6. Push the left part of lock shaft (8), and move the groove (9) in the direction of Arrow C to release the groove from the hole (10) in the main frame.
7. Shift the lock shaft (8) to the right, and move the shaft in the direction of Arrow D to remove the shaft from the larger guide hole (11).
8. Push the left part of the tractor assembly in the direction of Arrow E, and remove the tractor assembly (12) while pulling the drive shaft in the direction Arrow F. This moves the shaft out of the guide holes (13 and 14) of the printer frame.
9. Remove the center guide (15), the left pin tractor assembly (16), and the right pin tractor assembly (17) from the two shafts (4) and (8).

NOTES:

Marks A (18) and B (19) of the left (20) and right pin tractors (21) must be aligned when installed. Install the left pin tractor assembly to the left of the stopper on the lower cover. This limits movement and correctly positions the paper against the paper end sensor.

[P/N 50071901 Tractor: Pin \[L\] \(Assembly\) RSPL B.2.06](#)

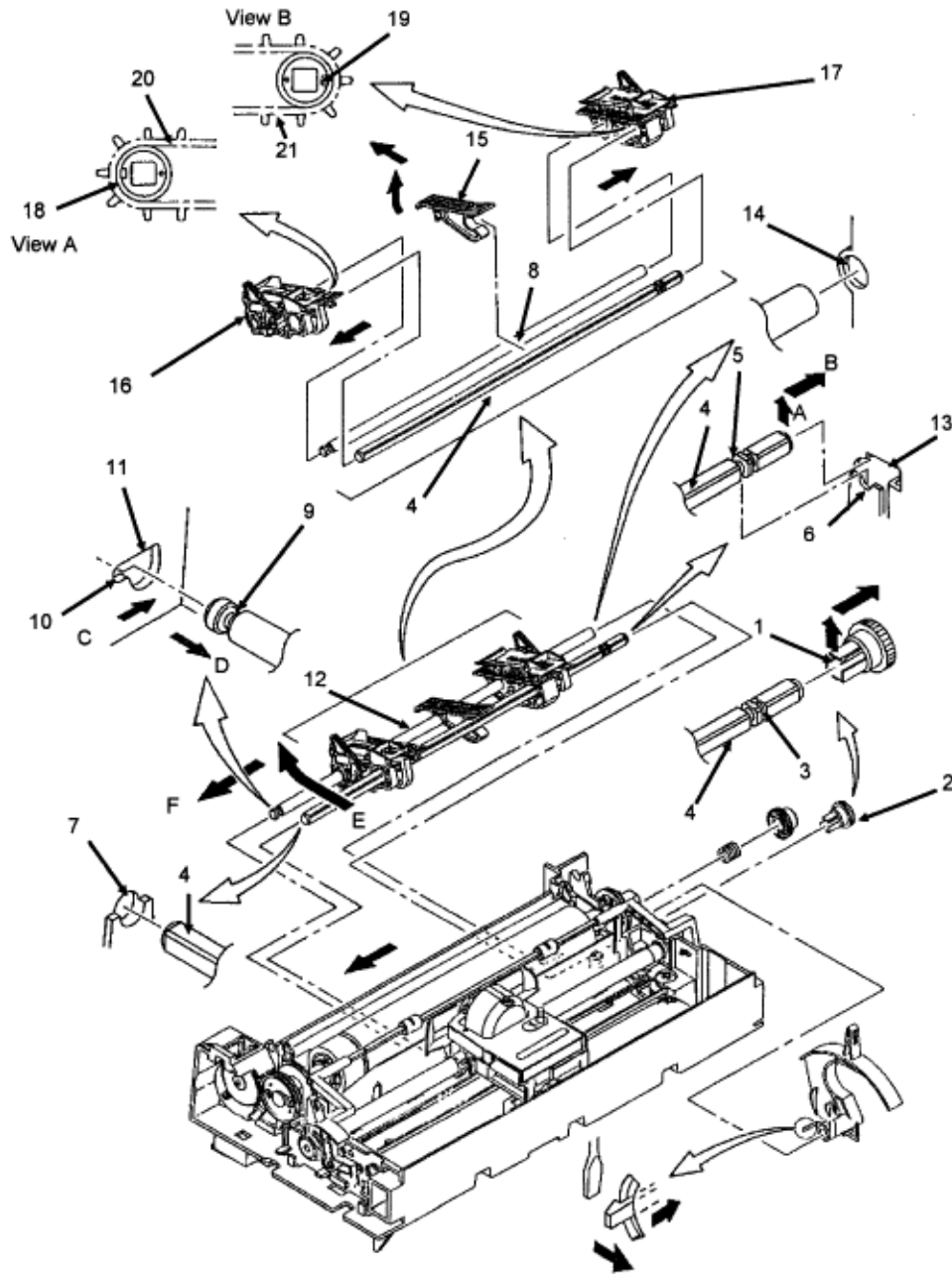
[P/N 51216101 Gear: Tractor RSPL B.2.05](#)

[P/N 51003901 Guide: Center RSPL B.2.06](#)

[P/N 50071801 Tractor: Pin \[R\] \(Assembly\) RSPL B.2.06](#)

[P/N 51109503 Shaft: Drive RSPL B.2.06](#)

[P/N 51110601 Shaft: Lock RSPL B.2.06](#)



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3.2.18 Microswitch Assembly (SASF)

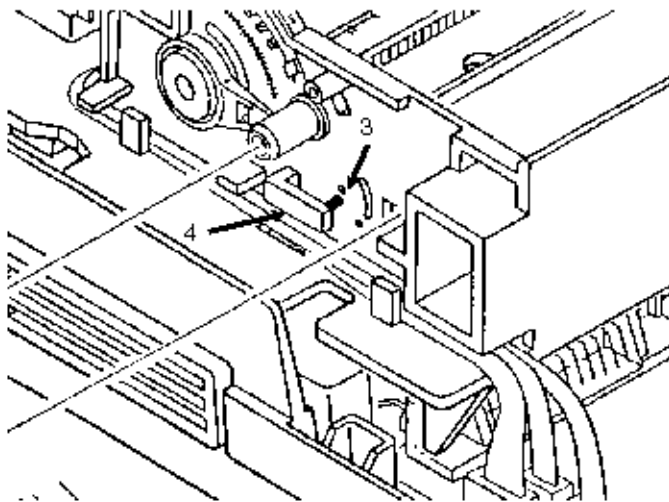
1. Perform these procedures: [3.2.01](#) and [3.2.03](#).

2. The microswitch assembly (1) is fastened to the frame on two pins. The first pin (2) is part of the switch. The second pin (3) is part of the printer mechanism. The first pin must be released before the switch will pivot on the second pin.

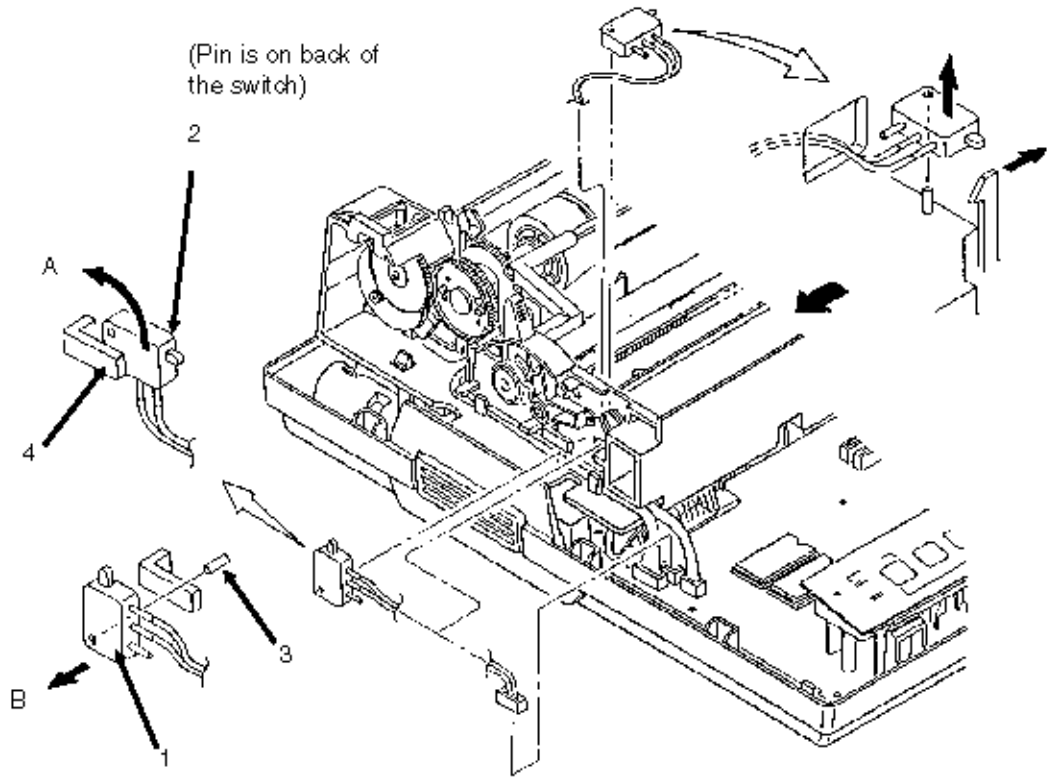
3. To release the first pin, use an opened paper clip to push the pin out of the hole. Access the hole from the inside of the printer frame. Then, pivot the switch on the second pin, in the direction of arrow A, until the switch clears the bracket (4).

4. Remove the microswitch assembly.

P/N 56211301 Microswitch: (Assembly) SASF RSPL B.2.05



Enlarged View (SASF
Switch Location)
3-2-18a.tif



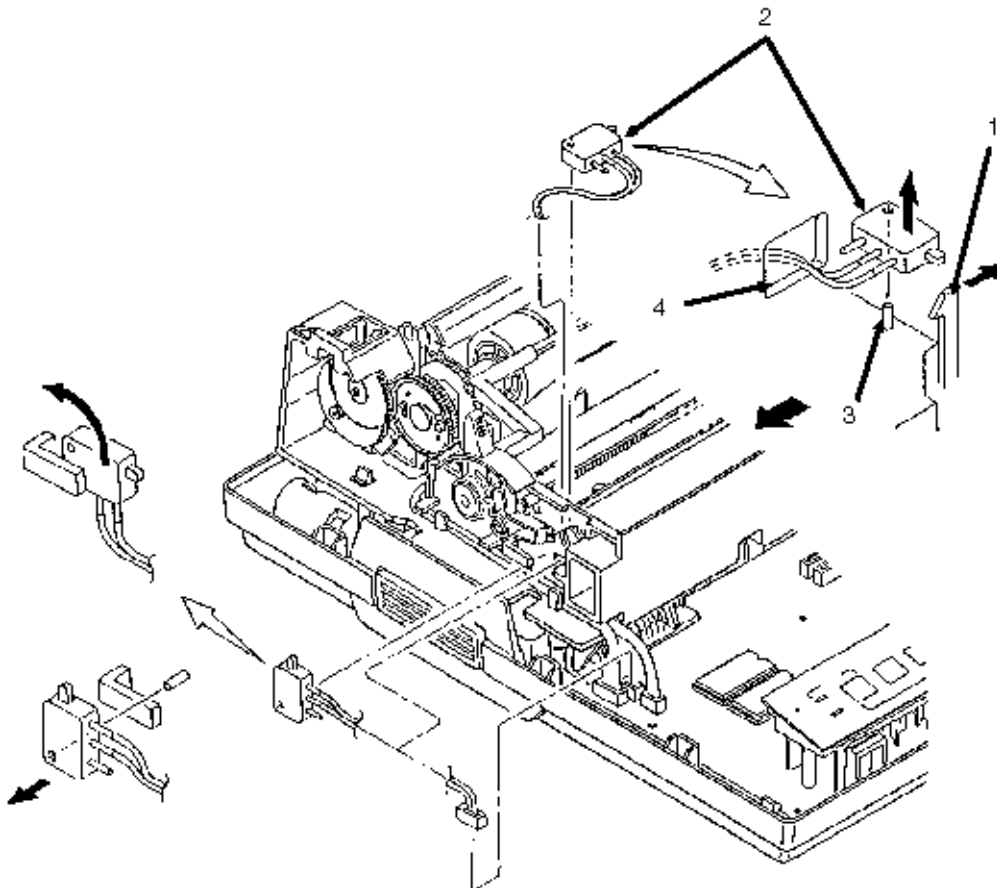
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3.2.19 Microswitch Assembly (Home Position Switch)



1. Perform these procedures: 3.2.01 and 3.2.03.

2. Open the switch clamp (1) and release the home position switch (2) from the pin (3).
3. Pull the switch through the opening (4) in the printer frame.
4. Release the cables from the guides on the frame.
5. Remove the microswitch assembly.

P/N 56211301 Microswitch: (Assembly) RSPL B.2.05 Home Position



3.2.20 Printer Mechanism

1. Perform these procedures: 3.2.01  and 3.2.03 .
2. Open the claws (1) of the lower cover assembly (2) and lift the printer mechanism (3) to remove it.

P/N 54148708 Screw: No. 3 x 8 MM Self Tapping RSPL B.2.02 

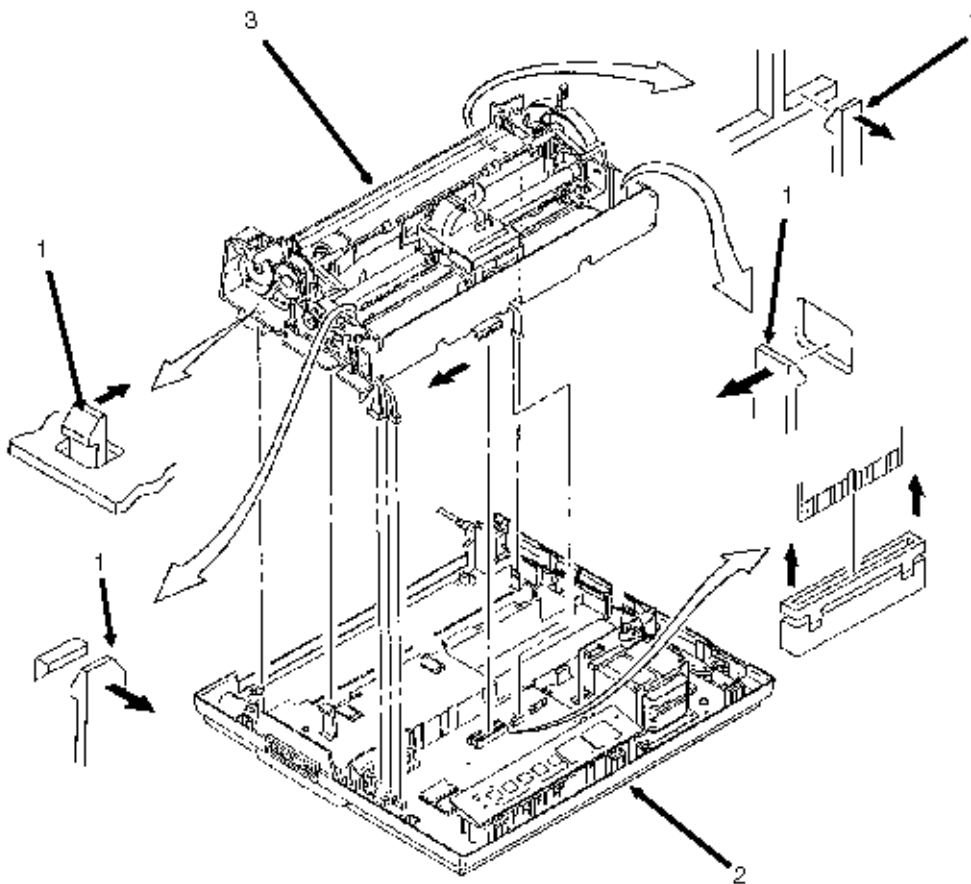
P/N 53330101 Plate: Shield RSPL B.2.02 

P/N 50071301 Cover: Lower (Assembly) RSPL B.2.03 

P/N 53510601 Cover: Lower RSPL B.2.02 

P/N 53452701 Foot: Rubber RSPL B.2.02 

P/N 50071401 Chassis: Mechanism (Assembly) RSPL B.2.05 



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3.2.21 Power Supply Unit

1. Perform these procedures: [3.2.01](#), [3.2.03](#), and [3.2.20](#).

2. Open the claws (1) and remove the AC power cord shock restraint (2).
3. Remove the two screws (3).
4. Remove the grounding cord (4) to the AC power cord (5).
5. Remove the grounding cord (6) to the transformer (7).
6. Remove the four screws (8).
7. Remove the transformer, the AC switch (9), and the AC power cord from the lower cover assembly (10).
8. The power supply unit is made of the grounding cords, the transformer, the AC switch, and the connector (11).

NOTE:

Installation

Firmly insert the AC switch into the A and B guides of the lower cover. The side with the red line goes is the front.

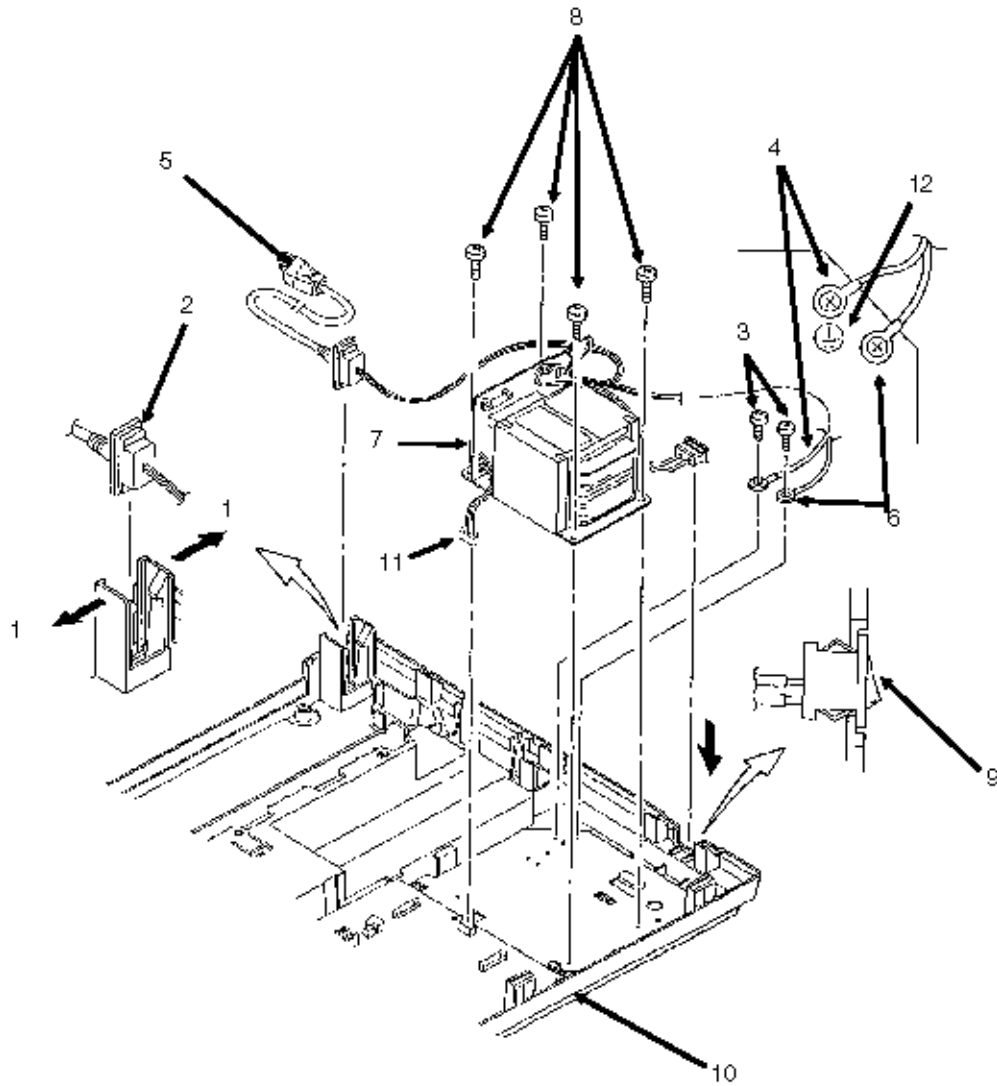
Be careful not to cover the grounding mark (12) when installing the grounding cords.

[P/N 56408201 Power Supply Unit 120V RSPL B.2.03](#)

[P/N 56408301 Power Supply Unit 220/240V RSPL B.2.03](#)

[P/N 56304101 Fuse: 125V 3.15A RSPL B.2.03](#)

[P/N 56304501 Fuse: 250V 1.25A RSPL B.2.03](#)



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3.2.22 Space Motor Assembly

1. Perform these procedures: [3.2.01](#), [3.2.03](#), and [3.2.20](#).

2. Raise the printer mechanism (1), and remove the space motor cord (2) from the guides (3).
3. Open the two claws (4) and pull the space motor assembly (5) in the direction of arrow A.
4. Remove the brackets (6) from the guide holes (7) of the main frame and remove the space motor assembly.

NOTE:

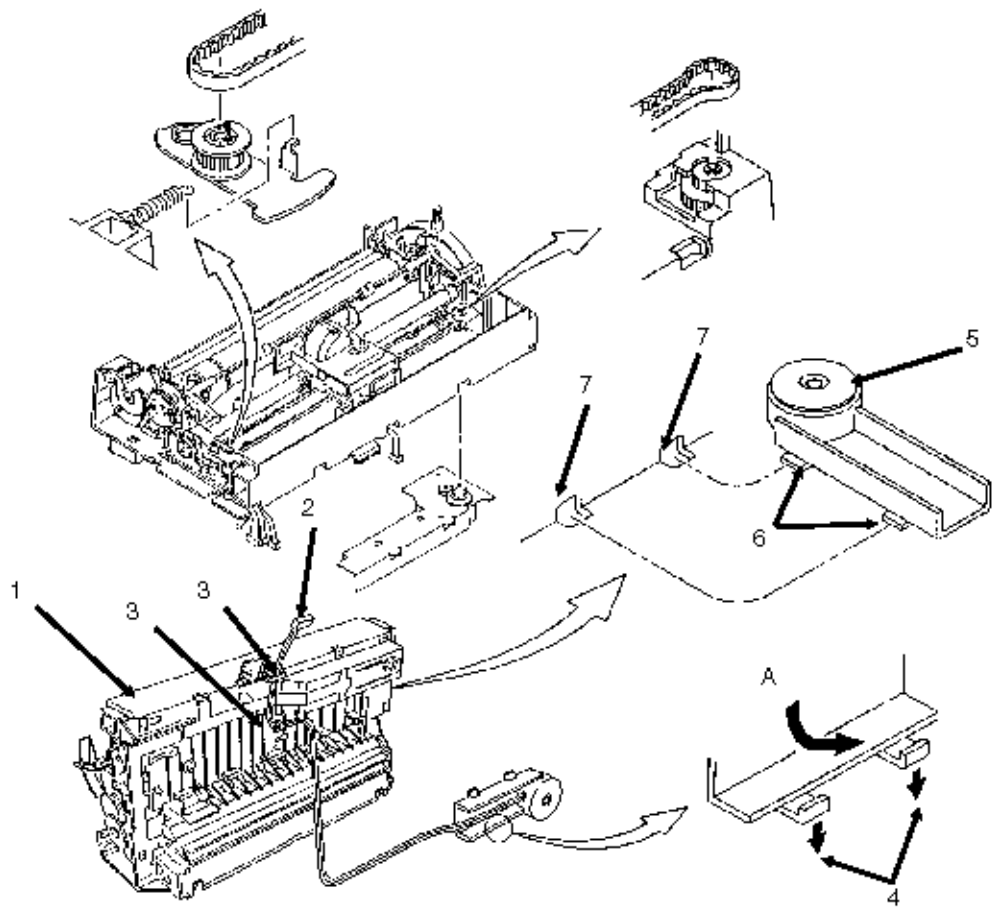
Installation

On installation, align the brackets with guide holes and push the space motor assembly down until it snaps into position under the two claws.

Perform the space belt tension adjustment procedure after installing this part.

[Refer to Section 3.3 of this Service Handbook.](#)

[P/N 56507901 Motor: Space \(Assembly\) RSPL B.2.05](#)



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3.2.23 Bottom Paper Guide Lever

1. Perform these procedures: [3.2.01](#), [3.2.03](#) and [3.2.20](#).

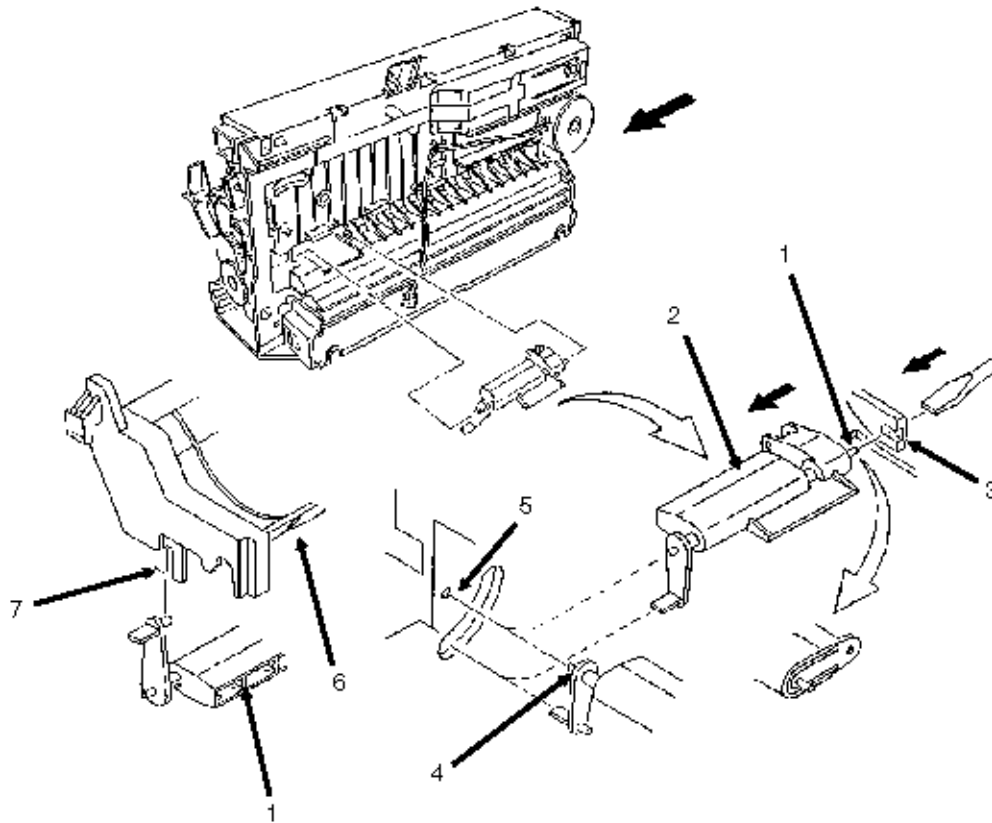
2. Push the pin (1) of the bottom paper guide lever (2), and remove the pin from the guide hole (3) of the main frame.

3. Remove the pin (4) from the guide hole (5) of the main frame, and remove the bottom paper guide lever.

NOTE:

When the paper chute (6) is installed, the cut-sheet paper end lever (7) must engage firmly with the bottom paper guide lever.

P/N 53510901 Lever: Bottom Paper Guide RSPL B.2.05



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3.3 PRINTER ADJUSTMENTS

3.3.01 General Information

This section contains the procedures for performing adjustments on the printer. These procedures may be required when replacing either consumables or parts. The disassembly/assembly procedures list the required adjustments and refer you to this section. Failure to perform these procedures may result in unnecessary service calls.

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3.3.02 Gap Between Platen and Printhead

General Information

The printhead gap adjustment should be performed when the following occur.

1. Print quality is darker on one side of the document.
2. Parts are replaced.

[Printhead \(3.2.02\)](#) 

[Space Rack \(3.2.04\)](#) 

[Carriage Frame \(3.2.13\)](#) 

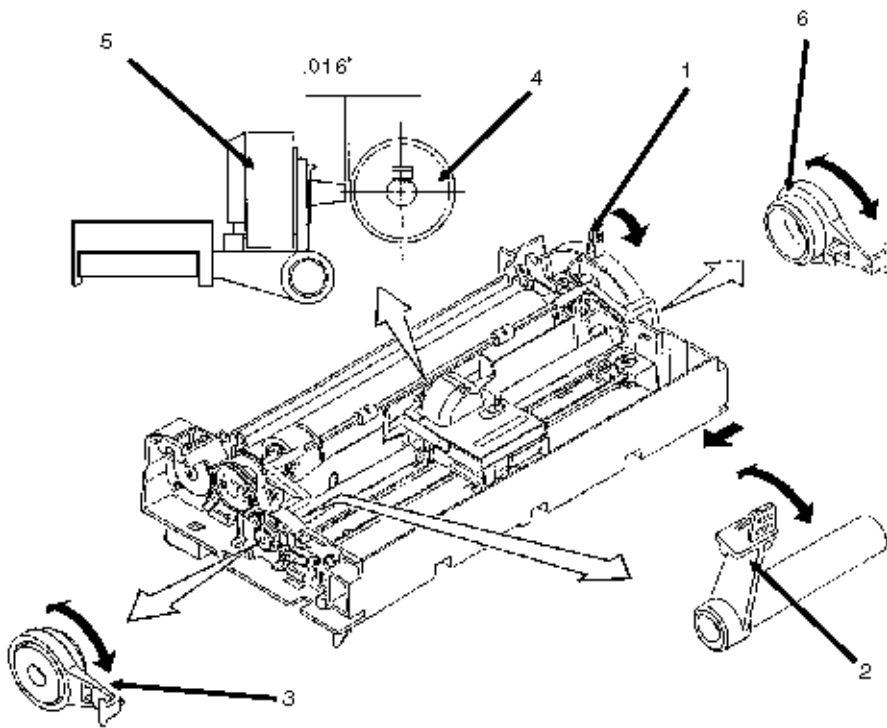
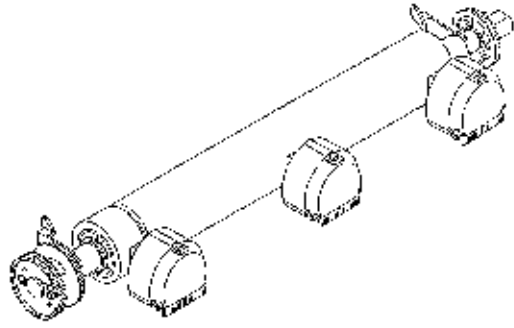
The printhead gap should measure .016 inch, + / - .002 inch (0.41 + / - 0.05 millimeters)

Procedure

1. Move the release lever (1) to the open position (front).
2. Set the printhead gap adjusting lever (2) to range 1
3. Move the carriage to the left side of the platen and rotate the left adjusting collar (3) to obtain the correct gap between the platen and the printhead.
4. Move the carriage to the right side of the platen and rotate the right adjusting collar to obtain the correct gap between the platen and the printhead.
5. Check the gap setting at the left, center, and right of the platen.

When the gap is correct at all positions, do the following check.

1. Set the adjusting lever to range 5
2. Check the gap setting at the left, center, and right of the platen. It should measure .027 inch, + / - 0.002 inch.



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3.3.03 Space Belt Tension

General Information

The space belt tension adjustment should be performed when the following parts are replaced.

[Space Belt \(3.2.06\)](#) 

[Space Motor Assembly \(3.2.22\)](#) 

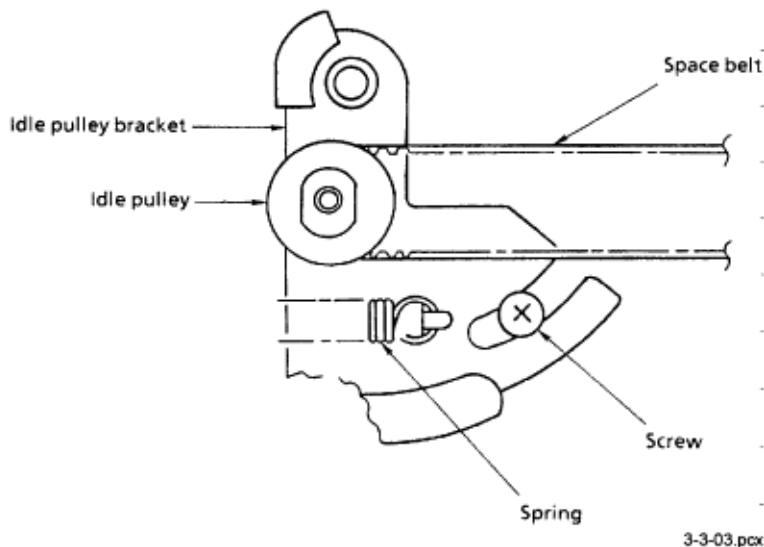
Procedure

1. Slightly loosen the screw of the idle pulley.

DO NOT remove the screw.

2. Manually slide the carriage assembly back and forth across the entire length of the platen.

3. Tighten the screw.



3.3.04 Key Combinations

Key Combinations	Description
FONT + PITCH (While ON-LINE)	Enter Menu Mode (While ON-LINE)
FONT (Hold during Power-ON)	Enter Menu Mode (From Power-OFF Access Menu if Menu set to LIMITED OPERATION)
SEL + FEED (Hold during Power-ON)	Reset Menu to Factory Defaults.
TOF + PARK (Hold during Power-ON)	Activate Rolling ASCII Test
FEED (Hold during Power-ON)	Activate Font Test
SEL + TOF/PARK (Hold during Power-ON)	Activate Hexadecimal Dump Test

3.3.05 Menu Operation / Menu Select Mode

NOTE:

Using the front panel or commands sent from the computer will override the features set in the menu. However, when the printer is powered OFF, features set by these methods will be canceled. Features set in the menu will stay in effect, even when the printer is powered OFF.

General Information

Menu Select Mode allows customization of printer settings and features. Selections made are stored in the printers permanent memory. However, they can be changed through software commands, control panel settings, or by resetting the menu.

When the printer is in Menu Select Mode, the function of the control panel buttons corresponds to the label below them: EXIT, GROUP, ITEM, SET, and PRINT.

The Menu is made up of a number of Groups.

Each Group has a list of Items.

Each Item has several Settings.

Refer to the Printer Handbook for a full explanation of menu selections.

There are two ways of entering the Menu Select Mode: from the Print Mode or when the unit is powered OFF.

From Print Mode

1. Load continuous feed paper.
2. Verify that the ribbon is correctly installed.
3. Verify that the printer is powered-ON and the SELECT lamp is lit.
4. Press the FONT and PITCH buttons at the same time.
5. The SELECT lamp will go out and MENU MODE will print on the paper.
6. Use the control panel to make menu changes.

Press GROUP to move to the next group in the menu.

Press ITEM to move to the next item within a group.

Press SET to move to the next setting of an item.

7. Press EXIT to save the change(s) and return to Print Mode. The SELECT lamp will light.

From Power-OFF

CAUTION:

Make sure that paper is installed or the printhead will print on the platen. This could damage / destroy the printhead, platen, and ribbon.

1. Verify that continuous feed paper is installed.
2. Verify that the ribbon is correctly installed.
3. Verify that the printer is powered-OFF.
4. Press and hold FONT while powering-ON the printer.
5. The POWER lamp will light. The SELECT lamp will not light. MENU MODE will print on the paper.
6. Use the control panel to make menu changes.

Press GROUP to move to the next group in the menu.

Press ITEM to move to the next item within a group.

Press SET to move to the next setting of an item.

7. Press EXIT to save the change(s) and return to Print Mode.
8. The SELECT lamp will light.

Printing the Menu

Printing the Menu provides a reference of current menu settings.

This will help you move through the menu.

Okidata STRONGLY RECOMMENDS printing the Menu *before* resetting the Menu to factory defaults.

Once the Menu is reset, all customized settings are LOST.

To print the Menu, follow this procedure.

CAUTION:

Make sure that paper is installed or the printhead will print on the platen. This could damage / destroy the printhead, platen, and ribbon.

1. Verify that continuous feed paper is installed.
2. Verify that the ribbon is correctly installed.
3. Enter Menu Select Mode (either from Print Mode or Power OFF).

From Print Mode

Verify that the printer is powered-ON and the SELECT lamp is lit.

Press the FONT and PITCH buttons at the same time.

The SELECT lamp will go out and MENU MODE will print on the paper.

From Power-OFF

Verify that the printer is powered-OFF.

Press and hold FONT while powering-ON the printer.

The POWER lamp will light. The SELECT lamp will not light. MENU MODE will print on the paper.

4. Press PRINT.
5. The Menu will print.
6. Press EXIT to exit Menu Mode.

For more information regarding the menu, please refer to the Printer Handbook.

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Sample Menu

Sample Menu		
Menu Mode		
Font	Print Mode	LQ Courier
Font	Pitch	10 CPI
Font	Style	Normal
Font	Size	Single
General Control	Cut Sheet Feeder	Not Installed
General Control	Graphics	Uni-directional
General Control	Max Receive Buffer	8K
General Control	Paper Out Override	No
General Control	Print Registration	0
General Control	Operator Panel Functions	Full Operation
General Control	Reset Inhibit	No
General Control	Print Suppress Effective	Yes
General Control	Interface	Parallel
Vertical Control	Line Spacing	6 LPI
Vertical Control	Form Tear-Off	Off
Vertical Control	Skip Over Perforation	No
Vertical Control	Auto LF	No
Vertical Control	Page Length	11"
Vertical Control	Cut Sheet Page Length	11"
Symbol Sets	Character Set	Set I
Symbol Sets	Language Set	American
Symbol Sets	Zero Character	Slashed
Parallel Interface	I-Prime Signal	Valid
Parallel Interface	Auto Feed XT	Invalid
Parallel Interface	Pin 18 Output	5v
Serial Interface	Parity	None
Serial Interface	Serial Data 7 or 8 Bits	8
Serial Interface	Protocol	Ready/Busy
Serial Interface	Diagnostic Test	No
Serial Interface	Busy Line	SSD-
Serial Interface	Baud Rate	9600 BPS
Serial Interface	DSR Signal	Valid
Serial Interface	DTR Signal	Ready on Power Up
Serial Interface	Busy Time	200 ms
Font	Print Mode	LQ Courier

Reset Menu to Factory Defaults

CAUTION:

Once the menu has been reset, all customized menu settings will be lost.

Always print the menu before resetting the printer to factory defaults.

To reset the menu to factory default settings:

1. Before resetting the Menu, Okidata STRONGLY RECOMMENDS printing the Menu.

Printing the Menu provides a reference of customized settings.

When the Menu is reset, all customized settings are LOST.

2. Power OFF the printer.
3. Press and hold SEL and FEED while powering ON the printer.

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Limited Operation

General Information

One of the menu selections that may be set by the end user is the operator panel function.

Operator Panel Function is an item in the General Control Group of the menu. This item may be set to either Full Operation or Limited Operation.

If the Operator Panel Function is set to Limited Operation the menu cannot be accessed and the operator panel switches listed below are not active.

1. Font
2. Pitch

The Operator Panel Function item is frequently set to Limited Operation on networks or other areas where many users share a printer. Limited Operation prevents the printer settings from being changed.

Procedure

To return the printer to Full Operation, you must modify the menu.

CAUTION:

Determine the preference of the end user regarding this feature. If the printer is on a network, do not reset this item without discussing the change with the network supervisor.

To access the menu when the printer is set to Limited Operation, follow this procedure.

1. Verify that continuous feed paper is installed.

CAUTION:

If paper is not installed, the printhead will print on the platen.

This could damage / destroy the printhead, platen, and ribbon.

2. Verify that the ribbon is correctly installed.
3. Power off the printer.
4. Press and hold FONT while powering ON the printer.
5. The SELECT lamp will not be lit.

When in Menu Mode, the functions printed below the operator panel switches are active.

6. Press GROUP until General Control prints.
 7. Press ITEM until Operator Panel Function prints.
 8. Press SET until FULL OPERATION prints.
 9. Press EXIT to save the change and exit Menu Mode.
-

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Service Guide ML380

Chapter 3 Maintenance & Disassembly

Menu Settings

Factory default settings are printed in ***Bold Italic***.

Group	Item	Setting
Font	Print Mode	<i>LQ Courier</i> LQ Swiss LQ Roman LQ Orator LQ Prestige LQ Gothic Utility
	Pitch	<i>10</i> 12 15 17.1 20 cpi Proportional
	Style	<i>Normal</i> Italic
	Size	<i>Single</i> Double
	Cut Sheet Feeder	<i>Not</i> Installed; Installed
General Control	Graphics	<i>Uni-directional</i> bi-directional
	<i>Paper Out Override</i>	<i>No</i> Yes
	Print Registration	<i>0</i> - 1 - 2 - 3 - 4 - 5 + 5 + 4 + 3 + 2 + 1
	Operator Panel Functions	<i>Full Operation</i> Limited Operation
	Interface	<i>Parallel</i> Serial
Vertical Control	Line Spacing	<i>6</i> 8 LPI
	Form Tear-Off	<i>Off</i> On
	Skip Over Perforation	<i>No</i> Yes
	Auto LF	<i>No</i> Yes
	Page Length	<i>11</i> 11 2/3 12 14 3 3.5 4 5.5 6 7 8 8.5 "
Symbol Sets	Character Set	<i>Set I</i> Set II Epson
	Language Set	<i>American</i> French German British Danish I Swedish Italian Spanish I Japanese Norwegian Danish II Spanish II Latin American French Canadian
	Zero Character	<i>Slashed</i> Unslashed
	Number of DLL Sets	<i>0</i> 1

Parallel I/F	I-Prime Signal	Valid Invalid
	Auto Feed XT	Invalid Valid
	Pin 18 Output	0 v + 5 v
Serial I/F	Parity	None Odd Even
	Serial Data 7 or 8 Bits	8 Bits 7 Bits
	Protocol	Ready / Busy X-ON / X-OFF
	Diagnostic Test	No Yes
	Busy Line	SSD- SSD+ DTR RTS
	Baud Rate	9600 4800 2400 1200 600 300 19200 bps
	DSR Signal	Valid Invalid
	DTR Signal	Ready on Power Up Ready on Select
	Busy Time	200 milliseconds 1 second

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3.3.06 Top of Form

General Information

Top of Form is the distance from the top edge of the paper to the first print position on the page (the highest vertical position on the page where the first line of printing will appear).

When setting the top of form, use the lower red line on the ribbon protector as a guideline. The red line shows the baseline of the current printing position.

The Top of Form may be set for each of the paper paths.

- Cut Sheet (single-sheet)
- Rear Feed
- Rear Feed With Pull Tractor
- Bottom Feed

Cut Sheet (Single Sheet)

1. Load paper into the printer.
2. Press the SELECT button to deselect the printer. The SELECT lamp will go out.
3. To move the paper, do either of the following.
 - To move the paper up, press and hold TOF/PARK and press FEED.
 - To move the paper down, press and hold TOF/PARK and press FONT.This moves the paper in increments of 1/180 of an inch.
4. Press TOF/PARK to store the top of form position in memory.
5. Press the SELECT button to select the printer. The SELECT lamp will light.

Rear Feed

1. Load paper into the printer.
2. Press the SELECT button to deselect the printer. The SELECT lamp will go out.
3. To move the paper, do either of the following.
 - To move the paper up, press and hold TOF/PARK and press FEED.
 - To move the paper down, press and hold TOF/PARK and press FONT.This moves the paper in increments of 1/180 of an inch.
4. Press TOF/PARK to store the top of form position in memory.

5. Press the SELECT button to select the printer. The SELECT lamp will light.

Rear Feed with Pull Tractor

1. Load paper into the printer.

2. Press the SELECT button to deselect the printer. The SELECT lamp will go out.

3. Rotate the platen knob to move the paper to the desired position.

4. Press TOF/PARK to store the top of form position in memory.

5. Press the SELECT button to select the printer. The SELECT lamp will light.

Bottom Feed

1. Load paper into the printer.

2. Press the SELECT button to deselect the printer. The SELECT lamp will go out.

3. Rotate the platen knob to move the paper to the desired position.

4. Press TOF/PARK to store the top of form position in memory.

5. Press the SELECT button to select the printer. The SELECT lamp will light.

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3.3.07 Paper Park

General Information

Paper park allows you to switch from continuous feed paper to single-sheet paper without removing the continuous feed paper from the printer. The continuous feed paper will be retracted from the platen and down into the printer housing without disengaging it from the built-in tractor. After the single-sheet paper is printed, pull the bail lever forward and the continuous feed paper will move back into the print position.

Paper park cannot be used when the optional pull tractor is installed.

Procedure

1. Tear off any printed pages.
2. Make sure the printer is selected. The SELECT lamp must be lit.
3. Press TOF/PARK.
4. The paper will retract from the paper path.
5. Move the paper selection to the single sheet position (towards the back of the printer).
6. Load the single sheet paper.
7. Print the single sheet paper.

To return to continuous feed printing, perform the following procedure.

1. Move the paper selection lever to the continuous form position (to the front of the printer).
2. Pull the bail lever forward.
3. The paper will advance to the loading position.
4. Push the bail lever back and adjust the top of form (if necessary)

3.3.08 Paper Tear Off

General Information

This feature (when activated) will automatically advance continuous feed paper to the tear-off position after it finishes printing the last page in the document. A few seconds after the printing stops, the printer will move the paper up to the tear-off position, aligning the perforation with the serrated edge on the access cover. The operator will be able to tear off the last printed page without wasting paper or readjusting the printer. When the printer receives data to print, it will automatically return the paper to the top of form position for printing.

Paper tear off can only be used with continuous feed paper fed in from the rear on the built-in push tractor. It cannot be used with the optional pull tractor.

Procedure

1. Load continuous feed paper into the printer.
2. Verify that the printer is selected (SELECT lamp is lit).
3. Press the FONT and PITCH buttons at the same time. This places the printer in Menu Mode.

The SELECT lamp will go out.

4. Press GROUP until the following line is printed.

Vertical Control Line Spacing 6 LPI

5. Press ITEM to advance the Menu to Form Tear-Off.

6. Press SET to change the menu setting for Form Tear-Off.

To activate form tear off, the setting must be ON.

To deactivate form tear off, the setting must be OFF.

7. Press SELECT to exit Menu Mode.
-

3.3.09 Resets

Reset Menu to Factory Defaults

CAUTION:

Once the menu has been reset, all customized menu settings will be lost.

Always print the menu before resetting the printer to factory defaults.

To reset the menu to factory default settings, follow this procedure.

1. Before resetting the Menu, Okidata **STRONGLY RECOMMENDS** printing the Menu.

Printing the Menu provides a reference of customized settings.

When the Menu is reset, all customized settings are LOST.

2. Power off the printer.
3. Press and hold SEL and FEED while powering ON the printer.

NOTE: *Refer to the Printer Handbook for a list of the factory default settings.*

3.4 CLEANING

3.4.01 General Information

***NOTE:** Always power OFF the printer before cleaning.*

Clean the inside of the printer every 6 months or 300 hours of operation, whichever comes first.

It will take approximately 10 minutes to clean the printer.

Use a dry, lint free cloth, and vacuum cleaner.

Areas to be Cleaned

Carriage Shaft and Vicinity

Remove or vacuum out the paper particles, wipe out dirt, dust, ribbon waste, etc.

Paper Feed Area and Pin Surfaces

Clean the pin roller part of platen.

Paper End Sensor

Wipe or vacuum out the dust from the sensors.

Platen

Clean with platen cleaner.

3.5 LUBRICATION

3.5.01 General Information

This equipment is designed to be maintenance-free and oiling is unnecessary during operation.

However, when assembly or cleaning of oiled parts occurs, lubricant is required.

1. Lubricant

Grease-type lubricant

Machine Oil (or equivalent)

Areas to be Lubricated

Carriage Shaft

Wipe the carriage shaft with a lint-free cloth that has been *lightly* dampened with machine oil.

Then, wipe the carriage shaft with a dry, lint-free cloth

Space Rack

Apply a *small* amount of grease to the space rack gear teeth.

CAUTION:

If you apply lubricant to the following areas, the printer may be damaged or output quality can be degraded.

Carriage Drive Belt

Flexible Head Cable

Microswitches

Platen Surface

Pressure Roller Surface

Pressure Rollers (on Paper Bail Bar)

Printhead

Ribbon Cartridge

Tractor Pins

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3.6 SHIPPING INSTRUCTIONS

3.6.01 Return for Service

CAUTION:

*When shipping the printer, use the original packaging to prevent damage.
Be sure to secure the printhead so it will not move during shipment.*

1. Locate the original packaging or order replacement packaging from Okidata. (Refer to Appendix B)
2. Make sure the printhead is secured so it will not move during shipment.
3. Remove the platen knob. Be sure to place it in the shipping container.
4. Pack the unit, using the materials from Step 1.

3.6.02 All Other Returns

CAUTION:

The product MUST be returned in the original packaging.

The product MUST be returned with ALL originally supplied factory items.

Be sure to secure the printhead so it will not move during shipment. 1. Locate the original packaging or order replacement packaging from Okidata. (Refer to Appendix B)









2. Locate the originally supplied factory items. (Refer to Setting Up in the Printer Handbook)
3. Make sure the printhead is secured so it will not move during shipment.
4. Pack the unit, using the materials from Step 1.

4.1 OVERVIEW

4.1.01 Introduction

This section is used to isolate problems to the assembly level. Application problems and detection of faulty components on the printed circuit boards are NOT addressed.

When troubleshooting a defective unit, follow these steps.

1. **Refer to Section 4.3** , which explains where to check for updates to the troubleshooting information.
2. **Section 4.4** , contains tips on preventing problems, as well as a list of common problems.
3. **Section 4.5** , shows samples of abnormal outputs.
4. **Section 4.6** , provides tables of error messages.
5. **Section 4.7** , contains the Repair Analysis Procedures (RAPs). Each RAP will ask you questions or require you to make observations. The answers to these questions and the results of your observations determine your next course of action. Use the RAP Index to identify which RAP should be used to resolve the problem with the machine.
6. **Section 4.8** , provides the procedures for various printer tests.
7. **Section 4.9** , lists the resistance check points.
8. **Section 4.2** , lists methods for reporting problems. If you encounter a situation that is NOT addressed by the documentation in this kit, please report the problem to Okidata, using one of the methods listed.

Refer to the Service Center Reference Guide for information on contacting Okidata.

4.1.02 Printer Serial Number Identification

To identify the revision level of a printer, record the serial number from the back of the printer.

Refer to the following to decode the serial number.

Example Printer Serial Number: 401A0154693

Date Code 401 (4 = year; 01 = month)

Revision A

Serial Number 0154693

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4.1.03 Firmware Revision Identification

To identify the revision level and part number of the firmware, print the Rolling ASCII Test or the Font Test.

Refer to Section 4.8 for information on printing the tests.

Header

At the top of each test is a header.

This header provides the following information: printer model (1) , emulation (2), version (3), firmware revision number (4), firmware part number (5), character generator revision number (6), and character generator part number (7).

ML380 EPS A F/W 03.01 YR4077-xxxx RES 01.00 YR4084-xxxx 1 2 3 4 5
7 6

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4.2 REPORTING PROBLEMS

4.2.01 General Information

Okidata strives to provide accurate and detailed service information through its training materials. The Technical Training Group realizes that service technicians have valuable experience, knowledge, and opinions. Okidata strongly encourages you to report any problems you may encounter when using the materials of this training kit. Please be as specific and detailed as possible. Your comments, suggestions, and criticisms are used to update and revise training kits.

You should reference the training materials when servicing Okidata products. Most problems can be solved by using the information provided in the training materials. If you encounter a situation that cannot be solved, please let Okidata know.

Refer to the Service Center Reference Guide for information on contacting Okidata.

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4.2.02 Problem Lists

Technicians frequently request a list of common problems specific to a product. Technical Training Kits are written before a product is shipped to customers. Therefore, such information is NOT available when a product is first released.

However, Okidata wants to respond to these requests. Okilink II provides round-table discussions on technical problems. Errors and corrections in the training materials are listed in the Training Section of Okilink II. The Technical Service Bulletins (also known as Okidata's Monthly Mail) are available via Okilink II. Situations that are NOT addressed in the reference documentation, technical service bulletins, or round-tables may be reported to the Dealer Service and Support Engineers (Contact Technical Support) or the Technical Training Group. You will receive a response to your message within one business day.

The information on Okilink II is the most accurate and up-to-date technical information available from Okidata. This is only possible with your assistance. By reporting your suggestions, concerns, and problems, Okidata can provide the best possible information.

Your cooperation is greatly appreciated. Thank you for your help!

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4.2.03 Reporting Methods

Okilink II

You may use Okilink II to report your findings. Refer to the Service Center Reference Guide for information on using Okilink II.

Course Critique

Use the Course Critique to report any problems you find as you are completing the self-paced training.

Fax Number

If you wish to fax your response, please use the numbers listed in the Service Center Reference Guide.

Mailing Address

If you respond by mail, please use the appropriate address listed in the Service Center Reference Guide.

Information Provided

Please provide the following information when reporting problems.

Okidata Dealer Number

Technicians Name

Company Name

Company's Address (Street, City, State/Province, ZIP / Postal Code, Country)

Telephone and Fax Numbers (with area / country access codes)

Product Name

Units Serial Number

Firmware Revision Level

Description of Problem

Document Name (with page number or procedure) with error or problem.

4.3 TROUBLESHOOTING UPDATES

4.3.01 General Information

Okidata distributes updated troubleshooting information in three ways.

Okilink II

Faxable Facts

Technical Service Bulletins

4.3.02 Okilink II

Okilink II is Okidata's Bulletin Board Service. This service is available to all Okidata Certified Service Technicians. Okilink II provides troubleshooting and service information. Technicians can download files, ask questions of Okidata's technical support personnel, and participate in round table discussions about Okidata products and services. Technical Service Bulletins,

Recommended Spare Parts Lists, Printer Drivers, Product Specifications, and Service Training Information are also available.

Refer to the Service Center Reference Guide for information on accessing Okilink II.

4.3.03 Faxable Facts

Okidata's Faxable Facts is an automated fax document retrieval system. It is maintained by Okidata's Customer Information Center. Answers to common questions about Okidata products are available through Faxable Facts.

Refer to the Service Center Reference Guide for information on accessing Faxable Facts.

4.3.04 Technical Service Bulletins

Okidata's Technical Service Bulletins (TSB's) contain technical information developed after product release. Firmware updates, part number changes, and procedural changes are some of the subjects covered by these bulletins. The TSB's are distributed through Okilink II.

Refer to the Service Center Reference Guide for information on accessing Okilink II.

4.4 TROUBLESHOOTING TIPS

4.4.01 Preliminary Checks

1. Is the product being operated under the proper ambient conditions?
2. Does the paper being used meet the specifications for this product?
3. Has the ribbon been replaced as recommended?
4. Has the ribbon been installed properly?
5. Is an Okidata ribbon being used?
6. Is the printhead gap correctly set?
7. Is the firmware the latest (current) revision?
8. Are the printer drivers being used correct for the printer?
9. Is the printer driver being used the latest (current) release?

4.4.02 Problem Categories

There are three categories of problems that you might encounter when servicing the printer.

SELECT Lamp Blinks (Fatal Errors)

The following can cause the SELECT lamp to blink.

Open Bail Arm

Jammed Paper

Printhead Cannot Move

Other Fatal Error

When the SELECT Lamp is blinking, check the items listed below.

1. Close the bail arm.
2. Check for a paper jam.
3. Verify that the printhead moves freely.
4. Record the status of the POWER, SELECT, Font Indicators, and Pitch Indicator Lamps.
5. Refer to the Fault Alarms Tables (Section 4.6)
6. Locate the error.
7. Perform the designated corrective action.

Operational Errors

An Operational Error is usually not accompanied by a fault alarm indication.

Refer to the Start Here Flowchart (Section 4.4.03) and perform the corrective action.

SELECT Lamp Blinks Slowly (Paper End/Jam Conditions)

A slowly blinking SELECT lamp usually indicates a cover open, paper jam or paper-end (out of paper) condition.

4.4.03 START HERE Flowchart

START

Power ON the unit.

Does the printer initialize?

NO Is SELECT blinking?

NO Refer to RAP 01.

YES Refer to Section 4.6 of this Service Handbook.

YES Load the printer with paper.

Does the paper load without jamming?

NO Refer to RAP 04.

YES Perform the Rolling ASCII test. Refer to Section 4.8 of this Service Handbook.

Is the output satisfactory?

NO Refer to Section 4.5 of this Service Handbook.

YES Are all operator panel switches operating properly?

NO Replace the operator panel.

YES Has the problem been resolved?

YES End of procedure.

NO Does the parallel or serial interface port receive data from the host PC properly?

YES End of procedure.

NO Which port is NOT receiving data?

Parallel Refer to RAP 05.

Serial Refer to RAP 05.

End of procedure.

4.4.04 Tips for Preventing Image Problems

1. Make sure that the ribbon is not "dried out". If the printer output is faded, install a new ribbon, then print another sample.
 2. Make sure that the paper you are using is within specifications. [Paper specifications !\[\]\(48a7667d09d5a06397e047ee4537bb6f_img.jpg\) can be found in Section 1 of this Service Handbook.](#)
 3. Make sure that the printhead gap adjust lever is in the appropriate position for the paper being used.
-

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4.4.05 Common Problems

1. Nothing happens at all when the operator powers ON the printer.

The printer may not be plugged in. Check the power cord connection to the outlet. If you're using a power strip, make sure its turned on. Check to be sure that the external line fuse hasn't blown or that the circuit breaker hasn't tripped.

2. The printer doesn't print when the computer sends it data.

The printer may be deselected. If the SELECT lamp is not lit, press the SELECT button.

3. The paper keeps jamming.

Be sure to set the top of form so that the paper is held in place by the bail. If the top of the page is below the bail, it will catch on the bail as it advances. Don't use the FEED button to load paper into the printer. Use the bail lever. If you are using continuous forms, be sure that you have the paper loaded squarely onto the tractors. If the sprocket holes are out of sync on either side, the paper will jam.

If the paper does jam, back it out of the printer carefully using the platen knob. Be sure to remove any shreds of paper from the printer before loading the paper. If you're using continuous feed paper, you can do this by using the following procedure.

Back the paper out of the printer.

Fold the paper over three times to produce a page four sheets thick.

Load the folded sheet onto the tractor pins.

Turn the platen knob to bring the paper around the platen.

This will clear the pieces of jammed paper out of the tractor path and bring them up and out so you can dispose of them. Don't forget to remove the quadruple thick sheet from the printer before you return to printing!

4. Dots are missing on printouts.

The head gap may not be set correctly. Try moving the head gap lever to a lower setting. If that doesn't help, the printhead may be damaged.

5. Word processor files don't print the way the menu and front panel are set.

Before sending a file to the printer, many word processors send either an initialization string or an I-Prime signal to the printer.

The initialization string contains codes that reset the printer to a default set of features. Otherwise, the printer might accidentally print using features set for a previous job. These codes will override panel or menu settings. Check your word processors manual to see if you can customize the initialization string. If so, remove any codes that interfere with your printers settings.

The I-Prime signal is sent over the parallel interface and will automatically override any settings you have made using the front panel buttons. To eliminate this problem, go into the Menu Select Mode and change the I-Prime item to INVALID. This will cause the printer to ignore the I-Prime Signal.

6. The FONT and PITCH buttons wont work.

The Operator Panel Functions item in the Printer Menu can be used to disable these buttons. If the printer is part of a customized system or if it is used by a number of people, the system manager may have used this option to make sure the printer is always set properly.

7. None of the lights in the FONT indicator on the front panel are lit.

The lights in the FONT indicator on the front panel all go out when the printer is operating in the utility mode. The lights will come on again as soon as you select an LQ font.

8. You need to check the data sent by the computer to the printer.

Use the hexadecimal dump mode.

To enter this mode, hold the SELECT and TOF/PARK buttons down while powering ON the printer. All data sent to the printer, including text and printer commands, will print in both hexadecimal and ASCII format. In the ASCII format, all non-printable codes will be represented by a period.

To return to normal printing, power OFF the printer, then power ON.

9. Static electricity causes the paper to stick.

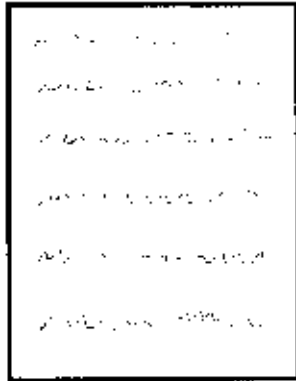
In cold, dry weather, static charges can build up on continuous feed paper. This can make the paper cling to the paper separator. If you have this problem during high-volume printing jobs, try moving the single sheet paper guides on the separator together so that the paper rests on the guides rather than on the separator itself.

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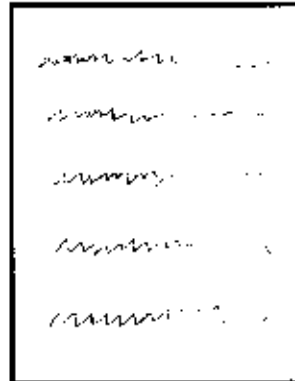
4.5 ABNORMAL OUTPUT

4.5.01 Output Samples

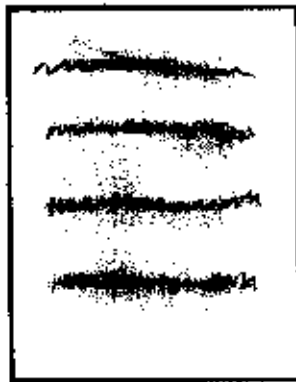
Light Print on the Entire Page



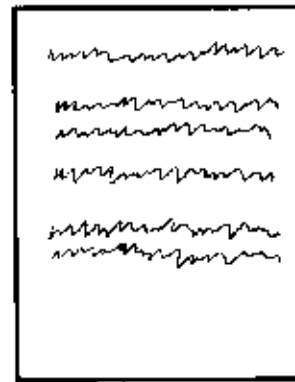
Uneven Print Density



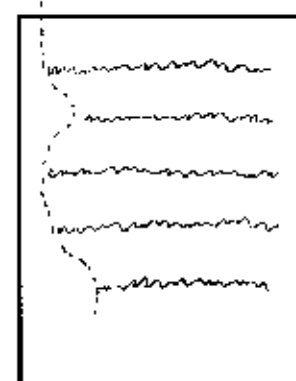
Smeared Print



Inconsistent Line Feed



Drifting Margin



Light Print on the Entire Page

Possible Causes:

1. Ribbon is "dried out". Replace the ribbon.
2. Verify that the headgap lever setting is appropriate for the type of paper being used.
3. Check / perform the printhead gap adjustment.
4. Paper is not within specification. Refer to Section One for paper specification.

Uneven Print Density

Possible Causes:

1. Printhead gap not within specification. Perform the printhead gap adjustment.
2. Defective platen. Replace the platen.

Smearred Print

Possible Causes:

1. Ribbon protector is missing or broken. Replace the ribbon protector.
2. Verify that the headgap lever setting is appropriate for the type of paper being used.
3. Check / perform the printhead gap adjustment.
4. Paper is not within specification. Refer to Section One for paper specification.

Inconsistent Line Feed

Possible Causes:

1. Power OFF the printer. Turn the platen knob. The platen should rotate smoothly. If it does not, remove the cause of the binding.
2. Defective line feed motor. Replace the line feed motor.

Drifting Margin

Possible Causes:

1. Power OFF the printer. Move the carriage assembly. The carriage should move smoothly. If it does not, remove the cause of the binding.

4.6 FAULT ALARMS

4.6.01 General Information

Follow these guidelines when using the Troubleshooting Tables.

1. Record the status (OFF, solidly ON, Flashing) of the Operator Panel LED's.
2. Go to the Fault Alarm Lamp Display Table (Section 4.6.02).
3. Look for the LED Indications you have observed.
4. The Table will provide a Failure Description, Probable Cause and Recommended Action.
5. The Recommended Action will direct you to take action.

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Service Guide ML380

Chapter 4 Failure & Repair Analysis

4.6.02 Fault Alarm Lamp Display

When the printer detects an alarm condition, the LED's are used to display the status of the alarm. The following tables show the alarm status conditions.

Printer Mode Display Table

SELECT LED	Printer Mode		Definition	Recommended Action
ON	Normal Operation Mode	ON-LINE	Printer is ready to receive data and print	Normal Operation
	Normal Operation Mode	Hex Dump	Printer is in HEX Dump Mode	Normal Operation
OFF	Normal Operation Mode	OFF-LINE	Printer is in Local Mode and will not accept data	Normal Operation
	Normal Operation Mode	Menu	Printer is in Menu Mode (see Printer Handbook)	Normal Operation
Slow Blink	Operator Alarm Condition	Paper-ended	Out of paper condition	Load Paper. If paper is installed check for jam.
	Operator Alarm Condition	Paper Jam	SASF /Tractor Paper is jammed	Clear jam. If no jam exists check / replace the sensor.
	Operator Alarm Condition	CSF Paper Jam	Paper is jammed when the Cut Sheet Feeder is installed	Clear jam. If no jam exists check / replace the sensor.
ON	Operator Alarm Condition	Print Suppress	Printer has received a "Stop Printing" command from the Host Computer	Normal Operation
Fast Blink	Internal Fault Alarm		See Internal Fault Alarm Conditions Table for additional information	See Internal Fault Alarm Conditions Table for additional information

Internal Fault Alarm Conditions Table

LED's Lighted *	Error Condition	Definition	Recommended Action
Courier 10	Memory Error	MPU Internal RAM Error	Replace the main control board.
Prestige 10	Memory Error	Program ROM Error	Replace the main control board.
Prestige 20	Memory Error	EEPROM Error	Replace the main control board.
Roman 10	Memory Error	External RAM Error	Replace the main control board.
Prestige 15	Memory Error	Resident Character Generator Error	Replace the main control board.
Prestige Roman 10	Memory Error	Resident Character Generator	Replace the main control board.
Courier Prestige 10	Spacing Error	Head Homing Error	1. Check for binding by manually moving the carriage assembly.
			2. Replace the space motor.
			3. Replace the main control board.
Courier Prestige 20	Spacing Error	Spacing Error	Refer to RAP 02
Courier Prestige 15	Printhead Error	Thermistor Open Error	Replace the printhead. Replace the main control board.
Courier 20	Serial Interface Error	Serial Interface ROM/RAM Error	Replace the serial interface module.

* The POW LED will be turned ON and the SELECT LED will be flashing.

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4.7 REPAIR ANALYSIS PROCEDURES (RAPs)

4.7.01 Using the RAPs

When using the Repair Analysis Procedures, follow these steps.

1. Go to the RAP Index.
2. Find the RAP which is associated with the printers problem.
3. Go to the appropriate RAP.
4. All RAPs begin with a START statement, followed by questions or another type of statement.

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4.7.02 RAP Index

RAP	Description
01	No Power
02	Spacing Operation Does Not Operate Normally
03	Wrong Character Or Missing Dots
04	Line Feed Problems
05	Data Receiving Failure

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RAP 01: No Power**START**

Is AC cable connected correctly?

NO Connect the AC cable correctly.

YES Is the AC fuse F1 on the transformer assembly open?

YES Replace the fuse.

NO Are +5V and +35V output on the control board?

Refer to Appendix A of this Service Handbook.

YES Go to A.

A

Check fuses F1 and F2 on the control board.

Are they open?

YES Replace the open fuses(s).

NO Is the connector CN9 on the control board connected properly?

NO Attach connector CN9 properly.

YES Remove connector CN9.

Is 28 VAC output between pins 1 and 2 on CN9?

Is 9 VAC output between pins 3 and 4 on CN9?

NO Replace the transformer assembly.

YES Replace the control board.

End of procedure.

RAP 02: Space Operation Does Not Operate Normally

START

Is the carriage assembly movement erratic or is the carriage jammed?

YES Check around the carriage assembly, space belt, space motor, and space rack for any obstructions, or mechanical problems.

Check ribbon drive mechanism for smooth operation.

NO Are +5V and +35V on the control board?

Refer to Appendix A of this Service Handbook.

NO Go to RAP 01, Item A

YES Is the connector CN8 on the control board connected properly?

NO Connect it properly.

YES Replace the control board.

Is condition corrected?

YES End of procedure.

NO Replace the space motor.

End of procedure.

RAP 03: Wrong Character or Missing Dots

START

Are connectors CN6 and CN7 on the control board connected properly?

NO Connect them properly.

YES Is the head cable inserted into the printhead connector correctly?

NO Seat the head cable to the printhead connector correctly.

YES Replace the printhead.

Is condition corrected?

YES End of procedure.

NO Replace the control board.

Is condition corrected?

YES End of procedure.

NO Replace the head cable.

End of procedure.

RAP 04: Line Feed Trouble

START

Rotate the platen knob. Does the platen rotate smoothly?

NO Ensure no foreign matter or dust is present on the platen gear, or line feed motor gear.

Check for smooth meshing of the platen gear and line feed motor gear.

Ensure correct operation of the push tractor assemblies (both right and left), and the tractor drive gears.

YES Is connector CN4 on the control board connected properly?

NO Connect it properly.

YES Is fuse F1 on the control board open?

YES Replace fuse.

NO Replace the line feed motor.

End of procedure.

RAP 05: Data Receiving Failure

START

Is the SELECT Lamp ON?

NO Press the SELECT Switch

YES Is the interface cable connected correctly?

NO Connect it correctly.

YES Is the serial interface module properly seated?

NO Properly install the serial interface module.

YES Are the serial interface parameters properly set in the menu?

Refer to the Printer Handbook, Chapter Three

OR

Refer to Section Three of this Service Handbook.

YES Replace the serial interface module

NO Set the serial interface parameters through the menu

Refer to the Printer Handbook, Chapter Three.

End of procedure.

4.8 PRINTER TESTS

4.8.01 General Information

This section covers the tests listed below.

- Rolling ASCII Test
- Font Test
- Serial Interface Loopback Test
- Hexadecimal Dump Mode

The Rolling ASCII and Font Tests check print operations.

The Serial Interface Loopback Test checks the operation of the serial interface board.

The Hexadecimal Dump Mode checks the data transfer between the computer and printer.

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4.8.02 Rolling ASCII Test

General Information

The Rolling ASCII Test gives a continuous sample of the default print style. The rolling ASCII test is a continuous printout of all 96 ASCII characters. This is an excellent way to check print quality across and down an entire page.

Use this test to check the following items.

1. Print Quality

Across the entire length of a line

Down the entire page

2. Line Spacing

3. Left Margin Alignment

Header

At the top of the test is a header.

This header provides the following information: printer model (1) , emulation (2), version (3), firmware revision number (4), firmware part number (5), character generator revision number (6), and character generator part number (7).

ML380 EPS A F/W 03.01 YR4077-xxxx RES 01.00 YR4084-xxxx

CAUTION

Before running this test, make sure that continuous feed paper is loaded.

Running the test without paper loaded or having the wrong width paper loaded will allow the printhead to print on the platen. This will dirty the platen, cause excessive wear on the ribbon, and may damage the platen, ribbon, and printhead.

1 2 3 4 5
7 6

Procedure

Follow these steps to print the Rolling ASCII Test.

1. Load continuous feed paper into the printer.
2. Power OFF the printer.
3. Press and hold the TOF/PARK button while powering ON the printer.

4. The test will print.

5. To stop the test, press SELECT.

Sample

```
ML380      EPS      A      F/W 00.37   YR4077-1262
              RES 01.00   YR4084-1035
```

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNopQRSTUVWXYZ[\]^_`abcdefghijklmnop
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNopQRSTUVWXYZ[\]^_`abcdefghijklmnop
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNopQRSTUVWXYZ[\]^_`abcdefghijklmnopq
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNopQRSTUVWXYZ[\]^_`abcdefghijklmnopqr
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNopQRSTUVWXYZ[\]^_`abcdefghijklmnopqrs
%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNopQRSTUVWXYZ[\]^_`abcdefghijklmnopqrst
&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNopQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstu
```

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4.8.03 Font Test

General Information

The Font Test gives samples of the various fonts and sizes available with the Microline 380 printer.

Header

At the top of the test is a header.

This header provides the following information: printer model (1) , emulation (2), version (3), firmware revision number (4), firmware part number (5), character generator revision number (6), and character generator part number (7).

ML380 EPS A F/W 03.01 YR4077-xxxx RES 01.00 YR4084-xxxx

CAUTION

Running the test without paper loaded will allow the printhead to print on the platen. This will dirty the platen, cause excessive wear of the ribbon, and may damage the platen, ribbon, and printhead.

Procedure

1. Load continuous feed paper into the printer.
2. Power OFF the printer.
3. Press and hold the FEED button while powering ON the printer.
4. The test will print.

This test is two pages long.

5. When the test has finished printing, the SELECT lamp will light.

To stop printing the test (before it is complete), follow these steps.

1. Press the SELECT button.
2. The printer will finish printing the current line.
3. The printer will perform a line feed and a carriage return. 1 2 3 4 5

7 6

Sample

ML380 EPS A F/M 03.01 YR4004-1477
REV 01.20 YR4004-1277

```
LQ COURIER 10 CPI  
!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWXYZ[\]^_`abcdefg  
hijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWX  
Y[\]^_`abcdefgijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHI  
JKLMNQRSTUWXYZ[\]^_`abcdefgijklmnopqrstuvwxyz{|}~"
```

```
LQ ROMAN 10 CPI  
!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWXYZ[\]^_`abcdefg  
hijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWX  
Y[\]^_`abcdefgijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHI  
JKLMNQRSTUWXYZ[\]^_`abcdefgijklmnopqrstuvwxyz{|}~"
```

```
LQ SWISS 10 CPI  
!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWXYZ[\]^_`abcdefg  
hijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWX  
Y[\]^_`abcdefgijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHI  
JKLMNQRSTUWXYZ[\]^_`abcdefgijklmnopqrstuvwxyz{|}~"
```

```
LQ PRESTIGE 10 CPI  
!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWXYZ[\]^_`abcdefg  
hijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWX  
Y[\]^_`abcdefgijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHI  
JKLMNQRSTUWXYZ[\]^_`abcdefgijklmnopqrstuvwxyz{|}~"
```

```
LQ ORATOR 10 CPI  
!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWXYZ[\]^_`abcdefg  
hijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWX  
Y[\]^_`abcdefgijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHI  
JKLMNQRSTUWXYZ[\]^_`abcdefgijklmnopqrstuvwxyz{|}~"
```

```
LQ GOTHIC 10 CPI  
!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWXYZ[\]^_`abcdefg  
hijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWX  
Y[\]^_`abcdefgijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHI  
JKLMNQRSTUWXYZ[\]^_`abcdefgijklmnopqrstuvwxyz{|}~"
```

```
UTL 10 CPI  
!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWXYZ[\]^_`abcdefg  
hijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWX  
Y[\]^_`abcdefgijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHI  
JKLMNQRSTUWXYZ[\]^_`abcdefgijklmnopqrstuvwxyz{|}~"
```

```
LQ 10 CPI SUPER/SUBSCRIPT  
!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWXYZ[\]^_`abcdefg  
hijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHIJKLMNQRSTUWX  
Y[\]^_`abcdefgijklmnopqrstuvwxyz{|}~!"#$%&'()*+,-./@123456789:;<=>?@ABCDEFGHI  
JKLMNQRSTUWXYZ[\]^_`abcdefgijklmnopqrstuvwxyz{|}~"
```

```
LQ SWISS 10 CPI DOUBLE WIDTH/HEIGHT  
!"#$%&'()*+,-./@123456789:;<=>?@ABC  
HIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnop  
qrstuvwxyz{|}~"
```

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4.8.04 Serial Interface Loopback Test

General Information

This test isolates the printer from the computer and monitors the operation of the serial interface. In order to run this test, the serial interface board must be installed with a serial loopback test connector attached to it.

Refer to the diagram in the next section for the connector configuration. 

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Loopback Connector Configuration Diagram

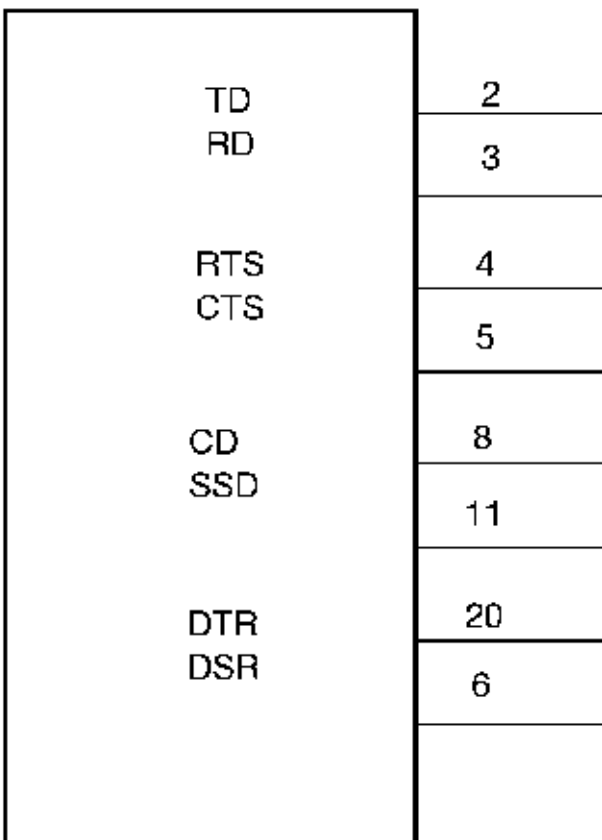
1. Jumper the following pins together:

Pin 2 to Pin 3

Pin 4 to Pin 5

Pin 8 to Pin 11

Pin 6 to Pin 20



Procedure

1. Load continuous feed paper.
2. Verify that the printer is selected (SELECT lamp is lit).
3. Press the FONT and PITCH buttons at the same time. This places the printer in Menu Mode. The SELECT lamp will go out.
4. Press GROUP until you access the Serial Interface group.
5. Press ITEM until you access the Diagnostic Test item.
6. Press SET until YES is specified.
7. Press SELECT to exit Menu Mode.
8. Power OFF the printer.
9. Remove the serial interface cable.
10. Install the test connector.
11. Power ON the printer. This will start the test.
12. The printer will check the memory function and the signal logic.

If both are functioning properly, the following will be printed.

LOOP TEST RAM GOOD I/F GOOD

If either is malfunctioning, the following will be printed.

LOOP TEST RAM BAD (if the memory function is faulty) I/F BAD (if the signal logic is faulty)

13. The printer will generate a test pattern, send the data through its transmit and receive circuits, and write the data to its message buffer. It will then print the stored data. The test pattern consists of the ASCII characters equivalent to the decimal values 32 to 126. The process repeats until the test is stopped.
14. Press MODE to stop the test.
15. Remove the test connector.
16. Install the serial interface cable.
17. Power OFF the printer.
18. Press and hold FONT while powering ON the printer. This will place the printer in Menu Mode.

19. Press GROUP until you access the Serial Interface group.

20. Press ITEM until you access the Diagnostic Test item.

21. Press SET until NO is specified.

22. Press SELECT to exit Menu Mode.

NOTE: *If you do not set Diagnostic Test to no, the printer will enter the test mode at each power ON.*

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Serial Cable Information

The information in this section will help you make a serial cable to connect between the printer and computer.

Refer to the computer documentation to determine the cable requirements on the computers end.

The printer has the following cable requirements.

- Shielded, RS-232C cable
 - UL and CSA approved
 - No more than 50 feet long
 - Cannon DB-25P plug (or equivalent) with 25 pins
 - Cannon DB-C2-J9 (or equivalent) connector shell
-

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Chapter 4 Failure & Repair Analysis

Serial Interface Signal Requirements

Pin	Signal	Symbol	Direction	Description
1	Protective Ground	PG	Ground	Connected to the printer frame
2	Transmit Data	TD	From Printer	Serial data transmitted to the system
3	Receive Data	RD	To Printer	Serial data received by the printer
4	Request to Send	RTS	From Printer	Always set to low (mark)
5	Not Used			
6	Data Set Ready	DSR	To Printer	Indicates that data can be sent
7	Signal Ground	SG	Ground	Ground
8 to 10	Not Used			
11	Supervisory Send Data	SSD	From Printer	Indicates that the printer is not ready to receive data
12 to 19	Not Used			
20	Data Terminal Ready	DTR	From Printer	Indicates that the printer is not ready to receive data
21 to 25	Not Used			

Commonly Used Serial Cable Configurations

IBM 25-Pin Cable Configuration

Computer			Printer	
PG	1	_____	1	PG
TD	2	_____	3	RD
RD	3	_____	2	TD
CTS	5	_____	11	SSD
DSR	6	_____	20	DTR
		└───┬───	6	DSR
SG	7	_____	7	SG
		└───┬───	4	RTS
		└───┬───	5	CTS

IBM 9-Pin Cable Configuration

Computer			Printer	
RD	2	_____	2	TD
TD	3	_____	3	RD
SG	5	_____	7	SG
DSR	6	_____	20	DTR
		└───┬───	6	DSR
CTS	8	_____	11	SSD
		└───┬───	4	RTS
		└───┬───	5	CTS

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4.8.05 Hexadecimal Dump Mode

General Information

The hexadecimal dump mode allows you to view the data sent from a computer to the printer. When the printer is in hex dump mode, all data received (both printable characters and control codes) will be printed in both hexadecimal and ASCII format.

NOTE: *In the ASCII format, all non-printable characters will be represented by a period.*

Example

Below is a line of BASIC code.

```
LPRINT CHR$(27) ;"0";CHR$(30);"This is an example of hexadecimal dump."
```

Below is the same line as it would appear in Hexadecimal Dump Mode.

```
1B 30 1E 54 68 69 73 20 69 73 20 61 6E 20 65 78 .0.
```

This is an example of a hexadecimal dump

```
61 6D 70 6C 65 20 66 20 61 20 68 65 78 61 64 65 63 69 6D 61 6C 20 64 75 6D 70 2E 0D 0A
```

Procedure

Follow these steps to engage the Hexadecimal Dump Mode.

1. Make sure the printer is connected to a computer.
2. Verify that paper is loaded.
3. Verify that the ribbon and printhead are correctly installed.
4. Power OFF the printer.
5. Press and hold the SELECT and TOF/PARK buttons while powering ON the printer.
6. All data sent to the printer, including text and printer commands, will print in both hexadecimal and ASCII format. In the ASCII format, all non-printable codes will be represented by a period.
7. To return to normal printing, power OFF the printer. Then, power ON.

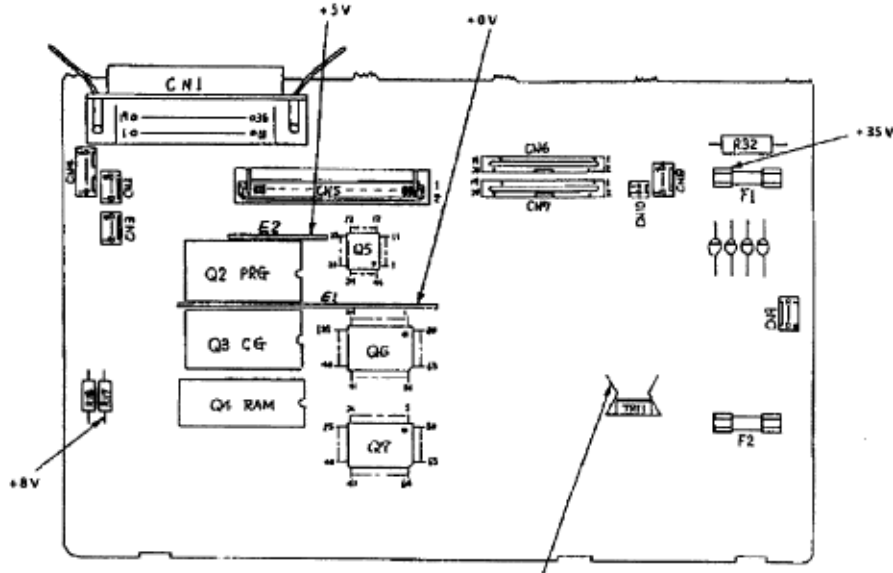
4.9 RESISTANCE CHECKS

4.9.01 General Description

The charts on the following pages provide information needed to determine if the printhead and motors used in the printer are defective.

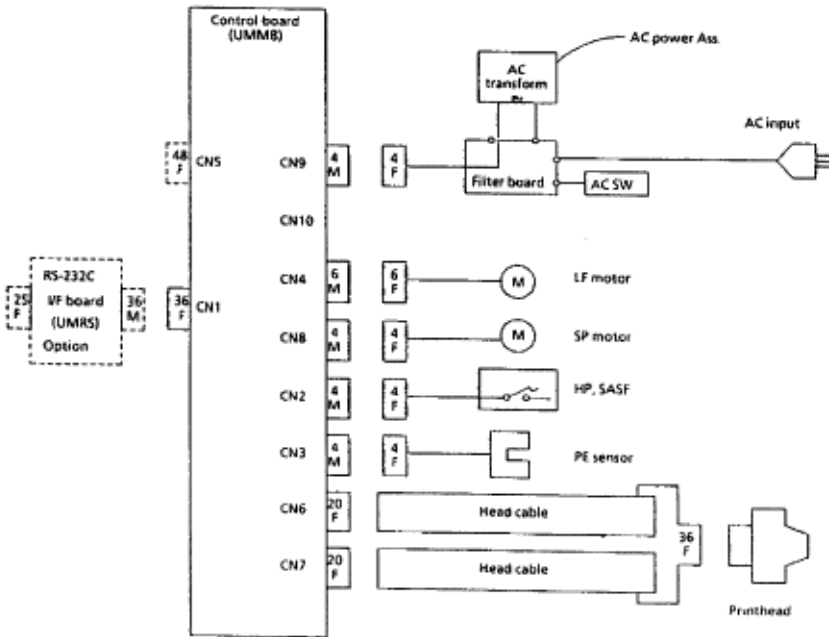
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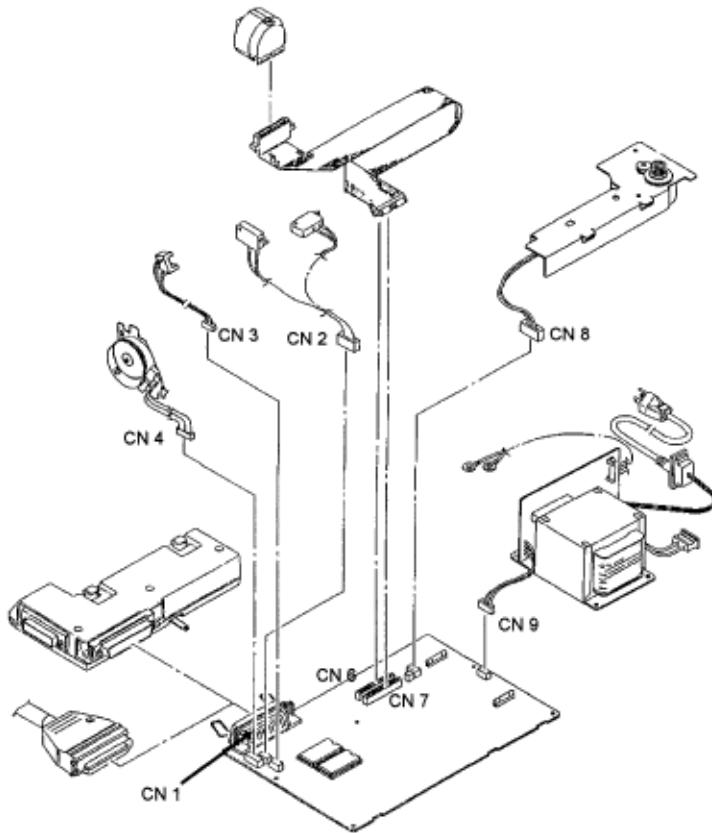
4.9.02 Main Control Board (UMMB) Voltage Check Points



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4.9.03 Connectors Block Diagram



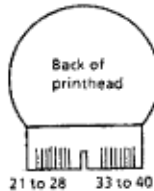
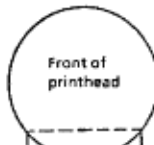
4.9.04 Connector Location

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4.9.05 Resistance Diagrams

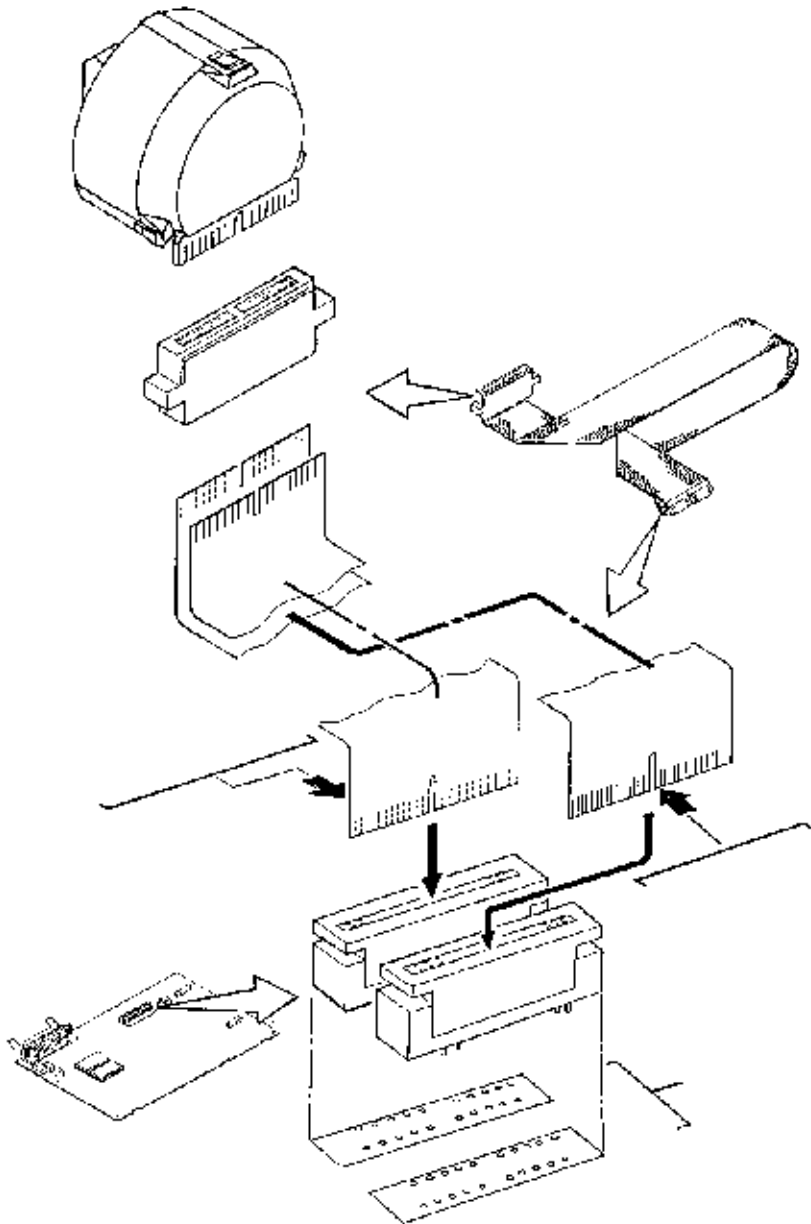
Printhead

Name	Signal name	Connection		Coll resistance	Figure
		A	B		
PRINthead	SG	CN6-1	21	Approx 18 Ω	Contact on the printhead 20 to 11 10 to 1
	HD#6	2	22		
	HD#8	3	23		
	HD#14	4	24		
	HD#16	5	25		
	HEAD COMMON	6	26		
	HEAD COMMON	7	27		
	HD#24	8	28		
	HD#23	CN6-13	33		
	HEAD COMMON	14	34		
	HEAD COMMON	15	35		
	HD#15	16	36		
	HD#13	17	37		
	HD#7	18	38		
	HD#5	19	39		
	HD#1	CN7-2	19		
	HD#3	3	18		
	HD#9	4	17		
	HD#11	5	16		
	HEAD COMMON	6	15		
	HEAD COMMON	7	14		
	HD#17	8	13		
	HD#19	9	12		
	HD#21	10	11		
	HD#22	11	10		
	HD#20	12	9		
	HD#18	13	8		
	HEAD COMMON	14	7		
	HEAD COMMON	15	6		
	HD#12	16	5		
	HD#10	17	4		
	HD#4	18	3		
	HD#2	19	2		
HEAD TH	20	1			



Space and Line Feed Motors

Name	Connector		Signal name	Coil resistance	Figure
	Name	Pin No.			
SPACE MOTOR	CN 8	1	SPMOØ1	Approx. 55 Ω	
		2	SPMOØ3		
		3	SPMOØ2		
		4	SPMOØ4		
LINE FEED MOTOR	CN 4	1	LFMOØ1	Approx. 43Ω	
		2	LFCOMØ1,3		
		3	LFMOØ3		
		4	LFMOØ4		
		5	LFCOMØ2,4		
		6	LFMOØ2		
TRANSFORMER	CN 9	1	AC V	Check for Continuity	
		2	AC V		
		3			
		4			
PHOTOSENSOR	CN 3	1	SG2	Check for Continuity	
		2	SG1		
		3	PE2		
		4	PE1		
MECHANICAL SWITCHES	CN 2	1	SG	Check for Continuity	
		2	HP		
		3	SG		
		4	SASF		

4.9.06 Head Cable Connection

A.1 OVERVIEW

A.1.01 General Information

This section describes the characteristics of the printed circuit boards used in the printer.

The following areas are covered.

Firmware

Fuses

Jumpers

Sensors

Switches

Test Points

Where an item is not applicable, the word *NONE* will be listed.

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A.2 INDEX TO CHARTS

Description	Board Designation	Section
Main Control Board (Original)	UMMB	A.2.01
Main Control Board (Current)	UMMB	A.2.02
RS-232C Serial Module	UMRS	A.2.03

Modifications to Main Control Board (UMMB)

There are two types of UMMB boards that you might encounter when servicing the Microline 380 printer.

Summary - UMMB: Original Board

The original board (refer to A.2.01) contains the following PROM/ ROM combination:

Q2 - contains a 256 K or a 512 K PROM in a socket. This PROM contains the printer control firmware.

Q3 - is a character generator ROM which is soldered to the printed circuit board.

The original board contains one jumper (SP4). Refer to A.2.01 for jumper placement information.

Summary - UMMB: Current Board

The current board ([refer to A.2.02](#)) contains the following PROM/ ROM combination:

Q2 - contains a 1 MB MASK PROM in a socket. This PROM contains the printer control firmware and the character generator.

Q3 - is an empty socket. However, if either the 256 K or 512 K PROMS are installed in Q2, a character generator must be installed in Q3.

The current board contains three jumpers (SP4, 6 and 7). Refer to A.2.02 for jumper placement information.

A.2.01 Main Control Board (UMMB) Original**Firmware**

Q2 - Control Program (PROM)

Q3 - Character Generator (CG ROM) - soldered on the UMMB

Fuses

F1: 2.5 Amp 125V

F2: 1.6 Amp 125V

F1: 3.15 Amp 125V (Power Supply Filter Board)

Jumpers

SP4: Place this jumper on the A Side for both 512K ROM and the 256K ROM

Sensors

NONE

Switches

LED1: Select

LED2: Power

LED3: Fonts

LED4: Fonts

LED5: Fonts

LED6: Character Pitch

LED7: Character Pitch

LED8: Character Pitch

SW1: Select

SW2: Paper Feed

SW3: TOF/Park

SW4: Fonts

SW5: Character Pitch

Test Points

Check the voltages at the testpoints shown

+ 8 vdc (Line Feed, Space Motor, Printer Alarm Circuitry)

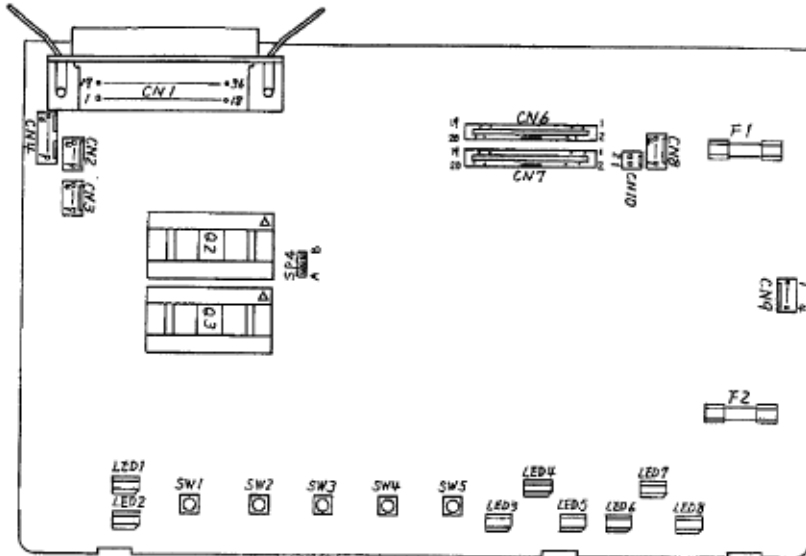
+ 35 vdc (Print Wire Drive)

+ 5 vdc (Printer Logic)

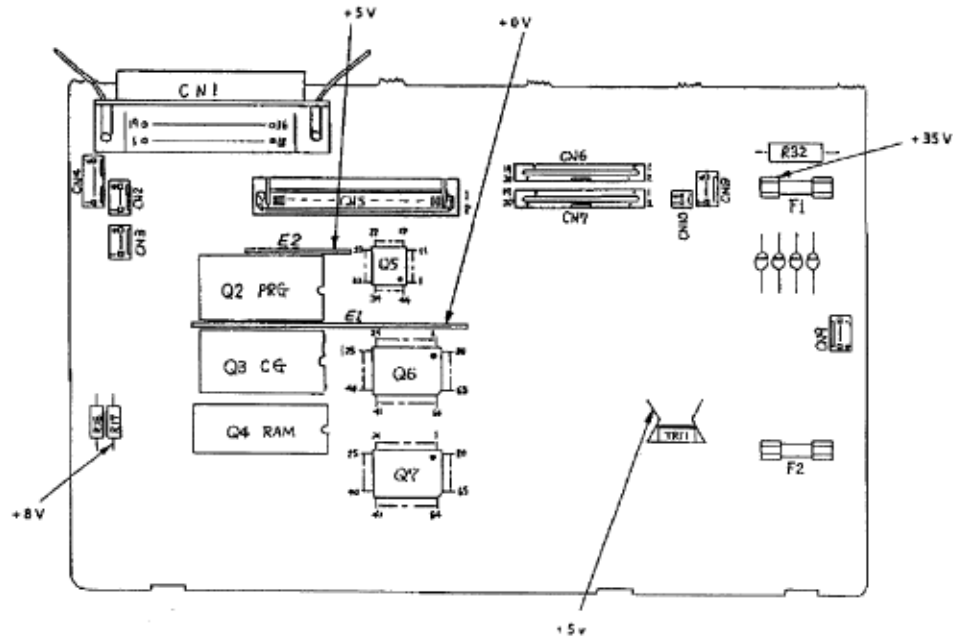
Main Control Board (UMMB) Original



Jumper Location



Test Points



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A.2.02 Main Control Board (UMMB) Current**Firmware**

Q2 - Control Program (PROM)

Fuses

F1: 2.5 Amp 125V

F2: 1.6 Amp 125V

F1: 3.15 Amp 125V (Power Supply Filter Board)

Jumpers

SP4: A Side = 1MB/512K ROM in Q2 B Side = 256K ROM in Q2

SP6: A Side = 256K/512K ROM in Q2 B Side = 1 MB Mask ROM in Q2

SP7: A Side = 256K/512K ROM in Q2 B Side = 1 MB Mask ROM in Q2

Sensors

NONE

Switches

LED1: Select

LED2: Power

LED3: Fonts

LED4: Fonts

LED5: Fonts

LED6: Character Pitch

LED7: Character Pitch

LED8: Character Pitch

SW1: Select

SW2: Paper Feed

SW3: TOF/Park

SW4: Fonts

SW5: Character Pitch

Test Points

Check the voltages at the testpoints shown

+ 8 vdc (Line Feed, Space Motor, Printer Alarm Circuitry)

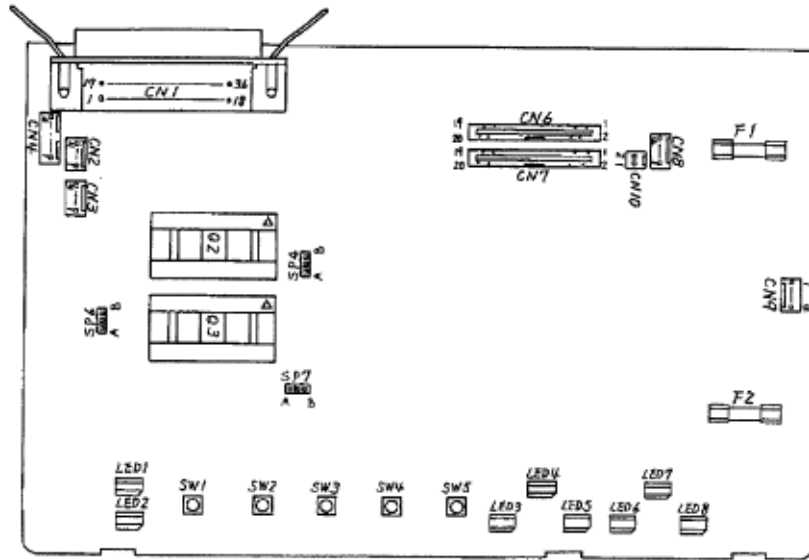
+ 35 vdc (Print Wire Drive)

+ 5 vdc (Printer Logic)

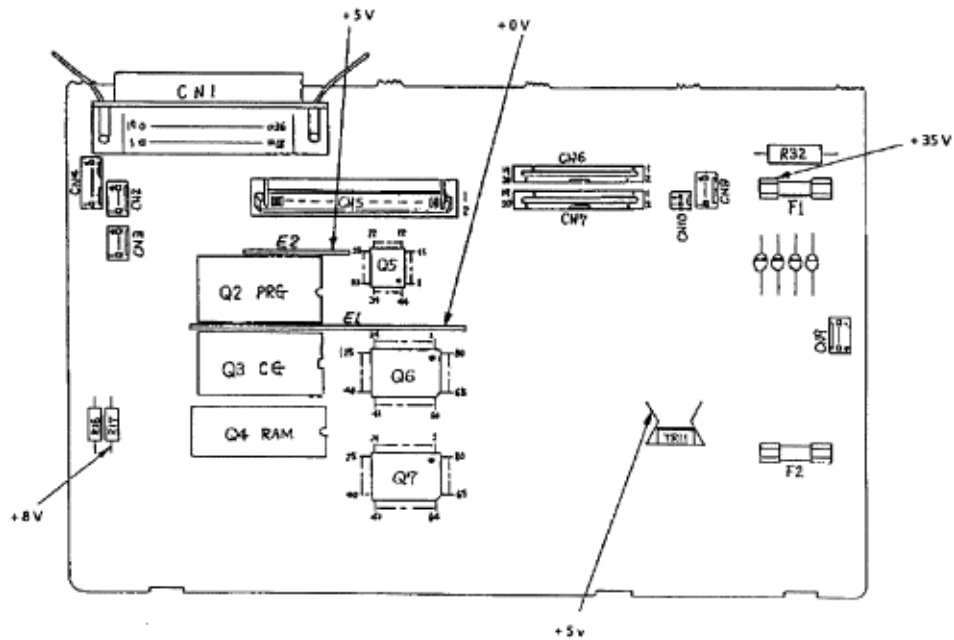
Main Control Board (UMMB) Current



Jumper Location



Test Points



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A.2.03 RS232-C Serial Module (UMRS)**Firmware**

Q3 - Control Program PROM

Fuses

NONE

Jumpers

SP1

Side 1+ 2 = External ROM

Side 2+ 3 = Internal ROM

Sensors

NONE

Switches

NONE

Testpoints

CN1, Pin 18 (see diagram)

+ 5 vdc

Q4, Pin 14

+ 9 vdc

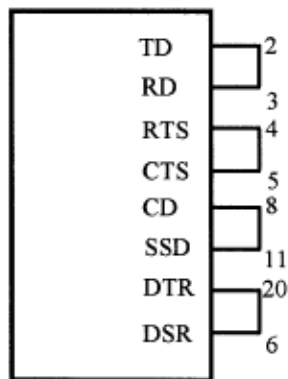
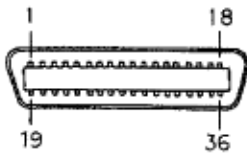
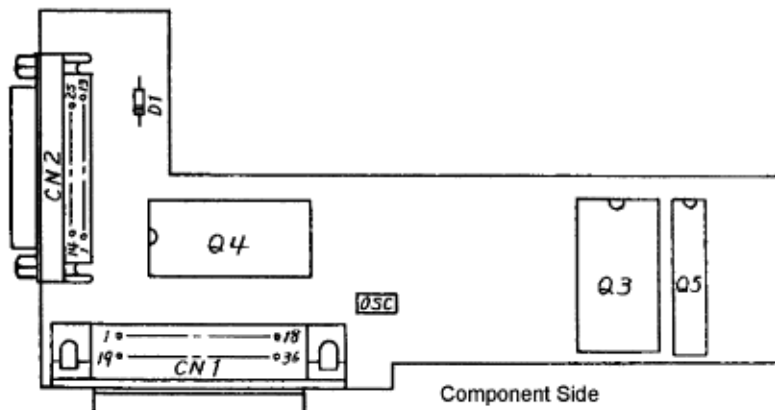
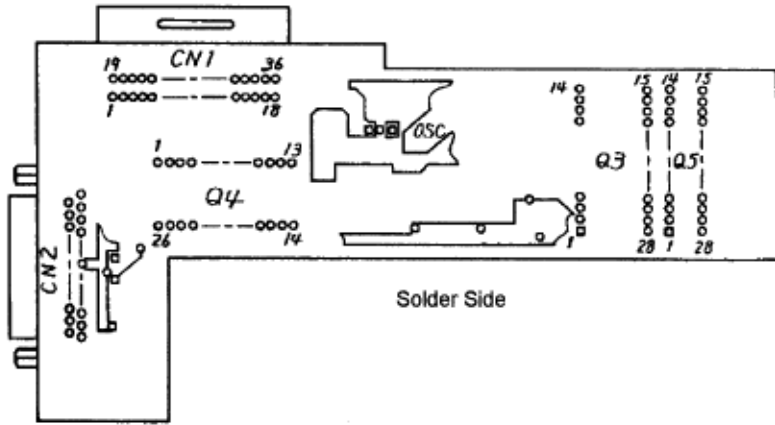
Q4, Pin 16

- 9 vdc

NOTES:

Check on solder side of board with cover removed. Be careful not to damage any components when cover is removed.

Instructions for running the Serial Loopback Diagnostic are contained in the Printer Handbook, Appendix D. Construct a loopback connector as shown using a DB-25-M connector.





Service Guide ML380

Chapter B Illustrated Parts Listing

B.1 OVERVIEW

B.1.01 General Information

This appendix will assist you in identifying the assemblies and parts of the product.

Use Section Four (Failure Analysis) to determine the defective part(s).

Locate the part and its part number in this section.

Appendix B is cross-referenced to Section Three (Maintenance).

Format

The format for this appendix is a series of tables with diagrams. The tables contain the item reference number, the Okidata and Oki-Japan (Oki-J) part numbers, the part description, a comments section, and the disassembly procedure.

Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
------	--------------------------	-------------	-----------------------------	--------------------------

Items with the comments RSPL (Recommended Spare Parts List), Consumable, Document, or Option are available from Okidata. Items without these comments are usually not stocked.

Some items are only available as assemblies. Every effort has been made to clearly indicate which items are in assemblies and which are not.

N/A will appear where a part number is not available

Current Part Numbers

Okidata has made every effort to include current part numbers in this Service Handbook *at the time of publishing*.

However, technical information frequently changes. These changes often include new or modified parts, with new or modified part numbers.

Please refer to the following resources for current part numbers and pricing.

- Okidata's Electronic Bulletin Board (Okilink II) contains current part numbers, prices, and recommended stocking levels for each item listed as a recommended spare part. For instructions on accessing Okilink II, refer to the Service Center Reference Guide.

- Okidata's Faxable Facts is an automated fax document retrieval system. Part numbers and pricing are available through Faxable Facts. For instructions on accessing Faxable Facts, refer to the Service Center Reference Guide.

- Okidata's Technical Information Group is a telephone support line reserved for Authorized Dealers. Part numbers and pricing are available through Technical Information. For instructions on accessing Technical

Information, refer to the Service Center Reference Guide.

REMEMBER

Current part numbers, recommended stocking levels, and pricing information are available through Okilink II, Faxable Facts, and Technical Information. Refer to the Service Center Reference Guide for information on accessing these resources..

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B.1.02 Definition of Terms

Assemblies

Assemblies are parts grouped under a single description and/or part number. Generally, individual items in an assembly are not available from Okidata.

Assemblies are surrounded by broken line boxes in the diagrams.

Assemblies will say "Includes xx xx" under the *Comments* section of the tables.

Parts in assemblies will say "Part of xx" under the *Comments* section of the tables.

Blank

Okidata does not recommend stocking this item. This item should be purchased on an **As Required Basis** *only*.

The availability of this item is *NOT* guaranteed by Okidata.

Consumable

A consumable is a supply item which has a specified life and must be periodically replaced. It is purchased and installed by the end user. Okidata machines are designed to work *exclusively* with Okidata consumables. By using genuine Okidata consumable products, the investment made in the equipment is protected.

Document

A document is a printed item which supports the service and marketing of a product. Various documents are available from Okidata.

Drivers

Printer drivers are updated frequently. Please refer to Okilink II for the latest printer driver information.

Firmware

Firmware is revised frequently. Please refer to Okilink II for the latest firmware information.

Option

An option is a part/assembly which is added to a product. The option expands the products functionality. An option may or may not be installed by the end user. Instructions for installation accompany each option.

Option RSPL

Okidata recommends that this part/assembly be on hand for servicing installed options.

RSPL

Okidata recommends that this part/assembly be on hand for servicing.

Technical Service Bulletins

Technical Service Bulletins (TSBs) are also referred to as Okidata's monthly mail.

The TSBs contain the latest information on firmware revisions, procedure changes, and technical information updates.

Okidata distributes the TSBs through Okilink II. The TSBs are issued monthly.

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B.1.03 Parts Ordering Information

Service Center Reference Guide

When a technician has successfully completed a Service Training Course for a product and the Dealer has become Service Authorized, an information package is provided to the Dealer. The Okidata Service Center Reference Guide outlines the following items.

- Responsibilities of Okidata Service Centers
- Spare parts and consumables information
- Procedures for warranty repairs
- Product Training, Certification, and Authorization
- Product Support information
- Okidata Depot information and services
- Third Party Service information
- Information about Okidata's Customer Information Center
- Okidata Service and Support telephone numbers.

The Service Center Reference Guide contains the procedures to follow for ordering parts. Please *read, understand, and follow* these procedures. Service Authorization for a specific product *must* be obtained before a Dealer can submit warranty claims.

Direct questions regarding the Service Center Reference Guide to Okidata Dealer Service. Refer to the Service Center Reference Guide for information on contacting Okidata.

Placing a Parts Order

All authorized Okidata resellers may order spare parts and consumables for Okidata products. Orders are placed through Okidata's Logistics Department.

Please refer to your Service Center Reference Guide for details on ordering parts.

You should have the following information available *before* you place your order.

- Okidata Dealer Authorization Number
- Okidata Customer Number
- Your Purchase Order Number












· Okidata Part Number(s)

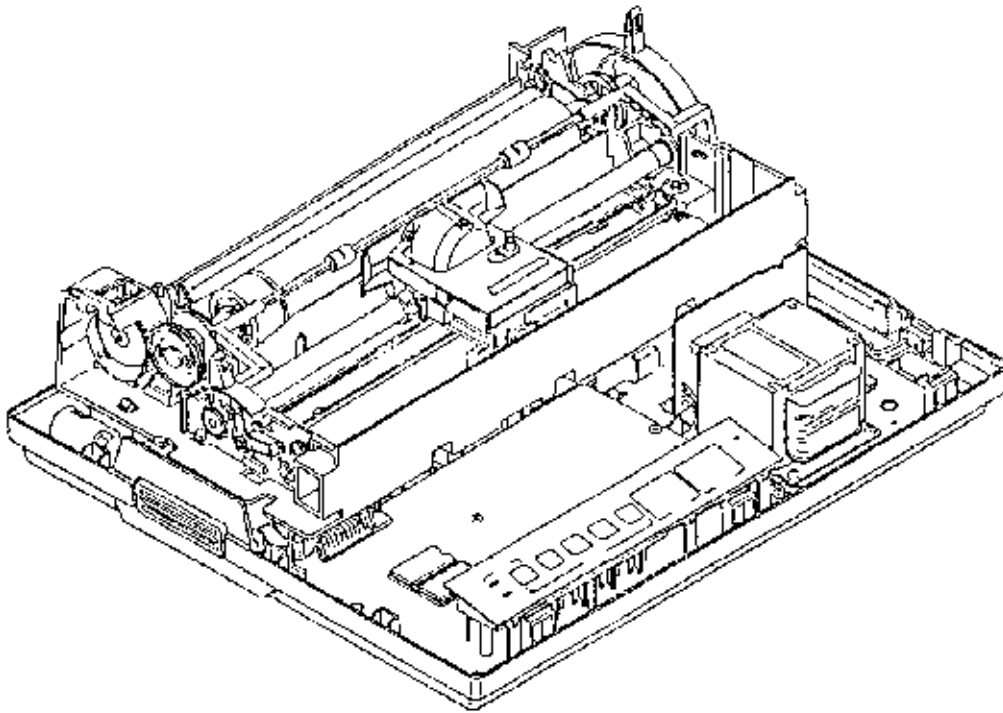
Use this Appendix, Okilink II, Faxable Facts, or contact Okidata Technical Support to find the correct part number. Refer to the Service Center Reference Guide for information on contacting Okidata.

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B.2 CHARTS

Below is an index to the illustrated parts breakdown charts.

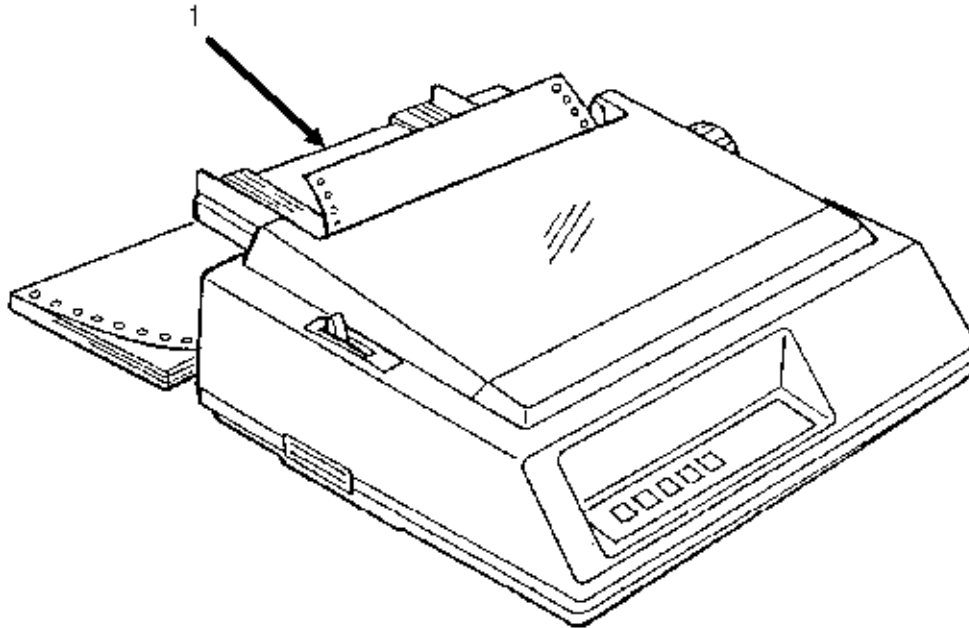
Description	Section
Printer	B.2.01 
Covers	B.2.02 
Printer Unit	B.2.03 
Printer Mechanism (1 of 3)	B.2.04 
Printer Mechanism (2 of 3)	B.2.05 
Printer Mechanism (3 of 3)	B.2.06 
Option Parts	B.2.07 
Consumables	B.2.08 
Packaging	B.2.09 
Documentation	B.2.10 
Service Training Kit Revisions	B.2.11 





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B.2.01 Printer

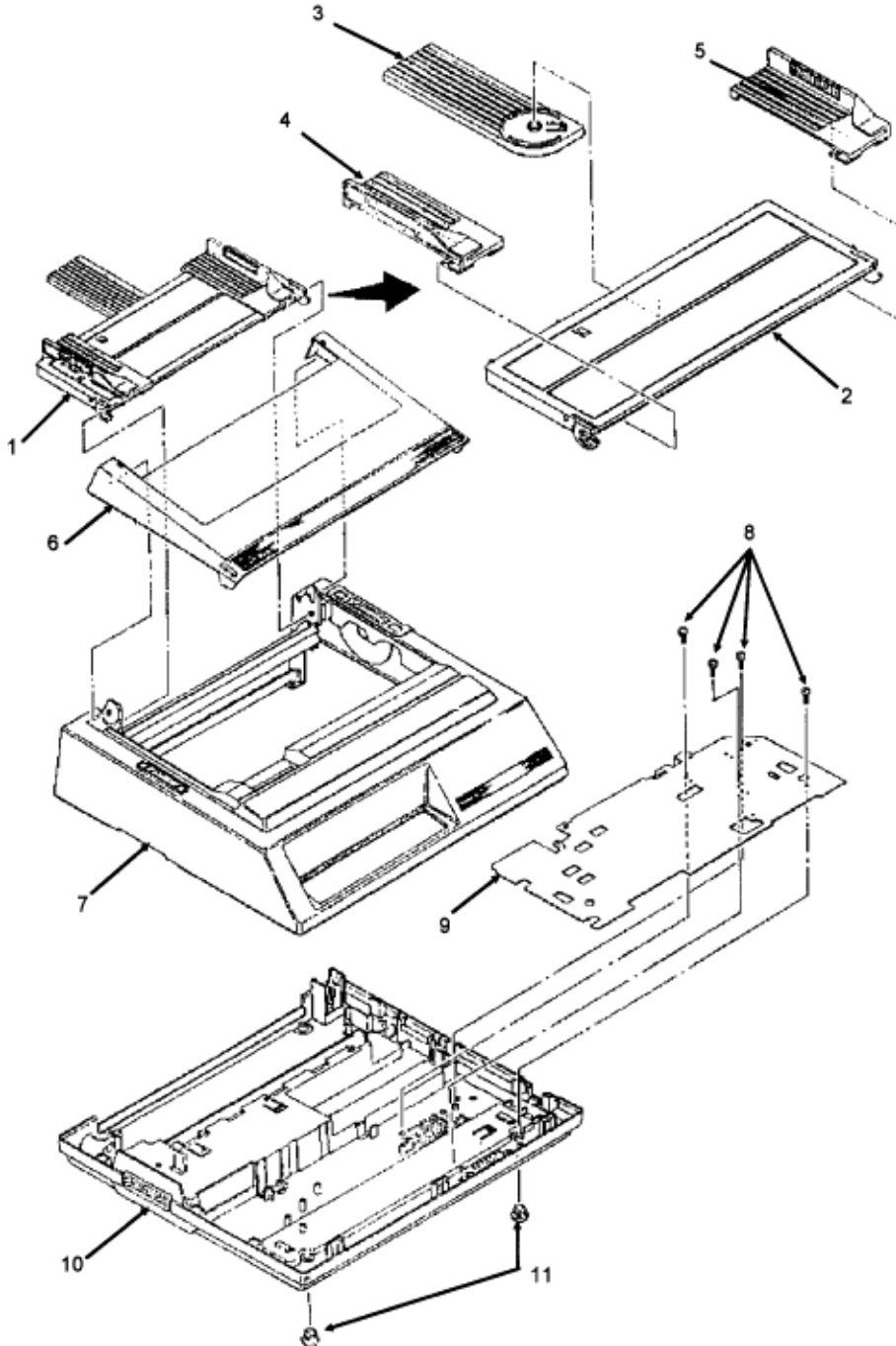
Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.



Item	Okidata P/N Oki-J P/N	Description	Comments	Disassembly Procedure
1	62407901 N/A	Printer: ML380 Parallel (120V) Epson/LQ Comp.	Refer to B.1.02 	N/A
2	62407902 N/A	Printer: ML380 Parallel (220V) Epson/LQ Comp.	Refer to B.1.02 	N/A

B.2.02 Covers

Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.

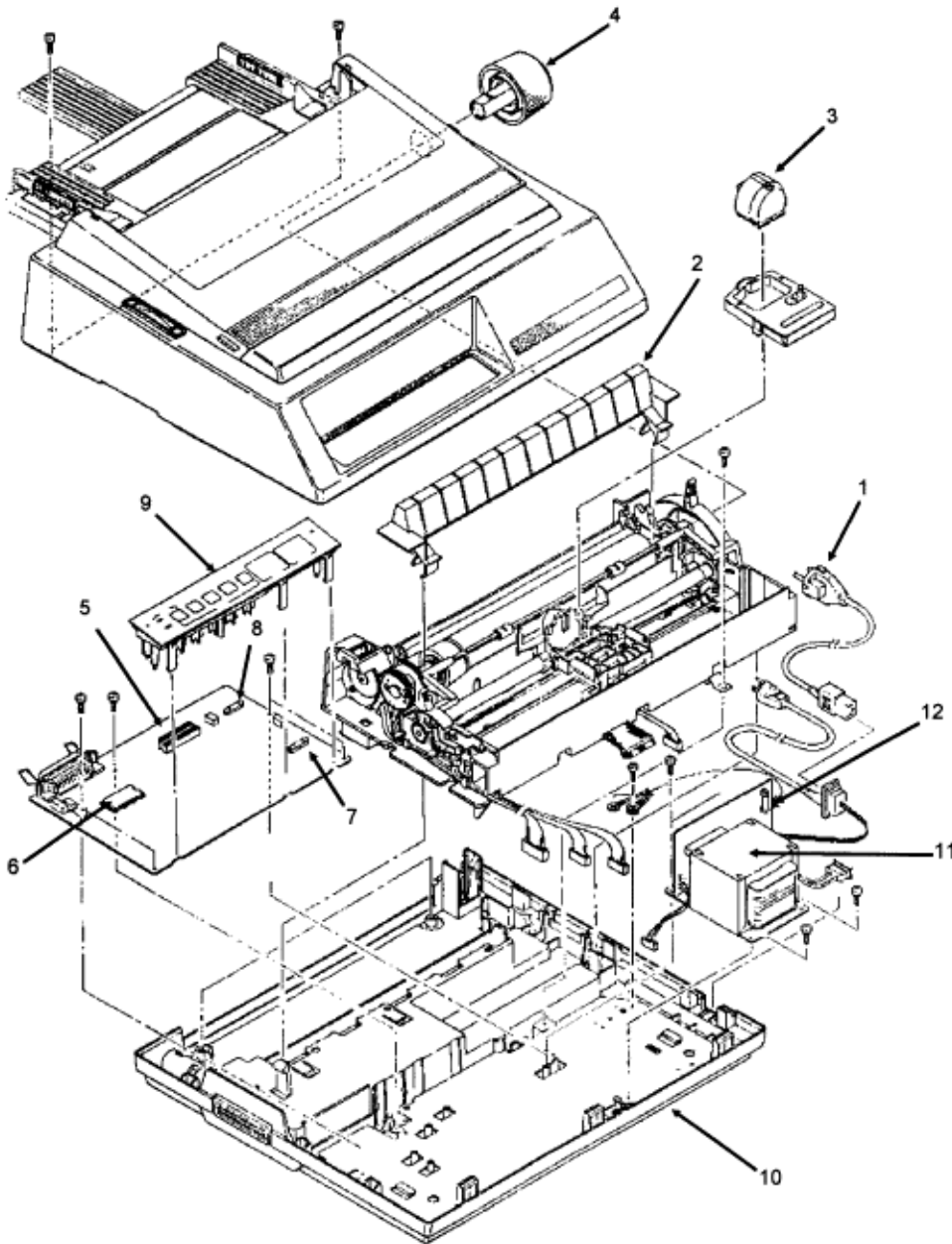

















Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
1	50071101 2PA4094-1078G1	Separator: Sheet (Assembly)	RSPL Inc. 2 - 4	3.2.03 
2	50071201 1PP4094-1079P1	Separator: Sheet		3.2.03 
3	53510201 1PP4094-1080P1	Support: Sheet		3.2.03 
4	53510401 2PP4094-1082P1	Guide: Sheet (L)		3.2.03 
5	53510301 2PP4094-1081P1	Guide: Sheet (R)		3.2.03 
6	53510101 1PP4094-1077P1	Cover: Access	RSPL	3.2.03 
7	53510001 1PP4094-1076P1	Cover: Middle	RSPL	3.2.03 
8	54148708 +T2P3-8-HHC	Screw: No. 3 x 8 MM Self Tapping	RSPL	3.2.20 
9	53330101 2PP4094-1085P1	Plate: Shield	RSPL	3.2.20 
10	53510601 1PP4094-1074P1	Cover: Lower	RSPL	3.2.20 
11	53452701 4PB4025-1137P1	Foot: Rubber	RSPL	3.2.20 

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B.2.03 Printer Unit

Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.

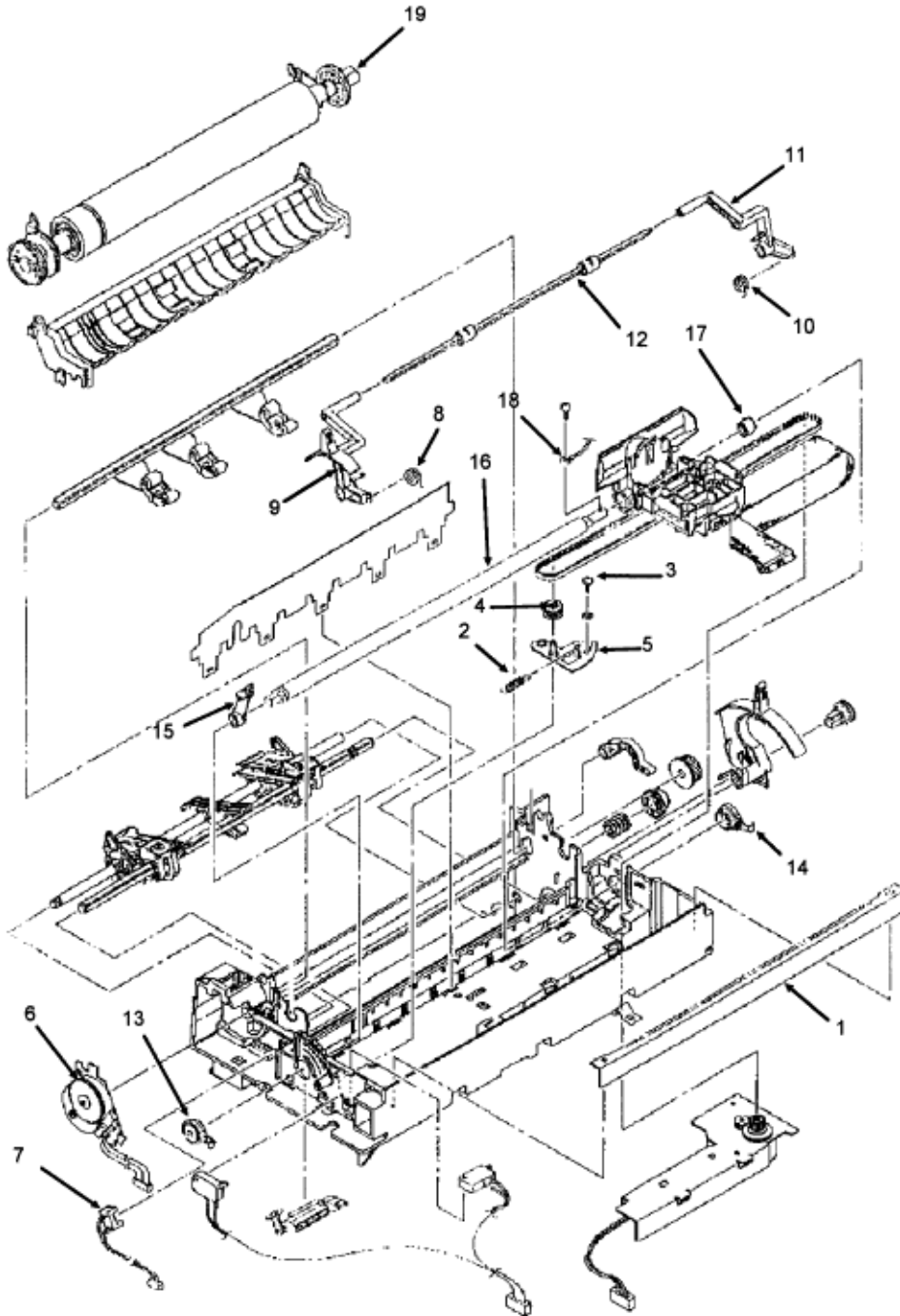




















Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
1	N/A 3YS4011-1187P1	AC Cable		3.2.01 
2	53511401 2PP4043-3688P1	Separator: Paper	RSPL	3.2.01 
3	50079301 4YA4023-2011G2	Printhead	RSPL	3.2.02 
4	51901101 3PP4025-2871P1	Knob: Platen	RSPL	3.2.03 
5	55047801 4YA4042-1450G11	PCB: UMMB (Main Control) w/o ROM	RSPL	3.2.08 
6	55938501 816A0326M0000	IC: EEPROM BR93CS46-Z-NW	RSPL	3.2.08 
7	56304201 540A2046M1162	Fuse: 125V 1.6A	RSPL	3.2.08 
8	56304301 540A2046M1252	Fuse: 125V 2.5A	RSPL	3.2.08 
9	53524301 3PP4043-3783G1	Sheet: Operation Panel	RSPL	3.2.09 
10	50071301 1PA4094-1073G1	Cover: Lower (Assembly)	RSPL	3.2.20 
11	56408201 4YB4049-1482P1	Power Supply Unit 120V	RSPL	3.2.21 
11	56408301 4YB4049-1498P1	Power Supply Unit 220/240V	RSPL	3.2.21 
12	56304101 540A2046M1322	Fuse: 125V 3.15A	RSPL	3.2.21 
12	56304501 540A2058T2132	Fuse: 250V 1.25A	RSPL	3.2.21 



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B.2.04 Printer Mechanism (1 of 3)

Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.



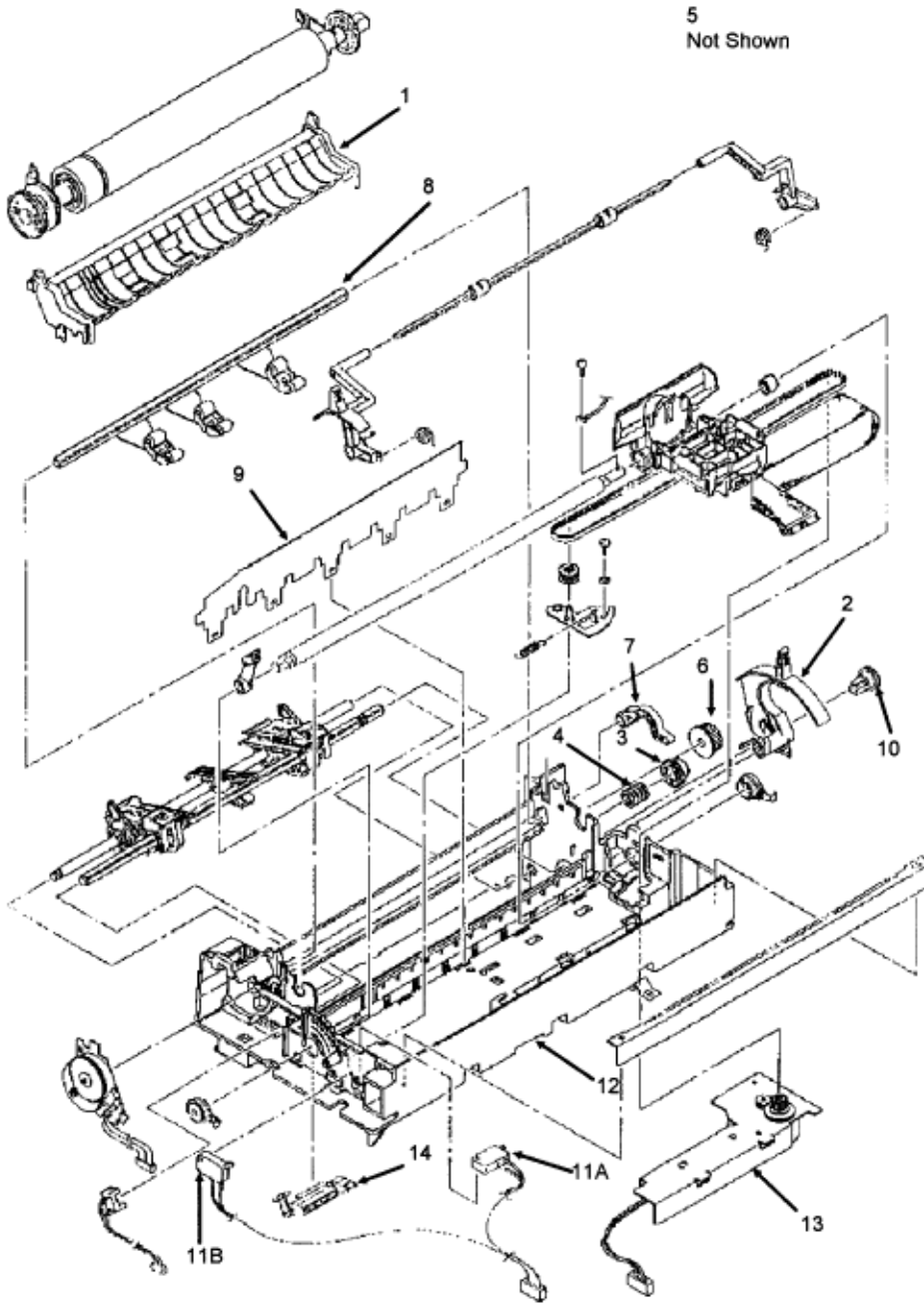
Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
1	53510801 3PP4043-3755P1	Rack: Space	RSPL	3.2.04 
2	50904801 LB-193000-1	Spring: Coil	RSPL	3.2.06 
3	N/A 4PP4050-2621P1	Screw: Self Tapping		3.2.06 
4	51219201 3PP4043-3683P1	Pulley: Idle	RSPL	3.2.06 
5	53330301 4PP4043-3756G1	Bracket: Idle Pulley	RSPL	3.2.06 
6	56507801 3PB4043-3772P1	Motor: Line Feed	RSPL	3.2.10 
7	56106901 4YX4043-3781G1	Photosensor: (Assembly) Paper End	RSPL	3.2.11 
8	50911801 4PB4025-2843P1	Spring: Bail Arm (L)	RSPL	3.2.12 
9	53511001 2PP4043-3696P1	Bail Arm (L)	RSPL	3.2.12 
10	50911701 4PB4025-2842P1	Spring: Bail Arm (R)	RSPL	3.2.12 
11	53511101 3PP4043-3697P1	Bail Arm (R)	RSPL	3.2.12 
12	51110501 4PB4043-3809P1	Shaft: Indicator (Assembly) Bail Bar	RSPL	3.2.12 
13	51606501 4PP4043-3684P1	Bushing: Adjust (L)	RSPL	3.2.13 
14	51606601 4PP4043-3685P1	Bushing: Adjust (R)	RSPL	3.2.13 
15	53510701 3PP4043-3687P1	Lever: Adjust	RSPL	3.2.13 
16	51110401 4PP4043-3769P1	Shaft: Carriage	RSPL	3.2.13 
17	50704601 4PP4043-3686P1	Collar: Eccentric	RSPL	3.2.13 





18	N/A 4YS4011-1607G2	Code: Earth		3.2.13 
19	50061305 3PA4025-2811G5	Platen: (Assembly)	RSPL	3.2.14 

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B.2.05 Printer Mechanism (2 of 3)

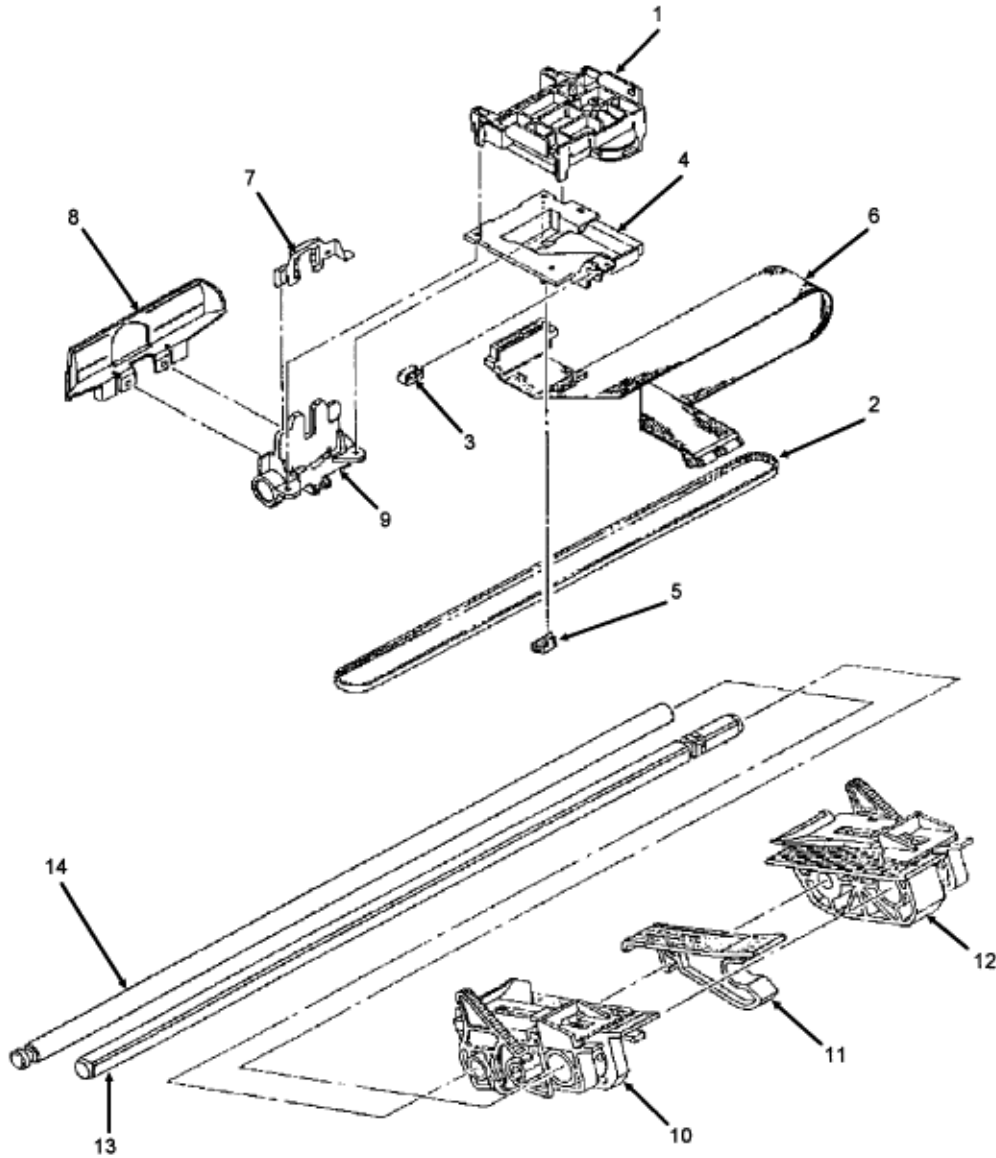
Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.

















Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
1	50071701 3PA4043-3777G1	Chute: Paper (Assembly)	RSPL	3.2.15 
2	53511201 3PP4043-3703P1	Lever: Release	RSPL	3.2.15 
3	51219101 4PP4043-3705P1	Gear: Change	RSPL	3.2.15 
4	50915101 4PP4043-3782P1	Spring: Change Gear	RSPL	3.2.15 
5	58227501 N/A	Kit: Idler/Change Gear (ML300)	RSPL Inc. 6	3.2.15 
6	51216001 4PP4025-2868P1	Gear: Idler		3.2.15 
7	53511301 3PP4043-3704P1	Link: Release	RSPL	3.2.15 
8	50071601 3PA4043-3773G1	Roller: Pressure (Assembly)	RSPL	3.2.15 
9	50911501 3PP4025-2819P1	Guide: Paper Pressure	RSPL	3.2.16 
10	51216101 4PP4025-2869P1	Gear: Tractor	RSPL	3.2.17 
11 A	56211301 4YX4043-3780G1	Microswitch: (Assembly) SASF	RSPL	3.2.18 
11 B	56211301 4YX4043-3780G1	Microswitch: (Assembly) Home Position	RSPL	3.2.19 
12	50071401 2PA4043-3751G1	Chassis: Mechanism (Assembly)	RSPL	3.2.20 
13	56507901 3PB4043-3762P1	Motor: Space (Assembly)	RSPL	3.2.22 
14	53510901 3PP4043-3690P1	Lever: Bottom Paper Guide	RSPL	3.2.23 

B.2.06 Printer Mechanism (3 of 3)

Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure

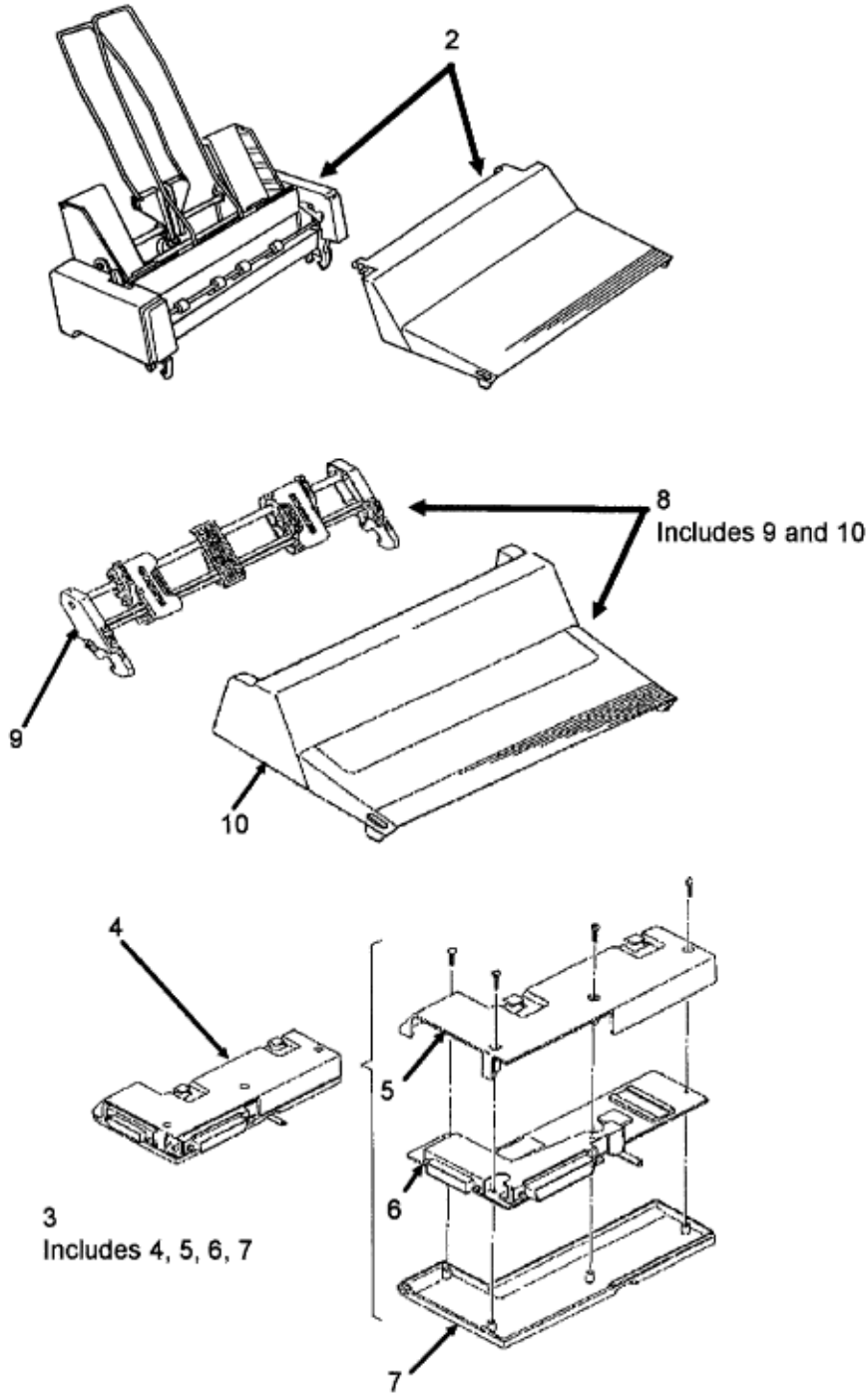
1	50071501 4PA4043-3767G1	Gear: Ribbon Feed (Assembly)	RSPL	3.2.05 
2	51304001 4PB4043-3759P1	Belt: Mini-Pitch (Space Belt)	RSPL	3.2.06 
3	51004001 4PP4043-3768P1	Slider	RSPL	3.2.06 
4	53330401 2PP4043-3801P1	Plate: Carriage	RSPL	3.2.06 
5	50704701 4PP4043-3802P1	Clamp: Belt	RSPL	3.2.06 
6	56725301 3PB4043-3766P1	Connector: Head (Assembly) Head Cable	RSPL	3.2.07 
7	50702901 4PP4025-1048P1	Clamp: Head	RSPL	3.2.13 
8	53056201 3PP4025-2836P1	Protector: Ribbon	RSPL	3.2.13 
9	53330201 4PP4043-3764G1	Frame: Carriage	RSPL	3.2.13 
10	50071901 4PA4043-3779G1	Tractor: Pin [L] (Assembly)	RSPL	3.2.17 
11	51003901 4PP4043-3741P1	Guide: Center	RSPL	3.2.17 
12	50071801 4PA4043-3778G1	Tractor: Pin [R] (Assembly)	RSPL	3.2.17 
13	51109503 4PB4043-3865P1	Shaft: Drive	RSPL	3.2.17 
14	51110601 4PP4043-3784P1	Shaft: Lock	RSPL	3.2.17 



B.2.07 Option Parts

Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.

1 is not shown



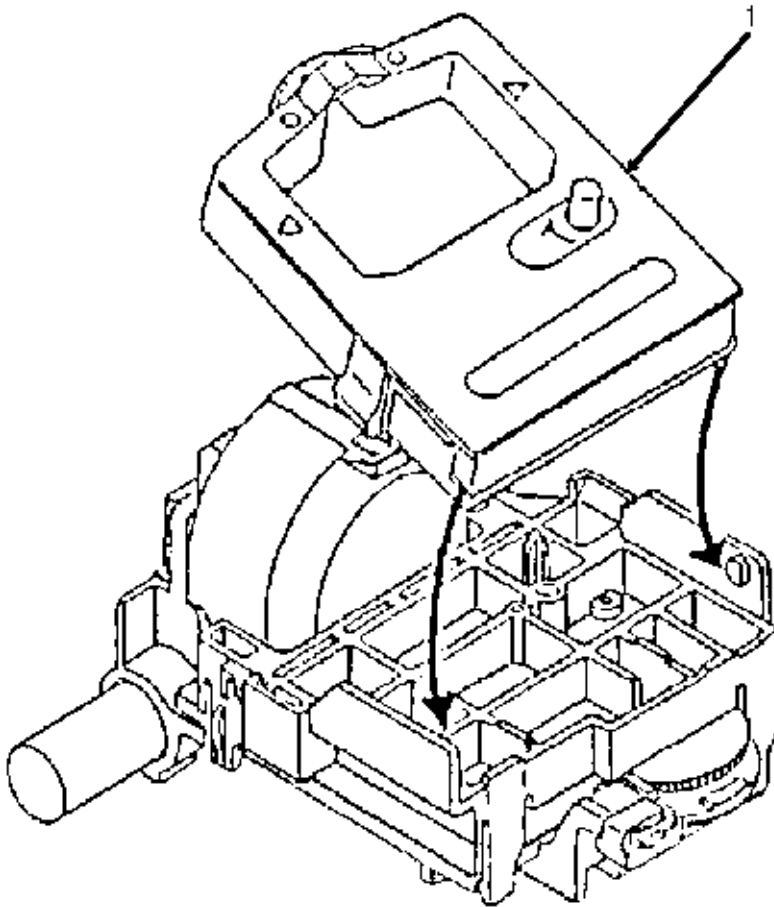
Item	Okidata P/N Okidata P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
------	----------------------------	-------------	---	--------------------------

1	7000803	Kit: IBM PC Cable Kit for Parallel Printers	Option	N/A
2	70016001	Kit: Cut Sheet Feeder 3800 Single Bin (ML380)	Option	N/A
3	70016101	Kit: Super Speed RS-232C (ML380)	Option Incl 4 5 6 7	N/A
4	N/A 4YA4042-1451G1	Module: Interface (RS232C)	Option Inc. 5 6 7	N/A
5	53511601 2PP4043-3718P1	Cover: Upper (RS232C I/F)	Option RSPL Part of 4	N/A
6	55047901 4YA4042-1451G11	PCB: UMRS (RS232C I/F) w/o ROM	Option RSPL Part of 4	N/A
7	53511501 2PP4043-3717P1	Cover: Lower (RS232C I/F)	Option RSPL Part of 4	N/A
8	70015901	Kit: Pull Tractor (ML380)	Option Inc 9 and 10	N/A
9	50072001 3PA4025-2971G1	Unit: Tractor	Option Part of 8	N/A
10	53510501 1PP4094-1084P1	Cover: Tractor	Option Part of 8	N/A

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B.2.08 Consumables

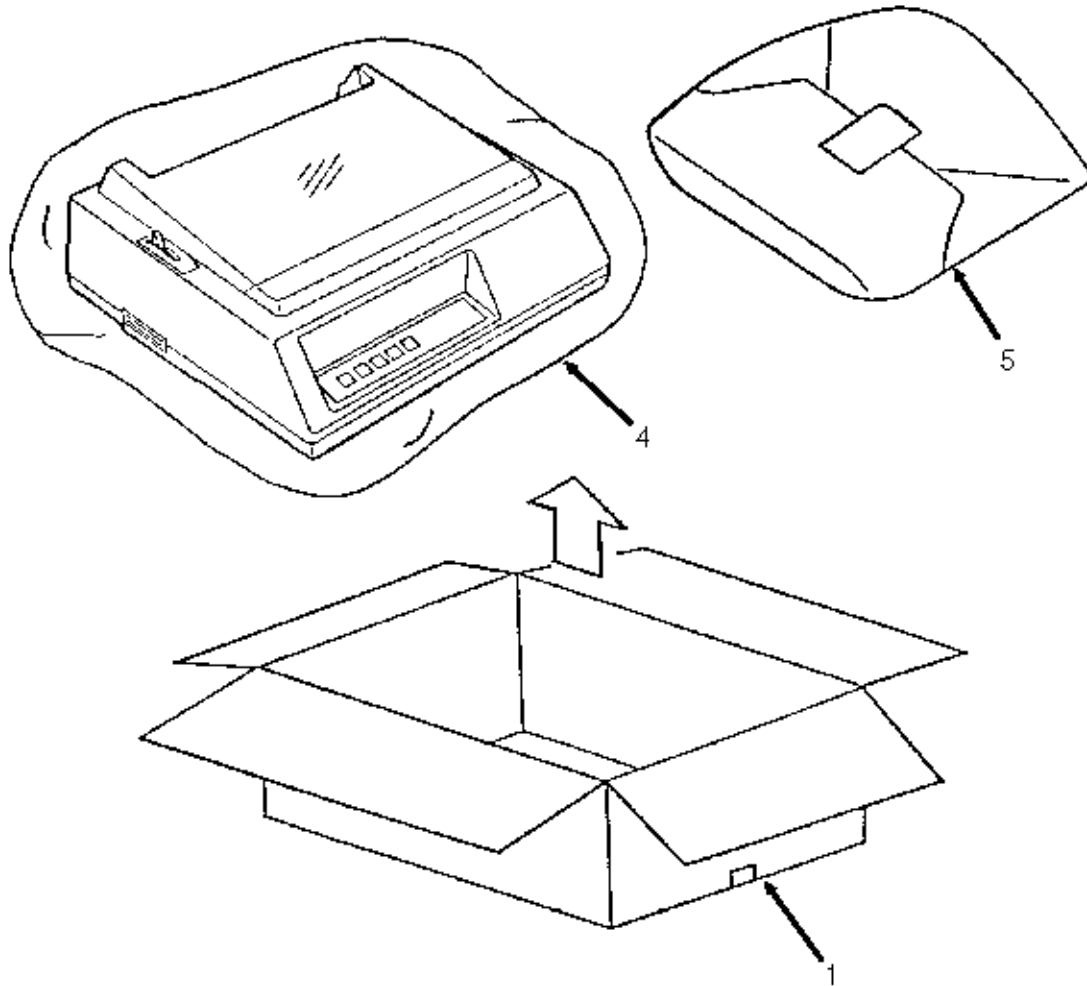
Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.



Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02	Disassembly Procedure
1	52104001 N/A	Ribbon: Cartridge	Consumable	3.2.02

B.2.09 Packaging

Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.



2
Not Shown

3
Not Shown


Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 📄	Disassembly Procedure
1	53506702 N/A	Box: Graphic (Microline 380)		N/A

2	53529702 N/A	Foam: End Cap (Left)		N/A
3	53529701 N/A	Foam: End Cap (Right)		N/A
4	N/A N/A	Bag: Printer		N/A
5	N/A N/A	Bag: Accessories		N/A

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B.2.10 Documentation


Part numbers are subject to change. Refer to Okilink II for current part numbers and pricing information.

Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
1#	58217701 N/A	Kit: ML380 Service Training	Document	N/A
1#	58217702 N/A	Kit: ML380 Service Training	Document	N/A
1#	58217703 N/A	Kit: ML380 Service Training	Document	N/A
2	58232301 N/A	Package: User's Documentation	Document Inc. 3 4 5 6	N/A
3	52033001 N/A	Card: QA Reply	Document Part of 2	N/A
4	53436029 N/A	Bag: Poly 9" x 12"	Document Part of 2	N/A
5	58052101 N/A	Guide: Customer Service	Document Part of 2	N/A
6	59235901 N/A	Handbook: Printer	Document Part of 2	N/A
6	59235902 N/A	Handbook: Printer	Document Part of 2	N/A
6	59235903 N/A	Handbook: Printer	Document Part of 2	N/A
7	59236401 N/A	Manual: Maintenance	Document	N/A
8	59236501 N/A	Manual: Troubleshooting	Document	N/A
9	59238401	Manual: Maintenance CSF 3800	Document	N/A
10	58054901 N/A	Product Specifications	Document	N/A

11	59239101	Product Specifications ML380 Serial Interface	Document	N/A
12	59239001	Product Specifications ML380 CSF 3800	Document	N/A

* To order Marketing Literature, complete an Okidata Marketing Literature Order Form. Fax the completed form to Okidata Marketing Communications.

** Obtain this form by faxing a request to Okidata Marketing Communications. Refer to the Service Center Reference Guide for information on contacting Okidata.

Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
13	N/A N/A	Okidata Service Center Reference Guide	Document	N/A
14	53547501 N/A	Okidata Support 3-Ring Binder	Document	N/A
15	58067201 N/A	ABCD Warranty Claim Forms (Pkg of 20)	Document	N/A
16	58052401 N/A	Warranty Summary Forms (Pkg of 20)	Document	N/A
17	N/A N/A	Printer Drivers	Refer to Okilink	N/A
18	N/A N/A	Product Updates	Document Refer to Okilink	N/A
19	N/A N/A	Recommended Spare Parts List	Document Refer to Okilink	N/A
20	N/A N/A	Software	Refer to Okilink	N/A
21	N/A N/A	Technical Service Bulletins	Document Refer to Okilink	N/A
22 *	N/A N/A	Marketing Literature	Document	N/A
23 *	N/A N/A	Okidata Marketing Literature Order Form	Document	N/A

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Service Guide ML380


Chapter B Illustrated Parts Listing

B.2.11 Service Training Kit Revision List

P/N 58217701 Microline 380 Service Training Kit

This kit was replaced by P/N 58217702.


Items in the training kit (except for the Printer Handbook) are NOT available separately.

Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
1 A	58217701 N/A	Kit: ML380 Service Training	Document	N/A
2 A	52046201 N/A	Label: Kit	Document	N/A
3 A	58055201 N/A	Sheet: Cover Letter	Document	N/A
4 A	59238901 N/A	Guide: Study	Document	N/A
5 A	59238701 N/A	Manual: Training	Document	N/A
6 A	59235901 N/A	Handbook: Printer	Document	N/A
7 A	59238801 N/A	Service Videotape	Document	N/A
8 A	52046202 N/A	Label: Service Videotape Case	Document	N/A
9 A	52046202 N/A	Label: Service Videotape Front	Document	N/A
10 A	52046202 N/A	Label: Service Videotape Spine	Document	N/A
11 A	57517101 N/A	Red Vinyl Case (VHS Videotape)	Document	N/A
12 A	53533001 N/A	Storage Box	Document	N/A

P/N 58217702 Microline 380 Service Training Kit

This kit was replaced by P/N 58217703.


Items in the training kit (except for the Printer Handbook) are NOT available separately.

Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
1 B	58217702 N/A	Kit: ML380 Service Training	Document	N/A
2 B	52046201 Rev B N/A	Label: Kit	Document	N/A
3 B	58055202 N/A	Sheet: Read Me First	Document	N/A
4 B	59238702 N/A	Handbook: Service	Document	N/A
5 B	59261901 N/A	User's Documentation	Document	N/A
6 B	59235903 N/A	Handbook: Printer	Document	N/A

P/N 58217703 Microline 380 Service Training Kit

This kit replaces P/N 58217702.

Items in the training kit (except for the Printer Handbook) are NOT available separately.

Item	Okidata P/N Oki-J P/N	Description	Comments Refer to B.1.02 	Disassembly Procedure
1 B	58217703 N/A	Kit: ML380 Service Training	Document	N/A
2 B	52046203 N/A	Label: Kit	Document	N/A
3 B	58055203 N/A	Sheet: Read Me First	Document	N/A
4 B	59238703 N/A	Handbook: Service	Document	N/A
5 B	59235903 N/A	Handbook: Printer	Document	N/A