# SATO EUROPE

# M-84Se Series Printers Operation Manual



M-8459Se/M-8460Se/M-8485Se/M-8490Se Left and Right Hand

SATO Europe Im Hülsenfeld 13 40721 Hilden Germany Tel.:+49 (0)2103 9592-0 Fax.:+49 (0)2103 55322



**Issued October 2000** 

This page is intentionally left blank.

# Warning

It is essential that the safety and operating procedures contained within this manual be brought to the attention of, and are used by, all personnel likely to operate this printer/product.

This printer/product must only be used for the purpose for which it was designed.

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Electrostatic discharges on the connector pins and on the memory card may damage the printer.

In the case of fire, water must not be used on the product to extinguish the fire, and the appropriate type of fire extinguisher should be readily available.

No modifications, either mechanical or electrical, should be made to this printer/product or accessory without the written consent of SATO Europe GmbH. Any modifications made without this consent may invalidate guarantee claims.

Other manuals relating to this printer include additional information relating to other aspects of the safe operation of the printer, and are available from your SATO supplier.

All consumable waste, such as the label backing paper and used carbon ribbon must be disposed of carefully, and in a manner that will cause the minimum of environmental pollution.

Should you have any doubts regarding the setting, operating or any safety aspects of this printer/product, please contact your SATO supplier.

SATO Europe GmbH makes no guarantee that all the features described in this manual are available in all models, and, due to SATO's policy of continuous development and improvement, specifications are liable to change, without notice.

# Consumables

Always use SATO carbon ribbons or equivalent. The use of incorrect materials may cause malfunctions of the printer and void the warranty.

# Conventions

Text that appears bold italic and all in capitals such as **LABEL** refers to a key or an LED on the operation panel.

Text that appears enclosed in brackets such as <ESC> refers to an Escape sequence of a data string.

Text that appears bold italic such as **On-Line** refers to a function or to a result.

Text that appears in bold such as **VR1** refers to electrical components like pins, resistors connectors and so on.

# Warranty and Copyright

SATO Europe GmbH makes no guarantee of any kind with regard to this material, including, but not limited to, the implied guaranties of merchantability and fitness for a particular purpose.

SATO Europe GmbH shall not be liable for errors contained herein or for any incidental consequential damages in connection with the furnishing, performance, or use of this material.

This document contains proprietary information which is protected by copyright.

All rights are reserved.

No part of this document may be reproduced or issued to third parties in any form whatsoever without the express permission of SATO Europe GmbH.

The information in this document is subject to change without notice.

© Copyright 2000 SATO Europe GmbH

# Contents

1.	Overv	iew and Specifications	1
	1.1	Overview	1
	1.2	Visual Differences Standard/Opposite Hand	2
	1.3	Overall Dimensions	6
	1.4	Components	7
	1.5	Operation Panel	9
	1.6	DIP Switch Panel	9
	1.7	Input/Output Connections (Rear Panel)	10
	1.8	Switches and Sensors	11
	1.9	Ribbon	13
	1.10	Installation Considerations	13
	1.11	Specifications	14
2.	Config	guration	17
	2.1	DIP Switch Settings	17
	2.2	Default Settings	25
	2.3	Printer Adjustments	27
		Normal Mode	28
		User Mode	28
		Print Darkness Setting	28
		Print Speed Adjustment	29
		Pitch Offset and Direction	29
		Cancel Print Job	31
		Advanced Settings	31
3.	Media	Loading	33
	3.1	Loading Ribbon (not appliciable for the M-8459Se)	33
	3.2	Loading Label	35
4.	Comp	uter Connections	37
	4.1	Bi-directional parallel interface (standard)	37
	4.2	Optional interface (RS-232C)	38
	4.3	Optional Interface (USB)	39
	4.4	Optional Interface (LAN)	39
	4.5	External Connector PIN Assignments	40
		External Output Signal Types	41
		REPEAT PRINT	42

		ERROR SIGNALS	43		
5.	Troub	leshooting	45		
	5.1	Overview	45		
	5.2	Initial Checklist	46		
	5.3	Error Signals	47		
	5.4	Troubleshooting Tables	48		
	5.5	Hex Dump Diagnostics Labels	52		
6.	Clean	ing and Maintenance	55		
	6.1	Cleaning the Print Head	55		
	6.2	Cleaning the Platen and Rollers	56		
	6.3	Cleaning the Sensors and Paper End Switch	57		
Ap	Appendix A: Advanced Settings				
Ap	pendix	B: Declaration of Conformity	63		

# 1. Overview and Specifications

#### 1.1 Overview

The SATO "Se" Series Thermal Transfer Printer Engines are designed to be integrated into high performance on-site labelling systems. All printer parameters are user programmable, using front panel controls and DIP switches. All popular bar codes and 13 human-readable fonts, including a vector font, are resident in memory providing literally thousands of type styles and sizes. The major difference between the M-8485Se and the M-8490Se is the resolution of the head.

The M-8490Se provides a higher print resolution, 305 dpi, to give laser quality printing. It is useful when higher resolution is needed for detailed graphic images.

The M-8459Se Direct Thermal Print Engine is based on the M-8485Se model and with a simplified direct thermal mechanism is significantly less expensive for print and apply applications where direct thermal is the technology of choice. In addition to the lower cost of the print engine, direct thermal is an economical solution to many labelling applications, saving users the costs of thermal transfer ribbons.

The M-8460Se Wide Web Print Engine features a 125 mm wide print head and a 165 mm wide media path. This unit is ideal for pallet labelling as well as compliance labelling that require labels up to 165 mm wide.

# 1.2 Visual Differences Standard/Opposite Hand

#### Note: Standard = Left Hand Opposite = Right Hand





#### 1. Overview and Specification





M-8459Se DIRECT THERMAL





M-8485Se/M-8490Se THERMAL TRANSFER M-8460Se WIDE WEB THERMAL TRANSFER



SERVICE BOARD (ALL UNITS)

M-8485Se/W8490Se THERMAL TRANSFER M-8460Se WIDE WEB THERMAL TRANSFER M-8459Se DIRECT THERMAL

# 1.3 Overall Dimensions



SPECIFICATION	M-8485S <mark>e</mark> /M-8490S <mark>e</mark> / M-8459S <mark>e</mark>	M-8460S <mark>e</mark>		
DIMENSIONS				
Width	245 mm	245 mm		
Depth	408 mm	455 mm		
Height	300 mm	299 mm		
Weight	11.34 Kg	12.5 Kg		
POWER REQUIREMENTS				
Voltage	Voltage 220 V (+/- 10 %)			
	50/60 Hz (+/- 1%)			
Power Consumption	50 Watts Idle			
	700 Watts Max			

**Operation Manual** 

1. Overview and Specification

## 1.4 Components



#### M-84 Se Series Printers



INDICATORS

CONTROL KEYS

# 1.5 Operation Panel



POWER ON/OFF SWITCH LCD DISPLAY

#### **OPERATION PANEL**

LCD Display	2 Line x 16 Character display
LABEL LED	Illuminated when label is out
RIBBON LED	Illuminated when ribbon is out (blinks by ribbon near end)
ERROR LED	Illuminated when errors have occurred
ON-LINE LED	Illuminated when printer is On-Line
LINE KEY	Switches the printer On-Line or Off-Line. Can also be used as a Pause function key to stop label during the printing process.
FEED KEY	To feed one blank label

# 1.6 DIP Switch Panel

The DIP Switch panel is located inside the printer in the mechanical section above the unwind/rewind spindles and contains two 8-position DIP switches and three adjustment potentiometers. Adjustment procedures for these are listed in Chapter 2, Configuration.



#### M-84 Se Series Printers

#### 1. Overview and Specification

# 1.7 Input/Output Connections (Rear Panel)



#### 1. Overview and Specification

# 1.8 Switches and Sensors

ITEM	DESCRIPTION	
1	Ribbon Motion Sensor	
2	Cover Open Switch	
3	Head Open Switch	
4	Label Gap (Bot 1/2) & "Eye-Mark" Sensors	
5	Label Gap (Top ½)	
6	Label Out Sensor	



M-8485Se /M-8490Se THERMAL TRANSFER M-8460Se WIDE WEB THERMAL TRANSFER



# 1.9 Ribbon

Use only SATO thermal transfer ribbons which were formulated expressly for use in all SATO printers. Use of other than approved ribbons may result in unsatisfactory print quality and/or damage to the print head and may void your warranty.

#### **1.10 Installation Considerations**

Printer operation can be affected by the printer environment. The location of the printer should be free from dust, humidity and sudden vibrations. To obtain optimum results from the printer module, avoid locations influenced by:

- Direct or bright sunlight since bright light will make the label sensor less responsive and may cause the label to be sensed incorrectly.
- Excessive warm or cold temperatures can cause electrical problems within the printer..

POWER REQUIREMENTS			
Voltage	220V (+/- 10%) 50/60 Hz (+/- 1%)		
Power Consumption	50W Idle 700W Operating		

# **1.11 Specifications**

	M 8460Se			
Print Type	Direct Thermal Thermal Transfer			
Printer Version				
Head Density	8 dot/mm (0.125 mm)	) square		
Continuous	Label Size Width: 50 mm to 162 mm (Web Width: 53 mm to 165 mm) Pitch: 15 mm to 356 mm (Web Length: 18 mm to 359 mm)			
Disponso		Width: 50 mm to 162 mm (Web Width: 53 mm to 165 mm)		
Dishense	Laver 5/2e widdi: 50 min to 162 mm (Web Widdi: 53 mm to 165 mm) Pitch: 15 mm to 356 mm (Web Length: 18 mm to 359 mm) Thickness 0.1 to 0.18 mm			
Print Area	STD 152 r	nm (W) x 178 mm (P)		
	Exp. 152 mm (W) x 356 mm (P)			
	With Memory Card up to 1.249 mm (9999 dots)			
The print head is moveable by 3.5 mm to the main side. The default positi				
Print Speed	User selectable 100 m	m/sec (4") 150 mm/sec (6"), 200 mm/sec (8")		
Print Darkness	3 steps; selectable by	printer driver ( <esc> codes) or via display</esc>		
Print Mode	Continuous, Dispense			
Data Transmission	ASCII			
Media Types	Die-Cut Label, Continu	ious Material		
Carbon Ribbon	Max. Width: 165 mm,	Max. Length: 650 metres, Thickness: 4,5 µ		
Barcodes		Code 39 Code 93 Code 128 LICC/EAN 128 Interleaved 2 of 5		
barcoues	Industrial 2 of 5. Matr	ix 2 of 5. Codabar, MSL Bookland, Postnet		
2-D Codes	Data Matrix, Maxicode	, PDF 417, QR-Code		
Barcode Ratio	1:2, 1:3, 2:5			
Barcode Sizes	Height: 4 dots to 600 dots; Width: user definable			
Fonts	U, S, M, WB; WL; XU; XS; XM; XB; XL; OCR-A/B; Outline Font (50-999)			
	Rasterizer Font Triumvirate <sup>®</sup> & Times <sup>®</sup> (08 – 99 points or 16 – 999 dots)			
Character Expansion	ally and horizontally			
Botational Capacity Full rotation of text and barcedes in 00% stone				
Rotational Capacity	Full rotation of text an	la barcodes in 90° steps		
Flexibility	numbering, form overlay for high-speed editing of complex formats, back feed, RTC print in text and barcodes			
Label Sensor	Sensor Type: Reflective Sensor (I-mark) bottom reading, fixed See-through Sensor (Gap), movable			
Print Control	rint Control User programmable via data stream			
CPU 32 bit SH3 RISC Processor/ 133MHz				
Calendar Internally installed RTC Chip				
Memory Capacity	<ul> <li>Standard Memory: 16MB SDRAM; 2,9MB Input Buffer; 2MB Flash Mem Opt. Memory Expansion: Internal - 4MB Flash Memory SIMM Card External - up to 4MB S-RAM Card or up to 16MB F Card</li> </ul>			
Interfaces	ECP Parallel (IEEE 128	34), Centronics Parallel, RS232C Standard (2400 – 19.200		
	Baud), RS232C Highsp	peed (9600 - 57.600 Baud), USB (12Mbit/s), LAN (TCP/IP		
	protocol 10/100 Base T), Twinax/Coax, RS422 / 485			
Switches and Display	Operation Switches:	Power, Online Key, Feed Key		
	Setting Switches:	2 x 8 DIP-Switches behind front cover		
		POWER, UNLINE, LABEL END, RIDBON END, ERROR		
	LCD.	Supported Languages:		
		English (default), German, French, Spanish, Italian,		
	Portuguese and space for 2 languages of your choice			
Self Check	Self Check mode inclu	des head check, barcode check, memory card verification		
Dimensions	265 mm (W) 455 mm	x (D) 302 mm x (H).		
Weight	12.5 kg			
Power	110 - 240V +/- 10%,	50/60 Hz, idle 50W, max. 700W		
Environmental	Uperating: $+5 \sim +40^{\circ}$ Storage: $-20 \sim +40^{\circ}$	<sup>2</sup> C; Humidity 15 ~ 85% RH non-condensing J°C, non-condensing; ESD Immunity: 8 kV		
Approvals	UL, CSA, TÜV-GS, CE			
Options	Memory Expansion, Keyboard			

	M 84855a			
	M 84855e			
Print Type	Direct Thermal, Thermal	Iranster		
Hood Donsity	2 dot/mm (0.125 mm) co			
Continuous	6 d00/11111 (0.125 11111) SC	Width: 22 mm to 131 mm (Web Width: 25 mm to 135 mm)		
Continuous	Thickness	Pitch: 15 mm to 356 mm (Web Length: 18 mm to 359 mm) 0.1 to 0.25 mm		
Dispense	Label Size Width: 22 mm to 131 mm (Web Width: 25 mm to 135 mm)			
	Pitch: 15 mm to 356 mm (Web Length: 18 mm to 359 mm) Thickness 0.1 to 0.18 mm			
Print Area	STD 128 mm (W) × 178 mm (P)			
	Exp. 128 mm (W) × 356 mm (P)			
	With Memory Card up to	1249 mm (9999 dots)		
Print Speed	User selectable 100 mm/sec (10"), 300 mm/sec (12")	sec (4"), 150 mm/sec (6"), 200 mm/sec (8"), 250 mm/sec		
Print Darkness	3 steps; selectable by pri	nter driver ( <esc> codes) or via display</esc>		
Print Mode	Continuous, Dispense			
Data Transmission	ASCII	M 1 1 1		
Media Types	Die-Cut Label, Continuous	s Material		
Carbon Ribbon	Type: black and colour, in	x. Length: 650 metres, Thickness: 4,5 μ nk inside		
Barcodes	UPC A/E, EAN 8 & 13, Co Industrial 2 of 5, Matrix 2	de 39, Code 93, Code 128, UCC/EAN 128, Interleaved 2 of 5, of 5, Codabar, MSI, Bookland, Postnet		
2-D Codes	Data Matrix, Maxicode, P	DF 417, QR-Code		
Barcode Ratio	1:2, 1:3, 2:5			
Barcode Sizes	Height: 4 dots to 600 dots. Width: user definable			
Fonts	U, S, M, WB; WL; XU; XS; XM; XB; XL; OCR-A/B; Outline Font (50-999) Rasterizer Font Triumvirate <sup>®</sup> & Times <sup>®</sup> (08 – 99 points or 16 – 999 dots)			
Character Expansion Up to 12 times. Vertically and horizontally				
Graphic Support	ort SATO hex/binary format. PCX format supported.			
Rotational Capacity	Full rotation of text and b	arcodes in 90° steps		
Flexibility	RAM storage for special c numbering, form overlay print in text and barcodes	haracters, dot-addressable graphics, repeat print, sequential for high-speed editing of complex formats, back feed, RTC		
Label Sensor	Sensor Type: Reflective S	ensor (I-mark) bottom reading, fixed		
	h Sensor (Gap), movable			
Print Control	User programmable via data stream			
CPU	32 bit SH3 RISC Processor/ 133MHz			
Calendar	Internally installed RTC Chip			
Memory Capacity	Standard Memory:	16MB SDRAM; 2,9MB Input Buffer; 2MB Flash Memory		
	Opt. Memory Expansion:	Internal - 4MB Flash Memory SIMM Card		
		Card - up to 4MB S-RAM Card or up to 16MB Flash		
Interfaces	ECP Parallel (IEEE 1284),	Centronics Parallel, RS232C Standard (2400 – 19.200		
	Baud), RS232C Highspeed (9600 – 57.600 Baud), USB (12Mbit/s)			
Switches and Display Operation Switches Dower Opline Key Feed Key				
Switches and Display	Setting Switches:	2 x 8 DIP-Switches behind front cover		
	beening briteries	$1 \times 8$ DIP-Switches on modular RS232 Interface		
	LED:	POWER, ONLINE, LABEL END, RIBBON END, ERROR		
	LCD:	Menu Controlled Printer Configuration and Error Messages		
		Supported Languages:		
		English (default), German, French, Spanish, Italian,		
Portuguese and space for 2 languages of		Portuguese and space for 2 languages of your choice		
Dimonsions	Self Check mode includes	D) 202 mm x (H)		
Weight	203 IIIII (W) 41/ MM X (	טע ווווו x (ח).		
Power	110 - 240V ±/- 10% 50/	60 Hz idle 50W max 700W		
Environmental	Operating: $+5 \sim +40^{\circ}$	Humidity 15 ~ 85% RH non-condensing		
	Storage: -20 ~ +40°C, non-condensing; ESD Immunity: 8 kV			
Approvals	UL, CSA, TUV-GS, CE			
options	remory Expansion, Keyt	Dolla		

#### 1. Overview and Specification

	M 84905e			
Print Type	Direct Thermal Thermal Transfer			
Print Type Drinter Version	Left Hand Dight Hand			
Head Density	12 dot/mm (0.083 mm	n) square. Intelligent Head		
Continuous	Label Size	Width: 22 mm to 131 mm (Web Width: 25 mm to 135 mm)		
continuous		Pitch: 15 mm to 356 mm (Web Length: 18 mm to 359 mm)		
	Thickness	0.1 to 0.25 mm		
Dispense	Label Size	Width: 22 mm to 131 mm (Web Width: 25 mm to 135 mm)		
	Pitch: 15 mm to 356 mm (Web Length: 18 mm to 359			
	Thickness	0.1 to 0.18 mm		
Print Area	STD 112 r	nm (W) x 178 mm (P)		
	Exp. 112 mm (W) x 356 mm (P)			
	With Memory Card up	to 833 mm (9999 dots)		
Print Speed	User selectable 100 m	m/sec (4") 150 mm/sec (6"), 200 mm/sec (8")		
Print Darkness	3 steps; selectable by	printer driver ( <esc> codes) or via display</esc>		
Print Mode	Continuous, Dispense			
Data Transmission	ASCII			
Media Types	Die-Cut Label, Continu	ious Material		
Carbon Ribbon	Max. Width: 131 mm,	Max. Length: 650 metres, Thickness: 4,5 µ		
	Type: black and colou	r, ink inside		
Barcodes	UPC A/E, EAN 8 & 13,	Code 39, Code 93, Code 128, UCC/EAN 128, Interleaved 2 of 5,		
2 D Cadaa	Industrial 2 of 5, Matr	IX 2 OF 5, Codabar, MSL, BOOKland, Postnet		
2-D Codes		, PDF 417, QR-Code		
Barcode Katio 1:2, 1:3, 2:5				
Barcoue Sizes	LIS M WR: WILLYLI YC: YM: YP: VI. OCD A/P: Outline East (50.000)			
PUILS U, 5, MI, WD; WL; AU; AU; AB; AB; AD; AD; AD; CUCK-A/B; UULIINE FONT (50-999) Ractarizar Font Triumvirata® & Timas® (08 – 99 points or 16 – 999 dots)				
Character Expansion	Rasterizer Font Thumwirdle <sup>-</sup> & Times <sup>-</sup> (06 – 99 points of 16 – 999 dots)			
Graphic Support SATO hey/hinary format DOY format supported				
Rotational Canacity	Full rotation of text an	nd barcodes in 90° steps		
Flexibility	RAM storage for speci	al characters, dot-addressable graphics, repeat print, sequential		
	numbering, form over	lay for high-speed editing of complex formats, back feed, RTC		
	print in text and barco	odes		
Label Sensor	Sensor Type: Reflectiv	e Sensor (I-mark) bottom reading, fixed		
	See-through Sensor (Gap), movable			
Print Control	User programmable via data stream			
CPU	32 bit SH3 RISC Processor/ 133MHz			
Calendar	Internally installed RTC Chip			
Memory Capacity	Standard Memory: 16MB SDRAM; 2,9MB Input Buffer; 2MB Flash Memory			
	Opt. Memory Expansion: Internal - 4MB Flash Memory SIMM Card			
	External - up to 4MB S-RAM Card or up to 16MB Flash			
Interfaces	ECD Darallal (TEEE 120	Calu 24) Contronics Darallel RE222C Standard (2400 – 10.200		
Interfaces	Revealed a second secon			
	protocol 10/100 Base T), Twinax/Coax, RS422 / 485			
Switches and Display	Operation Switches:	Power, Online Key, Feed Key		
· · · · · · · · · · · · · · · · · · ·	Setting Switches:	2 x 8 DIP-Switches behind front cover		
	5	1 x 8 DIP-Switches on modular RS232 Interface		
	LED:	POWER, ONLINE, LABEL END, RIBBON END, ERROR		
	LCD:	Menu Controlled Printer Configuration and Error Messages		
		Supported Languages:		
		English (default), German, French, Spanish, Italian,		
		Portuguese and space for 2 languages of your choice		
Self Check	Self Check mode inclu	aes nead cneck, barcode check, memory card verification		
Dimensions	265 mm (W) 417 mm	x (U) 302 mm x (H)		
Neight	11.5 Kg	E0/60 Hz idla E0/1/ may 700/1/		
Fower	110 - 240V +/- 10%,	SU/OU FIZ, IGIE SUW, Max. /UUW		
Environmental	Uperating: $+5 \sim +40^{\circ}$ C; Humiaity 15 ~ 85% KH non-condensing			
Approvals		C, non condensing, LOD Initiality. O KV		
Options	Memory Expansion Keyboard			

# 2. Configuration

# 2.1 DIP Switch Settings

Two DIP switches DSW2 and DSW3 are located in the mechanical section of the printer and is accessed through the front door. DSW1 is located on the optional RS232C serial interface. These switches can be used to set:

- RS232C transmit/receive parameters
- Thermal transfer or direct thermal mode
- Label sensor enable/disable
- Head check mode
- Hex dump mode
- Receive buffer size
- Operation mode

-			- <b>1</b> 7	
T		*******	(essente)	
	DSW1	DSW2	DSW3	
0	) ()	. 🤇		
PF	RINT OFFSE	T PITCH		

	DIP SWI	ТСН ТАВ	LE		
	2-1 Transfer /Direct	DSW2 DFF Denial transfer (N Corect Carea)	3-1 Backfeed Before/Alter	OSW3	Backfeed Before Backfeed After
	2-2 Sensor Type	OFF Gap DN Enerark	3-2 Peserved	OFF	A.
	2-3 Head Check	DFF Disabled DN Erabled	a - Pitch Sensor	077	Sensor Used Sensor Hot Used
Not used	2-4 Hes Duro	DFF Disabled	3-4 Dickfeed		Erabled Disabled
	2-5 Receive Builfer	OFF 1+LLER ON Hulta-Buffer	3-5 Print Start Storal	01 01	Enabled Disabled
	2-5 Peserves	- 97	3-6 External Storal lype	01 01	Type-4 Type-3
	2-7 Reserves	<b>D</b> F	1-7	35 35	140-2 1401-1
	2-8 Reserved	051	Perstant	3.	Disebled Enabled

#### 2. Configuration

#### **Operation Manual**

Each switch is an eight position "toggle" switch. The ON position is always to the top. To set the switches, first switch the unit Off, then position the DIP switches. After placing the switches in the desired positions, switch the printer back on. The switch settings are read by the printer electronics when the printer is switched on again. They will not become effective until this has been done.

# RS232 Transmit/Receive Setting

#### Data Bit Selection (DSW1-1)

This switch sets the printer to receive either 7 or 8 bit data bits for each byte transmitted.

DSW1-1	SETTING
*OFF	8 Data Bits
ON	7 Data Bits



# Parity Selection (DSW1-2, DSW1-3)

These switches select the type of parity used for error detection.

DSW1-2	DSW1-3	SETTING
*OFF	*OFF	No Parity
OFF	ON	Even
ON	OFF	Odd
ON	ON	Not Used



# Stop Bit Selection (DSW1-4)

Selects the number of stop bits to end each byte transmission.

DSW1-4	SETTING
*OFF	1 Stop Bit
ON	2 Stop Bits



#### Baud Rate Selection (DSW1-5, DSW1-6)

Selects the data rate (bps) for the RS232 port.

DSW1-5	DSW1-6	SETTING
*OFF	*OFF	9600
OFF	ON	19200
ON	OFF	38400
ON	ON	57600



#### Protocol Selection (DSW1-7, DSW1-8)

Selects the flow control and status reporting protocols.

DSW1-7	DSW1-8	SETTING									
*OFF	*OFF	Rdy/Bsy					DS	W1			
OFF	ON	Xon/XOff	<b></b>			<u> </u>					
ON	OFF	Bi-Com (Status 3)									
ON	ON	Status 4		1	2	3	4	5	6	7	8

#### Note: For Status 4 the DSW2-8 must be set to OFF.

#### Printer Set Up

#### Print Mode Selection (DSW2-1)

Selects between direct thermal printing on thermally sensitive paper and thermal transfer printing using a ribbon.



#### Sensor Type Selection (DSW2-2)

Selects between the use of a label gap or a reflective "Eye-Mark" detector.

DSW2-2	SETTING
*OFF	Gap
ON	"Eye-Mark"



#### Head Check Selection (DSW2-3)

When selected, the printer will check for head elements that are electrically malfunctioning.

DSW2-3	SETTING
*OFF	Disabled
ON	Enabled



#### Hex Dump Selection (DSW2-4)

Selects Hex Dump mode. Refer to Chapter 5-7.

DSW2-4	SETTING
*OFF	Disabled
ON	Enabled



#### **Receive Buffer Selection (DSW2-5)**

Selects the operating mode of the receive buffer.

DSW2-5	SETTING
*OFF	Single Job
ON	Multi Job



#### Download Mode (DSW2-6)

For Firmware Download.

DSW2-6	SETTING
*OFF	Disabled
ON	Enabled



#### Protocol Control Code Selection (DSW2-7)

Selects the command codes used for protocol control.

	OFTINO					DS\	N2			
D3W2-7	SETTING	ON								
*OFF	Standard	•								
		OFF								
ON	Non-Std.	•		_		_	_	_	-	_
L			1	2	3	4	5	6		8

#### **Selecting Protocol Control Codes**

Protocol control codes are the special control characters that prepare the printer to receive instructions. For example, the <ESC> character tells the printer that a command code will follow and the <ENQ> character asks for the printer status.

There are two pre-defined sets of Protocol Control codes to choose from. Each set is made up of six special characters. The **Standard Protocol Control** codes are non-printable characters, and the **Non-Standard Protocol Control** codes are printable characters. The Non-Standard set may be useful on host computers using protocol converters or in an application where non-printable ASCII characters cannot be sent from the host. This manual uses the Standard Protocol Control codes for all of the examples. Alternately, the user may define and download a set of custom Protocol Control Codes.

# Note: If the data being sent to the printer is "Standard" and the printer is set to "Non-Standard" the printer will do nothing.

The Protocol Control codes are selected by a DIP switch DSW2-7 on the front panel.

CONTROL CHARACTER	STANDARD DSW2-7 OFF	NON- STANDARD DSW2-7 ON	DESCRIPTION
STX	02 Hex	7B Hex = {	Start of Data
ETX	03 Hex	7D Hex = }	End of Data
ESC	1B Hex	5E Hex = ^	Command code to follow
Null	00 Hex	7E Hex = ~	Cutter command
ENQ	05 Hex	40 Hex = @	Get printer status, Bi-Com mode
Can	18 Hex	21 Hex = !	Cancel print job, Bi Com mode
Off-Line	40 Hex	5D Hex = ]	Take printer Off-Line

#### Compatibility Mode Selection (DS2-8)

Software command compatibility with earlier SATO model printers.

DSW2-8	SETTING
*OFF	Status 4
ON	Compatibility



#### **Backfeed Selection (DSW3-1)**

Backfeed is used to correctly position the label for application and then retract the next label to the proper print position. This operation can be performed immediately after a label is printed or immediately prior to the printing of the next label.



#### Label Sensor Selection (DSW3-3)

Enables or disables the Label Sensor. If the Sensor is enabled, it will detect the edge of the label and position it automatically. If it is disabled, the positioning must be under software control using Line Feed commands.



#### **Back Feed Selection (DSW3-4)**

When Back-Feed is enabled, the printer will position the last printed label for dispensing and retract it to the correct print position before printing the next label. The amount of backfeed offset is adjustable.





# **External Signal Interface**

The EXT connector on the printer rear panel is intended for use with the external printer accessories such as label rewinders or applicators. The 14 Pin Centronics type connector provides a choice of four different output signals along with various error conditions.

# EXT Print Start Signal Selection (DSW3-5)

Allows an external device to initiate a label print for synchronisation with the applicator.



#### 2. Configuration

#### External Signal Type Selection (DSW3-6, DSW3-7)

Both the polarity and signal type (level or pulse) of the external print synchronizing signal can be selected. See Chapter 4-6 for a description of signal types.

DSW3-6	DSW3-7	SETTING
*Off	*Off	Type 4
Off	On	Туре З
On	Off	Type 2
On	On	Type 1



#### Repeat Print via External Signal (DSW3-8)

Allows the applicator to reprint the current label in the print buffer.

DSW3-8	SETTING	ON	
*OFF	Disabled		
ON	Enabled	OFF	1



Reserved for future use (DSW3-2)

Note: The DIP Switch functions listed incorporate the latest firmware revisions at the time of printing.

# 2.2 Default Settings

#### Switch Selections

All switches are placed in the **Off** position (default) for shipping. This will result in the following operating configuration:

Communications:	8 data bits, no parity, 1 Stop bit, 9600 Baud
Protocol:	Ready/Busy
Sensor:	Gap Sensor
Receive Buffer:	Single Job
Mode:	Batch/continuous
Label Sensor:	Sensor Used
Back feed:	Enabled
External Signals:	Enabled

#### Software Default Settings

The printer stores the software settings upon receipt and uses them until they are again changed by receipt of a command containing a new setting. These settings are stored in non-volatile RAM and are not affected by switching the printer off. The printer may be reset to use the default software settings by depressing the **LINE** and **FEED** keys simultaneously while switching the printer on. This will result in the following default configuration:

	M-8459S <mark>e</mark>	M-8460S <mark>e</mark>	M-8485S <mark>e</mark>	M-8490S <mark>e</mark>
Print Darkness	3	2	2	2
Print Speed	100 mm/s	150 mm/s		
Print Reference	Vertical = 0000, Horizontal = 0000			
Zero	Slash			
Auto On Line	Enabled			

Once the default operation is completed, a "SATO DEFAULT COM-PLETED" message will be displayed on the LCD panel and a single audible signal will be heard.



The printer should be switched off while this message is being displayed. This saves the default settings in the EEPROM where they will be automatically loaded the next time the printer is switched on.

#### 2. Configuration

#### **Printer Adjustments**

The LCD Panel is used in conjunction with the **LINE** and **FEED** switches by the operator to manually enter printer configuration settings. Many of the settings can also be controlled via software commands and in the case of conflict between software and control panel settings, the printer will always use the last valid setting.

#### POWER ON

Normal/User Mode ONLINE

# 2.3 Printer Adjustments

The LCD Panel is used in conjunction with the **LINE** and **FEED** switches by the operator to manually enter printer configuration settings. Many of the settings can also be controlled via software commands and in the case of conflict between software and control panel settings, the printer will always use the last valid setting. If you load a label job that includes software settings and then enter a new setting via the operation panel, the manually set values will be used by the printer. If you set the values manually and then download a job with software settings, the software settings will be used.



#### 2. Configuration

#### **Normal Mode**

When the printer is switched on, the readout will display the following message.

ONLINE QTY:000000

The LCD Panel will display the **ONLINE** status on the top line of the display and the bottom line will contain the label quantity (QTY) status. The **ONLINE** message will be changed to OFF Line whenever the printer is switched offline by depressing the **LINE** key. As soon as a print job is received, the QTY message will indicate the number of labels to be printed. As soon as the label job begins to print, the display will indicate the number of labels remaining in the print job that remain to be printed.

#### **User Mode**

To enter the USER mode, perform the following steps:

STEP	PROCEDURE	
1.	The printer is first taken offline by pressing the <b>LINE</b> key once. The display will change to:	OFFLINE 000000
2.	When the display changes to OFFLINE, press the <b>FEED</b> and <b>LINE</b> keys simultaneously for more than one second. The printer now displays the first USER mode adjustment (Print Darkness).	

# **Print Darkness Setting**

There are three **Darkness** (or heat range) settings. The higher numbers represent darker settings. The current setting is indicated by a blinking cursor on one of the range settings.

To change the setting perform the following steps:

STEP	PROCEDURE	
1.	Use the <b>LINE</b> key to step the blinking cursor to the desired setting.	PRINT DARKNESS 1(L) 2(M) 3(D)
2.	Once the correct setting is selected, press the <b>FEED</b> key to accept the setting and advance to the next adjustment.	
Note: The estimation has even index by software Finan		

#### Note: The setting can be overridden by software. Finer adjustments can also be made using the PRINT potentiometer setting on the adjustment panel.

# **Print Speed Adjustment**

There are three SPEED settings on the M8490Se/M8460Se, five on the M-8485Se and four on the M8459Se. Each setting is listed on the bottom line of the display. The current setting is indicated by an blinking cursor on one of the speed settings.

M8459S <mark>e</mark>	M-8485S <mark>e</mark>	M-8490Se/M8460Se
2 = 50 mm/s 3 = 75 mm/s 4 = 100 mm/s 5 = 125 mm/s	4 = 100 mm/s 6 = 150 mm/s 8 = 200 mm/s 10 = 250 mm/s 12 = 300 mm/s	4 = 100 mm/s 6 = 150 mm/s 8 = 200 mm/s

To change the setting perform the following steps:

STEP	PROCEDURE
1.	Use the LINE key to step the blinking cursor to the desired setting.
2.	Once the correct setting is selected, press the <b>FEED</b> key to accept the setting and advance to the next adjustment.

#### Note: This setting can be overridden by software.

# **Pitch Offset and Direction**

The label pitch is the distance from the leading edge (the edge that comes out of the printer first) of a label and the leading edge of the next label. The leading edge position of the label can be adjusted relative to the print head +/-49 mm in increments of 1 mm using the following procedure. Once the position is set, it can be adjusted +/-3.75 mm using the PITCH potentiometer on the adjustment panel.



#### M -84 Se Series Printers

#### 2. Configuration

#### To change the setting perform the following steps:

STEP	PROCEDURE	
1.	Use the <b>LINE</b> key to step the blinking cursor to either the positive (+) or the negative (-) selection. A positive selection moves the leading edge of the label forward (away from the print mechanism) while a negative selection moves the leading edge of the label back into the mechanism.	
	PITCH DIRECTION	
2.	Once the correct setting is selected, press the <b>FEED</b> key to accept the setting and advance to the Pitch Offset adjustment.	
	PITCH OFFSET	
3.	Use the <b>LINE</b> key to step the counter to the desired position. The display will increment one step for each time the <b>LINE</b> key is pressed. The reading will advance to a setting of 4 mm for first position and 9 mmfor second position after which it will automatically wrap and start of "00" again. The pitch direction set in the previous step will be displayed in front of the Offset setting.	
4.	Once the setting is correct, press the <b>FEED</b> key to accept the setting and advance to the Cancel Print job display.	
5.	You may wish to check your settings by printing a test label after you have completed the adjustments to ensure that they are cor- rect.	

# **Cancel Print Job**

If the printer has a print job(s) loaded in memory, selecting YES will cause the job(s) to be cleared. The default selection is NO. Make sure that you want to cancel the print job before selecting YES as the job cannot be recovered and will have to be retransmitted to the printer.

To cancel the print perform the following steps:

STEP	PROCEDURE	
1.	Use the <b>LINE</b> key to step the blinking cursor to either YES or NO.	
	CANCEL PRINT JOB	
2.	Once the correct setting is selected, press the <b>FEED</b> key to accept the setting and terminate the user mode of operation and return to the normal mode ONLINE display. If you wish to change any of the settings, you must set the printer to OFFLINE and enter the user mode again by simultaneously pressing <b>FEED</b> and <b>LINE</b> keys for more than one second.	

# **Advanced Settings**

See Appendix A for advanced settings.

Please note that you will need special instructions for some of these settings!

#### 2. Configuration

This page is intentionally left blank.

# 3. Media Loading

# 3.1 Loading Ribbon (not appliciable for the M-8459Se)

Step	Procedure
1.	Open the print head by rotating the Head Latch until the head releases. It is spring-loaded in the open position.
2.	Place a new ribbon roll on the Ribbon Unwind Spindle and push it onto the spindle as far as it will go. Make sure the ribbon wil unwind from the top of the roll. Note that all SATO ribbons are wound face- in (the ink or dull side faces toward the inside of the roll). <b>Fig 3-1</b>
3.	Place an empty ribbon core on the Ribbon Wind Spindle and push it onto the spindle as far as it will go. <b>Fig 3-2</b>
4.	Unwind the clear ribbon leader until about 30 cm of leader/ribbon are off the roll.
5.	Route the ribbon as shown in the Ribbon Routing Diagram on the inside of the cover.
6.	Tape the end of the ribbon leader to the empty core so that it will underneath the core and over the top (see diagram on inside of cover).
7.	Manually wind approximately three turns of ribbon on the core.
8.	Inspect the ribbon to make sure it is not folded over or excessively wrinkled as it passes over the print head. <b>Fig 3-3</b>
9.	If labels are already loaded, close and latch the print head.

#### 3. Media Loading







Fig. 3-2



Fig. (3-3)

# 3.2 Loading Label

Step	Procedure
1.	Open the print head by rotating the Head Latch until the head releases. It spring-loaded in the open position.
2.	Unlatch the Label Hold Down by lifting up on the latch. It is spring- loaded in the open position.
3.	Pull the Label Edge Guide all the way out. Fig 3-4
4.	Remove approximately 18 inches of labels from the backing liner.
5.	Route the label liner under the Label Hold Down and under the print head and out the front of the printer.
6.	Pull the liner through the printer until the first label is positioned under the Label Hold Down.
7.	Push the labels in until they contact the inside edge of the printer, then position the Label Edge Guide until it lightly contacts the outside edge of the label liner.
8.	Close and latch the Label Hold Down and Print Head. Fig 3-5
9.	Release the Nip Roller Hold Down by pulling up on the Nip Roller Latch tab.
10.	Route the liner over the peel bar and back between the Nip Roller Hold Down and the Nip Roller.
11.	Pull the liner tight. Close the Nip Roller Hold Down by pushing upward until it latches in place. Make sure the Nip Roller Latch is securely engaged. Fig 3-6 Note: Always check that the backing paper is taut between Pla- ten Roller and Nip Roller.
12.	Power the printer on and press the Feed key. It should feed labels until the first label is peeled and ready for application.

#### 3. Media Loading



# 4. Computer Connections

# 4.1 Bi-directional parallel interface (standard)

- 1. Turn off the power of the printer. Using an interface cable connect the computer to the bi-directional parallel interface connector at the rear panel of the printer.
- 2. Be sure to use a IEEE 1284 compatible cable.

Connector: 36 PIN Amp

Max. Cable length: 1,8 m Centronic 5 m IEEE 1284

Wire Connection Table for IEEE 1284 compatible cable:

Host	Printer	Host		Printer
1	Strobe 1	14	LF	14
2	<u></u> 2	15	Error	32
3	<u>D1</u> 3	16	Init	31
4	<u>D2</u> 4	17	Select in	36
5	<u>D3</u> 5	18	GND	33
6	<u> </u>	19	GND	19
7	<u></u> 7	20	GND	21
8	<u> </u>	21	GND	23
9	<u>D7</u> 9	22	GND	25
10	<u>AKN</u> 10	23	GND	27
11	Busy 11	24	GND	29
12	<u></u> 12	25	GND	30
13	Select 13	Shield		Shield

# 4.2 Optional interface (RS-232C)

This printer operates by being connected to a computer.

- 1. Turn off the power of the printer. Using an interface cable connect the computer to the optional interface connector at the rear panel of the printer.
- 2. Interface Cable

The wire connection varies depending on the communication product.

Prepare an appropriate cable for the communication protocol.

Connector: DSUB-25S.

Cable length: Less than 5 meters.



# 4.3 Optional Interface (USB)

This printer operates by being connected to a computer.

- 1. Turn off the power of the printer. Using an interface cable connect the computer to the optional interface connector at the rear panel of the printer.
- Interface Cable USB connector for a printer is specified as a Type B Receptacle. Please use a Type B cable when you connect it with the printer.

# 4.4 Optional Interface (LAN)

This printer operates by being connected to a Network.

- 1. Turn off the power of the printer. Using an interface cable connect the computer to the optional interface connector at the rear panel of the printer.
- 2. Interface Cable

Please use a cross-cable when you connect one printer to one computer. If you connect a printer to a HUB, please use a straight cable.

# 4.5 External Connector PIN Assignments

PIN	DIRECTION	SIGNAL DESCRIPTION
1	To Host	Label Out - This pin goes low (0V) when a label out error exists.
2	Reference	Signal Ground
3	To Host	Ribbon Out - This pin goes low when the ribbon is out.
4	To Host	Error - This pin goes low when the printer detects an error condition such as head open or receiving buffer full.
5	To Printer	Print Start - The printer will print one label when this pin is pulled to ground. This signal must be enabled by placing switch DSW3-5 on the Control Panel in the OFF position.
6	To Host	End Print - It is used to drive an applicator or other external device requiring synchronization with the print cycle. You may choose between four types of output signals using control panel DSW3-6 and DSW3-7 sel- ections.
7	To Printer	Print Repeat - The printer repeatedly prints the current label in the print buffer immediately after receiving this signal. DSW3-8 must be ON.
8	To Printer	Vcc - +5V
9	To Host	On-Line
10	To Host	Ribbon Near End
11	To Printer	TBD
12	To Host	+24V - Used to power accessory items.
13	To Host	Vcc - +5V
14	Reference	Frame Ground

NOTE: The signals on pins 1, 3 4 and 6 each have an open collector output. These pins normally measure +.07V maximum when a true condition exists. If a false condition occurs, the voltage will drop to 0V. To achieve a signal level of +5V, you must add a 1K ohm, ¼ W pull-up resistor between the open collector output pin and Vcc (pin 13) as illustrated. This will provide a signal level of +5V for a true condition and 0V when a false condition exists. The maximum voltage that can be applied to these pins is +50V and the maximum current they can sink is 500 milliamps.

#### **External Output Signal Types**





#### **REPEAT PRINT**



#### **ERROR SIGNALS**



#### 4. Computer Connections

This page is intentionally left blank.

# 5. Troubleshooting

# 5.1 Overview

The design of SATO "Se" Series printers is based upon proven technology and reliable components. When a problem occurs, the solution can be easily traced using the troubleshooting tables in this section. This table list symptoms, probable causes, and suggested corrective actions. Many of the suggested corrective actions include references to a section or paragraph found elsewhere in this manual where more complete descriptions and procedures may be found.

Both print quality and general operational problems are listed in the troubleshooting table.

Make sure the basics have been checked before deciding you are unable to proceed any further. To help you this section has been divided into the following parts:

- Initial Checklist
- Troubleshooting Tables
- Hex Dump Diagnostic Labels

#### 5. Troubleshooting

#### 5.2 Initial Checklist

If you are unable to produce output on your printer, check the following before deciding you are unable to proceed any further.

- 1. Is the printer switched up and ON-LINE?
- 2. Do any of the Front Panel LEDs indicate an error condition? If this light is ON, it may indicate the print head assembly is open.
- 3. Is the Print Head and the Label Hold Down in the down and latched position?

Other areas that may need looking at include:

# 5.3 Error Signals (Some of the following procedures are NA for M-8459Se)

LED	LCD MESSAGE	AUDIBLE BEEP	ERROR CONDITION	TO CLEAR
Error On	Machine Error	1 Long	Machine Error	Switch power ON/OFF
Error On	EEPROM Error	1 Long	EEPROM Read/Write	Switch power ON/OFF
Error On	Head Error	1 Long	Head	Switch power ON/OFF
Error On	Sensor Error	3 Short	Sensor	Switch power ON/OFF
Error Blinks	Card R/W Error	1 Long	Memory Card Read/Write	Switch power ON/OFF
Error Blinks	Card Low Battery	1 Long	Memory Card Battery Low	Switch power ON/OFF
Error Blinks	Head Open	3 Short	Head Open	Close head lever
Error Blinks	Cutter Error	3 Short	Cutter	Switch power ON/OFF
Error On Line Blinks	PARITY ERROR	3 Short	RS232 Parity Error	Switch power ON/OFF
Error On Line Blinks	Overrun Error	3 Short	RS232 Overrun Error	Switch power ON/OFF
Error On Line Blinks	Framing Error	3 Short	RS232 Fra- ming Error	Switch power ON/OFF
Error On Line Blinks	Buffer Over	3 Short	Buffer Overflow	Switch power ON/OFF
Error Blinks Label On	Paper End	3 Short	Label End	Open/close Head Lever Open/close Label Hold down
Error Blinks Ribbon On	Ribbon End	3 Short	Ribbon End	Open/close Head Lever Open/close Label Hold down
Error Blinks Label Blinks	Media Error	3 Short	Media Error	Open/Close Head Lever
Ribbon Blinks		None	Ribbon Near End	Replace ribbon with full roll
Line Blinks		None	Buffer Near Full	Slow down transmis- sion rate

#### 5.4 Troubleshooting Tables (Some of the following procedures are not NA for M-8459Se)

- Image Voids
- Ribbon Wrinkle
- Light Images
- Smearing
- No Ribbon Movement
- No Label Movement
- No printed Image
- Display Problem
- POWER LED not on
- ERROR LED on

- LABEL LED on
- RIBBON LED on
- ON LINE LED not on
- No Label Drive

#### Print Quality Problems (Some of the following procedures are not NA for M-8459Se)

Symptom	Probable Cause	Suggested Corrective Action
ON LINE LED not on	LABEL, RIBBON, ERROR LED (s) on	Clear error condition
	Illegal printer memory state	Switch POWER switch off and back on
No Label Drive	Timing Belt bad/loose	Replace/tighten timing belts
Image Voids	Poor quality labels	Use thermal transfer compatible stock
	Poor quality ribbons	Use genuine SATO ribbons
	Ribbon not matched to label stock	Check with media suppliers
	Damaged print head	Replace print head
	Damaged platen	Replace platen

Symptom	Probable Cause	Suggested Corrective Action
Ribbon Wrinkle	Poor Head Alignment	Adjust head balance Adjust ribbon roller Adjust head alignment
	Poor Ribbon Tension	Adjust ribbon tension
	Worn Platen	Replace platen
	Foreign material on head or platen	Clean head and platen
	Foreign materials on labels	Use high quality label stock
	Damaged print head	Replace print head
Light Images	Poor quality labels	Use thermal transfer compatible stock
	Poor quality ribbons	Use genuine SATO ribbons
	Low print head energy/dar- kness	Adjust darkness control
	Low print head pressure	Use correct head pressure position
	Ribbon not matched to label stock	Use Premier II ribbon with a "1C" thermal transfer ribbon stock or equivalent for optimum results
	Low ribbon drive torque No ribbon movement	Adjust ribbon drive clutch
	Foreign material on head	Clean head and platen
	Poor head alignment	Align Print Head
	Excessive print speed	Reduce print speed setting

#### 5. Troubleshooting

Symptom	Probable Cause	Suggested Corrective Action
Smearing	Poor quality labels	Use Premier II ribbon with a "1C" thermal transfer ribbon stock or equivalent for optimum results
	Poor quality ribbons	Use genuine SATO ribbons
	Foreign material on head/ platen	Clean head and platen
	Foreign material on labels	Use high quality label stock
	Excessive print head energy	Adjust darkness control
	Excessive print speed	Adjust print speed
	Excessive head pressure	Use correct head pressure posi- tion
No Ribbon	Incorrect ribbon core size	Use genuine SATO ribbons
Movement	Loose drive clutch	Adjust clutch tension
	Loose platen drive belt	Adjust/replace belt
	No + 24 volt output	Test power supply and replace if required
	Loose service screws on rewind pulley	Tighten service screws
	Damaged electronics	Replace circuit board
No Label Movement	Loose/broken platen drive belt	Adjust/replace belt
	Incorrect label pitch sensor selected	Select correct label sensor type (DSW2-2)
	No +24 volt output	Replace fuse on main PCB Test power supply and replace if required
	Loose set screw on platen pulley/stepper motor	Tighten set screws
No Printed Image	Print head not connected	Verify print head connector fully seated at head and main PCB
	Ribbon upside down	Use genuine SATO ribbons
	No + 24 volt output	Test power supply and replace if required

# **Operation Manual**

# 5. Troubleshooting

Symptom	Probable Cause	Suggested Corrective Action
No Printed	Damaged print head	Replace print head
Image	Damaged electronics	Replace circuit board
Back light but no words on display or no display	The most likely cause is the ribbon cable has fallen out or not seated fully into connector.	Verify that the cable and con- nector are properly seated. Display POT not positioned pro- perly.
POWER LED not on	AC power cable not connected	Verify that the cable is connec- ted to the printer and the AC outlet
	Main Power Fuse defective	Replace fuse
	Defective power supply	Test power supply and replace if defective
ERROR LED on	Head not locked	Close and latch head release
LABEL	Label supply roll empty	Replenish label supply
LED on	Label stock not routed through sensor	Reload labels
	Label sensor not positioned correctly	Adjust sensor position
	Label sensor blocked	Clean label sensor
	Incorrect label sense threshold setting	Adjust label sense threshold
RIBBON	Ribbon supply roll empty	Replenish ribbon supply
LED on	Ribbon sensor out of align- ment	Realign ribbon sensor
	Ribbon sensor blocked	Clean ribbon sensor
	No cardboard core on ribbon rewind	Use cardboard core on ribbon rewind

# 5.5 Hex Dump Diagnostics Labels

#### **Print Buffer Hex Dump**

The contents of the Print Buffer can be examined using the Hex Dump mode. The label numbers each line of data received in the left-hand column, the data in hexadecimal format in the centre columns followed by the same data in ASCII format in the right-hand column.

STEP	PROCEDURE
1.	Turn on the printer.
2.	Send and print label.
3.	Place the printer in the Off Line mode by pressing the LINE key. The LINE LED should go out.
4.	Place <b>DSW2-4</b> in the On position.
5.	Press the LINE key to place the printer back On Line.
6.	Press the <b>FEED</b> key.
7.	A label should be printed containing the contents of the print buffer in Hexadecimal format.
8.	Return <b>DSW2-4</b> to the off position.
9.	Turn the printer off and then back on to place it back in the normal print mode.

#### **Receive Buffer Hex Dump**

The data that is being received by the printer (before it is placed in the Print Buffer) can be examined by using the Hex Dump Mode. The label numbers each line of data received in the left-hand column, the data in hexadecimal format in the centre columns, followed by the same data in ASCII format in the right-hand column.

STEP	PROCEDURE
1.	Turn off the printer.
2.	Place <b>DSW2-4</b> in the On position.
3.	Turn on the printer.
4.	Transmit the data to the printer.
5.	The data received is printed on a label in hexadecimal format.
6.	Return <b>DSW2-4</b> to the off position.
7.	Turn off the printer and then back on to place it back in the nor- mal print mode.

#### 5. Troubleshooting

This page is intentionally left blank.

# 6. Cleaning and Maintenance

# 6.1 Cleaning the Print Head

Step	Procedure
1.	Turn the printer off.
2.	Open the Label Access door.
3.	Open the Print Head Assembly by pushing the Head Latch toward the rear of the printer. The Print Head Assembly is spring-loaded and will automatically open as soon as the Head Latch is disengaged.
4.	Apply SATO Thermal Print Head Cleaner to a cotton swab.
5.	The Print Head faces downward along the front edge of the assem- bly. Pass the end of the dampened swab along the entire width of the Print Head (you may need to move the ribbon out of the way to do this).
5.	Check for any black coloring or adhesive on the swab after cleaning.
6.	Repeat if necessary until the swab is clean after it is passed over the head.
7.	The head should be cleaned at least every time the ribbon is chan- ged and more often in dusty environments.



# 6.2 Cleaning the Platen and Rollers

Step	Procedure
1.	Turn the printer off.
2.	Open the label access door.
3.	Open the Print Head Assembly by pushing the Head Latch toward the rear of the printer. The Print Head Assembly is spring-loaded and will automatically open as soon as the Head Latch is disengaged.
4.	Apply SATO Thermal Print Head Cleaner to one of the cotton swabs.
5.	The Platen is the rubber roller directly below the Print Head. It should be cleaned of any ribbon or label residue.
6.	The Label Feed Roller is located underneath the Label Hold-Down. It should be cleaned of any label residue or foreign material. Clean the Label Pressure Rollers on the underside of the Label Hold-Down.
7.	There is one metal Ribbon Guide Roller used in guiding the ribbon through the printer. It should be cleaned of any residue or foreign material.
8.	Repeat if necessary. The platen and rollers should be cleaned whenever foreign matter such as dust or adhesive is present.



# 6.3 Cleaning the Sensors and Paper End Switch

Step	Procedure
1.	Turn the printer off.
2.	Open the label access door.
3.	Open the Label Hold-Down by disengaging the latch. The Label Hold-Down is spring loaded and will stay in the up position. The Upper Sensor will be visible on the underside of the Label Hold- Down when it is raised. It is adjustable over a range of 14 mm to 68mm from the inside edge of the label. The Sensor Window is posi- tioned directly below the Upper Sensor.
4.	Apply SATO Thermal Print Head Cleaner to one of the cotton swabs.
5.	Use the cotton swab to clean any foreign matter from the exposed surface of the sensors.
6.	Check the roller on the Paper End Switch for residue and clean if necessary.



Sensor Window Pag

Paper End Switch

This page is intentionally left blank.











Appendix A:

Advanced

Settings

Appendix A



Hex Dump

60

Appendix A

**Operation Manual** 



Appendix A



M-84 Se Series Printers



**Operation Manual** 

62

# **Appendix B: Declaration of Conformity**

#### MANUFACTURERS DECLARATION OF CONFORMITY

Product identification	Product:
	Type:
	Options:

Thermal or Thermal Transfer Printer M8485 Se all

#### Means of conformity

The product is in conformity with the EMC Directive 89/336/EEC, 92/31/EEC and 93/68/EEC based on test results using harmonised standards.

Test Standard:

EN55022: 1994 + A1: 1995 + A2: 1997 Class B EN50082 -2: 1995 EN61000-3-2: 1995 + A1: 1998 + A2: 1998 EN61000-3-3: 1995

Test carried out	by
Test report no:	
Date:	

A-PEX International Co., Ltd. 19C0036-02-1 12.04.2000

The product is in conformity with Low Voltage Directive 73/23/EEC based on test results using harmonised standards

standards used:

EN60950 / A11: 1997

Test carried out by: Certificate No: Report No: Date: TÜV Product Service B 00 07 15569 017 20 GS 0139 25.07.2000

SATO Europe GmbH

Manufacturer:

 Bar Code SATO Electronics (M) SDN. BHD.

 Lot 20, Jalan 223
 46100 Petaling Jaya

 Selangor Darul Ehsan
 Malaysia

EC Representative:

lm Hülsenfeld 13 40721 Hilden Germany

Function: Date: Director and General Manager SATO Europe GmbH 23. 10. 2000

Signature:

AG Britts

M-84 Se Series Printers

#### Appendix B

#### MANUFACTURERS DECLARATION OF CONFORMITY

Product identification	Product: Type: Options:	Thermal or Thermal Transfer Printer <b>M-8490Se, M-8460Se, M8459Se</b> All

#### Means of conformity

The product is in conformity with the EMC Directive 89/336/EEC, 92/31/EEC and 93/68/EEC based on test results using harmonised standards.

Test Standard:	EN55022: 1994 + A1: 1995 + A2: 1997 Class B EN50082 -2: 1995 EN61000-3-2: 1995 + A1: 1998 + A2: 1998 EN61000-3-3: 1995		
Test carried out by:	A-PEX International Co., Ltd.		
Test report no:	19C0036-02-1		
Date:	12.04.2000		

This is based on the fact that these printer models are all of the same basic design. Therefore, the test was made for one typical model M8485Se. M-8490Se, M8460Se and M8459Se will pass as Class-B product because of the radiated voltage according to the QP test results of around 147MHz is within limits.

The product is in conformity with Low Voltage Directive 73/23/EEC based on test results using harmonised standards

Standards used:	EN60950 / A11: 1997		
Test carried out by:	TÜV Product Service		
Certificate No:	B 00 07 15569 017		
Report No:	20 GS 0139		
Date:	25.07.2000		
Manufacturer:	Bar Code SATO Electronics (M) SDN. BHD.		
	Lot 20, Jalan 223	46100 Petaling Jaya	
	Selangor Darul Ehsan	Malaysia	
EC Representative:	SATO Europe GmbH	lm Hülsenfeld 13 40721 Hilden Germany	

Director and General Manager SATO Europe GmbH 23. 10. 2000

Signature:

Function:

Date:

AG Britts