

3203

Printer, Model 5

SERVICE AIDS

IBM

Maintenance

IBM INTERNAL USE ONLY

WHERE TO FIND.

LOGICS/POWER:	MLM
AC Distribution, overview	2-016
AC/DC Power On/Off Sequencing	2-180
ACP	2-210
Board Wiring and Cables (Controller)	3-BBCC-
Board Wiring and Cables (Printer)	21-010-
Carriage Drive And Control	11-010-
D1 Board Lay Out	3-010-
D1 Board Card Plugging List	3-025
D1 Board Tie Down List (check after D1 board repl)	3-BBCC
DC Distribution (controller)	2-150
DC Distribution (printer)	16-140
Drum Emitter	9-020
Hammer Circuit Measuring Chart	6-080
Hammer Drive and +60v circuits	6-020-
Hammer Driver/Paddle Card Locations	6-050-
Hoax Puls Jumpering, see note on	3-SJ4A
	16-130
Indicator lamps	15-020
Idle Control	15-010-
Keys/Switches (Multiplexor Card)	4-060
Line Counter (spec feature to count print lines)	7-010
Motors/Motor Control	15-010-
MP Connector	16-170
MPX Card Input/output	4-060
Operator Panel, Indicator Lights	4-050
Operator Panel(s), Keys and Switches	4-060
Power ALDs (Controller)	2-HP021
Power Distribution (Controller)	2-010
Power Distribution (Printer)	16-010
Power On/Off Sequence	2-180
Power Supply (Controller)	2-020
Print Emitters (Drum/UCS)	9-030
Ready Control	15-010-
Ribbon Correction Control circuits	12-040
Ribbon Drive Motor Control	12-060
Ribbon Run Control	12-070
SPI (Standard Power Interface) 'EPO'	2-090
Stacker Control	13-050
Switches/Keys (Multiplexor Card)	4-060
Termo Loop	16-190
UCS Emitter	9-020
Usage Meter	7-020
Vacuum Cleaner	14-010
Voltage Check Points, (Controller)	1-050 and 2-170
Voltage check Points, (Printer)	16-010 and 16-180

TIP. Various problems.

Undefined problems such as very intermittent hammer checks, carriage checks, hangs and power checks may be caused by bad connection in connector DC01.
Check by flexing the connector cables while measuring the voltages in the AI-board (PEB). See MLM 16-180

Similar problems have also been caused by 60v relay K009 with mechanical bindings and/or bad contact points.

WTF.

ADJUSTMENTS:	MLM
Carriage Phototransducer current	11-030
Carriage Drive Belt	11-050
Carriage Phototransducer and Disc	11-080
Character Cut-off horizontally	5-030
Drum Emitter	9-070
EOF Switch	10-140
Form Compressors	10-030
Hammer Unit to PAB Parallelism	10-280
Hammer Flight Time (without PAB)	6-120
Hammer Flight Time (with PAB)	6-150
Impression Control Bar to PAB	10-290
Paper Brakes	10-040
Paper Jam Switch	10-170
Paper Thickness Knob Torque	10-280
Paper Thickness Shaft to Retainer	10-260
Paper Torn Switch	10-140
Plastic Shield to Train Parallelism	10-050
Print Quality	5-010
Ribbon Bar to Upper Ribbon Guide	10-060
Ribbon Sense Lever	12-090
Ribbon Sense Lever Switch	12-100
Ribbon Shield and Ribbon Guide	12-120
Ribbon Spool Contact Switch	12-100
Stacker Belt Tension	13-060
Stacker Cover Latch	13-080
Stacker Jam Detection Early/Late	13-080
Stacker Guideway (only new machines)	13-060
Stacker Rolls	10-210
Stacker Tray, horizontal	13-060
Swing Gate to Base Frame parallelism	10-040
Swing Gate Handle and Roller	10-250
Tractor Door closing force (snap down)	10-130
Tractor Door Stop	10-170
Tractor Guide Plate	10-160
Tractor Locking Handle	10-150
Tractor Torque Check	10-240
Train Belt	9-070
Train Slug to Slug clearance	8-020
UCS Emitter	9-070
UCS Gear mesh	9-060
Vacuum Cleaner Belt/Switch	14-030

BB, AA, FEXX, FFYY.

XXYY = 8674 = LVL 21

AF90 = LVL 22

D284 = LVL 23

495A = LVL 24.

TIP. Hammer Checks.

Before replacement of har magnet due to a hammer check:
SWAP HAMMER DRIVER CARD. See figure for location.
If the driver was OK, continue as follows.
PULL OFF THE COIL LEADS from the terminals.
INSTALL A SPARE MAGNET ASM leads on the terminals and let the asm hang free. (Be care not to shorten the loose asm to the terminals).
Print to see if the new one is working.
If not: Check the paddle card land pattern.
Check terminal for cold soldering.
Measure the circuits acc to MLM 6-080.

WTF.

HARDWARE:		MLM
Carriage Drive, General		11-010
Carriage Drive Belt Replacement		11-050
Carriage Phototransducer Replacement		11-040
Chad Shield Replacement		10-100
ESD eliminators (tinsel)		10-240
Hammer Block Replacement		6-240
Hammer Unit Removal/Installation		6-200
Locations, General		19-003
Locations, Power Controller	16-020- and	2-110-
Locations, Power Printer	16-020-	2-040-
Operator Panel		4-010
Print Quality	MAP 0500	5-010
Rear Unit Blower, Motor and Belt Replacement		10-180
Ribbon Bar Replacement		10-100
Ribbon Drive and Correction		12-010
Ribbon Motor Replacement		12-080
Ribbon Correction Motor Replacement		12-090
Ribbon Plastic Shield Replacement		10-080
Ribbon Protector (no charge feature 9488)		5-080
Ribbon Shield, General		12-110
Ribbon Switch Replacement		12-090
Stacker, General		13-010
Stacker Belt Replacement		13-070
Stacker Rolls Replacement		10-220
Top Cover, General		17-010
Tractor Replacement		10-090
Tractor Switch Assy Replacement		10-110
Tractor Torque Measurement		10-240
Train Assembling, general		8-100
Train Assembling, train drive gear positioning		8-140
Train Cartridge Drive		9-010
Train Cartridge break down		8-010
Train Oiling System		8-040
Train wear out points		8-060
Vacuum Cleaner		14-010

NOTE.

When you replace a hammer block:
 Clean carefully the holes in the hammer bar.
 Use a vacuum cleaner.
 Press the block DOWN against the notch in the bar
 before tightening screws. Check for free bar movement.

(R) Hammer Driver Positions

Card Position	Hammer Driver No.	Hex
AIM1	1 - 12	01 - 0C
L1	13 - 24	00 - 18
K1	25 - 36	19 - 24
J1	37 - 48	25 - 30
H1	49 - 60	31 - 3C
G1	61 - 72	30 - 48
F1	73 - 84	49 - 54
L3	85 - 96	55 - 60
K3	97 - 108	61 - 6C
J3	109 - 120	60 - 78
H3	121 - 132	79 - 84

DANGER: +60V
 Present with power on.

WTF.

MISCELLANEOUS:		MLM
CELIA Card Description/Jumpering		18-010
CELIA stop words.		1-010
Diagnostic Descriptions (NP)		23-010
EREP		20-010
Error Stop Words. MP display		1-101
Error Stop Words. LCA (Routine 91-A9 only)		1-310
Error Stop Words. OLTS		1-400
General Logic Probe		18-090
Installation		24-010
Installation, Jumpering chart		24-050
Last Log Display	MAP 0120	
MAP Entries		0-210*
MP Display		18-030
MP Usage/List of Routines/Error Display/Analyse		18-020
MP Display, Extended Error Bytes		18-040
Preventive Maintenance		22-010
Sense Byte Analysis	MAP 0100	
Sense Byte Summary		1-080
Sense Byte Summary/Detail Description		20-120
Tools		18-100
True Hoae Puls Print Control Jumpering		3-SJ14A

TIP. Print Quality.

HORIZONTAL REGISTRATION

Try this screw even for single/few positions if the space between characters are OK and you have no wigglers. The screw is usually hard to turn, but not locked.

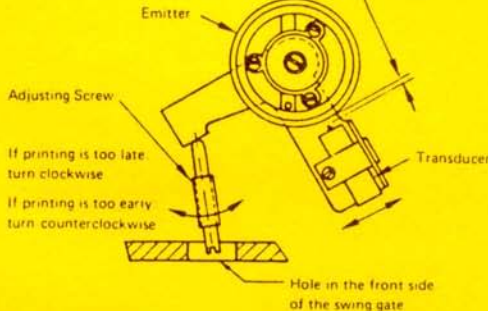
Cutoff Left (Printing too late)



Cutoff Right (Printing too early)



Emitter Timing Adjustment
 0.001 to 0.002 in
 (0,025 to 0,050 mm)



TIPS.

A BURNED OUT INDICATOR LAMP on the Operators Panel has been causing many lost problem determination hours. BE AWARE!!!

If customer reports light printing on the left or right end. Remove and turn the ribbon 180 degrees, to see if the ribbon is dry in one end, before doing any mechanical adjustment.

MLM recommends use of punch cards for certain adjustments/checkings. It's simple and save time. The commercial use of card decreases. Some customer doesn't use them at all so they are or will be scrapped. It's recommended to obtain a number of cards and store them together with the tool-bag inside the left end cover.

To force printing to start with TRUE HOME PULS only: Jumper D1T2U13-M07.

Check the jumper on the CELIA card each time you plug it. DO NOT leave CELIA card plugged on the board if not used.

SWAP TRAIN to isolate a print quality problem to either 3203 or 1418.

Use the possibility to SWAP CONTROLLER, if possible, to isolate undefined problems to either the printer or controller part.

TIP. Form Check.

Obtain a Jumper e.g. P/N 129242 or make one yourself by a piece of wire and two terminals P/N 135052. Store it at the unused side (e-h) of EC03. See figure.

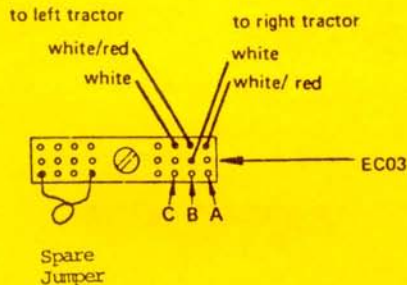
Use the Jumper to ISOLATE A FORM CHECK, either to the right or left tractor switches, or to logic circuits. BE CAREFUL.

Jumper EC03 A-B to bypass and Inactivate RIGHT tractor switches.

Jumper EC03 B-C to bypass and Inactivate LEFT tractor switches.

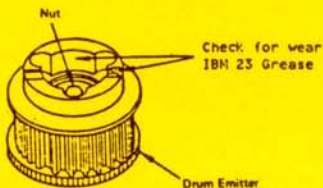
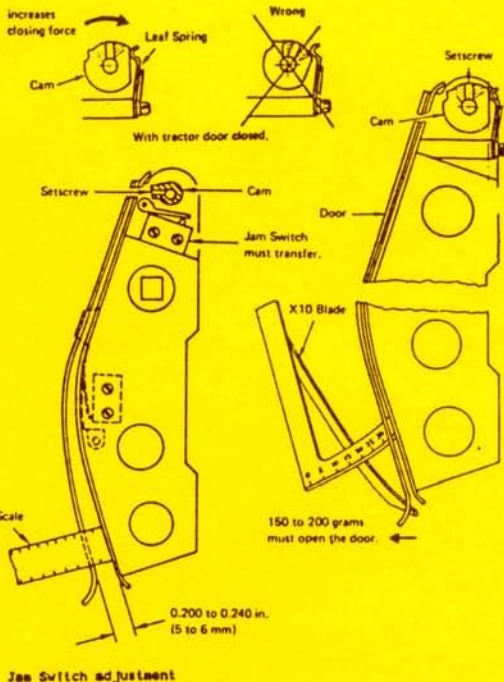
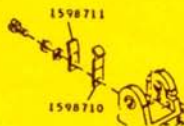
Jumper EC03 A-C to bypass and Inactivate both LEFT and RIGHT tractor switches.

DO NOT FORGET to put the Jumper back in the dummy position before you leave the machine to the customer.



NEW TRACTOR DOOR LEAF SPRINGS.

Mount the new leaf springs as shown and adjust the door cam to obtain a good tractor door 'SNAP-DOWN' force. MLM 10-130



THE INFORMATION AND TIPS IN THIS CARD ARE BASED ON INPUT FROM THE FIELD CE, S.

IT WAS PUT TOGETHER AND DISTRIBUTED BY:

CETO JARFALLA 85-04

REMEMBER: RETAIN IS YOUR (CE) DATABANK

3203 PARTNUMBER: (Quick List)

Blower	A-gate (PEB)	50 Hz	1896491	
	D-gate	(mixed, use Retain)		TDX541
	PCB		1894583	
	Power supply		2549540	
Carriage	Rear unit			PC Fig 6
	Belt		1555576	
	Belt Tension Roller Stud, new ver		6078187	Ref S-A1d
	Belt Tension Adj Screw (new)		6078188	Ref S-A1d
	Optical Transducer asm		1597799	
Clip	Emitter Disc		1597756	
	(on horizontal vernier screw)		257982	
	Compressor flap pos 1		4699065	
Compressor	flap pos 2-15		1897252	
	flap blade spring		1897051	
ESD Eliminators rear unit	'tinsel'		850248	
Filter	A-gate (PEB)		4699063	
	D-gate, if installed		1598802	
	Rear Unit, (Inst on later MC, s)		4699104	
Forms Brake, parts				PC Fig 7
Grease	IBM 23 (small tube, finger-size)		1280441	
	IBM 23 (tube, normal size)		9900692	
Hammer	Block, Incl plungers and springs		4699088	
	Plunger		1896574	
	Spring		1896575	
	Magnet Asm		2360917	
	Push Rod Asm		1894516	
Impression Control Bar			1894108	
Indicator Lamp (Operators Panel)			2122160	
Plastic Shield, Ribbon:	Up to 4 parts form users (new)		1598709	AVL 07-85
	More than 4 parts form (old)		1555372	
	Plastic Shield, Chad (upper)		1893748	
Rear Unit V-belt			1555759	
Residuals	Friction Roll			PC Fig 6
	(order qty 4 = one package)		1555398	
	Correction Sensor		1555476	
	Sensor Spring		1555720	
	Drive Hub		1598713	
Stacker	Drive Motor		1894506	
	Door Latch Asm		1896523	See Note 1
Switch	Tray Sliding Brackets		1897222	
	Counter Reset		738828	
	Others on operator panel(s)		2495491	single sw
	EOF / Swing Gate Interlock (new)		6078160	double sw
	Ribbon Reverse/Correction		1894256	PC Fig 12
Tractor	Tractor switches cable asm, left		1894257	
	right		1897082	
	Left		1897083	
	Right		1897083	
Train	Door leaf spring (new double)		1598710	+ 1598711
	In detail			PC Fig 15
	Cleaning paper		451529	
Vacuum Cleaner Asm	Drive belt		1894208	
	Drive/Timing disc		1894206	
	Drum emitter		1894252	
	UCS emitter		804618	
	Oil		1797703	or 856381
			1894202	
			1555830	
Vacuum Cleaner Belt	50 Hz		1555831	
	Dust Bag		1555837	
	O-ring (tube/adaptor)		1555837	
	Sealing (tube/nozzle)		1893536	

NOTE 1. If stacker hinges are worn, add washers P/N 1598996 as spacers to avoid cover latch breakage.

NOTE 2. USE GREASE IBM 23 on train drive coupling/key, train location pins, swing gate right end roller/latch tip, stacker door hinges and tractor door cam/leaf spring.

STACKER.**Recommended setting of stacker:**

Set the adjustable parts of stacker according to the length and stiffness of the form as described below.

For best stacking:

Start as recommended. In case of trouble, try the settings within brackets.

For Paper Forms up to 356 mm (14 inches) long:

1. Set the front and rear paper guides to the length of the forms. Minimum is 203 mm (8 inches), even if the forms are shorter. The holes in the guide rails are marked up for different form lengths.
2. Move the stacker tray to its top position. If problems with > 2 part forms, press stacker down to middle position or even lower for thick multi-forms before start.
3. Set the paper rail and chute to the levels shown in the figure.

Forms	Settings	
	Paper Rail	Chute
1-part	Down (Middle)	Down
2-4 parts	Middle (Top)	Middle (Up)
More than 4 parts	Up (Middle)	Up

For Paper Forms over 356 mm (14 inches) long:

1. Remove the REAR paper guide and slide it into the tubes in the stacker tray (horizontally). This will extend the length of the tray to support the longer forms.
2. Press STACKER DOWN until the middle (lowest) position.
3. Set the rail and chute as shown in the figure above.
4. Leave the stacker door open during printing.

For Card Stock and Extra-Stiff Forms:

1. Set the front and rear paper guides according to form length.
2. Press STACKER DOWN to lowest (middle) position.
3. Set the chute to the UP position.

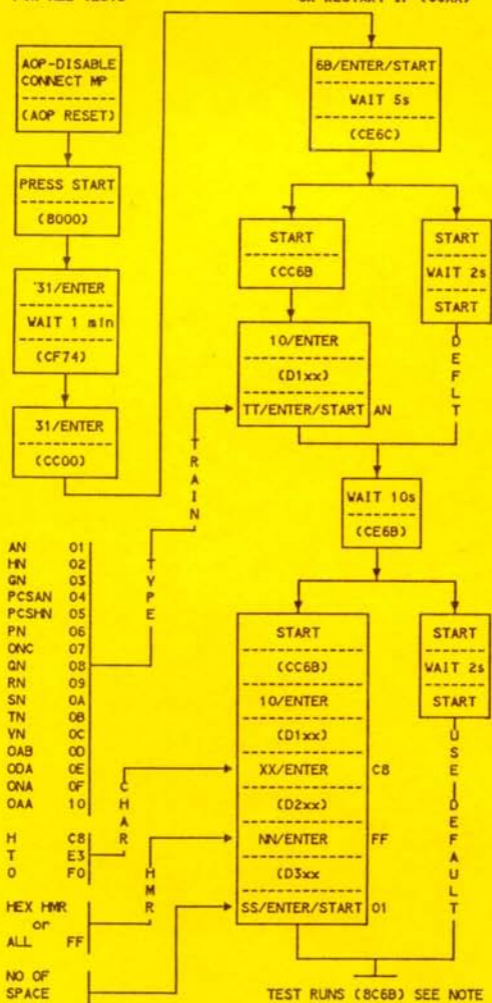
Wrong humidity may cause misfolding of forms.

A 'No charge' RPQ-500488 is available and may be helpful when using around 8.5 inch single forms. The RPQ supplies 4 'bathroom ball chains'. Length is 280 mm. Two are mounted with the center screws of the upper frame of the rear stacker cover and the other two (if needed) are mounted with the center screws holding the static eliminator at the front, repeat FRONT, side of the paper chute. The balls in the chains reduces form edge fluttering.

PRINT QUALITY VERIFICATION (ROUTINE 6B).

INITIAL SET UP
FOR ALL TESTS

ROUTINE 6B START UP
OR RESTART IF (CCXX)



NOTE:
FORM CHECK WHILE PRINTING: CORRECT ERROR AND PRESS START A FEW TIMES TO BYPASS ERROR STOPS AND CONTINUE PRINTING.

BEFORE OPENING SWING GATE: PRESS STOP TO GET (CCxx). RESTART ROUTINE 6B AFTER CLOSING SWING GATE.

EOF WHILE PRINTING: OPEN SWING GATE AND INSERT NEW FORM: PRESS START TO GET (CCxx). RESTART ROUTINE 6B.

REMEMBER: GOOD TOOLS SAVES TIME