M series
Retail System Scales

Service Instructions

ENGLISH

76102-673 Issue 3 *01.08.02*

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1 Warnings

1.1 Safety

Hazardous voltages

WARNING: This equipment is supplied by a mains voltage which can cause electric shock injury. Before removing the unit case or the covers of any remote units (for example: display, weighing platforms, customer keyboards etc.), disconnect completely the mains power supply and ensure that it cannot be connected inadvertently by other persons.

Installation

Pluggable equipment must be installed near an easily accessible socket outlet. Permanently connected equipment must have a readily accessible disconnect device incorporated in the fixed wiring.

The power plug must be inserted in a socket outlet provided with a protective earth contact. The electrical supply at the socket outlet must provide over-current protection of an appropriate rating. The socket outlet must be within easy reach for isolation of the machine for cleaning and servicing.

For your protection all mains (110V or 230V) equipment used out of doors or in wet or damp conditions should be supplied from a correctly fused source and protected by an approved RCD to BS7071 or BS7288 or BS4293.

Cleaning

Do not clean the machine or any remote units whilst it is switched on. For cleaning use only a clean cloth moistened with water containing a small amount of domestic detergent.

CAUTION: Harsh abrasives, solvents, scouring cleaners and alkaline cleaning solutions, such as washing soda, should not be used especially on the display windows. Under no circumstances should you attempt to wipe the inside of the machine.

1.2 Service precautions

If the unit case or the covers of any remote units have been removed, do not apply power to the unit unless specifically instructed to do so in these instructions. When working on live equipment, exercise great care, use insulated tools and test equipment, and do not work alone. Also maintain earth continuity on bare metal parts wherever practicable.

The capacitors in the power supply unit will hold a charge for a period of up to two minutes after the power supply is switched off. During this time, do not touch the unit. Do not attempt to discharge the capacitors by shorting their terminals.

Liquid Crystal Displays

The liquid crystal substance within the display panel used in this equipment is toxic. If the display panel is damaged and the LCD substance leaks out, do not ingest. If it comes into contact with your skin, wash the affected areas immediately with soap and water and seek medical advice.

Static Sensitive Devices

Almost all electronic integrated circuits are static sensitive devices (SSDs). They will be destroyed if contaminated with static electricity.

When working with SSDs follow anti-static procedures which include:

- the wearing of an anti-static wrist bracelet
- making sure that the workbench is covered by a static-discharge mat
- avoid wearing nylon clothes
- discharging any anti-static electricity which may be on your person by contacting an earthed device before handling an SSD

Keep an SSD in a bag made of an anti-static or conductive material. When shipping an SSD, cover all the SSD contacts with an anti-static or conductive material (not polythene).

When shipping an assembly which contains SSDs, pack it securely in an anti-static bag.

Handling procedures

The transducer in the machine is not protected against negative overload. Do not lift the machine by the cross assembly or transducer after the covers have been removed.

When the cross assembly, load stop or transducer are disassembled or otherwise removed, handle the transducer with care. Do not exert physical force on it and do not attempt to disassemble its component parts.

Do not attempt any maintenance within the transducer. Ensure that the transducer is not damaged by tools or other objects during maintenance, storage or shipment.

Print head

The thermal print head of the printer will be damaged if scratched with sharp objects (such as a screwdriver or knife blade). When examining or servicing the print head, take care not to damage it. If the print head requires cleaning, use only the cleaning kit specified in the procedures.

2 Model range

M100

M200

M202

M300

M400

M410

M420

M500

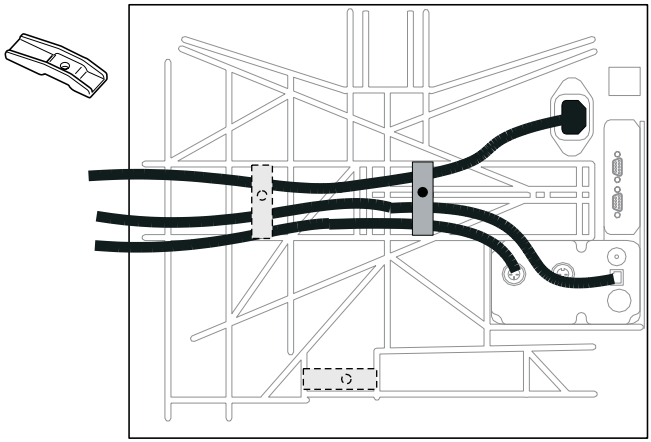
M600/601/602/603

M650/651

3 Installation

3.1 Cable management

In order to protect cables from being accidentally pulled out and damaged, all cables from the machine should be held in place using the clip(s) shown below.



= Alternative clip positions

3.2 Using a DCU converter

To use the C400 DCU, you must have an adaptor cable (part number 70734-970).

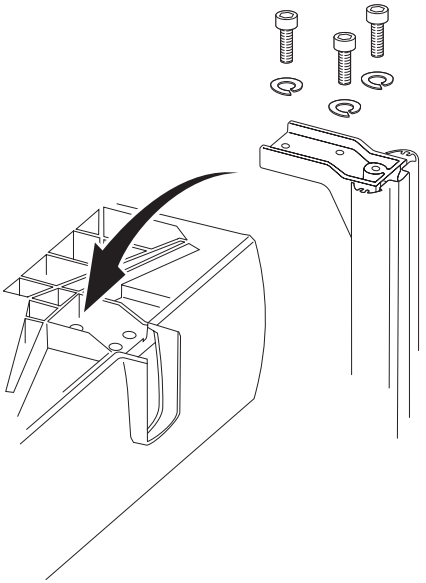
3.3 Installing the M300 TK keyboard

The M300 TK keyboard is a customer self-service keyboard. It can be configured at any time with a combination of standard, double and quadruple keys.

Column mounted

1. Remove the weighplate.
2. Place the machine upside-down, with the back of the machine near the edge of the work surface
3. Fit the M300 TK keyboard to the machine using three M6 X 16mm socket cap head screws and the three single-coil spring washers. Discard the nut (only used for packing).

CAUTION: The spring washers must be fitted to prevent damage to the machine



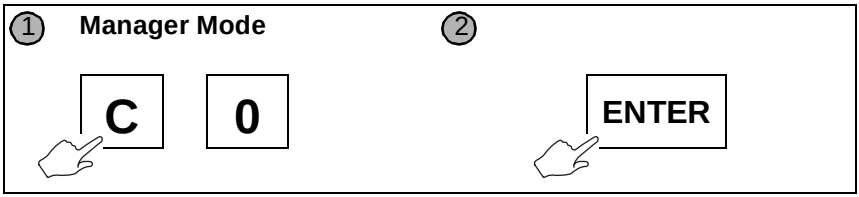
Remote and column mounted keyboard

4. Connect the cable from the M300 TK keyboard to serial port 2.

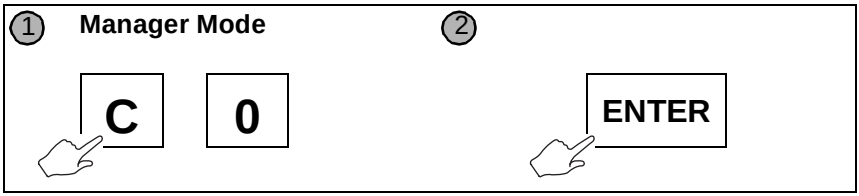
3.4 Configuring the M300 TK keyboard

Phase 1 up to phase 2 machines

To use the self-service keyboard you must disable the operator keyboard.

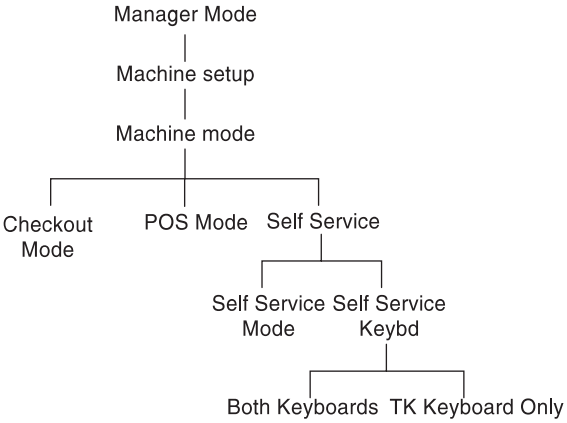


To enable the operator keyboard on a self-service machine



Phase 3 machines

For machines using phase 3 software you can choose to enable only the self service keyboard or both keyboards. If both keyboards are enabled all the keys except the function keys on the sales keyboard will be available.

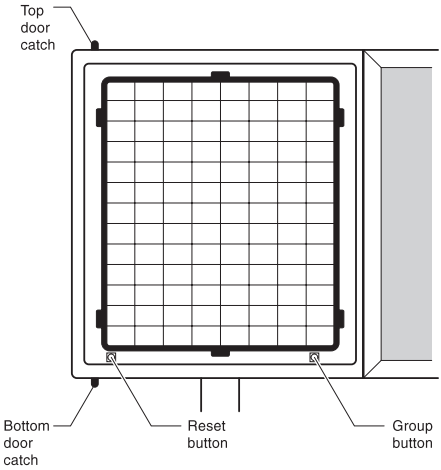


Note: *Security should be set for functions that you do not wish to be available from the keyboard.*

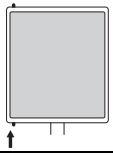
The zero key on the sales keyboard is disabled in self-service mode. To zero the scale, go to Manager Mode and press zero.

Setting up the keys

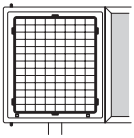
The keyboard is fitted with small keys as standard. Any set of four keys can be removed and replaced with a single quad key or a set of two keys can be replaced with a double key.



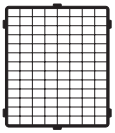
1. Push in both catches



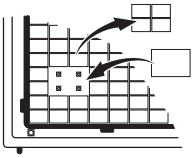
Open the door



Remove the overlay sheet



2. Replace the required keys.



3. For each new quad or double key, hold down the ‘Group’ button and press the quad or double key.

3.5 Installing a RAM expansion board

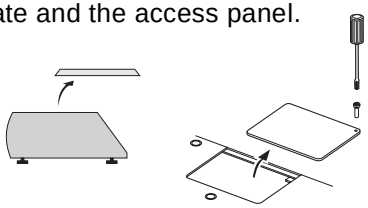
Make sure that all PLU files label formats etc. are copied to another machine before adding (or removing) a RAM expansion card.

Machine using main board 71014-972

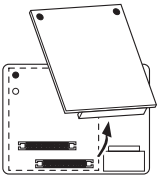
Note: *These instructions only apply to machines using main boards 71014-972.*

Observe all precautions for handling electrostatic discharge sensitive devices.

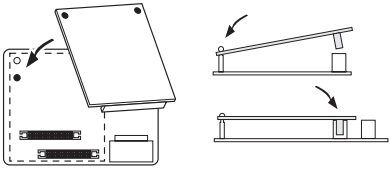
1. Remove the weighplate and the access panel.



2. Carefully remove the ethernet card (if fitted).



3. Connect the Ram expansion card.



Make sure that the RAM expansion card is located onto the two supports before pushing the card firmly onto the connector.

4. Replace the ethernet card and the access panel.

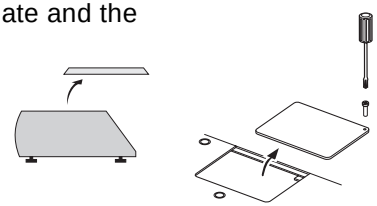
5. You must now cold start the machine for the RAM expansion card to be active.

Machine using main board 71015-281

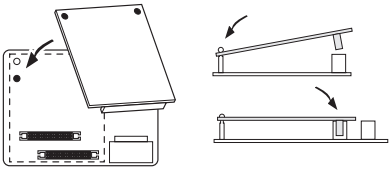
Note: *These instructions only apply to machines using main boards 71015-218 (Sabre).*

Observe all precautions for handling electrostatic discharge sensitive devices.

1. Remove the weighplate and the access panel.



2. Connect the Ram expansion card.



Make sure that the RAM expansion card is located onto the two supports before pushing the card firmly onto the connector.

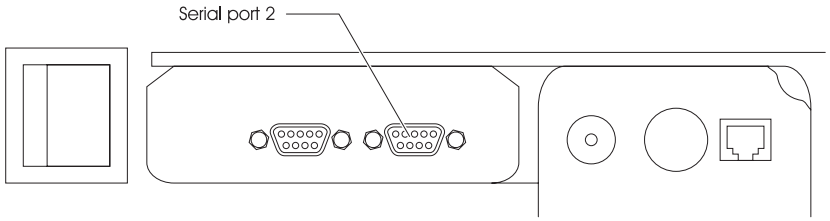
3. Replace the access panel.

4. You must now cold start the machine for the RAM expansion card to be active.

Note: *Machines with main boards 71015-218 (Sabre) do not require an ethernet card.* ***Do not fit an ethernet card.***

3.6 Installing and configuring a hand-held scanner

Connect the hand-held scanner to serial port 2.



Connections

Use the following pin outs (9-way male connector):

1. Not connected.
2. TX from scanner (scale input).
3. RX from scanner (scale output).
4. Not connected.
5. 0V
6. Not connected.
7. Do not connect.
8. Do not connect.
9. 5V supply from scale

9600 Baud, No parity, 1 stop bit

The scanner must be configured to interpret EAN/UPC family barcodes or Code 39 barcodes. The type of barcode will depend on the application to be used.

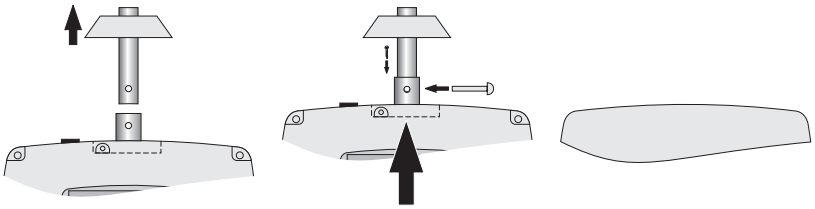
Refer to the instructions supplied by the scanner manufacturer for details on how to do this.

3.7 Installing a hanging scale (M500)

The customer is solely responsible for the support structure for the hanging scale based on the specifications provided.

WARNING: The hanging scale weighs approximately 13kg, under no circumstances should you attempt to install the machine on your own. This operation must be performed using two people.

To install the hanging scale

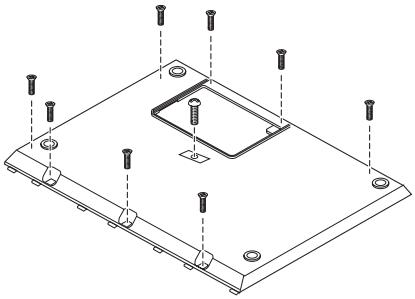


1. Place the top cover over the support.
2. Raise the machine so that the support holes are in line.
3. Insert the two support pins and lock in place with cotter pins.
4. Attach the safety chain/cable to the anchorage.
5. Feed the mains cable (and the network cable if applicable) through the top cover.
6. Connect the cradle to the suspension frame and hook the assembly in place. Place the pan on the cradle.

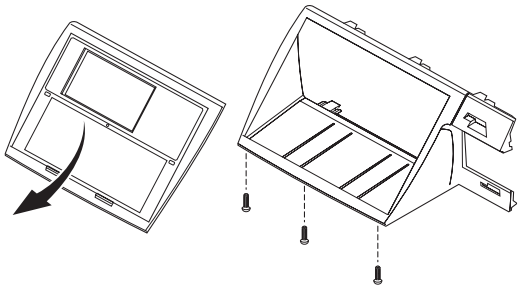
3.8 Removing the covers (monobloc and two piece)

All screws for the covers are M3 X 8mm recessed pan-head screws unless stated otherwise.

Removing the top cover

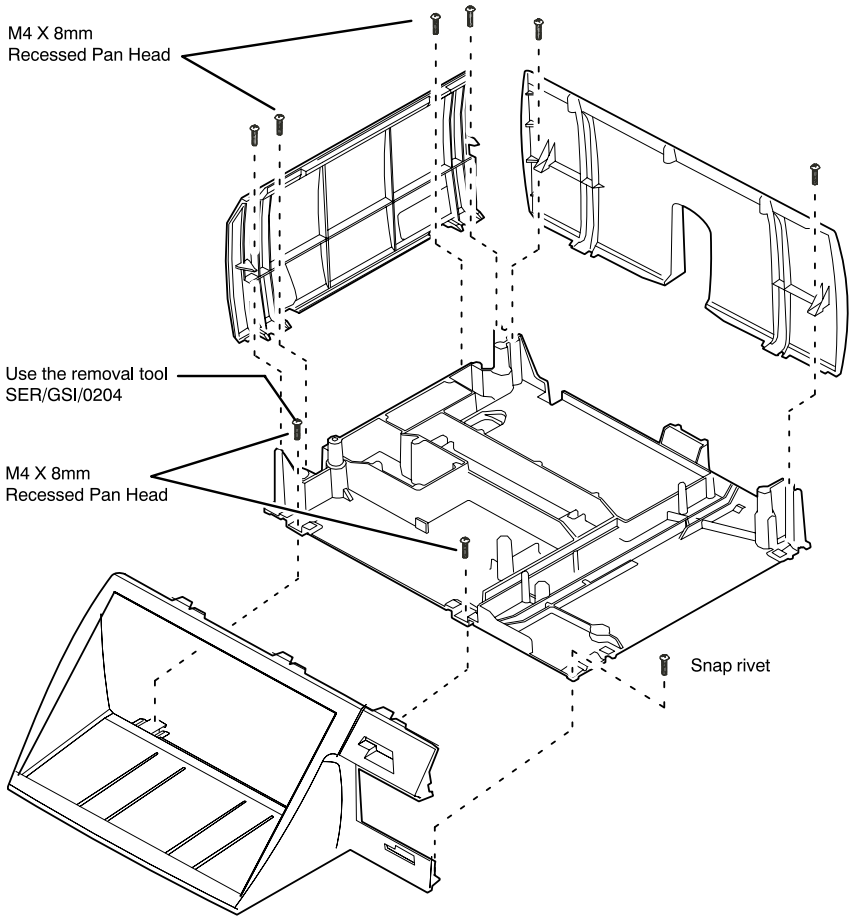


Removing the front bezel



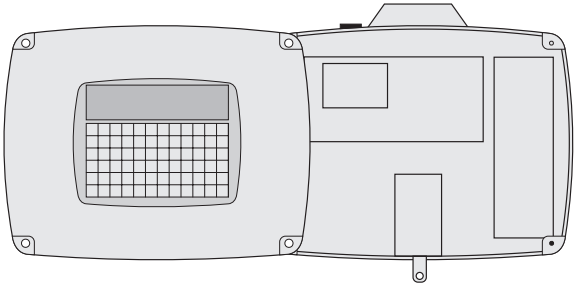
Removing the front, side and rear covers

All screws for the covers are M3 X 8mm recessed pan-head screws unless stated otherwise.



Removing the front cover (M500 model)

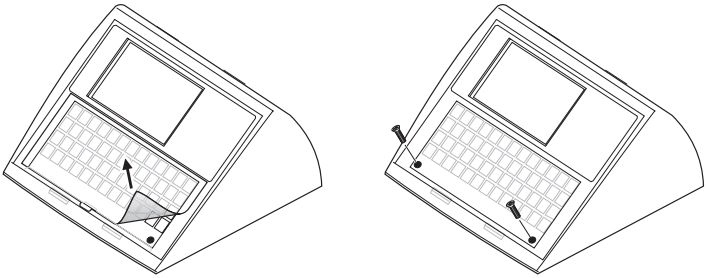
Note: *A special cover removal tool (Mono Drive SER/GSI/0208) is required to open the cover. Later models use a different size screw and require the cover removal tool SER/GSI/0214.*



1. Remove the screws at each corner of the machine.
2. Move the cover to the left and secure, using two of the screws. This will give you working access to most of the machine without having to disconnect the front panel.

When using the keyboard in this position, support the left hand edge to avoid breaking the cover.

Removing the cover (M600 model)



1. Carefully peel back the lower corners of the overlay pocket.
2. Remove the two screws and lift off the cover.

4 Programming menus

The following diagram shows the keys you should use to move around the menu system and select menu items.

The programming keyboard overlay may have keys that allow you to go directly to some of the menu items.

ENTER Move to menu item below.

Select menu item displayed

HOME Move to top level of menu.

When at top level of menu, return to operator/

SHIFT **ENTER** Move to menu item above.

  Move across menu items.

 Move up one level.

PLU Create/edit quick save

Save data entered up to this point.

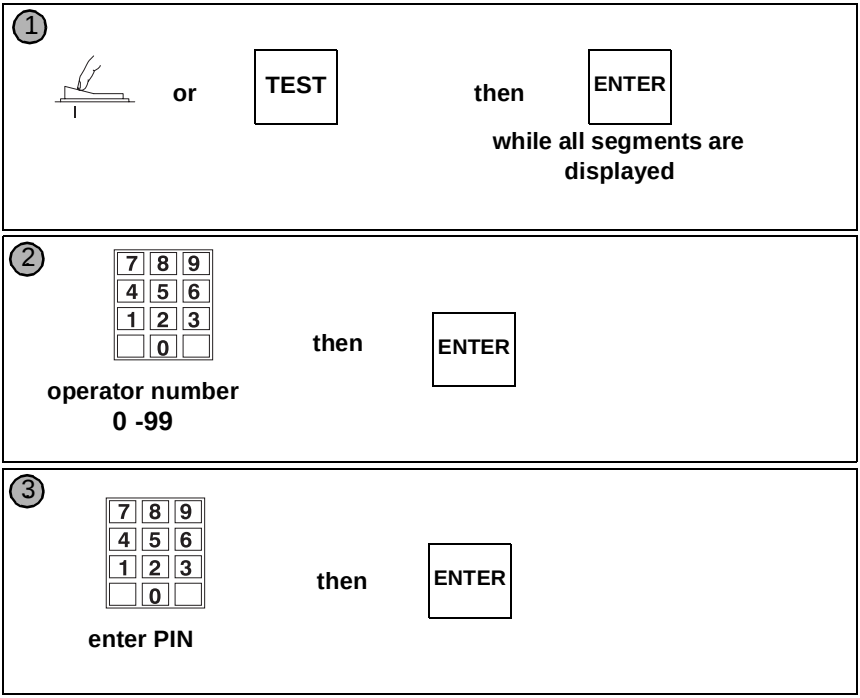
To exit Manager or Service Mode from within Menu

HOME **x 2**

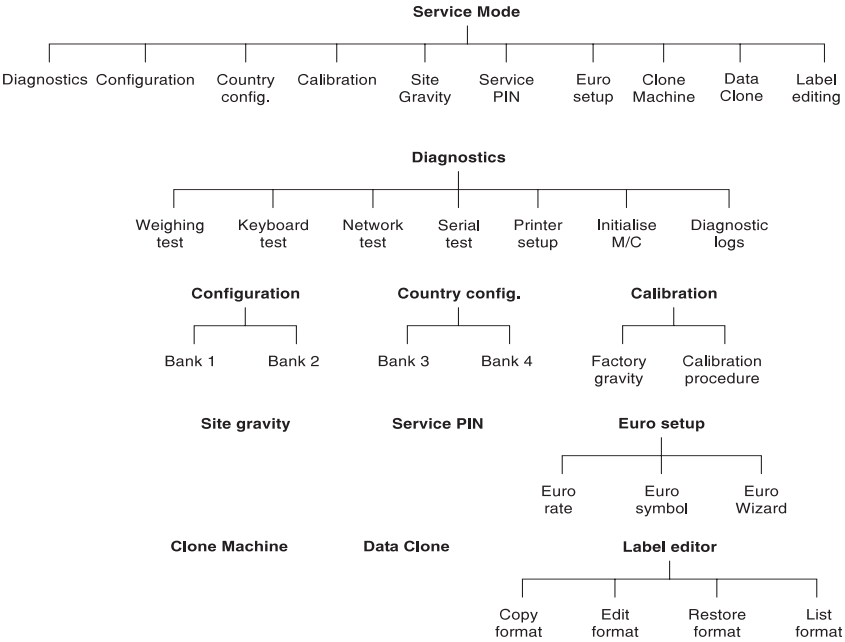
4.1 Entering manager mode

You can enter Manager Mode either during the start up routine or by pressing test, and following the sequence described below.

Note: *The factory default setting for operator 1 PIN is 4296 and for operator 1 security level is 9. Factory default settings for all other operators are PIN 0 and security level 0.*



5 Service mode menus



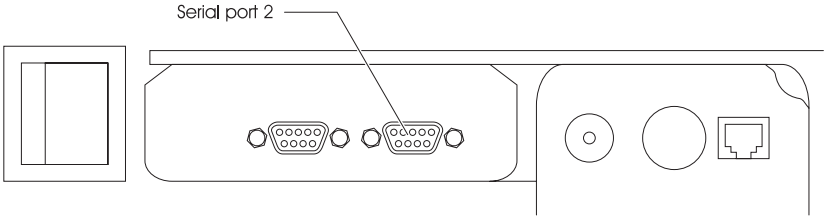
5.1 Entering service mode

There are two service mode levels. The first level gives complete access but requires a tamper seal to be broken and a switch on the underside of the machine to be pressed. The second level gives restricted access by entering a service PIN.

Unrestricted service access

To enter unrestricted service access:

1. Switch on the machine.
2. Carefully tilt the machine onto its right-hand side (printer).
3. Break the tamper seal, remove the plastic cover and press the reset button (shown below).



4. When you have finished making changes, replace the cover and the tamper seal.

Restricted service access

In restricted service access you will **not** be able to:

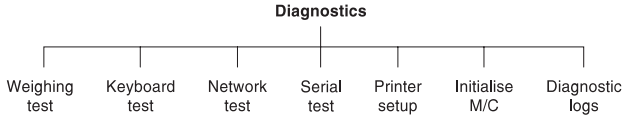
- Change the capacity.
- Change the gravity zone compensation.
- Calibrate the machine.

To gain restricted access to service mode:

1. Switch off the machine and then switch on again.
2. While the machine is starting up, enter the service PIN - 9467. Note: the service PIN can be changed (see user documentation - Manager Functions).
3. The display will now show 'Service Mode'.

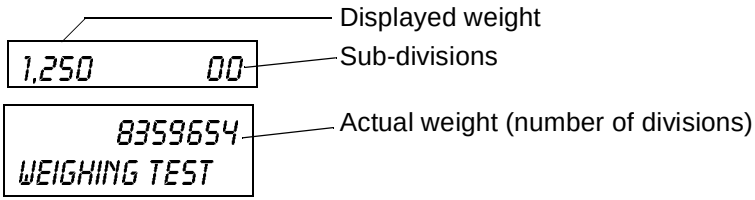
To exit restricted service access, press the 'Home' key to enter manager mode and again to enter operator mode.

5.2 Diagnostics

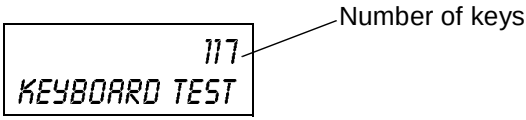


The diagnostics menu allows you to perform a number of tests:

Weighing test



Keyboard test



1. Press enter
2. Use ← to select either a 65 or 117 key keyboard.
3. Press each key on the keyboard in turn starting from the bottom right and working towards the left for each row of keys.

Note: *The 'Enter' key is made up of two keys.*

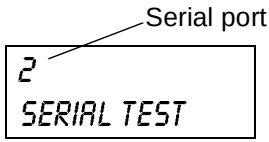
4. Press the same key three times to exit test.

Network test

This tests the network card to see if it is configured and fitted correctly.

Serial test

Note: *Pins 2-3 and 7-8 need to be shorted-out in order for the serial port to be tested.*



1. Press enter.
2. Use ← to select the serial port to be tested.
3. Press enter to start test.

The machine will display the baud rate and whether the serial port has passed or failed the test.

Printer setup

Do not adjust these settings unless there is a problem with the printer.

Density: This allows you to set the print density on the print out.

1 = light, 9 = dark (default = 5).

If the print quality is poor check that the printhead is clean. Poor quality printing can be caused by using inferior quality paper.

Note: *For M420 machines with two printers, set the print density for the receipt (second) printer using the Printer 2 menu option.*

Sensor: Not used.

Printhead life: This is for factory testing purposes only.

Sensor distance: This allows the parking position distance to be adjusted (mm). Default setting is 47.7mm

Initialise M/C

This allows you to select the method of restarting (initialise) the machine. The options are:

Warm restart: This is the equivalent of switching off the machine and then switching on.

Cold Start: This will restart the machine and clear all the battery-backed RAM. This will delete **ALL** records except:

- Service PIN
- Label formats and logos
- Configuration banks
- Euro rate
- IP address
- Advantage IP address
- Network ID
- Host port number
- Calibration and gravity factors
- Number of receipts and transactions
- Sub net mask
- Gateway IP address
- Modem enable/disable
- Print density
- Distance from sensor
- LCD contrast
- Diagnostic log size

Factory reset: This will restore the machine to its factory default settings. This will delete **ALL** records except for the MAC (Media Access Control) address, calibration constants, gravity factors and bank 1, digit 1 of the machine configuration.

Factory reset values

IP Address	Reset to 88.200.100.5
Network ID	Reset to 0
Host port number	Reset to 3001
Sub net mask	Reset to 255.0.0.0
TCP/IP Gateway Address	Reset to 0.0.0.0 (disabled)
Advantage IP Address	Reset to 0.0.0.0 (disabled)
Logos	All deleted
Label formats	Reset to default settings
Calibration	Unchanged
Gravity	Unchanged
Configuration banks	Reset to default settings except for digit 1 bank 1
Euro conversion rate	Reset to 1.00
Print density	Reset to 5
Number of receipts and trans.	Reset to 20 receipts and 8 transactions
Distance from sensor to printhead	Reset to 47.7mm
LCD contrast	Reset, but no change until machine is switched off and on.
Modem on/off	Reset to disabled
Modem initstring up to ver 2.4.0.8 vers 3.0.0.0 on	Reset to ATM0S0=2V1X4&K0D0↵ Reset to ATM0S0=1V1X4&K3&D0↵
Service PIN	Reset to 9467
Diagnostic log size	Reset to small
Audit mode	disabled
Distance printed (mm)	Reset to zero

Delete File: This will delete the PLU file.

Set transaction memory/transaction storage: This allows you to set the amount of memory allocated for transactions and receipts. See page 63 for details.

Note: *This will require the machine to be cold started.*

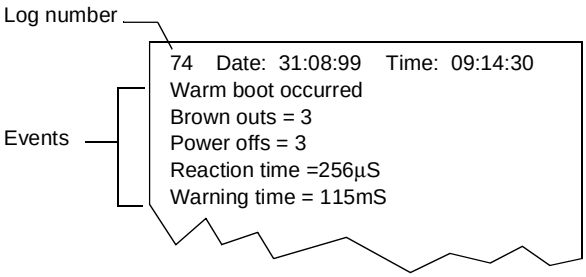
Diagnostic logs

This allows you to set the size of the log and print the reports. If you are using the MX050 support tool you can retrieve many more reports. The number of reports depends on the size of the log; small - 100, medium - 500, large - 1,000, huge - 10,000.

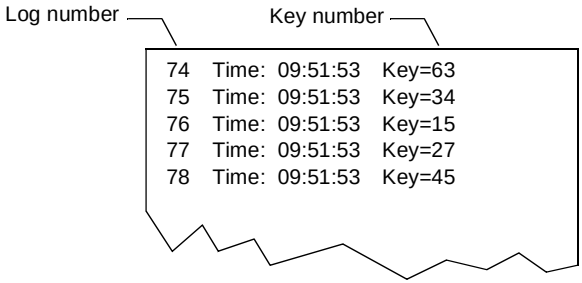
Print Logs

You can select which log to print or print all the logs.

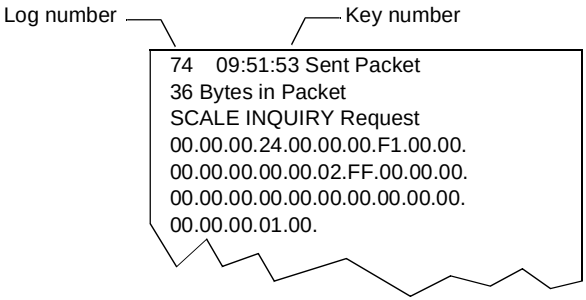
System log: This prints a report showing all the events that have occurred with the machine, including the number of times that the machine has been switched on and off.



Key log: This prints a report showing which keys have been pressed.



Comms log: This prints a report showing the history of the scale network traffic.



Set Log Size

This option sets the size of the log. If you select a different log size, then you must cold start the machine. Log size options are:

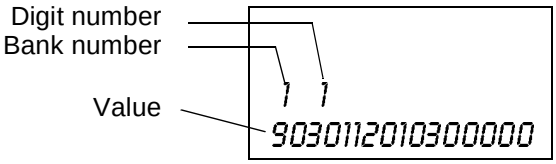
- None.
- Small (default).
- Medium*.
- Large*.

- Huge*.

Note:
The log size will affect the number of PLU entries that can be used.

* These require a RAM expansion board to be fitted.

5.3 Configuration menu



Phase 3.2 Software

Bank 1				
Digit				
1	**Capacity** (Not available in restricted access mode)			
	0. Reserved 1. 25lb x 1/8oz(T103) 2. 30lb x 0.01 (T103) 3. 50lb x 0.01 (T103) 4. 6kg x 1g (T103) 5. 6kg x 2g (T103) 6. 6kg AVR (T103) 7. 12kg x 2g (T103)	8. 15kg x 5g (T103) 9. 15kg AVR (T103) A. 24kg x 5g (T103) B. 30kg x5g (T103) C. 30kg AVR (T103) D. 30lb/15kg (T103) E. 60kg x 20g (T103) F. 150kg x 50g (T103)	G. 300kg x 100g (T103) H. 6kg x 1g (T110) I. 6kg x 2g (T110) J. 6kg AVR (T110) K. 12kg x 2g (T110) L. 15kg x 5g (T110) M. 15kg AVR (T110) N. 25kg x 5g (T110)	O. 30kg x 5g (T110) P. 30kg AVR (T110) Q. 60kg x 20g (T110) R. 150kg x 50g (T110) S. 300kg x 100g (T110)
2	**Tare system**			
	0. Free 1. Free, Graduated 2. Free, Cumulative, Graduated 3. Free, Cum., Grad, Proportional 4. Free, Stored		5. Free, Graduated, Stored 6. Free, Cumulative, Graduated, Stored 7. Free, Cum, Grad, Proportional, Stored	
3	**Tare display**			
	0. No tare display 1. Negative weight display		2. Separate tare display only 3. Separate tare and negative weight	
4	**Minimum weight disturbance**			
	0. 1 division 1. 4 divisions		2. 10 divisions 3. 20 divisions	
5	**Bleep behind zero, over balance lost**			
	0. Disabled		1. Enabled	
6	**Numeric entry timeout**			
	0. Disabled		1. Enabled	
7	**PLU auto recall timeout**			
	0. None 1. 0.6 Seconds		2. 1.0 Seconds	

8	**Receipt tax printing**	
	0. None 1. Totals Tax	2. Itemised Tax
9	**Weight filter type**	
	0. Settling time 0.2s, (71.2Hz) 1. Settling time 0.5s, (71.2Hz) 2. Settling time 1.0s, (71.2Hz) 3. Settling time 1.9s, (71.2Hz)	4. Settling time 0.2s, (81.2Hz) 5. Settling time 0.5s, (81.2Hz) 6. Settling time 1.0s, (81.2Hz) 7. Settling time 1.9s, (81.2Hz)
10	**Price base**	
	0. Single Price Base (lb/kg) 1. Single Price Base (1/4lb/100g)	2. Dual Price Base (lb/kg) 3. Dual Price Base (1/4lb/100g)
11	**Printer type**	
	0. None 1. Receipt only	2. Label only 3. Label & Receipt
12	**Default sales mode and machine type**	
	0. Hand Price Mode, Weighing 1. PLU Mode, Weighing	2. Hand Price Mode, Non-Weighing 3. PLU Mode, Non-Weighing
13	**Add function**	
	0. None 1. Transaction + Total 2. Total only	3. Receipt only 4. Transaction and receipt
14	**Date type**	
	0. Numeric	1. Alpha
15	**Date format**	
	0. DD MM YY 1. MM DD YY 2. YY MM DD	3. DD MM YYYY 4. MM DD YYYY 5. YYYY MM DD
16	**Maximum transaction sequence number**	
	0. 999999 1. 99999 2. 9999	3. 999 4. 99 5. 9

Bank 2		
Digit		
1	**Dummy zero in Unit price**	
	0. 6 digit UP, 6 digit TP, no dummy zero 1. 6 digit UP, 6 digit TP, dummy zero	2. 5 digit UP, 6 digit TP, no dummy zero 3. 8 digit UP, 8 digit TP, no dummy zero

Bank 2								
Digit								
2	**Transaction rounding**							
	0. Round to nearest 1 1. Round to nearest 5			2. Round to nearest 10 3. Round to nearest 25				
3	**Number of decimal places**							
	0. No decimal places 1. 1 decimal place 2. 2 decimal places			3. 3 decimal places 4. No decimal places on UP, 1 on TP 5. Thousands separators				
4	**Punctuation**							
	0. Decimal point			1. Comma				
5 &6	**Currency symbol**							
	00 None 01 £ 02 $ 03 R 04 F (French) 05 Kr 06 DM 07 S 08 Fr 09 f 10 Lit 11 P 12 E 13 K 14 M	15 D 16 RM 17 L 18. N$ 19 Esc 20 Pta 21 Rp 22 mk 23 PX 24 SR 25 zt 26 Kc 27 SK 28 kr 29 DHS		30 Won 31 Bt 32 Pts 33 EEK 34 Lt 35 € 36 Eur 37 R$ 38 B 39 C 40 Q 41 TL 42 F (Belgian) 43 BD 44 LE	45 JD 46 KD 47 LL 48 RO 49 QR 50 SR 51 YR 52 Ft 53 kn 54 Lm			
7	**Receipt rounding**							
	0. Round to nearest 1 1. Round to nearest 5			2. Round to nearest 10 3. Round to nearest 25				
8	**Auto subtotal display**							
	0. Disabled			1. Enabled				
9	**Subtotal timeout**							
	0. 1 Second 1. 2 Seconds 2. 3 Seconds			3. 4 Seconds 4. 5 Seconds				

Bank 2		
Digit		
10	**Printhead monitoring (Rohm only)**	
	0. Dot monitor Off. Dot Save Off (default) 1. Dot monitor On. Dot Save Off. 30 minute nag message. 2. Dot monitor On. Dot Save Off. 4 hour nag message.	3. Dot monitor On. Dot Save On. 30 minute nag message. 4. Dot monitor On. Dot Save On. 4 hour nag message.
11	**Date 1 field on hand price labels**	
	0. Date	1. Time
12	**Leading zero suppression**	
	0. Disabled	1. Enabled
13	**Printed boxes (if defined)**	
	0. Disabled	1. Enabled
14	**Not used**	
15	**Not used**	
16	**Not used**	

Country configuration

Bank 3		
Digit		
1	**Balance range**	
	0. ±2%	1. ±5%
2	**Balance at power up**	
	0. Disabled	1. Enabled
3	**Large step behind zero**	
	0. Disabled	1. Enabled
4	**Reduced zero tracking**	
	0. Disabled	1. Enabled
5	**Retained tare mode**	
	0. Disabled	1. Enabled
6	**Manual Tare Cancellation**	
	0. None 1. Tare key	2. Zero key 3. Tare & Zero key1. Tare key
7	**Price/tare interlock**	
	0. Disabled	1. Enabled

Bank 3		
Digit		
8	**Fix tare options**	
	0. Fix tare and unit price	1. Fix tare only
9	**Open cash drawer with zero total**	
	0. Disabled	1. Enabled
10	**Swap price1/price 2 positions**	
	0. Disabled	1. Enabled
11	**Receipt total currency symbols**	
	0. Disabled	1. Enabled
12	**Minimum prepack weight**	
	0. 1 division	1. 20 divisions
13	**Prepack allows stored/grad tares**	
	0. Disabled	1. Enabled
14	**Triple zero key**	
	0. Disabled	1. Enabled
15	**Tax system**	
	0. Inclusive 1. Exclusive	2. Inclusive, PoS only 3. Exclusive, PoS only
16	**Tax reference in description**	
	0. Disabled	1. Enabled

Bank 4		
Digit		
1 & 2	**Language**	
	00 English 01 Spanish 02 RSA 03 French 04 German 05 Italian 06 Dutch 07 Danish 08 Polish	09 Czech Rep 10 Portuguese 11 Finnish 12 Norwegian 13 Turkish 14 Greek 15 Croatia 16 Hungary 17 Sweden 18
3	**Sales key layout**	
	0. European price base key 1. European double zero key	2. USA ½ and ¼ keys

Bank 4		
Digit		
4	**Manager key layout**	
	0. European Qwerty 1. European Abcdef	2. Greek 3. Turkish
5	**Receipt algorithms**	
	Algorithm / Weighed / N x +ve non-weighed / n x -ve non-weighed 0. A 1/1 1/1 0/1 1. B 1/1 1/1 1/1 2. C 1/1 n/1 0/1 3. D 1/1 n/1 n/1 4. E 1/1 n/1 0/0	
6	**Receipt formats**	
	0. Receipt format 0 - Italian format which includes tare weight 1. Receipt format 1 - No symbols line, symbols printed with transaction data. First line contains text and total price. Second line contains weight/multiplier and unit price/item. 2. Receipt format 2 - As receipt format 2 except total price printed on third line for weighted. 3. Receipt format 3 - Symbols line. First line contains text. Second line contains weight/multiplier, unit/item price and total price. 4. Receipt format 4 - Each transaction contains its own symbols line 5. Receipt format 5 - USA receipt format. Identical to format 1 except that 'X' and 'Items' are replaced by '@' and 'pc' for nonweighed, and the '@' symbol is printed just before price/kg for weighed goods. 6. Receipt format 6 - Australian receipt format. Identical to format 5 except the description is not allowed to encroach into the total prices column.	
7	**Condensed format**	
	0. Disabled	1. Enabled
8	**Change calculation**	
	0. Disabled	1. Enabled
9	**Direct entry prepack**	
	0. Disabled	1. Enabled
10	**Net weight**	
	0. Grams	1. Oz - lb/oz
11	**USA total price legend**	
	0. Disabled	1. Enabled
12	**French Back calculation**	
	0. Disabled	1. Enabled

Bank 4		
Digit		
13	**Print Strobe Algorithm - Printer 1**	
	0. One full strike 1. Two half strikes 2. Three half strikes 3. Two full strikes	4. Three half strikes (reduced energy) 5.Historic Control (100mm/s)* 6.Historic Control (66mm/s)* 7.Historic Control (50mm/s)* * Disabled
14	**Print Strobe Algorithm - Printer 2**	
	See 'Print Strobe Algorithm - Printer 1'	
15	**Not used**	
16	**Not used**	

Software versions prior to Phase 3.2

Bank 1			
Digit			
1	**Capacity** (Not available in restricted access mode)		
	0. Reserved 1. 25lb x 1/8oz(T103) 2. 30lb x 0.01 (T103) 3. 50lb x 0.01 (T103) 4. 6kg x 1g (T103) 5. 6kg x 2g (T103) 6. 6kg AVR (T103) 7. 12kg x 2g (T103)	8. 15kg x 5g (T103) 9. 15kg AVR (T103) A. 24kg x 5g (T103) B. 30kg x5g (T103) C. 30kg AVR (T103) D. 30lb/15kg (T103) E. 60kg x 20g (T103) F. 150kg x 50g (T103)	G. 300kg x 100g (T103)
2	**Tare system**		
	0. Free 1. Free, Graduated 2. Free, Cumulative, Graduated 3. Free, Cum., Grad, Proportional 4. Free, Stored		5. Free, Graduated, Stored 6. Free, Cumulative, Graduated, Stored 7. Free, Cum, Grad, Proportional, Stored
3	**Tare display**		
	0. No tare display 1. Negative weight display		2. Separate tare display only 3. Separate tare and negative weight
4	**Minimum weight disturbance**		
	0. 1 division 1. 4 divisions		2. 10 divisions 3. 20 divisions
5	**Bleep behind zero, over balance lost**		
	0. Disabled		1. Enabled

6	**Numeric entry timeout**	
	0. Disabled	1. Enabled
7	**PLU auto recall timeout**	
	0. None 1. 0.6 Seconds	2. 1.0 Seconds
8	**Receipt tax printing**	
	0. None 1. Totals Tax	2. Itemised Tax
9	**Weight filter type**	
	0. Settling time 0.2s, (71.2Hz) 1. Settling time 0.5s, (71.2Hz)	2. Settling time 1.0s, (71.2Hz) 3. Settling time 1.9s, (71.2Hz)
10	**Price base**	
	0. Single Price Base (lb/kg) 1. Single Price Base (1/4lb/100g)	2. Dual Price Base (lb/kg) 3. Dual Price Base (1/4lb/100g)
11	**Printer type**	
	0. None 1. Receipt only	2. Label only 3. Label & Receipt
12	**Default sales mode and machine type**	
	0. Hand Price Mode, Weighing 1. PLU Mode, Weighing	2. Hand Price Mode, Non-Weighing 3. PLU Mode, Non-Weighing
13	**Add function**	
	0. None 1. Transaction + Total 2. Total only	3. Receipt only 4. Transaction and receipt
14	**Date type**	
	0. Numeric	1. Alpha
15	**Date format**	
	0. DD MM YY 1. MM DD YY 2. YY MM DD	3. DD MM YYYY 4. MM DD YYYY 5. YYYY MM DD
16	**Not used**	

Bank 2	
Digit	
1	**Dummy zero in Unit price**

Bank 2							
Digit							
	0. 6 digit UP, 6 digit TP, no dummy zero 1. 6 digit UP, 6 digit TP, dummy zero			2. 5 digit UP, 6 digit TP, no dummy zero 3. 8 digit UP, 8 digit TP, no dummy zero			
2	**Transaction rounding**						
	0. Round to nearest 1 1. Round to nearest 5			2. Round to nearest 10 3. Round to nearest 25			
3	**Number of decimal places**						
	0. No decimal places 1. 1 decimal place 2. 2 decimal places			3. 3 decimal places 4. No decimal places on UP, 1 on TP 5. Thousands separators			
4	**Punctuation**						
	0. Decimal point			1. Comma			
5 &6	**Currency symbol**						
	00 None 01 £ 02 $ 03 R 04 F (French) 05 Kr 06 DM 07 S 08 Fr 09 f 10 Lit 11 P 12 E 13 K 14 M	15 D 16 RM 17 L 18. N$ 19 Esc 20 Pta 21 Rp 22 mk 23 PX 24 SR 25 zt 26 Kc 27 SK 28 kr 29 DHS		30 Won 31 Bt 32 Pts 33 EEK 34 Lt 35 € 36 Eur 37 R$ 38 B 39 C 40 Q 41 TL 42 F (Belgian) 43 BD 44 LE	45 JD 46 KD 47 LL 48 RO 49 QR 50 SR 51 YR 52 Ft 53 kn 54 Lm		
7	**Receipt rounding**						
	0. Round to nearest 1 1. Round to nearest 5			2. Round to nearest 10 3. Round to nearest 25			
8	**Auto subtotal display**						
	0. Disabled			1. Enabled			
9	**Subtotal timeout**						
	0. 1 Second 1. 2 Seconds 2. 3 Seconds			3. 4 Seconds 4. 5 Seconds			

Bank 2		
Digit		
10	**Printhead monitoring (Rohm only)**	
	0. Dot monitor Off. Dot Save Off (default) 1. Dot monitor On. Dot Save Off. 30 minute nag message. 2. Dot monitor On. Dot Save Off. 4 hour nag message.	3. Dot monitor On. Dot Save On. 30 minute nag message. 4. Dot monitor On. Dot Save On. 4 hour nag message.
11	**Date 1 field on hand price labels**	
	0. Date	1. Time
12	**Leading zero suppression**	
	0. Disabled	1. Enabled
13	**Printed boxes (if defined)**	
	0. Disabled	1. Enabled
14	**Not used**	
15	**Not used**	
16	**Not used**	

Country configuration

Bank 3		
Digit		
1	**Balance range**	
	0. ±2%	1. ±5%
2	**Balance at power up**	
	0. Disabled	1. Enabled
3	**Large step behind zero**	
	0. Disabled	1. Enabled
4	**Reduced zero tracking**	
	0. Disabled	1. Enabled
5	**Retained tare mode**	
	0. Disabled	1. Enabled
6	**Manual Tare Cancellation**	
	0. None	1. Tare key
7	**Price/tare interlock**	
	0. Disabled	1. Enabled
8	**Fix tare options**	
	0. Fix tare and unit price	1. Fix tare only

Bank 3		
Digit		
9	**Open cash drawer with zero total**	
	0. Disabled	1. Enabled
10	**Swap price1/price 2 positions**	
	0. Disabled	1. Enabled
11	**Receipt total currency symbols**	
	0. Disabled	1. Enabled
12	**Minimum prepack weight**	
	0. 1 division	1. 20 divisions
13	**Prepack allows stored/grad tares**	
	0. Disabled	1. Enabled
14	**Triple zero key**	
	0. Disabled	1. Enabled
15	**Tax system**	
	0. Inclusive 1. Exclusive	2. Inclusive, PoS only 3. Exclusive, PoS only
16	**Tax reference in description**	
	0. Disabled	1. Enabled

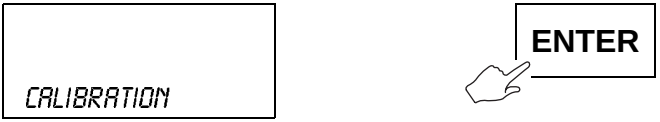
Bank 4		
Digit		
1 & 2	**Language**	
	00 English 01 Spanish 02 RSA 03 French 04 German 05 Italian 06 Dutch 07 Danish 08 Polish	09 Czech Rep 10 Portuguese 11 Finnish 12 Norwegian 13 Turkish 14 Greek 15 Croatia 16 Hungary 17 Sweden
3	**Sales key layout**	
	0. European price base key 1. European double zero key	2. USA ½ and ¼ keys
4	**Manager key layout**	
	0. European Qwerty 1. European Abcdef	2. Greek 3. Turkish

Bank 4			
Digit			
5	**Receipt algorithms**		
		N x +ve Weighed	n x -ve non-weighed	non-weighed
	0.	1 item	1.0 item	0 item
	1.	1 item	1.0 item	1.0 item
	2.	1 item	n item	0 item
	3.	1 item	n item	n item
	4.	1 item	1.0 item	0 item
6	**Receipt formats**		
	0. Receipt format 0 - Italian format which includes tare weight 1. Receipt format 1 - No symbols line, symbols printed with transaction data. First line contains text and total price. Second line contains weight/multiplier and unit price/item. 2. Receipt format 2 - As receipt format 2 except total price printed on third line for weighted. 3. Receipt format 3 - Symbols line. First line contains text. Second line contains weight/multiplier, unit/item price and total price. 4. Receipt format 4 - Each transaction contains its own symbols line		
7	**Condensed format**		
	0. Disabled	1. Enabled	
8	**Change calculation**		
	0. Disabled	1. Enabled	
9	**Direct entry prepack**		
	0. Disabled	1. Enabled	
10	**Net weight**		
	0. Grams	1. Oz - lb/oz	
11	**USA total price legend**		
	0. Disabled	1. Enabled	
12	**French Back calculation**		
	0. Disabled	1. Enabled	
13	**Printed Strobe Algorithm**		
	0. One full stroke (100m/S) 1. Two half strokes (100mm/S)	2. Three half strokes (66mm/S) 3. Two full strokes (66mm/S	
14	**Not used**		
15	**Not used**		
16	**Not used**		

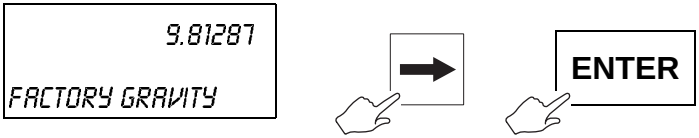
5.4 Calibration menu

To calibrate the machine:

1. Go to the calibration menu



2. If the site and factory gravity factors differ, then you will be prompted to enter the factory gravity factor. Refer to the local authority for details. Use the left/right arrows to set the decimal point.

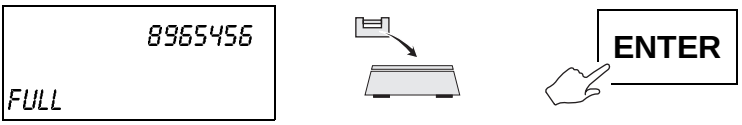


Note: *This is the gravity factor for the location where the machine is being calibrated.*

3. Make sure that there is no weight on the machine.

Note: *The last three digits will be unstable.*

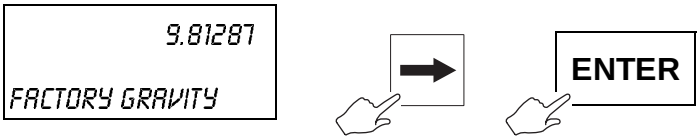
4. Place a full load on the machine.



Note: *The last three digits will be unstable.*

5.5 Site gravity

If the machine has been moved to a different gravity zone, enter the site gravity compensation factor. Refer to the local authority for details. Use the left/right arrows to set the decimal point.



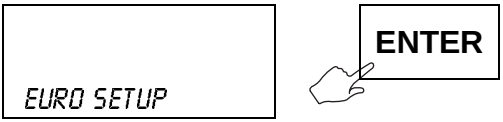
Note: *This is the gravity factor for the location where the machine is to be used.*

5.6 Service PIN

You can change the four digit restricted service access PIN from this menu. Only change the PIN if you think that the user knows the service PIN and is tampering with the machine's configuration.

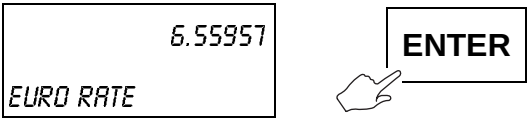
5.7 Euro setup menu

1. Go to the Euro setup menu



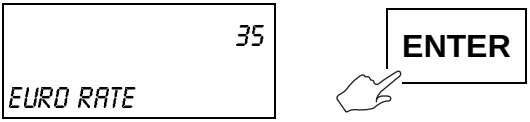
2.

3. Enter the value of the Euro rate, for example 6.55957. **Use the left/right arrows to position the decimal point.**



4.

5. Enter the value of the Euro symbol



See configuration bank 2, digits 5&6, for details

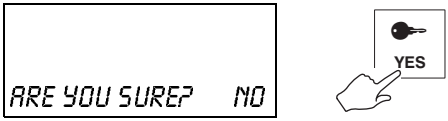
Euro wizard

This converts the PLU file from local currency to euro currency.

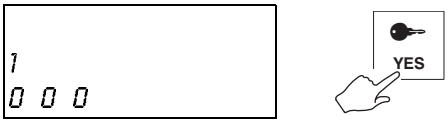
Only a factory reset can undo this operation.

6 Confirm that you want to change the Euro conversion rate and apply it to all the Machine's PLUs.

7



8 Enter the values for how the Euro appears on the machine and labels.

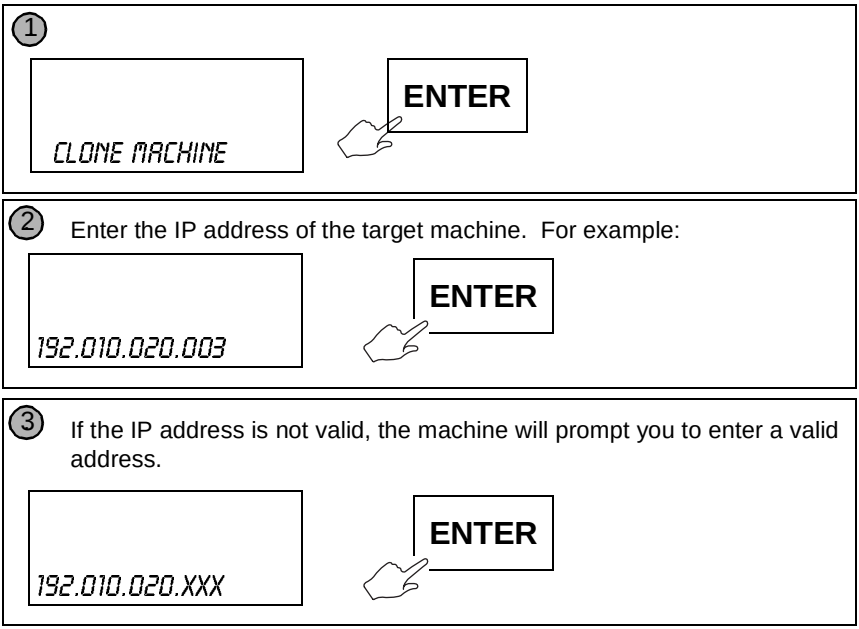


Label	0 = 2nd price field shows alternative currency 1 = 2nd price field shows promotional value
Barcode	0 = Barcode price printed as Euros 1 = Barcode prints alternate currency
Label	0 = Euro symbol 1 = Euro text

5.8 Clone machine

This function allows you to update another machine so that it is functionally identical to the one you are using. For example it will update the firmware executable files (application program), the PLU file, label formats, logos, configuration and keyboard layouts. It will not update information that may be specific to the target machine, such as the capacity, calibration data or gravity compensation factors.

The program application cloning will work irrespective of the network IDs of the two machines. The data cloning will only work if both machines are using the same network ID, see page 56.



Data clone

This function has been added in software version 3.2. Data cloning allows you to transfer all the data in one machine to another machine, or to all the machines on the network, provided that the machines **use the same network ID**.

The data transferred is the same as that transferred using machine cloning but the firmware executable files (application programs) are not transferred.

It is not possible to clone a machine fitted with a main board 761015-218 (Sabre) to a machine fitted with a main board 761014-972. You can use Data cloning to transfer data providing the machines use the same network ID.

5.9 Label editor menu

This menu allows you to create and edit up to 100 label formats. Each label can have up to 26 fields on it.

The maximum printable area on a label is 160mm X 60mm.

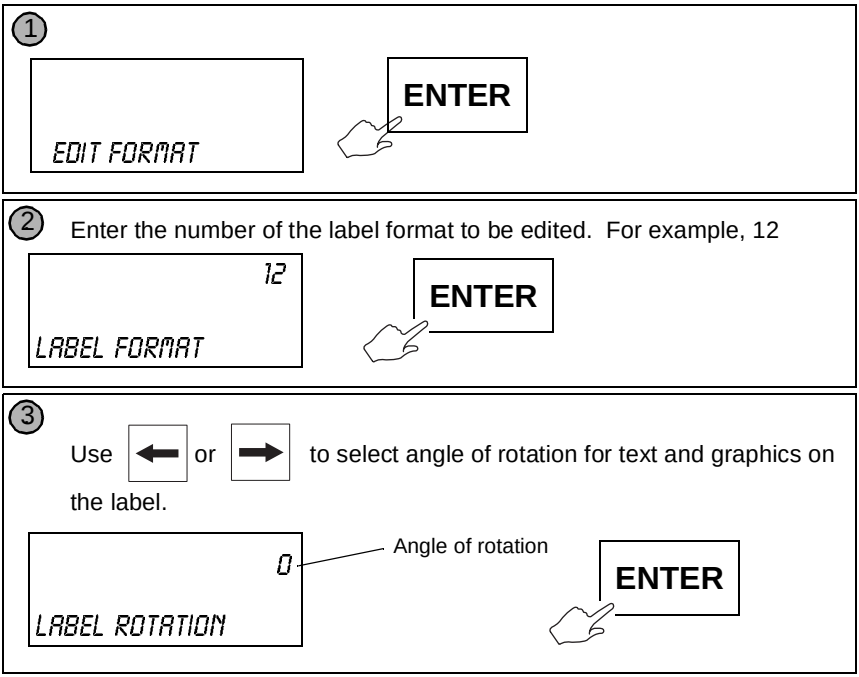
Copy Format

This menu allows you to create an identical copy of an existing label format. The copy could then be modified using the Edit Format option (see below).

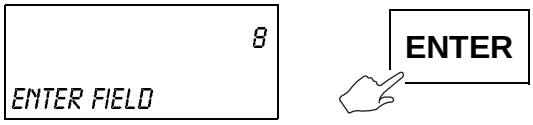
Edit Format

This menu allows you to edit the fields that appear on the selected label.

Note: *Use the `List Format' function to print the current settings.*



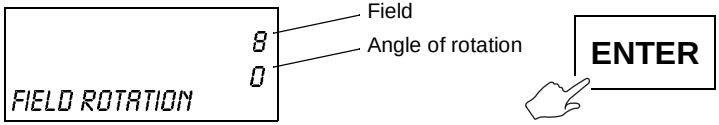
4 Enter the number of the field to be edited or press ENTER to move to the next field. Example shows field 8.



5 Use ← or → to select the information that field is to display.

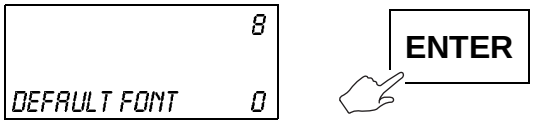
Example shows field 8 displaying UNIT PRICE.

6 Use ← or → to select the angle of rotation for the field.



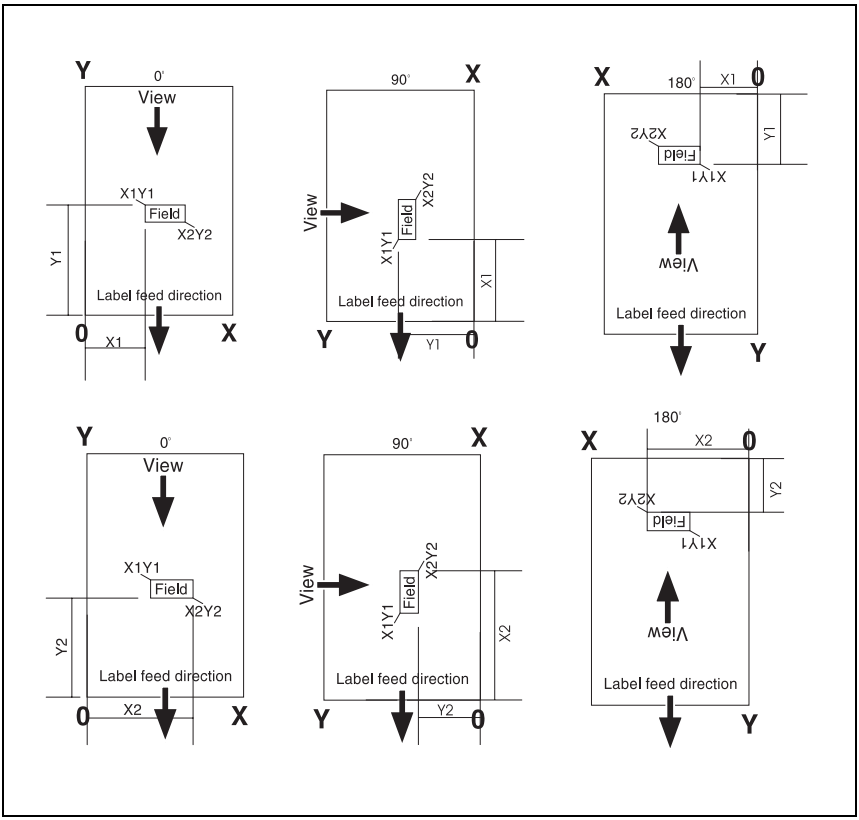
Note: *If you are creating a line or a box you will not see step 6. If you are creating a logo, enter the reference number*

7 Enter the number of the font style to be used.

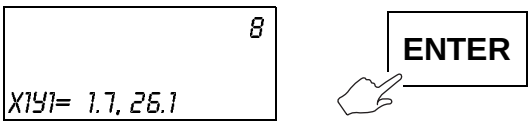


Positioning a field

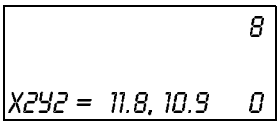
Enter the values in mm for the position of the top left corner of the field (X1, Y1) followed by the values for the bottom right corner (X2, Y2). The X1Y1 position must be the top left corner of the field **in the direction that the label is being viewed.**

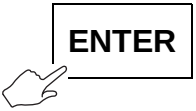


8 Enter the X1 value. Use → to move across and enter the Y1 value.



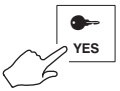
9 Enter the X2 value. Use → to move across and enter the Y2 value.



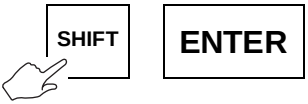


To print a test label

To save and exit

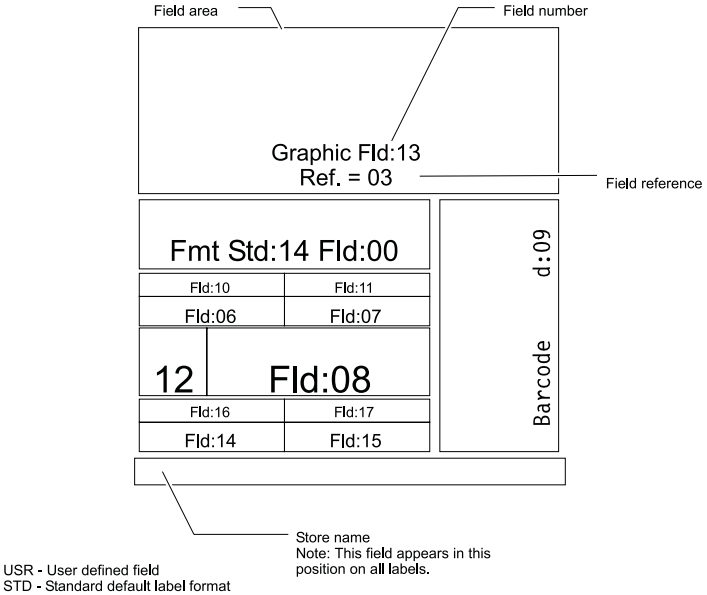


To exit without saving



To move to the next field

Typical test print

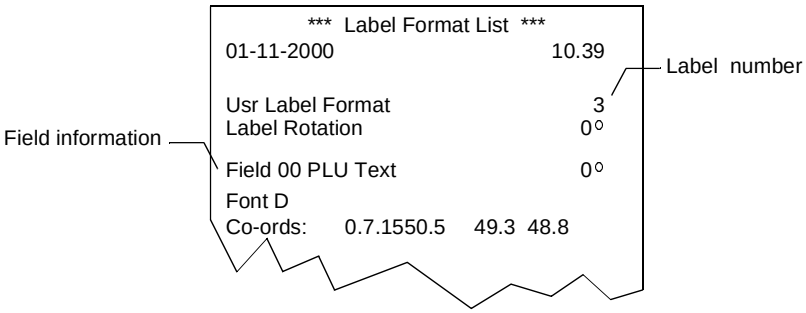


Restore Format

This option allows you to restore the specified label format to its factory default.

List Format

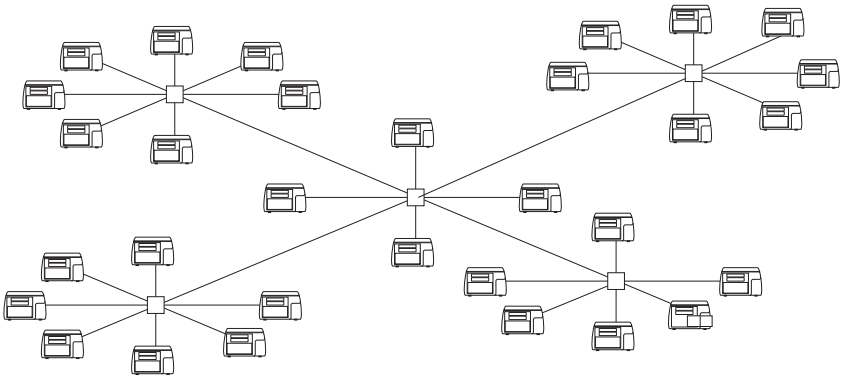
This option will print out details about all the fields that are used on the specified label format.



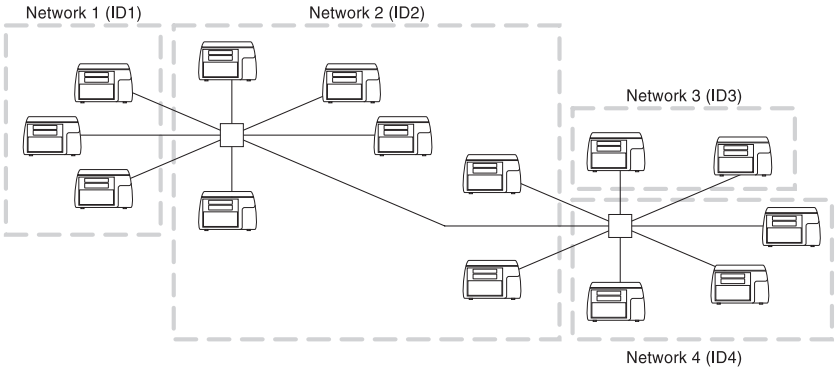
6 Networking

Two machines can be networked without a hub by using a simple cross cable to link the machines together.

Up to 31 M series machines and one CX network can be connected together into a machine network. These machines can be connected to either one physical network hub or several.



By giving each group of machines a different network ID number, up to 99 machine networks can be created, each network can consist of up to 31 machines.



To create a multiple machine network:

1. For each machine that is intended to be part of a multiple machine network, enter Management mode.

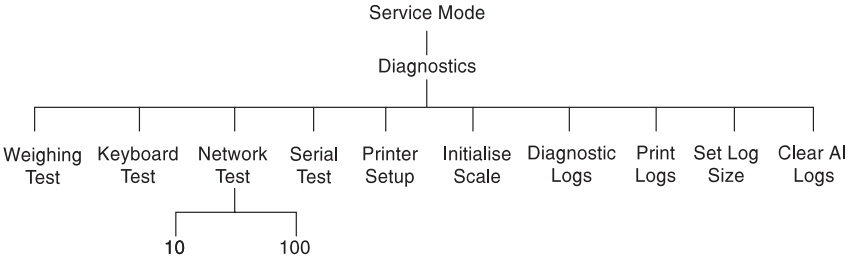
2. Go to the communications menu and press enter.
3. Go to Advanced setup menu and press enter.
4. Scroll to the Network ID menu and press enter.
5. Enter a new ID number (0-99).

Note: *The base port number should only be changed if there is a conflict between the M series machines and some other piece of equipment. All machines in the same network must have the same base port number.*

Ethernet network speed

Machines with main board 71014-972, only operate at 10Mbps using 10 base T ethernet connections.

Machines with main board 71015-218 can be configured to operate at one of two networking speeds, 10Mbps or 100Mbps using either 10 base T or 100 base T ethernet connections.



If you select 100Mbps, then the machine will determine the maximum speed at which the network will operate. This will be 100Mbps or 10Mbps depending on the network infrastructure.

Cable lengths

The maximum cable length between each machine and the hub is one hundred metres.

If the connections between hubs use 10 base T connections, then there should be no more than four hubs in series.

6.1 Setting up a new network

Note: *Before setting up an in-store network, obtain the IP addresses from the store IT administrator. Enter the addresses at the machines before connecting the network.*

To set up a machine only network:

1. Connect all the machines to the network hub and switch on.
2. Using the machine that is intended to be the server, in Management mode, go to the communications menu and press Enter.
3. If the system is comprised of more than one network of machines, see page 53.
4. Go to Auto configure and press Enter. The machine that you are using will automatically detect the other machines with the same network ID. This machine will become the server and the rest of the machines will be client machines.

6.2 Adding a machine to an existing network

To add a machine to an existing **machine only** network:

1. Connect the new machine to the network hub.
2. Enter Management mode, (see page)
3. Scroll to the communications menu and press enter.
4. If the system is comprised of more than one network of machines, refer to page 53.
5. Go to Auto configure and press Enter. The machine that you are using will detect the existing network and become a client machine.
6. If necessary update the machine's PLU file by performing a network dump. An ‘E’ in the Scale Map indicates that the client machine at that position does not have the PLU file.

If you are installing non DHCP machines to an established network that **uses other equipment such as EPOS systems and computers,** then you must ask the network administrator for a spare IP address number.

If you are installing a non DHCP machine to an established network where machines have already been installed, then you must gather information about the network. The easiest way to do this is to use an existing machine to print a test report (press the test key twice). The IP address of the new machine must be changed so it will communicate with the existing machines on the network.

The IP address of the machine consists of two parts, the network address and the machine address. The network address must be the same as all the other machines on the same network, and the machine address must be different from the other machines on the same network.

The network address depends on which sub-net mask is used, for example for an IP address of 88.1.1.7:

Sub-net mask	255.0.0.0	255.255.0.0	255.255.255.0
Network address	**88**.0.0.0	**88**.**1**.0.0	**88**.**1**.**1**.0
Machine address	88.**1**.**1.7**	88.1.**1.7**	88.1.1.**7**

To connect a machine to an **established mixed** network:

1. Enter Management mode.
2. Go to the communications menu and press enter.
3. Go to Advanced setup menu and press enter.
4. Go to the Machine IP Address and change the address so that the network address is the same as the existing network and so that the machine address is different from the other machines on the network.
5. Change the Sub-net mask so that it is the same as the existing network.

Note: *For Phase 1 machines, the appropriate default sub-net mask will be selected automatically according to the class of IP address used.*

6. Connect the new machine to the network hub.
7. If necessary update the machine's PLU file by performing a network dump (see updating a client machine).

DHCP (Dynamic Host Configuration Protocol)

This is an industry standard networking protocol. Its purpose is to simplify the administration of IP addresses on a network.

When DHCP is enabled, the scale IP address, subnet mask and default gateway are allocated by the DHCP server.

To use DHCP, at the scale, enter an IP address 0.0.0.0. Each time the scale reboots, it will request an IP address from the DHCP server. A test print from the scale will print the IP address allocated to the machine.

Updating a client machine

To update a client machine so that it uses the same PLUs, label formats and logos as the server machine:

1. Using the server machine, enter Management mode.
2. Select the Communications menu.
3. Select Network Dump. When asked "Are You Sure?" press the Yes key.

Error bleeps

The main PLU file is held by the server machine, all client machines are checked every 5 seconds. If one of the client machines becomes disconnected from the network, the server will begin to bleep. The bleeping will continue until you go to the network map and press Enter.

Note: *You can disable the bleep on phase 2 machines.*

Changing a machine from client to server

Software version 1

Any machine may be used as the server, however, if the PLU records in the machine are different from the records in the current server, a warning message will appear stating that there is a `map error' `data may be lost'; It will then ask `are you sure?'. If you select yes, then the machine you are using will become the server.

Software versions 2 onwards

Before setting a client machine to be a server you should:

- clear all transactions
- clear all totals
- clear the audit list completely.

If a server already exists on the network then:

- the new server becomes the back up server.
- an existing back up server will revert to client status.
- If you change a back up server to a server, the old server becomes the back up.

Machine operation

The receipt and transaction memory settings on the backup server must be identical to the main server.

Although the backup and server continuously synchronise, the system should not be operated for extended periods with one server switched off. If this is the case (e.g. repair) the totals, transactions and the audit list should be cleared before

re-instating a second server to ensure that they are synchronised.

The date and time of starting to synchronise and finishing is logged in the system log.

If you attempt to clear totals or transactions with backup off-line, a warning message is given.

If more than one server is set the server that powers up first will be the primary server with the second set to the backup server.

If the primary server goes down the backup server will become the primary server, and will continue to be so even if the previous server comes back up. The previous server will, in this instance, become the backup server when it restarts.

In the instance of a cable failure between backup server and the primary server, the backup server will become primary, when the cable is reconnected there will be two servers. In this instance the first server to detect this will demote the other to backup server. Any audit data mismatch will be detected by the background server during synchronisation polling.

The backup server acts as client in terms of clearing totals etc. i.e. the request is sent to the primary server, the backup server will also perform the request locally.

If both servers have failed the client will ask if the user wishes to enter local mode, on confirmation all totals and transactions will be cleared from the client local memory. The first transaction or total request, for each operator on the local machine will display a warning to re-enter transactions.

6.3 Local mode recovery

When the server detects a client that has gone to local mode it will switch that client on-line and synchronise the client's data. Firstly this will involve transferring any live transactions on the client to the server. During this period the client machine must be `locked out' to avoid losing transactions. This is achieved by sending an operator lock request for each operator. If the operator is already locked the server will wait for the lock to become free. The process of requesting locks also retrieves transaction data and will only retrieve transactions that are more up to date if they exist already on the server. If live transactions are correctly retrieved the machine will then be put on line. Completed transactions from the client machine will be transferred as a background task. As each completed receipt is retrieved it will be added to the relevant totals.

You can only recover local transactions if Audit mode has been enabled.

Using the network map

The network map shows the status of all the machines in the network. This display is not editable. Press enter to display the second series of machines (17 - 31).

```
1 - 16
SCBCCCOXXXXXXXXX
```

S = Server
B = Back up server
C = Client
O = Off-line
E = PLU file error
X = No machine present
L = Local mode

6.4 Adding a machine to a CX/Advantage network

M series machines may be integrated into an existing CX/ Advantage machine network.

Only M series machines set to server status will communicate with CX Advantage machines so you must set the Advantage IP address at a server machine.

M series machines can only communicate with CX/Advantage machines fitted with an ethernet comms controller.

When performing a scale dump from a M series machine to a CX/Advantage machine, only the PLU file will be copied.

6.5 Configuring machine ID numbers

For new installations, using Auto configure to install machines to a network is a very quick way of getting all the machines working. Auto configure will:

- Detect all the machines that are connected to the network and have the same network ID.
- If there are no servers, it will make the machine that you are using into the server. The machine ID will be made into ID1 or the next available ID number. The server will then find each client machine in turn and give it a machine ID.
- If a server already exists, then the machine you are using will become a client machine and be given the next available machine ID.

Using this method means that the machine IDs may be scattered across the store in a random pattern.

If you require machines to have a specific ID then:

1. Switch off all the machines except the one intended to be the server, and run Auto configure.
2. Switch on and run Auto configure for each client machine in turn.

You can also manually alter each machines ID by:

1. Enter Management mode, (see page).
2. Go to the communications menu and press enter.
3. Go to the Machine ID menu and change the ID number (1-31) Note: Machine ID 0 will disable the machine from the network.

7 Default settings

Note: *Changing these settings will induce a cold start and should therefore be done* ***before*** *other data is set. It is also important to make adequate provision for transactions and receipts, because changing the settings later, will destroy other data that has been programmed.*

7.1 Receipt and transaction memory

The number of receipts and transactions which will be required by a given installation will be dependant on a number of factors:

- Is an audit trail of transactions required?
- Is totals integrity during network failure important?
- How busy is the system?
- How busy are individual machines?
- Is dual server operation required?
- Is the system label or receipt?

When setting up the number of receipt stores and the number of transactions/receipt, the following should also be considered:

- Each label stored by the system requires one receipt store and one transaction store.
- Each receipt requires one receipt store and the appropriate number of transactions stores.
- The setting of the number of transactions/receipt, should reflect the average number of transactions per receipt, not the maximum possible figure.
- Greater numbers of receipts and transactions, will mean less memory for PLUs.
- A receipt store is about four times as big as a transaction store. So 100 receipt stores with 1 transaction/receipt (i.e. 100 transactions altogether) will take as much memory as 20 receipt stores with 21 transactions/receipt (i.e. 420 transactions altogether).

Setting up receipt and transaction memory

Under the Diagnostics-Initialise M/C-Set Trans Memory menu, the following can be set:

- The number of receipt stores.
- The number of transactions per receipt.

The number of receipt stores will determine how many receipts or labels (both live and audit) can be held at any given time.

When the maximum number of transactions have been reached, the machine will prompt the operator to print a receipt.

When these settings have been made the machine will cold start. Set them before setting data which would be lost during a cold start.

The default settings are 20 receipts and 8 transactions per receipt.

7.2 Client memory requirements

The client machine must have more than or equal memory to the server.

Where totals integrity is important

If totals data integrity is more important, under network failure conditions, than the ability to continue trading, then the client buffer mode should be set to linear (i.e. it will display `audit full' once its memory is full).

If totals data integrity is less important, under network failure conditions, than the ability to continue trading, then the client buffer mode should be set to circular (i.e. it will allow new trade to overwrite the oldest once its memory is full).

The number of receipt stores and transaction stores, will determine how long trading can continue in local mode, before either an `audit full' condition is reached (linear mode) or totals are lost (circular mode).

If for example a client machine is expected to produce 50 labels (not add mode) an hour, then 8 hours trading in local mode would require 400 receipts with 1 transaction/receipt.

If a client is expected to produce 20 receipts per hour, with an average of 4 transactions per receipt, then 8 hours trading in local mode would require 160 receipt stores with 4 transactions/receipt.

Where totals are unimportant

Where totals data is unimportant, the client needs only enough receipt and transaction stores to hold the live receipts and transactions.

If for example a client machine, in local mode, may have 4 operators, with up to 100 live transactions between them at any one time, then 4 receipts, with 25 transaction/receipt, is sufficient. This would also limit the largest receipt, when not in local mode, to 100 transactions (i.e. 4 x 25).

For label mode (not add mode) a single receipt store and transaction store is sufficient. It is preferable to leave this as the default setting.

7.3 Server memory requirements

Single servers

In a single server system, where audit trail is not required, leave audit mode at the default setting. Receipt and transaction stores are only required for live receipts. Consequently, the number of receipts stores need not be greater than the maximum number of operators that will use the system at any one time. The number of transactions per receipt store, should be set to the average size of a receipt.

If for example, the system may have 20 operators, with up to 100 live transactions between them at any one time, then 20 receipts, with 5 transaction/receipt, is sufficient. This would also limit the largest receipt, on the system, to 100 transactions (i.e. 20 x 5).

For label operation (not add mode) only a single receipt store and transactions store are required.

If an audit trail is required, the number of receipts and transaction stores should be set according to the length of trail required

Dual servers

For dual server operation, audit mode should be enabled. If communications between servers is broken, both may continue to support a network of clients.

If totals and/or audit trail integrity is less important than continued trading, then the server buffer should be circular. If communications between servers is broken, the number of receipt and transaction stores, will determine how long trading can continue without totals and/or audit trail being lost.

If totals and/or audit trail integrity is vital, then the server buffer should be linear. The number of receipt stores and transaction stores, will then determine how long trading can continue before an `audit full' condition is reached.

Consolidation of dual servers

When communications between dual servers breaks down, both will continue as servers, potentially with clients. As trading continues on both, totals, receipts and transactions will be generated. When the servers are reunited, transactions and receipts will be consolidated, so that both servers will now have a complete set of receipts and transactions. Totals data will not be collected. It will be regenerated from the receipt and transaction data. NB For server consolidation, audit mode must be enabled.

8 Audit report/transaction collection

8.1 Transaction collection

Transactions are collected to consolidate local mode machines to the server and also for consolidating dual servers with each other.

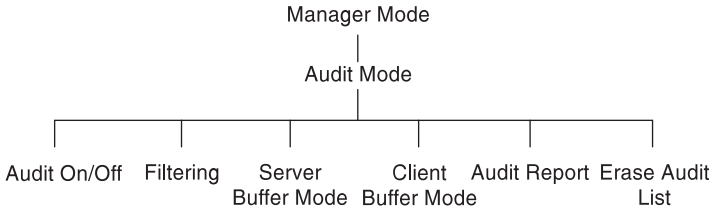
Consolidation of local mode machines

When a client machine enters local mode, because of some kind of server or network failure, it clears down its totals, receipt and transaction stores. Trading on this machine will generate totals, receipts and transactions locally. When receipts or labels are printed, the associated receipt and transaction data is retained - in the same way as such data is retained when audit mode is enabled.

When the network is restored, the server will initiate a process of recovering this data from all machines in local mode, and of restoring all local machines as clients. The server however, will not collect totals. It collects only receipts and transactions, but it regenerates the totals from these gathered receipts and transactions. Consequently, unless the local mode machine has a full set of receipts and transactions stored, the server will be unable to correctly generate the totals. It is for this reason, that the client buffer mode is, by default, a linear buffer - this in turn means that there is a finite amount of trading which can be performed in local mode, before the machine runs out of memory. This is determined by the number of receipts and transaction stores allocated when the machine was configured.

8.2 Audit menu functions

All audit functions are accessible through the manager menus. Refer to the user instructions for details.



Filtering

The audit store may be programmed to only add completed transactions of a certain type.

These types are currently:

- No Filter
- Label
- Receipt
- Label & Receipt

Server buffer mode

The buffer stores system live and audit data and operates on the server in one of two modes:

- Circular Buffer (default)
- Linear Buffer

When the server buffer is set to circular mode and there is no room left in the store the oldest transactions will be overwritten.

When the server buffer is set to linear mode the server will warn when the store becomes 75%, 90%, or 100% full, by flashing `audit 75% full', `audit 90% full' or `audit full' as appropriate, on the server machine, instead of the scrolling message. In addition the network map menu will display a warning of these conditions when entered.

Client buffer mode

- Circular Buffer
- Linear Buffer (default)

In a similar way a local machine may retain live data and audit transactions when in local mode. This will only occur until the server detects and re-synchronises the machine. No further transactions will be allowed when the buffer is full.

Audit report

Selecting this menu item will produce a report of the audit store. There are two types of report that may be generated:

- Summary (default)
- Detailed

Both reports require filter information to be entered:

Start Date/Time (defaulted to first transaction date/time in store)

End Date/Time (defaulted to now)

Start Receipt No

End Receipt No

Filter type (defaults to none)

The start and end receipt numbers default to 0 which will produce reports on any receipt number.

The report is printed when the filter information has been entered and the user has confirmed that a report is wanted.

Erase audit buffer

This menu optional allows the audit store to be erased within limits specified by a filter (see audit report). A warning will be displayed if the backup server is off-line as this could cause a problem with totalising; the backup server coming on-line would add receipts previously cleared back to the server. For this purpose there is a permanent network map to ensure the server is aware of this even after power-up.

PLU memory

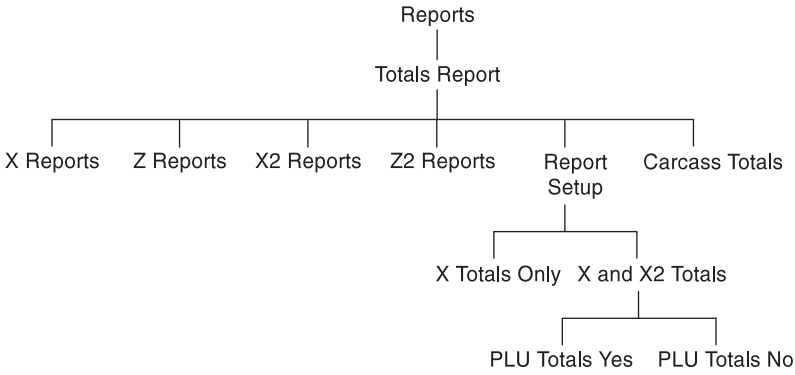
Software versions before version 3.0

The amount of memory needed to store PLUs grows as trading continues due to totals becoming non zero. Ensure that the PLU memory has sufficient free memory to store all of the expected totals.

Software versions 3.0 onwards:

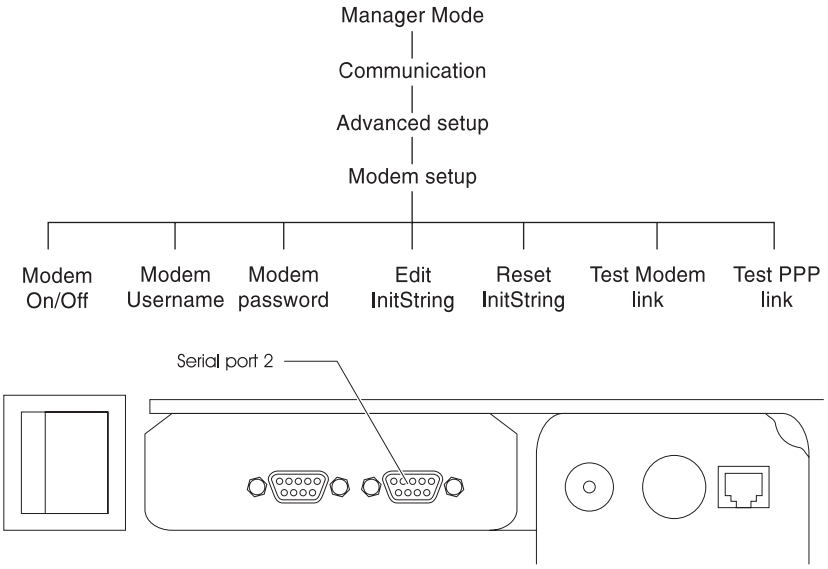
provide an option for disabling PLU totals. Disabling PLU totals has the effect of:

- freeing up memory that is then used as additional PLU memory
- as trading continues, the memory available for new PLUs does not decrease.



Note: *The default setting is PLU totals enabled.*

9 Modem operation



The modem and the MX050 both share Serial port 1, consequently the machine has to be set to use one or the other. It is not possible to use both together.

The factory default setting is modem disabled and MX050 enabled.

Note: *The modem enabled/disabled setting is stored in flash memory and it will not change even if the machine is Cold Started.*

When enabled the machine can use the modem to talk to any remote PC using the industry standard PPP Protocol.

Note: *The machine cannot dial out to a remote PC; it waits for an incoming call from a remote PC.*

When the machine is switched on, providing the modem is enabled, it will send its default Initstring to the modem. This configures how the modem will behave.

Software versions prior to 2.4.0.8

The default initstring has been chosen to suit the majority of modems currently in use.

The default initstring is ATM0S0=2V1X4&K0&D0

All Initstrings must start with AT (it is short for `AT'tention)

M0	Mute the loudspeaker.
S0 = 2	answer incoming calls after 2 rings
V1	respond with verbose replies
X4	advanced result codes
&K0	disable hardware flow control
&D0	ignore DTR, therefore always answer incoming call

Software versions 2.4.0.8 onwards

CTS/RTS handshaking has been enabled to provide better reliability when using poor quality telephone lines.

You must:

- use a 5 wire cable to connect the scale and modem. The standard recommended by Avery Berkel is of this type, with CTS and RTS wires included, see page 77, 'Standard modem loom'.
- check the initstring. For this newer software the initstring has changed.

&K0	disable hardware flow control has changed to
&K3	enable hardware handshaking with CTS and RTS

  The initstring should be ATM0S0=1V1X4&K3&D0

Some modems may use a command other than &K3 to enable CTS/RTS handshaking. Check the modem manufacturer's documentation and, if necessary, use the 'Edit Initstring' function to modify the initstring.

Edit InitString

If you need to modify the default initstring to suit a particular modem use the `Edit InitString' function.

Note: *When using the Edit InitString Menu the last character in the initstring must be a linefeed*

The edited initstring is sent to the modem and the modem will then either respond with `OK' or `ERROR' to this new string. If the modem responds with OK, then the machine will tell the modem to store away this setting in the modems user profile 0. This profile 0 is non-volatile memory, therefore the modem can now be switched off and on and it will retain the new initstring.

The initstring and the modem response will be logged in the System log. It is recommended that this is checked to ensure the modem accepted the string as `OK'.

Reset InitString

This will reset the Initstring to the factory default string if required.

9.1 Modem username and password

To establish the PPP link from the remote PC to the machine, the username and password on the machine must match exactly those used to set up the `dial up account' on the PC.

There are 2 new menus in the machine to allow Username and Password to be entered. Note: They are stored in battery backed memory in the machine, and are case sensitive

Default username `manager'

Default password `password'

9.2 Test modem link

This checks that the modem and the link to it are working. The machine sends an `AT' command to the modem and looks for an `OK' response. If it receives an `OK' then `modem responded ' is displayed. If not, it displays the message `no modem response'.

Test PPP link

This checks whether the machine is linked to a remote PC.

If the machine displays `PPP link up' the modem is working and someone has dialled up this machine from a remote PC, and the password/Username has been accepted and the PPP link is authenticated and established.

9.3 Setting up a dial up account on the PC

In order to communicate with the Mosaic machine via a modem, a `dial up account' must be set up on the PC with the correct parameters. The procedure for doing this differs between Win95, Win98 and NT.

Before setting up the account you must:

1. Check that the PC has a correctly installed modem.
2. Ensure that Windows Dial Up Networking is installed on the PC. Check the Windows documentation for how to do this.
3. Ensure TCP/IP protocol is enabled. Check the Windows documentation for how to do this.
4. Create a dial up networking account on the PC.

Using MX050

MX050 prompts the user for the following items:

- Phone book name
- Scale username
  must match username defined on the machine
- Scale password
  must match password defined on the machine
- Phone number

The remaining items are set up automatically.

Manual setup

When creating the dial up account manually, you must also set up these items:

- Modem setup
  38,400 BAUD8:N:1 enable hardware flow control
  enable modem error control
  enable modem compression
- Dial up server type
- PPP:Windows NT, Windows 95 Plus, Internet
- TCP/IP Network Protocol

- TCP/IP settings
  server assigned IP address
  server assigned name and server address
- Server settings

  disable modem compression

  disable PPP LCP extensions (NT option)

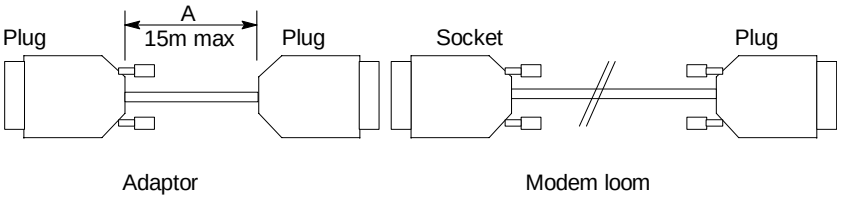
  disable IP header compression

  disable user default gateway

Modem adaptor cable

A short adaptor loom is required together with the standard modem loom (i.e. DTE to DCE loom) to connect a modem to Mosaic Comms.1 port.

Length `A' should be as required for the particular situation.



Standard modem loom

The standard modem loom has a 9 way D' type plug at the Modem end and a 9 way D' type socket at the end that normally connects to a computer.

The modem loom connections are pin1 to pin1, pin2 to pin2 etc.

All 4 connectors are 9 way D' types.

Connection Details:-

	Socket (Mosaic)	Plug (Modem Lead)
Scale RX Data (Scale Input).	Pin 2	Pin 2

Scale TX Data (Scale Output).	Pin 3	Pin 3
Signal Ground.	Pin 5	Pin 5
Scale RTS Signal (Scale Output).	Pin 7	Pin 7
Scale CTS Signal (Scale Input).	Pin 8	Pin 8

All other pins are not connected.

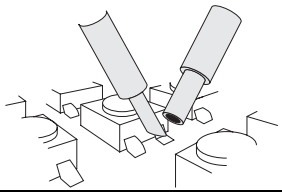
10 Maintenance

10.1 Replacing a keyboard switch

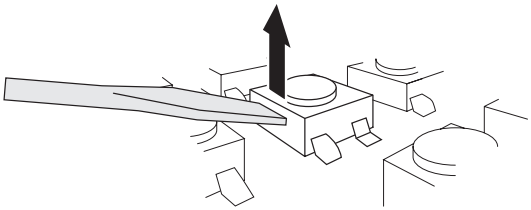
There are two types of keyboard in use on machines. The later keyboard, although looks quite different, is fully backwards compatible with the earlier keyboard.

Removing a switch (machines built before July 2001)

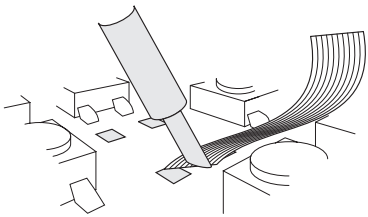
1. Remove the excess solder from each of the contacts using a soldering iron and a suction desoldering tool.



2. Heat the contact pads and carefully lever the switch off the circuit board.



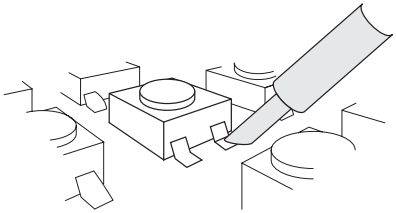
3. Clean the contact pads using desolder wick.



Fitting a new switch

1. Fit the new switch (part number 70101401), making sure it is aligned correctly.

2. Solder one leg, check the position and alignment then resolder the remaining legs.



Machines built from July 2001 onwards

The keyboard has a cover plate with floating buttons. Take care when removing the cover plate that the floating buttons do not fall out.

Removing a switch

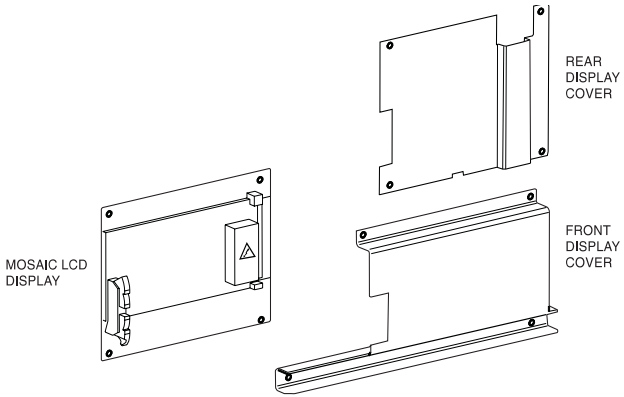
1. Carefully remove the cover plate retaining the floating buttons in their recesses.
2. Desolder the defective switch and remove it taking care not to damage any tracking.
3. Fit the new switch taking care not to damage the legs and solder it in place.
4. Replace the cover plate and floating buttons.

10.2 Replacing an LCD screen

Removing an LCD screen

WARNING: To avoid severe electric shock, disconnect the machine from the mains power supply before touching the back of the LCD screen

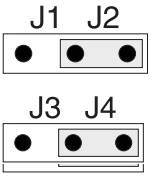
1. Switch off the machine and remove the cover holding the display.
2. Disconnect the looms to the screen.
3. Remove the four screws holding the screen to the cover
4. Lift out the backplate and screen.



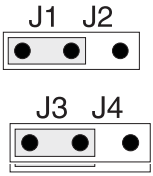
Replacing an LCD screen

Make sure that the correct links are fitted to the screen.

Vendor screen



Customer screen

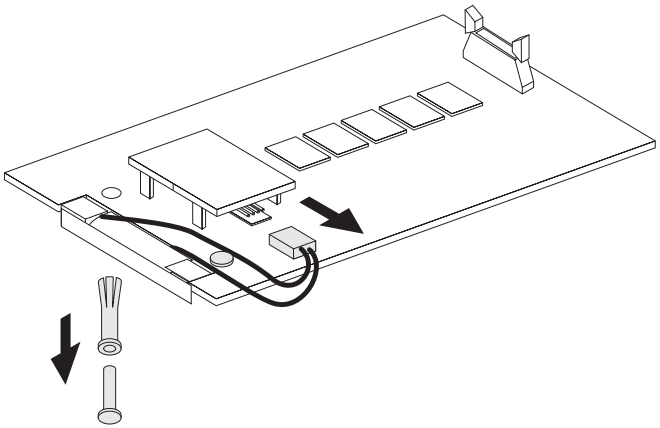


10.3 Replacing a backlight

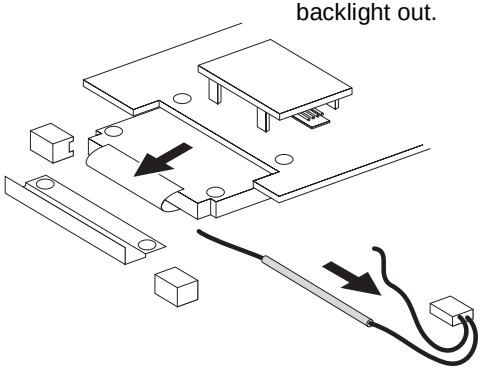
Removing the backlight

WARNING: To avoid severe electric shock, switch off the mains power to the machine before touching the back of the LCD screen.

1. Disconnect the connector from the backlight, then remove the two plastic retaining pins.



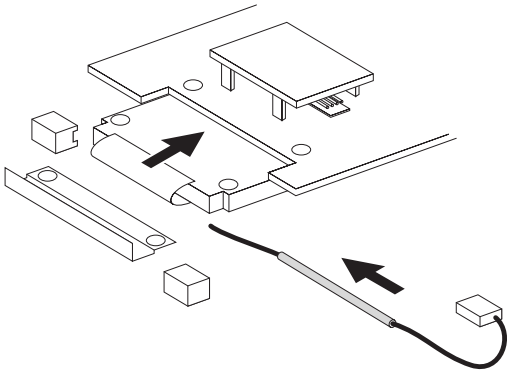
2. Slide the LCD screen partially out. Remove the two rubber end caps and the metal shield. Cut one of the wires to the backlight and slide the backlight out.



Fitting a new backlight

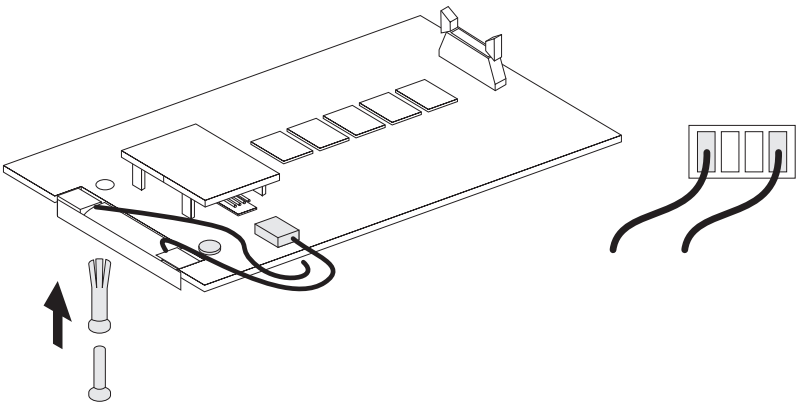
1. Thread the backlight through the end of the LCD scree and slide the LCD screen back into the housing.

2. Replace the two rubber end caps and the metal shield.



3. Secure the LCD screen in place with the two plastic retaining pins.

4. Slide the crimped wire off the backlight into the connector and plug the connector into the PCB.



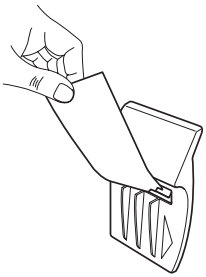
10.4 Changing the print head assembly

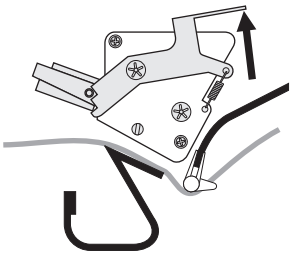
Removing/replacing the print head assembly

CAUTION: Observe all precautions for handling electrostatic discharge sensitive devices.

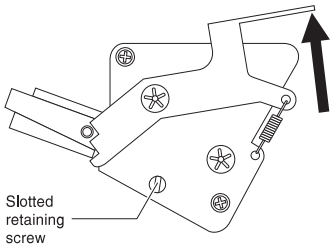
1. Switch off the machine.

2. Remove any paper from the printer mouth. Disengage the print head.





3. Remove the cassette. Unscrew the retaining screw and remove the complete print head assembly.



4. With the new print head in the **open** position, replace the print head taking care not to bend any of the connecting pins.

5. Tighten the retaining screw.

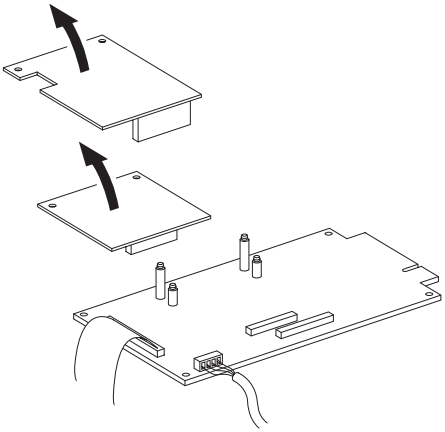
10.5 Converting to Sabre

Back up all data from scale before converting.

Machines fitted with the main boards 71015-218 (Sabre) will only operate with software versions 3.1 or later.

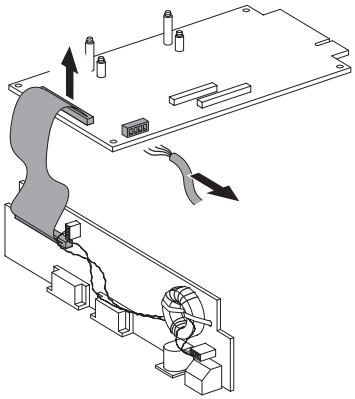
1. Remove the weighplate followed by the top cover and then the cross.

2. Remove Ram expansion card and ethernet card if fitted.

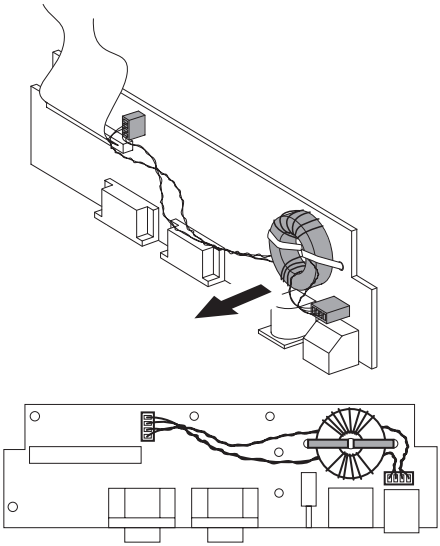


Discard the ethernet card. You must **not** fit an ethernet card with main board 71015-218.

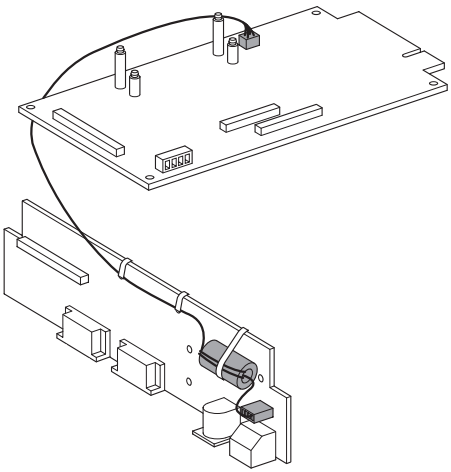
3. Disconnect ribbon cable to I/O board and transducer cable and remove main board.



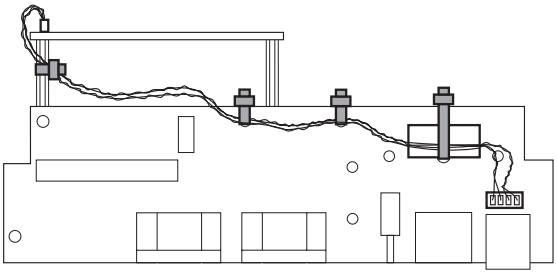
4 Remove existing ethernet loom (70734-960) cutting tie wraps where necessary.



5 Connect new ethernet loom (70735-153) to I/O board (Connector immediately above external network connector). Tie wrap the ferrite to the board using existing holes. Route the loom along the top of the I/O board and beneath the new main board. Connect to the 6 way connector on the main board.

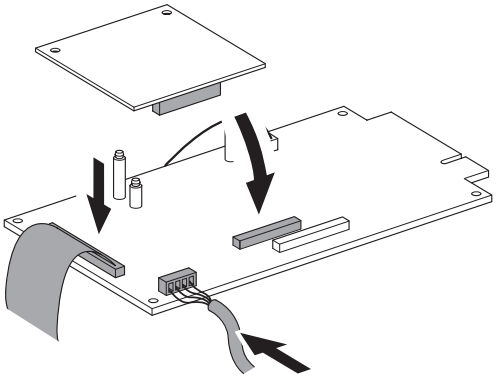


6 Fit the new main board (71015-218) and tie wrap the ethernet loom along the top of the I/O board and to one of the main board support pillars to prevent it interfering with the cross or the transducer.



7 Connect transducer and refit the RAM expansion card if one was originally fitted.

DO NOT REFIT THE OLD ETHERNET CARD.

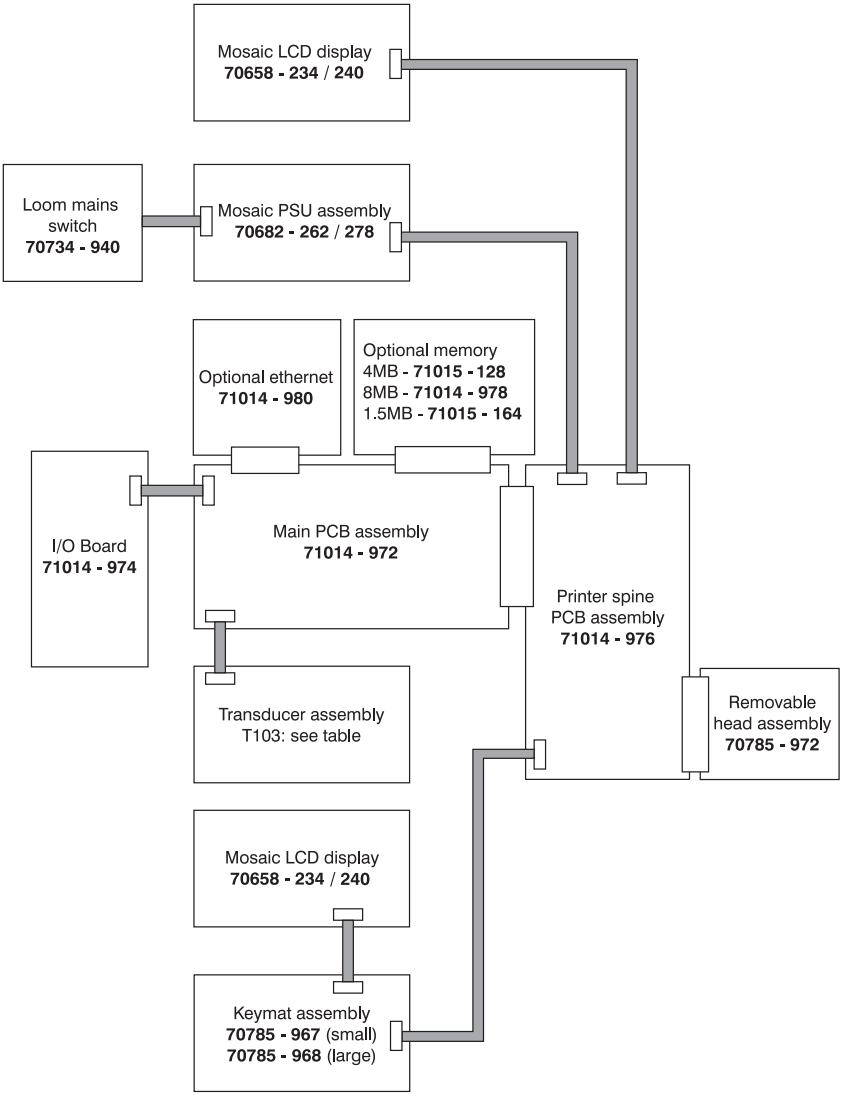


M500 models

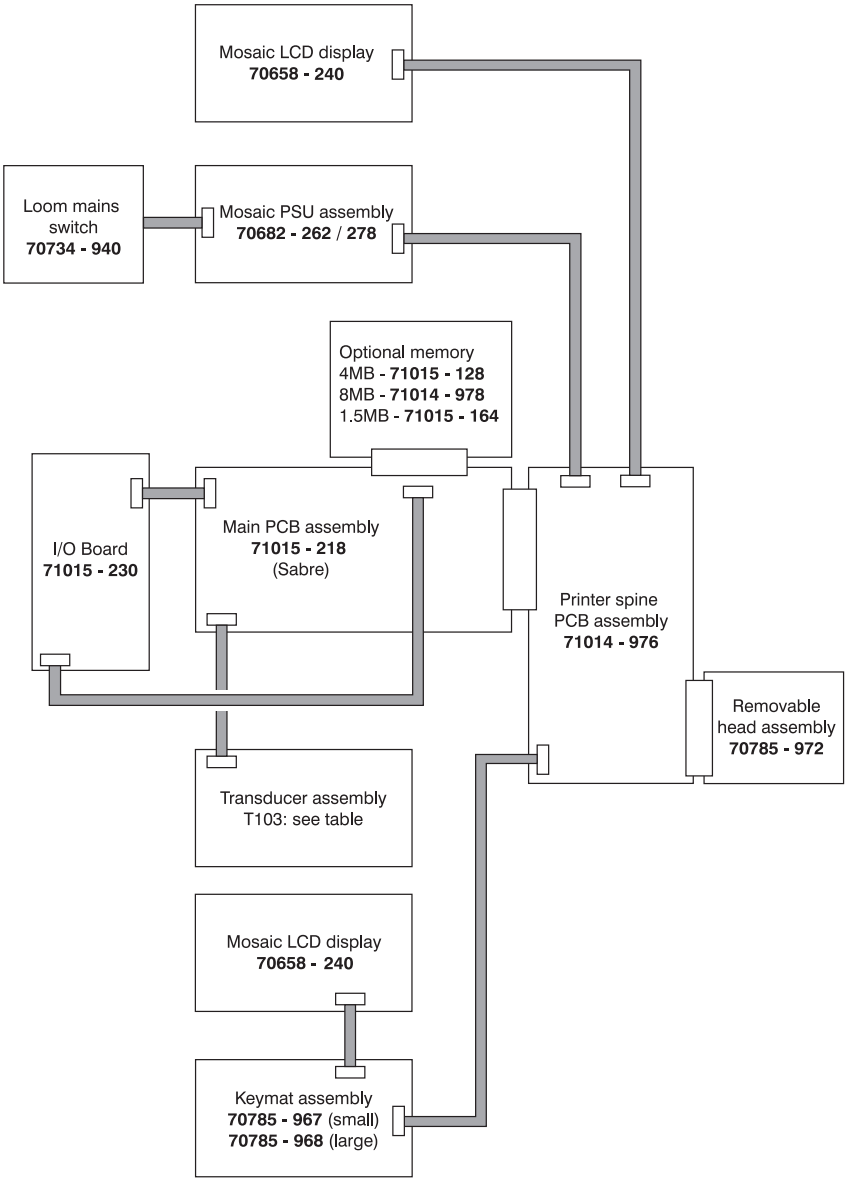
If you do not have adequate access to fit the new ethernet loom with the cover in the service position (see page 18), disconnect the display panel and remove the front cover completely.

10.6 Connections

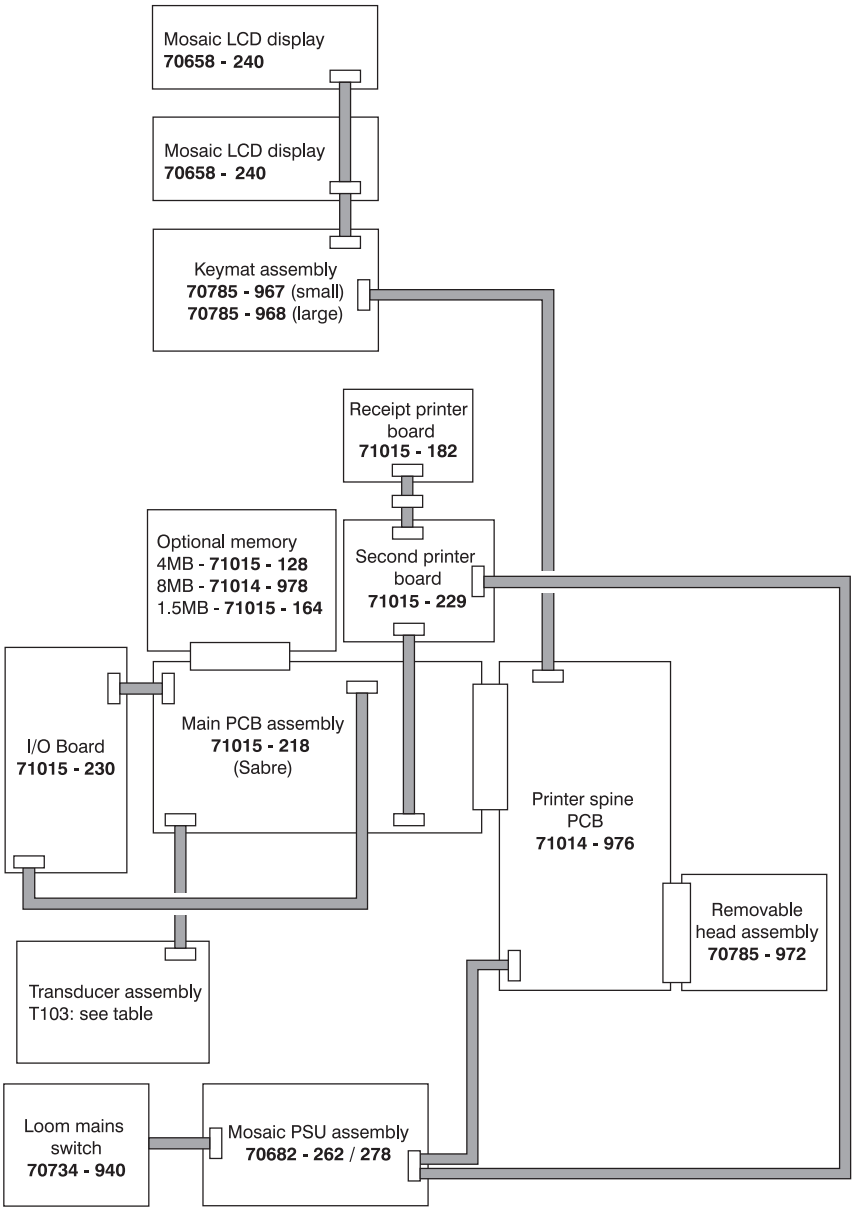
71014-972



71015-218 boards.



M420 dual printer machines.



11 Exploded views

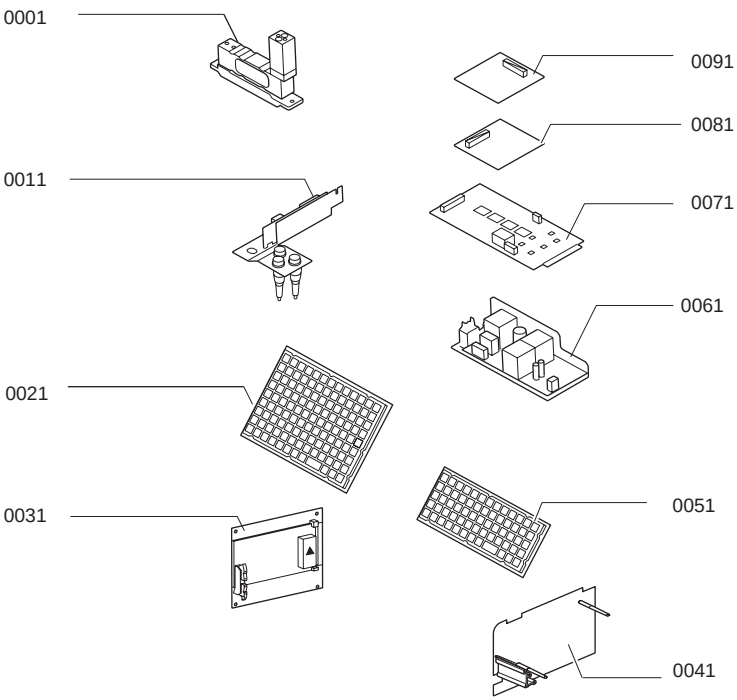


Figure 1: Electronics

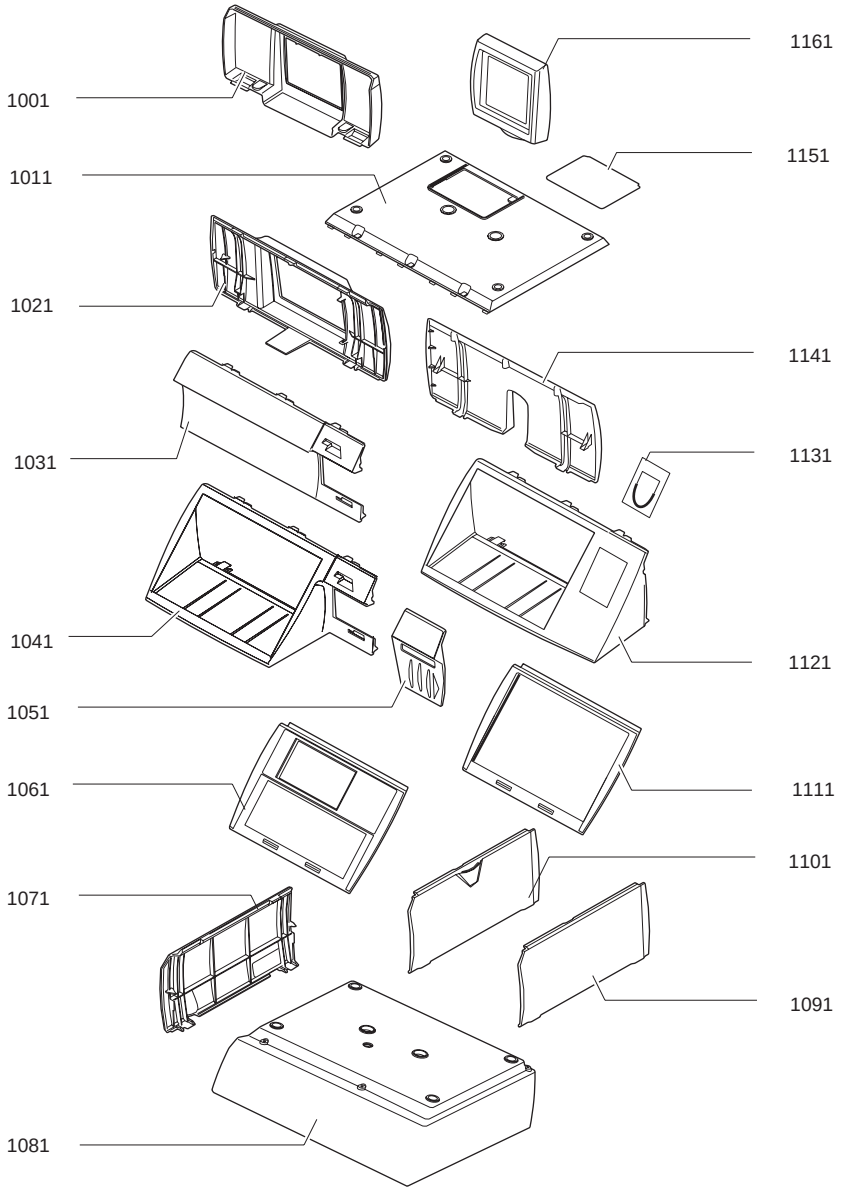


Figure 2: Covers

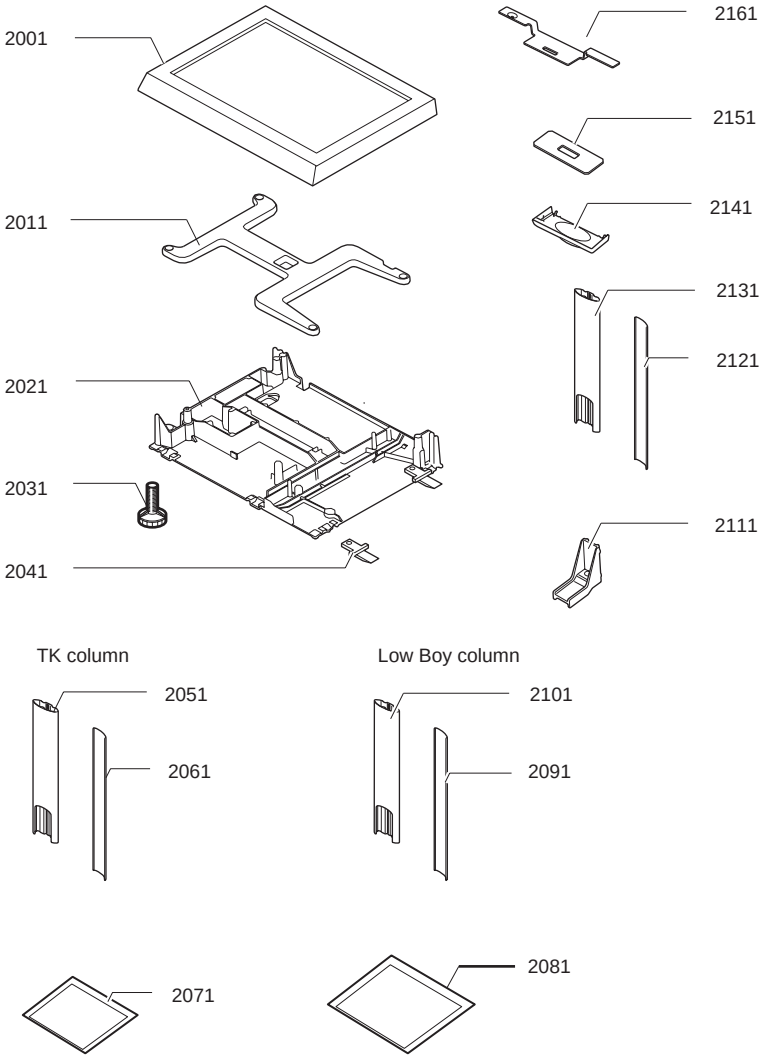


Figure 3: Miscellaneous items

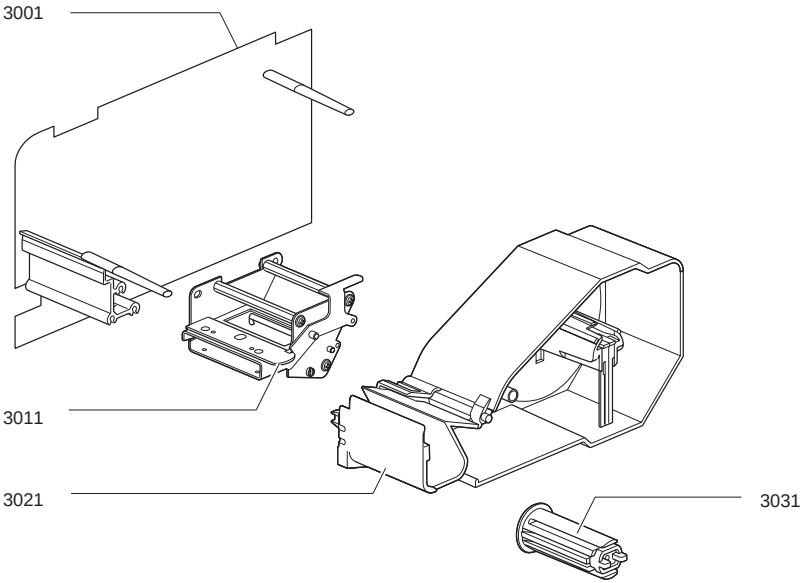


Figure 4: Cassette printer assembly

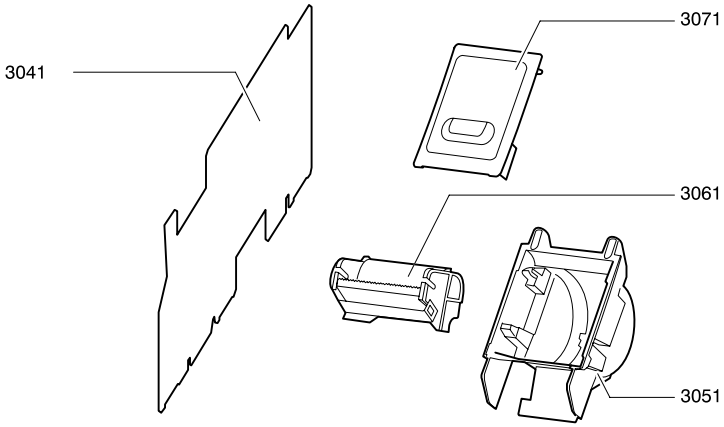


Figure 5: Clamshell printer assembly

12 Parts list

12.1 Figure 1 - Electronics

R Recommended spare part

S Service spare part

NI Not illustrated

Item	Name	Part number
0001	Transducer assembly (T301)	
R	30kg AVR transducer	70714-394
R	30kg transducer	70714-393
R	15kg transducer	70714-392
R	12kg x 2g transducer	70714-391
R	6kg AVR transducer	70714-390
R	6kg transducer	70714-389
R	6kg x 1g transducer	70714-388
R	15kg AVR transducer	70714-378
R	15kg transducer (hanging scale)	70714-313
0011	I/O board assembly (non Sabre)	70714-974
	I/O board assembly (Sabre)	71015-230
	Bracket	66126-163
0021R	Large keymat assembly	70785-968
0031R	LCD display	70658-240
0041S	see 3001, list 12.4 printers	
	Back light kit	SER/MOSAIC/0001
0051R	Keymat assembly (small)	70785-967
NI	Keyboard switch (old)	70101401
NI	keyboard switch (new)	
0061R	M series PSU assembly (**Note:** This is for any market)	70682-278
0071R	Main PCB assembly (non Sabre)	71014-972
	Main PCB assembly (Sabre)	71015-218
0081	Memory	
R	4MB memory card kit	MO1001AE00000000
R	8MB memory card kit	MO1001AF00000000
R	1.5MB memory card kit	MO1001AK00000000
0091	Ethernet PCB (non Sabre)	MO1001AD00000000
	Ethernet loom (Sabre)	70735-153

12.2 Figure 2 - Covers

R Recommended spare part

S Service spare part

NI Not illustrated

Item	Name	Part number
1001	Two piece rear	70076-721
1011S	Top cover assembly	70228-300
1021S	Rear customer display assembly	61226-282
1031S	Front and ticket mouth assembly	70076-721
1041S	Front keyboard and ticket mouth assembly	70076-718
1051S	Ticket mouth assembly (receipt)	62261-168
	Ticket mouth assembly (label)	62261-173
1061S	Bezel - Mosaic	68773-670
	Bezel window	68773-673
1071S	Left Hand side assembly	70228-289
1081S	Cover - Lo Boy	61333-222
1091S	Right Hand side	61252-246
1101R	Cassette printer door assembly	70227-104
1111S	Bezel - full keyboard	68773-672
1121S	Front keyboard - clamshell printer	61252-247
1131S	Clamshell printer blanking piece	61227-113
1141S	Rear column moulding	61252-244
1151	Access panel	61254-149
1161S	HUD housing pair (front and rear)	61226-283

12.3 Figure 3 - Miscellaneous items

R Recommended spare part

S Service spare part

NI Not illustrated

Item	Name	Part number
2001	Weighpan	68412-593
2011	Cross	68481-146
NI R	Cross rubber	65138-108
NI R	Cross rubber adhesive pad	18166-009
2021	Diecast base	61661-188
2031R	Foot + rubber + locknut	70257-153

Item	Name	Part number
2041R	Living hinge	62274-138
	TK column	
2051	Column	61656-188
2061	Column trim	61225-149
2071	Pocket overlay	67876-381
2081	Full keyboard pocket overlay	67875-202
	Lo Boy column	
2091	Column trim	61225-147
2101	Column	61656-181
2111	Column support casting	61724-115
	HUD Column	
2121S	Column trim: HUD	61225-147
2131S	Column: HUD	61656-180
2141S	Two piece head - bottom tray	61661-189
2151S	Mounting plate: HUD	65366-188
2161	Two piece mounting plate	66156-193

12.4 Figure 4 - Printers

R Recommended spare part

S Service spare part

NI Not illustrated

Item	Name	Part number
S	**Cassette printer assembly (low peel bar and M500)**	70588-554
S	**Cassette printer assembly (high peel bar)**	70588-563
3001S	Printer spine assembly (low peel bar)	70588-555
	Printer spine assembly (high peel bar and M500)	70588-561
3011R	Removeable head assembly	70785-972
3021	Full cassette assy (including conversion parts)	70786-141
3031	Take up spool asembly	70583-117
NI	Headwork spring	64433-117
R	**Axiohm clamshell printer assembly (minus PCB)** **After April 2001**	70588-557 70421-381
3041	Clamshell printer spine	65656-101

Item	Name	Part number
3051	Clamshell paper roll holder	61333-221
3061	Axiohm clamshell print head assembly After April 2001	70588-553 70588-560
	Deflector plate kit	SER/MOSAIC/0002
	Print head roller	3106019
3071	Clamshell door	62261-169
NI R	Printer adaptor PCB assy: Axiohm (old)	71014-984
	(current)	71015-182

12.5 Recommended spare parts

Name	Part number
Devlin keyboard controller PCB	25-INT-032-010-B
Devlin individual switch	10-B3F-4055
M5X12 Monodrive 1 Screw:St.Steel	13758-009
Push rivet for 4 dia hole - PPR-93-4	13858-308
9way D socket+Boardlock+PIN kit:*	18136-645
Mains switch cover	18136-449
Ticket mouth assy (receipt)	62261-168
Spacer display window	63148-122
Main board pillar	63515-113
PSU cover pillar	63523-121
Print roller (cassette)	63848-120
Garter spring	64433-118
Customer window with gasket	65318-924
Sealing disc (for centre screw in top cover)	65111-128
EMC spine clip	66251-131
Toothed drive belt:103T80	66872-122
Printer door assembly	70227-104
Assorted fixings	70421-374
Mains plug - UK 3M length	70611-909
Mains plug - UK Multiples (Electrax)	70611-908
Mains plug - Italy	70611-906
Mains plug - South Africa	70611-905
Mains plug - Denmark	70611-904
Mains plug - Europe	70611-903
Mains plug - Australia	70611-902
Mains plug - Indonesia	70611-901
Mains plug - Switzerland	70611-900
Mains plug - UK 2M length	70611-899

Name	Part number
Mains plug - USA/Canada	70611-898
Mosaic LCD display	70658-234
M series PSU assembly (**Note:** This is for any market except America) (old)	70682-262
New M series PSU assembly (current)	70682-278
15kg AVR transducer (Lo Boy M410)	70718-130
Keymat assembly	70785-967
Printer spine PCB assembly	71014-976
Input/Output PCB assembly (non Sabre)	71014-974
Input/Output PCB assembly (Sabre)	71015-230
Lo Boy print spine PCB assembly	71015-104
Pack of 5 clamshell cleaning cards	76801-107
Sureprint cleaning kit	76801-105
Devlin legend sheet	20-MEMB-DP-114000
Devlin front sheet with magnetic strips	20-MEMB-DP-114015
Prima Wrapper integration kit	MO6031AB00000000
Elixa Wrapper integration kit	MO6031AC00000000
Minimax Wrapper integration kit	MO6031AD00000000
W31 Wrapper integration kit	MO6031AD00000000

T

W

The address of your Avery Berkel support centre is

Avery Berkel

Foundry Lane
Smethwick
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