kortho

MANUAL

Hotprinter M-D Series





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Preface

Welcome to the Hotprinter M-D Series manual.

Read the manual before you start and read it carefully. This will avoid unnecessary problems and loss of performance.

This manual is meant for all personnel who are involved with the Hotprinter M-D Series. The purpose of this manual is to get familiar with the coding unit and control box of the printer.

Keep this manual on a sensible and safe place for future use.

Contact Korthofah BV or your local distributor if you have any questions.

Conventions in this manual:

- The Kortho Hotprinter M-D Series system will be referred to as the printer.
- Any material the printer is used to print on is called substrate.
- The Kortho Hotfoil, the medium with the pigment, will be referred to as the print ribbon or just ribbon.
- Follow the instruction order as indicated when you carry out any of the procedures described.

Instruction format:

- **1.** Instruction. Comment(s).
 - **a.** Sub-instruction. Comment(s).
 - **b.** Sub-instruction. Comment(s).
- **2.** Instruction. Comment(s).

Symbols in this manual

In this manual, the following symbols are used:



WARNING:

This symbol indicates a potentially hazardous situation which, if instructions are not followed, could result in serious injury or death.



CAUTION:

This symbol indicates a potentially hazardous situation which, if instructions are not followed, may result in minor or moderate injury or damage to property.

The statements above are notes for your safety.



Beware:

A notice with useful information for the user in relation to the product. It attends the user to possible problems.



Note:

Gives the user suggestions and helps the work to be carried more rapidly.

Glossary

Bracket:	Supports the coding unit and the platen and captures the print force between the print head an the platen.
Continuous packaging	A packaging machine is running without any interruption. The substrate keeps running during a packaging cycle. The printer can only print with a web arrester that holds the substrate stationary while printing.
Die holder:	Holds metal character dies, numeric die block or a magnesium die plate that reflects the print design.
Host:	A machine or production system that handles the product or substrate and can be connected by an interface to the printer, e.g. a printer alarm to stop the machine.
Hotfoil:	Print ribbon that carries the pigment. This pigment is needed to make prints on a substrate. To avoid confusion about the word foil, this manual uses the word ribbon for Hotfoil and the word substrate for packaging foil.
Intermittent packaging	A packaging machine is stopping and starting at regular or irregular intervals. The substrate runs and stops once during a packaging cycle. The printer can only print while the substrate is not running.
Platen:	An adjustable metal plate with a silicone rubber surface that is placed opposite the print head. The print pressure is build-up between the print head and the platen.
Print:	The result of printing an image on a substrate.
Print cycle:	The moment from which the printer accepts a print request until the printer is ready to accept a new print request.
Print head:	Stamps an imprint on the substrate. It slides into the print head slot and can be a composition of a text/die holder, date/number marker and magnesium stamping die.
Print head slot:	Contains one or more heating elements and holds or clamps an exchangeable print head.
Print request:	A signal generated by a sensor or host machine. It is a trigger to start a print cycle.
Print ribbon:	The foil with pigment (Hotfoil) that is needed to make prints on a substrate.
Product:	In this manual, the items the printer prints on, e.g. a box, package etc.
Ribbon:	Short for print ribbon, also known as Hotfoil.
Sensor:	A product detection device connected to the control box, usually a photocell.
Substrate:	This is the material of a product to print on, e.g. cardboard, wood, paper, foil, web etc.
Text holder:	The same as die holder.
Web arrester:	Buffers the packaging foil an keeps it stationary while printing. Only used when the packaging foil is continuously running while a print must be made.

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1 INTRODUCTION

1.1 Liability

Korthofah BV accepts no liability for damage resulting from the improper or uninformed use of the equipment or caused by maintenance or other work being carried out improperly. They also accept no liability for the normal wear and tear of the printer or its parts.

1.2 Qualified personnel

Operators are qualified when they have read and understand this manual. A specific preliminary training is not required.

Technicians that carry out repairs and technical maintenance on the printer equipment should have secondary technical education or comparable technical level of knowledge through practical experience.

Installation or servicing of the printer must only performed by qualified personnel of Korthofah BV or a local distributor, which is designated by Korthofah BV. For customer installations authorisation must be obtained from Korthofah BV or a local distributor, which is designated by Korthofah BV.

1.3 Elementary personal protection



WARNING:

Keep your hands away from the print head and the die holder. The print head and die holder are hot. Use the die holder handle to exchange die holders.



WARNING:

Do NOT put your hands between the print head and platen/substrate. The printer stamps with pressure an print on the substrate.

Please read the SAFETY chapter for more information.

1.4 Intended Use

The Hotprinter M-D Series printers are industrial printers and are designed to print directly on substrates.

Normal use means use under normal conditions as described in this manual.

The printer may not be used in areas, which have a fire or explosion hazard.

Specifications 1.5

1.5.1 Coding unit



A general impression of the coding unit dimensions is given for the Hotprinter, M40D in Fig. 1.1.

The dimensions of the coding units are:

Model	H x W x D	Print area
M40D	276 x 289 x 165 mm	20 x 40 mm
M80D	313 x 385 x 211 mm	50 x 80 mm
M100D	360 x 473 x 240 mm	100 x 100 mm
M150D	360 x 473 x 289 mm	100 x 150 mm

Coding unit M40D. Fig. 1.1

The coding units are driven by compressed air, dry and oil free, within a pressure range of 0.5 MPa and 0.8 MPa. The pressure depends on the application and the printer model.

1.5.2 Control box

The dimensions (H x W x D) of the control box are 225 x 230 x 85.

The electrical requirements for the power supply are a voltage of 115 or 230Vac and a frequency between 50 and 60Hz. The total power consumption is the sum of the control box and coding unit consumption. Refer to section 5.1.

All external equipment that is connected to the control box interface must be double insulated to qualify the whole installation as a separated extra-low voltage (SELV, Class II) system.

The control box has a bespoke hardware user interface and host I/O-ports.

The ambient temperature must be between 5 °C and 45 °C, with a relative humidity between 10% and 90% (non condensing).

1.6 Life span

The life span of the equipment is five years, under normal use.

The life span can be negatively influenced by improper/uninformed use of the equipment or improper maintenance, repair or modification. No claims for guarantee or compensation for damages will be accepted in such instances.

Shock & vibration 1.7

The control box should be installed in a low vibration location.

TECHNICAL DESCRIPTION

2.1 The printer system

2



- 1. Control box
 - Coding unit
- . Bracket
- . Substrate
- Ribbon

Fig. 2.1 The printer system.

The picture Fig. 2.1 shows a typical Hot Foil Printer system. The substrate runs between the coding unit and the platen. The host (e.g. packaging machine that is connected to the control box) triggers the printer to make a print. A print is made when the coding unit stamps the ribbon with the print head on a stationary substrate. After the print is made a new piece of ribbon is pulled from the feed roll.

The bracket differs in dimension for each printer model due to the stamping force. When the substrate is not stationary within a production cycle, a web arrester is added to the bracket.

2.2 Control box



- 1. Control box HP-D
- 2. Control panel
- 3. LCD display
- 4. Start key
- 5. Test key
- 6. X4 Cable gland
- 7. X3 Cable gland
- 8. X5 Optional cable gland
- 9. X2 Coding unit connector
- 10. X1 Mains supply connector
- 11. S1 Power switch
- 12. Mains supply cable + Euro plug
- 13. Cursor keypad
- (Up, down, left, right)
- 14. Stop key
- **15**. Front cover screw (4x)

Fig. 2.2 Control box.

2.3 Coding unit

2.3.1 M40-D, Exterior parts



Fig. 2.3 Coding unit M40-D front view.



Fig. 2.4 Coding unit M40-D right view.

- 1. Coding unit M40-D
- 2. Serial No. label
- 3. Warning signs
- 4. Capstan shaft
- 5. Pinch roller
- 6. Ribbon path diagram
- 7. Ribbon guide + lock adjustment
- 8. Ribbon adjustment wheel
- 9. Lock wheel
- 10. Carbon coil
- 11. Rewind mandrel
- 12. Hotfoil / Ribbon
- 13. Text holder
- 14. Platen
- 15. Silicon plate (replaceable)
- 16. Print head handle
- 17. Brake lever with ribbon guide
- 18. Ribbon alignment disk (2x)
- 19. Ribbon roll
- 20. Feed mandrel
- 21. Coding unit mounting screw
- 22. Rear cover
- 23. Cover screw
- 24. Instant fitting for compressed air
- 25. Coding unit cable
- 26. Ribbon guide roller (2x)
- 27. Platen adjustment screw
- 28. Platen spring with adjustment
- 29. Platen mounting screw
- 30. Platen alignment pin
- 31. Print head slot
- 32. Quick release for rewind roll
- 33. Carbon coil alignment ring
- 34. Pinch roller lock

2.3.2 M40-D, Interior parts



Fig. 2.5 Coding unit M40-D open rear view.



Fig. 2.6 Coding unit M40-D open left view.

- Pinion pulley
- Rack
- Ribbon actuator
- Brake disk
- Brake release pin
- (adjustable)
- Brake release lever
- 'Out of Ribbon' switch
- Brake lever with ribbon guide
- Brake block
- 10. Brake spring adjustment
- 11. Print valve with manual override
 - . Terminal block
- Rewind pulley
- 14.Rewind belt
- 15. Pinion and rack adjustment
- 16. Lock screw (release pin)



Fig. 2.7 Coding unit M80-D front view.



Fig. 2.8 Coding unit M80-D right view.

The interior parts of the coding unit M80-D have the same function and names as the coding unit M40-D, they differ only in size. Refer to Fig. 2.5 and Fig. 2.6.

- 1. Coding unit M80-D
- 2. Serial No. label
- 3. Warning signs
- 4. Capstan shaft
- 5. Pinch roller
- 6. Pinch roller lock
- 7. Foil path diagram
- 8. Lock wheel
- 9. Foil adjustment wheel
- 10. Foil alignment disk
- 11. Rewind mandrel
- 12. Foil
- 13. Text holder
- 14. Platen
- 15. Silicon plate (replaceable)
- 16. Print head handle
- 17. Brake lever with foil guide roller
- 18. Foil alignment disk
- 19. Foil / Ribbon roll
- 20. Feed mandrel
- 21. Coding unit mounting screw
- 22. Rear cover
- 23. Cover screw
- 24. Instant fitting for compressed air
- 25. Coding unit cable
- 26. Foil guide roller (2x)
- 27. Platen adjustment screw
- 28. Platen spring with adjustment
- 29. Platen mounting screw
- 30. Platen alignment pin
- 31. Print head clamp (2x)
- 32. Carbon coil

2.3.4 M100-D, M150-D

The M100-D and M150-D have similar but bigger parts as the M80-D (Fig. 2.7 and Fig. 2.8). The ribbon path is also different.



- 1. Print head clamps
- 2. Heating elements
- 3. Two extra ribbon guidance rollers

Fig. 2.9 Coding unit M100-D, without print head, front view.

The interior parts of the coding units M100-D and M150-D have the same function and names as the coding unit M40-D, they differ only in size. Refer to Fig. 2.5 and Fig. 2.6.

2.4 Print head

The print head for the M40-D slides into a print head slot. The print head for the M80/100/150-D slides between two print head clamps.



- 1. Handle (thermal insulator)
- 2. Spring clip
- 3. Magnesium stamping die
- 4. Text holder (brass)
- 5. Date or number marker
- 6. Space die (brass)
- 7. Text/Character die (steel or brass)
- 8. Base plate
- 9. Die lock screw

Fig. 2.10 Print head.

A die is an engraved plate or block where the non-printing areas are relieved. It is important that the material used holds as much thermal energy as possible at the surface. Copper and magnesium alloys excel in this area. That is why the dies are made from brass or magnesium and the text holder from brass.

2.5 The Hotfoil

Hotfoil is the name for print ribbon that carries the pigment. This pigment is needed to make prints on a substrate. To avoid confusion about the word foil, this manual uses the word ribbon for Hotfoil and the word substrate for packaging foil.

The used type of ribbon should correspond with the type of substrate material. If you do not have the correct type of ribbon, send a sufficient amount of your packaging material (substrate) and an indication of the layout of the print to your local distributor's sales or service department. They can determine with sample prints which type of ribbon is best suited for your substrate.

2.6 Mounting support



- 1. Standard bracket
- 2. Substrate guidance rollers
- 3. Substrate adjustment roller
- 4. Parallel tooth strips
- 5. Adjustment wheel
- 6. Lock wheel
- 7. Custom bracket equipment

Fig. 2.11 Standard Bracket equipped with substrate guidance rolls.

2.7 Compressed-air pressure regulator



Fig. 2.12 Compressed-air pressure regulator.

- 1. Compressed-air pressure regulator
- 2. Pressure adjustment
- 3. Instant fitting
- 4. Bowl with filter (40 μ m)
- 5. Automatic drain cock
- 6. Manometer

PROCESS DESCRIPTION

3.1 The printing process

3

The purpose of the printer is to print an image on a substrate. This printer uses heat, pressure and time to make a print by transferring pigment from a ribbon to the substrate.

The pigment is transferred to the substrate when a heated die forces the ribbon onto the substrate against the platen. The die must be hot enough to activate the pigment on the back ribbon and adhere it to the substrate.

The operator can set the print parameters; temperature, pressure and time to desired values. These parameters are dependent on the die size and the ribbon substrate combination. Before printing the printer must heat the print head with dies to a defined temperature.

The print cycle starts with a trigger signal. A host machine, switch or a photocell, which detects the product or special mark on the substrate, must generate this trigger. The printer then stamps the ribbon with the print head on the substrate. When the print head releases from the substrate, a drive roll pulls the used ribbon from the feed roll to the rewind roll.

A busy output is set when the print valve is active and the print head clamps the substrate to the platen. The host must not move the substrate when the busy output is set. If an inhibit signal from the host is set the printer ignores the trigger signal and the test key. An alarm output is set when the printer runs out of ribbon or when a printer error occurs.

3.2 User interface

The user interface consists of two parts, the control panel and the menu structure of operator menus.

3.2.1 Control panel



Fig. 3.1 Control panel.

The cursor keys positioned below the LCD display on the control panel are used to navigate through the control box's screen menus.

Three command keys, STOP, START and TEST are provided.

The STOP key sets the printer in the stop-mode. In stop-mode the printing is stopped and 'STOP' is displayed on the LCD-display. The STOP key will also silence the alarm buzzer if necessary.

The START key sets the printer in the run-mode. and 'RUN' is displayed on the LCD-display. The printer accepts now trigger pulses from the host machine, if the inhibit signal or alarm is not set.

PROCESS DESCRIPTION

The TEST key is only enabled in stop-mode. Press this key to make one test print. A test print will only be made if the inhibit signal and/or alarm signal are not set.

3.2.2 Indicator icons

The Indicator icons on the LCD display, are provided to show the status:

I-icon:	Indicates that the inhibit input is set. Printer ignores the trigger signal and the TEST key.
T-icon:	Indicates that the trigger input is set. And in RUN mode the print cycle will start.
P-icon:	Control box HP-D M40 - Indicates that the printer is printing and the busy output (power MOSFET) is set (T _{busy} = T _{delay} +T _{print} +T _{ext-delay}). Control box HP-D M80-M150 - Indicates that the printer is printing (T _{busy} = T _{print}).
H-icon:	Indicates that the heating elements are switched on. This icon is flashing until the set temperature is reached.



3.2.3 Menu structure

Fig. 3.2 Menu structure M40.

Refer to Appendix F for a full-scale sheet of the basic menu structure. Please note that the menu structure of the control box HP-D M40 and the control box HP-D M80-M150 are different.

4 SAFETY

This product is designed to conform to all current directives, and their relevant harmonized standards, of the European Council.

4.1 Relevant directives

CE Machinery Directive (2006/42/EC)

EN 12100-1 :2003 EN 12100-1/A1:2009	Safety of machinery - Basic concepts, general principles for design - Part 1: Basic terminology, methodology
EN 12100-2 :2003	Safety of machinery - Basic concepts, general principles for design - Part 2 :
EN 12100-2/A1:2009	Technical principles.

EMC Directive (2004/108/EC)

EN 55022 :2006 EN 55022/A1:2007	Information Technology Equipment - Radio disturbance characteristics Limits and methods of measurement.
EN 55024 :1998 EN 55024/A1:2001 EN 55024/A2:2003	Information Technology Equipment - Immunity characteristics Limits and methods of measurement.
EN 61000-3-2:2006	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)
EN 61000-3-3:1995 EN 61000-3-3/A1:2001 EN 61000-3-3/A2:2005	Electromagnetic compatibility (EMC) - Part 3-3: Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current 16 A per phase and not subject to conditional connection.

Low Voltage Directive (2006/95/EC)

EN 60950-1:2006	Information technology equipment - Safety Part 1: General requirements
EN 60950-1/A1:2009	

4.2 Power supply



Fig. 4.1 Voltage warning.

For safe operation, the power cable to the control box must be connected to a properly grounded singlephase supply of the appropriate voltage. The power supply must comply with the power supply information that is written on the serial-number label (located on the back of the control box).

Verify that no significant potential difference exists between the single-phase ground supply of the printer and the frame ground of the host machine.



Note:

All external equipment that is connected to the control box interface must be double insulated to qualify the whole installation as a separated extra-low voltage (SELV, Class II) system.

The wire colour code for the supply cable is:

BROWN for Line (L) BLUE for Neutral (N) GREEN/YELLOW for Protective Earth (PE)

When installing or servicing the equipment ensure that the host machine is stopped.

4.3 **Precautions before power-up**

Check at every printer power-up if all these connections are secured:

- **1.** The mains power plug. (X1).
- **3.** The printer cable. (X2).
- **4.** The cable/conduit (X3/X4) between the control box and the host.

4.4 **Precautions for the control box**

- VOOR OPENEN NETSPANNING ONDERBREKEN EN HANDLEIDING RAADPLEGEN - DISCONNECT POWERCORD AND READ MANUAL CAREFULLY BEFORE OPENING - VOR ÖFFNEN NETZ UNTERBRECHEN UND BEDIENUNGSANLEITUNG BEACHTEN - DEBRANCHER L'ALIMENTATION AVANT D'OUVRIR ET CONSULTER LA NOTICE

- INTERRUMPA LA TENSION Y CONSULTE MANUAL CUIDADOSAMENTE ANTES DE ABRIR

Fig. 4.2 Attention label for opening the control box.

The control box has an attention label (Fig. 4.2) to alert the user to read the manual before opening the control box.



WARNING:

- <u>ALWAYS</u> Switch the printer off and disconnect the main supply before removing any connectors or covers:
- Remove the plug from the mains power supply (X1).
- <u>DO NOT</u> operate the printer when any cover is removed.
- <u>DO NOT LEAVE</u> tools, screws or other parts inside the control box when re-assembling the equipment.

4.5 Precautions for the coding unit



WARNING:

• <u>ALWAYS</u> Switch the printer off and disconnect the main supply before removing any connectors or covers.

- Remove the plug from the mains power supply (X1).
- <u>DO NOT</u> operate the printer when any cover is removed.
- <u>DO NOT LEAVE</u> tools, screws or other parts inside the control box when re-assembling the equipment.
- After switching the printer off, the print head remains hot. When performing maintenance to the printer immediately after printing, be careful not to burn yourself!. Let the print head cool down for about 15 minutes before handling the printer.
- Keep body parts away from the moving parts of the mounting support or web arrester to avoid crush injuries when the printer and/or the host machine is operational. The (optional) moving parts of the mounting support or web arrester can squeeze body parts with high degree of force.

4.6 Coding unit caution labels

This section describes the caution labels used on or near the coding unit.



Fig. 4.3 Caution labels, general and hot parts risk.



WARNING:

Keep body parts away from the moving parts of the coding unit to avoid crush injuries when the printer is operational.

The text holder will stamp on the platen with pressure, this can squeeze body parts with high degree of force.



WARNING: .

Keep body parts away from the text holder to avoid burn injuries when the printer is powered up. The text holder is heated by an heating element, which can deliver a temperature up to 240°C (464°F).



WARNING: .

The heating elements of the coding unit are powered by 230V or 115V.

If the mounting support is equipped with moving parts this label will alert the operator.



Fig. 4.4 Optional caution label crushing risk.



WARNING:

Keep body parts away from the moving parts of the mounting support or web arrester to avoid crush injuries when the printer and/or the host machine is operational.

The (optional) moving parts of the mounting support or web arrester can squeeze body parts with high degree of force.

4.7 Anti-static precautions

The printed circuit boards are static sensitive devices, which can be damaged if they are touched without the necessary electrostatic discharge (ESD) precautions being taken. The ESD precautions involve the use of a grounded wrist strap and/or conductive work mat.

During installation, servicing and handling of the printed circuit boards, the printed circuit boards must be protected from electrostatic discharges.

INSTALLATION

5.1 Requirements

Provided by the customer:

- Power: 115 or 230VAC, 50-60Hz (refer to Fig. 5.1 for total power consumption).
- A trigger-signal output of the host machine (print).
- Sufficient space for installation and operation.
- Compressed air, dry and oil free, with a pressure of 0.5 0.8 MPa.

Optional:

5

- A stop-signal input of the host machine (printer alarm).
- Printer inhibit-signal output of the host machine (stop printer).
- A busy-signal input of the host machine (printer busy).

Name	Туре	VA (max.).
Control box	HP-D	10
Coding unit	M40-D	300
Coding unit	M80-D	250
Coding unit	M100-D	400
Coding unit	M150-D	600

Fig. 5.1 Power consumption / type.

The total power consumption is the sum of the control box and the coding unit power consumption.



Note:

Refer to Appendix D, 'Connections', 'Electrical diagram, Control box I/O' for the connection options.

5.2 Printer adaptation for 115VAC operation

All printer models are standard fitted with fuses and heating elements for 230VAC operation. Adaptation to 115VAC operation requires the exchange of fuses (control box) and heating elements (coding unit). Refer to Fig. 5.2 for the fuse values and Fig. 5.3 for the heating elements.

SW1	F1	F2	F3	F4
230Vac	3.15AT	5AT	300mAT	500mAT
115 Vac	6.3AT	8AT	500mAT	500mAT

Fig. 5.2 Control box, fuse values

Refer to Appendix D 'Connections', 'Power-I/O board' for the location of the fuses.

Coding unit	Heating	element	Part r	no. for
Model	Qty	Power	230VAC standard	115VAC optional
M40-D, M40B-D	2x	150 W	153519	153522
M80-D, M80B-D	1x	250 W	805458	805461
M100-D	2x	200 W	805499	805502
M150-D	2x	300 W	155479	-

Fig. 5.3 Coding unit, heating elements.

Refer to Appendix C 'Part lists & illustrations' for the location of the heating elements of the desired coding unit. For the M40-D refer to the illustration 'Print head slot assembly M40-D'.

5.3 Mounting the coding unit



- 1. Coding unit slot (X-axis)
- 2. Platen slot (X-axis)
- 3. Substrate guidance roller
- Substrate adjustment roller (Y-axis)
- 5. Rack and pinion
- X. X-axis: The print moves along the width of the substrate
- Y-axis: The print moves along the length of the substrate

Fig. 5.4 Positioning of the print.

Assuming you have available a mounting support:

- 1. Find a suitable location on the host machine for mounting the coding unit.
- **2.** Make sure this location does not prevent people doing their job and that this location is accessible for maintenance.
- **3.** Mount the coding unit mounting support on the host machine.
- **4.** Fit the coding unit and the platen in their slots.
- **5.** Slide the coding unit and the platen to the position (X-axis) where the print should be printed.
- 6. Tighten the mounting screw of the coding unit and the platen.

5.3.1 Intermittent packaging

On intermittent packaging machines the substrate stops and starts at (ir)regular intervals. The printer is triggered on these machines in the interval that the substrate is stopped.

The print position can be moved with the substrate adjustment roller, Fig. 5.5 item 3, between the top and bottom of the package. Be aware that the substrate contains an amount of prints/packages between the print area and the seal area. So an substrate adjustment takes effect after a certain amount of prints.

The package length must be smaller than twice the rack and pinion length (Ly) of substrate adjustment roller package length. The print area can only then be positioned anywhere between the top and bottom of the package.



- 1. Substrate (Packaging foil)
- 2. Platen (print area)
- Substrate adjustment roller (Y-axis)
- 4. Substrate guidance roller
- 5. Package (before forming, filling and sealing)
- 6. Print
- A. Move print to bottom of package
- B. Move print to top of package
- C. Top of package
- D. Bottom of package

Fig. 5.5 Substrate adjustment.

5.3.2 Continuous packaging

On continuous packaging machines the substrate never stops and starts while packaging. The printer is triggered on these machines by the packaging cycle or by a sensor that detects a mark on the substrate.

The print position can be moved with the substrate adjustment roller, Fig. 5.6 item 3, between the top and bottom of the package. Be aware that the substrate contains an amount of prints/packages between the print area and the seal area. So an substrate adjustment takes effect after a certain amount of prints.

The package length must be smaller than twice the rack and pinion length (Ly) of substrate adjustment roller package length. The print area can only then be positioned anywhere between the top and bottom of the package.

When a trigger triggers the print cycle, the printer will print and clamps at the same time the substrate between the print head and the platen (2). The web arrester balance (7) also releases at that moment. However, the packaging machine still pulls to the substrate and pulls with that the substrate from the egress buffer (F). This force pivots the balance from the balance start position and pulls with that 'new' substrate into the ingress buffer (E). The balance pivoting speed is controlled with an adjustable damper. Thus the same amount of substrate is pulled out as pulled in by the web arrester.

When the print head releases the substrate an actuator forces the web arrester balance back to its start position. This does not affect the substrate movement. The printer and web arrester are now ready for the next print cycle.

The print time must be shorter than the time it takes for the balance to reach its maximum pivot position. This prevents damage to the substrate, packaging machine or web arrester.

These parameters are important to determine the dimensions of the web arrester:

t_p	[s]	: Print time
L_p	[mm]	: Package length
R	[1/min]	: Rate (packages / minute)
L_b	[mm]	: Balance sweep length

$[m/\min]$: Substrate speed v_s

Determine with these equations the proper parameter values:

The maximum print time:

The minimum balance sweep length:

The maximum packaging rate:

$$t_{p \max} = \frac{120 \times L_b}{R \times L_p} \quad \text{or} \quad t_{p \max} = \frac{120 \times L_b}{v_s}$$
$$L_{b \min} = \frac{R \times t_p \times L_p}{120}$$
$$R_{\min} = \frac{120 \times L_b}{t_p \times L_p}$$

(A)В Ly ------2 3 7 (5 (6 ١, (A) < 2 Ly(1)(D)(в

n

- 1. Substrate (Packaging foil)
- 2. Platen
- 3. Substrate adjustment roller (Y-axis)
- 4. Substrate guidance roller
- 5. Package (before forming, filling and sealing)
- 6. Print
- 7. Web arrester balance
- А. Move print to bottom of package
- B. Move print to top of package
- C. Top of package
- D Bottom of package
- E. Substrate ingress buffer
- F. Substrate egress buffer
- G. Balance start position
- H. Maximum pivot position

Mounting the control box 5.4

Substrate adjustment + web arrester.

Find a secure location, which is easily accessible for operators, to mount the control box. Refer to Appendix B, 'Control box HP-D' for the dimensions of the mounting holes.

n-2

n-1

Fix it on a position near the coding unit bracket and guide the cables so that the coding unit can rotate and move back and forth within the dimensions of the bracket. Connect the coding unit cable to the X2 connector and of the control box and use the connector lock to lock it.

Use the electrical diagram, Appendix D 'Electrical diagram, Control box I/O', to determine which interface option suits best with the host machine. Open the control box to gain access to the terminal blocks. Put an interface cable through one of the cable glands and connect the wires to the proper input or output. In case of a sensor driven trigger use the other cable gland for the sensor cable.

Fig. 5.6

5.5 Initial setup

5.5.1 Prepare the print head

- **1.** Clip the stamping die on and/or arrange the text dies in the text holder. If available, set the date or number marker. Refer to section 2.4.
- **2.** Slide the print head into the print head slot of the coding unit.

5.5.2 First time ribbon loading, M40-D



- 1. Foil alignment disk 2x
- 2. Carbon coil alignment ring
- 3. Lock screw
- 4. Feed mandrel
- 5. Foil guide rollers
- 6. Pinch roller lock
- 7. Capstan shaft
- 8. Rewind mandrel with quick release
- 9. Matt side of the Foil / Ribbon
- 10. Print head
- 11. Quick release

Fig. 5.7 M40-D ribbon path.

- **1.** Switch the control box off and unplug the main supply cable.
- **2.** Place the print head in the print head slot.
- **3.** Remove the front alignment disc (1) from the feed mandrel.
- **4.** Loosen the lock screws from the rear alignment disc (1) and the carbon coil alignment ring (2, 3).
- 5. Turn the rear alignment disc to align the foil/ribbon to the print head (print area).
- **6.** Tighten the lock screw of the rear alignment disk slightly, check if the feed mandrel runs free.
- 7. Slide the carbon coil alignment ring (2) to align the carbon coil with the disk on the feed mandrel.
- 8. Tighten the lock screw of carbon coil alignment ring slightly.
- **9.** Check whether both the disc and ring are lined up (readjust the discs later, if the foil/ribbon is touching them).
- **10.** Slide the new ribbon roll on the feed mandrel (4), (refer to the label (Fig. 5.8) on the coding unit for the right way to load the new roll, the matt side towards the substrate).
- **11.** Place the front alignment disc (1) and turn it until the new ribbon roll is firmly locked between both alignment disks.
- **12.** Pull the quick release (8) to open the rewind mandrel.
- **13.** Place an empty carbon coil on the rewinding mandrel (8) (Use a coil that is not smaller than the width of the foil/ribbon).
- **14.** Push the quick release (8) to close the rewind mandrel. Check if the coil fit firmly on the mandrel.
- **15.** Guide the ribbon along the ribbon guides (5).
- **16.** Open the pinch roller lock (6) to free the drive roll.

- **17.** Guide the ribbon along the drive roll.
- **18.** Tape the end of the ribbon to the empty carbon coil and rotate the rewind mandrel a few turns clockwise until the ribbon is tensioned.
- **19.** Close the pinch roller lock (6) this to clamp the ribbon between the drive roll and the pinch roller.
- 1. Plug in the main supply cable and switch the control box on.



Fig. 5.8 Ribbon path labels.

5.5.3 First time ribbon loading, M80/100/150-D



- 1. Front alignment disk
- 2. Rear alignment disk
- 3. Pinch lock lever
- 4. Pinch roller
- 5. Foil guide rollers
- 6. Capstan shaft
- 7. Feed mandrel
- 8. Rewind mandrel

Fig. 5.9 M80/100/150-D ribbon path.

- **1.** Switch the control box off and unplug the main supply cable.
- **2.** Place the print head between the print head clamps.
- **3.** Loosen both front alignment discs (1).
- **4.** Loosen the lock screws from both rear alignment discs (2).
- 5. Turn both rear alignment discs to align the foil/ribbon to the print head (print area).
- 6. Tighten the lock screws of the rear alignment disks slightly, check if the both mandrels runs free.
- **7.** Check whether both the disc and ring are lined up (readjust the discs later, if the foil/ribbon is touching them).
- **8.** Slide the new ribbon roll on the feed mandrel (7), (refer to the label (Fig. 5.8) on the coding unit for the right way to load the new roll, the matt side towards the substrate).
- **9.** Place the front alignment disc (1) on the feed mandrel and turn it until the new ribbon roll is firmly locked between both alignment disks.
- **10.** Place an empty carbon coil on the rewind mandrel (8) (Use a coil that is not smaller than the width of the foil/ribbon).
- **11.** Place the front alignment disc (1) on the rewind mandrel and turn it until the empty coil is firmly locked between both alignment disks.
- **12.** Guide the ribbon along the ribbon guides (5).

- **13.** Open the pinch lock lever (3) to free the drive roll (6).
- **14.** Guide the ribbon along the drive roll.
- **15.** Tape the end of the ribbon to the empty carbon coil and rotate the rewind mandrel a few turns clockwise until the ribbon is tensioned.
- 16. Close the pinch roller lock (3) this to clamp the ribbon between the drive roll shaft and the pinch roller (4).
- **17.** Plug in the main supply cable and switch the control box on.

5.5.4 Control box setup

- **1.** Check if the coding unit is connected to the control box (connector X2).
- **2.** Plug the main supply cable to the control box.
- **3.** Switch the control box on. The program boots while the printer type is displayed.



- **4.** Fig. 5.10 Firmware for Printer type message.
- 5. After 3 seconds the Stop mode menu appears and shows the actual print head temperature.



- **6.** Fig. 5.11 STOP MODE menu.
- **7.** Press the RIGHT ARROW of the control panel to browse through the parameters and alter the desired parameter. Refer to section 6.3, 'Parameter / message screens' and Appendix F, 'Quick reference'.
- **8.** The parameter browse sequence is:

PRESET, SET DELAY, SET TEMP, SET TIME, FIRMWARE message, SET LCD CONTRAST, SET ALARM, EXT.BUSY.

- **9.** Press the STOP key to return to the STOP MODE menu.
- **10.** Check if the coding unit is connected to de compressed-air pressure regulator.
- **11.** Set the pressure regulator to a pressure between 0.5 0.8 MPa (5 -8 bar).
- **12.** Press the TEST key to make a test print.
- **13.** If the printer does not print refer to the chapter 7, TROUBLESHOOTING to solve the problem.
- **14.** Optimize the print quality as described in the section 5.6.

5.5.5 Print synchronisation

1. Press the START key to enter the RUN MODE menu.



Fig. 5.12 RUN MODE menu (### represents the actual temperature).

2. Press the RIGHT ARROW to browse through the parameters and alter the desired parameter while in run mode. Refer to section 6.3, 'Parameter / message screens' and Appendix F, 'Quick reference'.

The parameter browse sequence is: SET DELAY, SET TEMP, SET TIME, FIRMWARE message, SET LCD CONTRAST, SET ALARM, EXT.BUSY.

- **3.** Slide the platen away from the print area, to avoid problems while synchronizing the trigger signal with the packaging cycle.
- **4.** Proceed with either the intermittent or continuous packaging section below.

Intermittent packaging

- 1. Verify if the substrate follows the correct substrate path through the printer mounting support.
- **2.** Start the host machine.
- 3. Verify if the printer will print every packaging cycle. If not check the interface connections.
- **4.** Verify if the print is made while the substrate is not moving. If not, inverse the trigger signal or set the SET DELAY parameter.
- **5.** Stop the host machine.
- **6.** Slide both the coding unit and the platen to the X-axis print position on the substrate.
- 7. Use the substrate adjustment roller to move the print to the Y-axis print position on the substrate.
- **8.** Start the host machine.
- **9.** Repeat the steps 4 till 8 until the print is properly positioned on the substrate.

Continuous packaging

- **1.** Verify if the substrate follows the correct substrate path through the printer mounting support and web arrester.
- **2.** Start the host machine.
- 3. Verify if the printer will print every packaging cycle. If not check the interface connections.
- 4. Verify if the web arrester timing is synchronized with the printer.
- **5.** Use the EXT.BUSY parameter to synchronize the web arrester valve with the printer. The web arrester valve must wait a bit until the print head has freed the substrate. Set the value to at least 35ms.
- **6.** Stop the host machine.
- 7. Slide both the coding unit and the platen to the X-axis print position on the substrate.
- 8. Use the substrate adjustment roller to move the print to the Y-axis print position on the substrate.
- **9.** Start the host machine.
- **10.** Repeat the steps 6 till 10 until the print is properly positioned on the substrate.

5.6 Optimising the Print Quality

The quality of the print is determined by a combination of the print head pressure, print time, the print head temperature and adjustment of the platen.



1. Silicon plate screw

- 2. Silicon plate
- 3. Platen spring
- 4. Spring adjustment nut
- 5. Platen level screw (4x)
- 6. Locknut

Fig. 5.13 Platen.

- **1.** Switch on the Printer by switching the power rocker switch on the control box.
- **2.** Set the system operating pressure between 0.5-0.8 MPa (5-8 bar) using the air regulator.
- **3.** Place a print head into the print head slot of the coding unit.
- 4. Set the print head temperature (TEMP) at 160°C, refer to the menu structure in Appendix F.
- **5.** Loosen the lock nuts (6) and compress the platen spring (3) a bit by tightening the spring tension nut (4) on the platen.
- **6.** Loosen the four adjustment screws (5) until the gap between the print head and the platen is about 5 mm.
- 7. Place the ribbon, refer to subsection 5.5.2 or 5.5.3.
- **8.** Make some prints (when the print head reached its set temperature) by pressing the TEST button (STOP mode).
- **9.** While making some prints set the print time (TIME), refer to the menu structure in Appendix F.
- **10.** While still making prints, adjust the ribbon transport with the ribbon adjustment wheel.
- **11.** Lock the ribbon adjustment wheel when the print negatives on the ribbon are not overlapping each other on the used ribbon.
- **12.** Level the platen out with the print head by turning the four socket-screws (5) until a uniform, good quality print is obtained. The gap between the print head and the substrate will be about 5 mm. If so, the four lock nuts (6) need to be tightened. After tightening the lock nuts, re-adjust by means of either the socket screws, TEMP or TIME adjustment if necessary.
- **13.** Examine the print result. If the print is good proceed, otherwise readjust de printer according to the steps above.
- **14.** Tighten the lock nuts (6) on the four adjustment screws (5) after a good print result has been achieved. Compress the platen spring (3) a bit by tightening the platen spring nut (3). This secures the platen.
- **15.** Press the RUN button to set the printer ready to print (RUN mode).

OPERATION

This part describes the functions and procedures for operating the printer.

6.1 Powering up

6

- **1.** Check by visual inspection for damage of the printer.
- **2.** Check if all of the relevant cables are connected.
- **3.** Switch the control box on. The program boots while the printer type is displayed.



4. After 3 seconds the Stop mode menu appears.



Fig. 6.2 STOP MODE menu.

- **5.** Proceed with step 10, if the parameters does not have to change.
- **6.** Press the RIGHT ARROW to browse through the parameters and alter the desired parameter. Refer to section 6.3, 'Parameter / message screens' and Appendix F, 'Quick reference'.

The parameter browse sequence is:

PRESET, SET DELAY, SET TEMP, SET TIME, FIRMWARE message, SET LCD CONTRAST, SET ALARM, EXT.BUSY.

- 7. Press the STOP key to return to the STOP MODE menu.
- **8.** Press the TEST key to make a test print.
- 9. Check the print quality and change the SET TIME and/or SET TEMP parameter if necessary (step 5).



The print pressure is also important for the print quality.

10. Press the START key to enter the RUN MODE menu.

|--|

Fig. 6.3 RUN MODE menu.

11. Press the RIGHT ARROW to browse through the parameters and alter the desired parameter while in run mode. Refer to section 6.3, 'Parameter / message screens' and Appendix F, 'Quick reference'.

The parameter browse sequence is:

SET DELAY, SET TEMP, SET TIME, FIRMWARE message, SET LCD CONTRAST, SET ALARM, EXT.BUSY.

12. Press the STOP key to stop printing and enter the STOP MODE menu.

6.2 Printer mode

6.2.1 Stop mode

This menu is accessible from any screen (except error) by pressing the STOP key.

Fig. 6.4 STOP MODE MENU, with all possible indicator icons.

In this mode the trigger signal will be ignored, but a TEST key press will make a test print. The current temperature is represented by ### °C.

to shift to the PRESET LIST.
to make a test print.
to enter the RUN MODE MENU, the printer is now standby.

In this mode the following indicator icons can be displayed:

I-icon: Indicates that the inhibit input is set (The printer ignores in this mode the TEST key).
T-icon: Indicates that the trigger input is set (in this mode the trigger signal will be ignored).
P-icon: Indicates that the printer is printing (in this mode only by pressing the TEST key).
H-icon: Indicates that the heating elements are switched on. This icon is flashing until the set temperature is reached.

Press the RIGHT ARROW to browse through the parameters and alter the desired parameter while in run mode. Refer to section 6.3, 'Parameter / message screens' and Appendix F, 'Quick reference'.

6.2.2 Run mode

This menu is only accessible from the STOP MODE menu by pressing the START key.



Fig. 6.5 RUN MODE MENU, with all possible indicator icons.

In this mode the TEST key will be ignored. The current temperature is represented by ### °C.

Press button:RIGHT ARROWto shift to the SET DELAY parameter.STOPto return to the STOP MODE MENU and stop printing.
In this mode the following indicator icons can be displayed:

I-icon: Indicates that the inhibit input is set (The printer ignores in this mode the trigger signal).

T-icon: Indicates that the trigger input is set (in this mode only by a trigger signal).

P-icon: Indicates that the printer is printing (in this mode the TEST key will be ignored).

H-icon: Indicates that the heating elements are switched on. This icon is flashing until the set temperature is reached.

Press the RIGHT ARROW to browse through the parameters and alter the desired parameter while in run mode. Refer to section 6.3, 'Parameter / message screens' and Appendix F, 'Quick reference'.

6.3 Parameter / message screens

6.3.1 Preset list

This list is only accessible from the STOP MODE menu.



Fig. 6.6 PRESET LIST, the active preset is displayed.

The printer can store 8 different presets. A preset is a collection of predefined parameter values; SET DELAY, SET TEMP and SET TIME. The parameter values of the active preset can be altered by changing the desired parameter. The current preset list is represented by #.

Press button:	
UP ARROW	to increase the PRESET LIST number.
DOWN ARROW	to decrease the PRESET LIST number.
LEFT ARROW	to shift to the STOP MODE MENU.
RIGHT ARROW	to shift to the SET DELAY parameter.
STOP	to return to the STOP MODE MENU.

In the control box HP-D M80-M150 the active preset is visible on the STOP and RUN screen.



Fig. 6.7 RUN MODE MENU, with preset indicator.

6.3.2 Set delay

This parameter is only accessible from the RUN MODE menu or the PRESET list.

Fig. 6.8 SET DELAY parameter.

The SET DELAY parameter delays the print after a trigger signal is received. The delay has a range from 0.00 to 2.00 seconds. The current parameter value is represented by #.##s.

This parameter can be stored as a preset value, refer to subsection 6.3.1.

Press button:UP ARROWto increase the parameter value.DOWN ARROWto decrease the parameter value.LEFT ARROWto shift to the PRESET LIST (stop mode) or the RUN MODE MENU (run mode).RIGHT ARROWto shift to the SET TEMP parameter.STOPto return to the STOP MODE MENU and stop printing.

6.3.3 Set temp

This parameter is only accessible from the SET DELAY parameter.



Fig. 6.9 SET TEMP parameter.

The SET TEMP parameter is the desired temperature of the print element. The temperature has a range from 0 to 240°C. The current parameter value is represented by ### °C. This parameter can be stored as a preset value , refer to subsection 6.3.1.

Press button:UP ARROWto increase the parameter value.DOWN ARROWto decrease the parameter value.LEFT ARROWto shift to the SET DELAY parameter.RIGHT ARROWto shift to the SET TIME parameter.STOPto return to the STOP MODE MENU and stop printing.

6.3.4 Set time

This parameter is only accessible from the SET TEMP parameter.



Fig. 6.10 SET TIME parameter.

The SET TIME parameter is the desired print time. The print time has a range from 0.01 to 2.00 seconds. The current parameter value is represented by #.##s. This parameter can be stored as a preset value , refer to subsection 6.3.1.

Press button:	
UP ARROW	to increase the parameter value.
DOWN ARROW	to decrease the parameter value.
LEFT ARROW	to shift to the SET TEMP parameter.
RIGHT ARROW	longer than two seconds to shift to the FIRMWARE VERSION message.
STOP	to return to the STOP MODE MENU and stop printing.

6.3.5 Firmware message

This parameter is only accessible from the SET TIME parameter (press the RIGHT ARROW longer than two seconds).



The FIRMWARE VERSION message shows the printer type and current firmware version. The current version is represented by V#.#.###.

Press button:

LEFT ARROW	to shift to the SET TIME parameter.
RIGHT ARROW	to shift to the SET LCD CONTRAST menu.
STOP	to return to the STOP MODE MENU and stop printing.

6.3.6 Set LCD contrast

This parameter is only accessible from the FIRMWARE message.



Fig. 6.12

SET LCD CONTRAST menu.

In the SET LCD CONTRAST menu the LCD contrast can be changed.

Press button:	
UP ARROW	to darken the LCD contrast, keep pressed until the desired contrast is set
DOWN ARROW	to lighten the LCD contrast, keep pressed until the desired contrast is set
LEFT ARROW	to shift to the FIRMWARE VERSION message.
RIGHT ARROW	to shift to the SET ALARM parameter.
STOP	to return to the STOP MODE MENU and stop printing.

6.3.7 Set alarm

This parameter is only accessible from the SET LCD CONTRAST menu.

	ALARM:	*****
Fig. 6.13	SET ALA	RM parameter.

The SET ALARM parameter is the desired temperature alarm setting. The temperature alarm of the control box HP-D M40 has four possible settings: OFF, ±5°C, ±10°C or ±15°C. The temperature alarm of the control box HP-D M80-M150 has two possible settings: OFF or ±15°C. The current parameter value is represented by *****.

The temperature range (±5°C, ±10°C or ±15°C) is related to the SET TEMP parameter. If the actual temperature is outside the current temperature range; the alarm is set, the printer stops printing and an error message (ERROR 004) is displayed.

Press button:	
UP ARROW	to browse upwards through the settings.
DOWN ARROW	to browse downwards through the settings.
LEFT ARROW	to shift to the SET LCD CONTRAST menu.
RIGHT ARROW	to shift to the EXT.BUSY parameter.
STOP	to return to the STOP MODE MENU and stop printing.

6.3.8 Extended Busy

This parameter is only accessible from the SET ALARM parameter.

EAL.BUDY: #.##S

Fig. 6.14 EXT.BUSY parameter.

The EXT.BUSY parameter extends the busy signal, refer to Appendix D Connections, I/O signals. The extended busy time has a range from 0.00 to 2.50 seconds. The current parameter value is represented by #.##s.

Press button:UP ARROWto increase the parameter value.DOWN ARROWto decrease the parameter value.LEFT ARROWto shift to the SET ALARM parameter.RIGHT ARROWto shift to the READY TEMP parameter.STOPto return to the STOP MODE MENU and stop printing.

6.3.9 Ready Temperature

This parameter is only accessible from the EXT.BUSY parameter.



Fig. 6.15 READY TEMP parameter.

On the control box HP-D M40 the READY TEMP parameter controls the busy signal when the control box is powered on. This parameter is related to the SET TEMP parameter (subsection 6.3.3) and has 10 possible settings; OFF, -0°C and -1°C to -8°C in one degree steps.

On the control box HP-D M80-M150 the READY TEMP parameter controls the READY signal of the RELAY parameter (subsection 6.3.13). The parameter is related to the SET TEMP parameter (subsection 6.3.3) and has 11 possible settings; OFF, 0°C and -1°C to -9°C in one degree steps.

The current parameter value is represented by ****.

When this parameter is set in the control box HP-D M40, the busy signal is set from the moment the control box is powered on until the printer temperature ($T_{pr \text{ int } er}$) has reached a value equal or greater than SET TEMP (T_{set}) minus READY TEMP (T_{ready}).

$$T_{pr}$$
 int $er \geq T_{set} - T_{ready}$

The preferred READY TEMP values are OFF and -0°C, the other values are meant for special environments. While the busy signal is active, the printer ignores trigger signals and will not print. This parameter is usual used with automatically controlled packaging machines. It prevents printing until the printer has reached (nearly) the desired print temperature.



Note:

The busy signal status is not displayed when the busy signal is set by the READY TEMP parameter, only the output is set.

(Reminder: For the control box HP-D M40, the busy signal status is displayed as the P-icon when the printer is printing.)



CAUTION:

Make sure persons cannot have access to the coding unit when it is set to RUN mode automatically. When the READY TEMP option is activated, the system will start printing when a print request is supplied and the system temperature has reached the temperature according to the READY TEMP parameter.

Press button:	
UP ARROW	to increase the parameter value.
DOWN ARROW	to decrease the parameter value.
LEFT ARROW	to shift to the EXT.BUSY parameter.
RIGHT ARROW	to shift to the POWER ON parameter.
STOP	to return to the STOP MODE MENU and stop printing.

OPERATION

When the option READY TEMP is activated in the controller HP-D M80-M150, the following screen is displayed when the controller is switched on:



yyy° is the SET TEMP minus the value selected in the READY TEMP menu. xxx ° is the SET temperature. As long as the measured temperature remains below the SET TEMP, this screen is visible. As soon as the SET TEMP is reached, the screen will change to the STOP screen or the START screen (depending on the set mode in the POWER ON menu). In STOP mode, the system will not respond to a print requests. If the system has been set to RUN mode, the system is now ready to make prints and will respond to a print request.

6.3.10 Power On Mode

This parameter is only accessible from the READY TEMP parameter.

POWER	ON	#	****
			_

Fig. 6.17 POWER ON parameter.

The POWER ON parameter sets the print mode at which the control box will start after power on. This parameter has two possible settings, STOP and RUN. The current parameter value is represented by ****. This parameter is usual used with automatically controlled packaging machines.



CAUTION:

Make sure persons cannot have access to the coding unit when it is set to RUN mode automatically. After powering up, the system will start printing when a print request is supplied.

Press button:	
UP ARROW	to toggle the parameter to the RUN value.
DOWN ARROW	to toggle the parameter to the STOP value.
LEFT ARROW	to shift to the READY TEMP parameter.
RIGHT ARROW	to shift to the IGNORETRIG parameter.
STOP	to return to the STOP MODE MENU and stop printing.

6.3.11 Ignore Trigger

This parameter is only accessible from the POWER ON parameter.

Fig. 6.18 IGNORETRIG parameter.

The IGNORETRIG parameter sets the amount of trigger pulses the printer must ignore before printing. The IGNORETRIG has ten possible settings: OFF and 1 to 9 in steps of one. The current parameter value is represented by *****. Refer to Appendix D Connections, I/O signals.



Fig. 6.19 RUN# mode, when IGNORETRIG parameter is set.

If the IGNORETRIG parameter is set to three (3) the trigger/print sequence is then:

IGNORETRIG. parameter = 3				
Message	Message Trigger			
RUN3	n-3	no		
RUN2	n-2	no		
RUN1	n-1	no		
RUN0	n	yes		
RUN3	n-3	no		
RUN2	n-2	no		
RUN1	n-1	no		
RUN0	n	yes		
etcetera				

Fig. 6.20 Print sequence with IGNORETRIG parameter set.

6.3.12 Set_P / Set_I / Set_D

This parameter is only available in the control box HP-D M80-M150 and only accessible from the IGNORE TRIGGER parameter (press the RIGHT ARROW longer than four seconds).

The SET_P, SET_I and SET_D parameters are use to optimize the temperature control of the printer. Korthofah advises not to change the set values unless advised otherwise by Korthofah or one of his sales representatives.

6.3.13 Relay

This parameter is only available in the control box HP-D M80-M150 and only accessible from the SET_D parameter.



The relay parameter can be set to ALARM or READY. When set to ALARM the alarm relay will switch when an ERROR occurs. When set to READY the relay will switch when the following conditions are met:

- The controller is powered on;
- The controller is in RUN mode;
- No ERRORS are detected;
- The READY TEMP temperature has been reached (when activated).



Beware:

When set to ALARM the busy signal is not set when the READY TEMP function is activated.



Beware:

The wiring to the output of he relay must correspond to the RELAY parameter setting. Use the normally open contacts when set to ALARM. Us the normally open or normally closed contacts when set to READY.

6.4 Ribbon transport

The used ribbon is pulled along the ribbon path and rewinded after making a print. The length the ribbon is transported can be adjusted on the coding units to the millimetre. The precise adjustment of the ribbon gap prevents unnecessary ribbon waste.



- 1. Drive roll
- . Lock wheel
- 3. Ribbon adjustment wheel
- 4. Print head
- . Used ribbon with the print negatives
- 6. Platen

Fig. 6.22 M40-D ribbon transport.

- **1.** Switch the control box on.
- 2. Slide the print head (4) with the desired text into the print head slot.
- **3.** Place a piece of substrate between the platen (6) and the print head.
- 4. Press the TEST button several times. Several sample prints are now made manually.
- **5.** Determine the ribbon gap between the print negatives on the used ribbon. Turn the drive roll for a better view on the ribbon gaps.
- **6.** If these ribbon gaps are too wide or too small, loosen the lock wheel (2) on the ribbon adjustment wheel (3).
- **7.** Turn the adjustment (for M40-D clockwise to decrease the ribbon gap and counter clockwise to increase it. For other printer models it works the other way around).
- **8.** Repeat steps 3 through 7 until the ribbon gaps are small enough.
- **9.** Tighten the lock wheel, this secures the ribbon adjustment setting.

6.5 Placing new ribbon roll



WARNING:

After printing, the print head remains hot. When replace the ribbon immediately after printing, be careful not to burn yourself!

If the ribbon rolls are already aligned properly with the print head and each other (refer to subsections 5.5.2 or 5.5.3), the following steps are sufficient for installing a ribbon roll.

6.5.1 Placing ribbon on the M40-D

- **1.** Stop the host machine.
- **2.** Press STOP on the control box.
- **3.** Remove the front alignment disc from the feed mandrel.
- **4.** Replace the empty carbon core with the new ribbon roll on the feed mandrel, (refer to the label (Fig. 6.23) on the coding unit for the right way to load the new roll, the matt side towards the substrate).
- **5.** Place the front alignment disc and turn it until the new ribbon roll is firmly locked between both alignment disks.
- 6. Pull the quick release to open the rewind mandrel.
- **7.** Place an empty carbon coil on the rewinding mandrel (Use a coil that is not smaller than the width of the ribbon).
- 8. Push the quick release to close the rewind mandrel. Check if the coil fit firmly on the mandrel.
- **9.** Guide the ribbon along the ribbon guides.
- **10.** Open the pinch roller lock to free the drive roll.
- **11.** Guide the ribbon along the drive roll.
- **12.** Tape the end of the ribbon to the empty carbon coil and rotate the rewind mandrel a few turns clockwise until the ribbon is tensioned.
- **13.** Close the pinch roller lock this to clamp the ribbon between the drive roll and the pinch roller.
- **14.** Press START on the control box
- **15.** Resume printing.



Fig. 6.23 Ribbon path labels.

6.5.2 Placing ribbon on the M80/100/150-D

- **1.** Stop the host machine.
- **2.** Press STOP on the control box.
- **3.** Loosen both front alignment discs.
- **4.** Slide the new ribbon roll on the feed mandrel, (refer to the label (Fig. 6.23)) on the coding unit for the right way to load the new roll, the matt side towards the substrate).

OPERATION

- **5.** Place the front alignment disc on the feed mandrel and turn it until the new ribbon roll is firmly locked between both alignment disks.
- **6.** Place an empty carbon coil on the rewind mandrel (Use a coil that is not smaller than the width of the ribbon).
- **7.** Place the front alignment disc on the rewind mandrel and turn it until the empty coil is firmly locked between both alignment disks.
- **8.** Guide the ribbon along the ribbon guides.
- **9**. Open the pinch lock lever to free the drive roll.
- **10.** Guide the ribbon along the drive roll.
- **11.** Tape the end of the ribbon to the empty carbon coil and rotate the rewind mandrel a few turns clockwise until the ribbon is tensioned.
- **12.** Close the pinch roller lock this to clamp the ribbon between the drive roll and the pinch roller.
- **13.** Press START on the control box.
- **14.** Resume printing.

6.6 Print position

6.6.1 Intermittent packaging

- **1.** Stop the host machine.
- 2. Verify if the substrate follows the correct substrate path through the printer mounting support.
- **3.** Start the printer and the host machine.
- **4.** Verify if the print is made while the substrate is not moving. If not, inverse the trigger signal or set the SET DELAY parameter.
- **5.** Stop he host machine.
- **6.** Slide both the coding unit and the platen to the X-axis print position on the substrate.
- 7. Use the substrate adjustment roller to move the print to the Y-axis print position on the substrate.
- **8.** Start the host machine.
- **9.** Repeat the steps 4 till 8 until the print is properly positioned on the substrate.

6.6.2 Continuous packaging

- **1.** Stop the host machine.
- **2.** Verify if the substrate follows the correct substrate path of the web arrester.
- **3.** Start the printer and the host machine.
- **4.** Verify if the web arrester timing is synchronized with the printer. If not, adjust the EXT.BUSY parameter to synchronize the web arrester valve with the printer. The web arrester valve must wait a bit until the print head has freed the substrate. Set the value to at least 35ms.
- **5.** Stop the host machine.
- 6. Slide both the coding unit and the platen to the X-axis print position on the substrate.
- 7. Use the substrate adjustment roller to move the print to the Y-axis print position on the substrate.
- **8.** Start the host machine.
- **9.** Repeat the steps 5 till 8 until the print is properly positioned on the substrate.

6.7 User settings

Fill in this table with the values found by setting the printer parameters.

Use the table, as a reference, to set the printer parameters when the memory is reset to the default values. Keep the table nearby, when calling the helpdesk of your local distributor.

Firmware:	V	PRESET				
Parameter	Range	1	2	3	4	
SET DELAY	0.00- 2.00s					
SET TEMP	0 - 240°C					
SET TIME	0.01 - 2.00s					
Parameter	Range	5	6	7	8	
SET DELAY	0.00- 2.00s					
SET TEMP	0 - 240°C					
SET TIME	0.01 - 2.00s					
Parameter	Range	GLOBAL				
SET ALARM	OFF, ±5°C, ±10°C, ±15°C					
EXT.BUSY	0.00 - 2.50s					
READY TEMP	M40: OFF, -0°C to -8°C					
	M80-150: OFF, -0°C to -9°C					
POWER ON	STOP, RUN					
IGNORETRIG.	OFF, 1 to 9					
SET_P	0 - 250					
SET_I	0 - 250					
SET_D	0 - 250					
RELAY	READY, ALARM					

Fig. 6.24 Printer parameters.

In the control box HP-D M80-M150 the values can de reset to the default values by switching the system on while holding the TEST button for at least 2 seconds.

Fill in this table and keep nearby, when calling the helpdesk of your local distributor.

Manufacterer host machine, type			
Control box, serial number			
Coding unit , type and serial number	М	- D	
Production plant			
Production line			
Type of substrate (product)			
Production / print rate			Cycles / min
Ambient temperature (min, max)		°C (min)	°C (max)

Fig. 6.25 Printer environment information.

7 TROUBLESHOOTING

7.1 Solving print quality problems

7.1.1 No print at all

- 1. Check if the print head actuator is reacting to a print signal (RUN mode) or test button (STOP mode). If not, supply air pressure to the coding unit. Check otherwise the air valve at the back of the coding unit.
- **2.** Check if the print head can touch the platen. It is possible that the gap between the print head and the platen is too wide. If so, refer to subsection 7.1.2.
- **3.** Check if the ink side (matt side) of the ribbon is faced to the substrate. If not, replace the ribbon roll reversed on the feed mandrel.
- **4.** If the print head can touch the platen, try to obtain a sample print by increasing the print pressure. Check if the print head pressure is set too high by the degree of deformation on the back of the substrate.
- **5.** If a increased pressure does not improve the print quality, increase then the print time. When increasing the print time, verify if it is within the available time of the packaging cycle.
- **6.** When an increased print time will not result in an improvement in the print quality or if the set print time is too long, increase the print temperature of the print head. (In general, if a long print time combined a low print head temperature is sufficient; you need to decrease the print time if a higher temperature is set.).
- 7. Optimize the print quality by repeating steps 8, till 13 of section 5.6.

7.1.2 Print is not uniform



- 1. Silicon plate screw
- 2. Silicon plate
- 3. Platen spring
- 4. Spring adjustment nut
- 5. Platen level screw (4x)
- 6. Locknut

Fig. 7.1 Platen.

- 1. Check the print head and silicon plate on wear and tear, replace if necessary.
- **2.** Readjust the four level screws (5) on the platen. Level the platen with the print head.
- **3.** Make a sample print and adjust the platen upwards to the print head at the light areas in the print and /or downwards at the darker areas in the print.
- **4.** To avoid tilting of the platen, verify if the platen rest on all four level screws and the platen spring is a bit compressed.
- **5.** Optimize the print quality by repeating steps 8, till 13 of section 5.6.

7.1.3 Uniform Print but faint

- 1. Check if the ribbon transport is set at the proper length with the ribbon adjustment wheel.
- 2. Check the print head and silicon plate on wear and tear. Replace if necessary.
- **3.** Try to sharpen the print by increasing the operating pressure. Check if the pressure is set too high by the degree of deformation on the back of the substrate.

TROUBLESHOOTING

- **4.** If a increased pressure does not improve the print quality, increase then the print time. When increasing the print time, verify if it is within the available time of the packaging cycle.
- **5.** When an increased print time will not result in an improvement in the print quality or if the set print time is too long, increase the print temperature of the print head. (In general, if a long print time combined a low print head temperature is sufficient; you need to decrease the print time if a higher temperature is set.).
- 6. Check the used type of ribbon, maybe the ribbon/substrate combination is wrong.
- **7.** Optimize the print quality by repeating steps 8, till 13 of section 5.6.

7.1.4 Substrate sticks to ribbon or platen

- **8.** Check if the print head temperature is too high.
- **9.** Check if the print time is too long.
- **10.** Check if the substrate is touching the platen while moving. If so, lower the platen.
- **11.** Check the used type of ribbon, maybe the ribbon/substrate combination is wrong.
- **12.** Check if the silicon plate is clean.

7.1.5 Print is not wipe proof

- **1.** Check if the print head temperature is too low.
- **2.** Check if the print time is too short.
- **3.** Check the used type of ribbon, maybe the ribbon/substrate combination is wrong.

7.1.6 Creasing Ribbon

- **1.** Check if the ribbon feed roll is in line with the rewind roll. If not, align the rolls by adjusting the alignment disks.
- **2.** Check if the guidance rollers are aligned.

7.2 Ribbon brake

The ribbon brake should function properly in order to prevent any malfunctioning when unwinding the ribbon. This may result in the alarm signal, which indicates either an empty ribbon roll or broken ribbon, going off accidentally. It is important that the brake is adjusted properly. The brake is already adjusted properly by the factory, but due to wear-and-tear it is possible that re-adjustment of the ribbon brake is needed.



- 1. Lock nut
- 2. Eccentric axe
- 3. Brake disk
- 4. Set screw
- 5. Eccentric pin
- 6. Brake release lever
- 7. Micro switch
- 8. Ribbon brake lever
- 9. Brake spring
- 10. Spring adjustment screw (not visible in picture)
- 11. Brake shoe

Fig. 7.2 M40-D ribbon brake mechanism (representative for all models of the M-D series).

7.2.1 Setting the brake spring tension

The braking force is determined by a brake spring (Fig. 7.2 item 9). The pre-tension of this spring can be adjusted by turning the adjustment screw (item 10). Turn the set screw clockwise to increase the spring tension.

7.2.2 Replacing the brake shoe

Replace the brake shoe (Fig. 7.2 item 11). if the functioning of the brake mechanism is not improving by increasing the spring tension. Re-adjust the spring tension for the new brake shoe to the factory setting (refer to subsection 7.2.3).

7.2.3 Factory setting of the Ribbon brake mechanism

This procedure is only allowed for a qualified service technician and only valid with a new brake shoe.

Factory setting procedure:

- 1. Remove the ribbon (the ribbon brake lever (Fig. 7.2 item 8) moves to the idle position).
- **2.** Remove the rear cover from the coding unit.
- 3. Loosen the set screw (4) and turn the eccentric pin (5) towards the top of the coding unit.
- **4.** Secure the pin with the set screw (4).
- **5.** Loosen lock nut (1).
- **6**. Verify if the ribbon brake lever (8) is in the idle position.
- **7.** Turn the eccentric axe (2) until the clearance between brake release lever (6) and eccentric pin (5) is at its maximum.
- **8.** Secure the lock nut (1) and check the clearance setting again. Repeat step 4+5 if necessary.
- **9.** Loosen the set screw (4).
- **10.** Turn the eccentric pin (5) until the clearance between the eccentric pin and the brake release lever (6) is about 0.75 mm.
- **11.** Secure the eccentric pin again with the set screw (4).
- **12.** Adjust the micro switch (7) to the position where it is just switching when the ribbon brake lever (8) reaches the idle position.

7.3 Error 001



A too high or too low print temperature is detected.

The print temperature must be in between -10 to 260°C.

The actual temperature is displayed, here represented as ###°C.

7.4 Error 002

Occurs only in the stop or run mode.

7.4.1 -20°C

Fig. 7.4 ERROR 002, -20°C.

The temperature sensor circuit is short circuited or the PT1000 sensor is defect.

7.4.2 300°C



The temperature sensor circuit is open circuited or the PT1000 sensor is not connected or defect.

7.5 Error 003

Occurs only at system boot.

7.5.1 -20°C



The temperature sensor circuit is short circuited or the PT1000 sensor is defect.

7.5.2 300°C



The temperature sensor circuit is open circuited or the PT1000 sensor is not connected or defect.

7.6 Error 004

Occurs only if the SET ALARM parameter is set.



The temperature alarm is activated.

A too high or too low print temperature deviation from the SET TEMP parameter value ($\pm 5^{\circ}$ C, $\pm 10^{\circ}$ C or $\pm 15^{\circ}$ C) has occurred.

The actual print temperature is displayed, here represented as ###°C.

7.7 Error 016



Fig. 7.9 ERROR 016.

The print temperature algorithm does not detect a temperature change while the heating elements are switched on.

Possible causes and solutions:

- 1. The heating element(s) is/are not connected or defect.
 - a. Connect the coding unit to the control unit.
 - b. Connect the heating element(s) to the terminals on the coding unit.
 - c. Measure the resistance of the heating elements, disconnect at least one lead wire of the measured heating element (open circuitry).

Heating elements HP-D					
Printer Resistance [Ohm] ±10% at 23°C					
model	elements	single element *	both elements **		
M40-D	2	350	175		
M80-D	1	200	-		
M100-D	2	280	140		
M150-D	2	175	88		

To measure with an open circuitry:

* Disconnect one lead from terminal block

** Parallel circuitry, two leads in one ferrule. Disconnect one ferrule from terminal block

- d. Replace the heating element(s).
- 2. The PT1000 sensor is not connected or defect.
 - a. Connect the coding unit to the control unit.
 - b. Connect PT1000 sensor to the terminals on the coding unit.
 - c. Replace the PT1000 sensor.
- 3. The fuses F1/F2 are blown.
 - a. Replace the fuses, refer to Appendix D.
- 4. The heating circuit is defect.
 - a. Replace the Power-I/O board and/or the CPU board, refer to Appendix D.

The actual detected print temperature is displayed, here represented as ###°C.

7.8 LCD screen is not lit

Check the fuses F1, F2, F3 and F4. Refer to Appendix D.

MAINTENANCE

Maintenance does not require special tools.



8

WARNING:

After printing, the print head remains hot. When performing maintenance to the printer immediately after printing, be careful not to burn yourself!



WARNING:

The Coding unit must be disconnected from the mains supply before removing the protective cover. Unplug the main supply cable from the control box.



WARNING:

Do not use water to clean the equipment.



CAUTION:

Magnesium dies need to cool down before being cleaned.

8.1 Quick and regular checks

- 1. Check the print head and silicon plate on wear and tear. Replace if necessary.
- 2. Check if the print head and platen (silicon plate) are clean.
- **3.** Check if the platen is still aligned with the print head (not tilting).
- 4. Check if the ribbon guidance rollers are clean. Smooth rollers will prevent the ribbon to crease/wrinkle.

8.2 Cleaning

- 1. Clean the silicon plate with a clean paper tissue soaked in e.g. solvent or alcohol.
- **2.** Clean the ribbon guidance rollers with clean paper tissue soaked in e.g. solvent or alcohol. Smooth rollers will prevent the ribbon to crease/wrinkle.
- 3. The brass text material can best be cleaned using a brass brush (part no. 074072).
- **4.** Clean the magnesium dies with a non-scouring detergent. Do not use any detergents which may damage the magnesium.
- **5.** The coding unit is best cleaned by using a dry brush.
- 6. The control box is best cleaned by using a cleaner that will not damage the control panel and LCD.

8.3 Lubrication (every 6 months)

1. Remove the protective cover of the coding unit.



- 12. Gear tooth
- 13. Transport belt
- 14. Brake shoe
- 15. Brake disk

Fig. 8.1 Lubrication point.

- **2.** Check if the gear tooth is sufficiently lubricated. If necessary, apply new lubrication.
- **3.** Verify if the transport belt, brake shoe and brake disk are free of oil and grease! Degrease if necessary.

8.4 Long term maintenance

The recommended long term maintenance frequency for the printer is once in every two year but is also dependent upon the extent of use.

- 1. Check the print head and silicon plate on wear and tear. Replace if necessary.
- **2.** Check the print head and ribbon transport actuators for leaks and wear and tear. Refer to the Appendix C, Part lists & illustrations and contact your distributor.

DISMANTLING & DISPOSAL

9.1 Dismantling

Separate the printer parts in this order:

1. Switch off the printer.

9

- **2.** Unplug the mains power cable.
- **3.** Disconnect all remaining connections of the control box.
- **4.** Dismount the supports.
- **5.** Separate the supports from the coding unit and the control box.
- **6.** Treat the control box as electronic waste.

9.2 Disposal

9.2.1 Disposal method

The disposal method must be in accordance with national and local regulations at the time of the disposal.

The user is responsible for the disposal of:

- **1.** The printer at the end of its operational life.
- 2. Packaging.
- **3.** Used and wasted ribbon.

9.2.2 Waste separation

Please deliver the packaging materials to waste recycling companies.

The ribbon is generally being count as special waste.

Printed circuit boards are RoHS compliant and count as electronic waste.

The remaining waste of the printer contains mainly anodized aluminium and stainless steel.

Please deliver the remaining waste materials also to waste recycling companies.

Control box HP-D	A-2
Coding unit Mxx-D	A-2

Control box HP-D

Control box HP-D						
Specification		units	HP-D			
Weight		[kg]	1.7			
Dimensions	Heigth	[mm]	315			
(with cable connectors)	Width	[mm]	240			
	Depth	[mm]	90			
Main supply cable length		[m]	2.5			
Supply AC voltage (50/60 Hz)		[V]	115 or 230			
Power consumption		[W]	10			

Coding unit Mxx-D

Coding unit Mxx-D							
				Мо	odel		
Specification	units	M40-D	M 80-D	M100-D	M150-D		
Weight incl. platen	[kg]	5.0	8.5	9.2	10.5		
Dimensions incl. platen	Heigth	[mm]	276	313	360	360	
(with standard bracket)	Width	[mm]	289	385	473	473	
	Depth	[mm]	165	211	240	289	
Inner bracket heigh	t (minimum)	[mm]	165	200	200	205	
Supply/Control cable length		[m]		2.5			
Print area	(maximum)	[mm]	20 x 40	50 x 80	100 x 100	100 x 150	
Print rate, with full area	(maximum)	[n/min]	250	150	50	50	
Print head temperature range		[°C]		0~240			
Stamp force at 0,6 Mpa		[N]	500	1700	3000	3000	
Compressed air, supply pres	sure range	[MPa]		0.5	~ 0.8	-	
consumpti	on at 0.6 Mpa	[l/print]	0.19	0.62	1.2	1.2	
Supply AC voltage (50/60 Hz)		[V]		115 or 230			
Power consumption	[W]	300	250	400	600		
Noise level	[dB]	81	74	77	77		
Hot foil lenght on roll	(maximum)	[m]	305	305	610	610	

Appendix B Dimensions

Control box HP-D I	B-2
Standard coding units	B-3
Coding unit M40-D	B-3
Coding unit M80-D	B-3
Coding unit M100-D	B-4
Coding unit M150-D	B-4
Foil-less coding units	B-5
Coding unit M40B-D	B-5
Coding unit M80B-D	B-5

Control box HP-D



Standard coding units

Coding unit M40-D



Coding unit M80-D



Coding unit M100-D



Coding unit M150-D



Foil-less coding units

Coding unit M40B-D



Coding unit M80B-D



Appendix C Part lists & illustrations

Control Box HP-D C-	-2
Coding unit M40-DC·	;-4
Coding unit M40-D, drawing A C-	-4
Coding unit M40-D, drawing BC·	-6
Coding unit assembly M40-D, drawing AC.	;-8
Coding unit assembly M40-D, drawing B C-1	10
Base plate assembly M40-D C-1	12
Main actuator M40-D C-1	14
Ribbon/Foil actuator M40-D C-1	16
Brake assembly M40-D C-1	18
Brake lever assembly M40-D C-1	18
Pinch roller assembly M40-D C-2	20
Print head slot assembly M40-D C-2	20
Platen assembly M40-D C-2	22
Coding unit M40B-D C-2	24
Coding unit M80-DC-2	26
Coding unit M80B-DC-2	28
Coding unit M100-DC-3	30
Coding unit M150-DC-3	32

Control Box HP-D

CONTROL BOX HP-D M40 and CONTROL BOX HP-D M80-M150

Part no.:	814529 and 816909

Line	Part no.	Description	L	_ine	Part no.	Description
1	150007	STICKER DIM: 44X25MM	Γ	16	814838	CORD BLUE HQC/HP
2	158632	COUPLING NUT PG 9		17	814841	CORD BLACK HQC/HP
3	160481	ROUND HEAD COUNTERSUNK SCREW 3X8 ST.		18	814867	EARTH WIRE PCB HQC/HP-D
4	164974	PANEL CONTROL BOX HQC/HP		19	814879	CONTROLCABLE PCB HQC/HP-D
5	164999	NAME PLATE CONTROLBOX HP		20	814882	CORD NR 8, BEEPER HP-D
6	165085	BEEPER CONTROLBOX HP-D		21	814895	CORD NR 9, BEEPER HP-D
7	165098	COUPLING UNIT HOSE d=6,4		22	816912	PCB FRONTPLATE BOX HP-D M80-M150
8	165101	SWITCH CONTROLBOX HQC/HP-D		23		
9	321704	TOP CONTROLBOX HP/HQC/KWP		24		
10	321729	BOTTOM CONTROLBOX HP		25		
11	810682	POWER CORD HQC/HP		26		
12	814405	POWER PCB HP-D		27		
13	814491	PCB FRONTPLATE BOX HP-D M40		28		
14	814768	CHASSISPART CONTROLBOX HP-D		29		
15	814825	CHASSISPART MAINS VOLTAGE. HQC-D	Γ	30		



Coding unit M40-D

Coding unit M40-D, drawing A

814	447	CODING UNIT M40-D				
Drawing A		Not	Not shown in drawing A & B			
Line	Part no.	Description	Line	Part no.	Description	
1	150007	STICKER DIM: 44X25MM	1	811185	MAIN CABLE HOTPRINTER	
2	159081	STICKER DANGER	2			
3	159094	STICKER HOT!!	3			
4	163882	CONVEX CIL HEAD SCREW M3X4 SS	4			
5	163895	STICKER FOIL LOOP M40D	5			
6	320399	COVER TEXT HOLDER M-40	6			
7	805321	COUNTER PRESSURE PLATE M-40	7			
8	813508	CODING UNIT M40D (MOUNT.GROUP)	8			
Dra	wing E	3				
Line	Part no.	Description	Line	Part no.	Description	
1	152638	WASHER D=6,4 SS	11	161935	ELECTRIC 5/2 VALVE 1/8-24VDC	
2	152641	NUT M6 SS	12	310895	COVER M-40	
3	153885	SILENCER 1/8 INCH	13	813508	CODING UNIT M40D (MOUNT.GROUP)	
4	154248	CUPPED SPRING WASHER	14	813677	5/2 VALVE M40 - M150	
5	159081	STICKER DANGER	15			
6	159107	STICKER VOLTAGE-230V	16			
7	159192	LOW HEAD SCREW M6X20 SS	17			
8	161557	KNEE JOINT 6X1/8"	18			
9	161569	STRAIGHT COUPLING 6X1/8"	19			
10	161671	SOCKET HEAD SCREW M3X25 SS	20			



Coding unit M40-D, drawing B

814	447	CODING UNIT M40-D				
Drawing A		Not	Not shown in drawing A & B			
Line	Part no.	Description	Line	Part no.	Description	
1	150007	STICKER DIM: 44X25MM	1	811185	MAIN CABLE HOTPRINTER	
2	159081	STICKER DANGER	2			
3	159094	STICKER HOT!!	3			
4	163882	CONVEX CIL HEAD SCREW M3X4 SS	4			
5	163895	STICKER FOIL LOOP M40D	5			
6	320399	COVER TEXT HOLDER M-40	6			
7	805321	COUNTER PRESSURE PLATE M-40	7			
8	813508	CODING UNIT M40D (MOUNT.GROUP)	8			
Dra	wing E	3				
Line	Part no.	Description	Line	Part no.	Description	
1	152638	WASHER D=6,4 SS	11	161935	ELECTRIC 5/2 VALVE 1/8-24VDC	
2	152641	NUT M6 SS	12	310895	COVER M-40	
3	153885	SILENCER 1/8 INCH	13	813508	CODING UNIT M40D (MOUNT.GROUP)	
4	154248	CUPPED SPRING WASHER	14	813677	5/2 VALVE M40 - M150	
5	159081	STICKER DANGER	15			
6	159107	STICKER VOLTAGE-230V	16			
7	159192	LOW HEAD SCREW M6X20 SS	17			
8	161557	KNEE JOINT 6X1/8"	18			
9	161569	STRAIGHT COUPLING 6X1/8"	19			
10	161671	SOCKET HEAD SCREW M3X25 SS	20			


Coding unit assembly M40-D, drawing A

813	313508 CODING UNIT ASSEMBLY M40-D						
Dra	wing A	N Contraction of the second seco					
Line	Part no.	Description	Line	Part no.	Description		
1	151419	SOCKET HEAD SCREW M5X10 SS	16	320135	RING M40D		
2	152218	SOCKET HEAD SCREW M5X16 SS	17	320304	GUIDING SHAFT M40D		
3	153382	SOCKET HEAD SCREW M4X20 SS	18	320332	SHAFT PRESSURE ROLL M40D		
4	154305	COUNTER SUNK SCREW MBZ M6X16 SS	19	320345	EXCENTER M40D		
5	154318	SET SCREW SOCKET HEAD M4X10 SS	20	320358	DISTANCE BUSH M40D		
6	155438	WASHER D=10,5 SS	21	320361	DISTANCEPLATE M40D		
7	159288	SPRING WASHER D=5,1	22	805977	FOIL-ADVANCE ROLL M-40		
8	163838	HEX NUT M8 SS	23	805989	HOLDER FOIL-ROLL M-40		
9	163841	SOCKET HEAD SCREW M10X40 SS	24	813412	PRESSURE ROL FOIL M40D		
10	163867	SET SCREW SOCKET HEAD M3X4 SS	25	813425	REWINDING ROLL M40D		
11	163879	OUTER SAFETY RING D=6 SS	26	813438	MAIN CYLINDER M40D		
12	308359	RETAINING DISK	27	813832	BASEPLATE BLOCKHOLDER M40D		
13	309034	SEAL MAIN CYLINDER M-40	28				
14	309371	CLAMPPLATE M40	29				
15	309998	DISTANCE RING M40	30				
Dra	wing E	8					
Line	Part no.	Description	Line	Part no.	Description		
1	125061	DRAW SPRING I =32 DM=6 6 D=0 6	27	159291	SPRING WASHER D=6.4 SS		
2	126639	COMPR SPRING 1 0=14 5' DM=6 3'	28	161569	STRAIGHT COUPLING 6X1/8"		
3	151419	SOCKET HEAD SCREW M5X10 SS	29	163825	GASKETRING 17/10 5X1		
4	151489	S O M SADDI F	30	163854	BELT M40D		
5	151687	SOCKET HEAD SCREW M3X16 SS	31	307844	BELT PULLEY		
6	152638	WASHER D=6 4 SS	32	307942	GUIDING GEAR RACK M-40/150		
7	152641	NUT M6 SS	33	308207	BRAKE DISC M-40		
8	153395	OIL BRONZE BEARING 16/10X10	34	308219	STUD BOLT FOR BRAKE		
9	153551	MICRO-SWITCH END OF FOIL	35	308235	STUD BOLT FOR PRESSURE SPRING		
10	153717	COUPLING UNIT PG7 NICKELED	36	309257	BELT PULLEY		
11	153745	SET SCREW W.TAP M6X12	37	309339	MICRTO-SWITCH HOLDER		
12	153761	SOCKET HEAD SCREW M5X40 SS	38	309594	DISTANCE BUSH M40		
13	153787	SOCKET HEAD SCREW M5X30 SS	39	310809	GEARING SUPPORT M40		
14	154181	SOCKET HEAD SCREW M5X35 SS	40	310812	DISTANCE STRIP TOOTHED WHEEL M40		
15	154305	COUNTER SUNK SCREW MBZ M6X16 SS	41	310825	COUPLING UNIT HOLD. HOTPRINTER		
16	154375	SCREW ZSN M2X10 SS	42	316384	SHAFT COVER HP		
17	154388	NUT M2 SS	43	317701	MOUNTINGSTRIP 5/2 VALVE HP		
18	154391	SPRING WASHER DIA 2,1 SS	44	804659	GEAR WHEEL HOTPRINTER		
19	154585	SOCKET HEAD SCREW M4X10 SS	45	804984	BRAKE HOTPRINTER M-40		
20	154642	SOCKET HEAD SCREW M5X20 SS	46	805289	CYLINDER FOIL DRIVE COMPLETE		
21	155199	NUT M8 SS	47	805417	HAND WHEEL M-40		
22	156454	WASHER D=4,3 SS	48	806018	BRAKEARM M40		
23	157512	WASHER D=5,3 SS	49	806314	GEARING SUPPORT M40 ADVANCE		
24	157608	OUTER SAFETY RING 8X0,8 SS	50	813412	PRESSURE ROL FOIL M40D		
25	157748	SCREW ZSN M4X6 SS	51	813454	BASE PLATE M40D		
26	159275	SPRING WASHER D=4,3 SS	52				
Not	show	n in drawing A & B					
Line	Part no.	Description	Line	Part no.	Description		
1	308391	CARBON-BOARD TUBE M40	3				
2			4				



Coding unit assembly M40-D, drawing B

813508 CODING UNIT ASSEMBLY M40-D Drawing A Line Part no. Description Line Part no. Description 151419 SOCKET HEAD SCREW M5X10 SS 320135 RING M40D 16 2 152218 SOCKET HEAD SCREW M5X16 SS 320304 GUIDING SHAFT M40D 17 153382 3 SOCKET HEAD SCREW M4X20 SS 18 320332 SHAFT PRESSURE ROLL M40D 4 154305 COUNTER SUNK SCREW MBZ M6X16 SS 19 320345 EXCENTER M40D 5 154318 SET SCREW SOCKET HEAD M4X10 SS 20 320358 DISTANCE BUSH M40D 320361 DISTANCEPLATE M40D 6 155438 WASHER D=10,5 SS 21 7 159288 SPRING WASHER D=5,1 22 805977 FOIL-ADVANCE ROLL M-40 163838 HEX NUT M8 SS 805989 HOLDER FOIL-ROLL M-40 8 23 9 SOCKET HEAD SCREW M10X40 SS 813412 PRESSURE ROL FOIL M40D 163841 24 10 163867 SET SCREW SOCKET HEAD M3X4 SS 25 813425 **REWINDING ROLL M40D** 163879 OUTER SAFETY RING D=6 SS 26 813438 MAIN CYLINDER M40D 11 RETAINING DISK 27 BASEPLATE BLOCKHOLDER M40D 12 308359 813832 28 13 309034 SEAL MAIN CYLINDER M-40 14 309371 CLAMPPLATE M40 29 15 309998 DISTANCE RING M40 30 Drawing B Line Part no. Description Line Part no. Description 125061 DRAW SPRING,L=32;DM=6,6;D=0,6 159291 SPRING WASHER D=6,4 SS 27 2 126639 COMPR.SPRING, LO=14,5; DM=6,3; 28 161569 STRAIGHT COUPLING 6X1/8" 3 151419 SOCKET HEAD SCREW M5X10 SS 29 163825 GASKETRING 17/10,5X1 4 151489 S.O.M. SADDLE 30 163854 BELT M40D 5 151687 SOCKET HEAD SCREW M3X16 SS 307844 BELT PULLEY 31 6 152638 WASHER D=6,4 SS 32 307942 GUIDING GEAR RACK M-40/150 7 152641 NUT M6 SS 308207 BRAKE DISC M-40 33 8 153395 OIL BRONZE BEARING 16/10X10 34 308219 STUD BOLT FOR BRAKE MICRO-SWITCH END OF FOIL 308235 STUD BOLT FOR PRESSURE SPRING 9 153551 35 10 COUPLING UNIT PG7 NICKELED 309257 BELT PULLEY 153717 36 11 153745 SET SCREW W.TAP M6X12 37 309339 MICRTO-SWITCH HOLDER 12 153761 SOCKET HEAD SCREW M5X40 SS 38 309594 DISTANCE BUSH M40 39 13 153787 SOCKET HEAD SCREW M5X30 SS 310809 GEARING SUPPORT M40 14 154181 SOCKET HEAD SCREW M5X35 SS 40 310812 DISTANCE STRIP TOOTHED WHEEL M40 15 154305 COUNTER SUNK SCREW MBZ M6X16 SS 41 310825 COUPLING UNIT HOLD. HOTPRINTER 16 154375 SCREW ZSN M2X10 SS 42 316384 SHAFT COVER HP 154388 NUT M2 SS 317701 MOUNTINGSTRIP 5/2 VALVE HP 17 43 154391 18 SPRING WASHER DIA 2,1 SS 44 804659 GEAR WHEEL HOTPRINTER 19 154585 SOCKET HEAD SCREW M4X10 SS 45 804984 BRAKE HOTPRINTER M-40 20 154642 SOCKET HEAD SCREW M5X20 SS 46 805289 CYLINDER FOIL DRIVE COMPLETE 21 155199 NUT M8 SS 47 805417 HAND WHEEL M-40 48 22 156454 WASHER D=4,3 SS 806018 BRAKEARM M40 23 157512 WASHER D=5,3 SS 49 806314 GEARING SUPPORT M40 ADVANCE 813412 PRESSURE ROL FOIL M40D 24 157608 OUTER SAFETY RING 8X0.8 SS 50 25 157748 SCREW ZSN M4X6 SS 51 813454 BASE PLATE M40D 159275 SPRING WASHER D=4,3 SS 26 52 .

NOT	lot snown in drawing A & B						
Line	Part no.	Description		Line	Part no.	Description	
1	308391	CARBON-BOARD TUBE M40		3			
2				4			
				_			



Base plate assembly M40-D

813	454	BASE PLATE ASSEMBLY M40-D					
Line	Part no.	Description	Line	Part no.	Description		
1	153312	LOCK NUT M20X1 KM4	11	320189	BASE PLATE M40D		
2	153481	FREEWHEEL COUPLING 14/10X12	12	320374	FOIL LOOP HOLDER M40D		
3	157834	SOCKET HEAD SCREW M3X8 SS	13	320387	FOIL LOOP SHAFT M40D		
4	158324	TIGHTENING BUSH 3X16 SS	14	804564	BEARING BUSH FOIL ROLL HOLDER		
5	162174	CLIP CONNECTOR	15				
6	162187	CLIP PLATE	16				
7	162199	CONNECTING PIECE	17				
8	162257	STICKER CABLE CONN. M40/80	18				
9	163714	LOCK NUT M5 SS	19				
10	163727	SOCKET HEAD SCREW M5X8 SS	20				



Main actuator M40-D

813	438	MAIN CYLINDER M40-D			
Line	Part no.	Description	Line	Part no.	Description
1	113202	JOINT RING CYL. BOTTOM M-40	16	309129	NUT FOR PISTON M40
2	151769	SET SCREW M5X5 SS	17	309355	GUIDING PIN M-40
3	153382	SOCKET HEAD SCREW M4X20 SS	18	309368	GUIDE ARM M-40
4	153411	GASEKTRING 5/3X1	19	309425	HOLDER BUFFER MAIN CYL.M40
5	153592	JOINT RING 32/22X6	20	309438	BUFFER M-40 MAIN CYL. PISTON
6	153675	U-SLEEVE 20/13X3 RUBB.	21	316397	BUFFER M-40
7	154108	SOCKET HEAD SCREW M3X10 SS	22	320247	CYLINDER HOUSING M40D
8	154111	OIL BRONZE BEARING 12/06X06	23	320259	CONICAL BUSH CYLINDER M40D
9	156574	HEX SOCK. HEAD CAP SCREW M5X12	24	804379	BEARING BUSH MAIN CYL. M-40
10	157554	INNER SAFETY RING 20X1,0 SS	25	805108	BOTTOM MAIN CYLINDER M40
11	309021	BOTTOM MAIN CYLINDER M40	26	805124	PISTON MAIN CYLINDER M-40 CPL
12	309059	PISTON MAIN CYLINDER M40	27	805137	GUIDE ARM M-40 COMPLETE
13	309088	DISTANCE BUSH MAIN CYL.M40	28		
14	309104	RETAINING RING MAIN CYL.M40	29		
15	309117	PISTON ROD MAIN CYLINDER M-40	30		



Ribbon/Foil actuator M40-D

805	289	CYLINDER FOIL DRIVE COMPL.			
Line	Part no.	Description	Line	Part no.	Description
1	113158	JOINT RING CYL. FOIL TRANSPORT	16	308795	BOTTOM CYLINDER FOIL DRIVE
2	151702	SOCKET HEAD SCREW M4X16 SS	17	309298	CYLINDER WALL FOIL DRIVE M40
3	152641	NUT M6 SS	18	309314	GEAR RACK M40
4	153605	JOINT RING 25/17X6	19	309327	BLOCK GEAR RACK M40
5	153688	U-SLEEVE 14/08X4 RUBB.	20	315614	BUFFER GEAR RACK
6	153691	SPRING WASHER DIA 5,1 SS	21	804618	PISTON FOILDRIVE M-80 COMPL.
7	153704	SOCKET HEAD SCREW M5X70 SS	22	805009	BOTTOM CYLINDER FOIL DRIVE
8	154152	SQUARED HOSE SOCKET M5	23	805264	CYLINDER FOIL DRIVE M-40
9	155199	NUT M8 SS	24	805277	GEAR RACK M-40
10	157512	WASHER D=5,3 SS	25		
11	307927	PISTON-ROD FOIL DRIVE	26		
12	307971	SEALING PLATE FOIL DRIVE	27		
13	307997	CYLINDER-COVER FOIL DRIVE	28		
14	308009	PISTO FOIL DRIVE	29		
15	308251	BUFFER FOIL-TRANSP. CYL.	30		



Brake assembly M40-D

804	984	BRAKE HP M40			
Line	Part no.	Description	Line	Part no.	Description
1	155075	BRAKE ARM HOTPRINTER	6		
2	157595	OUTER SAFETY RING 6X0,7 SS	7		
3	308222	BRAKE PAD M-40/80/150/1100	8		
4	308248	PIN FOR BRAKE-PAD	9		
5			10		

Brake lever assembly M40-D

806	018	BRAKE ARM M40			
Line	Part no.	Description	Line	Part no.	Description
1	151757	SET SCREW M4X5 SS	6	315321	PIN BRAKE-ARM M40
2	152641	NUT M6 SS	7	316931	EXCENTRIC STUB BOLT HP
3	153564	OIL BRONZE BEARING 25/20X25	8		
4	154738	SCREW ZSN M3X6 SS	9		
5	315318	BRAKE-ARM M40	10		







Pinch roller assembly M40-D

813412		PINCH ROLLER ASSEMBLY M40-D						
Line	Part no.	Description		Line	Part no.	Description		
1	151757	SET SCREW M4X5 SS	[16	320329	SHAFT PRESSURE ROLL M40D		
2	154264	KNOB D=12, M4		17	812642	PRESSURE ROLL M-40		
3	163644	COMPR.SPRING, LO=8,7;DM=3,0;D=0,5		18				
4	163657	THREADED END M4X20 SS		19				
5	320177	HOLDER BLOCKING MECHANISM M40D		20				

Print head slot assembly M40-D

813	832	PRINT HEAD SLOT ASSEMBLY M	40-	-D		
Line	Part no.	Description	I	Line	Part no.	Description
1	151769	SET SCREW M5X5 SS		11	310138	CLIP BASE PLATE BLOCK-HOLDER M40
2	151785	SPRING WASHER DIA 3,1 SS		12	320819	HOLDER M40D TEXTPLATE
3	153519	HEATING ELEMENT M-40;230V-150W		13	805152	EARTH WIRE M-40
4	154108	SOCKET HEAD SCREW M3X10 SS		14		
5	154585	SOCKET HEAD SCREW M4X10 SS		15		
6	159275	SPRING WASHER D=4,3 SS		16		
7	164118	CONVEX CIL HEAD SCREW M2X3 SS		17		
8	164859	SENSOR PT1000		18		
9	324252	SPRING PRINT HEAD M40D		19		
10	310125	CLAMPING STRIP BLOCK-HOLDER M40		20		
Not	show	n in drawing				
Line	Part no.	Description	I	Line	Part no.	Description
1	153774	CONDUCTOR 0,75MM ²		3	308977	GLASS FABRIC TUBING M40
2	164681	CONDUCTOR 0,25MM ²		4		





Platen assembly M40-D

805	321	PLATEN ASSEMBLY M40/M80	PLATEN ASSEMBLY M40/M80					
Line	Part no.	Description	Line	Part no.	Description			
1	126627	COMPR.SPRING, LO=10; DM=8,0;	11	308305	HOLDER COUNTER-PRESSURE PLATE			
2	152641	NUT M6 SS	12	804675	SILICONE PLATE M-40/80			
3	153729	SOCKET HEAD SCREW M6X50 SS	13					
4	154429	SOCKET HEAD SCREW M6X25 SS	14					
5	157497	NUT M5 SS	15					
6	157681	TIGHTNINGBUSH 3X20 SS	16					
7	157748	SCREW ZSN M4X6 SS	17					
8	308054	UPPER PLATE M40/80 PLATEN	18					
9	308067	BOTTOM PLATE M40/80 PLATEN	19					
10	308079	THREADED END M5X30 SS	20					



Coding unit M40B-D

815	022	CODING UNIT M40B-D			
Line	Part no.	Description	Line	Part no.	Description
1	113202	JOINT RING CYL. BOTTOM M-40	21	309425	HOLDER BUFFER MAINCYL. M40
2	126627	COMPR.SPRING, LO=10; DM=8,0;	22	309438	BUFFER M-40 MAIN CYL. PISTON
3	153268	MTR. AIR TUBE 6/4-BLACK	23	311932	COVER M-40 B
4	153411	GASEKTRING 5/3X1	24	316397	BUFFER M-40
5	153519	HEATING ELEMENT M-40;230V-150W	25	316482	PROTECTION PLATE M-40
6	153592	JOINT RING 32/22X6	26	804379	BEARING BUSH MAIN CYL. M-40
7	153675	U-SLEEVE 20/13X3 RUBB.	27	804675	SILICONE PLATE M-40/80
8	153885	SILENCER 1/8 INCH	28	805124	PISTON MAIN CYLINDER M-40 CPL
9	154248	CUPPED SPRING WASHER	29	805137	GUIDE ARM M-40 COMPLETE
10	154251	CLOSE TOLERANCE SCREW	30	805149	MAIN CYLINDER M-40
11	164859	SENSOR PT1000	31	805152	EARTH WIRE M-40
12	308305	HOLDER COUNTER-PRESSURE PLATE	32	805165	BASEPLATE BLOCKHOLDER M-40
13	309034	SEAL MAIN CYLINDER M-40	33	805178	BLOCKING MECHANISM M-40
14	309117	PISTON ROD MAIN CYLINDER M-40	34	805321	COUNTER PRESSURE PLATE M-40
15	309132	DISTANCE PLATE M-40	35	812461	MAIN CABLE HOTPRINTER-B
16	309145	BASEPLATE BLOCKHOLDER M-40	36	813677	5/2 VALVE M40 - M150
17	309158	GUIDE TEXTHEAD FIXED M-40	37		
18	309161	GUIDE TEXTHEAD SPRING MOUNT.	38		
19	309355	GUIDING PIN M-40	39		
20	309371	CLAMP PLATE M-40	40		

Coding unit M40B-D



Coding unit M80-D

815	048	CODING UNIT M80-D			
Line	Part no.	Description	Line	Part no.	Description
1	113158	JOINT RING CYL. FOIL TRANSPORT	41	315598	BUFFER M-80
2	113161	STRING M-80	42	315614	BUFFER GEAR RACK
3	113228	JOINT RING CYL. BOTTOM M-80	43	316495	PROTECTION PLATE M-80
4	125061	DRAW SPRING,L=32;DM=6,6;D=0,6	44	804367	BEARING BUSH MAIN CYL. M-80
5	125074	DRAW SPRING,L=65;DM=6,6;D=0,6	45	804424	PISTON MAIN CYLINDER M-80 CPL
6	126627	COMPR.SPRING, LO=10; DM=8,0;	46	804437	GUIDING ARM M80
7	126639	COMPR.SPRING, LO=14,5; DM=6,3;	47	804449	MAIN CYLINDER M-80
8	151489	S.O.M. SADDLE	48	804465	FOIL-ROLL HOLDER M-80 COMPL.
9	152317	BEARING BUSH 8/12X12 BRONZE	49	804478	HAND WHEEL M-80
10	153268	MTR. AIR TUBE 6/4-BLACK	50	804519	FOIL-DRIVE ROLL M-80
11	153341	THROTTLE VALVE M5	51	804522	BEARING BUSH DRIVE ROLL M80
12	153395	OIL BRONZE BEARING 16/10X10	52	804551	FOIL-GUIDE HOLDER M-80
13	153481	FREEWHEEL COUPLING 14/10X12	53	804564	BEARING BUSH FOIL ROLL HOLDER
14	153551	MICRO-SWITCH END OF FOIL	54	804618	PISTON FOILDRIVE M-80 COMPL.
15	153564	OIL BRONZE BEARING 25/20X25	55	804634	CYLINDER FOIL DRIVE M-80
16	153589	JOINT RING 60/46X7,5	56	804659	GEAR WHEEL HOTPRINTER
17	153605	JOINT RING 25/17X6	57	804675	SILICONE PLATE M-40/80
18	153662	U-SLEEVE 22/15X4 RUBB.	58	804717	RETAINER DISK
19	153688	U-SLEEVE 14/08X4 RUBB.	59	804984	BRAKE HOTPRINTER M-40
20	153885	SILENCER 1/8 INCH	60	805152	EARTH WIRE M-40
21	154152	SQUARED HOSE SOCKET M5	61	805321	COUNTER PRESSURE PLATE M-40
22	154248	CUPPED SPRING WASHER	62	805458	HEATING ELEMENT M-80;230V-250W
23	164859	SENSOR PT1000	63	806145	MICRO-SWITCH HOLDER
24	307732	GUIDE TEXTHOLDER FIXED M-80	64	806479	PRESSURE ROLL M-80 NEW MODEL
25	307745	GUIDE TEXTHOLDER SPRING MOUNT.	65	811131	BAS PLATE BLOCK-HOLDER M80
26	307828	SHAFT FOIL-ADVANCE ROLL M-80	66	811185	MAIN CABLE HOTPRINTER
27	307939	GEAR RACK M80	67	813677	5/2 VALVE M40 - M150
28	307942	GUIDING GEAR RACK M-40/150	68		
29	308025	GUIDE PIN M-80	69		
30	308041	CLAMPING PLATE HOTPRINTER	70		
31	308207	BRAKE DISC M-40	71		
32	308222	BRAKE PAD M-40/80/150/1100	72		
33	308251	BUFFER FOIL-TRANSP. CYL.	73		
34	308305	HOLDER COUNTER-PRESSURE PLATE	74		
35	308318	DISTANCE PLATE M-80	75		
36	310701	RING PRESSURE SHAFT	76		
37	310727	ARM PRESSURE-SHAFT	77		
38	310965	ECCENTRIC PRESSURE SHAFT M-80	78		
39	310994	COVER M-80	79		
40	315181	SEAL MAIN CYLINDER M-80	80		

Coding unit M80-D



Coding unit M80B-D

815051		CODING UNIT M80B-D					
Line	Part no.	Description		Line	Part no.	Description	
1	113228	JOINT RING CYL. BOTTOM M-80	- [16	315181	SEAL MAIN CYLINDER M-80	
2	126627	COMPR.SPRING, LO=10; DM=8,0;		17	315598	BUFFER M-80	
3	153268	MTR. AIR TUBE 6/4-BLACK		18	316495	PROTECTION PLATE M-80	
4	153367	KNEE JOINT 6MM		19	804367	BEARING BUSH MAIN CYL. M-80	
5	153589	JOINT RING 60/46X7,5		20	804424	PISTON MAIN CYLINDER M-80 CPL	
6	153662	U-SLEEVE 22/15X4 RUBB.		21	804437	GUIDING ARM M80	
7	153885	SILENCER 1/8 INCH		22	804449	MAIN CYLINDER M-80	
8	164859	SENSOR PT1000		23	804675	SILICONE PLATE M-40/80	
9	307732	GUIDE TEXTHOLDER FIXED M-80		24	805152	EARTH WIRE M-40	
10	307745	GUIDE TEXTHOLDER SPRING MOUNT.		25	805321	COUNTER PRESSURE PLATE M-40	
11	308025	GUIDE PIN M-80		26	805458	HEATING ELEMENT M-80;230V-250W	
12	308041	CLAMPING PLATE HOTPRINTER		27	811131	BAS PLATE BLOCK-HOLDER M80	
13	308305	HOLDER COUNTER-PRESSURE PLATE		28	812461	MAIN CABLE HOTPRINTER-B	
14	308318	DISTANCE PLATE M-80		29	813677	5/2 VALVE M40 - M150	
15	311932	COVER M-40 B		30			





Coding unit M100-D

815064		CODING UNIT M100-D					
Line	Part no.	Description		Line	Part no.	Description	
1	113158	JOINT RING CYL. FOIL TRANSPORT] [41	315614	BUFFER GEAR RACK	
2	113187	JOINT RING CYL.BOT. M-100/150		42	316508	PROTECTION PLATE M-100/150	
3	125061	DRAW SPRING,L=32;DM=6,6;D=0,6		43	317599	DRIVE BELT M100/150	
4	125074	DRAW SPRING,L=65;DM=6,6;D=0,6		44	804379	BEARING BUSH MAIN CYL. M-40	
5	126627	COMPR.SPRING, LO=10; DM=8,0;		45	804382	BEARING BUSH MAIN CYL. M-100	
6	126639	COMPR.SPRING, LO=14,5; DM=6,3;		46	804564	BEARING BUSH FOIL ROLL HOLDER	
7	151489	S.O.M. SADDLE	ר ר	47	804659	GEAR WHEEL HOTPRINTER	
8	152317	BEARING BUSH 8/12X12 BRONZE	ר ר	48	804717	RETAINER DISK	
9	153268	MTR. AIR TUBE 6/4-BLACK	ר ר	49	804802	PISTON MAIN CYL. M-100/150 CPL	
10	153341	THROTTLE VALVE M5	ר ר	50	804815	MAIN CYLINDER M-100/150	
11	153395	OIL BRONZE BEARING 16/10X10	П	51	804828	DISTANCE PLATE M100/M150	
12	153481	FREEWHEEL COUPLING 14/10X12	ר ר	52	804831	EARTH WIRE M-100/150	
13	153551	MICRO-SWITCH END OF FOIL	ר ר	53	804857	FOIL-ROLL HOLDER M-100	
14	153564	OIL BRONZE BEARING 25/20X25	ר ר	54	804885	HAND WHEEL M-100/150	
15	153605	JOINT RING 25/17X6	ר ר	55	804898	FOIL-ADVANCE ROLL M-100	
16	153659	U-SLEEVE 28/20X4 RUBB.	ר ר	56	804901	BEARING FOIL-ADV.ROLL M-100	
17	153688	U-SLEEVE 14/08X4 RUBB.	7 1	57	804942	FOIL-GUIDE HOLDER M-100 RIGHT	
18	153885	SILENCER 1/8 INCH	7 1	58	804955	FOIL-SHAFT M-100	
19	154152	SQUARED HOSE SOCKET M5	ר ר	59	804968	FOIL-GUIDE HOLDER M-100 LEFT	
20	154248	CUPPED SPRING WASHER	7 [60	804984	BRAKE HOTPRINTER M-40	
21	159851	JOINT RING M-100/150		61	804997	PISTON FOILDRIVE M-100/150 CPL	
22	164859	SENSOR PT1000	ר ר	62	805012	CYLINDER FOIL DRIVE M-100/150	
23	307942	GUIDING GEAR RACK M-40/150	ר ר	63	805041	SILICONE PLATE M-100/1100	
24	308041	CLAMPING PLATE HOTPRINTER	7 [64	805067	COUNTER PRESSURE PLATE M-100	
25	308207	BRAKE DISC M-40	ר ר	65	805499	HEATING ELEMENT M-100;230V200W	
26	308222	BRAKE PAD M-40/80/150/1100	ר ר	66	806145	MICRO-SWITCH HOLDER	
27	308251	BUFFER FOIL-TRANSP. CYL.	ר ר	67	806467	PRESSURE ROLL M-100 OLD MODEL	
28	308305	HOLDER COUNTER-PRESSURE PLATE	7 [68	811185	MAIN CABLE HOTPRINTER	
29	308557	BASEPLATE BLOCKHOLDER M100	7 1	69	813677	5/2 VALVE M40 - M150	
30	308572	GUIDE TEXTHEAD FIXED M-100	ר ר	70			
31	308697	SHAFT FOIL-ADVANCE ROLL M-100		71			
32	308782	GEAR RACK M-100/150	7 1	72			
33	308811	GUIDING PIN M-100/150	71	73			
34	310109	SPRING GUIDE TEXT HEAD M-100	7 1	74			
35	310701	RING PRESSURE SHAFT	7 1	75			
36	310727	ARM PRESSURE-SHAFT	7 1	76			
37	310867	COVER M-100/150	1	77			
38	310879	ECCENTRIC PRESSURE SHAFT M-100	1	78			
39	315194	SEAL MAIN CYLINDER M-100/150	7	79			
40	315601	BUFFER M-100/150 MAIN CYLINDER	7 F	80			



Coding unit M150-D

815077		CODING UNIT M150-D					
Line	Part no.	Description	Line	Part no.	Description		
1	113158	JOINT RING CYL. FOIL TRANSPORT	41	310727	ARM PRESSURE-SHAFT		
2	151489	S.O.M. SADDLE	42	310867	COVER M-100/150		
3	153564	OIL BRONZE BEARING 25/20X25	43	315194	SEAL MAIN CYLINDER M-100/150		
4	804717	RETAINER DISK	44	315601	BUFFER M-100/150 MAIN CYLINDER		
5	806145	MICRO-SWITCH HOLDER	45	315614	BUFFER GEAR RACK		
6	811185	MAIN CABLE HOTPRINTER	46	316508	PROTECTION PLATE M-100/150		
7	113187	JOINT RING CYL.BOT. M-100/150	47	317599	DRIVE BELT M100/150		
8	125061	DRAW SPRING,L=32;DM=6,6;D=0,6	48	804379	BEARING BUSH MAIN CYL. M-40		
9	125074	DRAW SPRING,L=65;DM=6,6;D=0,6	49	804382	BEARING BUSH MAIN CYL. M-100		
10	126627	COMPR.SPRING, LO=10; DM=8,0;	50	804564	BEARING BUSH FOIL ROLL HOLDER		
11	126639	COMPR.SPRING, LO=14,5; DM=6,3;	51	804659	GEAR WHEEL HOTPRINTER		
12	152317	BEARING BUSH 8/12X12 BRONZE	52	804802	PISTON MAIN CYL. M-100/150 CPL		
13	153268	MTR. AIR TUBE 6/4-BLACK	53	804815	MAIN CYLINDER M-100/150		
14	153341	THROTTLE VALVE M5	54	804828	DISTANCE PLATE M100/M150		
15	153395	OIL BRONZE BEARING 16/10X10	55	804831	EARTH WIRE M-100/150		
16	153481	FREEWHEEL COUPLING 14/10X12	56	804885	HAND WHEEL M-100/150		
17	153551	MICRO-SWITCH END OF FOIL	57	804984	BRAKE HOTPRINTER M-40		
18	153605	JOINT RING 25/17X6	58	804997	PISTON FOILDRIVE M-100/150 CPL		
19	153659	U-SLEEVE 28/20X4 RUBB.	59	805012	CYLINDER FOIL DRIVE M-100/150		
20	153688	U-SLEEVE 14/08X4 RUBB.	60	805639	FOIL-ROLL HOLDER M-150		
21	153885	SILENCER 1/8 INCH	61	805642	FOIL-ADVANCE ROLL M-150		
22	154152	SQUARED HOSE SOCKET M5	62	805655	BEARING FOIL-ADV.ROLL M-150		
23	154248	CUPPED SPRING WASHER	63	805709	FOIL-SHAFT M-150		
24	155479	HEATING ELEMENT M-150;230V300W	64	805738	SILICONE PLATE M-150		
25	159851	JOINT RING M-100/150	65	805754	COUNTER PRESSURE PLATE M-150		
26	164859	SENSOR PT1000	66	806231	PRESSURE ROLL M-150 NEW MODEL		
27	307942	GUIDING GEAR RACK M-40/150	67	806861	FOIL-GUIDE HOLDER M-150 RIGHT		
28	308041	CLAMPING PLATE HOTPRINTER	68	806874	FOIL-GUIDE HOLDER M-150 LEFT		
29	308207	BRAKE DISC M-40	69	813677	5/2 VALVE M40 - M150		
30	308222	BRAKE PAD M-40/80/150/1100	70				
31	308251	BUFFER FOIL-TRANSP. CYL.	71				
32	308277	BASEPLATE BLOCKHOLDER M-150	72				
33	308292	GUIDE TEXTHEAD FIXED M-150	73				
34	308305	HOLDER COUNTER-PRESSURE PLATE	74				
35	308782	GEAR RACK M-100/150	75				
36	308811	GUIDING PIN M-100/150	76				
37	309622	SHAFT FOIL-ADVANCE ROLL M-150	77				
38	310112	SPRING GUIDE TEXT HEAD M-150	78				
39	310685	ECCENTRIC PRESSURE SHAFT M-150	79				
40	310701	RING PRESSURE SHAFT	80				



Appendix D Connections

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Control Box Connectors



ltem	Description	Туре
S1	Power switch	Rocker switch
X1	Mains supply	5-ways, chassis plug
X2	Coding unit	8-ways, chassis socket
X3	Cable gland (input)	PG9 gland
X4	Cable gland (output)	PG9 gland
X5	Cable gland (Optional)	

Fuses

814405, HP-D, PCB Powersupply board					
Fuse ID 115 VAC		230 VAC			
F1	6.3 AT	3.15 AT			
F2	8 AT	5 AT			
F3	500m AT	300m AT			
F4	500m AT	500m AT			





CPU board



APPENDIX D CONNECTIONS





Trigger settings

The trigger settings are set with de dipswitches of SW2 on the power-I/O board.

SW2			
NPN	PNP	Printer accept trigger if:	Diagram option
OFF	OFF	TRG/PNP input is switched to +V and TRG/NPN input is switched to GND	А
OFF	ON	TRG/PNP input is switched to +V	C, D
ON	OFF	TRG/NPN input is switched to GND	В, Е
ON	ON	Not used, trigger pulse is blocked	-

I/O signals

Input signals

- Trigger: A pulse on this input starts the print cycle, only if the printer is in run mode , not busy and the inhibit signal is not present. The T-icon on the screen indicates that the trigger input is set.
- Inhibit: A pulse on this input inhibits the print cycle, either if the printer is in run or stop mode. The Iicon on the screen indicates that the inhibit input is set.

Output signals

- Busy: This output is active when the printer is printing. The P-icon on the screen indicates that the busy output is set.
- Alarm: This output is active when the foil/ribbon is broken or an error has occurred. The message 'Ribbon' or 'Error ###' on the screen indicates that the alarm output is set.
- Power-on: If a voltage of +24V is present at the +24V terminal block the printer is switched on.

Pneumatic System

Pneumatic diagram, Coding Unit M40





Pneumatic diagram, Coding Unit M80 / M100 / M150
Pneumatic parts

The pneumatic parts are not marked with reference designators (e.g. –K1, -M1 etc), as shown in the pneumatic diagram. These designators are useful when talking to the helpdesk engineers of your distributor.

Pneumatic reference designators:

-M1:	Main actuator.
-M2:	Foil/ribbon transport actuator.
-M3:	Balance actuator of the web arrester (option).
-M4:	Damper of the web arrester (option).
-K1:	Pressure regulator (the supply pressure should be between 0.6 and 0.8 MPa).
-K2:	Print valve.
-R1:	Adjustment valve for foil/ribbon transport speed (only for M80, M100 and M150 coding units).
-R2:	Adjustment valve for the balance actuator speed (option).
-R3:	Adjustment valve for the balance damper speed (option).

Appendix E EC Declarations of conformity

Hotprinter HP-D Mxx-D / MxxB-D / Mxxx-D	E-2
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Hotprinter HP-D Mxx-D / MxxB-D / Mxxx-D



EC DECLARATION OF CONFORMITY

(According to Annex II.A of the Machinery Directive 2006/42/EC)

We, B.V. Korthofah Lageweg 39 NL 2222 AG Katwijk ZH The Netherlands

declare under own responsibility that the product

Hotprinter :	
Control box HP-D	(814529)
Coding unit M40-D	(814447)
Coding unit M40B-D	(815022)
Coding unit M80-D	(815048)
Coding unit M80B-D	(815051)
Coding unit M100-D	(815064)
Coding unit M150-D	(815077)
(including the mounting supp	ports built by B.V. Korthofah)

to which this declaration relates is in conformity with the following standards or other normative documents

EN 12100-1 (2003) + A1 (2009) EN 12100-2 (2003) + A1 (2009) EN 55022 (2006) + A1 (2007) EN 55024 (1998) + A1 (2001) + A2 (2003) EN 60950-1 (2006) + A1 (2009) EN 61000-3-2 (2006) EN 61000-3-3 (1995) + A1 (2001) + A2 (2005)

following the provisions of the

Machinery Directive 2006/42/EC EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC

M.P.J.J. de Groot, Director 1 September 2010, Katwijk ZH, The Netherlands

[PRINTER HP-D Mxx-D / MxxB-D / M

Appendix F Quick reference

Firmware control box HP-D M40	F-2
Firmware control box HP-D M80-M150	F-3



Default = 1

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HOTPRINTER

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POWER-ON

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START

FEST

HP M...-D Series



bv korthofah

P.O. box: 3040 2222 AG, Katwijk The Netherlands