

FORMAX[®]

7200 Series Inserters

Table of Contents

1. Introduction 5

2. Guidelines for Stationery Creators..... 5

 2.1 General Guidelines 5

 2.1.1 Flex Folder 6

 2.1.2 Versatile Feeder 8

 2.2 Group and Sequence Matrix..... 9

 2.2.1 Conditions 9

 2.2.2 Grouping Modes 10

 2.2.3 Form Sequence within a Job 12

 2.2.4 Form Sequence within a Group 13

 2.2.5 Group Sequence 15

 2.2.6 All Grouping and Sequence Marks..... 16

3. Barcode Label Details 17

 3.1 Linear Barcodes 17

 3.1.1 Narrow bar Thickness 17

 3.1.2 Ratio of wide Bar to Narrow Bar 17

 3.1.3 Quiet Zone 17

 3.1.4 Stop and Start Characters 17

 3.2 2D Datamarix Barcodes 17

 3.3 Both Linear & 2D Datamatrix 18

 3.3.1 Reading Modules 18

 3.3.2 Maximum Number of Characters 18

 3.3.3 Orientation of the Barcode Label 18

 3.3.4 Position of the Barcode Label 18

 3.3.5 Printing Contrast..... 18

 3.3.6 Position of Read Head 18

 3.4 Barcode Label Placement..... 19

4. OMR Specifications 20

 4.1 OMR Labels 20

 4.2 Mark Size..... 20

 4.3 Mark Pitch..... 20

 4.4 Gate Mark 20

 4.5 Label on Pages 20

 4.6 Colours..... 20

4.7	Reading Hoppers.....	20
4.8	Reading Modules.....	20
4.9	Number of Characters.....	20
4.10	Orientation of OMR Label	21
4.11	Position of OMR Label	21
4.12	Printing Contrast.....	21
4.13	Position of Read Head	21
4.14	Print Area (Flex Folder & Versatile Feeder).....	22
4.14.1	Portrait Orientation.....	22
4.14.2	Landscape Orientation	23
5.	Licencing	24
Appendices		
Appendix A	Barcode Labels	25
A.1	Compatilby.....	25
A.2	Interpreting the Hexadecimal Bit Fields	26
Appendix B	NTL Coding	29
B.1	Introduction	29
B.2	NTL Coding Terminology.....	29
B.3	Barcode System Character Definition	30
B.3.1	Grouping of Multipage Documents (Control Character)	30
B.3.2	Label on First Page Only.....	31
B.4	Selective Feeding	32
B.4.1	Selective Feeding of Items 2 to 5	32
B.4.2	Selective Feeding of Items 6 to 9	33
B.4.3	Selective Feeding of Items 10 to 11	34
B.5	Divert Units (Form Divert and Envelope Diverts).....	35
B.6	Form Sequence within a Job	36
B.7	Group Security	37
B.7.1	Form Sequence within a Group (1 - Reverse)	37
B.7.2	Form Sequence within a Group (2 - Forward)	38
B.8	Matching.....	39
B.9	Variable Group Size	42
B.9.1	Character Meaning	43
B.9.2	Example BCR Definition Screenshot	44
B.9.3	Example Define Mailset Screenshot.....	45

Appendix C	Custom Schemes.....	46
Appendix D	OMR Function Descriptions (NTL Coding)	59
D.1	Gate Mark	60
D.2	Grouping of Multipage Documents	60
D.3	Parity Mark.....	61
D.4	Selective Feeding of Items	61
D.5	Form Sequence within a Job	62
D.6	Diverting Forms	64
D.7	Envelope No Seal	64
D.8	Halt Function.....	64
D.9	Resync Function.....	64
D.10	Ignore Function	64
D.11	Blank Function.....	65
D.12	Force Fold	65
D.13	Form Sequence within a Group	66
D.14	Matching.....	67
D.15	Pulse Conveyor	69
D.16	Group, Divert & Continue	69
D.17	Group. Divert & Stop	69
D.18	Autoend.....	69
D.19	Exit Selection	69
D.20	Banner Page.....	69
D.21	Group Sequence within a Job.....	69
Appendix E	Coding (Flex)	70
E.1	2-Track	70
E.2	1-Track	71

7200 Series Reading Specification

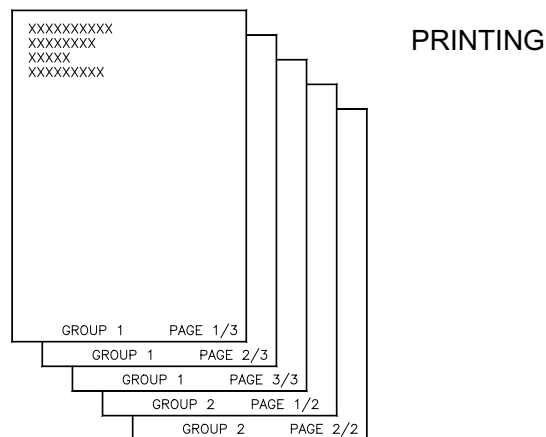
SECTION 1 Introduction

A CIS (Contact Image Scanner) reading device is optionally fitted to feeders or folders of NTL machines. It consists of a full portrait paper-width unit capable of reading Barcodes (1D & 2D) and OMR marks (1-track & 2-track). The maximum scanning width is 216mm.

SECTION 2 Guidelines for stationery creators

2.1 General Guidelines

- Documents are defined in print order and always run in reverse print order.
- They should be printed in page order 1,2,3,4.....etc. Page 1 being the address carrier of the group.
- The controlling document, with the coding printed on it, is sometimes referred to as the prime document.



The following applies for all reading applications:

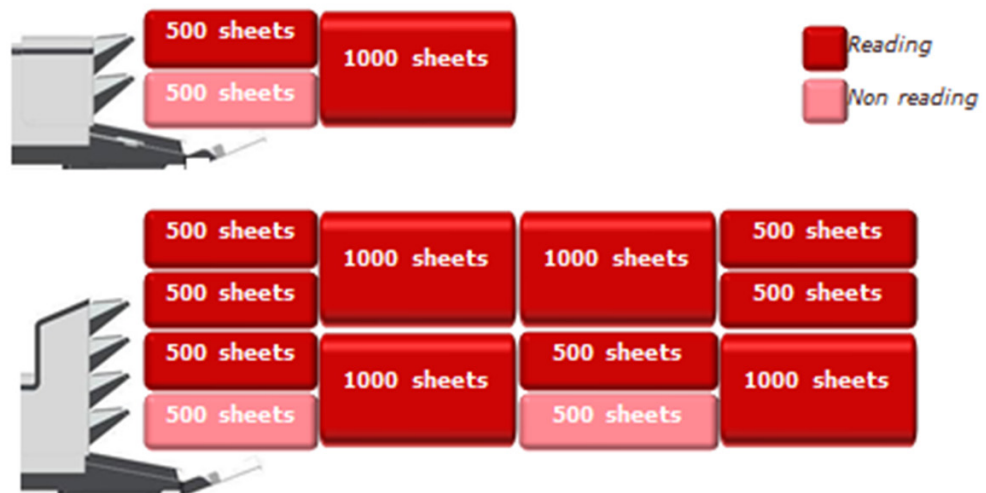
- For Flex Folders, (top feeding) documents must be loaded face down.
- For Versatile Feeders, (bottom feeding) documents must be loaded face up.
- Feed order in both cases is reverse of print order.
- Reading definitions are programmed in print order, i.e. If a grouping mark is printed on the first page of the set (page 1), this will be programmed as First of Group.
- If a grouping mark is printed on the last page of the set (e.g. page 5 of 5), this will be programmed as End of Group.

The marks are still read correctly despite being fed in the reverse order to printing.

2.1.1 Flex Folder

- Top feed system so mark reading documents are fed face down.
- The documents are fed in reverse print order e.g. a 3 page set will be fed page 3, page 2, page 1 and finish on the address carrier page.
- Preferably the grouping mark should appear on the address page (page 1) of a set, which gives first of group print definition.
- Reading is not available on a lower standard capacity feeder.

Flex Tower Folder (compact or standard)



- If reading from multiple hoppers in the flex folder, in the same job, the reading definitions must be the same.

This is also applicable for Matching applications.

Note: Reading definitions may be different between flex folder and versafeeder.

- When selectively feeding from the flex folder the prime documents set can be printed First of Group (FoG) or End of Group (EoG) although first of group printing is preferable.

The selectively fed documents:

- Must be in fixed group sizes
- Will not run via the accumulator
- If running end of group the first (EoG) document fed will be held in the accumulator, the selective documents fed and the rest of the set completed
- When selective feeding inserts must be programmed as 'OMR/BCR Selects'.

NOTE:- Selective feed and matching is not permissible when using the Flex Folder only.

Machine has to be programmed as 'Feed Always' for matching in the same module.

- g) Documents which have the feed mode set to 'Feed Always' can only go via the accumulator if grouping in First Of Group (FoG) mode (print order).
- h) The following information must be encoded on the last page of the document set, first page in feed order.
 - Envelope unseal and output divert
 - Halt
- i) The following must be encoded on all pages of the group
 - Pulse conveyor
 - Divert sheet
 - Select item

2.1.2 Versatile Feeder

- a) Bottom feed system so reading documents are fed face up.
- b) The documents are fed in reverse print order e.g. a 3 page set will be fed page 3, page 2, page 1 and finish on the address carrier page.
- c) The grouping mark **MUST** appear on the address page (page 1) of a set, which gives first of group print definition. **The feeder does not support End of Group print definition.**
- d) If reading from multiple units in the same job the mark definitions can be different.
- e) The following information must be encoded on the last page of the document set, first page in feed order.
 - Envelope unseal and output divert
 - Halt
- f) The following must be encoded on all pages of the group.
 - Pulse conveyor
 - Select item

2.2 Group and Sequence Matrix

2.2.1 Conditions

Shown below are guides to conditions of grouping and sequencing.

All documents are printed from A to Z on the printer. All documents loaded on the Flex Folder are loaded face down and fed Z to A. The Flex Folder is a top fed insert and document feeder. All document loaded on the Versatile Feeder are loaded face up and fed Z to A. The versatile Feeder is a bottom fed insert and document feeder

Print order	Feed Order (Versafeeder & Flex Folder)	Page count in set
1	21	1 of 1
2	20	1 of 2
3	19	2 of 2
4	18	1 of 3
5	17	2 of 3
6	16	3 of 3
7	15	1 of 4
8	14	2 of 4
9	13	3 of 4
10	12	4 of 4
11	11	1 of 5
12	10	2 of 5
13	9	3 of 5
14	8	4 of 5
15	7	5 of 5
16	6	1 of 6
17	5	2 of 6
18	4	3 of 6
19	3	4 of 6
20	2	5 of 6
21	1	6 of 6

Using the table on the left we can see that the machine will feed the documents in the reverse order to printing. This is because the documents can only be loaded face down.

The groups are highlighted in grey and white for clarification.

This assumes documents are printed A-Z.

The following tables show grouping and sequencing modes with reference to this table.

2.2.2 Grouping Modes

'Y' indicates the grouping command for NTL and other group modes.

Print order	Feed Order (Versafeeder & Flex Folder)	Page count in set	Group Modes										
			Neo 3						NTL and Others				
			N of M		Insert /Accumulate (where 1=insert, 2=accumulate)	Insert command only (where 1=insert)	Accumulate command only (where 1=accumulate)	Customer ID (i.e. Account number)	First of group as printed	End of group as printed	Demand feed FOG as printed	Demand feed EOG as printed	
			N Value	M Value									
1	21	1 of 1	1	1	1	1	0	1	Y	Y	Y	Y	
2	20	1 of 2	1	2	2	0	1	2	Y			Y	
3	19	2 of 2	2	2	1	1	0	2		Y	Y		
4	18	1 of 3	1	3	2	0	1	3	Y			Y	
5	17	2 of 3	2	3	2	0	1	3			Y	Y	
6	16	3 of 3	3	3	1	1	0	3		Y	Y		
7	15	1 of 4	1	4	2	0	1	4	Y			Y	
8	14	2 of 4	2	4	2	0	1	4			Y	Y	
9	13	3 of 4	3	4	2	0	1	4			Y	Y	
10	12	4 of 4	4	4	1	1	0	4		Y	Y		
11	11	1 of 5	1	5	2	0	1	5	Y			Y	
12	10	2 of 5	2	5	2	0	1	5			Y	Y	
13	9	3 of 5	3	5	2	0	1	5			Y	Y	
14	8	4 of 5	4	5	2	0	1	5			Y	Y	
15	7	5 of 5	5	5	1	1	0	5		Y	Y		
16	6	1 of 6	1	6	2	0	1	6	Y			Y	
17	5	2 of 6	2	6	2	0	1	6			Y	Y	
18	4	3 of 6	3	6	2	0	1	6			Y	Y	
19	3	4 of 6	4	6	2	0	1	6			Y	Y	
20	2	5 of 6	5	6	2	0	1	6			Y	Y	
21	1	6 of 6	6	6	1	1	0	6		Y	Y		

See also following page

N of M - Uses a page count comparison:

- When N equals M the set is complete.
- Must be printed with the N=M numbers on the last page of the set.
- N and M characters can be swapped to form M of N.
- Again document set is inserted when M=N.

Note: Takes precedence over Insert/Accumulate if printed

Insert/Accumulate: Uses Neo 3 numeric coding

1 = Insert

2 = Accumulate

Insert command only: Uses Neo 3 numeric coding.

- 1 is printed on the last page of the set in print order.
- 0 is printed on the pages to be accumulated.

Accumulate command only: Uses Neo 3 numeric coding.

- 1 is printed on the pages to be accumulated.
- 0 is printed on the last page of the set in print order.

Customer ID: Uses a number, Account number, phone number, in the barcode.

This number is checked on the documents and when the number changes the document set in the accumulator is complete. It can also be used for matching within the same module.

First of group as printed: Requires an insert/grouping command to be printed on the first page of the set as printed.

End of group as printed: Requires an insert/grouping command to be printed on the last page of the set as printed.

Demand feed First of Group as printed: Has a mark on every page in the set except the First page of the set as printed.

The command tells the machine to pull another document to the accumulator. When no mark is present, the set is inserted.

Demand feed End of Group as printed: Has a mark on every page in the set except the Last page of the set as printed. The machine feeds paper until no mark is seen and then inserted.

2.2.3 Form sequence within a Job

Print order	Feed Order (Versafeeder & Flex Folder)	Page count in set	Sequence in Job			
			Neo 3		NTL	
			Incrementing Numeric (assuming count starts at zero)	Decrementing Numeric (assuming count starts at zero)	Incrementing Alpha A-Z (assuming count starts at A)	Decrementing Alpha A-Z (assuming count starts at Z)
1	21	1 of 1	0	20	A	U
2	20	1 of 2	1	19	B	T
3	19	2 of 2	2	18	C	S
4	18	1 of 3	3	17	D	R
5	17	2 of 3	4	16	E	Q
6	16	3 of 3	5	15	F	P
7	15	1 of 4	6	14	G	O
8	14	2 of 4	7	13	H	N
9	13	3 of 4	8	12	I	M
10	12	4 of 4	9	11	J	L
11	11	1 of 5	10	10	K	K
12	10	2 of 5	11	9	L	J
13	9	3 of 5	12	8	M	I
14	8	4 of 5	13	7	N	H
15	7	5 of 5	14	6	O	G
16	6	1 of 6	15	5	P	F
17	5	2 of 6	16	4	Q	E
18	4	3 of 6	17	3	R	D
19	3	4 of 6	18	2	S	C
20	2	5 of 6	19	1	T	B
21	1	6 of 6	20	0	U	A

To ensure correct processing of the documents in the correct order we can have a rolling sequence count through the document set. This can be in the form of A-Z, 0-999, or for OMR a binary count based on the marks printed (0-63).

The count can start at 0 or 1 for OMR.

The sequence can be counting up or down and is programmed in print order.

2.2.4 Form sequence within a Group

Print order	Feed Order (Versafeeder & Flex Folder)	Page count in set		Sequence in Job				Sequence in Group			
				Neo 3		NTL		Neo 3		NTL	
				Incrementing Numeric (assuming count starts at zero)	Decrementing Numeric (assuming count starts at zero)	Incrementing Alpha A-Z (assuming count starts at A)	Decrementing Alpha A-Z (assuming count starts at Z)	Incrementing Numeric (assuming count starts at zero)	Decrementing Numeric (assuming count starts at zero)	Incrementing Alpha A-Z (assuming count starts at A)	Decrementing Alpha A-Z (assuming count starts at Z)
1	21	1 of 1	0	20	A	U	0	0	A	A	
2	20	1 of 2	1	19	B	T	0	1	A	B	
3	19	2 of 2	2	18	C	S	1	0	B	A	
4	18	1 of 3	3	17	D	R	0	2	A	C	
5	17	2 of 3	4	16	E	Q	1	1	B	B	
6	16	3 of 3	5	15	F	P	2	0	C	A	
7	15	1 of 4	6	14	G	O	0	3	A	D	
8	14	2 of 4	7	13	H	N	1	2	B	C	
9	13	3 of 4	8	12	I	M	2	1	C	B	
10	12	4 of 4	9	11	J	L	3	0	D	A	
11	11	1 of 5	10	10	K	K	0	4	A	E	
12	10	2 of 5	11	9	L	J	1	3	B	D	
13	9	3 of 5	12	8	M	I	2	2	C	C	
14	8	4 of 5	13	7	N	H	3	1	D	B	
15	7	5 of 5	14	6	O	G	4	0	E	A	
16	6	1 of 6	15	5	P	F	0	5	A	F	
17	5	2 of 6	16	4	Q	E	1	4	B	E	
18	4	3 of 6	17	3	R	D	2	3	C	D	
19	3	4 of 6	18	2	S	C	3	2	D	C	
20	2	5 of 6	19	1	T	B	4	1	E	B	
21	1	6 of 6	20	0	U	A	5	0	F	A	

We can also add a similar sequence count for each group. This also can be transferred to OMR and be counting up or down. The count resets at the change of group to the starting count, ensuring that all the pages are in the group. For OMR the count is 0-15

Form Sequence in Group limitations

Form sequence in group printed as End of Group

Print sequence	Feed sequence	Customer	Page	Grouping as printed EoG	Forward Sequence	Reverse Sequence
1	14	A	1		A	<u>C</u>
2	13	A	2		B	B
3	12	A	3	Y	C	A
4	11	B	1		A	<u>B</u>
5	10	B	2	Y	B	A
6	9	C	1		A	<u>D</u>
7	8	C	2		B	C
8	7	C	3		C	B
9	6	C	4	Y	D	A
10	5	D	1	Y	A	<u>A</u>
11	4	E	1	Y	A	<u>A</u>
12	3	F	1	Y	A	<u>A</u>
13	2	G	1		A	<u>B</u>
14	1	G	2	Y	B	A

If any of the underlined pages are missing this will not be recognised with a sequence error when the documents are printed in End of Group orientation

Form sequence in group printed as End of Group

Print sequence	Feed sequence	Customer	Page	Grouping as printed FoG	Forward Sequence	Reversed Sequence
1	14	A	1	Y	A	C
2	13	A	2		B	B
3	12	A	3		<u>C</u>	A
4	11	B	1	Y	A	B
5	10	B	2		<u>B</u>	A
6	9	C	1	Y	A	D
7	8	C	2		B	C
8	7	C	3		C	B
9	6	C	4		<u>D</u>	A
10		D	1	Y	<u>A</u>	A
11	4	E	1	Y	<u>A</u>	A
12	3	F	1	Y	<u>A</u>	A
13	2	G	1	Y	A	B
14	1	G	2		<u>B</u>	A

If any of the underlined pages are missing this will not be recognised with a sequence error when the documents are printed in First of Group orientation

2.2.5 Group sequence

Print order	Feed Order (Versafeeder & Flex Folder)	Page count in set	Sequence in Job				Sequence in Group				Group Sequence			
			Neo 3		NTL		Neo 3		NTL		Neo 3		NTL	
			Incrementing Numeric (assuming count starts at zero)	Decrementing Numeric (assuming count starts at zero)	Incrementing Alpha A-Z (assuming count starts at A)	Decrementing Alpha A-Z (assuming count starts at Z)	Incrementing Numeric (assuming count starts at zero)	Decrementing Numeric (assuming count starts at zero)	Incrementing Alpha A-Z (assuming count starts at A)	Decrementing Alpha A-Z (assuming count starts at Z)	Incrementing Numeric (assuming count starts at zero)	Decrementing Numeric (assuming count starts at zero)	Incrementing Alpha A-Z (assuming count starts at A)	Decrementing Alpha A-Z (assuming count starts at Z)
1	21	1 of 1	0	20	A	U	0	0	A	A	0	5	A	F
2	20	1 of 2	1	19	B	T	0	1	A	B	1	4	B	F
3	19	2 of 2	2	18	C	S	1	0	B	A	1	4	B	F
4	18	1 of 3	3	17	D	R	0	2	A	C	2	3	C	D
5	17	2 of 3	4	16	E	Q	1	1	B	B	2	3	C	D
6	16	3 of 3	5	15	F	P	2	0	C	A	2	3	C	D
7	15	1 of 4	6	14	G	O	0	3	A	D	3	2	D	C
8	14	2 of 4	7	13	H	N	1	2	B	C	3	2	D	C
9	13	3 of 4	8	12	I	M	2	1	C	B	3	2	D	C
10	12	4 of 4	9	11	J	L	3	0	D	A	3	2	D	C
11	11	1 of 5	10	10	K	K	0	4	A	E	4	1	E	B
12	10	2 of 5	11	9	L	J	1	3	B	D	4	1	E	B
13	9	3 of 5	12	8	M	I	2	2	C	C	4	1	E	B
14	8	4 of 5	13	7	N	H	3	1	D	B	4	1	E	B
15	7	5 of 5	14	6	O	G	4	0	E	A	4	1	E	B
16	6	1 of 6	15	5	P	F	0	5	A	F	5	0	F	A
17	5	2 of 6	16	4	Q	E	1	4	B	E	5	0	F	A
18	4	3 of 6	17	3	R	D	2	3	C	D	5	0	F	A
19	3	4 of 6	18	2	S	C	3	2	D	C	5	0	F	A
20	2	5 of 6	19	1	T	B	4	1	E	B	5	0	F	A
21	1	6 of 6	20	0	U	A	5	0	F	A	5	0	F	A

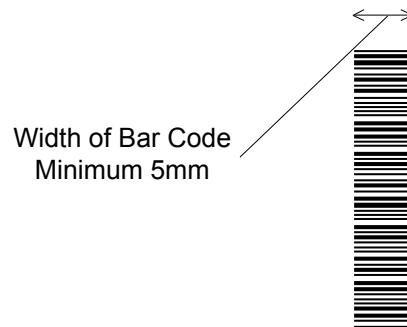
Each group of documents can have a sequence count. The count increases or decreases at the change of each group ensuring that the groups are processed in the correct order.

For OMR the count is 0-15

SECTION 3 Bar Code Label Details

To ensure reliable reading of the Barcode Label it should be of the following dimensions:

3.1 Linear Barcodes



3.1.1 Narrow bar Thickness (Codes 3 of 9, 2 of 5 & 128)

The minimum acceptable thickness for the narrow bar should be 0.01" (0.25mm)

3.1.2 Ratio of Wide Bar to Narrow Bar (Codes 3 of 9 & 2 of 5)

The minimum acceptable ratio between the wide bar and narrow bar thicknesses should be 2.2. However, to achieve a higher level of read reliability the ratio should be increased to 3.

3.1.3 Quiet Zone There should be a clear area all round the LABEL of at least 6.5mm (0.25"). There should be no graphics or text printing or background colour changes on the form in this quiet zone.

3.1.4 Start and Stop Characters (Code 3 of 9 only)

The bar code label requires the printing of an asterisk * at the beginning and also at the end of the label. These are the start and stop characters, which are used in the decoding of the label. **They are not included in the number of characters count.**

3.2 2D Datamatrix Barcodes

Recommend a 7 mm 2D square and 7 mm away from the document edges and print.



1. Cell size 0.35mm (0.014") min. for each edge.
2. Label size 30mm (1.18") square max.
3. Preferred print quality 600dpi
4. Print drift from page to page +/-2mm max.
5. Colour background: White

3.3 Both Linear & 2D Datamatrix

3.3.1 Reading Modules

Barcode labels can be read only on the following modules:
Flex Folder Bottom Read only.
Versatile Feeder Top Read only.

3.3.2 Maximum Number of Characters

The maximum number of characters in the bar code label that can be read is 32. This includes the start and stop characters for linear barcodes.

3.3.3 Orientation of the Bar Code Label

The bar code label can be printed vertically or horizontally – see Barcode Label Placement in section 4.4.

3.3.4 Position of the Bar Code Label

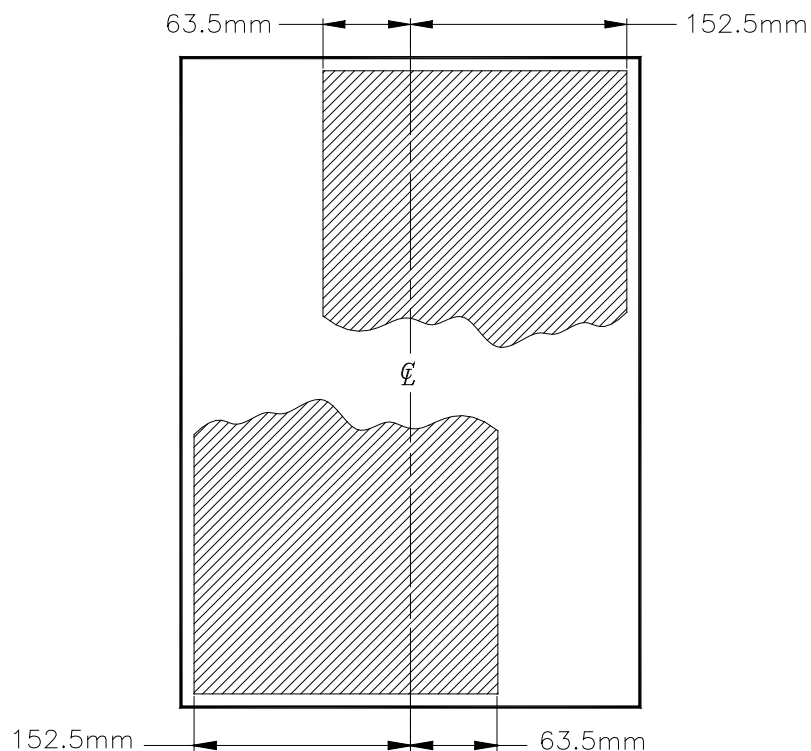
The bar code label should be positioned as indicated on the layout details – see Barcode Label Placement in section x.

3.3.5 Printing Contrast

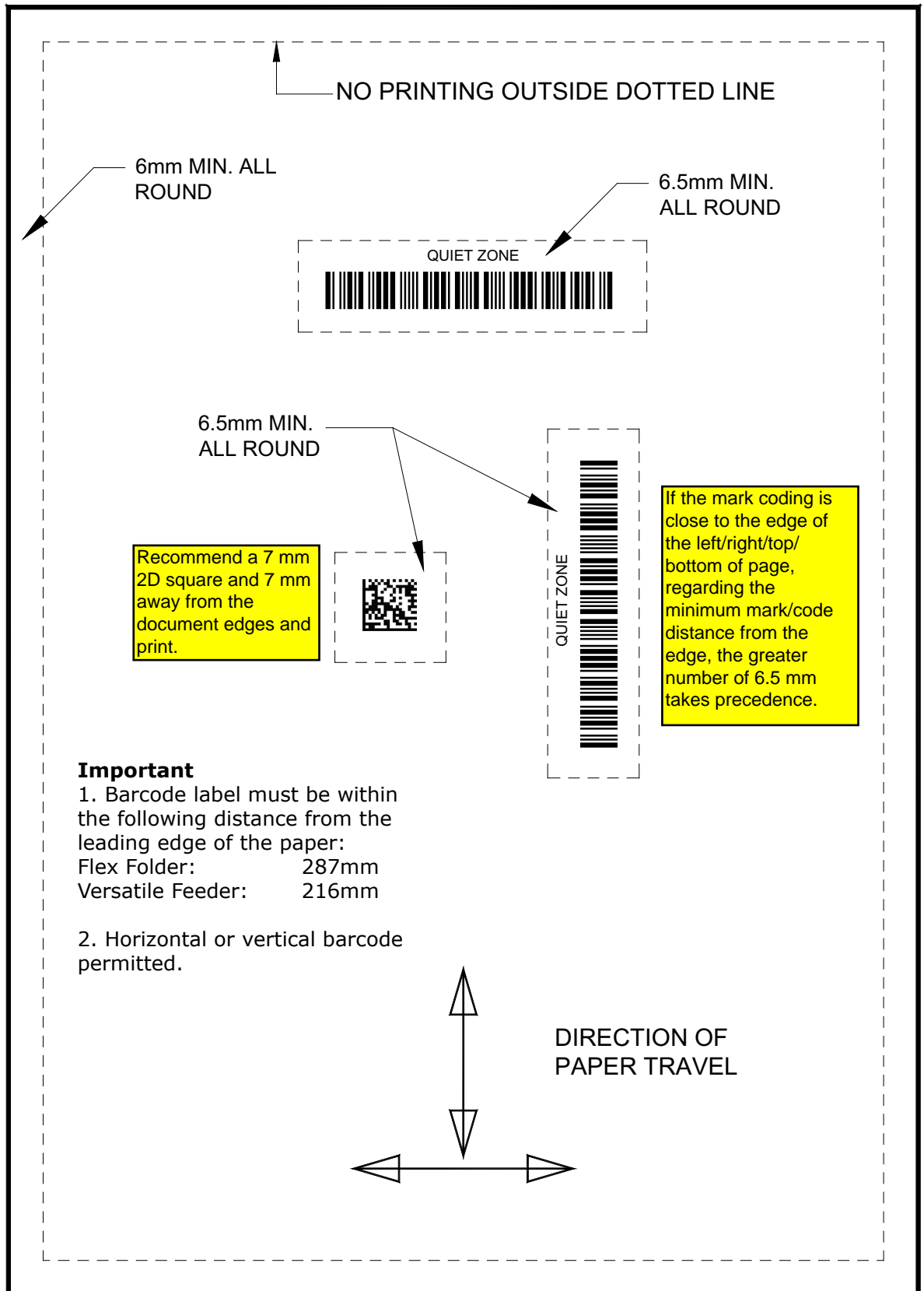
The label must be strongly printed in black on white background for maximum contrast. Other light backgrounds may be acceptable, subject to test.

3.3.6 Position of Read Head

The position of the read head is operator adjustable to suit the required job. If other jobs are anticipated being run in the same unit, the label should be printed in the same position. **Note:** The reader has 2 positions, fully to the user side of the unit or fully to the non-user side. This will provide a reading range shown below. It must be locked in position after adjustment.



3.4 Barcode Label Placement (Flex Folder & Versatile Feeder)



Important

1. Barcode label must be within the following distance from the leading edge of the paper:

- Flex Folder: 287mm
- Versatile Feeder: 216mm

2. Horizontal or vertical barcode permitted.

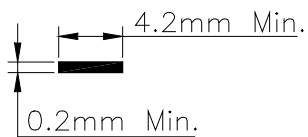
Invisible gate: Printed from A to Z with ONLY EOG on last printed page must be set to EOG. If FOG mark is on the first page as printed, set as FOG. Pitch is set to 5 mm, invisible gate = YES. If running a FOG invisible gate, there must be a single marked document preceding the reading of the first set. the system cannot interpret an invisible gate as the first mark read.

SECTION 4 OMR Specifications

4.1 OMR Labels

The acceptable print positions for the OMR marks on the page are shown diagrammatically on the following page.

4.2 Mark Size



4.3 Mark Pitch

The following fixed mark pitches are acceptable, and custom pitches are also supported.

(Note: Mark pitch is the distance from the top edge of one mark to the top edge of the next mark.)

1/10", 1/8", 1/6", 1/5", 1/4", 1/3", 3 mm, 3.8mm, 5 mm, 5.3mm, 10 mm

4.4 Gate Mark

The Gate Mark must be either the first mark to be scanned, or the last mark to be scanned.

4.5 Label on Pages

The OMR label must be printed on every page that is fed from the paper hopper.

4.6 Colours

Marks must be printed in black on preferably a white background. Non-white paper must be as pale as possible. The background behind the printed marks must be consistent in colour.

4.7 Reading Hoppers

Flex Folders can be fitted with up to 4 x 500-sheet hoppers or 2 x 1000-sheet hoppers. Reading is possible on all hoppers except for the lowest 500-sheet unit.

4.8 Reading Modules

Barcode labels can be read only on the following modules:

Flex Folder Bottom Read only.

Versatile Feeder Top Read only.

4.9 Maximum Number of Marks

The maximum number of marks in the OMR label that can be read is 20.

4.10 Orientation of the OMR Label

The OMR label can be printed vertically or horizontally – see Barcode Label Placement in section 4.14.

4.11 Position of the OMR Label

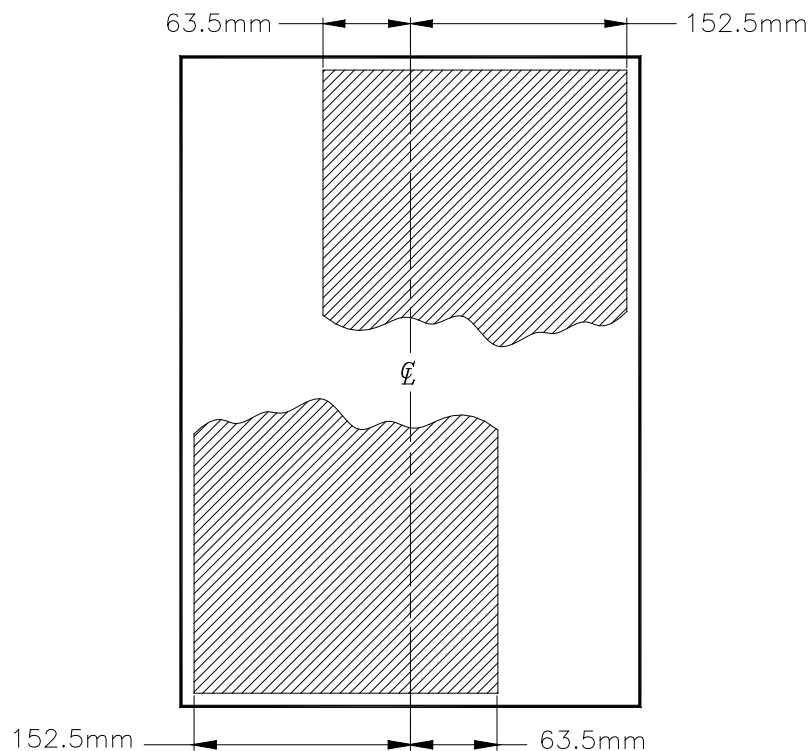
The OMR label should be positioned as indicated on the layout details – see OMR Label Placement in section 4.14.

4.12 Printing Contrast

The label must be strongly printed in black on white background for maximum contrast. Other light backgrounds may be acceptable, subject to test.

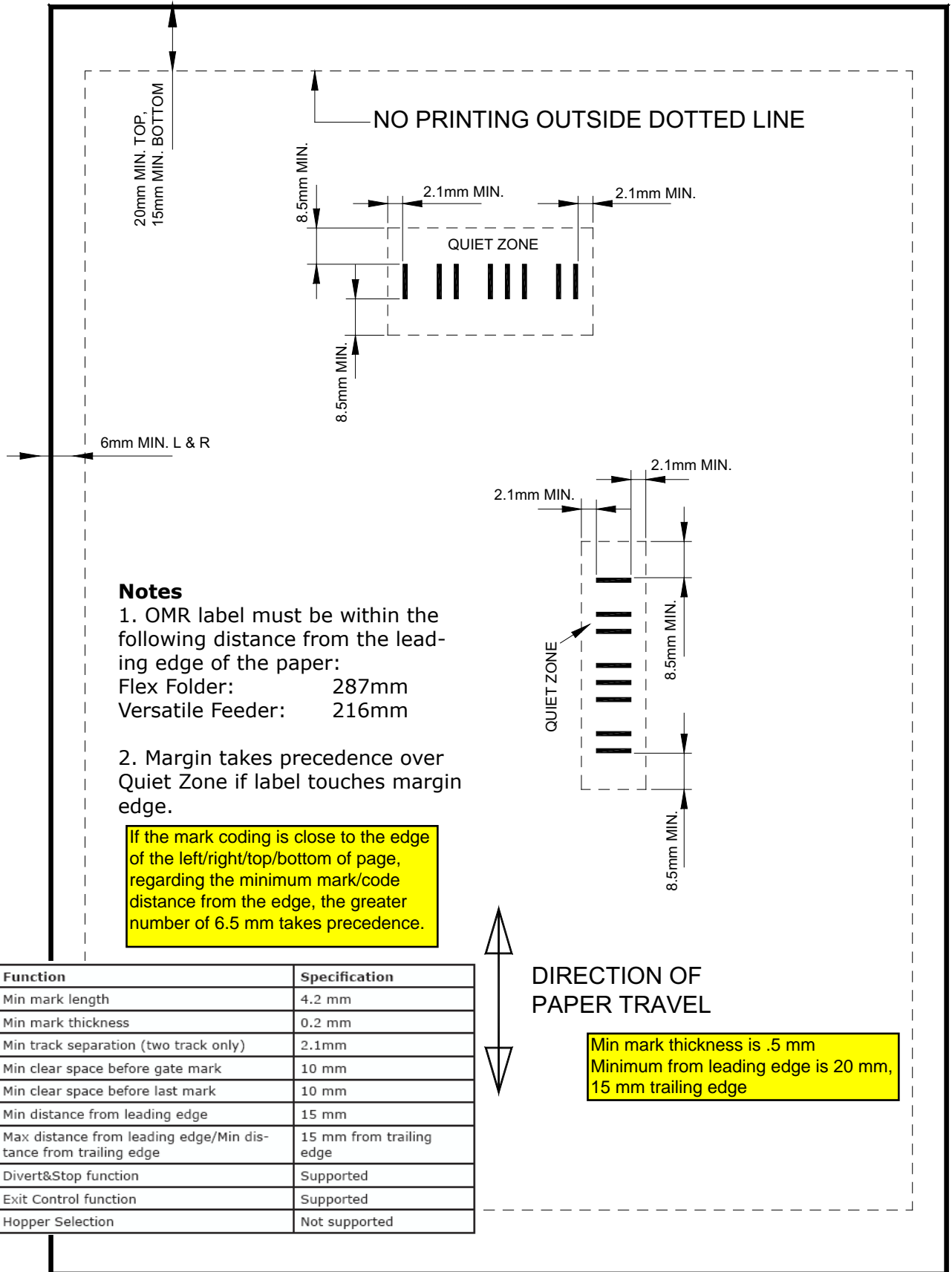
4.13 Position of Read Head

The position of the read head is operator adjustable to suit the required job. If other jobs are anticipated being run in the same unit, the label should be printed in the same position. **Note:** The reader has 2 positions, fully one side of the unit or the other. This will provide a reading range shown below. It must be locked in position after adjustment.



4.14 Print Area (Flex Folder & Versatile Feeder)

4.14.1 Portrait Orientation



Notes

1. OMR label must be within the following distance from the leading edge of the paper:

Flex Folder: 287mm
Versatile Feeder: 216mm

2. Margin takes precedence over Quiet Zone if label touches margin edge.

If the mark coding is close to the edge of the left/right/top/bottom of page, regarding the minimum mark/code distance from the edge, the greater number of 6.5 mm takes precedence.

SECTION 5 Licensing

Licenses for the use of label reading must be obtained according to the applicable unit and the label type. These are obtained using numbers shown below:

Part No.	Licence for
9109954K	1 Track OMR - Flex Tower
9109955L	2 Track OMR - Flex Tower
9109956M	1D BCR - Flex Tower
9109957N	2D Datamatrix - Flex Tower
9109958P	1 Track OMR - Versatile Feeder
9109959Q	2 Track OMR - Versatile Feeder
9109960R	1D BCR - Versatile Feeder
9109961S	2D Datamatrix - Versatile Feeder
9112504R	Flex licence (Flex Folder only)*

*Flex is a bespoke license that allows a customer's existing barcode system to be used, and is purchased in addition to one or more of the licenses shown above.

The above barcode licenses cover both Neo 3 and legacy BCR barcode systems, and for OMR, both Neo 3 and NTL coding schemes.

Each reading module requires at least one licence.

When a license has been obtained, its number must be installed in the IMOS operating software.

Note: if an existing unit is upgraded for reading, or further reading units are fitted, additional licenses must be obtained.

Appendix A Neo 3 Barcode Labels.

A.1 Compatibility

The machine is capable of accommodating Neo 3 barcode labels, thus existing stationery printed with these labels can be used. The following table defines the characters.

Reading code parameter	Code length	Default setting ^a	Description	
Page N of M	M: 0 - 2 N: 0 - 2	D, 0 D, 0	n<m: accumulate n=m: insert n>m: invalid, sequence error, divert. The field Chars shows the number of character positions available for N / M: 1, 2: 1 or 2 character positions 1 S, 2 S: 1 or 2 character positions with N and M in reverse order (M first, then N).	
Can start at 0 or 1	Sheet Seq	0 - 3	E, 3	Sheet counter If a sheet number is missing, an error is generated.
Can start at 0 or 1	Group Seq	0 - 3	D, 0	Set counter If a set number is missing, an error is generated.
	Insert / Accumulate	1 bit ^b	E	Insert and accumulate command.
	Divert 1	1 bit	E	Divert and continue. Divert and stop.
	Divert 2	1 bit	E	
	Selective Feeds	1 bit each	E	A maximum of 10 feeders are available for selective feed.
	Do not glue	1 bit	E	Sealing control: enable or disable sealing.
	Envelope selection 1 - 3	1 bit each	E	Not possible on 200 Series.
	Exit. Sel. 1	1 bit	E	Select Exit 1
	Exit. Sel. 2	1 bit	E	Select Exit 2
	Exit. Sel. 3	1 bit	E	Select Exit 3
	Stop	1 bit	E	Stops the inserter.
	Customer ID	0 - 16	D, 0	If customer ID equals the ID on the previous page: accumulate. If customer ID is different from ID on the previous page: insert the set.

^a E is enabled, D is Disabled

^b 4 bit values represent one barcode character

A.2 Interpreting the Hexadecimal Bit Fields

The hexadecimal bit fields contain at most four functions that can be controlled. The generic interpretation/encoding is shown in the table below. 'No' means that the field is not active and 'Yes' means it is active. For some fields the system behaviour may be mapped differently, e.g. Exit Selection.

Position Char Value	Function 1	Function 2	Function 3	Function 4
0	No	No	No	No
1	Yes	No	No	No
2	No	Yes	No	No
3	Yes	Yes	No	No
4	No	No	Yes	No
5	Yes	No	Yes	No
6	No	Yes	Yes	No
7	Yes	Yes	Yes	No
8	No	No	No	Yes
9	Yes	No	No	Yes
A	No	Yes	No	Yes
B	Yes	Yes	No	Yes
C	No	No	Yes	Yes
D	Yes	No	Yes	Yes
E	No	Yes	Yes	Yes
F	Yes	Yes	Yes	Yes

For example, when the Controls Feeding from Logical Station 1,2,3 and 4 character contains the character '7' this is interpreted as Control Feeder 1 = Yes, Control Feeder 2 = Yes, Control Feeder 3 = Yes and Control Feeder 4 = No.

See also following page.

A.2 Interpreting the Hexadecimal Bit Fields (cont.)

The diagram below indicates the relationship between the BCR functions and the character bit; each character contains 4 bit functions.

If it is required to move to the next character when the previous one has fewer than 4 functions ascribed, unused functions can be allocated but set to 'Ignore' so as to create 'dummy' functions to fill up the character.

E	Divert 1	Char 1	D	Insert	Char 1	Function 1
I	Selective Feed 1		D	Accumulate		Function 2
E	Selective Feed 2	Char 2	E	Divert 1	Char 2	Function 3
I	Selective Feed 3		D	Divert 2		Function 4
I	Selective Feed 7	Char 2	I	Selective Feed 1	Char 2	Function 1
I	Selective Feed 8		E	Selective Feed 2		Function 2
E	Exit Select 1	Char 3	I	Selective Feed 3	Char 3	Function 3
			D	Selective Feed 4		Function 4
		Char 3	D	Selective Feed 5	Char 3	
			D	Selective Feed 6		
		Char 4	I	Selective Feed 7	Char 4	
			I	Selective Feed 8		
		Char 4	D	Do not Glue	Char 4	
			D	Env Select 1		
		Char 5	D	Env Select 2	Char 5	
			D	Env Select 3		
		Char 5	E	Exit Select 1	Char 5	
			D	Exit Select 2		
		Char 6	D	Exit Select 3	Char 6	
			D	Stop		
		Char 6	D	Reserved 1	Char 6	
			D	Reserved 2		
		Char 7	D	Reserved 3	Char 7	
			D	Reserved 4		
		Char 7	D	Reserved 5	Char 7	
			D	Reserved 6		
		Char 8	D	Reserved 7	Char 8	
			D	Reserved 8		
		Char 8	D	Reserved 9	Char 8	
			D	Reserved 10		
		Char 8	D	Reserved 11	Char 8	
			D	Reserved 12		

E = Enabled & Printed
 I = Printed & Ignored
 D = Disabled, not Printed

See also following page

A.2 Interpreting the Hexadecimal Bit Fields (cont.)

When a Command is enabled in the barcode label screen then this will become a “function” in the table.

	Length	Status	
Page N of M	0	Disable	↑
Sheet sequence	0	Disable	
Group sequence	0	Disable	
Insert	1	Enable	
Accumulate	1	Enable	
Divert 1	1	Ignore	
Divert 2	0	Disable	
Select 1 (Item ID 2)	1	Enable	↓

Cancel Save

For example: if the barcode character 1 was printed this would indicate that the first enabled function would be triggered, causing the document to be inserted. If a 2 was printed then the second enabled function would be enabled causing the document to be accumulated. If a 9 was printed this indicates that functions 1 and 4 needed to be enabled causing an insertion AND selective feed.

Neo 3 commands available:

- Insert command:** Forces accumulated pack to be folded and inserted
- Accumulate command:** Indicates the document is to be accumulated
- Divert 1 command:** Diverts the complete document set
- Divert 2 command:** Diverts the complete document set
- Select feed item 1-10:** Causes selective feed documents to be pulled
- No Seal:** Leaves the completed envelope unsealed
- Envelope select:** Not used on 7200 Series
- Exit select (exits 1-3):** Selects the exit required if output sorting is available
- Stop:** Halts the machine but does not Autoend.

Appendix B NTL Coding

B.1 Introduction

BCS is the barcode symbology previously used by NTL, and is fully supported.

The standard Bar Code System used is Code 39 (3 of 9).

Code 39 allows the coding of:

upper case letters	A to Z	26 symbols
numbers	0 to 9	10 symbol
the space character		1 symbol
the symbols	- . \$ / + %	6 symbols

The functions which the machine's Code System supports are:

- Grouping of multipage documents
- Selective feeding from all the feed stations (excluding the prime document station)
- Divert units (form divert and envelope diverts)
- Form security
- Group security
- Matching (within a document set)
- Data logging of customer's document identifier

The bar code is composed of a variable number of characters to cater for the required functions above. The minimum number of characters required will be two characters, the smallest size of bar code that code 39 accepts. The bar code may contain additional characters as required by the customer for customer specific functions. Additionally, the bar code requires a stop and a start character to be printed (*). The maximum number of barcode characters depends on the label details, up to a theoretical maximum of 25 excluding the stop and start characters.

B.2 NTL EncodingTerminology

The complete bar code as printed on the form is referred to as the BAR CODE LABEL. Within the Bar Code Label there are a number of coded characters; these will be referred to as BAR CODE CHARACTERS. They are numbered from the start of the Bar Code Label to the end of the Bar Code Label. Within the Bar Code Label there are a number of coded characters which have defined functions within the Bar Code System; these will be referred to as BCS CHARACTER #1, BCS CHARACTER #2 etc., but note that they can be in any position within the label and need not follow sequentially.

Finally, during the programming of the machine, the position of each BCS CHARACTER within the BAR CODE LABEL will need to be specified by start and length.

BAR CODE LABEL CHECKSUM CHARACTER This may be printed if it is required by the customer. It will not be used by the machine, but is treated as part of the customer code.

B.3. Bar Code System Character Definition

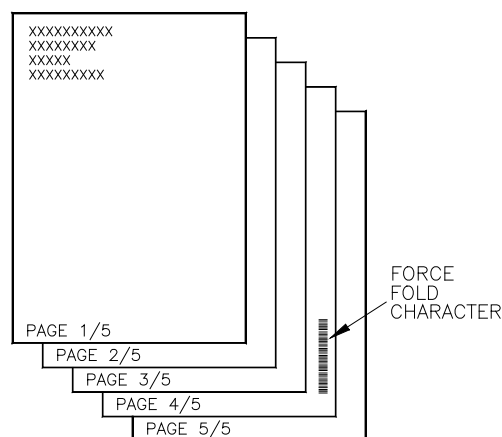
B.3.1 Grouping of multipage documents (Control Character)

BCS CHARACTER #1

This character is used for grouping document sets from one feed unit together. **Documents must be printed as First of Group if using Versafeeder for reading.**

BCS CHARACTER #1

- = A Demand Feed Continues feeding forms
- = B End of Group or First of Group Depends upon setting in Barcode setup, whether EOG or FOG. If set to EOG, stops feeding forms, as this form is the last form of the group to be fed, and requires insertion into the same envelope. Group is then folded and ejected. If set to FOG, when character is read, forms up to that point are folded, as this is the first document of the next set. See also 'Label on First Page Only' on the following page.
- = C End of Job Stops feeding forms into the accumulator, as this form is the last form of the group which requires insertion into the same envelope, and additionally the machine goes into its Auto-end mode as this set of forms is the last of the job. This should be printed on the first page of the job run.
- = D Force Fold This mark is used with multi-page documents, when it is required to break the document group into specific sets, earlier than the maximum fold limit which has been set. The action of force fold is shown below:



When the force fold character is read, pages 4 and 5 will be folded.

- = E to Y Defined number of pages to be inserted into the envelope with no further barcodes printed on the continuation pages.

The barcode on the first page to be read defines the total number of pages to be inserted into the envelope. The character definitions are:

The BCS character value 'E' equals a group of 1

The BCS character value 'F' equals a group of 2

The BCS character value 'G' equals a group of 3

The BCS character value 'H' equals a group of 4 etc. to

The BCS character value 'Y' equals a group of 21.

The BCS character value 'Z' indicates that the document set is greater than 21.

If the first form of the next set does not have a barcode, this is treated as a bad read.

If a form within the set does have a barcode, this is treated as a form-sequence error.

Because the page count is known in advance, 'too many forms' groups can be diverted singly, preserving the page sequence.

There is an alternative selectable option, in which the page with the defining barcode label is not the first page to be read, but the last page of the document set.

B.3.2 Label on First Page Only

Documents may also be grouped using the 'Label on First Page Only' or 'Label on Last Page Only' options in the software. This function allows the group character to be printed only on the first page of the group, thus avoiding printed labels on subsequent pages in the group.

Label on first page only mode -

There is a very minimal amount of security for the documents within a set when using this code scheme. Everyone must be aware that we cannot guarantee that there will not be any mis-insertions!

Label on First Page Only: Use only BCS coding scheme (E,F,G,H etc) or BCS with customer ID using Z as a unique identifier.

Can run Label of First Page as customer ID with any character. The 200 is only looking for the next code. Verified.

Z on the first page for large set such as flat apps meaning greater than 21 pages.

See spec here. Single character in Barcode.

E to Y (1 page to 21 pages). For groups bigger than 21 you will code a Z. Will not work for less than 21. Verified.

For those page counts that use the E to Y code scheme - the machine is doing a physical page count of the pages in the set. There is no way to be certain that the pages counted belong to the set of documents going to a particular customer. Again it is still possible to mis-insert documents. For those page counts that exceed 21 and are coded with the Z character - there is no counting of pages at all done by the machine. It is simply looking for the next barcode!

B.4 Selective Feeding

B.4.1 Selective Feeding of Items 2 to 5

BCS CHARACTER #2

This character is used to control selective feeding of Items 2 to 5 in every combination. Must be printed in every label in the group.

Note 1: Item 1 will normally be the prime document.

Note 2: There is a maximum of four characters used for Select Feeding. These should be consecutive characters.

BCS CHARACTER #2	Items	2	3	4	5
= A		---	No Feed	---	
= B		✓			
= C			✓		
= D		✓	✓		
= E				✓	
= F		✓		✓	
= G			✓	✓	
= H		✓	✓	✓	
= I					✓
= J		✓			✓
= K			✓		✓
= L		✓	✓		✓
= M				✓	✓
= N		✓		✓	✓
= O			✓	✓	✓
= P		✓	✓	✓	✓

B.4.2 Selective Feeding of Items 6 to 9

BCS CHARACTER #3

This character is used to control selective feeding of Items 6 to 9 in every combination.

	Items	6	7	8	9
BCS CHARACTER #3	= A	---	No Feed	---	
	= B	✓			
	= C		✓		
	= D	✓	✓		
	= E			✓	
	= F	✓		✓	
	= G		✓	✓	
	= H	✓	✓	✓	
	= I				✓
	= J	✓			✓
	= K		✓		✓
	= L	✓	✓		✓
	= M			✓	✓
	= N	✓		✓	✓
	= O		✓	✓	✓
	= P	✓	✓	✓	✓

B.4.3 Selective Feeding of Items 10 to 11

BCS CHARACTER #4

This character is used to control selective feeding of Items 10 to 11 in every combination.

	Items	10	11
BCS CHARACTER #4	= A	No Feed	
	= B	✓	
	= C		✓
	= D	✓	✓

B.5 Divert Units (Form Divert and Envelope Diverts - where applicable)

BCS CHARACTER #6

This character is used to control the destination of both unfolded forms into the forms divert facility and also the destination of filled envelopes into the envelope divert facility (where applicable).

The forms divert facility is the divert tray on the accumulator. Forms can be diverted into the tray without the need to stop the machine, or it can be set to stop to allow removal.

The envelope divert facility uses the INF Output Sorter.

BCS CHARACTER #6	= A	No diverts
	= B	Form Divert
	= E	Pulse Conveyor (see below)
	= F	No Env Seal (see below)
	= G	Do not divert
	= H	Select Exit 1
	= I	Select Exit 2
	= J	Select Exit 3
	= L	Select Exit 1 + Pulse Conveyor
	= M	Select Exit 2 + Pulse Conveyor
	= N	Select Exit 3 + Pulse Conveyor
	= Q	No Env Seal
	= R	No Env Seal + Select Exit 1*
	= S	No Env Seal + Select Exit 2*
	= T	No Env Seal + Select Exit 3*
	= U	No Env Seal
	= V	No Env Seal + Sel Exit 1 + Pulse Conv*
	= W	No Env Seal + Sel Exit 2 + Pulse Conv*
	= X	No Env Seal + Sel Exit 3 + Pulse Conv*
	= Y	No Env Seal
	= Z	No Env Seal

* Due to loose envelope flap, No Env Seal is subject to test when using Sorter.

Pulse Conveyor: When this character is set to any letter using Pulse Conveyor, it will cause the conveyor to move n number of steps as programmed in the job (the duration of each step will depend upon the speed setting of the conveyor) and then pause for 4 seconds before running resumes.

No Envelope Seal: When this character is set to any letter using No Env Seal on the prime document will program the wetter inhibit function.

B.6 Form Security / Form Sequence within a Job

BCS CHARACTER #7

This facility is used to ensure that forms are processed through the inserter in the same order that they were printed, and that there are no missing forms. This is achieved by coding each form as it is printed with the alphabetic characters A,B,C.....Z. After the Z is printed the sequence restarts at A again.

Note: The coding sequence continues A to Z, regardless of changes of customer.

When the forms are read by the barcode reader any change from the correct order is detected and an alarm produced.

BCS CHARACTER #7 = A
= B
= C
= D
= E
= F
= G
= H
= I
= J
= K
= L
= M
= N
= O
= P
= Q
= R
= S
= T
= U
= V
= W
= X
= Y
= Z
cycle restarts at "A" = A
= B
= C
etc.

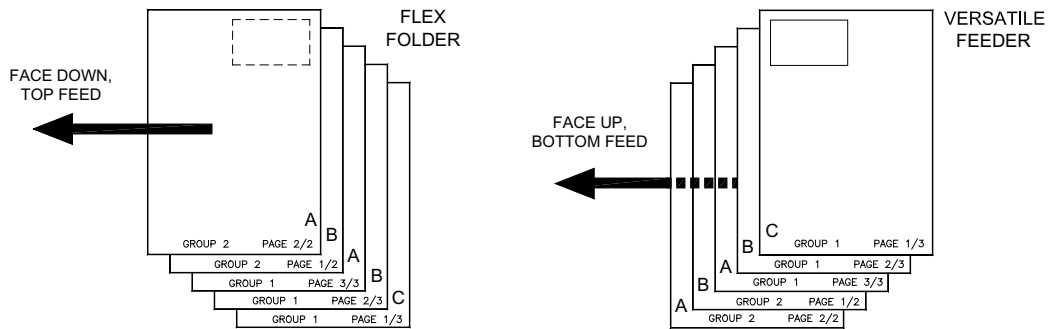
B.7 Group Security

**B.7.1 Group Security / Form Sequence within a Group (1)
End of Group Identifier - Page 1
Page sequence - Reverse**

BCS CHARACTER #8

This facility is used to ensure that forms are processed through the inserter in the correct sequence, and that there are no missing forms. This is achieved by coding each form of a group as it is printed with the alphabetic characters A,B,C.....Z. If the batch of forms in a group exceeds 26 pages, after the Z is printed the sequence restarts at A again. When the forms are read by the barcode reader any change from the correct order is detected and an alarm produced.

Note: Forms are loaded and fed differently on Flex Folder & Versatile Feeder, as shown below. See also section 3.1.



BCS CHARACTER #8

- = A
- = B
- = C
- = D
- = E
- = F
- = G
- = H
- = I
- = J
- = K
- = L
- = M
- = N
- = O
- = P
- = Q
- = R
- = S
- = T
- = U
- = V
- = W
- = X
- = Y
- = Z
- = A
- = B
- = C etc.

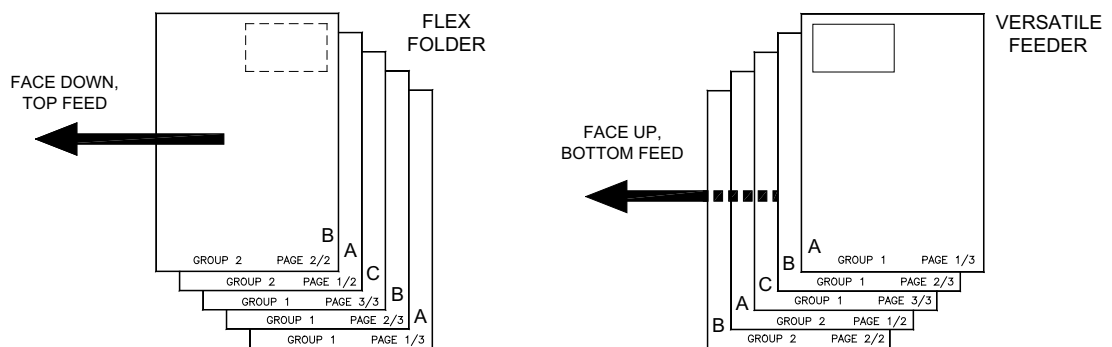
cycle restarts at "A"

B.7.2 Group Security / Form Sequence within a Group (2) First of Group Identifier - Last Page Page sequence - Forward

BCS CHARACTER #8

This facility is used to ensure that forms are processed through the inserter in the correct sequence, and that there are no missing forms. This is achieved by coding each form of a group as it is printed with the alphabetic characters A,B,C.....Z. If the batch of forms in a group exceeds 26 pages, after the Z is printed the sequence restarts at A again. When the forms are read by the barcode reader any change from the correct order is detected and an alarm produced.

Note: Forms are loaded and fed differently on Flex Folder & Versatile Feeder, as shown below. See also section 3.1.



- | | |
|-----------------------|----------|
| BCS CHARACTER #8 | = A |
| | = B |
| | = C |
| | = D |
| | = E |
| | = F |
| | = G |
| | = H |
| | = I |
| | = J |
| | = K |
| | = L |
| | = M |
| | = N |
| | = O |
| | = P |
| | = Q |
| | = R |
| | = S |
| | = T |
| | = U |
| | = V |
| | = W |
| | = X |
| | = Y |
| | = Z |
| cycle restarts at "A" | = A |
| | = B |
| | = C etc. |

B.8 Matching

BCS CHARACTER #9

This facility is used to ensure that each envelope is only filled with personalised items addressed to one recipient. Hence, if there are pages (single or grouped) being fed from more than one feed station each of these pages should have the same match code character. The match codes that can be used are the characters A to Z. The characters do not need to be used in any particular sequence, as the machine will simply look at each page destined for one envelope, and ensure that all the coded pages carry the same Match code character. In the event that there is a mismatch between the forms an alarm is produced.

It is recommended to locate the matched station as close to the prime station as possible.

Matching on folder module with multiple hoppers (Main + Enclosure document integrity match)

- Documents to be matched and fed from additional hoppers MUST have the same barcode definition and position as printed on the prime document.
- The Match document must be set to Feed Always. Any grouping character will be read and acted on.
- The matched document cannot be selectively fed.
- Matching is only possible with FoG (as printed) on Flex folder.
- Matching using NTL codification ONLY (A to Z random; ONE Character).
- Possible to match using Customer ID characters (Both NTL and Neo 3 coding).

Accross Modules Matching

NTL (BCS) codes only.

Matching used to verify the parent document match with the select feed or feed always document

All matching job documents must be cleared and re-synced manually. IMOS will not direct to recover neatly.

Can Match from 2 Flex Folder hoppers: No Select Feed from Flex Folder when matching. Must be Feed Always

Can Match from 1 Flex Folder hopper to a Versa Feeder

Printed from A to Z with the group mark/character on the "A" page (Address Page)

Every main document set must have at least one matched enclosure

Must contain a grouping characters (for multiples)

Set up separate definitions for Folder and VF

Local (module) Matching-----

If single pages OK to match the customer ID. These are single pages. No multiples.

If more than one page (or multiples) we need to have the grouping character added (it will need to be First of Group only).

Cannot have any select feeds.

Can Match from 2 Flex Folder hoppers: No Select Feed from Flex Folder when matching. Must be Feed Always

EX:

Folder

Prime document - Must be first of group printed

Grouping character (in case of multiples).

Note no select feeds from folder if running matching!

Versafeeder

Matched document - Must be first of group printed

Grouping character (in case of multiples)

Matching on folder module from same hopper (Main document integrity match):

The image shows two screenshots of the 'Edit - Character Function' interface. Both screenshots have a title bar with a question mark icon. The interface is divided into several sections with input fields for 'Start Pos.' and 'Length', and a 'Status' column.

Example 1: The 'Customer ID characters' row is circled in red. The 'Status' column for 'Customer ID characters' is set to 'Enable'. Other rows include 'Data logging characters', 'Job number characters', 'Piece ID characters', and three 'Envelope Select' rows, all with 'Disable' status.

Example 2: The 'Customer ID characters' row is circled in red. The 'Status' column for 'Customer ID characters' is set to 'Enable'. The 'Grouping' row is also circled in red. Other rows include 'Data logging characters', 'Job number characters', 'Piece ID characters', 'Form and Envelope Divert', 'Form Sequence within a Job', 'Form Sequence within a Group', 'Matching', 'Group Sequence', and 'Document ID', all with 'Disable' status.

Example 1

Example 2

- Example 1: Neo 3 with Customer ID enabled
- Example 2: NTL Grouping plus Customer ID enabled

Matching on single Versafeeder hopper (Main document integrity match)

- Example 1: Neo 3 with Customer ID enabled
- Example 2: NTL Grouping plus Customer ID enabled

Matching on Folder module plus multiple reading versafeeders (across modules) (Main + Enclosure document integrity match).

- Documents must be printed as First of group when using a versafeeder. This is absolutely necessary for multiple page sets.
- The barcode may be different to the prime document if being fed from a versafeeder.
- When matching documents from different modules the NTL match coding must be used. Neo111 code is not supported for matching.
- Barcode may be matched with OMR where A=0 to Z=25 using the marks as defined in the table on the following page.
- Possible to match using Customer ID characters (both NTL and Neo 3 coding).

Reading Specification

	Equivalent Numeric Values															
Mark No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Match Mark 1																
Match Mark 2																
Match Mark 3																
Match Mark 4																
Match Mark 5																
Cont....																
	Equivalent Numeric Values															
Mark No.	16	17	18	19	20	21	22	23	24	25						
Match Mark 1																
Match Mark 2																
Match Mark 3																
Match Mark 4																
Match Mark 5																

B.9 Variable Group Size

BCS CHARACTER #10

Variable Group Size allows the selection of variable numbers of forms from multiple feed hoppers to form the group.

11 new character types have been introduced:

Item Id n feed count (where n = 2 to 12)

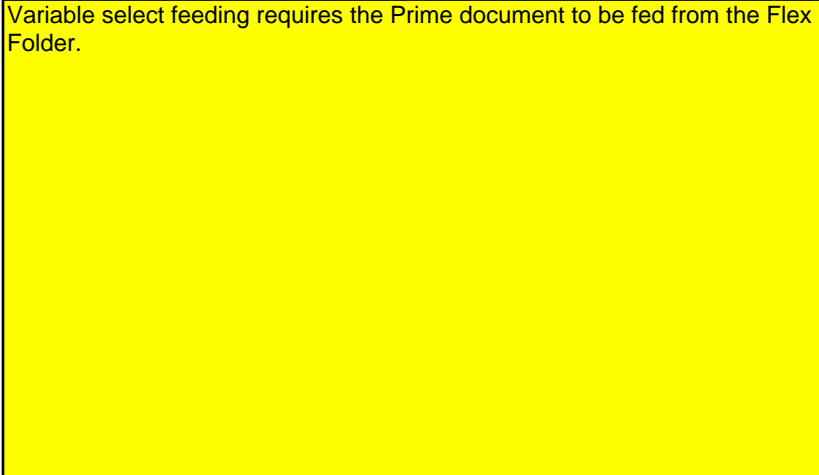
Each character refers to a document by its Item Id

For each character definition, the feed quantity can range from 0 to maximum 25.

Additional notes:

- The character value will remain the same for every label within a group.
- The character length will be 1.
- The "label machine control" will be **BCS Control**.
- The document can be placed on any reading hopper.

Variable select feeding requires the Prime document to be fed from the Flex Folder.



cont.

B.9.1 Character meaning:

This table shows the following

- Valid character value in the label range from "A" through to "Z".
- Feed quantity up to a maximum of 25 documents.
- The character "A" means that no select feed is required.
- The character "F" means that 5 documents need to be selectively fed.

Character Value	Feed Count
A	0
B	1
C	2
D	3
E	4
F	5
G	6
H	7
I	8
J	9
K	10
L	11
M	12
N	13
O	14
P	15
Q	16
R	17
S	18
T	19
U	20
V	21
W	22
X	23
Y	24
Z	25

B.9.2 Example BCR Definition screenshot

Item Id feed count set to start position 2

The image shows two overlapping software windows. The background window is titled "Create new - BCR definition" and contains the following fields:

- BCR definition: Item Id 2 Feed Count Example
- Number of characters in label: 2
- Label machine control: BCS Control
- Symbology: Code 3 of 9
- Grouping: End-of-Group
- Datalogging mode: Off

The foreground window is titled "Edit - Character Function" and contains a table with columns "Start Pos." and "Length". The table lists various character functions with their respective start positions and lengths. The "Item Id 2 feed count" row is circled in red.

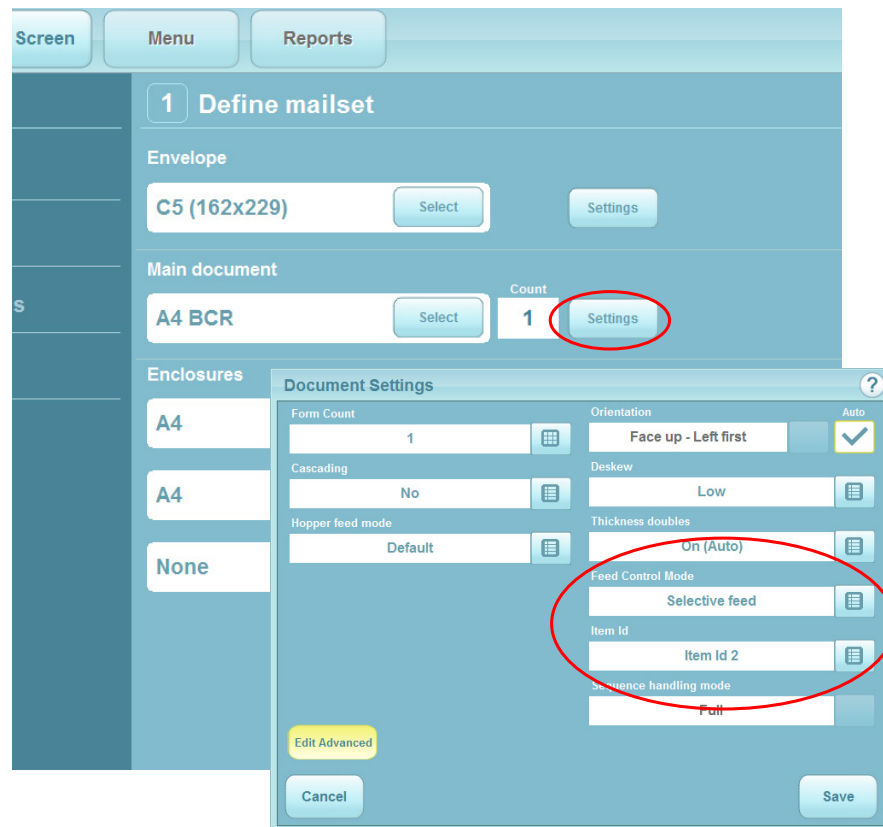
	Start Pos.	Length
Data logging characters	0	0
Customer ID characters	0	0
Job number characters	0	0
Piece ID characters	0	0
Document ID	0	0
Item Id 2 feed count	2	1
Item Id 3 feed count	0	0
Item Id 4 feed count	0	0
Item Id 5 feed count	0	0
Item Id 6 feed count	0	0
Item Id 7 feed count	0	0
Item Id 8 feed count	0	0

Character position 1: Grouping character -End of Group (out of view).

Character position 2: Item Id 2 feed count

B.9.3 Example Define Mailset screenshot

The document you want associated with the Item Id character control must be programmed with a matching Item Id and its feed mode must be set to Selective Feed. This document may be placed on any reading feed hopper.



- Document that uses the Item Id must be set up with the BCR definition.
- A reading licence must be purchased in order to use a BCR definition.

Appendix C Custom Schemes

Flex Barcode

Flex barcode allows a customised barcode scheme to be added to the machine. This coding cannot be edited by the user.

- This tool will be available at NTL.
- This tool will allow programmer to specify how existing function are encoded.
- This tool will not allow programmer to create new machine functions.
- This will reduce costly SPR usage.
- This will give a new competitive advantage.
- This will give flexibility & reactivity to Opco's via NTL.
- This will help us to deal with service providers.

C.1 2 of 5 Custom Control 1

When "Label machine control" is programmed to "Numeric 2 of 5" then the mode of operation is dependent on the label length. Below explains the two modes. Mode 1 is operational when the number of characters in the label is 22 and Mode 2 is for all other label lengths.

Mode 1: Number of characters in label = 22:

Grouping character: Position 18, length 1

bit 0: 0 = Continue, 1 = End of group OR first of group

Select Feeding character(s): Position 19, length 2

Character 1, bit 0 : 1 = select Item Id 2

Character 1, bit 1 : 1 = select Item Id 3

Character 1, bit 2 : 1 = select Item Id 4

Character 2, bit 0 : 1 = select Item Id 5

Character 2, bit 1 : 1 = select Item Id 6

Character 2, bit 2 : 1 = select Item Id 7

Character 3, bit 0 : 1 = select Item Id 8

Character 3, bit 1 : 1 = select Item Id 9

Character 3, bit 2 : 1 = select Item Id 10

Character 4, bit 0	: 1 = select Item Id 11
Character 4, bit 1	: 1 = select Item Id 12
Character 4, bit 2	: 1 = select Item Id 13
Character 5, bit 0	: 1 = select Item Id 13
Character 5, bit 1	: 1 = select Item Id 14
Character 5, bit 2	: 1 = select Item Id 15
Character 6, bit 0	: 1 = select Item Id 16
Character 6, bit 1	: 1 = select Item Id 17
Character 6, bit 2	: Reserved, Only set to 0.

Divert character: Position 21, length 1

Any character value other than '0' will cause a divert.

Form sequence in job character(s): Position 17, length 1

Yes, up to 9 characters.

1 character programmed:	Max form sequence = 7 (BNP)
2 characters programmed:	Max form sequence = 99
3 characters programmed:	Max form sequence = 999
4 characters programmed:	Max form sequence = 9,999
5 characters programmed:	Max form sequence = 99,999
6 characters programmed:	Max form sequence = 999,999
7 characters programmed:	Max form sequence = 9,999,999
8 characters programmed:	Max form sequence = 99,999,999
9 characters programmed:	Max form sequence = 999,999,999

Form sequence in group character(s): Not used

1 character programmed:	Max form sequence = 9
2 characters programmed:	Max form sequence = 99
3 characters programmed:	Max form sequence = 999
4 characters programmed:	Max form sequence = 9,999

Mode 2: Number of characters in label not equal to 22.

Grouping character: Position 7, length 1

bit 1: 0 = Continue, 1 = End of group OR first of group

Select Feeding character: Position 8, length 2

BCD encoding up to 5 characters. Can select Items ID2 - ID17.

Divert character: Position 6, length 1

bit 0: 0 = No Divert, 1 = Divert

bit 1: 0 = No Seal, 1 = Seal

bit 2: Ignored

Form sequence in job character(s): Position 1, length 5

Yes, up to 9 characters.

1 character programmed:	Max form sequence = 9
2 characters programmed:	Max form sequence = 99
3 characters programmed:	Max form sequence = 999
4 characters programmed:	Max form sequence = 9,999
5 characters programmed:	Max form sequence = 99,999
6 characters programmed:	Max form sequence = 999,999
7 characters programmed:	Max form sequence = 9,999,999
8 characters programmed:	Max form sequence = 99,999,999
9 characters programmed:	Max form sequence = 999,999,999

Form sequence in group character(s): Not used

1 character programmed:	Max form sequence = 9
2 characters programmed:	Max form sequence = 99
3 characters programmed:	Max form sequence = 999
4 characters programmed:	Max form sequence = 9,999

C.2 Last Page Custom Control 1

As Legacy BCS but label printed on last page only.

BCS character #1 is used for grouping as follows:

'A'	End of Group (group of 2)
'B'	End of Group (group of 1)
'C'	End of Group and Autoend
'G'	End of Group of 3
'H'	End of Group of 4
'I'	End of Group of 5
"	
"	
"	etc.
'Z'	End of Group of more than 21

C.3 Custom Control 2

CSX Special, Interleaved 2 of 5, fixed label length of 14 characters, label printed on all pages. Encoding as follows

Posn	Field len	Description
1	2	Ignored
3	3	Job name - ignored
6	6	Customer ID
12	1	Form sequence in group, starting at 1 in the print order, feed order is n,n-1,3,2,1
13	1	Select feed in range 0-9. Bit0=Item2 ... Bit3=Item5
14	1	Postal Code - ignored

C.4 Custom Control 3

Programmed in print order.

Number of characters	= 7.
Pos 1-3	= Rolling sequence (numeric). Range = 000 - 999. Incrementing.
Pos 4	= Grouping character. End of Group.
Pos 5	= Not in use. (Stop inserter).
Pos 6	= Not in use.
Pos 7	= Select feed character. Range = '0'-'F'.

Important Note

Custom Controls 1 to 3 are available as standard. Any other custom requirements can be accommodated under the NTL SPR (Special Project Request) system.

Document ID

C.5 Customer ID (with Code 3 of 9, Code 2 of 5, Code 128 and 2D DataMatrix)

This is an alternative method of grouping the document sets. It depends on each page of a set having the same barcode label printed on it, for example, an alphanumeric account ID or customer ID etc.

Pages will be fed to the accumulator until the ID field changes. Whenever, the ID changes the feeding will stop so that only pages with the same ID will be grouped together and inserted into an envelope.

The ID field may be all or part of the barcode label. If only a part of the label is used as the customer ID, then those characters must be positioned together in the label.

In addition to Grouping, the following functions are also supported:

- selective feed
- form and envelope divert (only if 3 of 9)
- sequence in job,
- sequence in group,

Grouping by Document ID may contain alpha and numeric characters.

C.6 Custom Control 5

If KAS special, hard-code the job settings.

Programmed in print order.

Number of characters = 7.

Pos 1-3	= Rolling sequence (numeric). Range = 000 - 999. Incrementing.
Pos 4	= Group
Pos 7	= Select feed character. Range = '0'-'F'. End of Group.
Pos 5	= Not in use. (Stop inserter)
Pos 6	= Not in use.

C.7 Custom Control 6

Custom specific code as follows:

19 characters

Pos	Len	Description
7	6	Sequence
13	2	Total sheets
15	2	Sheet number
17	1	Insert control
18	1	Select feed 1-5
19	1	Select feed 6-10

C.8 Custom Control 7

Abtran Customer, 3 characters, 3-of-9 symbology, encoded as follows

Pos	Len	Description
1	1	Grouping, number in range 0-3, Bit0=Last-page (printed), Bit1=First page (printed)
2	1	Sequence in group, number range 0-9, counts up (print order)
3	1	Six select feed items (see table on following page)

		TRAY (B)	TRAY (C)	TRAY (A)	TRAY (D)	TRAY (E)	TRAY (F)
Value	Encode Digit	SF1	SF2	SF3	SF4	SF5	SF6
0	0						
1	1	Open					
2	2		Open				
3	3	Open	Open				
4	4			Open			
5	5	Open		Open			
6	6		Open	Open			
7	7	Open	Open	Open			
8	8				Open		
9	9	Open			Open		
10	A		Open		Open		
11	B	Open	Open		Open		
12	C			Open	Open		
13	D	Open		Open	Open		
14	E		Open	Open	Open		
15	F	Open	Open	Open	Open		
16	G					Open	Open
17	H	Open				Open	Open
18	J		Open			Open	Open
19	K	Open	Open			Open	Open
20	M			Open		Open	Open
21	N	Open		Open		Open	Open
22	P		Open	Open		Open	Open
23	Q	Open	Open	Open		Open	Open
24	R				Open	Open	Open
25	S	Open			Open	Open	Open
26	T		Open		Open	Open	Open
27	V	Open	Open		Open	Open	Open
28	W			Open	Open	Open	Open
29	X	Open		Open	Open	Open	

Custom Control 12

Customer specific – NBR code as follows:
10 characters

Number of characters = 10 (1D)

Pos 1	= 0-7	= Group. EOG = bit 1
Pos 2	= 0-7	= Bit 0 = **Not used** = Bit 1 = MARK_SEL_ITEM2 = Bit 2 = MARK_SEL_ITEM3
Pos 3	= 0-7	= Bit 0 = MARK_SEL_ITEM4 = Bit 1 = MARK_SEL_ITEM5 = Bit 2 = **Not used** (Ink mark)
Pos 4-5	= 00-99	= Form sequence in job.
Pos 6-7	= 00-99	= Match marks.
Pos 8-9	= 00-99	= **Not used** ID check.
Pos 10	= 0-7	

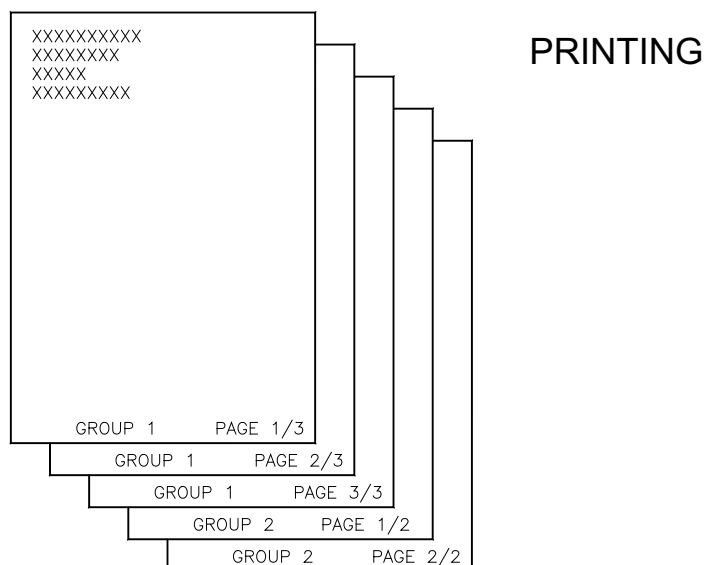
Appendix D OMR Function Descriptions (Neo 3 and NTL Coding)

D.1 Gate Mark 1 mark
The Gate Mark must be either the first mark to be scanned, or the last mark to be scanned by the OMR reader. It must be printed in the same position on every page of the print run and may be at the top, bottom, left or right of the form.

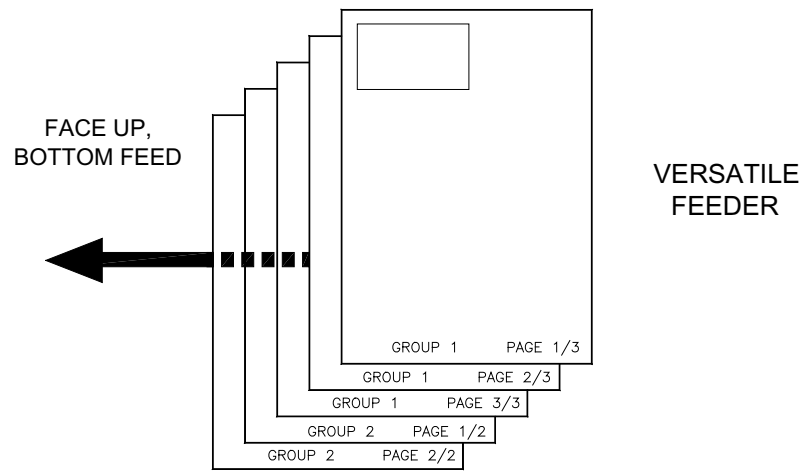
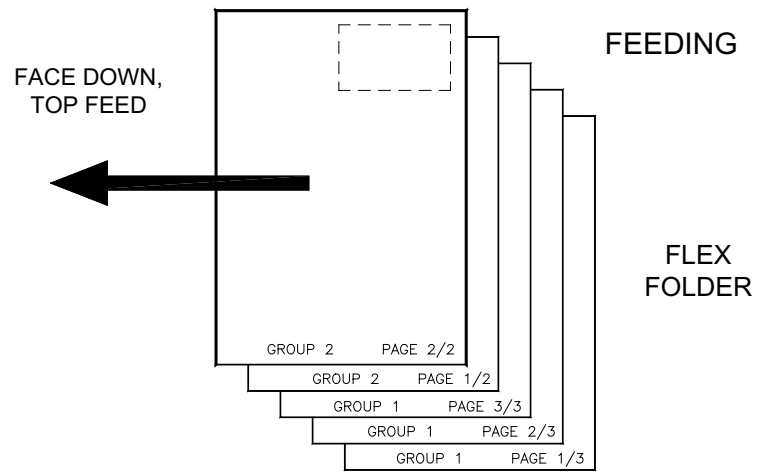
D.2 Grouping of Multi-page Documents 1 mark
Multiple pages can be grouped together for insertion into the same envelope. The function mark required is one of the following:

1. First of Group Mark (FOG). Printed on the first page of a group: it is the last page to be fed and stops the next page being collated with the group.
2. End of Group Mark (EOG). Printed on the last page of a group: it is the first page to be fed but held at hold point while the previous group exits. Pages then feed until the next EOG mark is read, which again stops at the hold point..
3. Demand feed (FOG). Printed on all pages of the document group except for the first page. (Inverse of FOG).
4. Demand feed (EOG). Printed on all pages of the document group except for the last page. (Inverse of EOG).

Note: The above assumes print order, not feed order. Documents are defined in print order and always run in reverse print order:



cont.



D.3 Parity Mark

1 mark

The function of the Parity Mark is to check if the correct number of marks have been read. Options a and b are a basic form of printing security.

The options for the parity marking are

- a) Even parity marking: the machine looks for an even number of marks.
- b) Odd parity marking: the machine looks for an odd number of marks.
- c) No parity marking: the machine does not look for a mark count.

D.4 Selective Feeding of Items

10 marks

The selective feed facility allows the selection of up to ten items to be added to the prime document depending on the OMR marks printed on the prime document. The maximum number of selective feeds is limited to the maximum number of additional feed units fitted. The select feed mark(s) must be on the first document fed on the prime station when document is part of a group.

Note: By default, the prime document is item 1, though items placement defaults can be overridden.

The table above shows Select Feed marks for up to 10 selective feed stations (items 2-11), the maximum supported by the 200 Series.

Select Item	2	3	4	5	6	7	8	9	10	11
Select Feed Mark 1	---									
Select Feed Mark 2		---								
Select Feed Mark 3			---							
Select Feed Mark 4				---						
Select Feed Mark 5					---					
Select Feed Mark 6						---				
Select Feed Mark 7							---			
Select Feed Mark 8								---		
Select Feed Mark 9									---	
Select Feed Mark 10										---

D.5 Form Sequence within a Job

6 marks

The purpose of this mark function is to code each page of a print run with a number sequence running from 0 up to 63 and then restarting at 0. This ensures that integrity of document sets is maintained, and that each envelope is filled correctly.

Up to six marks are used, in a binary sequence as shown in the matrix on the following page. If a smaller number of marks is required then it is possible to use five, four, three, two or one mark, in which case the numbering goes from 0 to 31, 0 to 15, 0 to 7, 0 to 3 or 0 to 1 respectively. It is not generally recommended to use less than three marks.

Note: See also D.21 'Group Sequence within a Job'.

Mark No.	Page Sequence										Page Sequence																												
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							
FSN Mark 1																																							
FSN Mark 2																																							
FSN Mark 3																																							
FSN Mark 4																																							
FSN Mark 5																																							
FSN Mark 6																																							

Mark No.	Page Sequence										Page Sequence																														
	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63									
FSN Mark 1																																									
FSN Mark 2																																									
FSN Mark 3																																									
FSN Mark 4																																									
FSN Mark 5																																									
FSN Mark 6																																									

- D.6 Diverting Forms** 1 mark
The system allows programming of a divert mark to force a document set to be diverted into the divert bin, which may be fitted to the machine. On the tower folder, this is the bin on the accumulator. On the versatile feeder, forms are diverted to the insert head collate pocket for manual removal. The machine will stop to allow this.
- D.7 Envelope No Seal** 1 mark
A single mark may be used to program the wetter inhibit function. If an OMR mark is detected in the Unseal position on the prime document, when that form is inserted into the envelope unsealed.
- D.8 Halt Function** 1 mark
The Halt function consists of one mark which when detected by the OMR system completes the collation of the document group and all other actions until the document set, including additional inserts is enveloped and held at the output rollers unsealed. It then stops the inserter to allow operator intervention for whatever purpose, for example, to periodically confirm correct operation of the mailing run, or to add a non standard item to the envelope.
- Note:** If the document with the halt mark also has a divert mark, then as that document never reaches the output, it will not cause the system to stop. Hence, the halt mark should not be used in a set of documents which are marked for diversion.
- D.9 Resync Function** 1 mark
The Resync function consists of one mark which when detected by the OMR system re-registers the paper to the remainder of the OMR marks to be read. This assumes that the marks have been correctly printed on a fixed pitch and makes the required correction between the actual and apparent position of the marks. This option is mainly used when the OMR marks are spread over a very large length of the document.
- D.10 Ignore Function**
The Ignore function consists of any number of marks which when detected by the OMR system are read and counted with the other marks for the purposes of parity checking. No other function is assigned to the marks, so functionally, there are ignored.

D.11 Blank Function

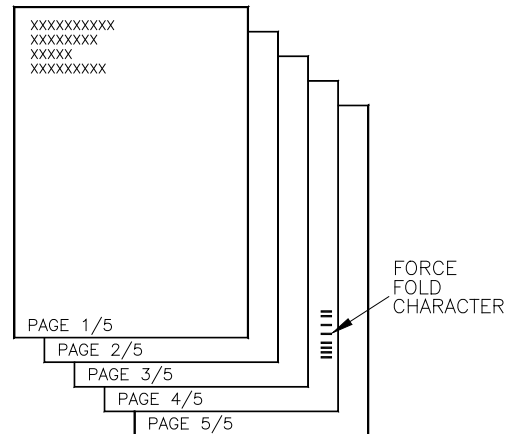
1 mark

Used to indicate spaces in groups of marks on the page.

D.12 Force Fold

1 mark

This mark is used with multi-page documents, when it is required to break the document group into specific sets, earlier than the maximum fold limit which has been set. The action of force fold is shown below:



When the force fold character is read, pages 4 and 5 will be folded.

D.13 Form Sequence within a Group

4 marks

The purpose of this function is to code each page of a document set with a number sequence running from 0 up to 15 and then restarting at 0 for the next document set. In the event that a document group exceeds 16 pages, then the numbering goes from 0 to 15, restarting at 0 and incrementing to the last page. This number sequence is printed on each page of a set or group, which is to be inserted into an envelope. Therefore, as soon as a loss of sequence is detected, it indicates an error in the page order and stops the machine so that the operator can rectify the fault. This ensures that integrity of document sets is maintained, and that each envelope is filled correctly. This function is achieved by programming up to four marks and printing them as a binary sequence as shown below.

Mark No.	Page Sequence in the Group															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
GSN Mark 1		---		---		---		---		---		---		---		---
GSN Mark 2			---	---			---	---			---	---			---	---
GSN Mark 3					---	---	---	---					---	---	---	---
GSN Mark 4									---	---	---	---	---	---	---	---

Due to the fact that the forms may be fed 'face up' or 'face down' from the form stack on the machine infeed unit, it means that the forms may be processed either in the order they were printed, or the reverse order. However, the OMR system on the machine checks the numbering in a count up sequence. Additionally, if the forms are printed with no zero, for example, 1 to 15, then the checking system can be programmed to exclude zero from the number sequence.

Note: The normal security system for ensuring that all the printed pages are processed correctly through the machine is Form Sequence within a Job (see D.5). Form Sequence within a Group should only be considered when Form Sequence within a Job cannot be used.

Note: See also D.21 'Group Sequence within a Job'.

D.14 Matching

5 marks

When personalised documents are being fed from more than one OMR station for insertion into the same envelope, it is possible to code the individual pages with the same 5 mark pattern to indicate that the pages belong together. In this situation the OMR marks are read on each individual page at each of the OMR stations. When the two or more personalised sets of marked documents are merged on the insert track, the control system checks if the match marks are the same. If there is a mismatch of the match marks the machine stops with an error message displayed. For the system to continue operation all the forms with OMR match marks which are to be inserted together into one envelope must have the same match code. Any difference in the match code on any page indicates that that page does not belong with the others and stops the inserter until the operator corrects the problem and restarts the system. The match codes can be generated randomly, no particular sequence or order is required. In the table shown on the following page, all of the 32 possible mark combinations are shown with their numerical values.

It is recommended to locate the matched station as close to the prime station as possible. If a fixed number of forms is being fed in the matched station, use multiple feed, or the machine will run more slowly.

cont.

	Equivalent Numeric Values															
Mark No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Match Mark 1		---		---		---		---		---		---		---		---
Match Mark 2			---	---			---	---			---	---			---	---
Match Mark 3					---	---	---	---					---	---	---	---
Match Mark 4									---	---	---	---	---	---	---	---
Match Mark 5																
Cont...																
	Equivalent Numeric Values															
Mark No.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Match Mark 1		---		---		---		---		---		---		---		---
Match Mark 2			---	---			---	---			---	---			---	---
Match Mark 3					---	---	---	---					---	---	---	---
Match Mark 4									---	---	---	---	---	---	---	---
Match Mark 5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Matching on folder module with multiple hoppers:

- Documents to be matched and fed from additional hoppers MUST have the same barcode definition and position as printed on the prime document.
- All other marks except the match mark will be ignored on secondary documents.
- The Match document must be set to Feed Always and be of a fixed multiple, usually just single sheet. The matched document cannot be selectively fed.
- Matching is only possible with FoG (as printed) on Flex folder.
- Matching using NTL codification ONLY (A to Z random; ONE Character).
- Possible to match using Customer ID characters

Matching on Folder module plus multiple reading versafeeders:

- Documents must be printed as First of group when using a versafeeder. This is absolutely necessary for multiple page sets.
- The OMR may be different to the prime document if being fed from a versafeeder.
- Barcode may be matched with OMR where A=0 to Z=25 using the marks as defined in the table above.

D.15 Pulse Conveyor

1 mark

This mark will cause the conveyor to move a number of steps (the duration of each step is set in the operating software) and then pause for 4 seconds before running resumes.

D.16 Group, Divert & Continue

1 mark

This mark is for compatibility with legacy jobs from machines other than 200 Series. It is printed on the last page of the group (print-order) and tells the machine that:

- (a) this is the last page of the group.
- (b) the group accumulated thus far will be diverted.
- (c) the machine will continue to run after the group has been diverted.

This feature applies to a tower folder fitted with a divert tray. If the divert tray is not fitted, the machine must stop to allow the operator to manually remove the group from the accumulator. On modules which do not support a divert tray, the group will be accumulated in the collate pocket of the head and the machine will again stop and ask the operator to remove the group.

D.17 Group, Divert & Stop

1 mark

As above, but the machine will stop after the group has been diverted and display an appropriate message.

D.18 Autoend

1 mark

This mark may be used at the end of the job when it is required to automatically enter the 'Autoend' mode. The system operates by detecting this mark in the last document set, and then setting the 'Autoend' mode so that the marked document set is the last to be enveloped and ejected on to the output conveyor. This mark may also be used when there is a requirement to interrupt a job into well defined parts, for example to batch work by post code, or any other defined criterion. This must be printed on the first page of the job or batch.

D.19 Exit selection

Choices are Exit 1, exit 2 or exit 3 at one mark per exit

D.20 Banner Page

Diverts the blank page, resets form sequence and carries on running.

D.21 Group Sequence within a Job

This function is not supported, ie. if a group is removed within a job, the machine will **not** stop and display an error.

Appendix E Neo 3 coding (Flex)

Support for 2-track OMR is provided to accommodate existing jobs that use this system. Marks may be printed in either both tracks, or only one (referred to as 1-Track OMR).

E.1 2-Track (A = first track, B = second track).

Reading code parameter	A	B		A	B		A	B		A	B	
Basic 1	-	x	=accumulate	x	-	=insert	x	-	= divert & continue, divert & stop or ignore the divert (set in software)	-	x	= divert & continue, divert & stop or ignore the divert (set in software)
Basic 2	x	-		-	x		x	-		-	x	
Selective feed 1	-	x	= Feed from station 1				x	-	= Do not feed from station 1			
Selective feed 2	-	x	= Feed from station 2				x	-	= Do not feed from station 2			
Selective feed 3	-	x	= Feed from station 3				x	-	= Do not feed from station 3			
Selective feed 4	-	x	= Feed from station 4				x	-	= Do not feed from station 4			
Selective feed 5	-	x	= Feed from station 5				x	-	= Do not feed from station 5			
Selective feed 6	-	x	= Feed from station 6				x	-	= Do not feed from station 6			
Selective feed 7	-	x	= Feed from station 7				x	-	= Do not feed from station 7			
Exit Control	-	x	= Pulse conveyor				x	-	= Pulse conveyor			
Pres. on Deck and continue	-	x	= Halt				x	-	= Halt			
Pres. on Deck and stop	-	x	= Halt				x	-	= Halt			
Sealing control	-	x	= Do not seal				x	-	= Seal			
	0		1	2	3	4	5	6	7			
Sequence check 4	x -		x -	x -	x -	- x	- x	- x	- x			
Sequence check 2	x -		x -	- x	- x	x -	x -	- x	- x			
Sequence check 1	x -		- x	x -	- x	x -	- x	x -	- x			
Parity (even parity)	-	x	or				x	-				

- = Mark, x = No mark

Min mark thickness is .5 mm
Minimum from leading edge is 20 mm and 15 mm from the trailing edge

Function	Specification
Min mark length	4.2 mm
Min mark thickness	0.2 mm
Min track separation (two track only)	2.1mm
Divert&Stop function	Supported
Exit Control function	Supported
Hopper Selection	Not supported

E.2 1-Track (A = first track) - Neo 3 coding (Flex)

Reading code parameter	A			A					
Start mark	-		Always present			-		Always present	
Insert/accumulate	-		= Insert					= Accumulate	
Divert & continue	-		= Divert & continue					= Do not divert & continue	
Divert & stop	-		= Divert & stop					= Do not divert & stop	
Stop	-		= Stop machine					= Stop machine	
Selective feed 1	-		= Feed from station 1					= Do not feed from station 1	
Selective feed 2	-		= Feed from station 2					= Do not feed from station 2	
Selective feed 3	-		= Feed from station 3					= Do not feed from station 3	
Selective feed 4	-		= Feed from station 4					= Do not feed from station 4	
Selective feed 5	-		= Feed from station 5					= Do not feed from station 5	
Selective feed 6	-		= Feed from station 6					= Do not feed from station 6	
Selective feed 7	-		= Feed from station 7					= Do not feed from station 7	
Exit control	-		= Pulse conveyor					= Pulse conveyor	
Pres. on Deck and continue	-		= Halt					= Do not Halt	
Pres. on Deck and stop	-		= Halt					= Do not Halt	
Sealing control	-		= Do not seal					= Seal	
		0	1	2	3	4	5	6	7
Sequence check 4	-	-	-	-	-	-	-	-	-
Sequence check 2	-	-	-	-	-	-	-	-	-
Sequence check 1	-	-	-	-	-	-	-	-	-
Parity (even parity)	-		or			-			
Safety mark	-		Always present			-		Always present	

- = Mark, x = No mark

Min mark thickness is .5 mm
Minimum from leading edge is 20 mm and 15 mm from the trailing edge

Function	Specification
Min mark length	4.2 mm
Min mark thickness	0.2 mm
Min track separation (two track only)	2.1mm
Divert&Stop function	Supported
Exit Control function	Supported
Hopper Selection	Not supported