Users Manual

PCL

Printer Control Language

Users Guide and

Reference Manual

AVERY DENNISON

Manual Edition 7.2

24 October 2003

Manual Part Number 800116

This Page Intentionally Left Blank

Contents

Introduction

AVERY DENNISON PCL stands for **AVERY DENNISON P**rinter **C**ontrol **L**anguage. AVERY DENNISON PCL is a set of commands, which allows data to be transferred to the AVERY DENNISON 630, 650, 960, 636, 656, 676, 686 and 545 printers. From herein the AVERY DENNISON 630, 650, 960, 636, 656, 676, 686 and 545 printers will be referred to as PCL Printers. AVERY DENNISON PCL was developed to allow any device that can transmit data through an RS232 connection to transfer information to the AVERY DENNISON PCL Printer. This capability allows the PCL Printer to be driven by many different types of computer equipment.

Users Guide

Overview

AVERY DENNISON PCL is a description language for the AVERY DENNISON PCL printers. PCL allows a user to describe a tag layout to a printer. Also PCL allows a user to send multiple sets of information to a printer. These sets of information will be printed using either a tag layout that was sent to the printer using PCL or a tag layout that is stored on the printer.

A tag layout is known as a format. A format contains all the physical descriptions of a tag or label. These descriptions include tag size, sense mark position, field positions, field types, field sizes, etc..., everything the printer needs to know in order to build and print the tag or label. The formats can be sent to a printer using PCL just prior to the information that is to be printed or the formats can reside in the printer. If the formats reside in the printer then PCL is only needed to send the information that is to be printed.

The multiple sets of information are known as Batch Data or just Batches. Batches consist of character data sent to the printer in the order specified by the format. This information is plugged into the format and a tag is created. The number of tags to be printed using this information is known as the quantity. The quantity is also sent with the batch data.

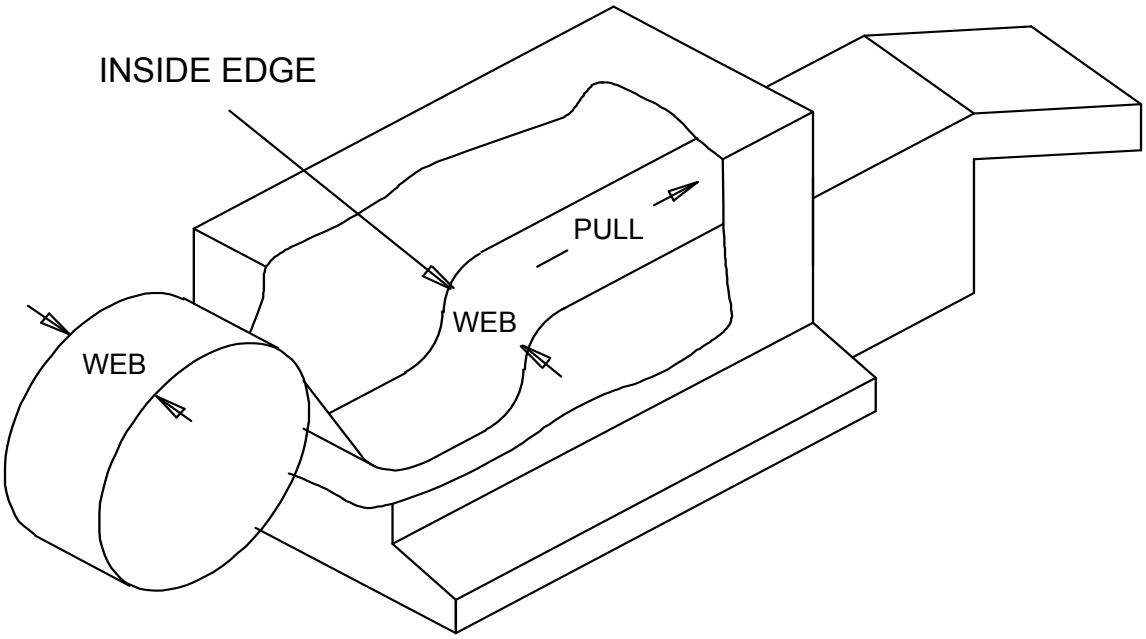
The following sections in this document explain how to make a format and send it to the printer and also explains how to present the batch data to the printer. These sections give realistic examples that can be referred to when making a format. All of the AVERY DENNISON PCL commands are not covered in the Users Guide. A complete guide for the AVERY DENNISON PCL commands is included in the AVERY DENNISON Printer Control Language Reference Manual.

Building a Format

There are some important terms that are used when building a format which are defined here.

Pull Direction - The pull direction is used to describe one side or dimension of a tag/label. The pull direction is the direction that the stock travels through the printer.

Web Direction - The web direction is used to describe another side or dimension of a tag/label. The web direction is best illustrated by the width of a roll of stock. The web direction is the dimension that is directly related to the print head.

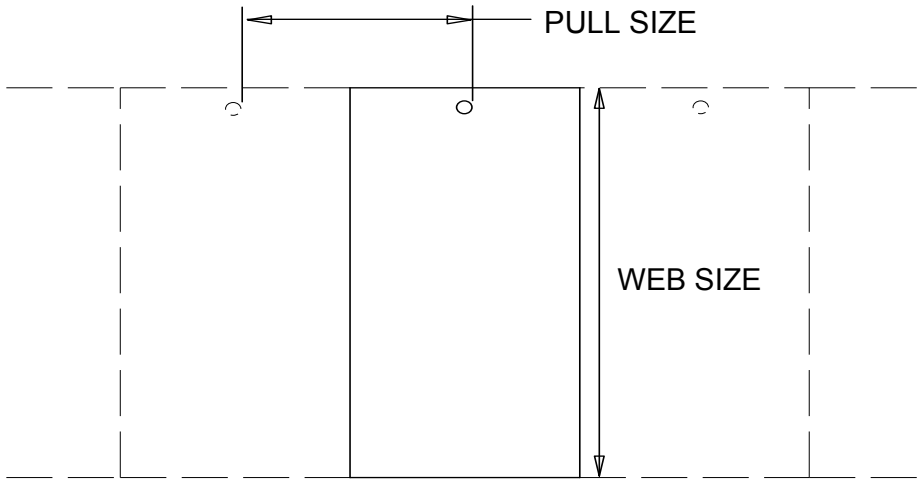


The pull and web directions are very important when laying out a tag / label. If these dimensions are not determined correctly then the orientations of the fields that are placed on the tag/label will be incorrect.

Format Header

The Format Header contains information that pertains to the physical characteristics of the tag and any other print characteristics. There are several commands that are necessary for the format header information. The first is ~XA. The XA command is the start command for a format header. This command is required at the beginning of every format that is sent to a printer.

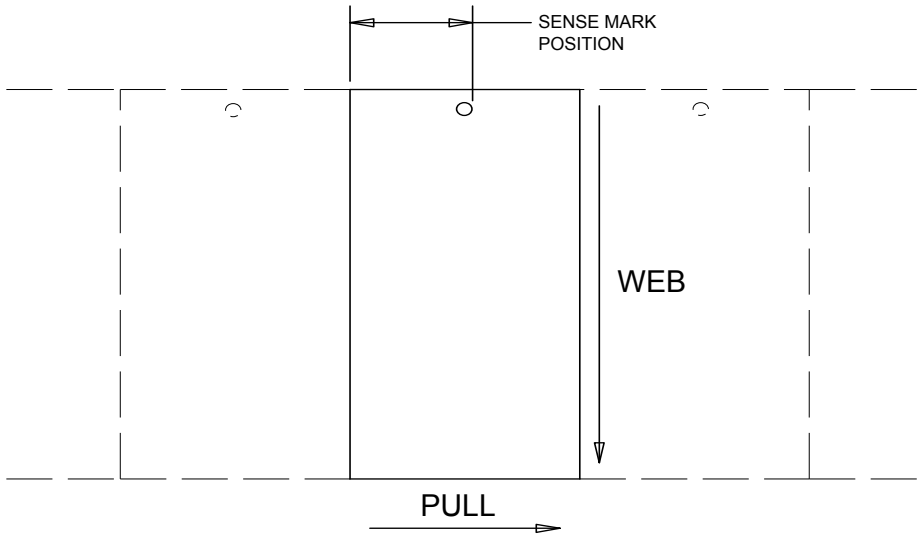
The next two commands which must follow the XA command are the ~XW and ~XP commands. These commands tell the printer the tags web size and pull size. It is important that these commands are included in the format header because the printer cannot print the tags correctly if these commands are omitted or are incorrect. These commands should also be the first format header commands sent to the printer because other header commands use the size information from these commands.



For a tag that has a web size of 3" the command would be ~XW3000. All measurements are accepted by the printer in thousandths of an inch. For a pull size of 2-1/4", the command would be ~XP2250. If the tag is a sense mark tag, the best way to determine the pull size is to measure from the leading edge of one sense mark to the leading edge of the next sense mark on a continuous roll of stock.

Note: When using Pressure Sensitive stock you must use the distance from sense mark to sense mark for the tag's pull length but remember when you are laying out the fields that the actual sticker area which is printed on is smaller.

If the information which is to be printed on the stock is to be registered to a sense mark, the command ~XM must be used to tell the printer the sense mark information. The sense mark's position is determined by measuring from the leading edge of the sense mark to the trailing edge of the tag/label in the pull direction. (The "leading edge" and "trailing edge" are determined by the path of the stock through the printer. The leading edge arrives at the printhead first and the trailing edge arrives at the printhead last.)



If it is a hole sense mark the command is ~XMH. If it is a reflective sense mark the command is ~XMR. This command is followed immediately by the sense mark's position. If the 3" X 2-1/4" tag described above had a hole sense mark in the middle of the tag, the sense mark command would be ~XMH1125.

Another common command for header information is the flagging command. The flag is the tag or pair of tags that are made to separate batches. The flagging command is ~XF. The flagging command has several options that are described in the Reference Manual. This tag will use the ~XFL command. This tells the printer to do a long/short flag between the batches.

The complete format header for this example would be:

~XA~XP2250~XW3000~XMH1125~XFL

The field definitions would follow the header information. At the end of the field definitions the command ~XZ is required to signal the end of the format description.

The overall format description would be structured like this:

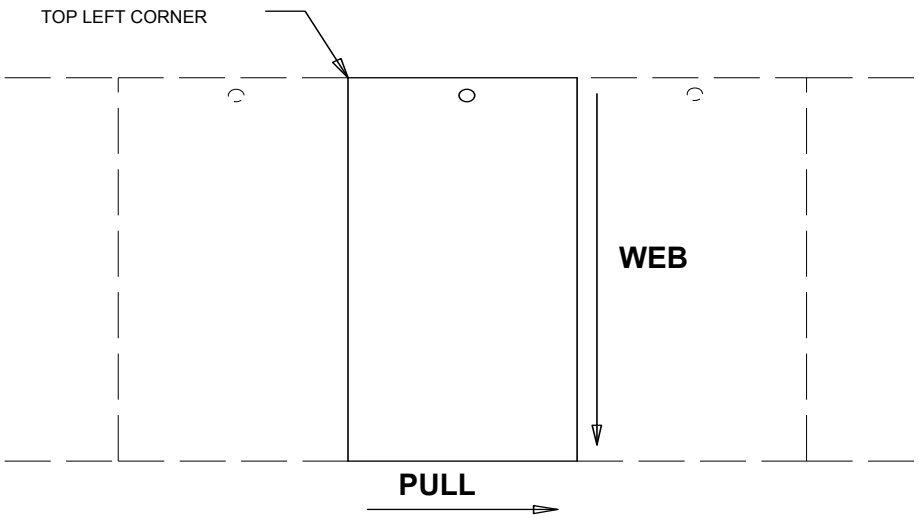
~XA{Format Header}{Field 1 Desc.}{Field 2 Desc.}...~XZ

There are more features that can be presented in the format header information. These other features are specific to certain printer and tag characteristics. The commands for these features are described in the Reference manual.

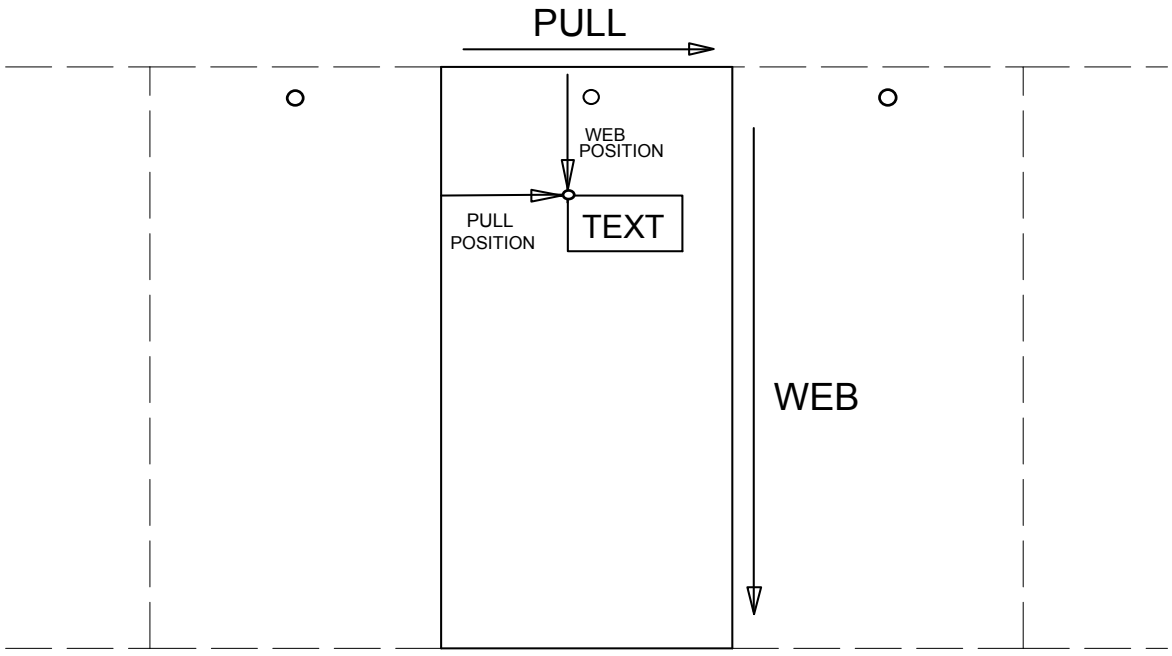
Field Description

The most important item to understand when doing a field description is the point of reference on the tag for placing a field and the point of reference on a field for doing a rotation of the field.

All field positions are referenced from the corner of the tag which is formed at the point where the trailing edge of the tag and the edge of the tag which is closest to the machine as the stock travels through the machine meet. The corner of the tag that is formed by these two sides is referred to as the top left hand corner of the tag.

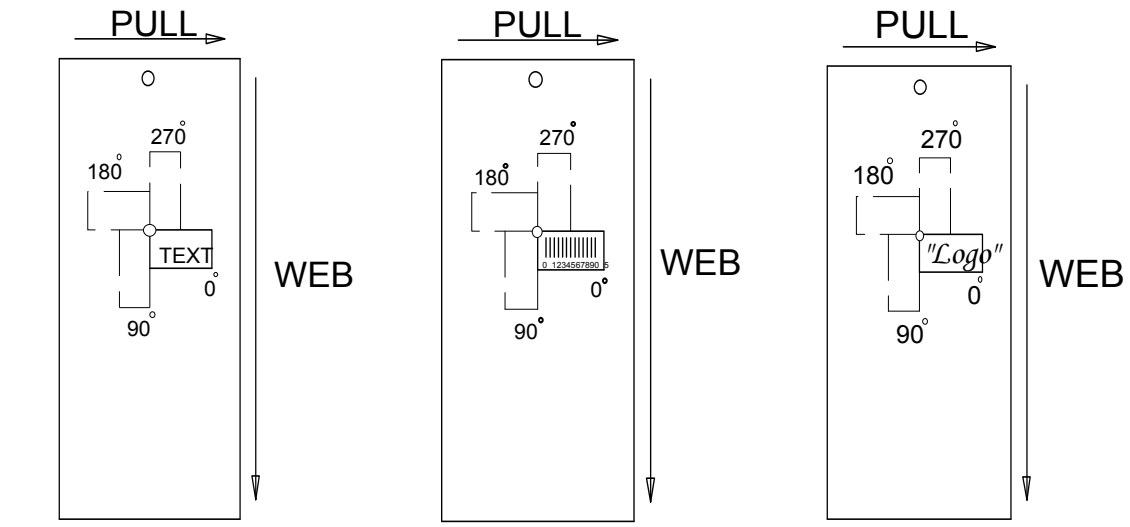


The point of reference to a field is also the top left hand corner. When a field of text is in a normal reading position so that the text can be read from left to right, the top left hand corner is the corner formed by the left edge of the first letter and the top edge of the letters. This is the point of a field that is used to position a field on a tag and also is the pivot point for a field when it is rotated.



A field definition starts with ~FA for an alphanumeric field, ~FB for a barcode field, ~FL for a box / underline field, ~FG for a logo field, and ~FS for a care symbol field. Once the printer receives one of these commands, it considers the format header information to be complete and will ignore any other header commands that are sent. The printer expects all the commands that follow the field definition start command to be information for that field. Any commands that are sent that are not commands for the field type specified in the field definition start command will be ignored. To start the definition of another field send another field definition start command that is correct for the new field's type. Once all the field definitions have been sent, then an ~XZ command should be sent to signal that the format definition is complete.

All of the field type definitions with exception of FL for a box / underline field requires a field length. Also all field definitions must have a web position and a pull position specified. These positions are set using the ~FW and ~FP commands. Another feature for a field is rotation. The rotation is specified using the ~FR command.



Alpha-Numeric Rotation **Barcode Rotation** **Logo Rotation**

Alpha-Numeric Description

The description of an alphanumeric field with a length of seven characters would start as ~FA07. The field is to be placed at a position that is 1/2" in the web direction and 1/2" in the pull direction. These commands would be ~FW0500 and ~FP0500. The rotation of the field is zero degrees which would be ~FR0. The field would be printed with the top left of the first character in the field starting 1/2" in from the trailing edge of the tag and 1/2" in from the inside edge of the stock as it traveled through the printer. A 10-point font size could be selected for the field by using the command ~AF and using the font number 8. The full command would be ~AF08.

The complete command string for the alphanumeric field would be:

~FA07~FW0500~FP0500~FR0~AF08

There are more features which can be implemented for alphanumeric fields described in the Reference manual under the ~A commands.

Barcode Description

The description of a barcode field with a length of twelve would start with an ~FB12. The field is to be placed at a position that is 1" from the inside edge in the web direction and 1/2" in from the trailing edge in the pull direction. The commands for these positions would be ~FW1000 and ~FP0500. The top left corner of a barcode includes the quiet zone area of the barcode. The rotation for this field is zero degrees so the command would be ~FR0. This barcode is to be a UPCA Barcode so the command ~BF01 is to be used with the barcode type 01. The barcode is to have Human Readable Information underneath it, so the command ~BA08, is used to specify an HRI using a 10 point font for the numbers. Also the barcode is to be 1/2" tall so the command ~BH0500 is used to specify a bar height of 1/2".

The barcode description will look like:

~FB12~FW1000~FP0500~FR0~BF01~BA08 ~BH0500

There are more features which can be implemented for barcode fields described in the Reference manual under the ~B commands.

Box / Underline Description

The description of a box / underline field starts with an ~FL. There is not a field length associated with a box / underline field. Starting point for a box / underline field is the initial web and pull position. This position is presented with the ~FW command and the ~FP command. The web position for the end web coordinate is specified with the ~LW command. The pull position for the end pull coordinate is specified with the ~LP command. The LW command and LP command should always contain values greater than the FW and FP commands. The width in dots of the lines used to make the box / underline field is specified using the ~LV for the lines in the web direction and the ~LH command for the width of the lines in the pull direction.

A box that started at web position 1/2" and pull position 1/2" and had a web size of 1" and pull size of 1" and line widths of 2 dots would have the command string of:

~FL~FW0500~FP0500~LW1500~LP1500~LV02~LH02

Logo Description

The description of a logo field with one logo would have a starting command of ~FG01. The logo is to be placed at web position 1" and pull position 1-1/2". The position commands would be ~FW1000 and ~FP1500.

The logo type would be in the command ~GT. The logo type is determined by the logo size class which the logo is in. The logo's must reside on the printer and the logo type information must be presented with the logo files (650 type) or IC card (630 type) when they are received. In this case the logo type will be one.

The logo command string would be:

~FG01~FW1000~FP1500~GT01

Care Symbol Description

The description of a care symbol field is very similar to a logo field. The start command ~FS04 specifies the start of a care symbol field which contains four symbols. The symbols can be placed at web position 2" and pull position 1" using the commands ~FW2000 and ~FP1000. The care symbols reside on the printer and the care symbol type is usually a fixed type whose number should be included with the care symbol information that's with the printer. For a care symbol type of nine the care symbol type command is ~ST09.

The care symbol command string is:

~FS04~FW2000~FP1000~ST09

The last field definition in a format is followed by the command ~XZ. This command signals to the printer that the format description is complete. Once this information is transferred to the printer multiple groups of information known as batches can be sent to the printer to be printed.

The commands discussed in this section are the basic commands required to make a format using PCL. These commands are the MINIMUM commands required to create a format. There are more commands that allow other features to be utilized in the printers. These commands are described in the Reference manual.

Batch Data Description

The batch data is the information that will be printed on a tag. The format description for a tag must have already been sent to a printer or must already reside in the printer before batch data can be sent to the printer. The command ~ZD is the start of data command. If the format was sent to the printer using PCL or if the format from the previous batch is the same as the one for this batch the ZD command uses zero for the format number. If the batch data is to be used with a specific format that already resides on the printer, then the format number follows the ZD command. So if the batch data is to be printed using the same format as the previous batch or if the format was sent to the printer using PCL the batch data start command would be ~ZD00. If the batch data is to be printed using format two which resides in the printer the batch data start command would be ~ZD02.

The specific field information for the batch follows the batch data start command. Each field information string is preceded by an ~D. If the first field in the format was a string that specified the color of an item that was to be the color "BLUE", then the command would be ~DBLUE. The data strings have to be sent to the printer in the same order that they are described in the format. Box / underline fields which don't have any data associated with them are automatically skipped so an ~D command should not be sent for a box / underline field.

Once the last field data string has been sent it should be followed by the ~ZZ command. This command means that the batch information is complete and the printer can print the batch. The ZZ command also includes the quantity. If ten tags were to be printed using the data which preceded the ZZ command, the command would be ~ZZ0010~. The ~ZZ command must ALWAYS be followed by one more ~. The final escape character signals the end of the quantity string. The printer will not start printing a batch until it receives the final ~ character.

An example of a batch of data would be:

~ZD00~DBLUE~D012345678905~D01~D23,32,33,42~ZZ0010~

The ~D command has some built in safety features. If a format describes a field as having seven characters and then that field receives data from an ~D field which contains nine characters the last two characters of the data in the ~D command will be dropped. If a field is described as being seven characters long and the ~D command only sends six characters the field will be padded out with spaces to seven characters before it is printed. Also if there are more ~D data fields sent in a batch then there are fields described in the format, the extra data fields at the end of the batch data will be dropped.

The ~D command has a few useful variations. If an ~D command is followed immediately by another ~D or ~ZZ so that no data follows the ~D command, then the data from the previous batch will be used for that field. If the ~D command is followed by one space character and then followed by another ~D or ~ZZ, then that field will be blank for the current batch.

Reference Guide

Format Header

~XA 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the beginning of a format. This command precedes any tag or field commands. When the PCL Printer receives this command it automatically sets the current format to the default settings. Default settings can be found in Appendix B. All of the ~X commands must be sent before any field commands are sent.

~XW9999 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the web of the tag in thousandths of an inch. For example: If the tag web size is 3-1/4 inches the command would be ~XW3250.

Compatibility Note:

630 The 630 maximum web size of a tag is 5000 or 5 inches. The actual resolution or smallest increment is 33 thousandths.

650 The 650 maximum web size of a tag is 4800 or 4.8 inches. The actual resolution or smallest increment is 33 thousandths.

960 The 960 maximum web size of a tag is 4000 or 4.0 inches. The largest print area is 3.55". The resolution is 7 thousandths.

636, 656, 676, 686 The maximum web size of a tag is 5125 or 5.125 inches. The actual resolution or smallest increment is 1/dpi of the printer.

- 240 DPI = 4 Thousandths
- 300 DPI = 3 Thousandths

545 The 545 maximum web size of a tag is 1500 or 1.5 inches. The largest print area is 1375 or 1.375" and this value should not be exceeded with the ~XW command. The actual resolution or smallest increment is 5 thousandths.

~XP99999 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the pull length of the tag in thousandths of an inch. For example: If the tag pull length is 4-1/8 inches the command would be ~XP4125.

Note: If the stock that is being printed on has sense marks for print registration then special care should be taken in determining a tag's pull length. The pull length of the tag should be determined by measuring from the leading edge of one sense mark to the leading edge of the next sense mark on a continuous roll of stock.

Compatibility Notes:

630 The 630 maximum pull length of a tag is 7000 or 7 inches. The actual resolution or smallest increment is 33 thousandths.

650 The 650 maximum pull length of a tag is 14000 or 14 inches. The actual resolution or smallest increment is 33 thousandths.

960 The 960 maximum pull length of a tag is 6000 or 6 inches. The resolution is 14 thousandths.

636, 656, 676, 545 The maximum pull length of a tag is 14000 or 14 inches. The actual resolution or smallest increment is 1/dpi of the printer.

- 240 DPI = 4 Thousandths
- 300 DPI = 3 Thousandths
- 545 = 5 Thousandths

~XM_9999 630, 650, 960, 636, 656, 676, 686, 545

This command specifies that the format is a sense mark format. Replace the '_' with an **H** if a hole sense mark is used or an **R** if a Reflective sense mark is used. Specify the sense to cut distance in thousandths of an inch. The sense to cut distance is measured in the pull direction from the leading edge of the sense mark to the trailing edge of the tag as it passes through the printer. For example: A particular tag stock is using a punched hole as a sense mark. The distance from the leading edge of one hole to the leading edge of another hole is 4 inches. Therefore the tag pull length is 4 inches. The sense mark occurs in the middle of what will be the finished tag after it has been printed and cut. This distance from the leading edge of one hole to where the cut will occur at the trailing edge of the tag is 2 inches. The sense to cut value is 2 inches. The command for the printer is ~XMH2000. The H specifies that a punched hole is used for the mark and the 2000 is the 2 inch sense to cut value sent in thousandths of an inch.

Compatibility Notes:

630, 650 These printers resolution or smallest increment for the sense to cut distance is 33 thousandths.

960 The 960 resolution or smallest increment is 7 thousandths in the web direction and 14 thousandths in the pull direction. The 960 only supports reflective sensing.

636, 656, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

676 The actual resolution or smallest increment is 1/dpi of the printer. Replace the '_' with an **H** if a hole sense mark is used, an **R** if reflective sense mark is used on the bottom, or a **T** if reflective sense mark is used on the top.

~XF_ 630, 650, 960, 636, 656, 676, 686, 545

This command controls flagging. The underscore should be replaced by one of the following.

N - No Flagging This command turns off flagging for this format.

L – Long / Short This means that two blank tags will appear after a batch is printed when the tag has a sense mark. The first blank tag is cut long by .23 inches and the second is cut short by the same amount. These blank tags act as a separator when the tags are in the printers stacker. When there is no sense mark on the tag, the blank tag is longer by .23 inches than the printed tags.

D - Double length This command produces a flag that is two tags in the pull length.

T - Stock Saving Flag All tags are printed but the cut on the next to last tag is .125 inches short, which makes the last tag .125 inches longer in the pull length. All tags can be used.

V - Verifier Flag This command is to be used if a verifier is active on the printer. The batch quantity is increased by 2 and the stock saving feature is activated. The print is carried over to the flag that prevents the verifier from halting the printer when a barcode is not scanned.

B - Double blank Flag This command produces a flag that is blank and two tags in the pull length.

S - Small Flag This command produces a flag that is .078 inches longer than the tag in the pull length. When the tag has a sense mark, the first tag is cut long by .078 inches and the second is cut short by the same amount.

M - Medium Flag This command produces a flag that is .15 inches longer than the tag in the pull length. When the tag has a sense mark, the first tag is cut long by .15 inches and the second is cut short by the same amount.

X - Extra Large Flag This command produces a flag that is .31 inches longer than the tag in the pull length. When the tag has a sense mark, the first tag is cut long by .31 inches and the second is cut short by the same amount.

Z - Zero length Flag This command produces a flag that is equal to the tag in the pull length. When the tag has a sense mark, only one tag is generated for the flag.

Compatibility Notes:

630 The 630 does Long / Short flagging but the flags are controlled by the pull length of the tag and cannot be controlled by this command. Meaning if a tag is less than 1.400 inches, the batches will be flagged with a Double Length flag. All batches whose tags are greater than 1.400 inches will be flagged with Long / Short flags. The 630 does not support the B, S, M, X commands.

650 The 650 does not support the T, S, M, X commands.

960 If the 960 is doing a non-sensemark tag and is flagging, the tag pull length cannot be longer than 5.756 inches. This tag pull length allows the longer flag to be created and to be less than the 6-inch maximum for tag pull size. The 960 does not support the T, V, B, S, M, X commands.

636, 656, 676, 686, 545 These printers do not support the D, V, B commands. With the S, M, L, X commands, it is possible to produce flags with print other than what is printed on the tags.

~XG_ PcMate Plus Display

This command assists PCMate Plus in distinguishing whether a graphic field is alphanumeric or logo during import. The printers ignore the command. The underscore should be replaced by one of the following:

A - Specifies that the graphic field is an alphanumeric field.

L - Specifies that the graphic field is a logo field.

P - Specifies the point size of a graphic alphanumeric field. Not required for graphic logo fields.

Compatibility Notes:

Only formats exported using PCMate Plus version 3.02 alpha or later will contain this command in the PCL stream. Earlier versions of PCMate Plus will not export this command.

Restrictions:

If manually editing the PCL stream to add this command, the command MUST immediately precede the ~FM command which designates a graphic field. Otherwise, the field will not import properly.

~XL9 630, 650, 960, 636, 656, 676, 686

This command specifies how many tags to print across the web. When this command is used the printer accepts information for the layout of a tag as if the printer was printing only one tag across the web of the stock. The printer then duplicates this one tag multiple times across the web. Extreme care should be taken when specifying the tag web size for this type of format. Also it should be determined that the total width of the number of tags across the web is less than or equal to the capabilities of the printer.

Note: The use of this command requires special stock. If multiple up formats are desired, your AVERY DENNISON representative should be contacted to help you with this type of layout.

Compatibility Note:

630, 636, 656, 676, 686 These printers are capable of producing up to 4 tags across the web as long as the width of all four tags is less than 4.8 inches.

650, 960 The 650 and 960 printers are only capable of producing 2 tags across the web.

~XS99 630, 650, 636, 656, 676, 686, 545

This command sets the Print Speed. The 99 in the command should be replaced by the speed. For example: To set the speed for 5.0 inches/sec for a tag layout the command would be ~XS50. Normally all print jobs can run at the maximum speed. In the case of special inks or special stocks, the printer have to run at a slower speed. If a speed of greater than the maximum is specified, the printer will still run at the maximum speed. If a speed of less than the minimum is specified, the printer will run at the minimum speed.

Compatibility Notes:

630 A 630 is capable of printing at speeds of 3.0, 4.0, or 5.0 inches/sec..

650 A 650 is capable of printing at speeds of 2.5, 3.0, 3.5...5.5, 6.0, 6.5 inches/sec.

636 A 636 is capable of printing at speeds of 3.0, 4.5, 6.0 inches/sec.

656 A 656 is capable of printing at speeds of 3.0, 4.5, 6.0, 7.0 inches/sec.

676 A 676 is capable of printing at speeds of 3.0, 4.0, 5.0 inches/sec.

686 A 686 is capable of printing at speeds of 3.0, 7.0, 10.0, 12.0 inches/sec.

545 A 545 is capable of printing at speeds of 4.0, 6.0, 8.0, 10.0 inches/sec.

~XH99 630

This command sets the head strobe value. The head strobe range is from 1 to 15. This adjusts the amount of heat that is used to transfer the ink to the stock. A good setting for this value is around 5 or 6. The type of stock or ink that is used can effect this setting.

Note: This command can effect the head life of the thermal printhead that is used in the 630. Running a format with a high strobe value may reduce the head life of the thermal printhead.

~XT99 650, 636, 656, 676, 686

This command sets the transfer type. The transfer types are designed so that the printhead is driven properly for a combination of stock and ink. The 99 in the command should be replaced with the correct value found in the transfer type table in Appendix A.

~XI 650, 656, 676

This command tells the printhead to attempt to do head lift with the format. Head lift allows for ink saving on the printer. When there is an area in the format which is at the beginning or end of the tag that does not have any fields printed in it - and the area is greater than the minimum amount required on the printer, the printer will lift the head and stop the ink while this area of the tag is moving under the printhead.

Compatibility Notes:

650 The 650 requires an area of 5/8 inches with no print in the area.

656, 676 The printer requires an area of 9/10 inches with no print in the area.

~XC99 630, 636, 656, 676, 686, 545

This command tells the printer how many tickets to print before it makes a cut. The maximum number of tickets that the printer can wait between cuts is 99. If no cuts are needed within the batch a value of 00 should be sent. If 00 is sent then a cut only occurs at the beginning of a batch. For example: A format calls for only cutting once every 3 tags. The command would be ~XC03.

~XV_..._ 636, 656, 676, 686

This command tells the printer the setup information that is to be passed to the verifier. A verifier must be attached to the printer. As many options as are necessary can be placed after the command. For example: If a barcode command has these settings - ~XVRSCC00A00 then the verifier will reject barcodes with a grade C or lower. The options consist of:

N - Halt the printer on a no read only.

B - Halt the printer on both a no read and a symbol quality reject.

W - Halt the printer on warnings generated by the barcode.

R - Halt the printer on barcode symbol quality rejects only.

S_ - Quality level of the barcode is checked. The _ is replaced by the grade of **B, C, D,** or **F**.

C99 - Consecutive failures of a barcode where 99 is replaced by **00** for Disable, or **01** thru **10**.

A99 - Accumulative failures of a barcode where 99 is replaced by **00** for Disable, or **01** thru **20**.

~XR_ 636, 656

This command tells the printer the color of the ink.

R - Allows red ink to be used in the printer. Without this command the sensor sees through red ink, indicating there is no ink in the printer.

B - Black ink is used in the printer. This is the default.

~XN_ 676, 545

This command tells the printer to select the print station designated in the command. All print station dependent PCL commands will affect only the designated print station. The print station dependent commands include the ~XT command for transfer type. The ~XA command will set the defaults for all the print stations, then to change the default, precede the command with the ~XN command selecting the print station.

1 - Selects print station #1

2 - Selects print station #2

3 - Selects print station #3

~XO 636, 656, 676, 686, 545

This command tells the printer to print a mirror of the image. The image is mirrored on the axis that is parallel to the printhead. Fields will be printed right to left with the characters facing to the left as the fields go underneath the printhead.

~XD9999 PcMate Plus Display

This command refers to the dpi that was used to design the format. This is not a printer command and can not be used to change the dpi of the printer. This command is used for display purposes by the application that designs the formats for the printers.

240 - The format was designed for a 240-dpi printer.

300 - The format was designed for a 300-dpi printer.

~XX9999 PcMate Plus Display

This command refers to the specific printer the format was designed for. This is not a printer command. This command is used for display purposes by the application that designs the formats for the printers.

636, 656, 676, 686, 545 - The printer the format was designed for.

~XE 636, 656, 676, 686, 545

This command tells the printer to halt after every batch is printed regardless of how many batches are in the printer. Without this command, the printer does not halt but prints the batches continuously until there are no more batches in the printer.

~XJ99 636, 656, 676, 686

This command specifies the number of minimum scans that must be obtained for each barcode on the tag to pass verification.

~XZ 630, 650, 960, 636, 656, 676, 686, 545

This command tells the PCL Printer that this is the end of the format layout description. This command must be sent after the description of the last field.

~XU_ 686

This command allows additional features to be added by replacing the _ with the following;

B9 – Barcode Exclusion SV100 Scanner Only

This command allows for specified barcodes on the tag **NOT** to be verified. This command is **ONLY** valid with the **SV100** verifier. The barcodes can be excluded by replacing the 9 with the following;

0 = Exclude none

1 = Exclude UPC-A, UPC-E, EAN-8, EAN-13

2 = Exclude Code 39

4 = Exclude Code 128, EDI Code 128

8 = Exclude Interleave 2 of 5

16 = Exclude Code 93

To exclude multiple barcodes, replace the 9 with the sum of the values desiginating the barcodes to exclude.

Example: To exclude code 39 and Interleave 2 of 5, add the 2 and the 8 together and the command would be **~XUB10**.

C9 – Future Expansion

Field Information

These are control codes for general field information.

~FA99 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the beginning of an alphanumeric field where 99 is replaced with the maximum number of characters in the data string for the field.

Note: This command tells the printer that all the following commands are for this new alphanumeric field. Any commands other than alphanumeric or general field commands are ignored. The description of this field ends when the printer is sent a new beginning of field command (FB, FL, FS, FY, FG, or FM) or the end of format layout description command (XZ).

Compatibility Notes:

630, 650, 960 The maximum number of characters which can be in a field is 64.

636, 656, 676, 686, 545 The maximum number of characters which can be in a field is 128.

~FB99 630, 650, 636, 656, 676, 686, 545

This command specifies the beginning of a barcode field where 99 is replaced with the maximum number of characters in the data string for the field.

Note: This command tells the printer that all the following commands are for this new barcode field. Any commands other than barcode or general field commands are ignored. The description of this field ends when the printer is sent a new beginning of field command (FA, FL, FS, FY, FG, or FM) or the end of format layout description command (XZ).

Compatibility Notes:

630, 650 The maximum number of characters which can be in a field is 64.

636, 656, 676, 686, 545 The maximum number of characters which can be in a field is 128.

~FL 630, 960, 636, 656, 676, 686, 545

This command specifies the beginning of a box / underline field.

Note: This command tells the printer that all the following commands are for this new box / underline field. Any commands other than box / underline or general field commands are ignored. The description of this field ends when the printer is sent a new beginning of field command (FA, FB, FS, FY, FG, or FM) or the end of format layout description command (XZ).

~FG99 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the beginning of a logo field where 99 is replaced with the number of logos that will appear in this field.

Note: This command tells the printer that all the following commands are for this new logo field. Any commands other than logo or general field commands are ignored. The description of this field ends when the printer is sent a new beginning of field command (FA, FB, FS, FY, FL, or FM) or the end of format layout description command (XZ).

Compatibility Note:

650 The 650 is only capable of one logo per logo field. In order to have multiple logos, multiple logo fields will have to be created. If the number of logos specified in the command is greater than one, the 650 will map only the one logo.

~FS99 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the beginning of a care symbol field where 99 is replaced by the number of symbols that will appear in the field.

Note: This command tells the printer that all the following commands are for this new care symbol field. Any commands other than care symbol or general field commands are ignored. The description of this field ends when the printer is sent a new beginning of field command (FA, FB, FG, FY, FL, or FM) or the end of format layout description command (XZ).

Compatibility Note:

650 The 650 can only do one care symbol per field. In order to print multiple care symbols multiple care symbol fields must be used.

~FY99 960

This command specifies the beginning of a special symbol field where 99 is replaced by the number of symbols that will appear in the field.

Note: This command tells the printer that all the following commands are for this new special symbol field. Any commands other than special symbol or general field commands are ignored. The description of this field ends when the printer is sent a new beginning of field command (FA, FB, FG, FS, FL, or FM) or the end of format layout description command (XZ).

~FM 630, 636, 656, 676, 686, 545

This command specifies the beginning of a graphic image field. Graphic images supported are PCX and BMP. The graphic image must follow industry standards for PCX and BMP file structures. Many applications produce both files.

Note: This command tells the printer that all the following commands are for this new special symbol field. Any commands other than special symbol or general field commands are ignored. The description of this field ends when the printer is sent a new beginning of field command (FA, FB, FG, FS, or FL) or the end of format layout description command (XZ).

~FW9999 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the field origin for the web direction in thousandths of an inch. This distance is measured from the edge of the web that is on the inside of the machine as the stock runs through the machine. This same edge would be the top edge of a finished tag. The field origin is the top left-hand corner of a field. This corner is also the corner that the field is rotated around. For example: If a field is to be placed two inches from the edge of a tag in the web direction the command would be ~FW2000.

Compatibility Notes:

630, 650 For the 630 and 650 printers the resolution or smallest increment is 33 thousandths.

960 The 960 resolution is 7 thousandths in the web direction.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

- 240 DPI = 4 Thousandths
- 300 DPI = 3 Thousandths
- 545 = 5 Thousandths

~FP99999 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the field origin for the pull position in thousandths of an inch. This distance is measured from the trailing or left hand edge of the tag as the stock runs through the machine. The field origin is the top left-hand corner of a field. This corner is also the corner that the field is rotated around. For example: If a field is to be placed two inches from the edge of a tag in the pull direction the command would be ~FP2000.

Compatibility Notes:

630, 650 For the 630 and 650 printers the resolution or smallest increment is 33 thousandths.

960 The 960 resolution is 14 thousandths in the pull direction.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

- 240 DPI = 4 Thousandths
- 300 DPI = 3 Thousandths
- 545 = 5 Thousandths

~FR9 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the rotation of a field. The rotations can be performed in increments of 90 degrees. The increments are 0 degrees, 90 degrees, 180 degrees, 270 degrees. These rotations are represented in the command by 0, 1, 2, and 3 respectively. A field is rotated about its top left corner. The direction of rotation is clockwise.

Compatibility Note:

960 The 960 will accept 0,1,2,and 3 for rotations and will also accept 0, 90, 180, 270 as values for the rotation.

~FD_ 960, 636, 656, 676, 686, 545

This command specifies which side of the tag that the field is printed on. Replace the _ with the appropriate letter.

Compatibility Note:

960	Use **F** for front, **B** for back and **A** for flag.
676, 545	Use **1** to print field using head 1
676, 545	Use **2** to print field using head 2
676	Use **3** to print field using head 3.
636, 656, 686	All have just one printhead – therefore all field commands will print on the same printhead. The correct default command is **2**.
676, 545	Use **A1** to print on flag using head 1
676, 545	Use **A2** or **A** - (default) to print on flag using head 2
676	Use **A3** to print on flag using head 3.
636, 656, 686	All have just one printhead – therefore all flag commands will print on the same printhead. The correct default command is **A**.

Special Codes for Alphanumeric Fields

These are codes that are special to alphanumeric fields.

~AF9999 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the font number for the characters in the alphanumeric field. Available character fonts are listed in Appendix A.

Compatibility Note:

636, 656, 676, 686, 545 This is only effective when the emulation mode on the printer is set to 630 or 650.

~AL9999 636, 656, 676, 686, 545

This command specifies the scaleable font number for the characters in the alphanumeric field. Available scaleable fonts are listed in Appendix A.

~AC999 960, 636, 656, 676, 686, 545

This command selects the code page that is to be used for character translations. For example: To select code page 850 - send the command ~AC850. Currently available code pages are AVERY DENNISON Code Pages 000, 001 (Compatible with older AVERY DENNISON printers.), Code Page 437, Code Page 850, Code Page 851, Code Page 852, Code Page 857 and 866.

~AP99 636, 656, 676, 686, 545

This command specifies the point size of the printed text in the field. This command only applies to the scaleable fonts.

Compatibility Note:

636, 656 (240 dpi) The range for the point size is 6 to 96.

636, 656, 676, 686 (300 dpi) The range for the point size is 4 to 96.

545 The range for the point size is 6 to 96.

~A199 630, 650, 636, 656, 676, 686, 545

This command specifies the printed field order number for a source field in a Data Copy. (See note in command A3)

~A299 630, 650, 636, 656, 676, 686, 545

This command specifies the start character for a Data copy. (See note in command A3)

~A399 630, 650, 636, 656, 676, 686, 545

This command specifies the number of characters to be copied for a Data Copy.

Note: This group of Data Copy commands allows duplicate data to be sent just once and the printer will take care of copying the data into other fields. Using the A1 command the field number of the field which data is to be copied from is specified. The field number is determined by the order that the fields are described to the printer, with the first field being field one. The command A2 specifies at which character within the specified field to start copying. The start character number is the character's position in the specified field's data string. The first character in the data string is character one. The command A3 specifies how many characters to be copied. This count includes the start character. These characters are copied into this field which is being defined starting at the first character in this field.

~AS99 630, 650, 636, 656, 676, 686, 545

This command activates auto-incrementing. Auto-incrementing means that this field will start at the data value which it is sent and increment using the step size that is specified in this command. The step size of the increment is specified in 99. An increment of zero turns off auto-incrementing.

Compatibility Note:

630 The 630 printer allows the field to be sequenced by a value of 1 to 255.

650 The 650 printer allows the field to be sequenced by a value of 1 to 254. A value of 255 allows the field to be decrement by 1.

636, 656, 676, 686, 545 These printers allow the field to be sequenced by a value of - 2,147,483,647 to + 2,147,483,647.

~AD99 630, 960, 636, 656, 676, 686, 545

This command specifies the number of tags containing each count that should be printed when doing auto-incrementing.

~AE_ 630, 650, 960, 636, 656, 676, 686, 545

This command specifies an edit code for a field. This edit code specifies a format for the text that will appear in the field. The available codes are **L** for Left justified, **R** for Right justified, **C** for Centered, **A** for Print as is (the string is printed just as it was sent to the printer).

~AV9 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the expansion multiple for the height of the field. This command tells the printer to print the field with the font selected by the command AF and expand the height of the characters '9' number of times.

Compatibility Note:

630, 960 These printers can expand in multiples of 1 to 9.

650 The 650 can only expand in multiples of 2, 4, and 8.

636, 656, 676, 686, 545 This is only effective when the emulation mode on the printer is set to 630 or 650.

~AH9 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the expansion multiple for the width of the field. This command tells the printer to print the field with the font selected by the command AF and expand the width of the characters '9' number of times.

Compatibility Note:

630, 960 These printers can expand in multiples of 1 to 9.

650 The 650 can only expand in multiples of 2, 4, and 8.

636, 656, 676, 686, 545 This is only effective when the emulation mode on the printer is set to 630 or 650.

~AI99 630, 960, 636, 656, 676, 686, 545

This command specifies the intercharacter spacing of the selected font. The value that is included in this command is the number of dots that will be between characters.

Compatibility Notes:

630 The resolution for these printers is 4 thousandths.

960 The resolution for this printer is 7 thousandths in the web direction and 14 thousandths in the pull direction.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~AR9 630, 650, 960, 636, 656, 676, 686, 545

This command specifies how the field will be graphically placed on the tag. There are four possible ways to place the field's image on the tag. The DIRECT option is the default and will print the image directly, as it was created. However, when part of the image or the entire image is coincident with any part of a previously printed image, the two field images will be compared in those areas where they are coincident.

The **DIRECT** option is specified by a **0** in the command. The dot will remain on only when it is on in the last mapped image for that same dot position.

The **AND** option is specified by a **1** in the command. The dot will remain on only when it is on in both images for that same dot position.

The **OR** option is specified by a **2** in the command. The dot will remain on if the dot is on in either or both images for that same dot position.

The **XOR** option is specified by a **3** in the command. The dot will remain on only when it is on in one of the images - but will not be on if it is on in both images for that same dot position.

The **INVERSE** option is specified by a **3** in the command. The dot will remain on only when it is off in the last mapped image for that same dot position.

Compatibility Note:

630, 960 These printers support DIRECT, AND, OR, and XOR.

650 The 650 only supports DIRECT, OR, and XOR.

636, 656, 676, 686, 545 These printers only supports DIRECT, OR, and INVERSE.

~AO99 636, 656, 676, 686, 545

This command specifies the slant of the characters within the field. This command tells the printer to print the field with the scaleable font selected by the command AL and slant the characters giving the field an italic look. The range of the slant is **-90** to **90**.

~AT_ 636, 656, 676, 686, 545

This command specifies the character orientation. With this command, the scaleable font defined by the command AL is oriented as defined within the field. The option of **H** for Horizontal text is the default selection. With this selection, the text is printed left to right just as it always has been. The option of **V** allows the text to be printed with each character rotated 90 degrees counter clockwise within the field. This gives the appearance of each character following below the last character instead of beside it.

~AM_ 636, 656, 676, 686, 545

This command specifies the data to merge onto the tag. Depending on the selection, the information requested is obtained and printed on the tag in the field defined. In the batch data, a ~D must be present as a place holder for this field. The underscore should be replaced by one of the following.

D - Specifies the date is to be printed on the tag (mm/dd/yy format). The date is obtained internally from the printer and can not be edited.

E - Specifies the date is to be printed on the tag using the European style (dd/mm/yy format). The date is obtained internally from the printer and can not be edited.

T - Specifies the time is to be printed on the tag (hh:mm:ss AM/PM format). The time is obtained internally from the printer and can not be edited.

Q - Specifies the quantity of the batch is to be printed on the tag. The value printed is obtained from the command ZZ.

I - Specifies the Batch ID is to be printed on the tag. The Batch ID printed is obtained from the command ZI.

~AW9999 636, 656, 676, 686, 545

This command specifies the width of the field. This command can be used to contain the scaleable fonts defined in command AL within a certain area. If this command is not defined, then the scaleable font is printed as is. Some of the scaleable fonts are variable widths, which means that each batch can look slightly different due to the text printed. This command gives the text a uniform width requirement for the batches. This command is needed in order to justify the field using the command AE when the font selected is scaleable. Also, this command is needed in order to fit the text within the field using the command AQ when the font selected is scaleable. The actual resolution or smallest increment is 1/dpi of the printer.

~AQ_ 636, 656, 676, 686, 545

This command specifies how the characters printed are to be sized within the width defined in the command AW. The underscore should be replaced by one of the following.

0 - Squeeze to fit With this option, if the width of the characters in the text exceeds the width defined in the command AW then the characters are squeezed into the width defined in the command AW. If the width of the characters in the text does not exceed the width defined in the command AW then the characters are mapped as is.

1 - Proportion to fit With this option, the widths of the characters in the text are proportioned within the width defined in the command AW.

2 - Stretch to fit With this option, if the width of the characters in the text is less than the width defined in the command AW then the characters are stretched into the width defined in the command AW. If the width of the characters in the text exceeds the width defined in the command AW then the characters are squeezed into the field width defined in the command AW.

3 - Regular fit With this option, the field is mapped as is - using the width given for each character.

~AA_ Reserved for Future Use

Reserved for future printers.

This command specifies the direction that the characters are to be printed. The direction of print can be either left to right or right to left.

~AB_ Reserved for Future Use

This command specifies the area to be used by alphanumeric fields. The area defined can be configured with ascenders and decenders. If the area is not defined then the full character will not be printed.

A - Allow area for ascenders.

D - Allow area for decenders.

B - Allow area for ascenders and decenders.

O - No area for ascenders or decenders is allowed.

Special Codes for Barcode Fields

These control codes are special for barcode fields.

~BF99 630, 650, 636, 656, 676, 686, 545

This command specifies the barcode type. The barcode types are listed in Appendix A.

~B199 630, 650, 636, 656, 676, 686, 545

This command specifies the printed field order number for a source field in a Data Copy. (See note in command B3)

~B299 630, 650, 636, 656, 676, 686, 545

This command specifies the start character for a Data Copy. (See note in command B3)

~B399 630, 650, 636, 656, 676, 686, 545

This command specifies the number of characters to be copied for a Data Copy.

Note: This group of Data Copy commands allows duplicate data to be sent just once and the printer will take care of copying the data into other fields. Using the B1 command the field number of the field which data is to be copied from is specified. The field number is determined by the order that the fields are described to the printer, with the first field being field one. The command B2 specifies at which character within the specified field to start copying. The start character number is the character's position in the specified field's data string. The first character in the data string is character one. The command B3 specifies how many characters to be copied. This count includes the start character. These characters are copied into this field which is being defined starting at the first character in this field.

~BS99 630, 650, 636, 656, 676, 686, 545

This command activates auto-incrementing. Auto-incrementing means that this field will start at the data value which it is sent and increment using the step size that is specified in this command. The step size of the increment is specified in 99. An increment of zero turns off auto-incrementing.

630 The 630 printer allows the field to be sequenced by a value of 1 to 255.

650 The 650 printer allows the field to be sequenced by a value of 1 to 254. A value of 255 allows the field to decrement by 1.

636, 656, 676, 686, 545 These printers allow the field to be sequenced by a value of - 2,147,483,647 to + 2,147,483,647.

~BD99 630, 636, 656, 676, 686, 545

This command specifies the number of tags containing each count that should be printed when doing auto-incrementing.

~BH9999 630, 650, 636, 656, 676, 686, 545

This command specifies the height for the barcode bars. The height is described in thousandths of an inch. For example: If a barcode is to be 3/4 of an inch in height the command would be ~BH0750.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 33 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~BW9 630, 636, 656, 676, 686, 545

This command specifies the module width for a barcode. The module width is the size of the narrowest bar in the barcode. The '9' in this command is the multiple of the narrowest bar. This command should not be used with barcodes that have a standard fixed size such as a UPC or EAN barcode. This command can be used with more flexible barcodes such as Code 39 or Code 128.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 4 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~BX9999 630, 636, 656, 676, 686, 545

This command specifies the length of the Barcode guard bars. This command allows the guard bars of the barcode to be extended down around the human readable information. The '9999' of this command is the size of the guard bars in thousandths of an inch.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 33 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~BC 630, 650, 636, 656, 676, 686, 545

This command specifies that a check digit should be calculated for the barcode.

Note: If the check digit calculation command is used then the data string that is sent for this field should not already have a check digit in the barcode.

~BZ_ 630, 636, 656, 676, 686, 545

This command specifies where the **H**uman **R**eadable **I**nformation (HRI) should be printed in reference to the barcode. Using **T** places the HRI on the top of the barcode, using **B** places the HRI on the bottom of the barcode.

~BA99 630, 650, 636, 656, 676, 686, 545

This command specifies the text font that should be used for the **H**uman **R**eadable **I**nformation (HRI). A selection of zero for the font turns off the HRI. The values for '99' are located under character fonts in Appendix A. Code page 437 is used for the HRI of a Code 128 barcode.

636, 656, 676, 686, 545 This is only effective when the emulation mode on the printer is set to 630 or 650.

~BL9999 636, 656, 676, 686, 545

This command specifies the scaleable font that should be used for the **H**uman **R**eadable **I**nformation (HRI). A selection of zero for the font turns off the HRI. The values for '99' are located under scaleable fonts in Appendix A.

~BP99 636, 656, 676, 686, 545

This command specifies the point size of the printed text for the **H**uman **R**eadable **I**nformation (HRI). This command only applies to the scaleable fonts.

Compatibility Note:

636, 656 (240 dpi) The range for the point size is 6 to 96.

636, 656, 676, 686 (300 dpi) The range for the point size is 4 to 96.

545 The range for the point size is 6 to 96.

~BI99 636, 656, 676, 686, 545

This command specifies the intercharacter spacing of the selected font used in the HRI. The value that is included in this command is the number of dots that will be between characters. The actual resolution or smallest increment is 1/dpi of the printer.

~BB9999 630, 636, 656, 676, 686, 545

This command specifies the barcode margin. The barcode margin is the white space at the beginning and end of the bars in the barcode. This area is known as quiet area and is required for barcode scanners to properly scan the barcodes. The barcode margin is defined in thousandths of an inch.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 33 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~BJ9999 630, 636, 656, 676, 686, 545

This command controls the horizontal movement of the system digit and the check digit of a UPC barcode. The movement is performed in reference to the barcode. The system digit and check digit always start out at the very edge of the barcode margin. The value in '9999' is the distance to move the system digit and check digit in towards the barcode. The distance is in thousandths of an inch.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 4 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~BK9999 630, 636, 656, 676, 686, 545

This command controls the vertical movement of the system digit and the check digit of a UPC barcode. The movement is performed in reference to the barcode. The system digit and check digit always start out at the same vertical position as the human readable information. The value that is placed in '9999' is the distance the system digits will be moved vertically from the starting position.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 4 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~BR9 630, 650, 636, 656, 676, 686, 545

This command specifies how the field will be graphically placed on the tag. There are four possible ways to place the field's image on the tag. The DIRECT option is the default and will print the image directly, as it was created. However, when part of the image or the entire image is coincident with any part of a previously printed image, the two field images will be compared in those areas where they are coincident.

The **DIRECT** option is specified by a **0** in the command. The dot will remain on only when it is on in the last mapped image for that same dot position.

The **AND** option is specified by a **1** in the command. The dot will remain on only when it is on in both images for that same dot position.

The **OR** option is specified by a **2** in the command. The dot will remain on if the dot is on in either or both images for that same dot position.

The **XOR** option is specified by a **3** in the command. The dot will remain on only when it is on in one of the images - but will not be on if it is on in both images for that same dot position.

The **INVERSE** option is specified by a **3** in the command. The dot will remain on only when it is off in the last mapped image for that same dot position.

Compatibility Note:

630 These printers support DIRECT, AND, OR, and XOR.

650 The 650 only supports DIRECT, OR, and XOR.

636, 656, 676, 686, 545 These printers only supports DIRECT, OR, and INVERSE.

~BG9 650, 636, 656, 676, 686, 545

This command allows the format of the HRI Segmentation to be specified. The 9 in the command would be replaced by a segmentation type number from Appendix A.

~BM_ 636, 656, 676, 686, 545

This command specifies the option to be used on the selected barcode. Not all options apply to all barcodes. The options are as follows:

R99 Wide to narrow ratio of the barcode. The only applies to variable length barcodes such as Code 39 and Interleave 2 of 5 barcodes. The valid values that should replace the '99' are **20, 21, 22, 23, ..., 28, 29, 30** for the ratio values of 2.0:1, 2.1:1, 2.2:1, 2.3:1, ..., 2.8:1, 2.9:1, 3.0:1.

S9 Supplement to the UPC / EAN barcodes. Supplemental bars can be appended to the main barcode by selecting the values of **2** for the +2 supplement, and **5** for the +5 supplement. The number of characters must be increased in the command FB to accommodate the supplement.

D99 Matrix size for the Data Matrix barcode. Replace 99 with one of the following values;

		Maximum Number of Characters	
Value	**Row x Column**	**Alpha**	**Numeric**
0	Auto Detect	2335	2710
1	10 x 10	3	6
2	12 x 12	6	10
3	14 x 14	10	16
4	16 x 16	16	24
5	18 x 18	25	36
6	20 x 20	31	44
7	22 x 22	43	60
8	24 x 24	52	72
9	26 x 26	64	88
10	32 x 32	91	124
11	36 x 36	127	172
12	40 x 40	169	228
13	44 x 44	214	288
14	48 x 48	259	348
15	52 x 52	304	408

		Maximum Number of Characters	
Value	**Row x Column**	**Alpha**	**Numeric**
16	64x64	418	560
17	72 x 72	550	736
18	80 x 80	682	912
19	88 x 88	862	1152
20	96 x 96	1024	1392
21	104 x 104	1222	1632
22	120 x 120	1573	2100
23	132 x 132	1954	2608
24	144 x 144	2335	2710
25	8 x 18	6	10
26	8 x 32	13	20
27	12 x 26	22	32
28	12 x 36	31	44
29	16 x 36	46	64
30	16 x 48	72	98

The matrix size is data dependant - which means the data entered – once encoded – determines the number of characters allowed. The number of characters shown is the maximum number of characters allowed. Depending on the data, the number of characters may have to be less or the matrix size larger. An example would be changing from upper case alphas to lower case alphas requires extra data space. Changing from numeric to alpha within the data stream would also require extra data space.

The number of rows in the matrix size is also key in determining the barcode height. The height is calculated by (module width * number of rows) / DPI of printhead.

Special Codes for Box / Underline Information

~LW9999 630, 960, 636, 656, 676, 686, 545

This command specifies the end web position of a box / underline field. The web position is in thousandths of an inch.

Note: The starting web coordinate is the position that is specified in the FW command.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 33 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~LP99999 630, 960, 636, 656, 676, 686, 545

This command specifies the end pull position of the box / underline field. The pull position is in thousandths of an inch.

Note: The starting pull coordinate is the position that is specified in the FP command.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 33 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~LV99 630, 636, 656, 676, 686, 545

This command specifies the width of the vertical lines in dots.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 4 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~LH99 630, 636, 656, 676, 686, 545

This command specifies the width of the horizontal lines in dots.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 4 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~LT_ 960, 636, 656, 676, 686, 545

This command specifies what type of shape is being drawn. An **L** means draw a line using the two points. A **B** means draw a box using the two points.

~LF9 630, 960, 636, 656, 676, 686, 545

This command specifies the mode in which the box / underline image is created on the tag. The **0** mode displays the box / underline as a normal box or underline. The **1** mode clears the box even if the box overlays another fields image. The **2** mode fills the box.

Compatibility Note:

630 The 630 has an additional mode **3** that XOR's the box.

~LR9 960, 636, 656, 676, 686, 545

This command specifies how the field will be graphically placed on the tag. There are four possible ways to place the field's image on the tag. The DIRECT option is the default and will print the image directly, as it was created. However, when part of the image or the entire image is coincident with any part of a previously printed image, the two field images will be compared in those areas where they are coincident.

The **DIRECT** option is specified by a **0** in the command. The dot will remain on only when it is on in the last mapped image for that same dot position.

The **AND** option is specified by a **1** in the command. The dot will remain on only when it is on in both images for that same dot position.

The **OR** option is specified by a **2** in the command. The dot will remain on if the dot is on in either or both images for that same dot position.

The **XOR** option is specified by a **3** in the command. The dot will remain on only when it is on in one of the images - but will not be on if it is on in both images for that same dot position.

The **INVERSE** option is specified by a **3** in the command. The dot will remain on only when it is off in the last mapped image for that same dot position.

Compatibility Note:

960 These printers support DIRECT, AND, OR, and XOR. If the LF1 function for clearing a box is selected the LR command will be ignored.

636, 656, 676, 686, 545 These printers only supports DIRECT, OR, and INVERSE.

Special Codes for Logo Information

~GH9 630

This command specifies the expansion multiple for the logo in the pull direction.

~GV9 630

This command specifies the expansion multiple for the logo in the web direction.

~GT99 630, 650, 960

This command specifies the logo type.

Compatibility Note: The 630 is limited to only eight types of logo types.

630 The logo images reside on the I.C. card which plugs into the side of the 630 printer. In order for a logo type to be chosen the logo type must be present on the I.C. card and the I.C. card must be plugged into the printer in order for a format layout that contains a logo field to work.

650 The 650's logo images reside in a file on the hard disk drive in the 650. In order for the logo type to be chosen and printed the logo's file must on the 650.

~GM9 636, 656, 676, 686, 545

This command specifies the file structure type of the image. The valid values are

3 Specifies the file type to be **BMP**. Currently logos are prepared as BMP files. The BMP file structure must follow industry standards.

4 Specifies the file type to be **PCX**. The graphic image must follow industry standards for the PCX file structure. Many applications produce the PCX files.

~GE_

Reserved for future printers.

This command specifies the horizontal justification of the logo. The '_' should be replaced by one of the options.

L The logo will be left justified.

C The logo will be centered.

R The logo will be right justified.

~GU_

Reserved for future printers.

This command specifies the vertical justification of the logo. The '_' should be replaced by one of the options.

T The logo will be top justified.

C The logo will be centered vertically.

B The logo will be bottom justified.

~GR9 630, 650, 960, 636, 656, 676, 686, 545

This command specifies how the field will be graphically placed on the tag. There are four possible ways to place the field's image on the tag. The DIRECT option is the default and will print the image directly, as it was created. However, when part of the image or the entire image is coincident with any part of a previously printed image, the two field images will be compared in those areas where they are coincident.

The **DIRECT** option is specified by a **0** in the command. The dot will remain on only when it is on in the last mapped image for that same dot position.

The **AND** option is specified by a **1** in the command. The dot will remain on only when it is on in both images for that same dot position.

The **OR** option is specified by a **2** in the command. The dot will remain on if the dot is on in either or both images for that same dot position.

The **XOR** option is specified by a **3** in the command. The dot will remain on only when it is on in one of the images - but will not be on if it is on in both images for that same dot position.

The **INVERSE** option is specified by a **3** in the command. The dot will remain on only when it is off in the last mapped image for that same dot position.

Compatibility Note:

630, 960 These printers support DIRECT, AND, OR, and XOR.

650 The 650 only supports DIRECT, OR, and XOR.

636, 656, 676, 686, 545 These printers only supports DIRECT, OR, and INVERSE.

~GI99 630

This command specifies the intercharacter spacing of the selected logo. The value that is included in this command is the number of dots that will be between the logos. These dots are equivalent to 4 thousandths.

Special Codes for Care Symbol Information

~SH9 630

This command specifies the expansion multiple for the care symbol in the horizontal direction.

~SV9 630

This command specifies the expansion multiple for the care symbol in the vertical direction.

~ST99 630, 960, 636, 656, 676, 686, 545

This command specifies the care symbol type.

Compatibility Note:

630 The care symbol images reside on the I.C. card which plugs into the side of the 630 printer. In order for a care symbol type to be chosen the care symbol type must be present on the I.C. card and the I.C. card must plugged into the printer in order for a format layout that contains a care symbol field to work. The standard type for care symbols on the 630 is type **9**. The 630 will default to type **9** when the care symbol field is created. This command is only necessary if the care symbols are stored as a non-standard type number.

960 On the 960, a symbol type of **1** is printed as large care symbols and a symbol type of **2** is printed as small care symbols.

636, 656, 676, 686, 545 On these printers, a symbol type of **1** is printed as small care symbols and a symbol type of **2** is printed as large care symbols.

~SR9 630, 650, 960, 636, 656, 676, 686, 545

This command specifies how the field will be graphically placed on the tag. There are four possible ways to place the field's image on the tag. The DIRECT option is the default and will print the image directly, as it was created. However, when part of the image or the entire image is coincident with any part of a previously printed image, the two field images will be compared in those areas where they are coincident.

The **DIRECT** option is specified by a **0** in the command. The dot will remain on only when it is on in the last mapped image for that same dot position.

The **AND** option is specified by a **1** in the command. The dot will remain on only when it is on in both images for that same dot position.

The **OR** option is specified by a **2** in the command. The dot will remain on if the dot is on in either or both images for that same dot position.

The **XOR** option is specified by a **3** in the command. The dot will remain on only when it is on in one of the images - but will not be on if it is on in both images for that same dot position.

The **INVERSE** option is specified by a **3** in the command. The dot will remain on only when it is off in the last mapped image for that same dot position.

Compatibility Note:

630, 960 These printers support DIRECT, AND, OR, and XOR.

650 The 650 only supports DIRECT, OR, and XOR.

636, 656, 676, 686, 545 These printers only supports DIRECT, OR, and INVERSE.

~SI99 630, 960, 636, 656, 676, 686, 545

This command specifies the inter-character spacing of the selected care symbols. The value that is included in this command is the number of dots that will be between the care symbols.

Compatibility Notes:

630, 650 For these printers the resolution or smallest increment is 4 thousandths.

636, 656, 676, 686, 545 The actual resolution or smallest increment is 1/dpi of the printer.

~SP99 636, 656, 676, 686, 545

This command specifies the point size of the printed symbols. This command only applies to the scaleable fonts. The range for the point size is 4 to 96.

~SW9999 636, 656, 676, 686, 545

This command specifies the width of the field. If this command is not defined, then the scaleable symbol is printed as is. This command gives the symbols a uniform width requirement for the batches. This command is needed in order to fit the symbols within the field using the ~SQ command. The actual resolution or smallest increment is 1/dpi of the printer.

~SQ_ 636, 656, 676, 686, 545

This command specifies how the symbols printed are to be sized within the width defined in the ~SW command. The underscore should be replaced be one of the following:

0 = Squeeze to fit With this option, if the width of the symbols in the text exceeds the width defined in the command SW then the symbols are squeezed into the width defined in the command SW. If the width of the symbols in the text does not exceed the width defined in the command SW then the symbols are printed as is.

1 = Proportion to fit With this option, the width of the symbols in the text are proportioned within the width defined in the command SW.

2 = Stretch to fit With this option, if the width of the symbols in the text is less than the width defined in the command SW then the symbols are stretched into the width defined in the command SW. If the width of the symbols in the text exceeds the width defined in the command SW then the symbols are squeezed into the field width defined in the command SW.

3 = Regular fit With this option, the field is printed as is using the width given for each symbol.

~SE_ 636, 656, 676, 686, 545

This command specifies an edit code for a field. This edit code specifies a format for the symbol that will appear in the field. The available codes are ***L*** for Left justified, **R** for Right justified, ***C*** for Centered, ***A*** for Print as is (the string is printed just as it was sent to the printer).

~SO99 636, 656, 676, 686, 545

This command specifies the slant of the symbols within the field. This command tells the printer to print the field with the scaleable symbols and slant the characters giving the field an italic look. The range of the slant is **-90** to **90**.

Special Codes for Special Symbol Information

~YH9 Reserved for Future Printers

This command specifies the expansion multiple for the special symbol in the horizontal direction.

~YV9 Reserved for Future Printers

This command specifies the expansion multiple for the special symbol in the vertical direction.

~YT99 960

This command specifies the special symbol type. The 960 has the following special symbol types.

Type	Description
1	Trademark symbol (Tm)
2	Registered symbol
3	10pt Fractions
4	12pt Fractions
5	Size Symbols
6	Centimeter symbol (cm)

~YR9 960

This command specifies how the field will be graphically placed on the tag. There are four possible ways to place the field's image on the tag. The DIRECT option is the default and will print the image directly, as it was created. However, when part of the image or the entire image is coincident with any part of a previously printed image, the two field images will be compared in those areas where they are coincident.

The **DIRECT** option is specified by a **0** in the command. The dot will remain on only when it is on in the last mapped image for that same dot position.

The **AND** option is specified by a **1** in the command. The dot will remain on only when it is on in both images for that same dot position.

The **OR** option is specified by a **2** in the command. The dot will remain on if the dot is on in either or both images for that same dot position.

The **XOR** option is specified by a **3** in the command. The dot will remain on only when it is on in one of the images - but will not be on if it is on in both images for that same dot position.

The **INVERSE** option is specified by a **3** in the command. The dot will remain on only when it is off in the last mapped image for that same dot position.

~YI99 960

This command specifies the intercharacter spacing of the selected special symbols. The value that is included in this command is the number of dots that will be between the special symbols.

Special Codes for Graphic Image information

~MH9 630

This command specifies the expansion multiple for the logo in the pull direction.

~MV9 630

This command specifies the expansion multiple for the logo in the web direction.

~MR9 630, 636, 656, 676, 686, 545

This command specifies how the field will be graphically placed on the tag. There are four possible ways to place the field's image on the tag. The DIRECT option is the default and will print the image directly, as it was created. However, when part of the image or the entire image is coincident with any part of a previously printed image, the two field images will be compared in those areas where they are coincident.

The **DIRECT** option is specified by a **0** in the command. The dot will remain on only when it is on in the last mapped image for that same dot position.

The **AND** option is specified by a **1** in the command. The dot will remain on only when it is on in both images for that same dot position.

The **OR** option is specified by a **2** in the command. The dot will remain on if the dot is on in either or both images for that same dot position.

The **XOR** option is specified by a **3** in the command. The dot will remain on only when it is on in one of the images - but will not be on if it is on in both images for that same dot position.

The **INVERSE** option is specified by a **3** in the command. The dot will remain on only when it is off in the last mapped image for that same dot position.

Compatibility Note:

630 These printers support DIRECT, AND, OR, and XOR.

636, 656, 676, 686, 545 These printers only supports DIRECT, OR, and INVERSE.

Control Codes for Data

~ZD99 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the start of data and the format number of the format to use for the data. If the format that was selected for the previous batch is required for the current batch, then 00 can be used for the format number. If 00 is used for the format number, then the PCL Printer also retains all of the data from the previous batch. This means that only the data that has changed from the previous batch needs to be sent for the current batch.

Note: If the format information was sent using AVERY DENNISON PCL, then the format number is 00.

~D_____ 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the start of a data string. The end of the data string is marked by the ~ of the command following the data string. If this command is sent without any data then the data for this field will be the same as the previous batch unless the ZD command for the current batch specified a format number other than zero. If the ZD command specified the format number of a format that resides on the printer then the data for this field will be precanned data from the format description. If this command is sent with one space as its data - then the field will be blank. For example: For the regular transmission of data string 'HELLO', the command would be ~DHELLO. If in the next batch hello is also to be printed the command would be ~D followed by the ~D for the next fields data. In order to send a blank field send ~D<SPACE> and then the ~D for the next field. (<SPACE> stands for the single character Space.)

Compatibility Notes:

630, 650, 960 All data sent to the PCL printer must be UPPERCASE.

636, 656, 676, 686, 545 Data can be sent to the PCL printer as uppercase or lowercase.

~I_____ 630, 636, 656, 676, 686, 545

This command specifies the start of a graphic image. The end of the image is marked by the ~ of the command following the image. The entire image to be printed should follow the ~I command.

~ZB9999 630, 636, 656, 676, 686, 545

This command tells the printer to take the batch that is being sent and print it as multiple batches of size 9999. For example: If 1000 tickets need to be printed with the same information but the tickets need to be grouped in batches of 100, the ZB command would be sent with a value of 100 (~ZB0100) and the ZZ command would be sent at the end of the batch with a value of 1000 (~ZZ1000~). If the ZZ quantity is not an even multiple of the ZB quantity then the remainder of the total quantity will be printed as the final batch.

Note: This command must be sent before the ZZ command. The ZZ signifies the end of a batch and all other commands must be sent before the ZZ command.

~ZZ9999 630, 650, 960, 636, 656, 676, 686, 545

This command specifies the end of a set of data fields. Included in this command is the number of tags or quantity of tags to be printed with this information. This data set constitutes a batch. This is the last command the PCL Printer receives before it prints a batch. This command must be followed by an ~. The final ~ tells the PCL Printer that it is at the end of the quantity data. For example: If 100 tickets of the current batch are to be printed then the command would be ~ZZ0100~.

~ZI_____ 636, 656, 676, 686, 545

This command specifies the Batch ID that is to be associated with the batch. The feature always the batch to be tracked if a Batch ID has been assigned. The Batch ID can be up to 8 characters.

Configuration Commands

~CC 630

This command instructs the printer to return the ASCII character 'FS' (Hexadecimal 1C, Decimal 28) every time a tag is printed. This feature allows the connected computer to maintain a count. This command must be sent with every batch. It is cleared upon completion of the batch.

~CF_ 630, 650, 960, 636, 656, 676, 686, 545

This command controls flagging in the current batch. The underscore should be replaced by one of the following.

N - No Flagging This command turns off flagging for this format.

L = Long / Short This means that two blank tags will appear after a batch is printed when the tag has a sense mark. The first blank tag is cut long by .23 inches and the second is cut short by the same amount. These blank tags act as a separator when the tags are in the printers stacker. When there is no sense mark on the tag, the blank tag is longer by .23 inches than the printed tags.

D = Double length This command produces a flag that is two tags in the pull length.

T = Stock Saving Flag All tags are printed but the cut on the next to last tag is .125 inches short, which makes the last tag .125 inches longer in the pull length. All tags can be used.

V = Verifier Flag This command is to be used if a verifier is active on the printer. The batch quantity is increased by 2 and the stock saving feature is activated. The print is carried over to the flag which prevents the verifier from halting the printer when a barcode is not scanned.

B = Double blank Flag This command produces a flag that is blank and two tags in the pull length.

S = Small Flag This command produces a flag that is .078 inches longer than the tag in the pull length. When the tag has a sense mark, the first tag is cut long by .078 inches and the second is cut short by the same amount.

M = Medium Flag This command produces a flag that is .15 inches longer than the tag in the pull length. When the tag has a sense mark, the first tag is cut long by .15 inches and the second is cut short by the same amount.

X = Extra Large Flag This command produces a flag that is .31 inches longer than the tag in the pull length. When the tag has a sense mark, the first tag is cut long by .31 inches and the second is cut short by the same amount.

Z = Zero length Flag This command produces a flag that is equal to the tag in the pull length. When the tag has a sense mark, only one tag is generated for the flag.

F = Flag According to the Format Returns the flagging mode to whatever was defined in the format.

~CI 636, 656, 676, 686, 545

This command indicates to the printer that the Batch ID assigned to the batch is to be sent to the host upon completion of the batch. Completion of the batch refers to the last tag of the batch being in the stacker.

Compatibility Notes:

630 The 630 does Long / Short flagging but the flags are controlled by the pull length of the tag and cannot be controlled by this command. Meaning if a tag is less than 1.400 inches, the batches will be flagged with a Double Length flag. All batches whose tags are greater than 1.400 inches will be flagged with Long / Short flags. The 630 does not support the B, S, M, X commands.

650 The 650 does not support the T, S, M, X options.

960 If the 960 is doing a non-sensemark tag and is flagging, the tag pull length cannot be longer than 5.756 inches. This tag pull length allows the longer flag to be created and to be less than the 6-inch maximum for tag pull size. The 960 does not support the T, V, B, S, M, X options.

636, 656, 676, 686, 545 The 636/656 does not support the D, V, B options. With the S, M, L, X options, it is possible to produce flags with print other than what is printed on the tags.

~CK_ 636, 656, 676, 686, 545

This command controls cuts in the current batch. This command is a configurable command and must be included in every batch that the cut is to be suppressed. The underscore should be replaced by one of the following options.

A - All cuts for this batch are suppressed. These cuts include flag and cut count requests along with the cut at the beginning of the batch.

B - The cut at the beginning of the batch is suppressed. This will also suppress the cut between the batch and the flag if flagging is active as the flag is treated as a separate batch.

~CE 636, 656, 676, 686, 545

This command specifies to the printer that the printer is to halt after printing the batch that this command is inserted within. This is a configuration command and is placed with the batch data commands between the ~ZD and ~ZZ commands. The start button on the printer must be pressed to resume printing. If a flag is present, printing halts after the flag.

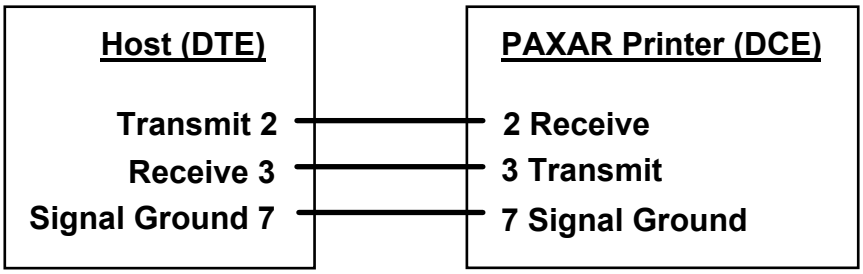
Connection Guide

Serial Connection Specifications

The AVERY DENNISON PCL printers communicate through an RS232 port. This port is configured as DCE (Data Computing Equipment) on the printer. They require ASCII data and use XON/XOFF flow control as the default. An XOFF is transferred to the host when the printer's buffer is full and the printer transfers XON to the host when the buffer is nearly empty.

The PCL printers default to the following RS232 communications settings:

9600 Baud, **8** data bits, **1** stop bit, **No Parity**



RS232 25 Pin Host Configuration for a AVERY DENNISON PCL Printer.

Shown above is the pin configuration for connecting a 25-pin RS232 host to a AVERY DENNISON printer that accepts PCL. The host computer should have its port configured as DTE (Data Terminal Equipment). The AVERY DENNISON printer is configured as DCE (Data Computing Equipment). A standard straight through cable is required for this connection.

Note: A Null Modem cable is used to connect two pieces of DTE equipment together and **SHOULD NOT** be used for this connection.

The PCL printers do not provide any Device Ready Signal so the host must be configured so that it does not require a Device Ready Signal. If the host doesn't have a configuration selection which allows the equipment to be configured with Device Ready Signal = NONE, then the communications cable to the printer may have to be modified to provide a Device Ready Signal using an output signal from the equipment. If the host has an output signal which is on when the equipment is powered on then jumper this output to the input that is being used as the Device Ready Signal on the host end of the cable. This allows the host to provide its own Device Ready Signal.

PCL printers use XON/XOFF as a Flow Control Protocol. If the host does not provide this type of flow control then a different type of host must be used. If the host uses a hardware line Busy signal then the communications cable should be modified so that this signal is always not busy. Normally the host will have an output which is either always on or turns on when the host equipment is ready to send. Either of these outputs can be jumpered to the Busy in signal on the host side of the communications cable to effectively disable the hardware Busy.

PC / AT Connection Tip

When a PC/AT or compatible is used as the host computer the RTS - CTS and DSR-DTR communication lines may have to jumpered together on the host side of the communications cable. For a 25 pin cable the jumpered lines are 4-5 for RTS - CTS and lines 6-20 for DSR-DTR. On a 9-pin cable the jumpered lines are 7-8 for RTS-CTS and 4-6 for DSR-DTR.

AVERY DENNISON Printer Specific Connection Information

AVERY DENNISON 630

In order for the 630 to receive PCL commands the printer must be set for PCL mode. Look in the 630 Operation / Maintenance Guide under Direct Downloading for information on how to set the printer for this mode.

The 630 can be placed in a PCL command Debug mode by setting the printer up for Direct Downloading and then holding the Test button down while powering on the printer. Once the printer is in PCL Debug mode every command that is sent to the printer is printed out on the current stock that is in the printer.

AVERY DENNISON 650

The 650 must have the AVERY DENNISON PCL program running with the 650's display and keyboard connected to receive PCL Commands from the host. The PCL program will display a "Waiting for Host" screen.

Currently there is not a debug mode available on the 650 printer.

AVERY DENNISON 960

The 960 printer must have the PCL option installed on the printer in order to accept PCL Commands.

Currently there is not a debug mode available on the 960 printer.

AVERY DENNISON 636, 656, 686, 545

Currently there is not a debug mode available on the 636, 656, 686 or 545 printers.

AS/400 Communications Information for a AVERY DENNISON PCL Printer

Listed below are the settings required by an IBM AS/400 using Andrew Corporation's Interlynx protocol converter. These settings must be correct in order for the communications and batching to work properly with a AVERY DENNISON 630 or 650 printer using PCL. The communications with an AS/400 has only been tested using an Interlynx protocol converter. This example uses a straight thru RS232 cable that is unmodified between the Interlynx protocol converter and the AVERY DENNISON Printer.

AS/400 Local Settings: (OS Ver 2 Rel 1 Mod 1)

Display Device Description

Device description	DEVD	PX
Option	OPTION	*ALL
Category of device		*PRT
Device class	DEVCLS	*LCL
Device type	TYPE	5225
Device Model	MODEL	4
Advanced function printing . .	AFP	*NO
Port Number	PORT	5
Switch Setting	SWTSET	3
Online at IPL	ONLINE	*YES
Attached controller	CTL	CTL01
Form feed	FORMFEED	*CONT
Printer error message	PRTERRMSG	*INQ
Message queue	MSGQ	RDSP040CB
Library		*LIBL
Text . . . . . DENNISON - 630	TEXT	AVERY

AS/400 Remote Settings: (OS Ver 2 Rel 1 Mod 1)

Display Device Description

Device description	DEVD	PX
Option	OPTION	*ALL
Category of device		*PRT
Device class	DEVCLS	*RMT
Device type	TYPE	5225
Device Model	MODEL	4
Advanced function printing . .	AFP	*NO
Local location address	LOCADR	08
Online at IPL	ONLINE	*YES
Attached controller	CTL	RCTL04B
Form feed	FORMFEED	*CONT
Printer error message	PRTERRMSG	*INQ
Message queue	MSGQ	RDSP040CB
Library		*LIBL
Maximum length of request unit.	MAXLENRU	*CALC
Pacing	PACING	7
Text	TEXT	AVERY DENNISON - 630

Interlynx/400 or Interlynx 5251 Protocol Converter Configuration:

1. Device Type	PRINT-
2. Associated Work Station Address	1+
3. Bit Rate	9600
4. Number of Bits/Char (Excluding Parity)	8
5. Parity	NONE
6. Number of Stop Bits	1
7. Communications Interface	DTE
8. Auto Answer Mode	No
9. Flow Control From Converter	XON
10. Flow Control From Device	XON
11. Device Ready Signal	NONE

IBM 3270 Connection using Interlynx 3287

The Interlynx 3287 can connect to a AVERY DENNISON PCL printer using a straight thru RS232 cable and the following settings;

- Interface = Serial
- DCE/DTE switch set to DTE
- 9600 baud, 8 data bits, Parity=NONE (Interlynx uses 1 stop bit, not configurable)
- Ready Signal = NONE
- Busy Signal = NONE
- Auto-Hold Print = NONE
- Printer Error Timeout = NONE, Retry Forever

Glossary of Terms

Batch

Groups of tags with the same information.

DPI

Dots per inch

Format

Describes all the physical descriptions of a tag or label

HRI

Human Readable Information - This is the human interpretation of the barcode.

PCL

Printer Control Language

Pull

The direction which the stock travels through the machine

Tag

Printed information describing an item

Web

The width of a roll of stock

APPENDIX A – PCL Values

Character Font Numbers Associated with the AL and BL Commands.

Value	Font	Supported by
5	Swiss 721 Bold	636, 656, 676, 686, 545
102	Swiss 721 Heavy	636, 656, 676, 686, 545
173	Swiss 721 Black Condensed	636, 656, 676, 686, 545
596	Monospace 821 Roman	636, 656, 676, 686, 545
598	Monospace 821 Bold	636, 656, 676, 686, 545
759	Swiss 721 Medium	636, 656, 676, 686, 545

Character Font Numbers Associated with the AF and BA Commands.

Value	Font	Supported by
1	6 Point Condensed	630, 650, 960
2	6 Point Standard	630, 650, 960
3	6 Point Bold	630
4	8 Point Condensed	630, 650, 960
5	8 Point Standard	630, 650, 960
6	8 Point Bold	630, 650, 960
7	10 Point Condensed	630, 650, 960
8	10 Point Standard	630, 650, 960
9	10 Point Bold	630, 650, 960
10	12 Point Condensed	630, 650
11	12 Point Standard	630, 650, 960
12	12 Point Bold	630, 650, 960
13	OCR A	630, 650

Barcode Font Numbers Associated with the BF Commands.

Value	Font	Supported by
1	UPC-A	650, 636, 656, 676, 686, 545
1	UPC-A with 1-5-5-1 HRI segmentation	650
3	UPC-E	630, 636, 656, 676, 686, 545
4	Code 39	630, 650, 636, 656, 676, 686, 545
5	EAN-8	630, 650, 636, 656, 676, 686, 545
6	EAN-13	630, 650, 636, 656, 676, 686, 545
7	Interleave 2 of 5	630, 650, 636, 656, 676, 686, 545
10	Code 128	630, 650, 636, 656, 676, 686, 545
11	EDI Code 128	630, 650, 636, 656, 676, 686, 545
12	UPC-A with 4-4-4 HRI segmentation	630
13	Code 39 with Sears HRI segmentation	630
14	UPC-A with extended bars	650
14	Interleave 2 of 5 with 3:1 Ratio	630
15	Expanded Code 128	650
16	Reduced Code 128	650
17	Code 93	636, 656, 676, 686, 545
18	Data Matrix	636, 656, 676, 686

Transfer Type Values Associated with the XT Commands.

Value	Transfer Type	Supported by
0	Topcoated card stock & HR-4111 Ink	650
	NonTopcoated card stock & HR-4111 Ink	650
4	PS Non Thermal Receptive & TT-1111 Ink	650
5	Pressure Sensitive Non Thermal Receptive & HR-1111 Ink	650
8	Tyvek & TT-1111 Ink	650
10	PS Non Thermal Receptive & TF-1111 Ink	650
11	Tyvek & TF-1111 Ink	650
14	Fabric 2800 & HC-3111 Ink	650
15	Size Stickers & TW-1111 Ink	650
51	Heat Seal & SD-1111 Ink	636, 656, 676
52	Topcoated card stock & TT-3111 Ink	636, 656, 676
53	Topcoated card stock & TT-1111 Ink	650, 636, 656, 676
54	Topcoated card stock & HR-3111 Ink	650, 636, 656, 676
55	Topcoated card stock & HR-1111 Ink	650, 636, 656, 676
56	Topcoated Card Stock & TW-1111 Ink	650, 636, 656, 676
57	Topcoated card stock & TW-1151 Ink	636, 656, 676
58	Pressure Sensitive & TT-3111 Ink	636, 656, 676
59	Pressure Sensitive Thermal Receptive & TT-1111 Ink	650, 636, 656, 676
60	Pressure Sensitive Thermal Receptive & TW-1111 Ink	650, 636, 656, 676
61	Pressure Sensitive & TW-1151 Ink	636, 656, 676
62	Pressure Sensitive & HR-3111 Ink	636, 656, 676
63	Uncoated Tag Stock & TT-3111 Ink	636, 656, 676
64	Uncoated Tag Stock & TT-1111 Ink	636, 656, 676
65	Uncoated Tag Stock & HR-3111 Ink	636, 656, 676
66	Uncoated Tag Stock & HR-1111 Ink	636, 656, 676
67	Uncoated Tag Stock & TW-1111 Ink	636, 656, 676
68	Uncoated Tag Stock & TW-1151 Ink	636, 656, 676
69	Fabric 2800 & TT-1111 Ink	650, 636, 656, 676
70	Fabric 2800 & HR-3111 Ink	636, 656, 676
71	Fabric 2800 & TT-3111 Ink	636, 656, 676
72	Fabric 2800 & HC-3111 Ink	636, 656, 676
73	Fabric 2800 & HR-1111 Ink	650, 636, 656, 676
74	Fabric 2795 & TT-1111 Ink	650, 636, 656, 676
75	Fabric 2795 & HR-3111 Ink	636, 656, 676
76	Fabric 2795 & TT-3111 Ink	636, 656, 676
77	Fabric 2795 & HC-3111 Ink	636, 656, 676
78	Fabric 2795 & HR-1111 Ink	650, 636, 656, 676

Value	Transfer Type	Supported by
79	Coated Tag Stock & HR-4111 Ink	636, 656, 676
80	Pressure Sensitive & HR-4111 Ink	636, 656, 676
81	Uncoated Tag Stock & HR-4111 Ink	636, 656, 676
82	Fabric 2800 & HR-4111 Ink	636, 656, 676
83	Fabric 2795 & HR-4111 Ink	636, 656, 676
84	New Pressure Sensitive (no xfer) & TT-3111 Ink	636, 656, 676
85	New Pressure Sensitive (no xfer) & TT-1111 Ink	636, 656, 676
86	New Pressure Sensitive (no xfer) & TW-1111 Ink	636, 656, 676
87	New Pressure Sensitive (no xfer) & TW-1151 Ink	636, 656, 676
88	New Pressure Sensitive (no xfer) & HR-1111 Ink	636, 656, 676
89	New Pressure Sensitive (no xfer) & HR-3111 Ink	636, 656, 676
90	New Pressure Sensitive (no xfer) & HR-4111 Ink	636, 656, 676
91	Coated Tag Stock & GP-1111 Ink	650, 636, 656, 676
92	Uncoated Tag Stock & GP-1111 Ink	650, 636, 656, 676
93	New Pressure Sensitive (no xfer) & GP-1111 Ink	650, 636, 656, 676
94	2800 Fabric & GP-1111 Ink	636, 656, 676
95	2795 Fabric & GP-1111 Ink	636, 656, 676
96	2795 Fabric & CT-1111 Ink	636, 656, 676
97	4800 Fabric & CT-1111 Ink	636, 656, 676
98	4800 Fabric & CT-1114 (Blue)	636, 656, 676
99	4800 Fabric & GP-1111	636, 656, 676
100	2395NWT Fabric & CL-1111 (UK)	636, 656, 676
101	2395NWT Fabric & XC-3111 (UK)	636, 656, 676
102	2395NWT Fabric & HR-1111 (UK)	636, 656, 676
103	2495NWT Fabric & CL-1111 (UK)	636, 656, 676
104	2495NWT Fabric & XC-3111 (UK)	636, 656, 676
105	2495NWT Fabric & HR-1111 (UK)	636, 656, 676
106	4000NWT Fabric & CL-1111 (UK)	636, 656, 676
107	4000NWT Fabric & XC-3111 (UK)	636, 656, 676
108	4000NWT Fabric & HR-1111 (UK)	636, 656, 676
109	4002NWT Fabric & CL-1111 (UK)	636, 656, 676
110	4002NWT Fabric & XC-3111 (UK)	636, 656, 676
111	4002NWT Fabric & HR-1111 (UK)	636, 656, 676
112	G.S. Satin & XC-3111 (UK)	636, 656, 676
113	2012T Fabric & XC-3111 (UK)	636, 656, 676
114	1021T Fabric & XC-3111 (UK)	636, 656, 676
115	2800 Fabric & CT-1111	636, 656, 676
116	591SST Fabric & CT-1111	636, 656, 676
117	591SST/601SST Fabrics & CT-1114	636, 656, 676
118	601SST Fabric & CT-1111	636, 656, 676

Value	Transfer Type	Supported by
119	591SST/601SST Fabrics & CT-1115	636, 656, 676
120	591SST/601SST Fabrics & CT-1117	636, 656, 676
121	591SST Fabric & CT-1112	636, 656, 676
122	601SST Fabric & CT-1112	636, 656, 676
155	4900NWT / 4900HSA & HS1111	636, 656, 676
156	1800FRA & TW1111	636, 656, 676
157	1800FRA & GP1111	636, 656, 676
158	2085NWT / 2495NWT / 2360NWT & HS1111	636, 656, 676
159	2360NWT / 2800NWT & XC3111	636, 656, 676
160	2895NWT / 2800NWT & HS1111	636, 656, 676
161	2895NWT & XC3111	636, 656, 676
162	2895NWT & HC3111	636, 656, 676
163	1800MWA & GP1111	636, 656, 676
164	1800MWA & TW1111	636, 656, 676
165	604LKP / 601LKP & DS7501 / 7502 / 7504	636, 656, 676
166	604LKP / 601 LKP & DS7503	636, 656, 676
167	4800NBC Fabric & HS1011	636, 656, 676
168	2012T Fabric & HS1111/1112	636, 656, 676
169	4360NBT Fabric & SD1011	636, 656, 676
170	4041THS Fabric & HS1111	636, 656, 676
171	4700TWT Fabric & PL1111	636, 656, 676
172	4800TST Fabric & CT1111	636, 656, 676
173	4800TST Fabric & CT1112	636, 656, 676
174	4800TST Fabric & CT1114	636, 656, 676
175	4800TST Fabric & CT1115	636, 656, 676
176	4800TST Fabric & CT5137	636, 656, 676
177	4800TST Fabric & HS1111	636, 656, 676
178	770SWT Fabric & CT1112	636, 656, 676
179	770SWT Fabric & CT1114	636, 656, 676
180	770SWT Fabric & CT1115	636, 656, 676
181	770SWT Fabric & CT5137	636, 656, 676
182	772SWT Fabric & CT1112	636, 656, 676
183	772SWT Fabric & CT1114	636, 656, 676
184	772SWT Fabric & CT1115	636, 656, 676
185	772SWT Fabric & CT5137	636, 656, 676
201	New Tag Stock A & GN - 1111	686
202	New Tag Stock B & GN - 1111	686
203	New Tag Stock C & GN - 1111	686
204	New Tag Stock D & GN - 1111	686
205	New Tag Stock E & GN - 1111	686

Barcode Segmentation Values Associated with the BG Commands.

Value	Font	Supported by
0	None	650, 636, 656, 676, 686, 545
1	4-4-4 UPC (3 of 4)	650, 636, 656, 676, 686, 545
2	1-5-5-1 UPC	650, 636, 656, 676, 686, 545
3	Sears Code 39	650, 636, 656, 676, 686, 545
4	1-6-6 EAN	650, 636, 656, 676, 686, 545
5	UCC128	650, 636, 656, 676, 686, 545
6	2&4	650, 636, 656, 676, 686, 545
7	1&6	650, 636, 656, 676, 686, 545
8	3-3-3-3 UPC (4 of 3)	650, 636, 656, 676, 686, 545
9	4-4	650, 636, 656, 676, 686, 545

APPENDIX B - Default Values

Format Defaults When Printer Receives a ~XA command:

630:

Web Size = 0

Pull Size = 0

No Sensemark

No Flags

1-UP

Head Strobe = 6

Print Speed = 5.0 inches/sec

Sense to Cut = 0

Cut count = 1

Number of fields = 0

650:

Web Size = 5.0" (Max Value)

Pull Size = 7.0"

No Sensemark

No Flags

1-UP

Print Speed = 6.5 inches/sec

Sense to Cut = 0

No Head Lift

Transfer Type = 0 (Topcoat card stock & TT-1111 Ink)

Number of fields = 0

960:

Web Size = 2.0"

Pull Size = 1.0"

No Sensemark

Sense to Cut = 0

636:

Web Size = 1.0"
Pull Size = 1.0"
No Sensemark
No Flags
1-UP
Print Speed = 5.5 inches/sec
Sense to Cut = 0
Cut count = 1
Transfer Type = 91 (Topcoat card stock & TT-1111 Ink)
Number of fields = 0

656:

Web Size = 1.0"
Pull Size = 1.0"
No Sensemark
No Flags
1-UP
Print Speed = 7.0 inches/sec
Sense to Cut = 0
Cut count = 1
No Head Lift
Transfer Type = 91 (Topcoat card stock & TT-1111 Ink)
Number of fields = 0

676:

Web Size = 1.0"
Pull Size = 1.0"
No Sensemark
No Flags
1-UP
Print Speed = 5.0 inches/sec
Sense to Cut = 0
Cut count = 1
No Head Lift
Transfer Type = 91 (Topcoat card stock & TT-1111 Ink)
Number of fields = 0

686:

Web Size = 1.0"
Pull Size = 1.0"
No Sensemark
No Flags
1-UP
Print Speed = 12.0 inches/sec
Sense to Cut = 0
Cut count = 1
No Head Lift
Transfer Type = 201 (New Tag Stock A & GN - 1111 Ink)
Number of fields = 0

545:

Web Size = 1.0"
Pull Size = 1.0"
No Flags
1-UP
Print Speed = 10.0 inches/sec
Cut count = 1
Number of fields = 0

Format Defaults When Printer Receives a ~FA Command:

630:

No Datacopy

No Increment

Font = 8 Point Standard

Field Position = 0, 0

No Expansion

Inter Character Spacing of 3

Field Rotation = 0 degrees

650:

No Datacopy

No Increment

Font = 8 Point Standard

Field Position = 0, 0

No Expansion

Field Rotation = 0 degrees

960:

Side = Front

Web = 0.250"

Pull = 0.250"

Field Rotation = 0 degrees

No Edit codes

No Expansion

Font = 8 Point Standard

636 / 656 / 676 / 686 / 545:

Web = 0.062"

Pull = 0.062"

No Increment

Length = 1

Font = Monospace 821 Bold

Pointsize = 8

Field Rotation = 0 degrees

Code Page = 437

Justification = Left

Inter Character Spacing of 3

Format Defaults When Printer Receives a ~FB Command:

630:

No Datacopy

No Increment

Barcode Type = UPC-A

Barcode height = 1/2"

Module width = 1

No Guard bars

Field Position = 0, 0

Field Rotation = 90 degrees

No Check Digit

No Human Readable Information

Barcode margin (Quiet Zone) = 0

System Digit position = 0,0

650:

No Datacopy

No Increment

Barcode Type = UPC-A

Barcode height = 1/2"

Field Position = 0, 0

Field Rotation = 90 degrees

No Check Digit

No Human Readable Information

636 / 656 / 676 / 686 / 545:

No Datacopy

No Increment

Barcode Type = UPC-A

Length = 12

Barcode height = 1/2"

Module width = 0.13"

No Guard bars

Web = 0.062"

Pull = 0.062"

Field Rotation = 90 degrees

No Check Digit

No Human Readable Information

Barcode margin (Quiet Zone) = 0

System Digit position = 0,0

HRI Font = Monospace 821 Bold

HRI Pointsize = 8

HRI Code Page = 437

HRI segmentation = 1-5-5-1

HRI Position = bottom

Justification = Left

Inter Character Spacing of 3

Format Defaults When Printer Receives a ~FS Command:

630:

Field Position = 0, 0

No Expansion

Spacing between symbols = 5 dots

Field Rotation = 0 degrees

Symbol type = 9

650:

Field Position = 0, 0

No Expansion

Field Rotation = 0 degrees

960:

Side = Front

Web = 0.250"

Pull = 0.250"

Field Rotation = 0 degrees

No Expansion

636 / 656 / 676 / 686 / 545:

Web = 0.062"

Pull = 0.062"

Length = 1

Image Type = BMP

Justification = Left

Inter Character Spacing of 3

Format Defaults When Printer Receives a ~FG Command:

630:

Field Position = 0, 0

No Expansion

Spacing between symbols = 5 dots

Field Rotation = 0 degrees

Logo type = 1

650:

Field Position = 0, 0

No Expansion

Field Rotation = 0 degrees

Logo type = 1

960:

Side = Front

Web = 0.250"

Pull = 0.250"

Field Rotation = 0 degrees

No Expansion

Logo type = 1

636 / 656 / 676 / 686 / 545:

Web = 0.062"

Pull = 0.062"

Image Type = BMP

Format Defaults When Printer Receives a ~FL Command:

630:

Field Start Position = 0, 0

Field End Position = 0,0

Line Width Horizontal and Vertical = 2 dots

960:

Field Start Position = 0.250", 0.250"

Field End Position = 0.250", 0.250"

Line Width Horizontal and Vertical = 1 dot

636 / 656 / 676 / 686 / 545:

Web = 0.062"

Pull = 0.062"

End Web = 1.062"

End Pull = 1.062"

Line Width Horizontal and Vertical = 3 dots

Shape = Box

APPENDIX C – PCL Summary 7.2

Format Commands

Command	Description	Available on
~XA	**Start of Format**	630, 650, 960, 636, 656, 676, 686, 545
~XW9999	**Tag Web Size**	
	Up to 5000 (5.0") by increments of 33 (.033")	630
	Up to 4800 (4.8") by increments of 33 (.033")	650
	Up to 4000 (4.0")	960
	1000 (1.0") to 5125 (5.125")	636, 656, 676, 686
	500 (0.5") to 1375 (1.375")	545
~XP99999	**Tag Pull Size**	
	Up to 7000 (7.0") by increments of 33 (.033")	630
	Up to 14000 (14.0) by increments of 33 (.033")	650
	Up to 6000 (6.0")	960
	1000 (1.0") to 14000 (14.0")	636, 656, 676, 686
	625 (.625") to 14000 (14.0")	545
~XM_9999	**Sense Mark Format**	
	H:Hole, **R**:Reflective	630, 650, 960, 636, 656, 686
	H:Hole, **T**:Top Reflective, **R**:Reflective (back option)	676
~XF_	**Flagging**	
	N: None	630, 650, 960, 636, 656, 676, 686, 545
	L: Long / Short,	630, 650, 960, 636, 656, 676, 686, 545
	D: Double,	630, 650, 960
	T: Tag,	630, 636, 656, 676, 686, 545
	V: Verifier,	630, 650
	B: Double blank	650
	S: Small, **M**: Medium, **X**: Extra Large,	636, 656, 676, 686, 545
	Z: Zero length	636, 656, 676, 686, 545
~XG	**Graphic Field Designation** **A**: Graphic field is an alphanumeric field. **L**: Graphic field is a logo field. **P**:Point size of a graphic alphanumeric field.	PcMate Plus Display
~XL9	**Number of Tags Across the Web**	
	Up to 4 tags	630, 636, 656, 676
	Up to 2 tags	650, 960
~XS99	**Print Speed**	
	50: 5.0"/sec, **40**: 4.0"/sec, **30**: 3.0"/sec	630, 676
	65: 6.5"/sec to **25**: 2.5"/sec by .5"/sec	650
	70: 7.0", **60**: 6.0", **45**: 4.5", **30**: 3.0"/sec	636, 656
	120: 12", **100**: 10", **70**: 7.0", **30**: 3.0"/sec	686
	100: 10", **80**: 8", **60**: 6.0", **40**: 4.0"/sec	545
~XUC9	**Future Command**	

~XUB9	**Barcode Exclusion** **B9 – Barcode Exclusion SV100 Scanner Only** This command allows for specified barcodes on the tag **NOT** to be verified. This command is **ONLY** valid with the SV100 verifier. The barcodes can be excluded by replacing the 9 with the following; **0** = Exclude none **1** = Exclude UPC-A, UPC-E, EAN-8, EAN-13 **2** = Exclude Code 39 **4** = Exclude Code 128, EDI Code 128 **8** = Exclude Interleave 2 of 5 **16** = Exclude Code 93 To exclude multiple barcodes, replace the 9 with the sum of the values desiginating the barcodes to exclude. **Example**: To exclude code 39 and Interleave 2 of 5, add the 2 and the 8 together and the command would be **~XUB10**.	636, 656, 676, 686
~XH99	**Head Strobe Value** - 1 to 15	630
~XT99	**Transfer Type**	
	9: Topcoated Card Stock w/TF-1111 (lightest-650 only)	650
	74: Fabric 2795 w/TT-1111	650, 636, 656, 676
	60: PS Thermal Receptive w/TW-1111	650, 636, 656, 676
	15: Size Stickers w/TW-1111	650
	14: Fabric 2800 w/HC-3111	650
	11: Tyvek w/TF-1111	650
	59: PS Thermal Receptive w/TT-1111	650, 636, 656, 676
	73: Fabric 2800 w/HR-1111	650, 636, 656, 676
	69: Fabric 2800 w/TT-1111	650, 636, 656, 676
	10: PS Non Thermal Receptive w/TF-1111	650
	8: Tyvek w/TT-1111	650
	4: PS Non Thermal Receptive w/TT-1111	650
	53: Topcoated card stock w/TT-1111	650, 636, 656, 676
	54: Topcoated card stock w/HR-3111	650, 636, 656, 676
	0: Topcoated card stock w/HR-4111	650
	0: NonTopcoated card stock w/HR-4111	650
	5: PS Non Thermal Receptive w/HR-1111	650
	56: Topcoated Card Stock w/TW-1111	650, 636, 656, 676
	78: Fabric 2795 w/HR-1111	650, 636, 656, 676
	55: Topcoated card stock w/HR-1111 (darkest-650 only)	650, 636, 656, 676
	51: Heat Seal w/SD-1111	636, 656, 676
	52: Topcoated card stock w/TT-3111	636, 656, 676
	57: Topcoated card stock w/TW-1151	636, 656, 676
	58: Pressure Sensitive w/TT-3111	636, 656, 676
	61: Pressure Sensitive w/TW-1151	636, 656, 676
	62: Pressure Sensitive w/HR-3111	636, 656, 676
	63: Uncoated Tag Stock w/TT-3111	636, 656, 676
	64: Uncoated Tag Stock w/TT-1111	636, 656, 676
	65: Uncoated Tag Stock w/HR-3111	636, 656, 676
	66: Uncoated Tag Stock w/HR-1111	636, 656, 676
	67: Uncoated Tag Stock w/TW-1111	636, 656, 676
	68: Uncoated Tag Stock w/TW-1151	636, 656, 676
	70: Fabric 2800 w/HR-3111	636, 656, 676
	71: Fabric 2800 w/TT-3111	636, 656, 676
	72: Fabric 2800 w/HC-3111	636, 656, 676
	75: Fabric 2795 w/HR-3111	636, 656, 676
	76: Fabric 2795 w/TT-3111	636, 656, 676
	77: Fabric 2795 w/HC-3111	636, 656, 676

~XT99 (Con't)	**Transfer Type**	
	79: Coated Tag Stock w/HR-4111	636, 656, 676
	80: Pressure Sensitive w/HR-4111	636, 656, 676
	81: Uncoated Tag Stock w/HR-4111	636, 656, 676
	82: Fabric 2800 w/HR-4111	636, 656, 676
	83: Fabric 2795 w/HR-4111	636, 656, 676
	84: New Pressure Sensitive (no xfer) w/TT-3111	636, 656, 676
	85: New Pressure Sensitive (no xfer) w/TT-1111	636, 656, 676
	86: New Pressure Sensitive (no xfer) w/TW-1111	636, 656, 676
	87: New Pressure Sensitive (no xfer) w/TW-1151	636, 656, 676
	88: New Pressure Sensitive (no xfer) w/HR-1111	636, 656, 676
	89: New Pressure Sensitive (no xfer) w/HR-3111	636, 656, 676
	90: New Pressure Sensitive (no xfer) w/HR-4111	636, 656, 676
	91: Coated Tag Stock w/GP-1111	636, 656, 676
	92: Uncoated Tag Stock w/GP-1111	636, 656, 676
	93: New Pressure Sensitive w/GP-1111	636, 656, 676
	94: 2800 Fabric w/GP-1111	636, 656, 676
	95: 2795 Fabric w/GP-1111	636, 656, 676
	96: 2795 Fabric w/CT-1111	636, 656, 676
	97: 4800 Fabric w/CT-1111	636, 656, 676
	98: 4800 Fabric w/CT-1114 (Blue)	676, 656, 676
	99: 4800 Fabric w/GP-1111	676, 656, 676
	100: 2395NWT Fabric w/CL-1111 (UK)	676, 656, 676
	101: 2395NWT Fabric w/XC-3111 (UK)	676, 656, 676
	102: 2395NWT Fabric w/HR-1111 (UK)	676, 656, 676
	103: 2495NWT Fabric w/CL-1111 (UK)	676, 656, 676
	104: 2495NWT Fabric w/XC-3111 (UK)	676, 656, 676
	105: 2495NWT Fabric w/HR-1111 (UK)	676, 656, 676
	106: 4000NWT Fabric w/CL-1111 (UK)	676, 656, 676
	107: 4000NWT Fabric w/XC-3111 (UK)	676, 656, 676
	108: 4000NWT Fabric w/HR-1111 (UK)	676, 656, 676
	109: 4002NWT Fabric w/CL-1111 (UK)	676, 656, 676
	110: 4002NWT Fabric w/XC-3111 (UK)	676, 656, 676
	111: 4002NWT Fabric w/HR-1111 (UK)	676, 656, 676
	112: G.S. Satin w/XC-3111 (UK)	676, 656, 676
	113: 2012T Fabric w/XC-3111 (UK)	676, 656, 676
	114: 1021T Fabric w/XC-3111 (UK)	676, 656, 676
	115: 2800 Fabric w/CT-1111	676, 656, 676
	116: 591SST Fabric w/CT-1111	636, 656, 676
	117: 591SST/601SST Fabrics w/CT-1114	636, 656, 676
	118: 601SST Fabric w/CT-1111	636, 656, 676
	119: 591SST/601SST Fabrics w/CT-1115	636, 656, 676
	120: 591SST/601SST Fabrics w/CT-1117	636, 656, 676
	121: 591SST Fabric w/CT-1112	636, 656, 676
	122: 601SST Fabric w/CT-1112	636, 656, 676
	155: 4900NWT / 4900HSA & HS1111	636, 656, 676
	156: 1800FRA & TW1111	636, 656, 676
	157: 1800FRA & GP1111	636, 656, 676
	158: 2085NWT / 2495NWT / 2360NWT & HS1111	636, 656, 676
	159: 2360NWT / 2800NWT & XC3111	636, 656, 676
	160: 2895NWT / 2800NWT & HS1111	636, 656, 676
	161: 2895NWT & XC3111	636, 656, 676
	162: 2895NWT & HC3111	636, 656, 676
	163: 1800MWA & GP1111	636, 656, 676
	164: 1800MWA & TW1111	636, 656, 676
	165: 604LKP / 601LKP & DS7501 / 7502 / 7504	636, 656, 676
	166: 604LKP / 601 LKP & DS7503	636, 656, 676
	167: 4800NBC Fabric & HS1011	636, 656, 676

~XT99 (Con't)	**Transfer Type** **168**: 2012T Fabric & HS1111/1112 **169**: 4360NBT Fabric & SD1011 **170**: 4041THS Fabric & HS1111 **171**: 4700TWT Fabric & PL1111 **172**: 4800TST Fabric & CT1111 **173**: 4800TST Fabric & CT1112 **174**: 4800TST Fabric & CT1114 **175**: 4800TST Fabric & CT1115 **176**: 4800TST Fabric & CT5137 **177**: 4800TST Fabric & HS1111 **178**: 770SWT Fabric & CT1112 **179**: 770SWT Fabric & CT1114 **180**: 770SWT Fabric & CT1115 **181**: 770SWT Fabric & CT5137 **182**: 772SWT Fabric & CT1112 **183**: 772SWT Fabric & CT1114 **184**: 772SWT Fabric & CT1115 **185**: 772SWT Fabric & CT5137 **201**: New Tag Stock A & GN – 1111 **202**: New Tag Stock B & GN – 1111 **203**: New Tag Stock C & GN – 1111 **204**: New Tag Stock D & GN – 1111 **205**: New Tag Stock E & GN - 1111	636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 636, 656, 676 686 686 686 686 686
~XI	**Head Lift**	650, 656, 676
~XC99	**Number of Tags Before a Cut**	630, 636, 656, 676, 686, 545
~XV_..._	**Verifier Setup Information** As many commands as are necessary can be placed after the ~XV command **W**: Halt on warnings **N**: Halt the printer on a no read only. **B**: Halt the printer on both a no read and a symbol quality reject. **R**: Halt on Symbol quality rejects only **S_**: Quality level where _ is replaced by one character grade B,C,D,F **C99**: Consecutive failure where 99 is replaced by 00=Disable or 01 thru 10 **A99**: Accumulative failure where 99 is replaced by 00=Disable or 01 thru 20	636, 656, 676, 686
~XR_	**Ink Color** **R**: Red ink, **B**: Black ink	636,656
~XN	**Print Station Selection** **1**:Station 1, **2**:Station 2, **3**:Station 3	676, 545
~XO	**Mirror Image**	636, 656, 676, 686, 545
~XD	**DPI Definition** **240**: 240 dpi, **300**: 300 dpi	PcMate Plus Display
~XX	**Printer Definition** 636, 656, 676, 686, 545	PcMate Plus Display
~XE	**Printer Halt After Batch Command**	636, 656, 676, 686, 545
~XJ99	**Minimum Barcode Scans**	636, 656, 676, 686, 545
~XZ	**End of Format**	630, 650, 960, 636, 656, 676, 686, 545

Field Commands

~FA99	**Alpha Numeric Field Definition** 1 to 64 characters 1 to 128 characters	 630, 650, 960 636, 656, 676, 686, 545
~FB99	**Barcode Field Definition**	630, 650, 636, 656, 676, 686, 545
~FL	**Box / Line Field Definition**	630, 960, 636, 656, 676, 686, 545
~FG99	**Logo Field Definition**	630, 650, 960, 636, 656, 676, 686, 545
~FS99	**Care Symbol Field Definition**	630, 650, 960, 636, 656, 676, 686, 545
~FY99	**Special Symbol Field Definition**	960
~FM	**Graphic Image Field Definition**	630, 636, 656, 676, 686, 545
~FW9999	**Field Web Position**	630, 650, 960, 636, 656, 676, 686, 545
~FP99999	**Field Pull Position**	630, 650, 960, 636, 656, 676, 686, 545
~FR9	**Field Rotation** **0**: 0, **1**: 90, **2**: 180, **3**: 270 degrees	 630, 650, 960, 636, 656, 676
~FD_	**Side of Tag Field is Placed on** **F**:Front, **B**:Back **1**:Station 1, **2**:Station 2, **3**:Station 3 **2**:Station 2 **A**:Flag (Station 2 default), **A1**:Station 1 Flag, **A2**:Station 2 Flag, **A3**:Station 3 Flag	 960, 676 676, 545 (only 1 & 2) 636, 656, 686 960, 636, 656, 676, 686, 545 676, 545 (only A1 & A2)

Alphanumeric Field Commands

~AF9999	**Alphanumeric Font Number** **1**:6 Pt CND, **2**:6 Pt STD, **3**:6 Pt BLD, **4**:8 Pt CND, **5**:8 Pt STD, **6**:8 Pt BLD, **7**:10 Pt CND, **8**:10 Pt STD, **9**:10 Pt BLD, **10**:12 Pt CND, **11**:12 Pt STD, **12**:12 Pt BLD, **13**:OCR A	 630, 650, 960 630, 630, 650, 960 630, 650, 960 630, 650, 960 630, 650
~AL99999	**Scaleable Fonts** **5**:Swiss 721 Bold **102**:Swiss 721 Heavy **173**:Swiss 721 Black Condensed **759**:Swiss 721 Medium **596**:Monospace 821 **598**:Monospace 821 Bold (default)	 636, 656, 676, 686, 545
~AC999	**Code Page** 000, 001, 437, 850, 851, 852, 857, 866	960, 636, 656, 676, 686, 545
~AP99	**Point Size of Scaleable Font** 4 to 96 6 to 96	 636, 656, 676, 686 545
~A199	**Data Copy Source Field**	630, 650, 636, 656, 676, 686, 545
~A299	**Data Copy Start Character**	630, 650, 636, 656, 676, 686, 545
~A399	**Data Copy Number of Characters**	630, 650, 636, 656, 676, 686, 545

~AS99	**Sequencing** **1** to **255** **1** to **254** **255**: Decrement by 1 **- 2,147,483,647** to **+ 2,147,483,647**	 630, 960 650 636, 656, 676, 686, 545
~AD99	**Number of Tags Before Sequencing**	630, 960, 636, 656, 676, 686, 545
~AE_	**Edit Code** **L**:Left justified, **R**:Right justified, **C**:Center justified, **A**:Print as is	 630, 650, 960, 636, 656, 676, 686, 545
~AV9	**Height Expansion Multiple** 2, 4, and 8 1 to 9	 650 630, 960
~AH9	**Width Expansion Multiple** 2, 4, and 8 1 to 9	 650 630, 960
~AI99	**Intercharacter Spacing**	630, 960, 636, 656, 676, 686, 545
~AR9	**Write Mode** **0**: Direct, **1**: And, **2**: Or, **3**: Xor **0**: Direct, **2**:Overlap, **3**:Inverse	 630, 650, 960 636, 656, 676, 686, 545
~AO99	**Oblique of Character (Slant)** -90 to 90	 636, 656, 676, 686, 545
~AT_	**Character Orientation** **V**:Vertical, **H**:Horizontal	 636, 656, 676, 686, 545
~AM_	**Function Field** **D**:Date – (mm/dd/yy), **E**:Date – (dd/mm/yy), **T**:Time – (hh:mm:ss AM/PM), **Q**:Quantity, **I**:Batch ID	 636, 656, 676, 686, 545
~AW9999	**Width of Field for Variable Width Fonts**	636, 656, 676, 686, 545
~AQ9	**Quadrangle Field** **0**:Squeeze to fit, **1**:Proportion to fit, **2**:Stretch to fit, **3**: Regular fit	 636, 656, 676, 686, 545
~AA9	**Escapement** **0**:Left to Right, **1**:Right to Left	Future Command
~AB_	**Field Ascender / Decender Selection** **A**: Ascenders only, **D**: Decenders only, **B**: Ascender and Decenders, **O**: Neither Ascenders or Decenders	Future Command

Barcode Field Commands

~BF99	**Barcode Type** **1**:UPC-A (1-5-5-1 HRI), **1**:UPC-A, **3**:UPC-E, **4**:Code 39, **5**:EAN-8, **6**:EAN-13, **7**:I 2 of 5, **10**:Code 128, **11**:EDI Code 128, **12**:UPC-A (4-4-4 HRI), **13**:Code 39 (Sears Code 39 HRI), **14**:UPC-A w/Extended guard bars, **14**:I 2 of 5 - 3:1 Ratio, **15**:Expanded Code 128, **16**:Reduced Code 128, **17**:Code 93 **18**: Data Matrix	 630 650, 636, 656, 676, 686, 545 630, 636, 656, 676, 686, 545 630, 650, 636, 656, 676, 686, 545 630, 650, 636, 656, 676, 686, 545 630 630 650 630 650 650 636, 656, 676, 686, 545 636, 656, 676, 686, 545
~B199	**Data Copy Source Field**	630, 650, 636, 656, 676, 686, 545
~B299	**Data Copy Start Character**	630, 650, 636, 656, 676, 686, 545
~B399	**Data Copy Number of Characters**	630, 650, 636, 656, 676, 686, 545
~BS99	**Sequencing**	630, 650, 636, 656, 676, 686, 545
~BD99	**Number of Tags Before Sequencing**	630, 636, 656, 676, 686, 545
~BH9999	**Height for the Barcode Bars**	630, 650, 636, 656, 676, 686, 545
~BW9	**Module Width of the Bars**	630, 636, 656, 676, 686, 545
~BX9999	**Length of Barcode Guard Bars**	630, 636, 656, 676, 686, 545
~BC	**Check Digit Calculated**	630, 650, 636, 656, 676, 686, 545
~BZ_	**HRI Placement** **T**:Top, **B**:Bottom	 630, 636, 656, 676, 686, 545
~BA99	**HRI Font**	630, 650, 636, 656, 676, 686, 545
~BL99999	**Scaleable Fonts** **5**: Swiss 721 Bold **102**: Swiss 721 Heavy **173**: Swiss 721 Black Condensed **759**: Swiss 721 Medium **596**: Monospace 821 **598**: Monospace 821 Bold (default)	 636, 656, 676, 686, 545
~BP99	**Point Size of HRI** 4 to 96 6 to 96	 636, 656, 676, 686 545
~BI99	**Intercharacter Spacing**	636, 656, 676, 686, 545
~BB9999	**Barcode Margin**	630
~BJ9999	**UPC System Digit / Check Digit Horizontal Placement**	630, 636, 656, 676, 686, 545
~BK9999	**UPC System Digit / Check Digit Vertical Placement**	630, 636, 656, 676, 686, 545
~BR9	**Write Mode** **0**: Direct, **1**: And, **2**: Or, **3**: Xor **0**: Direct, **2**:Overlap, **3**:Inverse	 630, 650, 960 636, 656, 676, 686, 545

~BG9	**HRI Segmentation** **0**:None, **1**:4-4-4 UPC, **2**:1-5-5-1 UPC, **3**:Sears Code 39, **4**:1-6-6 EAN, **5**:UCC128 **6**:2&4, **7**:1&6, **8**:3-3-3-3, **9**:4-4	 650, 636, 656, 676, 686, 545 650, 636, 656, 676, 686, 545 636, 656, 676, 686, 545
~BM_	**Barcode Options** **R99**: Ratio for wide to narrow bars **20**:2.0, **21**:2.1, **22**:2.2, ..., **29**:2.9, **30**:3.0 **S9**: Supplement to UPC/EAN barcode **2**:+2, **5**:+5 **D99**: Data Matrix matrix size 1 to 30 (see chart with ~BM command in Reference Guide)	636, 656, 676, 686, 545

Box / Line Field Commands

~LW9999	**End Web Position of Box / Line field**	630, 960, 636, 656, 676, 686, 545
~LP99999	**End Pull Position of Box / Line field**	630, 960, 636, 656, 676, 686, 545
~LV99	**Width of Vertical Line**	630, 636, 656, 676, 686, 545
~LH99	**Width of Horizontal Line**	630, 636, 656, 676, 686, 545
~LT_	**Type of Shape** **L**:Line, **B**:Box	 960, 636, 656, 676, 686, 545
~LF9	**Write Mode of Box** **0**:Normal, **1**:Clear, **2**:Fill	 630, 960, 636, 656, 676, 686, 545
~LR9	**Write Mode** **0**: Direct, **1**: And, **2**: Or, **3**: Xor **0**: Direct, **2**:Overlap, **3**:Inverse	 960 636, 656, 676, 686, 545

Logo Field Commands

~GH9	**Logo Pull Expansion Multiple**	630
~GV9	**Logo Web Expansion Multiple**	630
~GT99	**Logo Type**	630, 650, 960
~GM9	**Type of Image File** **1**:ASM, **2**:LGO, **3**:BMP, **4**:PCX	 636, 656, 676, 686, 545
~GE_	**Logo Horizontal Justification** **L**:Left, **C**:Center, **R**:Right	636, 656, 676, 686, 545
~GU_	**Logo Vertical Justification** **T**:Top, **C**:Center, **B**:Bottom	636, 656, 676, 686, 545
~GR9	**Write Mode** **0**: Direct, **1**: And, **2**: Or, **3**: Xor **0**: Direct, **2**:Overlap, **3**:Inverse	 630, 650, 960 636, 656, 676, 686, 545
~GI99	**Inter Logo Spacing**	630

Care Symbol Field Commands

~SH9	**Care Symbol Pull Expansion Multiple**	630
~SV9	**Care Symbol Web Expansion Multiple**	630
~ST99	**Care Symbol Type** **1**:Small set, **2**:Large set **3**:Nafta symbols **9**:Care symbol set	 960, 636, 656, 676, 686, 545 636, 656, 676, 686, 545 630
~SR9	**Write Mode** **0**: Direct, **1**: And, **2**: Or, **3**: Xor **0**: Direct, **2**:Overlap, **3**:Inverse	 630, 650, 960 636, 656, 676, 686, 545
~SI99	**Spacing Between Care Symbols**	630, 960, 636, 656, 676, 686, 545
~SP99	**Point Size of Symbol** 4 to 96 6 to 96	 636, 656, 676, 686 545
~SW9999	**Care Symbol, Width of Field**	636, 656, 676, 686, 545
~SQ_	**Care Symbol, Quadrangle Field** **0**:Squeeze to fit, **1**:Proportion to fit, **2**:Stretch to fit, **3**:Regular fit	636, 656, 676, 686, 545
~SE_	**Edit Code** **L**: Left justified, **R**: Right justified, **C**: Center justified, **A**: Print as is	636, 656, 676, 686, 545
~SO99	**Oblique of Character (Slant)** -90 to 90	636, 656, 676, 686, 545

Special Symbol Field Commands

~YH9	**Special Symbol Pull Expansion Multiple**	960
~YV9	**Special Symbol Web Expansion Multiple**	960
~YT99	**Care Symbol Type** **1**:TM, **2**:cm, **3**:10 Pt fractions, **4**:12 Pt fractions, **5**:Size symbols	 960 960
~YR9	**Write Mode** **0**: Direct, **1**: And, **2**: Or, **3**: Xor	 960
~YI99	**Spacing Between Special Symbols**	960

Image Commands

~I	**Graphic Image**	630, 636, 656, 676, 686, 545
~MH9	**Image Width Expansion Multiple**	630
~MV9	**Image Height Expansion Multiple**	630
~MR9	**Write Mode** **0**: Direct, **1**: And, **2**: Or, **3**: Xor **0**: Direct, **2**:Overlap, **3**:Inverse	 630, 636, 656, 676, 686, 545

Batch Commands

~ZD99	**Start of Batch Data**	630, 650, 960, 636, 656, 676, 686, 545
~D	**Data to be Printed on the Tag**	630, 650, 960, 636, 656, 676, 686, 545
~ZB9999	**Batch Separation**	630, 636, 656, 676, 686, 545
~ZZ9999	**End of Batch Data**	630, 650, 960, 636, 656, 676, 686, 545
~ZIXXXXXX XX	**Batch ID** XXXXXXXX Replaced with ID number	636, 656, 676, 686, 545
~CC	**Tells Printer to Send FS for Each Tag**	630, 636, 656, 676, 686, 545
~CF_	**Current Batch Flagging**	
	N:None, **L**:Long/Short,	630, 650, 960, 636, 656, 676, 686, 545
	D: Double,	630, 650, 960
	F: Flag according to format,	630, 650, 960, 636, 656, 676, 686, 545
	T: Tag,	630, 636, 656, 676, 686, 545
	V: Verifier	630, 650
	B: Double blank,	650
	S: Small, **M**: Medium, **X**: Extra Large	636, 656, 676, 686, 545
	Z: Zero length	676
~CI	**Tells Printer to Send Batch ID After Printing**	636, 656, 676, 686, 545
~CK_	**Suppresses the Cut** **A**: All cuts in the batch are suppressed **B**: Only the cut between batches is suppressed	636, 656, 676, 686, 545
~CE	**Printer Halt After Batch Command**	636, 656, 676, 686, 545