<u>SAP R/3 Printing</u>

<u>Support by Ricoh</u>

<u>Customer documentation</u>

<u>Volume 3</u> : [DC04]

Device-specific information

for
- Ricoh   Aficio 551
                         Aficio 700
                         Aficio 1055

Version: 1.09

Abstract:
This document contains device-specific information about the device hardware and accessories, the configurable features, related limitations, and the commands necessary to configure the settings in the device type.

C o n t e n t s

1. General Device Information

This chapter contains general information about the devices.

SAP R/3 device types to use:
- PCL-based   **ZA0x**, ver 005+

Device (model name):

• **[DC04a]**	Aficio 551	
• **[DC04b]**	Aficio 700	
• **[DC04c]**	Aficio 1055	

Controller: [DC04a,b]: Printer Controller Type 700
                                      [DC04c]:   Printer Controller Type 1055

Compatibility / Emulation: HP PCL 5e

Firmware (PCL):
                                      Note: It is recommended to always use the latest firmware.

Speed: [DC04a]: 55 ppm (A4 simplex)
                                      [DC04b]: 70 ppm (A4 simplex)
                                      [DC04c]: 55 ppm (A4 simplex)

Printer queue name: PORT1

2. Device Hardware Accessories

This chapter contains information about the standard or optionally available hardware accessories of the devices.
The Description column indicates the name of the unit, its properties, and, where applicable, the supported paper sizes and the sheet capacity.
It also contains a list of features which can be configured on the device's front panel, as well as their initial factory defaults.

For more device-specific information, see also the device's Operating Instructions manual.

Device Hardware Accessories

Unit		Description
Memory (RAM)	standard optional	32 MB max. 256 MB
Bypass	standard	(paper input) Bypass Tray unit - Capacity = 50-sheet - Paper = see (*)
Large Capacity Tray (LCT)	optional	(paper input) - attached to the right-hand side of the device • [RT37] - Capacity = 3500 sheets - Paper = A4, B5, LTR
Duplex unit	standard	- Paper = see (*)
Mailbox	optional	(paper output) Mailbox - has 1 Proof Tray and several Mailbox trays
- 9-bin		• [CS360] - only with [DC04a,b] - mounted between device and Finisher (if exists) - Capacity (# sheets) = 1 x 500 (Proof Tray) + 9 x 100 - Paper = see (*)
Finisher	optional	(paper output) device to perform stapling and/or punching functions - mounted on the left-hand side of the device - Trays = 1 Proof Tray, 1 Shift Tray
- Type 3000M		• [SR740] - Capacity (# sheets) = 3000 (Shift Tray) + 250 (Proof Tray) - Paper = see (*)

		- Stapling: 50 sheets, 4 positions
- Type 3000MP		dto., with 3-hole punch (US)
- Type 3000MP		dto., with 2-hole punch (EU)
- Type 3000MP, Punch Type E		dto., with 4-hole punch ("European style")
- Type 3000MP, Punch Type NE		dto., with 4-hole punch ("Swedish style")
- Type 3000B		• [SR810] = - only with [DC04a,b] - does not allow Mailbox attach ! - Capacity (# sheets) = 3000 (Shift Tray) + 500 (Proof Tray) - Paper = see (*) - Stapling: 100 sheets; 4 positions
- Type 3000BP		dto., with 3-hole punch (US)
- Type 3000BP		dto., with 2-hole punch (EU)
- Type 3000BP, Punch Type E		dto., with 4-hole punch ("European style")
- Type 3000BP, Punch Type NE		dto., with 4-hole punch ("Swedish style")
- Booklet Finisher M		• [SR750] - Trays: additional "Book Tray" - Capacity = 1000 sheets - Paper = see (*) - Stapling: 50 sheets **Note**: Its booklet finishing option is currently NOT supported under SAP R/3 printing.
Job separation unit	optional	

Note: (*) = See the Operating Instructions manual.

Note:
• The Mailbox can only be connected with the Finisher Type 3000Mx.

Features configurable on the device front panel

The following table specifies those features that can be configured from the device's front panel, and their initial factory default settings.
For those features whose setting is typically unlikely to be changed often, they can be configured once on the device front panel, and thus need no configuration from SAP R/3.

Feature	Initial (factory) setting
• Resolution	600 dpi
• Edge Smoothing	On
• Symbol set	Roman-8
• Tray priority	Auto
• Duplex mode	Off
• Stapling mode	Off
• Punching mode	Off
• Sort mode (Job separation)	Off

3. Features & Commands

This chapter contains one section for each configurable feature.

The features are ordered by importance (how often used) and logical order (in the processing of the job).
• 3.1 - 3.7   = likely to be configured / changed
• 3.8 - 3.13   = unlikely to be changed often
• 3.14 - 3.21   = changing makes no sense or has no effect, or it must or should not be changed
• 3.22 - ...   = additional features

Each section contains the following information about the feature:

1. Description of the **Feature**
2. Table of all possible **Settings** for this feature, and the **Values** necessary to specify in the **Command**(s).
        An (*) indicates that the interpretation of a value is subject to some restriction.
3. Dependencies/Constraints, other remarks
4. (for each Printer language and each related Command):
  a. Tag (this is used to clearly mark where the Command is located in the device type)
  b. Command syntax (see Appendix 1 below for general information on the printer language)
  c. Initial command (as an example, and as it is shipped in the device type)
        The entire initial command sequence of a particular device type is listed in the corresponding Volume 2.

Note: (Print controls)
For some of those features that can be specified per page, paragraph, or character, Print controls are defined.
Where applicable, these are also listed in the Settings/Values table of the feature.

General remarks:

- The order in which the commands appear in the device type, and in which they are sent to the printer, is roughly the same as the one generated by our Windows drivers. To make sure the controller doesn't get problems, this order should be maintained.
  Please also note that some commands are sent automatically by the SAPscript driver, on which we cannot take any influence.
- Be aware that some settings may require modifications in more than 1 place !

SAP-specific syntax issues:
- A `"#"` at the beginning of a line is the SAP comment symbol. It means that the line will not be sent to the printer.
- Non-printable characters have to be entered as SAP escape characters.

Notation conventions:
- All commands are printed in fixed-spaced Courier font.
- The "`^^^`" indicates a place-holder for a value that has to be looked up from the Settings/Values table.
- **<...>** indicates a place-holder.
- A `"##"` in front of a line is to indicate that it should never be uncommented.
- [...] indicates optional text that can be omitted.

3.1 Input Bin

Description:
Specify the input bin from where to take the paper.

Settings/Values:

^^^ [PCL.01]	Print control	Interpretation	Capacity (# sheets)
0	TRYST	Print out current page from currently active input bin (remains unchanged)	--
7	--	Auto Tray Select	--
2	TRYMN	Bypass	50
5	TRY05	Large Capacity Tray (LCT)	3500
8	TRY01	Tray 1 ("Tandem")	2x1550
1	TRY02	Tray 2	550
4	TRY03	Tray 3	550

Dependencies/Constraints:
- LCT requires LCT unit
- For the paper sizes supported by a particular bin, please see the Operating Instructions manual.
- LCT supports only paper sizes A4, B5, B4, Letter, Half-Letter.
- Tray 1 supports only paper sizes A4, Letter.
- Trays 2 and 3 support all paper sizes.
- Only Bypass supports paper sizes A6, Executive.
- Bypass Tray => no Duplex, no Stapling, no Punching, no Collation

Note: (Using the HPL2 ABAP list driver)
When using the HPL2 ABAP list driver, the PCL command for this setting will not become effective.
You need to use the SAP R/3 mechanism to specify the Input Bin.

Note: (The SAP R/3 mechanism to specify the Input Bin)
- For ABAP & SmartForms:
Under SAP R/3 this setting can also be specified in the definition of the Output device.
The "Output attributes for list drivers" tab has a setting named "Paper tray".
The selectable values "Tray 1" | ... | "Tray 10" | "Single sheet" | "Envelopes" | "ManualEnvelope",
correspond to the Print controls TRY01 | ... | TRY10 | TRYMN | TRYEN | TRYME.
This setting is only used by the HPL2 ABAP list driver.
If the standard ABAP list driver is used, the setting has to be specified in the command at [PCL.01] in the "Printer initialization" action in the Device type.
- For SAPscript:
The TRYxx print control to be used for a particular page can be specified in the definition of the Form used by the document, under
  "Page layout" -> <page> -> [Attributes] -> "Print attributes" -> "Resource name".

Note: (Forcing a particular Input bin for SAPscript)
As explained above, the desired input bin for SAPscript can be specified in the "Resource name" field of the definition of the SAPscript FORM. If it is not desired to assign a fixed input bin to a SAPscript FORM, then this field should be left empty, and the desired input bin should rather be specified in the "Printer initialization" action of the Device type, at tag [PCL.01]. This is, however, only possible if the SAPscript FORM does not specify an input bin yet. If the SAPscript FORM does already specify an input bin that is undesired, and if it cannot be changed, please contact Technical support for how to override it.

3.1.1 Tag: # [PCL.01] INPUT BIN

Command syntax:
- `\e&l^^^H`

Initial / Example:
- `#\e&l7H`

3.2 Paper Type

Description:
The device supports several paper types (media types) that require a reduced fuser temperature. Fuser heating can be controlled through PJL commands.

Settings/Values:

^^^ [PJL.04a]	Interpretation
PLAINPAPER	Plain / Normal paper
THICK	Thick paper

Dependencies/Constraints:
- Only the Bypass tray supports Thick paper.

3.2.1 Tag: # [PJL.04] PAPER TYPE 1/2

Command syntax:
- @PJL SET FUSERCONTROL = ^^^ \r\n   -- **[PJL.04a]**
- @PJL SET MEDIATYPE = ^^^ \r\n   -- **[PJL.04b]** -- This command is NOT supported by this device.

Initial / Example:
- #@PJL SET FUSERCONTROL = PLAINPAPER \r\n
- #@PJL SET MEDIATYPE = PLAIN \r\n

3.2.2 Tag: # [PCL.12] PAPER TYPE 2/2

This command is NOT supported by this device.

3.3 Duplex Mode

Description:
Duplex means printing on both sides of a sheet of paper.

Depending on the **Binding edge** (the edge of the page that would be used for binding the document), there are 2 different orientations of the rear page with respect to the orientation of the front page possible and necessary.
There are two different notions of indicating the binding edge.
- The notion of **Long-/Short-edge binding** is independent of the orientation of the contents of the pages.
- The notion of **Side (Left-edge) / Top binding** is related to the above through the orientation of the printout, as follows:

	Portrait	Landscape
Long-edge	Side	Top
Short-edge	Top	Side

Settings/Values:

		^^^ [PCL.03]	Print control	Interpretation
		0	SPMSI	Simplex
		1	SPMDU	Duplex, Long-edge binding
		2	SPMTU	Duplex, Short-edge binding (Tumble)

Dependencies/Constraints:
- Duplexing requires a Duplex unit.
- Duplex is not possible from the Bypass Tray.
- Duplex is not possible with custom paper sizes.
- For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted. See chapter "Limitations" below.
- The Duplex unit may not support all paper sizes; see chapter "Device Hardware Accessories" above.
- No duplexing for A6, Statement, and envelopes.

Note: (Using the HPL2 ABAP list driver)
When using the HPL2 ABAP list driver, the PCL command for this setting will not become effective.
You need to use the SAP R/3 mechanism to specify the Duplex mode.

Note: (The SAP R/3 mechanism to specify the Duplex mode)
- For ABAP & SmartForms:
Under SAP R/3 this setting can also be specified in the definition of the Output device.
The "Output attributes for list drivers" tab has a setting named "Print mode".
The selectable values are: DEFAULT, SIMPLEX, DUPLEX, and TUMBLE DUPLEX.
This setting is only used by the HPL2 ABAP list driver.

If the standard ABAP list driver is used, the setting has to be specified in the command at [PCL.03] in the "Printer initialization" action in the Device type.
- For SAPscript:
The Duplex mode to be used for a particular page can be specified in the definition of the Form used by the document, under
  "Page layout" -> <page> -> [Attributes] -> "Print attributes" -> "Print mode".
The selectable values are: <empty>, "S", "D", "T".

Note: (Forcing a particular Duplex mode for SAPscript)
As explained above, the desired duplex mode for SAPscript can be specified in the "Print mode" field of the definition of the SAPscript FORM. If it is not desired to assign a fixed duplex mode to a SAPscript FORM, then this field should be left empty, and the desired duplex mode should rather be specified in the "Printer initialization" action of the Device type, at tag [PCL.03]. This is, however, only possible if the SAPscript FORM does not specify a duplex mode yet. If the SAPscript FORM does already specify a duplex mode that is undesired, and if it cannot be changed, please contact Technical support for how to override it.

3.3.1 <mark>Tag: # [PJL.17] DUPLEX MODE 1/2-- NOT USED</mark>

These commands are NOT supported by this device.

3.3.2 <mark>Tag: # [PCL.03] DUPLEX MODE 2/2</mark>

Command syntax:
- \e&l^^^S

Initial / Example:
- #\e&l0S

3.4 Output Bin

Description:
The output receptacle (bin, tray) for the printed paper.

Settings/Values:

^^^ [PJL.16]	^^^ [PCL.02]	Print control	Interpretation	Capacity (# sheets)
--	0	--	Default output tray (as specified from the device's front panel)	--
UPPER	1	TROST TRO01	- External Tray [if no Mailbox or Finisher attached]	125
FINISHERPROOF	2	TRO04	Finisher Proof Tray	250/500 150 [BF]
OPTIONALOUTPUTBIN1	3	TRO10	Mailbox Proof Tray	500
OPTIONALOUTPUTBIN2	4	TRO11	Mailbox Tray 1	100
OPTIONALOUTPUTBIN3	5	TRO12	Mailbox Tray 2	100
OPTIONALOUTPUTBIN4	6	TRO13	Mailbox Tray 3	100
OPTIONALOUTPUTBIN5	7	TRO14	Mailbox Tray 4	100
OPTIONALOUTPUTBIN6	8	TRO15	Mailbox Tray 5	100
OPTIONALOUTPUTBIN7	9	TRO16	Mailbox Tray 6	100
OPTIONALOUTPUTBIN8	10	TRO17	Mailbox Tray 7	100
OPTIONALOUTPUTBIN9	11	TRO18	Mailbox Tray 8	100
OPTIONALOUTPUTBIN10	12	TRO19	Mailbox Tray 9	100
FINISHERSHIFT	101	TRO03	Finisher Shift Tray	3000
BOOKLET	102	TRO05	Book Tray [BF]	1000

Note: The tag "[BF]" indicates the case of a Booklet Finisher M.

Dependencies/Constraints:
- Finisher trays require a Finisher unit.
- Mailbox trays require a Mailbox unit.
- For the paper sizes supported by a particular bin, please see the Operating Instructions manual.

Note:
Switching output bins in the middle of a job, within a document, is possible.
Only the PCL command can be used.
This does not work if the default output bin (Printer Output Tray) setting of the device's front panel is set to "Finisher Shift Tray".

Note: (Using the HPL2 ABAP list driver)
When using the HPL2 ABAP list driver, you need to use the PJL command for this setting.

3.4.1 Tag: # [PJL.16] OUTPUT BIN 1/2

Command syntax:
- `@PJL SET OUTBIN = ^^^ \r\n`

Initial / Example:
- `#@PJL SET OUTBIN = xxx \r\n`

Note: If both PJL and PCL commands are sent, the PCL setting takes precedence over the PJL setting.

3.4.2 Tag: # [PCL.02] OUTPUT BIN 2/2

Command syntax:
- `\e&l^^^G`

Initial / Example:
- `#\e&l1G`

3.5 Job Offset

Description:
There are several mechanisms conceivable to separate multiple copies of the same job.
Job offset can be configured for each job individually through the PJL JOBOFFSET command.
In either case, two consecutive stacks of output can be separated through sheet **rotation** or **shifting**.

Settings/Values:

^^^ [PJL.13]	Interpretation
OFF	No offset.
ROTATE	Output is rotated versus the previous, by just switching between LEF and SEF paper.
SHIFT	Output is offset side-wise versus the previous.

Dependencies/Constraints:
- ROTATE requires also to set "Input bin" = "Auto Tray Select", and that paper of the specified paper size is available in the input trays in both feed directions (LEF & SEF).
- SHIFT requires a Finisher Shift Tray.
- A Finisher Shift tray always applies shifting.
<

3.5.1 Tag: # [PJL.13] JOB OFFSET

Command syntax:
- `@PJL SET JOBOFFSET = ^^^ \r\n`

Initial / Example:
- `#@PJL SET JOBOFFSET = OFF \r\n`

3.6 Stapling

Description:
Set the Stapling mode. Paper output can be stapled automatically.
One can configure the **number** of staples (1/2), and their **position** (at which corner/edge) and **orientation** (vertical/horizontal/slanted).
The command to be used also depends on the orientation of the document.
The stapling unit is part of the Finisher unit.
Due to mechanical reasons of the stapling unit, only certain modes are possible. See also the device's Operating Instructions manual.
The **physical** position and orientation of the staple(s) is determined and possibly restricted by the mechanism of the punching unit.
However, the printer controller can implement multiple **logical** staple positions and orientations, by combining the physical possibilities, the choice of SEF/LEF paper, and the orientation of the page (e.g. by making a 180 degree rotation).
E.g. "Top-Left Vertical (Portrait)" and "Top-Right Horizontal (Landscape)" actually use the same physical position and orientation of the staple.

Note:
The indicated orientation of the document should match the actual orientation of the printout. Otherwise, the result may not make much sense.
E.g. if a Portrait document is printed with the command for "Top-Left Horizontal (Landscape)", the result will actually appear as "Bottom-Left Vertical (Portrait)", which is not useful.

Note: The TITLE action should not specify any commands for Stapling, because the Cover page is only 1 page.

Settings/Values:

^^^ [PJL.02]	Interpretation	#	Position	Orientation	Document	Paper feed

			of staple(s)	of staple(s)	orientation	**direction required**
OFF	off / no stapling	--	--	--		--
LEFTTOPHORIZPORT	LHP	1	Top-Left	Horizontal	(Portrait)	SEF
LEFTTOPHORIZLAND	LHL	1	Top-Left	Horizontal	(Landscape)	LEF
LEFTTOPSLANTPORT	LSP	1	Top-Left	Slanted	(Portrait)	LEF
LEFTTOPSLANTLAND	LSL	1	Top-Left	Slanted	(Landscape)	SEF
LEFTTOPVERTPORT	LVP	1	Top-Left	Vertical	(Portrait)	LEF
LEFTTOPVERTLAND	LVL	1	Top-Left	Vertical	(Landscape)	SEF
RIGHTTOPHORIZPORT	RHP	1	Top-Right	Horizontal	(Portrait)	SEF
RIGHTTOPHORIZLAND	RHL	1	Top-Right	Horizontal	(Landscape)	LEF
RIGHTTOPSLANTPORT	RSP	1	Top-Right	Slanted	(Portrait)	SEF
RIGHTTOPSLANTLAND	RSL	1	Top-Right	Slanted	(Landscape)	LEF
RIGHTTOPVERTPORT	RVP	1	Top-Right	Vertical	(Portrait)	LEF
RIGHTTOPVERTLAND	RVL	1	Top-Right	Vertical	(Landscape)	SEF
LEFT2PORT	L2P	2	Left	(Vertical)	(Portrait)	LEF
LEFT2LAND	L2L	2	Left	(Vertical)	(Landscape)	SEF
RIGHT2PORT	R2P	2	Right	(Vertical)	(Portrait)	LEF
RIGHT2LAND	R2L	2	Right	(Vertical)	(Landscape)	SEF
TOP2PORT	T2P	2	Top	(Horizontal)	(Portrait)	SEF
TOP2LAND	T2L	2	Top	(Horizontal)	(Landscape)	LEF

Dependencies/Constraints:
- Stapling requires that a Finisher Unit be installed
- Stapling requires the following setting: "Output bin" = "Finisher Shift Tray"
- Bypass Tray => no Stapling
- Stapling is not possible for A5, A6, Statement.
- For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted. See chapter "Limitations" below.
- Multiple copies should always be specified as Collated.
- The Input bin should be set to Auto Select, or it must be ensured that the paper in the tray is set in the correct paper feed direction.

Note:
It is recommended to always explicitly specify the Duplex mode, as indicated in the section "Duplex mode" above, in order to override any existing Duplex mode setting on the device, which could be in conflict to the desired Stapling mode.

Note:
- The paper supported and the maximum number of sheets that can be stapled are specified in the chapter "Device Hardware Accessories" above.

3.6.1 Tag: # [PJL.02] STAPLING MODE

Command syntax:
- @PJL SET STAPLE = ^^^ \r\n

Initial / Example:
- #@PJL SET STAPLE = OFF \r\n

3.7 Punching

Description:
Set the Punching mode. Paper output can be 2/3/4-hole punched automatically.
One can configure the **number** of holes and their **position** (at which edge).
The command to be used depends on the orientation of the document output.
The Punching unit is part of the Finisher unit.
Due to mechanical reasons of the Punching unit, only certain modes are possible.
See also the device's Operating Instructions manual.

Settings/Values:

^^^ [PJL.03a]	Interpretation	**Position** of holes	Document orientation	**Paper feed direction required**
OFF	off / no punching	--	--	--
LEFTPORT	LP	Left	(Portrait)	LEF
LEFTLAND	LL	Left	(Landscape)	SEF
RIGHTPORT	RP	Right	(Portrait)	LEF
RIGHTLAND	RL	Right	(Landscape)	SEF
TOPPORT	TP	Top	(Portrait)	SEF
TOPLAND	TL	Top	(Landscape)	LEF

Dependencies/Constraints:
- Punching requires a Finisher Unit with Punch Unit (Finisher Type 3000xP) installed, and also to set "Output bin" = "any Finisher Tray (Shift or Proof)".

- Bypass Tray => no Punching
- For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted. See chapter "Limitations" below.
- The Input bin should be set to Auto Select, or it must be ensured that the paper in the selected tray has the correct paper feed direction.
- Transparencies cannot be punched.
- Some paper sizes cannot be punched at their short edge, if they are not wide enough to hold all punch holes. E.g. A4 & LTR cannot be 4/3-hole punched at their short edge.
- Some paper sizes cannot be punched at their long edge, because they cannot be fed in LEF direction. E.g. A3 & DLT.

Note:
It is recommended to always explicitly specify the Duplex mode, as indicated in the section "Duplex mode" above, in order to override any existing Duplex mode setting on the device, which could be in conflict to the desired Punching mode.

Note:
Depending on the type of Finisher and Punching unit, the following numbers of holes can be punched:
- 2 holes = European (EU) style
- 3 holes = North American (US) style
- 4 holes =
    - European (E) style
    - North European / Scandinavian / Swedish (NE) style

Note:
- The indicated orientation of the document should match the actual orientation of the printout. Otherwise, the result may not make much sense.
- The paper supported is specified in the chapter "Device Hardware Accessories" above.

3.7.1 Tag: # [PJL.03] PUNCHING MODE

Command syntax:
- @PJL SET PUNCH = ^^^ \r\n   -- **[PJL.03a]**
- @PJL SET PUNCHHOLE = ^^^ \r\n   -- **[PJL.03b]** -- This command is NOT supported by this device.

Initial / Example:
- #@PJL SET PUNCH = OFF \r\n
- #@PJL SET PUNCHHOLE = xxx \r\n

3.8 Resolution

Description:
By default, the horizontal and vertical printer resolution, in dots per inch (dpi), is 600 dpi.
In case of memory or speed problems, or for draft prints, you may wish to switch to 300 dpi.
If resolution is changed, the memory is reconfigured, and all downloaded fonts and PCL macros are lost.

Settings/Values:

^^^ [(*)]	Interpretation
600	600 dpi
300	300 dpi

Note: (*): The same value must be set at both places !

Note: 300 dpi is available only with [DC04c].

3.8.1 Tag: # [PJL.01] RESOLUTION 1/2

Command syntax:
- @PJL SET RESOLUTION = ^^^ \n

Initial / Example:
- @PJL SET RESOLUTION = 600 \n

3.8.2 Tag: # [PCL.14] RESOLUTION 2/2

Command syntax:
- \e&u^^^D

Initial / Example:
- \e&u600D

3.9 Copies

Description:
Number of copies to print of this job.
For example, for 4 copies of a 3-page document,
- **Uncollated** copies will appear as 1,1,1,1,2,2,2,2,3,3,3,3.
- **Collated** copies will appear as 1,2,3,1,2,3,1,2,3,1,2,3.

Settings/Values:
^^^ = { 1,...,999 }

Dependencies/Constraints:
- Collation => requires an internal Hard Disk unit
- Bypass Tray => no Collation
- Please note that this may conflict with some SAP Output Management System software.

Note: (PCL/PJL)
There are two PJL commands and one PCL command related to specifying the number of copies and the collation mode.
Initially, both PJL commands are commented out, and the PCL command specifies 1 copy.
If either PJL command is used, the other one and the PCL command need to be commented out to avoid conflicts.
For Collated mode, the PJL QTY command is needed.
For Uncollated mode, either PJL COPIES or the PCL command can be used.
If both PJL and PCL commands are used, the PCL setting will override the PJL setting.

Note: (Increasing the performance of network printers)

It is possible to specify the desired number of copies directly in the print data stream, using one of the commands below. Since the spool system cannot know the contents of the data stream, it has to be told explicitly that N = 1, to avoid any conflict.

If a certain class of print jobs always requires the same fixed number of copies, the administrator may choose
1. to create a dedicated device type which sends the appropriate command, and
2. to tell his users to always keep N = 1 in the Print parameters dialog.

Note: The above does not work in conjunction with the HPL2 ABAP list driver, since it overrides this setting; it always forces only 1 copy.

3.9.1 Tag: # [PJL.15] COPIES 1/2

Command syntax:
- @PJL SET QTY = ^^^ \r\n   -- **[PJL.15a]** (for Collated)
- @PJL SET COPIES = ^^^ \r\n   -- **[PJL.15b]** (for Uncollated)

Initial / Example:
- #@PJL SET QTY = 1 \r\n
- #@PJL SET COPIES = 1 \r\n

3.9.2 Tag: # [PCL.13] COPIES 2/2

Command syntax:
- \e&l^^^X

Note:
This PCL command will just print uncollated copies.
It needs to be commented out if one of the above PJL commands is used.

Initial / Example:
- \e&l1X

3.10 EconoMode (Toner Saver)

Description:
For draft printouts, the EconoMode can be activated to save toner.
For normal operation, this feature should be deactivated.

Settings/Values:

^^^ [PJL.14]	Interpretation
OFF	disabled (normal printing)
ON	enabled

3.10.1 Tag: # [PJL.14] ECONOMODE (TONER SAVER)

Command syntax:
- `@PJL SET ECONOMODE = ^^^ \r\n`

Initial / Example:
- `#@PJL SET ECONOMODE = OFF \r\n`

3.11 Auto Tray Change/Switching

Description:
If enabled, and the current tray runs out of paper, the job will be continued from a tray containing the same paper size.
If disabled, the front panel LCD will prompt the user to refill paper and wait.
This should be disabled in case there are e.g. 2 different types of A4 paper (e.g. normal, colored) which should not be mixed.

Settings/Values:

^^^ [PJL.12]	Interpretation
OFF	disabled
ON	enabled

3.11.1 Tag: # [PJL.12] AUTOTRAYCHANGE

Command syntax:
- `@PJL SET AUTOTRAYCHANGE = ^^^ \r\n`

Initial / Example:
- `#@PJL SET AUTOTRAYCHANGE = ON \r\n`

3.12 Edge Smoothing/Enhancement

Description:
If Edge smoothing/enhancement is enabled, the controller will ameliorate the contours of font glyphs.
This should only be disabled in case of performance problems.

Settings/Values:

^^^ [PJL.11]	Interpretation
OFF	disabled
ON	enabled

3.12.1 Tag: # [PJL.11] SMOOTHING

Command syntax:
- `@PJL SET SMOOTHING = ^^^ \r\n`   -- **[PJL.11a]**
- `@PJL SET RET = ^^^ \r\n`   -- **[PJL.11b]** -- This command is NOT used by this device.

Initial / Example:
- `#@PJL SET SMOOTHING = ON \r\n`
- `#@PJL SET RET = ON \r\n`

3.13 Page Protection

This feature is NOT supported by this device.

3.13.1 Tag: # [PJL.06] PAGE PROTECTION

This command is NOT supported by this device.

3.14 Paper Size

Description:

Determines the paper size to be used for the current page.

The **physical height** and **width** of the sheet or envelope are specified below.
The engine's mechanics implies an unprintable area near the edges, so that the **imageable area** is usually smaller. This is device-dependent.

Paper may be treated differently, depending on with which edge the sheets are fed into the paper path (**feed direction**).
- **LEF** = Long-edge-feed
- **SEF** = Short-edge-feed

(This notion of feed direction is independent of the notion of orientation.)
In the paper sizes below the first value specified is the feed edge.

Note: (Configuring the Paper size)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a SAPscript document, its paper size is configured in the "Page format" setting in the SAPscript Form used by the document, which in turn determines the Device format to be used. For the SAP R/3 standard paper sizes (A3, A4, A5, Letter, Legal, Executive), the command sent is built in the HPL2 SAPscript OTF driver, otherwise (for non-standard paper sizes) it has to be specified at the end of the Printer initialization action of the corresponding Device format.
For an ABAP report, the paper size to be used is always assumed to be A4 or Letter; however, the "Printer initialization" action does not send any paper size command.
In any case, the command syntax is explained below.

Note: ("Sub paper size")
Normally, a print job specifying a certain paper size would require that paper of this size be loaded in a tray.
If paper of this size is not available in any tray, the user will be requested via the device's front panel to load it.
Since A4 and Letter have similar formats, it may be desirable to be able to print a job specifying Letter format on A4 paper, or vice versa. This feature is called "Sub(stitute) paper size". There is no scaling applied; so if the image is too large, it will be cropped at the margins.
This feature can only be set via the device's front panel (Sub Paper Size = Auto); there is no PJL command to achieve this.

Settings/Values:

^^^	Name (short)	Full / Alternative names	EU/US	Size
27	**A3**	DIN A3 ((SEF))	EU	297 x 420 mm
26	**A4**	DIN A4 (LEF)	EU	297 x 210 mm
	A4R	DIN A4 (SEF)		210 x 297 mm
2000	**A5** (*)	DIN A5 (SEF)	EU	148 x 210 mm
2001	A6	DIN A6	EU	105 x 148 mm
46	B4	B4(JIS)	EU	257 x 364 mm
45	B5	B5(JIS)	EU	182 x 257 mm
6	**Ledger**	DLT, Double Letter, Tabloid ((SEF))	US	11" x 17"
3	**Legal**	LGL, Legal ((SEF))	US	8.5" x 14"
2	**Letter**	LTR, Letter ((LEF,SEF))	US	8.5" x 11"
1	**Executive**	Executive	US	7.25" x 10.5"
2008	Statement	HLT, Half Letter	US	5.5" x 8.5"
2012	Folio	F4	US	8.25" x 13"
2011	F/GL	F, Folio GL	US	8" x 13"
2007	Foolscap	Foolscap, Folio, F4, Government Legal	US	8.5" x 13"
2030	8K	8Kai	EU/US	267 x 390 mm
2031	16K	16Kai	EU/US	195 x 267 mm

Dependencies / Constraints:
- Some input bins and output bins support only certain paper sizes, and some only in a certain feed direction.
  See the sections about Input bins and Output bins and the chapter "Device Hardware Accessories" above.
- (*): **A5 (LEF)** is not possible to use, because tray and paper transport mechanisms of the device engine do not support it.
- If no paper select command is sent, the controller will use the paper in the addressed tray, or it may ask to load the paper which is currently specified as default.
- Envelopes are NOT supported by this device.
- A6 and Executive only from Bypass.

Note: (Support of paper sizes by SAP R/3)
Only the entries marked bold are currently fully supported as standard under SAP R/3.
For the procedure on how to support a non-standard paper size, see the corresponding section in Volume 2, Appendix 1.

Command syntax:
- \e&l^^^A

Example:
- \e&l26A

3.15 Orientation

Description:

The orientation defines how the printed output appears on the physical paper. By definition, "Portrait" means that, in order to read the text, the sheet must be held upright, i.e. with the short edge at the top. (This notion is independent of the notion of paper feed direction.)

Note: (Configuring the Orientation)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a SAPscript document, its orientation is configured in the "Orientation" setting in the SAPscript Form used by the document. The command is automatically sent by the HPL2 SAPscript OTF driver, using the Print controls SPORT and SLAND, after the command sequence of the "Printer initialization" action. Therefore, the "Printer initialization" action should not send any commands to specify orientation.
For an ABAP report, the orientation is a property of the Device format (X_ll_cc), which in turn is determined by the number of lines per page and the number of columns. The necessary PCL command is contained at the end of the "Printer initialization" action.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
0	Portrait (P)
1	Landscape (L)

Note: The values are the digits 0,1, NOT the letters O,l.

Dependencies/Constraints:
- For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted. See the chapter "Limitations" below.

Command syntax:
- \e&l^^^O

Note: The last character is the uppercase letter "O".

Example:
- \e&l0O

3.16 Left margin

Description:
The left margin of the page.

Note: (Configuring the Left margin)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a SAPscript document, the horizontal margins are automatically cleared (set to 0) by the HPL2 SAPscript OTF driver, sending the command "<ESC>9" after the command sequence of the "Printer initialization" action.
For an ABAP report, the horizontal margins are automatically cleared (set to 0) when using the HPL2 ABAP list driver. Otherwise no command is sent.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
{ 0,1,... }	Number of columns (as defined by the current HMI)

Command syntax:
- \e&a^^^L

Example:
- \e&a5L

3.17 Top margin

Description:
The top margin of the page.

Note: (Configuring the Top margin)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a SAPscript document, the top margin is automatically cleared (set to 0) by the HPL2 SAPscript OTF driver, sending the command "<ESC>&l0E" after the command sequence of the "Printer initialization" action.
For an ABAP report, the top margin is automatically cleared (set to 0) when using the HPL2 ABAP list driver. Otherwise no command is sent.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
{ 0,1,... }	Number of lines (as defined by the current VMI)

Command syntax:
- \e&l^^^E

Example:
- \e&l1E

3.18 Horizontal spacing

Description: (PCL)
The horizontal spacing defines the distance between two adjacent characters.
In a proportional font, it affects only the width of the space character.
The current horizontal spacing is kept in a variable called **HMI** (Horizontal Motion Index).
It has to be specified as an absolute measure in 1/120 inch.
This determines the number of characters per inch (**cpi**).
The default HMI is = 12/120" = 10 cpi.

Note: (Configuring the Horizontal spacing)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it. Moreover, after any font select command the HMI is automatically set to a (font-specific) default, and therefore it needs to be specified again.
For a SAPscript document, the horizontal spacing is specified by the HPL2 OTF driver automatically after each font select command of a proportional font (thus only affecting the width of the space character). For fixed-spaced fonts, no command is sent; thus the default pitch of the selected font will be used.
For an ABAP report, the "Printer initialization" action of an X_ll_cc Format contains a command to override the default pitch of the font used (Courier), thus condensing or expanding it to just the right size so that cc columns will fit properly on the page. The HPL2 ABAP list driver sends the command automatically.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
{ <any rational number> }	absolute measure in 1/120 inch

Command syntax:
- \e&k^^^H

Example:
- \e&k12H

3.19 Vertical spacing

Description: (PCL)
The vertical spacing defines the distance between two adjacent lines.
The current vertical spacing is kept in a variable called **VMI** (Vertical Motion Index).
It can be specified as number of lines per inch (**lpi**).
The default VMI is = 8/48" == 6 lpi.

Note: (Configuring the Vertical spacing)
This setting cannot be configured effectively in the "Printer initialization" action of the device type, because there are other mechanisms which would override it.
For a SAPscript document, the vertical spacing is initially set to 0 by the HPL2 SAPscript OTF driver, using the command "<ESC>&l0C".
For an ABAP report, the necessary command is contained at the end of the "Printer initialization" action of the format. The HPL2 ABAP list driver overrides this, setting it to 0.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
{ 1,2,3,4,6,8,12,16,24,48 }	number of lines per inch (**lpi**)

Command syntax:
- \e&l^^^D

Example:
- \e&l6D

3.20 Character set

Description:
Select/change the active printer character set.
This term is also known as "symbol set" (HP) or "code page" (Microsoft).

It is a table that interprets ASCII codes as characters.

Note: (Configuring the Character set)
This setting is not a property of the job or a page but of individual characters. Nor is it an attribute of the font, it is maintained independently. It would make sense to specify an initial value in the "Printer initialization" action of the device type, but it could be overridden at any time.
In a SAPscript document, the character set can be switched by sending an appropriate Print control. (This is currently not implemented.)
This setting is also overridden by the SFxxx font select Print controls issued by the HPL2 SAPscript OTF driver.
For an ABAP report, the initial character set to be used is specified at the end of the "Printer initialization" action.
In any case, the command syntax is explained below.

Settings/Values:

^^^	Interpretation
0N	Latin-1 (ISO 8859-1)
2N	Latin-2 (ISO 8859-2)

For the initial setting, see the Example below.
Dependencies/Constraints:

- none

Note: (Switching the Character set)
At the moment it is not possible to switch between character sets, e.g. to mix both Latin-1 and Latin-2 in the same document.

Note: (Support of the EURO character)
The EURO character (€) has been implemented in the symbol sets 19U (Latin-1), 9E (Latin-2), for most typefaces, except LinePrinter, at position 80 (hex).
For this device, the resident fonts support the EURO character.
To find out if the device type supports the EURO character, please see Volume 2.

Command syntax:

- \e(^^^

Example:

- \e(0N   -- for ZA0x1vvv
- \e(2N   -- for ZA0x2vvv

3.21 Font

Description:
Selects the font to be used, by specifying the following parameters:

- ^^^p = proportional
- ^^^h = pitch (cpi)
- ^^^v = font height (point size)
- ^^^s = style (italic)
- ^^^b = weight (bold)
- ^^^T = typeface

Note: (Selecting a font & Configuring font attributes)
This setting is not a property of the job or a page but of individual characters.
It doesn't make sense to specify an initial value in the "Printer initialization" action of the device type, since it will be overridden.
In a SAPscript document, the font to be used for a portion of text is specified by preceding the text with a 2-character tag which is defined as a Character format or Paragraph format in the Form or Style used by the document. The tag maps to a system font and thus to a SFxxx Print control and thus eventually to a font select PDL command sequence.
For an ABAP report, only a fixed-spaced font can be used, in this case COURIER. The font size depends on the format chosen, and it is specified in the "Printer initialization" action of the Device format. The HPL2 ABAP list driver has its own mechanism.
In any case, the command syntax is explained below.
There are no Print controls for changing/specifying a font attribute, because using them would conflict with the existing mechanisms.

Note: (OCR text printing)
Printing OCR text requires a separate solution. Please refer to the chapter "Barcodes & OCR Text" in Volume 2 for more information.

Note: (Barcode printing)
Printing barcodes requires a separate solution. Please refer to the chapter "Barcodes & OCR Text" in Volume 2 for more information.

Note: (Arbitrary size fonts)
For printing fonts in arbitrary sizes, please refer to the chapter "The Fonts" in Volume 2 [ZA0x].

Settings/Values:
Please refer to proper PCL documentation.

Note: The pitch command (<ESC>&k#H) must be respecified after any font select command. Otherwise a (font-specific) default is used.
Note: LinePrinter supports only symbol sets 0N, 2N.

Command syntax:
- `\e(s^^^p^^^h^^^v^^^s^^^b^^^T`

Example:
- `\e(s0p10h12v0s0b4099T`   -- This would select normal Courier 10 cpi 12 pt.

3.22 Color printing

This feature is NOT supported by this device.

3.22.1 <mark>Tag: # [PCL.30] COLOR : COLOR MODE</mark>

This command is NOT supported by this device.

3.23 Slip sheet

This feature is NOT directly supported by this device. If you still need this feature under SAP R/3, please contact support for a workaround.

3.23.1 <mark>Tag: # [PJL.20] SLIPSHEET</mark>

This command is NOT supported by this device.

3.25 Edge-to-Edge Mode

This feature is NOT supported by this device.

3.25.1 <mark>Tag: # [PJL.07] EDGE-TO-EDGE MODE</mark>

This command is NOT supported by this device.

4. Limitations

This chapter contains device-specific or controller-specific limitations related to combinations of several features.
For **device-specific limitations of single features**, see under "Dependencies/Constraints" of the corresponding section above.
For **device-independent limitations** related only to the SAP R/3 device type used, please refer to the "Limitations" chapter of the corresponding Volume 2.

4.1 Combinations of Feed direction, Orientation, Duplex, Stapling, Punching

For Stapling, Punching, Duplexing, Orientation, and Paper feed direction, only certain combinations make sense and are permitted.
The mechanics of the stapling and punching units are such that they can only operate on the far edge in the paper path (the one that leaves the path last). This results in the restrictions on paper feed direction as indicated in the above sections for stapling and punching.

The 10 most common and reasonable combinations are summarized in the table below:
(All images are in readable orientation. The arrow indicates the edge that leaves the printer first.)

Note: (Feed direction required for desired Stapling mode)
If the paper is not available in the feed direction required for stapling in the desired mode (combination of position and orientation of staple(s)), the controller reacts as follows:
If the Input tray is explicitly specified as a particular tray, it will print anyway, but unstapled.
If Auto tray select or no input tray is specified, it will ask to load paper in the required feed direction, and wait (user intervention).

Image	Orientation	Binding edge	Stapling	Punching	Feed direction	Remarks
	Portrait	Top / Short	LHP	TP	SEF	

	Landscape	Top / Long	LHL	TL	LEF	
	Portrait	Side / Long	LSP	LP	LEF	
	Landscape	Side / Short	LSL	LL	SEF	
	Portrait	Side / Long	LVP	LP	LEF	
	Landscape	Side / Short	LVL	LL	SEF	
	Portrait	Side / Long	L2P	LP	LEF	
	Landscape	Side / Short	L2L	LL	SEF	
	Portrait	Top / Short	T2P	TP	SEF	
	Landscape	Top / Long	T2L	TL	LEF	

Note:

- The following paper sizes cannot be stapled/punched at the Top edge (Landscape) or the Left edge (Portrait), because they cannot be fed in LEF direction: A3, Double Letter, Legal.

4.2 Other

The **Booklet Finishing** feature cannot be supported under SAP R/3, since the required page re-ordering is done by the Windows printer driver, not by the device's printer controller.

5. (Appendix 1): Printer Languages

This chapter gives a brief introduction of each printer language used by the printer controllers of our devices.

5.1 PCL

The HP **PCL Printer Language** (PCL) is a **page description language** (PDL).
That means it is used to specify the contents and format of a page.

The general syntax of a PCL command is:
* `<ESC> <character> <letter> <value> <letter>`

Note:
* Please be aware that the syntax is case-sensitive.
* In `"\e&l^^^H"` etc., `"l"` is the lowercase letter "L" not the digit "1" !
* In `"\e&l^^^O"` etc., `"O"` is the uppercase letter "O" not the digit "0" !
* Do NOT introduce any extra blanks.

PCL5e is the version that most of our black-and-white devices use.
PCL5c is the version that our color devices use.

For detailed information, please refer to the "PCL5 Printer Language Technical Reference Manual" from HP.

5.1.1 PCL macros

PCL allows to define and execute **macros**. A macro is identified by a number (`<#>`).
* `<ESC>&f<#>y0X`   start define macro #
* `<ESC>&f<#>y1X`   stop define macro #
* `<ESC>&f<#>y2X`   execute macro #
* `<ESC>&f<#>y3X`   call macro #

5.2 PJL

The HP **Printer Job Language** (PJL) is a **job control language**.
That means it controls parameters of a whole job, not of individual pages.
Normally all PJL commands are sent at the beginning of a job, and then it switches to some page description language.

The general syntax of a PJL command is:
* `@PJL SET <keyword> = <value> [<CR>]<LF>`

Note:
* Please be aware that the syntax is case-sensitive.
* The white spaces in front of and behind the "=" sign are optional.
* Do NOT introduce any blanks behind the <CR><LF>.

For detailed information, please refer to the "PJL Technical Reference Manual" from HP.