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SINGLE PRINTHEAD OR GROUP OF PRINTHEADS ALIGNMENT

HP INC

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Single Printhead or Group of Printheads Alignment

Abstract: Printhead alignment and calibration time is reduced, and calibration versatility increased, by a calibration process which can be performed on only selected printheads of a printer, rather than all printheads.

This disclosure relates to the field of printers.

A technique is disclosed that reduces printhead alignment and calibration time and increases calibration versatility.

Time spent performing calibration, and the concurrent waste of ink and media, are key factors of the printhead alignment calibration regarding to user experience. The numbers of printhead units have been increasing in many types of printers, including latex printers. Latex printers include printhead units for pretreatment, overcoat and white fluids. Those types of fluids require special kinds of calibrations due to the use of printed backgrounds to enhance visibility, which in turn requires even more time to perform the printhead alignment calibration. Furthermore, the white ink printheads are kept in a wheel in motion whenever a print job is not demanding the use of white ink. Consequently, the white printheads are reinserted very frequently.

Currently, if the user decides to launch a printhead alignment calibration, it will be done for all the printheads inside the carriage even if only one printhead is inserted, or if the user is interested in aligning or calibrating a single printhead. This not only delays the calibration, but also demands the presence of all the printheads inside the carriage, even though fluids such as white, overcoat or lights inks may not be required in a particular print job.

Information regarding the physical carriage architecture - the numbers of pens, dice, trenches, nozzles and distances between them and their nominal positions and the colorants of the loaded inks - is packed into a carriage data structure. The alignment values corrections file contains a set of values per trench obtained after a printhead alignment calibration. The interaction between the alignment values corrections and the carriage information creates a "default carriage", the one used by the workflow of a user printmode. However, the deviations for every nozzle in a trench are stored into a single structure shared with the rest of trenches inside each pen. That means that the alignment values corrections file is indivisible. The deviations for every printhead must to be in the same file, and thus all the deviations for every printhead will be overwritten whenever a new print head alignment calibration is done.

According to the present disclosure, and as understood with reference to the Figure, a workflow 10 allows a single print head alignment, or a group of printhead alignment, to be performed without also realigning the rest of the printheads. This technique resets the alignment value corrections of only the inserted printheads coming indistinctly from manual printhead alignment (MPA) or automatic printhead alignment (APA).

At 20, a printhead alignment calibration (MPA or APA) is launched. At 30, the user chooses among the following alignment options: a single printhead alignment, alignment of a predefined group of printheads, or alignment of all printheads.

Once the selection is done, at 40 the previous alignment values corrections obtained from the latest calibration are loaded. At 50, the correction values for only those printheads chosen by the user to recalibrate are reset. The retained values are used as a reference to align the reset ones.

At 60, the temporal alignment values corrections created at 50 are saved. At 70, the new and temporal alignment values corrections file is loaded. At 80, the desired print head alignment calibration (MPA or APA) is launched.

The disclosed technique advantageously improves the user experience by reducing the time needed for calibration, and reducing the amount of waste ink and media generated during calibration. The alignment corrections can be combined from an automatic or manual calibration. It enables white ink, overcoat, and pretreatment fluids to be efficiently aligned manually when they cannot be aligned automatically. It also allows fine tuning of the calibration of particular printheads based on an alignment verification plot, and in these ways increases the versatility of the alignment calibration to meet the requirements of a specific print job.

Disclosed by Manuel Agudo, Andreas Muller, and Xavier Quintero Ruiz, HP Inc.

| Launch Alignment calibration (MPA or APA) | —20 |

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| Choose the print head or group of print heads to align. | —30 |

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| Load previous alignment values corrections. | —40 |

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| Reset only the values of the print heads chosen in the second step, keeping the rest as they were. | —50 |

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| Save the temporal alignment values corrections created in the previous step. | —60 |

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| Load temporal alignment values corrections. | —70 |

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| Start APA or MPA workflow. | —80 |