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CONVERT SERVICE PART PACKAGING INTO A SERVICE TOOL TO DO A SAFELY INTERVENTION OF REPLACING A HEATING MODULE OF A LARGE FORMAT PRINTER

HP INC

Title

Convert Service part packaging into a Service Tool to do a safely intervention of replacing a heating module of a large format printer

Problem Solved

In ink printers, heating sources are usually applied with a heating module that covers the maximum media width supported by the printer. As the portfolio evolves, the print velocity demand (throughput) is increasing drastically and consequently the size of the heating module to maintain the exposure time of the printed media underneath it. The heating size has driven the inclusion of a lifting mechanism needed to move away the heating module and maintain the ergonomics of the user interaction with the printer. Because of this the toughest service intervention is the heating module replacement and it needed to be adapted in order to guarantee the safety of the service engineers and operators.

The present invention shows how to transform the packaging of the replacing heating module to a tool that holds and secures the heating system during all the stages of the replacement even when the system is not linked to the mechanism.

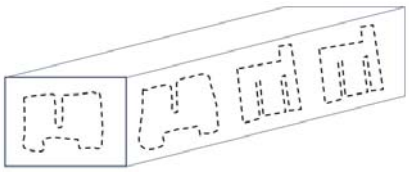
Prior Solutions

Prior printing systems mainly had the heating system attached directly to the structure and it could be hold securely by gravity even after removing all the screws. However, in the current trend of printers with bigger modules a special tool is needed to hold the system.

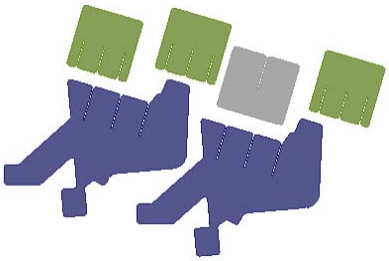
Description

The described invention is specially intended to hold heavy moving systems with a no fixed possible positioning during its replacement procedure.

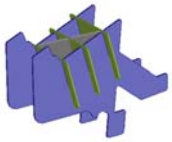
The invention consists on having a sketch drawn and pre-cut of the replacing tool outline in the packaging box of the service kit, in this example the replacing heating module (*sketch1*). The first step of the intervention will be to separate the parts from the packaging box (*sketch2*), afterwards the tool can be easily mounted by hand in a few steps without needing any additional tool (*sketch*3). Once the tool is assembled it can be easily mounted into the same system that holds the media rolls, already known as MIMO, (1) by previously lifting the heating system (2) (*sketch4*). A flat table will be then created to hold the heating module (*sketch 5*). The replacement can be easily done beyond this point with plenty safety. In the unlikely case of having the tool damaged during the assembly or during the transport of the packaging, it can be re-build using the pdf drawing that can be found in a “QR code” printed in the box or by asking the files to the Service engineer. The tools can be easily reprinted and cut using the common facilities (printers and contour cuts) found in the Customers house. As mentioned just above, Service engineer will have access to the drawings and there will be the possibility to build the tool with available material on site. So, any possible troubleshooting could be performed before ordering any part and reducing downtime of the unit.



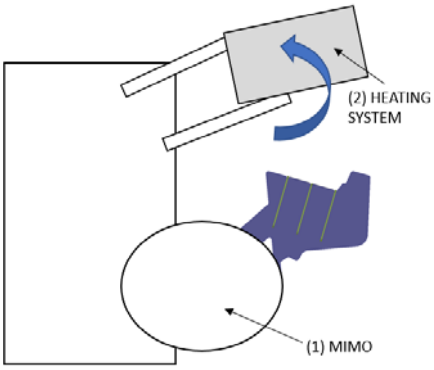
Sketch1: tool outline in packaging box



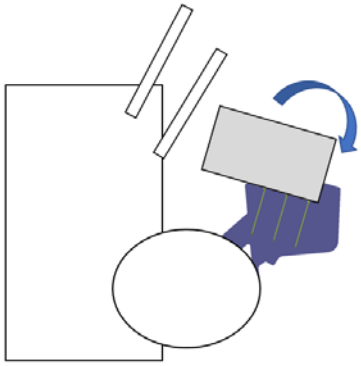
Sketch2: tool prepared to be assembled



Sketch3: assembled tool



Sketch4: Placing the tools into the printer



Sketch5: Heating Module hold by the tool

Advantages

- Use of the packaging of the Service Part as a tool
  - No material scrap
  - Recyclability of the tool after its use
  - No special tool needed to be made but the packaging box itself
- Cost savings for both Partners and End User:
  - No additional Service tool required for the intervention.
  - No storage place required for the partners to keep any special tool.
  - Only 2 people required for the complex replacement. Specifically, 2 are only required when moving the module (few minutes). So, a unique Service Engineer can perform it with the help of a customer operator.
- Safety of the intervention guaranteed even with large and heavy modules.
- Tool can be easily replicated in customer sites because the materials selected are available in most sites. So, troubleshooting could start immediately before ordering any part.
- No complexity added in the packaging of the replacement unit to allocate a heavy tool and protect the service part from the it.
- Weight reduction of the Service Part because the tool is the packaging itself.

Disclosed by Albert Franco Morera, Carles Flotats Villagrasa and Eugeni Perez Rubio, HP Inc.