

Future Technologies



OCE AFTERMARKET CARTRIDGE AND CHIP REPORT 2008-01-29

FUTURE TECHNOLOGIES PLANS TO OFFER
A SOLUTION TO THE PROBLEMS THAT
HAVE BEEN ENCOUNTERED DURING THE
TESTING PHASE OF THE OCE INK
REMANUFACTURING PROJECT TAKING
PLACE AT CRAFTSIGNS.

FINDINGS AND IMPLEMENTATION

OVERVIEW

Future Technologies manufactures and develops aftermarket “killer chips” for the wide format printer industry to allow the remanufacture to produce and sell their own inks and cartridges.

Craftsigns contacted Future Technologies and ordered 90 Sets of Oce aftermarket chips, part of the agreement was that Future Technologies tests every chip on all 5 of Craftsigns Oce printers, during this test phase Future Technologies discovered the following errors:

ERROR MESSAGES

Oce Printers have a set of predefined error messages that are displayed in the case of an error. Future Technologies will list and then follow that error up with a reason for its occurrence and the solution to overcome the error. Future Technologies has learnt how to “solve” the error in order for the aftermarket product to function 100% like the OEM product.




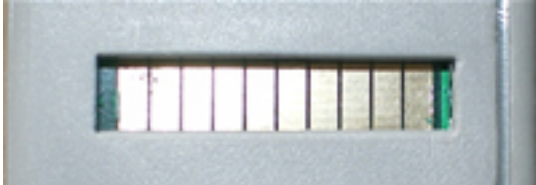
- Error 0 – EPROM checking error
- Error 1 – Check sum error
- Error 2 – Different Color
- Error 3 – Different OEM type
- Error 4 – Hash Error
- Error 5 – Write Error
- Error 6 – Upper Limit error
- Error 7 – Serial ID I/O error
- Error 8 – Different customer serial ID
- Error 9 – Ink remaining History

ERROR MESSAGES DEFINITIONS AND SOLUTIONS

- **Error 0** – This error is caused due to the EEPROM of the chip returning the incorrect value back to the printer, thus causing the printer to reject the chip. This is a very low risk error and the solution for this error is to simply exchange the chip for a new one as this is a hardware error and needs to be corrected by Future Technologies. (Craftsign Risk Factor 0%)
- **Error 1** – Check sum data in the EEPROM has become corrupted due to the cartridge being removed while the printer is writing data to the chip. This is also a very low risk error and is only caused by the individual operating the printer, thus please ensure the cartridge slot door is open and that the printer is not accessing the cartridge during the removal of the ink tank. (Craftsign Risk Factor 0%)
- **Error 2** – The printer has detected the incorrect color chip in a certain slot. Example a chip programmed as black has been inserted in a magenta cartridge and the user has inserted the cartridge into the magenta slot – This will cause error 2 to be displayed. The solution is to re-program the color of the chip with the FT Reset Station into the correct color of the ink supplied in the tank. (Craftsign Risk Factor 0%)
- **Error 3** – This is the error that the implemented testing process needs to detect as this error has more than one cause and there are a number of factors that may lead to this error message being displayed by the printer. Future Technologies has discovered that the main cause of error 3 is the alignment of the chip within the cartridge as well as the actual alignment of the Signtronic Generic cartridge being used by Craftsigns. The following information will describe each alignment error and its corresponding solution. (Please View the table below as Craftsigns Risk Factor is 50%)

The table below will give you a detailed view on what the cause of error 3 is and how it can be solved. Future Technologies has spent a week performing rigorous testing to solve the issues with error 3 and we have found that the cartridge provided to Craftsigns has not been made to the exact specification to that of the OEM cartridge. We have found that the “shoulder” along the inside of the cartridge which sets the depth at which the chip will be inserted is lower than that of the OEM and that there are some cartridge which we have yet to single out, that for some or other reason they cause the chip to misalign even if the chip has been insert correctly and is aligned as shown in the table below.

ERROR 3 DETAILED DISCRPTION AND SOLUTIONS

<p>Chip alignment is incorrect and needs to be adjusted accordingly, please view the images provide to ensure that the alignment of the chip with respect to the cartridge is 100% correct, and thus eliminating one possible cause for error 3</p> <p style="text-align: center;">Figure 1</p>	<div style="text-align: center;">  </div> <p style="text-align: center;">This is an image of how an original Océ cartridge and chip align in the window of the cartridge, you will notice that there is an equal space of green on each side of the chip and that the bottom of the chips contact points run parallel to the bottom of the cartridge window</p>
<p style="text-align: center;">Figure 2</p>	<div style="text-align: center;">  </div> <p style="text-align: center;">This is an image of how an FT chip sits if inserted into a Signtronic cartridge, as you can see the alignment is out on either end and the chip is not running 100% parallel with the base of the window. The reason why we encounter this is due to the cartridge. When the cartridge was manufactured it was not exactly manufactured to that of the OEM specification and thus the chip sit to far down the window causing the chip to align incorrectly. The solution is simple and is visible in the next row.</p>
<p style="text-align: center;">Figure 3</p>	<div style="text-align: center;">  </div> <p style="text-align: center;">This image contains the same chip and cartridge as the above image, the only difference is that the chip has been aligned correctly in the cartridge thus eliminating the error 3. The persons that will be installing the chip need to be aware of this and make adjustment to align the chip as seen in the above image.</p>
<p style="text-align: center;">Figure 4</p>	<div style="text-align: center;">  </div> <p style="text-align: center;">Future Technologies would like to make it known that we have found certain Signtronic cartridge that are faulty and cause the chip to misalign even if the chip looks 100% aligned as in figure 4. Therefore if you encounter an error 3 and the alignment of the chip is perfect according to the above image then the only solution to the problem is to discard that cartridge and replace it with a new one.</p>

- **Error 4** – The Hash value of the chip is incorrect. The hash value tells the printer what region the chip is from, for example an Océ printer from Europe can not use OEM ink cartridges from Asia as the region code is wrong. To rectify this error you need to reset the chip to the correct region with the Future Technologies reset device. (Craftsigns Risk Factor 0%)
- **Error 5** – The EEPROM on the chip has been protected by the printer (No more write operations can be performed on the EEPROM). This happens when a cartridge is used beyond the 2% mark for some time. (Craftsign Risk Factor 0%)
- **Error 6** – Future Technologies has never encountered this error and therefore we have no information with regards to the error. (Craftsign Risk Factor 0%)
- **Error 7** – UID device (PIC 12F629) on the chip is not functioning or not programmed. Check the alignment of the chip and the cartridge, if that is correct then you will need to read the chip with FT device and check that the chip has not been damaged. If the chip data is corrupt then reset the chip and re-insert the chip back into the printer – if the problem persist then replace the chip, if the problem is displayed again exchange the cartridge as it is causing the chip to align incorrectly. (Craftsign Risk Factor 10%)
- **Error 8** – The UID read from the chip has an illegal/unrecognized customer number/byte. Valid values are 0xAD for HP 9000 and 0x81 for Seiko/Océ printers. Use option “B” with the FT resetter to read the value and verify that the UID is incorrect. The solution is to return the chip back to Future Technologies to be reflashed at no charge to the customer. (Craftsign Risk Factor 0%)
- **Error 9** – The UID programmed into the chip has been previously used in the printer that reported this error. Another interpretation is that the printer has found a similar UID in its memory with a different ink level and the install date than that of the current installed UID/Chip. The solution to this error is to reset the chip with a new UID by means of the FT reset station or the client can purchase a PCMCIA card the flash the printer memory thus deleting all previous UID stored in the printers memory. (Craftsigns Risk Factor 40%)

These 9 errors have now been identified and the relevant solutions have been provided for each error, this information is the guide for the testing process that will be implemented by Craftsigns (supported by Future Technologies). The next chapter will outline a testing process that should be followed to ensure that all cartridges sent to the various clients will be in 100% working condition and of the highest standard.

RECOMMENDED TESTING PROCESS

The following information will guide the user on how to test the “Product” cartridge and chip guaranteeing that once the “Product” has been tested exactly as guided the remanufacture will have a 100% success rate with his “Product”.

- **PHASE 1** – INSERT THE CHIP INTO THE CARTRIDGE AS PER THE VISUAL REFERENCE GUIDE PROVIDED ON PAGE 4, FIGURE 4
- **PHASE 2** – INSERT THE CARTRIDGES INTO ALL THE TEST PRINTERS, IN COMPLETE SETS OR AS AN INDIVIDUAL COLOR (BLACK, CYAN, MAGENTA, YELLOW, LIGHTCYAN, AND LIGHT MAGENTA). THIS PROCESS IS WHERE THE ERROR WILL BE IDENTIFIED AND “FIXED” ACCORDING TO THE ERROR DISPLAYED. PLEASE USE THE ERROR REFERENCE GUIDE PROVIDED ABOVE TO SOLVE THE PROBLEM ENCOUNTERED DURING THIS PHASE.
- **PHASE 3** – IF THERE SHOULD BE A SHORTAGE OF CHIPS DUE TO ERRORS BEING IDENTIFIED, AND THEN CONTACT FUTURE TECHNOLOGIES AND THEY WILL PROVIDE A REPLACEMENT WITHIN 48 HOURS UPON RECEIVING THE REQUEST.
- **PHASE 4** – REDO PHASE 1 TO 3 UNTIL ALL CARTRIDGES ARE DISPLAYING “PRINT READY” ON THE DISPLAY PANEL OF THE PRINTER.

This is a guide developed by Future Technologies to ensure that the client will provide a “product” equal/superior to that provided by the OEM manufactures, thus ensuring customer satisfaction. Future Technologies is committed to providing support to all customers using our “killer chip” solutions.

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