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DOCUCOLOR 12 (DC12 style)… It's all in the cooking.

Xerox Docucolor 12 (DC12), Document Centre Color System 50 (DCCS50)

In a recent pair of articles, we explored this excellent full-color offering from Xerox… the DC12 style currently includes only two models (the DC12, and the DCCS50). They produce some truly impressive color prints. First, in the June 2005 ENX, we started off by looking at the Status Codes in an abbreviated fashion. Later, in the July ENX, we hit the basics on some of the key diagnostic procedures, code resets and component tests available from diagnostics.

Next it makes sense to zoom in on the Fuser Module… Several folks who are experienced on these machines have informed me that the fusing is extremely crucial… particularly the oiling system. Many copy quality issues can be a result of a problem in the fuser oiling system. It makes sense… with 4 layers of color all being fused together in a nice glossy finish, its all in the cooking!

We'll have a look at the basics of the anatomy of the fuser and how it comes apart. Also, we'll look at the Fuser Nip Adjustment and finally, the most important thing… the "Fuser Break-in Procedure" which primes the fuser oil.

The DC12 Fuser Module is a relatively complex piece. It includes a Heat Roller, a Pressure Roller and an "Outer Roller". Each of the 3 rollers has its own Heat Lamp. Then there is an oiling assembly. This assembly includes a donor roll, a "pick-up roll" which takes up the excess oil, and a blade which cleans off the Pickup Roll. There is also a Cleaning Roll for the Heat Roll. Finally there's a Cleaning Web which is offered as a "Web Cartridge". The fuser oil is sold in its own container… kind of like a cartridge… it is not the same stuff as is used in other machines (at least I've not found any safe crossovers yet) and seeing as how the fuser oil is so critical to the copy quality, it wouldn't be wise to experiment with it.

Before you remove the Fuser Module to work on it, you'll want to lay out a drop cloth to keep the fuser oil from getting all over the place. To remove the Fuser Module, you'll open up the Front Door, push a lever down and slide the Drawer Assembly out to the maintenance position. Then push in the stoppers at both sides so that you can pull the Drawer Assembly all the way out. With the Drawer Assembly out, you will then remove the lever, the drawer cover, and the Oil Cartridge. Then lower a baffle, loosen 2 screws and remove the bracket. Disconnect a connector and the Fuser is ready to be lifted off.

To get the Web Assembly off of the fuser, you'll need only to remove the fuser's top cover, press the latch release button and remove the assembly. To get the Heat Roll out, you'll first get the Web Assembly off, then remove the Heat Roll Heater Rod and the Heat Roll Finger Assembly. Then to get the Heat Roll off, you'll pull out a "Stand Plate" before opening the Upper Frame Assembly. When opening the Upper Frame Assembly, take care because the springs from the Donor Roll Assembly can fall off and disappear on you. There are 2 screws you'll need to remove to open the Upper Frame Assembly. Now, with the Upper Frame Assembly open, loosen 2 screws and raise the stoppers on both sides. Take note at this point how the Heat Roll Bearing's flanges sit… they should be inside the Fuser Frame at either end.

The Pressure Roll removal procedure is much the same as the Heat Roll except that there is an Inlet Chute and a Spring to remove before the Pressure Roll will come out. It is important once again to pay attention to the way the bearing flanges sit. Similar to the Heat Roll, these should be inside the Fuser Frame at both ends.

If you want to remove the External Heat Roll, the Service Manual recommends you first check out the length of the spring on the External Heat Roll Assembly… it should be 24 +/- 0.3 mm from bracket to bracket… if not, they recommend that you replace the entire External Heat Roll Assembly rather than just the External Heat Roll. There is a sensor with a fragile actuator in there which you'll want to unscrew and let it hang where it'll be safe before you take out the External Heat Roll. To remove the External Heat Roll, you'll remove the External Heat Rod… then there are 2 rings and 2 bearings before the External Heat Roll will come out.

When replacing any of the three Rolls (Heat, Pressure or External), inspect and clean up that Roll's two thermistors. This Fuser has a whopping 6 thermistors… 2 for the Heat Roll, 2 for the Pressure Roll, and 2 for the External Heat Roll. Likewise, each of the 3 rolls has its own Thermal Fuse.

Ok.. all the stuff we just covered would be easy enough to figure out for a decent mechanic in the field. Here are the two bits of info which you'd need to know ahead of time… The Fuser Break-in Procedure and the Fuser Nip Adjustment.

The "Standard" Fuser Break-in Procedure should be performed if you replace the Donor Roll Assembly, Oil System Kit, or any piece of the Donor Roll Assembly (the Donor Roll itself or the Pickup Roll). It should also be done if you're replacing the Heat Roll, External Roll, Pressure Roll, the Wick, Heat Roll Stripper Fingers or Cleaning Roll. To perform the Standard Fuser Break-in Procedure, turn on the power and allow the machine to warm up to "Ready". This will cycle the Fuser Drives for 3 minutes and the Oil Pump will run for 5

minutes. Place a blank sheet of paper on the Platen Glass and run 20 blank copies from Tray 1 in the Full Color mode. Then, place a Test Pattern on the Platen Glass and run 20 copies (again in Full Color Mode).

The "Full" Fuser Break-in Procedure is necessary if you're installing a brand new complete fuser module, or any of the Oil supply components (the Oil Pump, Oil Supply Tubes, Oil Drip Pipe, or the Oil Tank). Turn on the power and allow the machine to come to "Ready. Enter Diagnostics and select dC330 (Component Test Codes) and enter the code 10-033 (this turns on the Oil Pump). Press Start to get the pump going for 90 seconds… when it stops, hit 'Start' again to go for another 90 seconds. Then look at the clear oil tubes above and below the Oil Pump to make sure that they are full of oil, are free of air bubbles, and aren't leaking. If you find leaks or air bubbles, reposition the clamps & fittings to correct the problem and then power up again and run the Oil Pump from Diagnostics again just as before. Once the oil is flowing as it should, run 20 blank sheets from Tray 1 in Full Color Mode followed by 20 copies of a Test Pattern. That should do it to keep you out of trouble in the lubrication department.

Now for the Fuser Nip Adjustment. For the checking of the Fuser Nip Width, the Service Manual gives the impression that you'd need the use of a PWS (Portable Work Station… a specialized laptop which interfaces with the machine to assist in diagnostic procedures). The procedure has you enter Diagnostics DC701 mode to get to the Fuser Nip Adjustment. You can try accessing DC701 from the User Interface Diagnostics (from the Control Console) but its unclear how the procedure might go from the console. Not being able to use the diagnostics to check the Nip Width is a minor disadvantage… generally if you suspect that the Nip Width is too small or too large, you can adjust it using the screw at the rear or the screw at the front as you need to. The adjustment screws are set at an angle, one near the front end and the second near the rear end. Rotating one of the screws Counter Clockwise will decrease the Nip Width. To increase it turn the screw Clockwise.

Since we're covering the Fuser… it makes some sense to repeat some of the info from the previous two articles. Below are the Diagnostic Adjustment Codes which relate to the Fuser Module. For many of the fuser related Status Codes, you'd need to reset one of the Diagnostic NVM valules to '0' in order to make the Status Code go away. Here's a refresher on how to get to the NVM read / write functions:

> Turn on the power… then while holding down the '0' button, press 'Start'. The screen will prompt you for an "Access Number"… use the keypad to enter '6789' which is the Default Access Number.

Then select “NVM Read / Write” from the Main Menu after which you’ll be prompted for the code… enter the first part of the code followed by ‘Print’ and then the second part of the code followed by ‘Print’ again.

NVM Code	Description	Status Codes which this code resets
772-018	Fuser Fan Failure Reset	**10-398 & 10-399**
777-051	Oil Pump On Time (adjusts oil dispensing), Default setting is 3000 (ms)	n/a
777-077	Web Status (0=Full, 1=Near Empty, 2=Empty) (Used to Reset Web Code if a new Web Cartridge fails to reset it automatically).	**10-422**
777-160	Fuser Failure Status (0=No Problems, 1= Heat Roll Lamp Failed, 2=Heat Roll Safety failure, 3=Press Roll Lamp failed, 4=Press Roll Safety failure, 5=External Roll Lamp failed, 6=Ext. Roll Safety failure.	**10-366, 10-367, 10-375, 10-376, 10-386, 10-387**

That’s it for now on the fusers… I figured folks will need to have some clues to attack these as they come along. I would’ve loved to have some photos for you, but that’ll have to wait till I have a machine in shop which I can take apart and get beyond what the Service Manual talks about. I hope that you all find this information to be valuable and I’d welcome any feedback or tidbits of experience from the field. Maybe next month we’ll have a good long look at the Drum Module… I know that the Connectors are in the works, so its just a matter of time till the Drum Cartridges are resettable and therefore repairable.

Britt works for The Parts Drop, a company whose primary business is providing parts, supplies and information for Xerox brand copiers, printers and fax machines. You can find more information as well as an offering of parts and supplies on their website www.partsdrop.com. There’s a complete listing of past articles under contributing writers on the ENX website (www.ENXMAG.com) if you’d like to read more about Xerox brand office equipment.