Introducing: The Xerox DC12 style machines.

(Docucolor 12 (DC12) & Document Centre Color System 50 (DC50 or DCCS50)) Overview and Status Codes...
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All accounts of the Xerox Docucolor 12 which I've heard so far, seem to consider this a superb piece of equipment. It's a full color copier and printer capable of producing color prints and copies which are truly impressive. There are quite a few of these machines out there… we'll start with a quick overview and then plunge into the rather deep pool of Status Codes (actually, we'll just wade a little… the complete listing would take up way too many pages).

The DC12 and the DCCS50 are covered together in one service manual so they are very closely related. These machines are said to run well so long as regular maintenance is observed… one of the most sensitive parts of the machine lies in the Fuser's Oil application system. Problems in copy quality which may at first appear to be caused by other things can wind up being in the fuser oiler section. Its important to understand the way the machine works a little bit… there is an "IBT" belt which is a transfer belt… this belt gets written on by laser and then developed by each of the colors individually… it keeps going around till each color is overlayed to form the image, then the image is developed onto the Drum from the IBT belt to finally be transferred onto the Paper. With all the layering, it is understandable how crucial a roll the fuser plays in this system. It must have the right temperature, lubrication and pressure to do its job. The Fuser is different from many of the black and white copiers / printers which I know in that it has three Fuser Rollers (the Heat Roll, the Pressure Roll, and the External Roll). It has heater lamps in all three of these rollers as well as thermal fuses. It also has thermistors for heat control and overheat on all 3 rollers (for a grand total of 6 thermistors and 3 thermal fuses / thermostats if you're keeping count).

There is a way to enter into the Diagnostic Mode from the Control Console or User Interface (UI) although access is somewhat limited. Ideally, you'd be equipped with a PWS (Portable Work Station) which is a laptop computer loaded with software to interface with the machine. From a PWS you'd have a menu driven way of accessing the diagnostics. From the Control Console, you'll need to get a listing of the codes… there's no approaching this one blind. You'll also have to pay extremely close attention to make sure you enter the code you really intend to since the display will give you little to go on.

While there are plenty of regular maintenance work and mechanical repair work which any competent tech can handle, it'll be important to recognize when you're in over your head… basically, take on the problems which make sense to you and know when to run! If you run into logic problems, you'll need to get in an expert for sure… let the customer know that you can repair some of the basic and more common problems which occur (such as replacing fuser parts, feed components, etc.) but that you have limited access to information and in some cases, they may need to find someone who is trained on the machine (someone who owns a PWS would be best). If you make friends with someone who knows these machines, keep their number handy.

Like many of the more complex Xerox machines, this one is a bit logic-heavy… so there are more codes than we'll actually list here, but at least this will give you a good idea which way to look when you get a status code.

Below are the basic layout of the meanings behind the Status Codes:

STATUS CODES:

1-300   Front Door Interlock is open.

1-304   Left Cover Interlock is open.

2-310   User Interface (UI) Panel failure.

2-340   UI RAM failure.

3-xxx Codes are all Communication and memory failures

4-001   Main Motor problem.

4-002   Drum Motor problem.

5-xxx Codes are all Document Feeder (DADF) problems… below are a few you'll want to know:

     5-110 to 5-113 DADF Registration jams.

     5-115 to 5-116 DADF Exit jams.

     5-196   Document sensed at Document Sensor at power on or when the DADF Top Cover was closed.

     5-197   Document sensed at Registration Sensor at power on or when the DADF Top Cover was closed.

     5-198   Document sensed at Exit Sensor at power on or when the DADF Top Cover was closed.

     5-199   Document duplex sensor jam.

     5-301   DADF Top Cover is open.

6-xxx Codes relate to the optics… below are a few select ones:

     6-360   Carriage Position Failure.

     6-371   Exposure Lamp failure.

     6-389   Carriage overrun at scan end.

     6-390   Carriage overrun at home end.

7-xxx Codes relate to the Paper Supply…some of the simpler ones are below:

     7-281   Tray 1 Lift Motor failure.

     7-282   Tray 2 Lift Motor failure.

     7-283   Tray 3 Lift Motor failure.

     7-284   Tray 4 Lift Motor failure.

     7-286/287 Tray 5 Lift Motor problems.

8-xxx Codes are Paper Feed and Registration problems

9-xxx Codes are all Xerographic problems such as toner problems, developer problems, Drum Cartridge problems, ADC (Auto Density Control) problems too. Some examples:

     9-271   Yellow Toner empty.

     9-272   Magenta Toner empty.

     9-273   Cyan Toner empty

     9-274   Black Toner empty.

     9-311   Wrong Drum Cartridge.

     9-372   No Drum Cartridge sensed.

     9-374   No Waste Bottle sensed.

     9-376   Waste Bottle full.

     9-378   Drum Cartridge count expired (40K).

10-xxx Codes are Fuser problems and Paper Exit problems.

10-102 to 10-117 Fuser area paper jams.
10-127 to 10-163 Duplex jams.
10-300   Inverter Cover is open.
10-341   Fuser Oil bottle is empty (30-40K expected yield if the oiler system including the metering blade, donor roll, etc are in good working order). This code should reset automatically when a new Oil Bottle is installed.
10-342   Fuser Web Cartridge needs changing (this code should reset automatically when a new Web Cartridge is installed).
10-359   Open Heat Roll Control Thermistor (the one closer to the middle of the roll).
10-360   Open Heat Roll Overheat Thermistor.
10-361 to 10-365 :   Heat Roll not hot enough.
10-366* to 10-367*:   Heat Roll Over-temperature.
10-368   Open Press Roll Control Thermistor (the one closer to the middle of the roll).
10-369   Open Press Roll Overheat Thermistor.
10-370 to 10-374:   Press Roll not hot enough.
10-375* to 10-376*:   Press Roll Over-temperature10-377 to 10-378:   Open External thermistor failures.
10-379 to 10-385   External Heat Roll not hot enough.
10-386* to 10-387*:   External Heat Roll Over-temperature

* Overheat codes must be reset from Diagnostics (NVM adjustments) by entering code 777-160 and changing the value to a '0' after repairs are complete. To get to the NVM adjustments, you'll need to 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'.

11-xxx Codes are all Sorter related stuff…
14-xxx Codes are ROS (Raster Output Scanner or Laser Module) failures.
15-xxx Codes have to do Image Processing System (IPS) failures in the logic / communications.
16-xxx Codes generally point to network faults.
21-504 Code indicates a problem with an Accessory device such as a Coin Kit.

Next month we'll cover how to access the Diagnostics available from the Control Console. You're going to need a listing of some of the basic Memory Adjustment Codes. This machine requires that you know the code you want to enter… there's no friendly menus like some of the other Xerox machines we've covered here in the past (the 5340 style and the DC220 style for example are menu driven, so you can find your way around intuitively… not so for the DC12).   I'll also have to get you an abbreviated list of the Component Control Codes for testing sensors, motors, etc.
I think that'll do it for this month… hopefully this little taste has piqued your interest without being too much of a tease. See you next month.

There's a complete listing of past articles under contributing writers (look for Britton the ENX website (www.ENXMAG.com) if you'd like to read more about Xerox brand office equipment.

Introducing: The Xerox DC12 style machines (Part 2) – DIAGNOSTICS…
(Docucolor 12 (DC12) & Docucolor 50 (DC50 or DCCS50)) Overview and Status Codes...

Last month found us wading into the rather deep pool of Status Codes for the Docucolor12 & DCCS50 machines… Just enough to wet your appetite. This is the first series of machines which I've dealt with which is a full color machine… it's a good place to start as its an excellent piece of equipment… well built… just about everyone who has anything to say about it raves about it. So lets continue dreaming in full color…

This month, as promised, we'll have a peek at some of the Memory Adjustments and Component Test Codes which you're most likely to need. You will need to keep a list of the codes on hand because the Memory adjustments and Component Tests do not have an intuitive, menu driven diagnostic screen… you cant scroll through a list of possible codes… you simply have to know exactly which code you want to run. There are a few adjustments and tests which are available only if you have a specially equipped laptop computer or "PWS" (Portable Workstation).   Fortunately, a vast majority of the diagnostic functions are available from the User Interface (UI) Diagnostics Mode.

Entering Diagnostic Mode: First of all… to enter the User Interface (UI) Diagnostic Mode: 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. This should bring you to a menu of options to choose from:

- **NVM Reset** (Non Volatile Memory) / NVM Initialization
- **NVM Read / Write** (memory adjustments)
- **Component Control** (for testing sensors, motors, etc.)
- **Print** (for running Test Patterns from Diagnostics)
- **Subsystem Check** (for fuser nip measurement check out, and developer unit check out)
- **Max Setup** (for setting up copy quality)

We'll start with the NVM Read / Write (Non Volatile Memory Adjustments)… Again, you need to have the exact code you wish to enter … don't guess at this or you can screw things up pretty easily. Here's an abbreviated list:

NVM Code	Description	Default value	Range
700-116	Lighter – Darker Default	0	0-7
700-117	Hue Control Default	0	0-5
700-118	Chroma Control Default	0	0-5
700-119	Sharpness Default	0	0-5
710-004	Document Feeder Lead Edge Registration (simplex)		
710-007	Document Feeder Lead Edge Registration (duplex)		
715-023	Doc Feeder Side Registration offset	32	0-100
715-132	Scanner Lead Edge Registration correction	50	0-75
715-133	Scanner Lead to Trail Magnification correction	50	44-56
720-001	Side Edge Registration Adjustment (A side)	525	1-16383

720-002	Side Edge Registration Adjustment (B side)	525	1-16383
720-018	Lead Edge Erase (top edge)	35 (2.96mm)	0-255
720-019	Trail Edge Erase (bottom edge)	35	0-255
720-020	Side Edge Erase	70	0-255
760-004	Tray 1 Paper Size	3 (8.5x11)	0-3
772-018	Fuser Fan Failure Reset **(For Resetting 10-398 & 10-399 Status Codes)**	(set to '0' to clear codes)	
774-056	Read CRU Type (Copy Cartridge type) 48 = Metered Version (uses 13R557) 49 = Sold Version (uses 13R558	48	
777-051	Oil Pump On Time (adjusts oil dispensing)	3000 (ms)	40-10000
777-077	Web Status (0=Full, 1=Near Empty, 2=Empty) (Used to Reset 10-422 Status Code if web cartridge fails to reset it automatically)		
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. **(Used to Reset the following Fuser Fault Codes: 10-366, 10-367, 10-375, 10-376, 10-386, 10-387)**	0	

You'll notice that several of the NVM codes above allow you to reset the machine when certain otherwise unclearable Fault Codes occur. In each case, you'd want to reset the value to '0' to make the Fault Code go away.

Next, you'll want to be equipped with a list of the more commonly needed Component Control Codes… similar to the NVM codes, you need to know the exact code you want to run. Again, you'll need to be very careful inputting the codes so that you don't create unexpected problems for yourself by running the wrong component. First we have a partial list of the Input Codes (these test the sensors and switches):

INPUT COMPONENT TEST CODES:

Input Code	Description	Status Meaning
001-300	Front Door Interlock Switch	High = Open
001-304	Left Cover Interlock Switch	High = Open
005-102	Document Present Sensor	High = No Document
005-110	Document Registration Sensor	High = No Document
005-115	Document Exit Sensor	High = No Document
005-119	Document Duplex Sensor	High = No Document
005-300	Platen Switch	High = Open
005-301	Top Cover Interlock Switch	High = Open
006-212	Scan Registration Sensor	High = Light Blocked
007-100	High Capacity Feeder (HCF) Feed Sensor	High = Paper Detected
007-186	HCF Stack Height Sensor	High = Stack not Home
007-187	HCF Paper Size Sensor	High = 8.5x11
007-188	HCF Paper Empty Sensor	High = Paper Detected
007-189	HCF Tray Closed Interlock	High = Closed
007-308	HCF Docking Interlock Switch	High = Docked

008-104	#1 Pre Feed Sensor	High = No Paper Sensed
008-105	#1 Feed Out Sensor	High = No Paper Sensed
008-109	#2 Pre Feed Sensor	High = No Paper Sensed
008-110	#2 Feed Out Sensor	High = No Paper Sensed
008-114	#3 Prefeed Sensor	High = No Paper Sensed
008-115	#3 Feed Out Sensor	High = No Paper Sensed
008-119	#4 Pre Feed Sensor	High = No Paper Sensed
008-120	#4 Feed Out Sensor	High = No Paper Sensed
008-135	Tray 5 Feed Sensor	High = Paper Sensed
008-150	Takeaway Sensor	High = No Paper Sensed
008-153	Pre Registration Sensor	High = No Paper Sensed
008-155	Registration Sensor	High = No Paper Sensed
008-163	Behind Registration Jam Sensor	High = No Paper Sensed
008-305	Tray 5 (Bypass) Interlock Switch	High = Feeder Open
009-216	IBT Belt Cleaner Retract Home Postion Sensor	High = Home Detected
009-217	Oil Roll Retract Home Position Sensor	High = Light Blocked
009-220	Developer Rotary Home Position Sensor	High = Light Blocked
009-237	Developer Rotary Lock Mechanism Sensor	High = Latched
009-249	Waste Bottle Position Sensor	High = Set
009-250	Waste Bottle Full Sensor	High = Full
009-251	Trickle Bottle Sensor	High = Full
009-255	Low Toner Sensor (Black)	High = Toner Sensed
009-257	Low Toner Sensor (Yellow)	High = Toner Sensed
009-258	Low Toner Sensor (Magenta)	High = Toner Sensed
009-259	Low Toner Sensor (Cyan)	High = Toner Sensed
010-100	Fuser Entrance Sensor	High = No Paper Sensed
010-105	Fuser Exit Sensor	High = No Paper Sensed
010-110	Machine Exit Sensor	High = No Paper Sensed
010-115	Exit Path Sensor	High = Paper Sensed
010-125	Inverter Path Sensor	High = Paper Sensed
010-130	Duplex In Sensor	High = Paper Sensed
010-132	Duplex Path 1 Sensor	High = Paper Sensed
010-133	Duplex Out Sensor	High = Paper Sensed
010-220	Press Roll Retract Sensor	High = Retract position
010-221	External Heat Roll Retract Sensor	High = Retract position
010-222	Oil Sensor	High = Oil Empty

Here's a list of some of the Output Component Codes you're likely to want to be able to run:
OUTPUT COMPONENT TEST CODES:

Output Code	Description
003-002	K1 Relay (from AC Drive PWBA)
004-007	Main Motor
004-009	Fuser Motor
004-021	Drum Motor (Photoreceptor and IBT Belt both come on)
005-011	Doc Feeder (DADF) Set Gate Solenoid Open
005-012	DADF Set Gate Solenoid Close
005-040	DADF Feed Motor
005-055	DADF Document Transport Belt Motor Forward

005-056	DADF Document Transport Belt Motor Reverse
005-075	DADF Registration Gate Solenoid
005-081	DADF Exit Motor
005-084	DADF LED
006-002	Exposure Lamp
006-005	Exposure Cooling Fan (low speed)
006-006	Exposure Scan Motor (scan forward)
006-013	Exposure Cooling Fan (high speed)
007-078	High Capacity Feeder (HCF) Feed Clutch
007-079	HCF Elevator Motor
007-080	HCF Feed Motor
008-006	Tray 1 Nudger Roll Solenoid
008-007	Tray 1 Feed Motor (reverse)
008-008	Tray 1 Feed Motor (forward)
008-009	Tray 1 Takeaway Feed Clutch
008-011	Tray 2 Nudger Roll Solenoid
008-012	Tray 2 Feed Motor (reverse)
008-013	Tray 2 Feed Motor (forward)
008-014	Tray 2 Takeaway Feed Clutch
008-016	Tray 3 Nudger Roller Solenoid
008-017	Tray 3 Feed Motor (reverse)
008-018	Tray 3 Feed Motor (forward)
008-019	Tray 3 Takeaway Feed Clutch
008-021	Tray 4 Nudger Roller Solenoid
008-022	Tray 4 Feed Motor (reverse)
008-023	Tray 4 Feed Motor (forward)
008-024	Tray 4 Takeaway Feed Clutch
008-025	Takeaway Motor
008-030	Tray 5 Nudger Roll Solenoid
008-037	Tray 5 Feed Clutch
008-040	Tray 5 Lift Motor
008-043	Main Motor 2
008-054	Registration Motor
009-011	Cartridge Motor (Black)
009-012	Cartridge Motor (Yellow)
009-013	Cartridge Motor (Magenta)
009-014	Cartridge Motor (Cyan)
009-018	Rotary Lock Mechanism Latch
009-021	Developer Motor Clutch
009-025	IBT Roll Contact
009-026	IBT Roll Retract
009-031	Dispense Motor (Black)
009-032	Dispense Motor (Yellow)
009-033	Dispense Motor (Magenta)
009-034	Dispense Motor (Cyan)
009-040	ADC LED (Auto Density Control)
009-050	Erase Lamp
009-066	IBT Cleaner Contact
009-067	IBT Cleaner Retract
009-068	Pre Clean Corotron
009-085	Rotary Motor Fan
009-088	Blower

009-089	Copy Cartridge Fan
010-004	Fuser Fan (low speed)
010-005	Inverter Gate Solenoid (Invert)
010-006	Inverter Gate Solenoid (Exit)
010-018	Fuser Fan (high speed)
010-020	Inverter Motor (forward / upward)
010-021	Inverter Motor (reverse / down)
010-023	Pressure Roll Contact
010-024	Pressure Roll Retract
010-025	Inverter Roll Nip Solenoid
010-026	Inverter Roll Release Solenoid
010-027	External Heat Roll Contact
010-028	External Heat Roll Retract
010-029	External Heat Roll Lamp
010-030	Heat Roll Lamp
010-031	Pressure Roll Lamp
010-032	Web Motor
010-033	Oil Pump
010-040	Exit Motor
010-047	1st Belt Transfer Roll (BTR)
010-050	Duplex Out Motor
010-060	Fuser Intake Fan (low speed)
010-061	Fuser Intake Fan (high speed)

That just about does it for the Diagnostics for the time being. Hopefully that'll suffice to help you wet your beak. There is a lot to be said about copy quality adjustments and so forth which may warrant a future article. I'd also love to get my paws on one of the Fuser Modules to learn how they come apart and how to perform the service on them… will write something up for a future article when the time comes. One other potential subject for an article would center around repairing / reconditioning the Drum / Copy Cartridge…

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