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WC 4150 style

(WorkCentre 4150c, 4150s, 4150x, 4150xf, 4250, 4260)

TECHNICAL INFORMATION

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4150 - Shown without Finisher option.

Machine Intro (excerpt from ENX Magazine article June 2008)

The 4150 model machines are small and fast… They boast 45 pages per minute black and white. They start at around $2200.- for the 4150c which serves only as a copier. Add another $200.- and upgrade to the 4150s which adds printing, scan to email and network printing capabilities (with fax as an option). The most costly option is the 4150xf which comes with extra paper decks (4 all together), a stand and a Finisher (the finisher fits into the empty area in the center of the machine which otherwise serves as the catch tray area). The Duplex feature and the Duplexing Automatic Document Feeders (DADF) are standard features on all models. Xerox Dealerships who have been placing these machines and servicing them have told me on a few occasions now that they are very reliable machines with few inherent problems. One of the good dogs.

The newer models are WC-4250 and 4260. Many similarities but also some differences will be found.

These machines are built to make the primary consumables easy to replace. The Fuser Module was a case-in-point… a few screws and it's out. Other stuff will likely prove to be not-so-friendly… but time will tell.

The main consumables are the Toner Cartridge and the Drum Cartridge (or "Xerographic Module" as the manual calls it). Interestingly the Developing station is actually inside the Drum Cartridge… so the Toner Cartridge is really just a supplier of the toner to the Drum Cartridge. The waste container is on the front of the Toner Cartridge

The Toner Cartridge is initially provided to machines under OEM contract under the part number 6R1274 (that is the "Metered plan" version)… once a machine is taken off of contract, the consumables are then changed over to the "sold" plan. In North America and Europe, the reorder number for the "Sold plan" version is 6R1275 and in the Developing Market Operations West (DMO West), the part number will be 6R1276 instead. The Toner Cartridge is supposed to yield 20K pages at 5% coverage… it sells for around $120.-. The machine does have a sensor which senses when the toner material is actually running low, but it also has a counter chip on the unit which will terminate at 20K pages if the toner does not run out first.

The chips or "CRUM"s (Customer Replaceable Unit Monitor) on both cartridges are the new RF (Radio Frequency) type of technology. In this case, the "chip" is a very slim piece which looks more like a fancy sticker adhered to the side of the cartridge. Eventually someone will need to start producing replacements for these CRUM stickers. It may be a little wait before replaceable CRUMs are available in the market because, while there is rumor of soon to be released RF chips for other models, this one is unique so far in form.

The Xerographic Module (Drum Cartridge) sells for $280.- under the part number 013R00623. It is rated for 55K pages.

Thanks goes to ENX Magazine for first publishing the series of articles for which these pages were first compiled. www.enxmag.com

Now let's get into the Fault Codes and their meanings. The list which follows is abbreviated somewhat but should give you an idea where to start looking.

If you get calls about fault messages rather than Fault Codes on the screen… have the customer press the "Machine Status" button to view the Fault Codes so you'll have a better idea what the problem is. It may be necessary to have them enter the "Customer Tools" menus to get more information. Here's how that is done:

Press the "Access" button and enter the password (the default is '1111' on this machine). Then touch the "Go to Tools" button. You'll find a well laid out menu with all sorts of customizable features and adjustable defaults including the customer version of the Supplies Management and a Fault History.

FAULT / STATUS CODES:

Code:	Description
01-100	Right side door open.
01-200/300/400	Tray 2 / 3 / 4 access door open.
01-500	Finisher front door open.
03-xxx Codes	Communication and Software faults.
04-100	Tray 1 Elevator troubles.
04-200/300/400	Tray 2 / 3 / 4 elevator problems.
04-500	Main Motor drive problem (often something is bound up and keeping the motor from turning).
04-800	Duplex Fan failure.
04-910	Power Supply Fan failure.
05-100 thru 900	Document Feeder (DADF) jams.
05-920	Document Feeder top cover / door interlock open.
05-930	Document Feeder exit door interlock open.
06-100/200	Laser Unit (LSU) errors.
07-xxx	Paper Supply problems such as tray interlocks open or paper supply low or empty.
08-xxx	Paper jams.
09-100	Toner low.
09-200	Toner empty condition sensed.
09-210	Toner sensing problem.
09-220	Toner Count is expired (the CRUM's counter is up). Replace the Toner Cartridge to reset.
09-230/240/250/500	Problems with the Toner Ctg. CRUM (Customer Replaceable Unit Monitor) / Radio Frequency (RF) chip.
09-300	Drum warning (new end of 55K life)
09-310	Drum cartridge drum is not turning properly. (check the drum and the drives to the drum's drive coupling)
09-320/330/340/600	Drum Cartridge CRUM (chip) failure.
09-400	Drum Cartridge end of life.
09-700	Toner supply error (Toner is not making it from the toner cartridge to the xerographic module / drum ctg.)

09-800	Wrong Toner Cartridge detected (incompatible CRUM chip)
09-900	Wrong Xerographic Module (Drum Ctg.) (incompatible CRUM chip)
10-100/200	Low fuser temperature detected.
10-300	Fuser Overheat problem.
10-400	Fuser fault (the manual is not all that specific on this code).
12-100/200/300/400	Finisher jams.
12-500	Finisher exit tray is full.
12-600/610	Stapler problems.
12-700	Finisher compiler paddle fault.
12-710/720	Finisher jogger faults.
12-730	Finisher support finger home sensor fault.
12-740	Finisher ejector failure.
12-750	Finisher stapler fault.
12-760	Finisher stacker fault
14-100	CCD / Scanner carriage is locked. Check the slide latch which is designed to be used during shipping… It's located underneath the Scanner Bed, just above where the paper exit tray is found.

Some of the codes or messages require resetting a counter in diagnostics (read about "Resetting the HFSI Counters" (High Frequency Service Item Counters) later on page 5).

System Administrator Tools (user menu):

For setting up machine defaults and options which are available to the customer, you'd want to go into the "System Administration Tools". This is done by pressing the 'Access' button and entering the Administrator's Password ('1111' is the Default password). Then touch "Go To Tools". You'll find a bunch of stuff in an easy to navigate menu:

- System Settings
- Feature Defaults
- Screen Defaults
- Connectivity / Network Settings
- Access and Accounting
- Online / Offline
- Supplies Management
- Machine Tests
- Customer Support and Supplies Number
- Power Saver Administration
- Optional Services
- Software Reset
- Customer Software Upgrade
- Fax Setups
- On Demand Image Overwrite

System Settings gives you access to things like telling the machine if you want it to run a Configuration Report or not, each time the power is turned on.

Supplies Management is a particularly interesting menu item. Here you (or the customer for that matter) can reset the Counters for the Fuser, BTR (Bias Transfer Roll), and Feed Rollers. They also have options in there to Enable or Disable the Drum Cartridge or Toner Cartridge Status. If the Service Manual is correct, then the Fuser can be reset from here… if that fails, you can enter Diagnostic Mode and choose "HFSI" (High Frequency Service Items) and reset it from there (read more later in this article.

Machine Tests includes some Image Quality Test Patterns which could come in handy when troubleshooting copy quality problems.

Entering Diagnostic Mode:

Hold down the '#' key while then pressing the 'Access' key. You'll get a Diagnostic Login Window. Enter the password followed by 'Enter' (the default password is '1934'). Note that if you accidentally enter the wrong password 3 times in a row, the machine will lock-up for 3 minutes before you can try again.

When you are done in the Diagnostics, you will want to exit by pressing the "Call Closeout" button. You'll want to choose to reboot the copier if you have made any changes to memory settings.

Once in Diagnostics, you'll find the Main Menu:

Main Diagnostics Menu:

- **Service Info** - Here you'll find the HFSI (High Frequency Service Items) Resets. Also you can read the machine's Network IP Address and the System Administrator's Password.
- **Fault History** - Check the Fault Log to see what is going on with the machine.
- **Diagnostic Routines** - If you touch this Tab, you'll find a submenu:
  - Copier Routines
  - Network Routines
  - Fax dC Routines
  - Other Routines

In the "**Copier Routines**" (Diagnostic Routines / Copier Routines), you will find yet another juicy submenu including dC131 NVM Read / Write (Non Volatile Memory adjustments), and dC330 Component Control for testing motors, sensors and such. We'll go through the test codes and memory codes later on.

"**Other Routines**" (Diagnostic Routines / Other Routines), you'll find the "Shading Test" which allows you to check the functionality of the CCD (Charge Coupled Device… the electronic part up top on the exposure carriage which scans the originals). You'll also find the following functions:

dC001 Reset Auditron Master PIN. This resets the Administrator's Password (default is '1111'). The Auditron Master and Administrator share the same password (two hats for one person I suppose?).

dC606 Print Test Patterns, and the "Shading Test" which allows you to check the functionality of the CCD (Charge Coupled Device… the electronic part up top on the exposure carriage which scans the originals).

Resetting HFSI Counters (High Frequency Service Item Counters) … for example the Fuser Count: This is done by first entering Diagnostic Mode as detailed below. Next touch the 'HFSI' tab to bring up the HFSI Table. Look for & select the Fuser. Its status will show either "off" (not being tracked) or "OK" if it is not over the count yet, or it'll say "Check" if it is over its count. To reset the fuser's actual count to zero, select and highlight the fuser on the list and then touch 'Reset' followed by 'OK'. Now choose 'Exit'. Touch 'Call Closeout'. From this screen, leave "Reboot Copier" set to "yes" so that your HFSI Fuser counter will be properly reset during the rebooting process.

Component Control:

Now let's get some details on how to test various parts of the machine. Enter Diagnostic Mode, then touch "Diagnostic Routines", followed by "Copier Routines" and finally "330 Component Control". From here you can enter the "Chain – Function" codes (the 'Chain' is the first two digits before the dash, and the 'Function' is the 3 digits after the dash)… or you can browse through the available codes by pressing the button which says "Find Component'. Find and touch the component you want to try out and press 'Select' to add that component to the top of a short list of up to 6 components which they call the "Component Name Table List". If you choose more than 6, the bottom one on the list will get removed from the list. Each of the components on the short list of readied codes will have their status shown as either "On", "Off", "High", or "Low". To actually energize one of your readied codes, touch the code to highlight it and press 'Start'. To then stop a component's test, touch the code and then touch 'Stop'.
Even though the lists are available in a menu form, it may be helpful to have a list of the codes in front of you to save you some hunting time. Below are the codes which are most likely to be useful. They are broken down into the "Input Codes" (switches and sensors) and the "Output Codes" (motors, fans, solenoids, & clutches).

Input Component Codes: (abbreviated list):

01-100	Right Side Cover Interlock	"Opened " = Cover is open.
01-200	Exit Cover Present Sensor	"Closed" = Exit Cover is installed.
04-110	Main BLDC Motor	"High" = Running at normal speed. "Low" = Not running at normal speed.
04-410	Duplex Fan 1 Speed	"High" = Running at normal speed. "Low" = Not running at normal speed.
04-420	Duplex Fan 2 Speed	"High" = Running at normal speed. "Low" = Not running at normal speed.
05-xxx Codes	DADF (Document Feeder) test codes:	
05-100	Document Detect Sensor	"High" = Document sensed. "Low" = No Document sensed.

05-110	Document Paper Width Sensor	“High” = Sensor is actuated.
05-120	Document Paper Length Sensor	“High” = Document sensed.
05-130	Document Registration Sensor	“High” = Document sensed.
05-140	Document Scan Sensor	“High” = Document sensed.
05-150	Document Geate Sensor	“High” = Document sensed in gate.
05-160	Document Door Open Switch	“High” = Door open.
05-170	Document Duplex Sensor	“High” = Document present.
05-180	Document Exit Door Open Sensor	“High” = Door open.
05-400	Document Platen Cover Switch	“High” = Platen is raised.
06-110	Laser Unit Motor Ready	“High” = Laser Motor is running at normal speed.
06-310	Laser Unit Fan Ready	“High” = Laser Unit Cooling Fan is running at normal speed.
07-100/200/ 300/400	Tray 1/2/3/4 Tray Home Sensor	“Low” = Tray is detected in home position.
07-110/210/ 300/400	Tray 1/2/3/4 Paper Empty Sensor	“High” = Tray is empty.
07-120/220/ 320/420	Tray 1/2/3/4 Size Sensor 1	“High” = Sensor is actuated.
07-130/230/ 330/430	Tray 1/2/3/4 Size Sensor 2	“High” = Sensor is actuated.
07-140/240/ 340/440	Tray 1/2/3/4 Size Sensor 3	“High” = Sensor is actuated.
07-150/250/ 350/450	Tray 1/2/3/4 Stack Height Sensor	“High” = Paper in tray is elevated.
07-160/260/ 360/460	Tray 1/2/3/4 Paper Low Sensor	“High” = Paper in tray is low.
07-510	Bypass Paper Empty Sensor	“High” = Bypass Tray empty.
08-100/200 300/400	Tray 1/2/3/4 Feed Sensor	“High” = Paper present at appropriate tray’s sensor.
08-500	Registration Sensor	“High” = Paper sensed at Reg. Sensor.
08-600	Exit Sensor	“High” = Paper sensed at Exit Sensor.
08-700	Duplex Jam 1 Sensor	“High” = Paper sensed at sensor.
08-710	Duplex Jam 2 Sensor	“High” = Paper sensed at sensor.
08-720	Out-Bin Full Sensor	“High” = Paper full detected.
09-110	MHV (Main High Voltage) Bias Read	Display shows the Main (charge) High Voltage value.
09-310	THV (Transfer High Voltage) Bias Read	Display shows the Transfer Roll’s High Voltage value.
09-510	SMPS (Power Supply) Fan check	“High” = SMPS Fan is running at normal speed.
09-700	Toner Sensor	Display shows the toner level value.
10-200	Fuser Temperature at Thermistor	Display shows temperature in degrees

	'A'	Celsius (C = XXX)
10-210	Fuser Temperature at Thermistor 'B'	Display shows temperature in degrees Celsius (C = XXX)
10-300	Fuser Unit Fault detected.	Display shows either "Normal" or "Fault"
10-510	Fuser Fan ready test.	"High" = Fan is running at normal speed.
12-xxx Codes	Codes which relate to the optional Finisher.	

Output Component Codes: (Motors, Fans, Clutches & Solenoids)

04-100	Main Motor
04-200	Exit Motor –Forward Fast
04-210	Exit Motor – Forward Slow
04-300	Duplex Motor – Forward
04-310	Duplex Motor – Backward
04-400	Duplex Fan 1 & 2
04-510	Tray 1 Elevator Motor – Up
04-520	Tray 2 Elevator Motor – Up
04-530	Tray 3 Elevator Motor – Up
04-540	Tray 4 Elevator Motor – Up
05-200	Document Scan Motor – Forward
05-210	Document Duplex Motor – Forward
05-220	Document Duplex Motor – Backward
05-300	Document Pick-up Clutch
05-310	Document Registration Clutch
08-800	Bypass Feed Clutch
08-810	Tray 1 Feed Clutch
08-820	Tray 2 Feed Clutch
08-830	Tray 3 Feed Clutch
08-840	Tray 4 Feed Clutch
08-850	Registration Clutch
08-860	Duplex Feed Clutch
08-870	Duplex Gate Solenoid
08-920	Tray 2 Feed Motor
08-930	Tray 3 Feed Motor
08-940	Tray 4 Feed Motor
09-100	MHV (Charge Voltage)
09-200	Developer Bias
09-300	THV (+) (Positive Transfer Voltage)
09-400	THV (-) (Negative Transfer Voltage)
09-500	SMPS Fan (Power Supply Fan)
09-600	Toner Dispense Motor
09-800	Detack Bias Voltage
10-100	Fuser Power On

10-400	Fuser Motor – Forward
10-500	Fuser Fan
10-600	Fuser Bias Voltage.
12-XXX Codes	Codes which relate to the optional Finisher.
20-XXX Codes	Fax output signal test codes for testing the fax modem's various bps signals.

NVM Read / Write (Non Volatile Memory Settings & Adjustments):

The Memory settings or "NVM Read / Write" (Non Volatile Memory) are found in the "Copier Routines". Enter Diagnostic Mode, then touch "Diagnostic Routines", followed by "Copier Routines" and then "131 NVM Read / Write". Once you are in there you'll touch the appropriate "Chain" button (the chain is the first 2 digit part of the code). Then scroll through the choices and touch the code you want followed by "Read/Write". That will open the "Read/Write" window where you can change the value and save it. If you touch "Reset", the selected code will return to its default value. Some of the codes are "Read Only" and some require a password which would need to be gotten from Xerox directly in order to change the setting.

We will start with just the Registration Codes (there are quite a few of these, so we've condensed them to save space a bit) All of the Registration Codes use "30" as the default and have ranges of 0-60 with every 13 steps resulting in a change of 0.5mm.

Registration for DADF (Doc Feeder) & Platen (scanning)…

05-100 : DADF Top Edge Erase (Single sided)	**05-110** : DADF Bottom Edge Erase (Single sided)	**05-120** : DADF Left Edge Erase (Single Sided)
05-130 : DADF Right Edge Erase (Single sided)	**05-210** : DADF Horizontal Magnification (Single Sided)	**05-300** : DADF Top Edge Erase (Duplex)
05-310 : DADF Bottom Edge Erase (Duplex)	**05-320** : DADF Left Edge Erase (Duplex)	**05-330** : DADF Right Edge Erase (Duplex)
05-410 : DADF Horizontal Magnification (Duplex)	**05-500** : Platen Top Edge Erase	**05-510** : Platen Bottom Edge Erase
05-520 : Platen Left Edge Erase	**05-530** : Platen Right Edge Erase	**05-610** : Platen Horizontal Magnification

Registration for Trays:

06-100 : Vertical Magnification	**06-110** : Horizontal Magnification	**07-100** : Tray 1 – Top Registration (Single sided)
07-110 : Tray 1 – Side Registration (Single sided)	**07-120** : Tray 1 - Top Registration (Duplex 2nd side)	**07-130** : Tray 1 – Side Registration (Duplex 2nd side)
07-140 : Tray 1 – Top Registration (Duplex 1st side)	**07-150** : Tray 1 – Side Registration (Duplex 1st side)	**07-200** : Tray 2 – Top Registration (Single sided)
07-210 : Tray 2 – Side Registration (Single sided)	**07-220** : Tray 2 – Top Registration (Duplex 2nd side)	**07-230** : Tray 2 – Side Registration (Duplex 2nd side)
07-240 : Tray 2 – Top Registration (Duplex 1st side)	**07-250** : Tray 2 – Side Registration (Duplex 1st side)	**07-300** : Tray 3 - Top Registration (Single sided)
07-310 : Tray 3 – Side Registration (Single sided)	**07-320** : Tray 3 – Top Registration (Duplex 2nd side)	**07-330** : Tray 3 – Side Registration (Duplex 2nd side)

07-340 : Tray 3 – Top Registration (Duplex 1st side)	**07-350** : Tray 3 – Side Registration (Duplex 1st side)	**07-400** : Tray 4 – Top Registration (Single sided)
07-410 : Tray 4 – Side Registration (Single sided)	**07-420** : Tray 4 – Top Registration (Duplex 2nd side)	**07-430** : Tray 4 – Side Registration (Duplex 2nd side)
07-440 : Tray 4 – Top Registration (Duplex 1st side)	**07-450** : Tray 4 – Side Registration (Duplex 1st side)	**07-500** : Bypass – Top Registration (Single sided)
07-510 : Bypass – Side Registration (Single sided)	**07-520** : Bypass – Top Registration (Duplex 2nd side)	**07-530** : Bypass – Side Registration (Duplex 2nd side)
07-540 : Bypass – Top Registration (Duplex 1st side)	**07-550** : Bypass – Side Registration (Duplex 1st side)	

NVM Read / Write (Continued):

Code	Name / Description	Value / (default)
05-700	Document Roller Page Counter	Read Only
05-710	Document Retard Pad Page Counter	Read Only
08-100	Tray 1 Nudger (Pickup) Roller Page Counter	Read Only
08-110	Tray 1 Feed Roller Page Counter	Read Only
08-120	Tray 1 Retard Roller Page Counter	Read Only
08-130	Tray 2 Nudger (Pickup) Roller Page Counter	Read Only
08-140	Tray 3 Nudger (Pickup) Roller Page Counter	Read Only
08-150	Tray 4 Nudger (Pickup) Roller Page Counter	Read Only
08-160	Bypass Retard Pad Page Counter	Read Only
09-100	Laser Light Level (600dpi value in PWM)	200-600 (default = 350)
09-110	Main Charge Bias Control (value in PWM)	108-145 (default = 126)
09-120	Transfer Bias Control (THV) (value in PWM)	41-220 (default = 76)
09-130	Developer Bias Control (standard voltage = -500V (PWM 522)	408-607 (default = 522
09-140	Detack Bias Control (standard voltage = -1800V)	80-160 (default = 123)
09-200	Drum Page Counter	Read Only
09-210	Toner Page Counter	Read Only
09-230	Transfer Roll Counter	Read Only
10-100	Fuser Standby temperature (target) (4 steps = 5 degree interval)	0-15 (default = 10
10-105	Fuser Run Temmerature (target) (3 steps = 5 degree interval)	0-10 (default = 5)
10-110	Fuser Power Save Mode Temperature (9 steps = 5 degree interval)	0-40 (default = 20)
10-115	Fuser Wide Paper (101-185mm) Temperature (offset temperature on Thermistor B) (4 steps = 5 degree interval)	0-15 (default = 5)
10-120	Fuser Wide Paper (186-216mm) Temperature (offset temperature on Thermistor B) (4 steps =	0-15 (default = 5)

	5 degree interval)	
10-125	Fuser Heavy Paper (60gms) Temperature (offset temperature) (4 steps = 5 degree interval)	0-15 (default = 5)
10-130	Fuser Very Heavy Paper (90gms) Temperature (offset temperature for heavy media) (3 steps = 5 degree interval)	0-10 (default = 5)
10-135	Fuser Bond Paper Temperature Offset	0-10 (default = 5)
10-140	Fuser Transparency Temperature Offset	0-10 (default = 5)
10-145	Fuser Cardstock Temperature Offset	0-10 (default = 5)
10-150	Fuser Envelopes Temperature Offset	0-10 (default = 5)
10-155	Fuser Labels Temperature Offset	0-10 (default = 5)
10-200	Fuser Assembly Page Counter	Read Only
10-210	Fuser Heat Roll Page Counter	Read Only
10-220	Fuser Pressure Roll Page Counter	Read Only
10-300	Fuser Temperature Pickup Interval Delay (in microseconds)	0-100 (default = 0)
10-310	Fuser Temperature Pickup Interval Delay for Special Papers (in microseconds)	0-100 (default = 0)

The Service Manual mentions that it is not possible to read or modify any NVM which contains customer administrator data. This means that some things which are traditionally adjusted or readable from the NVM Read / Write may actually need to be accomplished from the Administrator Tools … The exception is the resetting of the Administrator's PIN (dC 001 … see page 5).

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