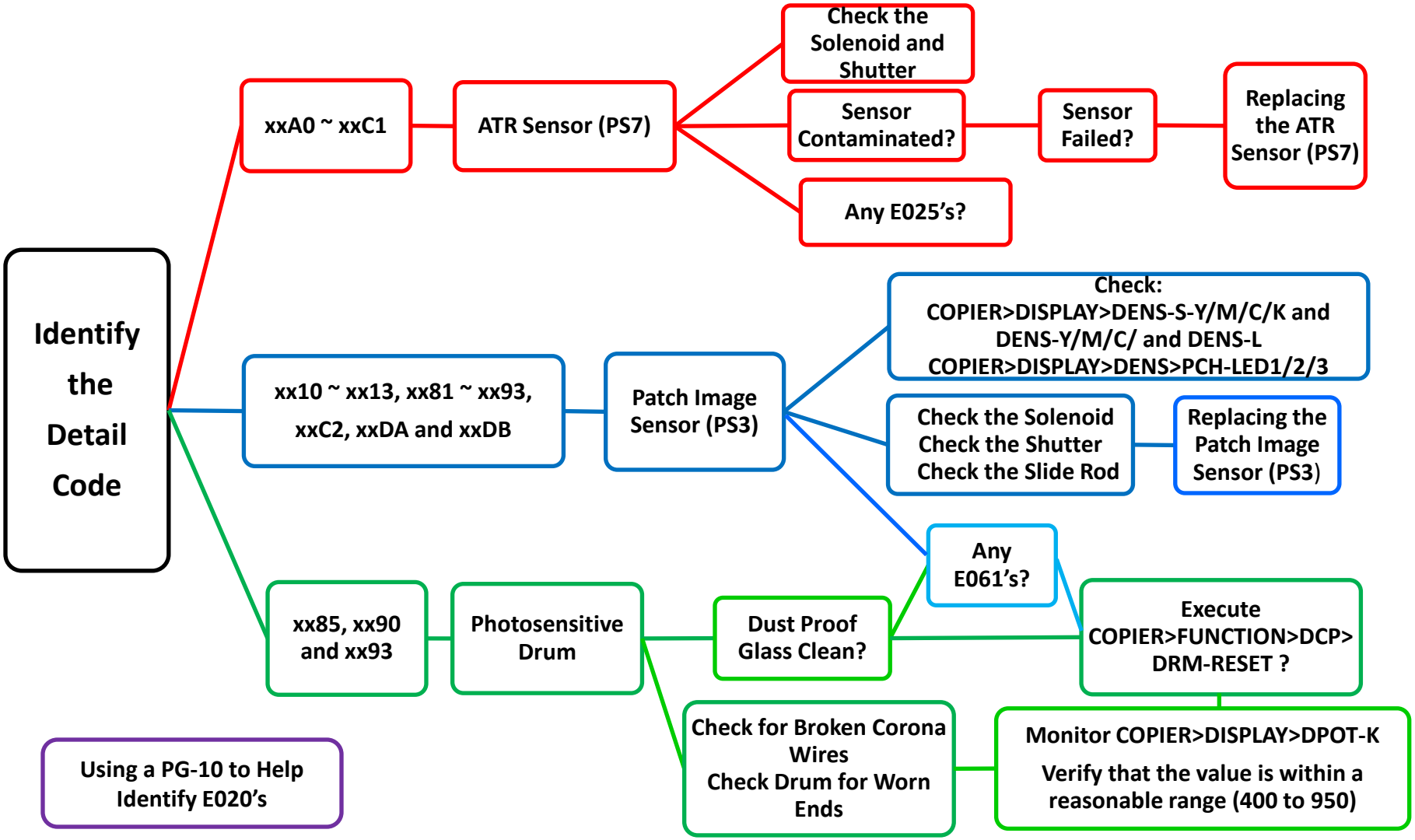
# E020 Error Code Workflow

- In an effort to assist the field troubleshooting E020 Error Codes, Canon U.S.A., Inc. is introducing this imagePRESS C1 Series E020 Workflow Course. The workflow includes links to valuable information, including error code definitions, theory, practical fixes, and most importantly direction on how to troubleshoot various E020 Error Codes.

# Troubleshooting E020 Error Codes



# Understanding E020 Error Codes

E020-xxyy Error Codes indicate a deviation of signals derived from the ATR Sensor and the Patch Image Sensor. The deviation of signals can come from a number of different incidents or malfunctions within the Rotary Assembly, Developer Assemblies, Photosensitive Drum Unit, Toner Supply, Patch Image Sensor, ATR Sensor, Main Controller, or DC Controller.

# Cleaning, Maintenance, and Scheduled Parts Replacements

Canon U.S.A., Inc. cannot emphasize enough, that proper cleaning, maintenance, and scheduled parts replacements are the most effective way to minimize the occurrence of E020-xxyy Error Codes. Carefully monitoring the on-board counters for durables and consumables, and replacing them in a timely manner reduces downtime and repeat service visits while increasing productivity and profitability.

# ATR and Patch Image Sensor

- Optimal performance of the ATR and Patch Image Sensors plays a significant role in the prevention of E020 Error Codes.
- Recommended cleaning intervals are minimum standards. Low copy volume engines may require cleaning at a more frequent copy count interval.
- To ensure the correct operation of the engine, more frequent cleaning of these components may be necessary depending on environmental and operating conditions.

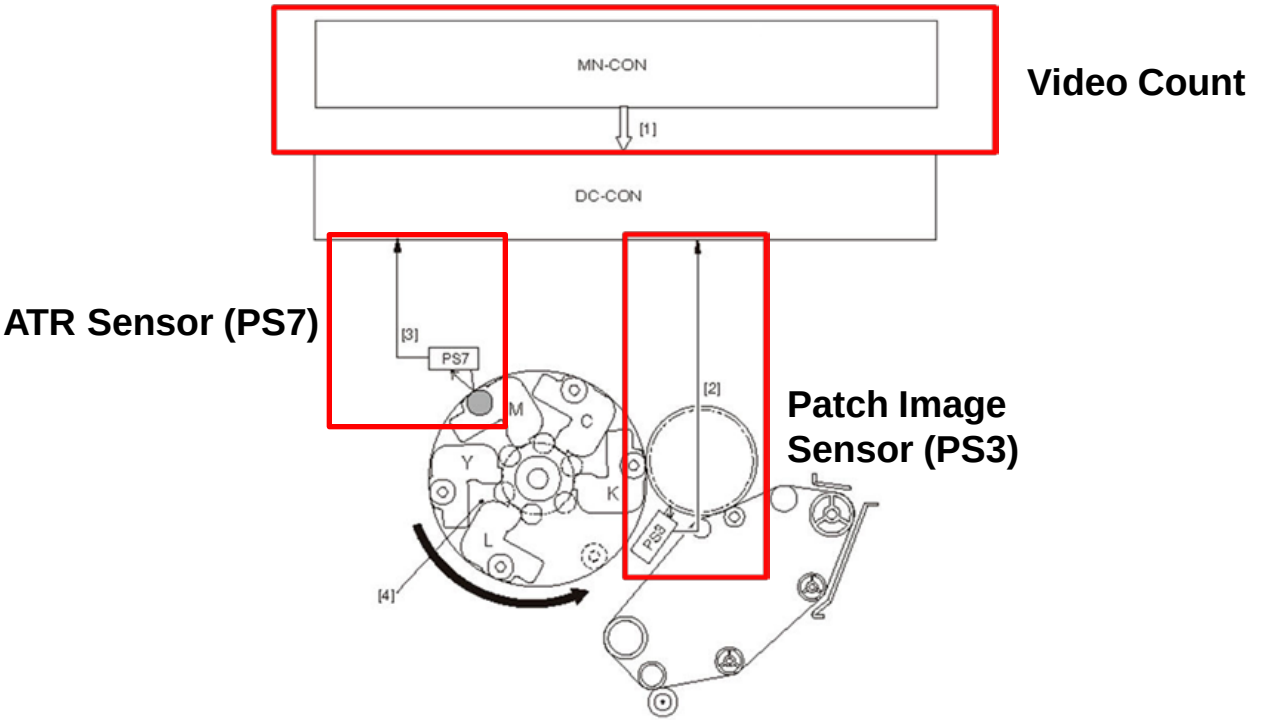
# ATR Control and E020s

ATR Control is executed to supply the correct amount of Toner to each individual Developing Assembly. Toner supply is achieved by calculating the Toner consumption and the amount of Toner to supply. The amount of Toner supplied to each Developing Assembly is calculated by data collected in three different ways.

# Toner Supply Calculation

**The three (3) components in calculating Toner Supply:**

1. **Video Count**
2. **Data from the Patch Image Sensor (PS3)**
3. **Data from the ATR Sensor (PS7)**




**Video Count**

**ATR Sensor (PS7)**

**Patch Image Sensor (PS3)**

# Video Count

The Video Count monitors each document output when printing. Calculations made on the Main Controller PCB estimate the amount of Toner consumption from the Video Count data, and then, in conjunction with the other methods of data collection, it calculates the amount of Toner actually consumed.

# Patch Image Sensor (PS3)

The Patch Image Sensor measures the Toner image formed on the Photosensitive Drum. This function is performed sheet-to-sheet, and based on the data collected, the amount of Toner supplied is adjusted so the overall image density will achieve the target density.

# ATR Sensor (PS7)

The ATR Sensor detects the Developer/Toner mix on the Developing Cylinder for Y/M/C/L. ATR detection occurs every eight (8) color prints output on Letter (8½” x 11”) paper. If the results fall outside of the target Developer/Toner mix range, Toner supply will be either increased or decreased to achieve the target Developer/Toner mix range.

# Identifying the Source of E020 Error Codes

- Error Code E020-xxyy can be generated by a number of components associated with the creation of the Electrostatic Latent Image and the Development Process.
- Components including the ATR Sensor (PS7), Patch Image Sensor (PS3), Developer Assemblies, and the Photosensitive Drum Unit can be a direct cause of E020 Error Codes.
- Identifying the source of an E020 Error Code is not limited only to the information outlined in this Seminar. Technicians must utilize all available resources to resolve E020 Error Codes on a first call basis. Resources include the Service Manual, the Enhanced Service Manual, the Technical Reference Manual, Technical Publications available from e-Support, e-Support Forums, applications such as the Service Support Tool, NAVI and Canon U.S.A., Inc.'s Technical Support Center.

# Understanding Detail (Sub) Codes

When troubleshooting E020 Error Codes the Detail (Sub) Codes indicate the root cause of the Error Code.

Interpretation of E020 Detail Codes: “xxyy”

The first two bits “xx” refer to the color:

01 = **Yellow** 02 = **Magenta** 03 = **Cyan**

04 = **Black** 05 = Clear (C1+ Only).

The second two bits “yy” indicate the actual fault.

# ATR Sensor (PS7), Associated Solenoid (SL9) and the Shutter

xxA0, xxA1, xxA2, xxA3, xxA8, xxA9, xxC0, and xxC1 Detail Codes are all related to the ATR Sensor (PS7; FM2-8159-000), Solenoid (SL9; FK2-0100-000), or the ATR Sensor Shutter (FC6-1524-000).

•Check the readings for *Target, Reference, and Signal Data* from the ATR Sensor in Service Mode: COPIER>DISPLAY>DENS:

REF-Y/M/C & REF-L: Developer density standard for the Developing Cylinder (Y/M/C/L).

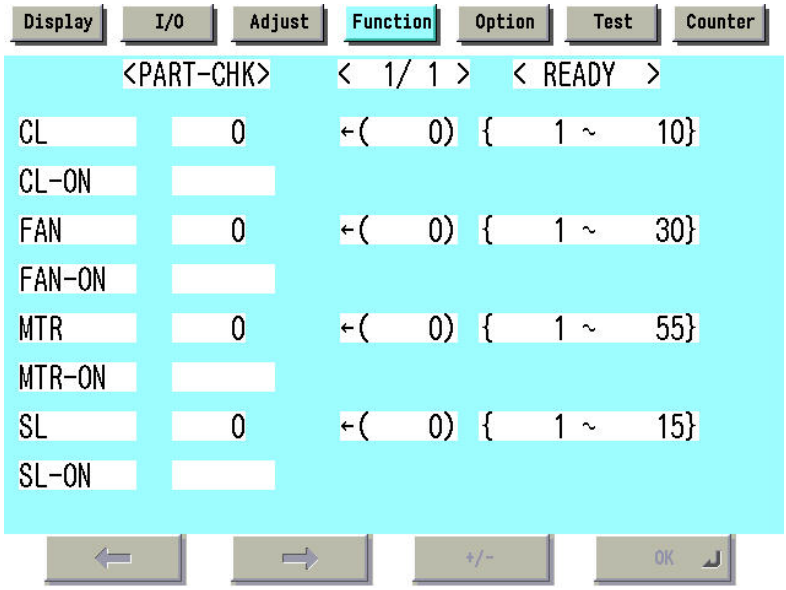
SGNL-Y/M/C & SGNL-L: Measured value (Y/M/C/L) of Developer density on the Developing Cylinder. The value will be measured every job.

D-Y/M/C-TRGT: Target value of Developer density (Y/M/C). Input the values recorded on the service label on the inside of the engines front cover in COPIER>ADJUST>DENS>SGNL-Y/M/C.

D-L-TRGT: Target value of the Developer density (L).

# Checking the Operation of the ATR Solenoid (SL9)

- Check the operation of the ATR Sensor Solenoid (SL9) using the Part Check Function in Service Mode. After enabling the Solenoid in Service Mode, COPIER>FUNCTION>PART-CHK>SL.




- SL9's operation can be verified by listening for clicks made by the activation and deactivation of the component.

# Troubleshooting the ATR Sensor

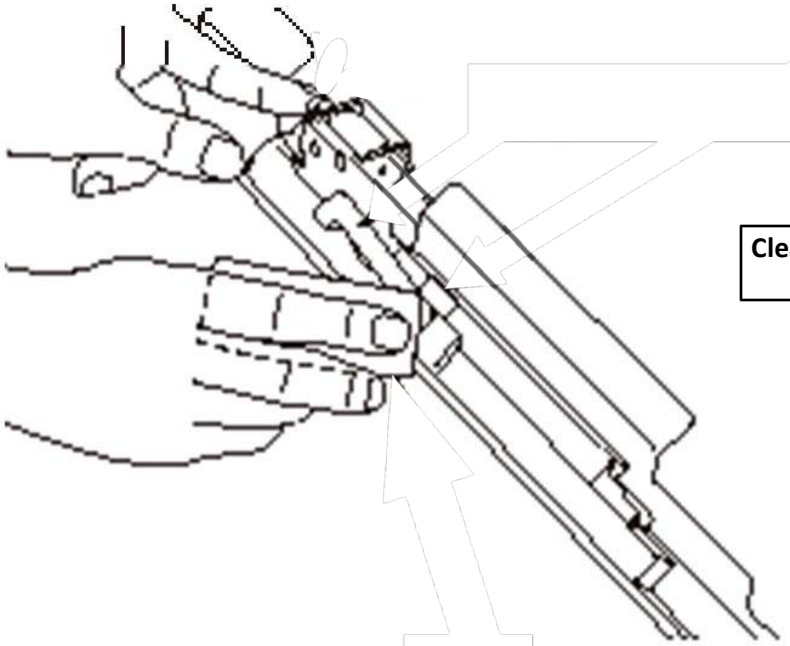
1. Check the CP-PRINT, specifically DISPLAY>DENS>SGNL-Y/M/C.


2. Check the condition and operation of the ATR Sensor Solenoid (SL9) and the Shutter.
3. Check and clean the ATR Sensor Window.
4. Check if the ATR Sensor connector is physically removed or if the wires are damaged (perform any necessary repair).
5. Check the ATR Control Reference Values in Service Mode COPIER>DISPLAY>DENS>REF-Y/M/C and REF-L (imagePRESS-C1+).
6. Check the ATR Control Signal Values in Service Mode COPIER>DISPLAY>DENS>SGNL-Y/M/C and SGNL-L (imagePRESS-C1+).
7. If the Reference value (462~562) or optical Signal value (250~760) are not within specification, replace the ATR Sensor.

# Cleaning the ATR Sensor

Cleaning the ATR Sensor Window and the ATR Sensor Shutter:

1) Remove the ATR Sensor from the Main Body.
2) Press the Plunger [1] of the ATR Sensor Lever Solenoid in the direction of the arrow.
3) Clean the ATR Sensor Window [2] and the ATR Sensor Shutter [3] with lint-free paper [4].



| | C1 | C1+ |
|---|---|---|
| Clean the ATR Sensor | 75,000 Prints | 50,000 Prints |

# Replacing the ATR Sensor (PS7)

- When the ATR Sensor is replaced, the Developer Assemblies must be replaced to bring the Developing Block to an optimal standard. At this time an INIT must be executed in Service Mode in order to generate and store the new Developing values.

  imagePRESS C1: FUNCTION>INSTALL>INIT-3 or (Y/M/C)

  imagePRESS C1+: FUNCTION>INSTALL>INIT-4 or (Y/M/C/L)

  •The composition of the Black Toner is different from the Y/M/C/L Toner. Consequently, the ATR Sensor is not used for the Black Developer; therefore INIT-K and SGNL-K are not available in Service Mode.

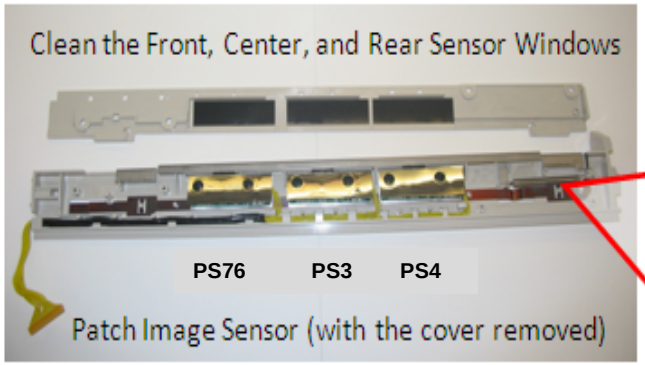
- After replacement of the ATR Sensor and the INIT has been performed, a Full Auto Gradation Correction must be performed.

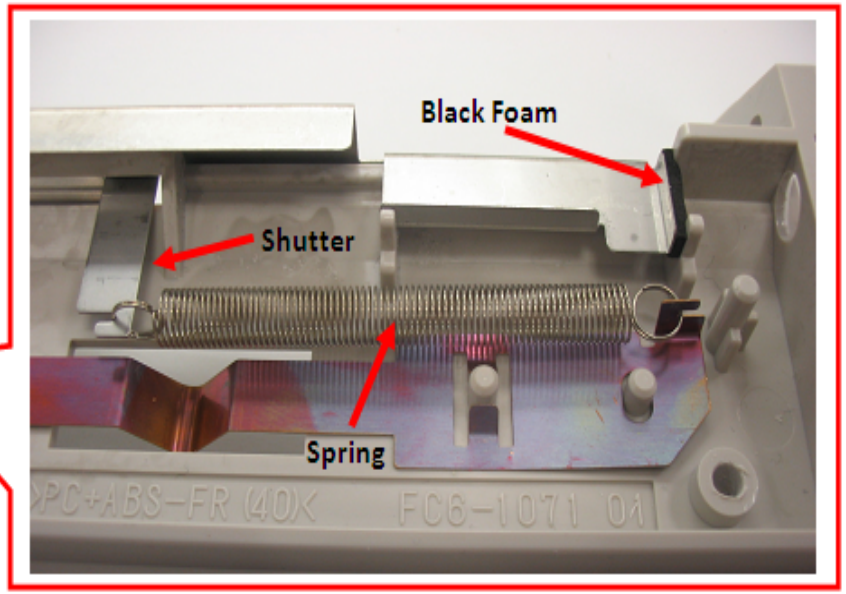
# Patch Image Sensor (PS3), Patch Sensor Shutter, Solenoid (SL8)

- Patch Image Sensor (PS3; FM2-2494-010) and Patch Image Sensor Shutter (FL2-2710-000), Solenoid (SL8; FM2-2650-000) Detail Codes range from XX10 to XX13, XX81 to XX93, XXC1, XXDA and XXDB.

| | C1 | C1+ |
|---|---|---|
| Clean the Patch Image Sensor] | 75,000 Prints | 50,000 Prints |

**Check the Shutter, the Spring, and the Black Foam for wear and replace the Shutter or the entire Sensor if necessary.**



# Troubleshooting the Patch Image Sensor

- Check the CP-PRINT, specifically DISPLAY>DENS>DENS-S-Y/M/C/K, DENS-S-L and DENS-Y/M/C/ and DENS-L.

**DISPLAY>DENS**

| | | | |
|---|---|---|---|
| Calculated Value of Density to Target (Difference displayed in %) | DENS-Y | +2.30 % | |
| | DENS-M | +3.40 % | |
| | DENS-C | +2.90 % | |
| Current Status | DENS-S-Y | 338 | Higher = Lighter |
| | DENS-S-M | 358 | Lower = Darker |
| | DENS-S-C | 364 | |
| | DENS-S-K | 357 | |
| Target | D-Y-TRGT | 336 | |
| | D-M-TRGT | 355 | |
| | D-C-TRGT | 346 | |

DENS-Y/M/C/L: Calculated value of Developer density (Y/M/C/L).

NOTE: An E020 can result when an abnormal value (±5%) is displayed for DENS-Y/M/C/L. Deterioration of the Developer, dirt on the Patch Image Sensor Window, or failure of the Patch Image Sensor may be to blame.

- Check the CP-PRINT readings in COPIER>DISPLAY>DENS>PCH-LED1/2/3. If the value for the Front, Center, or Rear Sensor is “0”, this is a clear indication that the sensor assembly or its wiring is faulty. If the values rise to around 240, it could indicate a very dirty sensor.

**DISPLAY>DENS**

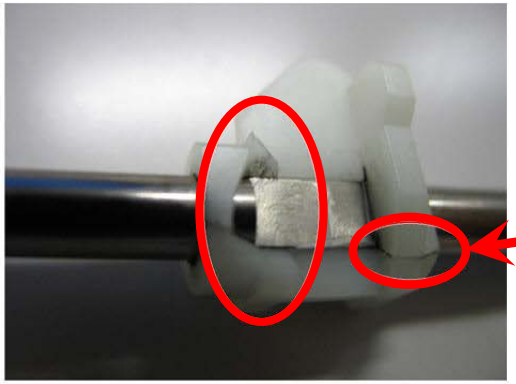
| | | |
|---|---|---|
| PCH-LED1 | 135 | - Front Sensor |
| PCH-LED2 | 134 | - Center Sensor |
| PCH-LED3 | 127 | - Rear Sensor |

- If one or more of the values is incorrect, exchanging the position of the faulty sensor with a working one is a quick way to check for a faulty sensor. If the faulty sensor moves, obviously the problem is the sensor. If the faulty sensor does not move, you should suspect a problem in the wiring or electronic components (PCB’s).

**NOTE:** If one or more the Sensors in the Patch Image Sensor are defective, a new Patch Image Sensor Assembly should be installed.

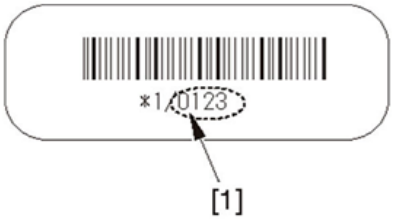
# Troubleshooting the Patch Image Sensor

- Check the operation of the Patch Image Sensor Solenoid (SL8) using the Part Check Function in Service Mode. After enabling the Solenoid in Service Mode, it's operation can be verified by listening for clicks made by the activation and deactivation of the component (same as the ATR Sensor on page 15).
- Check the Patch Image Sensor Shutter to make sure it moves freely and that the Front, Center, and Rear Sensors, and the Sensor Windows are clean.
- Inspect the Slide Rod (FC6-1043-010) for damage.



# When Replacing or Cleaning the Patch Image Sensor

1. After replacing the Patch Image Sensor, do not forget to enter the four digit label values for each Sensor in Service Mode: COPIER>ADJUST>DENS>ALF-F/C/R.
2. The Patch Image Sensor comes with the three (3) correction value labels.
3. The labels contain correction values for the front, center, and rear sensors.
4. Enter the 4 digit label values [1] using the aforementioned Service Mode.




5. Attach the label for the new Patch Image Sensor to the Front Door.
6. After Replacing or Cleaning the Patch Image Sensor, execute FUNCTION>MISC-P>PT-LPADJ (this adjusts the initial volume of reflective light for Patch Image Detection).
7. Select DISPLAY>DENS>PCH-LED1/2/3, and check the value of PCH-LED1/2/3. If the values are between 80 and 240, complete the work.
8. If the value is not between 80 and 240, replace the harness and repeat the process starting with the execution of FUNCTION>MISC-P>PT-LPADJ.
9. Recheck the appropriate LED values in DISPLAY>DENS>PCH-LED1/2/3.

**NOTE:** Replacement of the Developing Assembly is NOT necessary at this time.

# Photosensitive Drum Unit

The E020 Detail Codes associated with the Photosensitive Drum Unit are XX85, XX90 and XX93.

Although these Detail Codes indicate a Patch Image Sensor Error, the reality is that a malfunction of components in the Drum Unit can generate the Patch Image Sensor Detail Codes.

# DPOT-K

Verify that the value for DPOT-K is within a reasonable range (400 to 950).

Use COPER>DISPLAY>DPOT-K to monitor this value during the print process.

# Electrical Arcing

An Electrical Arc caused by a broken Corona Wire, or scratches on the Photosensitive Drum from worn ends, are some of the occurrences which can lead to a fault in Potential Control, causing Developer depletion, and ultimately resulting in E020 Error Codes.

# Drum Reset

E020 Error Codes can also occur after replacing the Photosensitive Drum.

ATR control is activated at the time of power on after the Photosensitive Drum is replaced. At this time, the Potential Control for patch detection becomes active. Potential Control adjusts the Laser intensity in accordance with the new Photosensitive Drum in order to improve the accuracy of the patch detection.

However, depending on the degree of deterioration of the old Photosensitive Drum , if the difference of Photosensitive Drum sensitivity is large between the old Photosensitive Drum and the new Photosensitive Drum, the protective function intervenes in the adjustment of Laser intensity, and the Laser intensity may not be optimized.

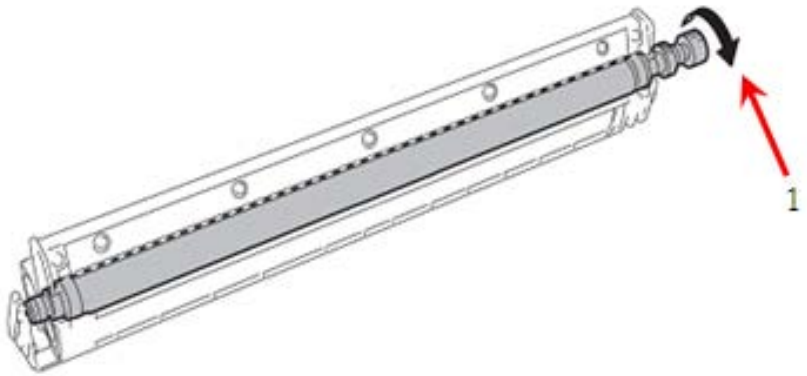
As a result of the latter, it may falsely detect a patch detection fault and trigger the ATR Sensor error (E020-XXXX).

If this is suspected, set the appropriate Laser intensity for the new Photosensitive Drum with this procedure:

1) Turn the main power OFF/ON.
2) Execute the Service Mode COPIER>FUNCTION>DCP>DRM-RESET.
3) If the error reoccurs after turning the main power OFF/ON again, execute step 1 and 2 up to five (5) times.

# Developer Assembly

The readings from the Patch Image Sensor (PS3) and the ATR Sensor (PS7) can be affected by the fluidity of the Start Developer and the Toner inside the Developer Assembly. As a result of contamination or the Developer Cylinder being rotated in the reverse direction, fluidity can be disrupted and a buildup of Developer/Toner material in one area of the Developer Assembly, or across the entire Developer Cylinder can occur. If the buildup cannot be removed by rotating the Developer Cylinder in the normal direction [1], try removing the build up with a clean sheet of paper, by scooping it out and then carefully pour it back onto the Developer Cylinder while rotating the Developer Cylinder in the normal direction.



# Performing a Developer Change

In lieu of replacing the entire Developer Assembly, the technician has the ability to replace only the Starter Developer.

- Required maintenance and cleaning should be performed at this time.
- The ATR Sensor and the Patch Image Sensor must be cleaned.
- ATR Sensor and the Patch Image Sensor proper operation should be checked.

# Replacing the Start Developer or Developer Assembly

After replacing the Start Developer or Developer Assembly perform the subsequent Service:

Execute aging in the following order.

- imagePRESS C1:FUNCTION>INSTALL>STIR-4 or (Y/M/C/K)
- imagePRESS C1+:FUNCTION>INSTALL>STIR-5 or (Y/M/C/K/L)

NOTE: Clean the ATR and Patch Image Sensors.

- Execute 20 sheets of duplexing print for Blue solid color image (11 x 17).
- Execute 20 sheets of duplexing print for Green solid color image (11 x 17).
- Execute 20 sheets of duplexing print for Red solid color image (11 x 17).
- Execute 10 sheets of duplexing print for solid black image in monochrome mode (11 x 17).
- Execute 20 sheets of duplexing print for solid white image in monochrome mode (11 x 17).

Exit Service Mode, and select User Mode > Auto Gradation Correction. Execute Auto Gradation Correction (full adjust) according to the instruction on the display.

**NOTE:** DO NOT perform INISET or INIT after replacing the Starter or the Developing Assembly. If INISET or INIT is performed, the initial value of the toner density signal will be set with erroneous data due to staining that occurs on the surface of the ATR Sensor. The ONLY time to perform INISET or INIT on the imagePRESS C1 / imagePRESS C1+ Series is when the ATR Sensor Unit, and the Developing Assemblies (or the starters) are replaced at the same time.

# imagePRESS C1/C1+ Developer Assemblies Starter, Toner, and Drum

**imagePRESS C1/C1+ Developer Assemblies & Drum**

| COLOR | DEVELOPER ASSEMBLIES | DRUM ITEM No. |
|---|---|---|
| YELLOW | FM3-1211-000 | 0405B003AA |
| MAGENTA | FM3-1212-000 | |
| CYAN | FM3-1213-000 | |
| BLACK | FM3-1214-000 | |
| CLEAR | FM3-8360-000 | |

# Using PG-10 to Help Identify E020 Problems

The imagePRESS-C1/C1+ has multiple PG PRINT types. Each test print can be used to detect image faults. PG-10 (MCYBk Lines) is most often used to check the dark area density of each color, and balance amongst each color.

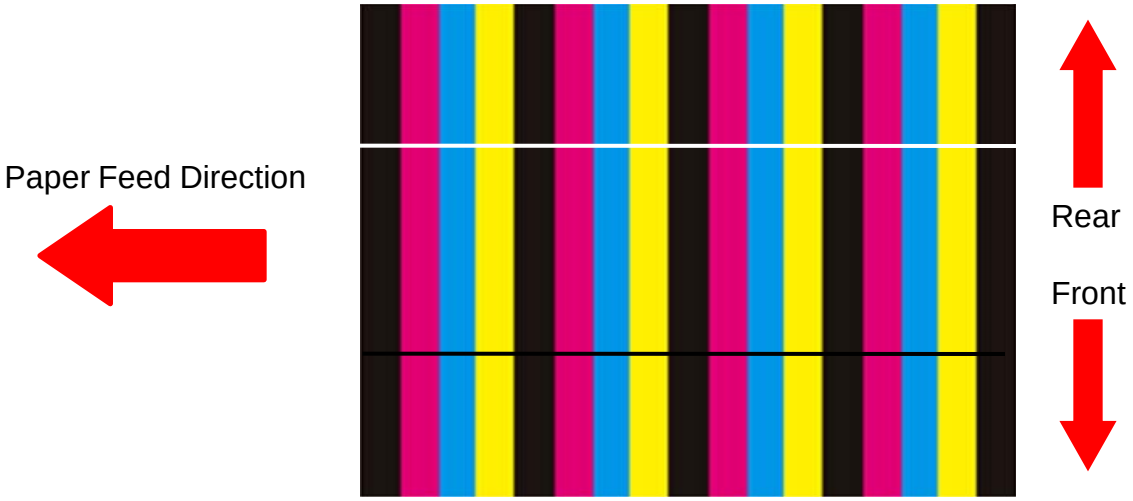
(1) Solid density of each color and balance among each color, or unevenness from the front to rear.

Check to ensure density is not extremely light or varying from one end to the other. If there is light density for a certain color(s), it may be caused by poor fluidity or clumping of Toner/Developer in the Developer Assembly (or fault of Primary Transfer Roller, Laser Scanning System, Photosensitive Drum Unit, ITB or High Voltage System).

(2) White/Black line.

If there are white/black line within a certain color, it may be caused by a foreign object in the Developer Assembly (or problems with the Photosensitive Drum Unit or a soiled optics path).

In cases where there is no fault on the test print, it may be caused by the PDL input side, or the Reader side.




PG 10 Print

# XXA0 ~ XXC1

| | | |
|---|---|---|
| xxA0 | Sig value is less than 62 in ATR control | 1. Execute the remedy same as for "xxA1".<br>2. Check by removing the ATR Sensor Shutter.<br>If it is OK, replace the shutter and complete the remedy. |
| xxA1 | Ref value is less than 62 in ATR control. | 1. Clean the ATR Sensor window.<br>2. Check if the ATR Sensor Connector is physically removed.<br>3. Replace the ATR Sensor.<br>* Refer to the service manual when replacing the sensor.<br>When replacing the ATR Sensor, it is also necessary to replace the Developing Assemblies. |
| xxA2 | Sig value is more than 960 in ATR control. | 1. Execute the remedy same as for "xxA0". |
| xxA3 | Ref value is more than 960 in ATR control. | 1. Execute the remedy same as for "xxA1". |
| xxA8 | The value exceeds the upper limit (14%) of detected TD ratio 3 times in a raw in ATR control. | 1. Check DISPLAY>DENS>SPL-LG-Y/M/C/K.<br>=> If all values are 00, go to step 2. If not, go to step 3.<br>2. Feed solid black image.<br>3. Clean the ATR Sensor window.<br>4. Replace the ATR Sensor.<br>* Refer to the service manual when replacing the sensor.<br>When replacing the ATR Sensor, it is also necessary to replace the Developing Assemblies. |
| xxA9 | The value falls below the lower limit (3%) of detected TD ratio 3 times in a raw in ATR control. | 1. Check DISPLAY>DENS>SPL-LG-Y/M/C/K.<br>=> If all values are more than 01, check toner level of the Toner Cartridge and Hopper.<br>2. Check if the Hooper Toner Level Sensor Connector is physically removed.<br>3. Feed solid white image.<br>4. Clean the ATR Sensor.<br>5. Replace the ATR Sensor.<br>* Refer to the service manual when replacing the sensor.<br>When replacing the ATR Sensor, it is also necessary to replace the Developing Assemblies. |
| xxC0 | Variation in Sig value is more than 100 in ATR control. | 1. Execute the remedy same as for "xxA0". |
| xxC1 | Variation in Ref value is more than 100 in ATR control. | 1. Execute the remedy same as for "xxA0". |

# xx10 ~ xx13, xx81 ~ xx93, xxC2, xxDA and xxDB

| | | |
|---|---|---|
| xx10 | Initial Sig value is less than 62 in INIT control (initial toner density control) at initial setting. | Turn OFF and then ON the main power, Replace the Patch Sensor shutter or Patch sensor. |
| xx11 | Initial Sig value is more than 960 in INIT control ((initial toner density control) at initial setting. | Turn OFF and then ON the main power, Replace the Patch Sensor shutter or Patch sensor. |
| xx12 | Initial Ref value is less than 62 in INIT control ((initial toner density control) at initial setting. | Turn OFF and then ON the main power, Replace the Patch Sensor shutter or Patch sensor. |
| xx13 | Initial Ref value is more than 960 in INIT control ((initial toner density control) at initial setting. | Turn OFF and then ON the main power, Replace the Patch Sensor shutter or Patch sensor. |
| xxDA | Variation in Sig (initial data) is more than 100 at initial setting. | Turn OFF and then ON the main power. |
| xxDB | Variation in Ref (initial data) is more than 100 at initial setting. | Turn OFF and then ON the main power. |
| xx81 | Error in Drum background light intensity (reflected light intensity from Drum surface) lower limit<br>DISPLAY>DENS>P-SENS-P (Drum background measurement value) </= 255 | 1. After cleaning the Patch Sensor,<br>execute FUNCTION>MISC-P>PT-LPADJ.<br>Select DISPLAY>DENS>PCH-LED2, and check the value of PCH-LED2.<br>2. If the value is between 80 and 240, complete the remedy. If not, execute "xx84" remedy. |
| xx82 | Error in Patch Sensor (Center) dark current lower limit<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) </= 30 | 1. Check if the Patch Sensor Connector is physically removed.<br>2. Replacement due to sensor failure.<br>Execute FUNCTION>MISC-P>PT-LPADJ.<br>Select DISPLAY>DENS>PCH-LED2, and check the value of PCH-LED2. (If the value is between 80 and 240, complete the remedy. |
| xx83 | Error in Patch Sensor (Center) dark current upper limit<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) >/= 90 | 1. Replacement due to sensor failure.<br>Execute FUNCTION>MISC-P>PT-LPADJ.<br>Select DISPLAY>DENS>PCH-LED2, and check the value of PCH-LED2. (If the value is between 80 and 240, complete the remedy.)<br>2. If not, replace the harness and execute PT-LPADJ. |
| xx84 | Drum background sampling error<br>DISPLAY>DENS>P-SENS-P (Drum background measurement value) -<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) </= 30 | 1. After cleaning the Patch Sensor,<br>execute FUNCTION>MISC-P>PT-LPADJ.<br>Select DISPLAY>DENS>PCH-LED2, and check the value of PCH-LED2 (1).<br>2. After removing the Patch Sensor Shutter,<br>execute FUNCTION>MISC-P>PT-LPADJ.<br>Select DISPLAY>DENS>PCH-LED2, and check the value of PCH-LED2 (2).<br>3. If (1) is more than 240 and (2) is between 80 and 240, replace the shutter and solenoid. Then,<br>execute PT-LPADJ again. If the value is between 80 and 240, complete the remedy. If not, go to step 4.<br>4. After replacing the Patch Sensor, execute PT-LPADJ. If the value is between 80 and 240, complete the remedy. |
| xx85 | Patch image sampling (center) error 1<br>DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) -<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) </= 30 | 1. Execute the remedy same as for "xx84". |
| xx86 | Patch image sampling (center) error 2<br>DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) -<br>DISPLAY>P-SENS-P (Drum background measurement value) </= 30 | 1. Execute the test print (TEST>PG TYPE= 5 , 96 (D)/single color, 4 colors.<br>check the evenness of image -> check the Developing Motor.<br>2. If the value of DISPLAY>DPOT>PT-LPW-Y/M/C/K is more than 250,<br>(1) Clean the Dustproof Glass and check.<br>(2) Replace the drum.<br>(3) Replace the Laser Scanner Unit/clean inside.<br>3. Perform the remedy for "xx84". |
| xx87 | Error in Patch Sensor (Center) dark current upper limit<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) >/= 930 | 1. Replacement due to sensor failure.<br>Execute FUNCTION>MISC-P>PT-LPADJ.<br>Select DISPLAY>DENS>PCH-LED2, and check the value of PCH-LED2.<br>Check that the value is between 80 and 240. |
| xx88 | Error in Patch Sensor (Front) dark current lower limit<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) </= 30 | 1. Execute the remedy same as for "xx82".<br>* Check the value of PCH-LED1. |
| xx89 | Error in Patch Sensor (Rear) dark current lower limit<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) </= 30 | 1. Execute the remedy same as for "xx82".<br>* Check the value of PCH-LED3. |
| xx8A | Error in Patch Sensor (Front) dark current upper limit<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) >/= 90 | 1. Execute the remedy same as for "xx83".<br>* Check the value of PCH-LED1. |
| xx8B | Error in Patch Sensor (Rear) dark current upper limit<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) >/= 90 | 1. Execute the remedy same as for "xx83".<br>* Check the value of PCH-LED3. |
| xx90 | Error in patch image density lower limit<br>During printing, DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) < 16 (patch density is too high). | 1. Check DISPLAY>DENS>SPL-LG-Y/M/C/K.<br>=> Check that the value is 00; then, go to step 2.<br>2. Replace the Patch Sensor.<br>3. Replace the Potential Sensor. |
| xx91 | Error in patch image density lower limit<br>During printing, DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) >/= 880 (patch density is too low). | 1. Check DISPLAY>DENS>SPL-LG-Y/M/C/K.<br>=> If all values are more than 01, check toner level of the Toner Cartridge and Hopper.<br>2. Check if the Hooper Toner Level Sensor Connector is physically removed.<br>3. Replace the Patch Sensor.<br>4. If the value of DISPLAY>DPOT>PT-LPW-Y/M/C/K is more than 250,<br>(1) Clean the Dustproof Glass and check.<br>(2) Replace the Laser Scanner Unit/clean inside and the Dustproof Glass.<br>5. Replace the Potential Sensor.<br>6. Replace the drum. |
| xx92 | Error in developer density lower limit<br>The value of DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) is less than –5% 3 times in a row. | 1. Execute the remedy same as for "xx91". |
| xx93 | Error in developer density lower limit<br>The value of DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) is less than +5% 3 times in a row. | 1. Execute the remedy same as for "xx90". |

# xx85, xx90 and xx93

| | | |
|---|---|---|
| xx85 | Patch image sampling (center) error 1<br>DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) -<br>DISPLAY>DENS>D-CRNT-P (dark current measurement value) </= 30 | 1. Execute the remedy same as for "xx84". |
| xx90 | Error in patch image density lower limit<br>During printing, DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) < 16 (patch density is too high). | 1. Check DISPLAY>DENS>SPL-LG-Y/M/C/K.<br>=> Check that the value is 00; then, go to step 2.<br>2. Replace the Patch Sensor.<br>3. Replace the Potential Sensor. |
| xx93 | Error in developer density lower limit<br>The value of DISPLAY>DENS>DENS-S-Y/M/C/K (patch image measurement value) is less than +5% 3 times in a row. | 1. Execute the remedy same as for "xx90". |

# E061's – Potential Control

In order to stabilize printing, the engine executes Potential Control to optimize the electrostatic latent image factors, i.e. Grid Bias, Developer Bias and Laser Intensity. When any of these image formation components malfunction, Potential Control can fail, and an E061 is generated. Failures in Potential Control can ultimately result in an E020 error Code.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