GRAPHIC MEASUREMENTS INC.

ColorQuick

Troubleshooting Guide

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ColorQuick/Clarios/ Troubleshooting Guide

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1. Purpose

The purpose of this document is to provide a comprehensive troubleshooting guide for the CQ-DOS systems for the average CQ User or maintenance personnel. The goal is to help these users of the CQ systems better troubleshoot hardware, firmware, and software problems and reduce the number of components returned that are not actually defective. (NTF)

2. Scope

This guide applies to all ColorQuick, DOS-based systems manufactured to date by Graphics Microsystems Inc. (GMI) The ColorQuick consists of multiple sub-systems. Isolating the particular subsystem involved is the initial goal of the troubleshooting process. Each sub-system is an interdependent system that can generate failure symptoms caused by one subsystem that mimics failure modes in other subsystems.

3. Definitions

- **Assy** – Assembly
- **CRT** – Cathode Ray Tube (an older type of monitor)
- **FPD** – Flat Panel Display
- **CF** – Compact Flash
- **EDM** – Encoder Divide Module
- **OP** – On Press Computer
- **Host** – Host computer
- **HDD** – Hard Disk Drive
- **FDD** – Floppy Disk Drive
- **OPM** – On Press Module
- **NTF** – No Trouble Found
- **CLC** – Closed Loop Control
- **ESD** – Electrostatic Discharge
- **OEM** – Original Equipment Manufacturer
- **LC** – Location Circumferential (refers to PH alignment)
- **PH** – Probe Head
- **NIC** – Network Interface Card (aka Ethernet card)
- **PS** – Power Supply
- **PSI** – Press Signal Interface Board
- **GUI** – Graphical User Interface

4. Reference Documents

- ColorQuick User Manual
- ColorQuick Service Manual
- ColorQuick On-Press Error Codes Manual
- ColorQuick Training Handbook
- ColorQuick Color Manager User Manual

- ColorQuick Color Manager Service Manual

23. Clarios Server

Basic overview

Network Connection

Application Server

Job Queue and Forms

- Ethernet Installation Guide
- AutoQuick User and Service Manuals

5. Tools and Equipment Recommendations

- Monitor. This can be a LCD flat panel display or a CRT style monitor.
- Standard Keyboard with AT connector. If you cannot find one of these older style keyboards, then you will need an adapter as outlined in the next bullet.
- AT Adapter. If your standard keyboard has a PS/2 connector, you will need an adapter as most Host computers have an AT style keyboard connector. (These adapters can be found at www.cablestogo.com, Part numbers 02475 and 02478)

Fig. 1 - #02475

Fig. 2 - #02478

- ESD Wrist strap. These are typically supplied with replacement Host and OP computers. These are used only if you need to open the case of the computer.
- Ethernet Cable Tester
- 9/64” Allen Wrench
- .050 Allen Wrench
- #2 Phillips Screwdriver
- Assorted Flat blade Screwdrivers
- Feeler Gauges (.010 - .045)
- Dual Trace Oscilloscope
- Multimeter (Digital or meter type)
- Cotton Swabs
- Isopropyl Alcohol or other optic cleaning solution such as Bausch and Lomb Sight Savers.
- Lightweight Machine Oil (such as 3-In-1 Oil)
- Compact Flash Reader (typically can plug into a USB port on a Windows PC)
- Computer Test Disk (GMI Part #061G100035)
- Control Panel Test Disk (GMI Part #061G100027-02)
- ColorQuick Recovery Disk (Supplied during installation of system)
- Blank floppy disk, 3 ½” 1.44MB, HD, IBM Formatted

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6. Procedure for Testing a GMI Replacement Computer

These basic tests are best performed on a bench and do not require that the computer be connected to the system. A test disk is provided with each replacement Host and OP computer.

Equipment required:

- Monitor
- AT Keyboard
- Line Cord
- ESD Wrist Strap (039G200196)

Software Required:

- CQ Computer Basic Tests Disk (061G100035)

Basic Computer Test

1. Plug monitor, keyboard and AC Line cord into computer to test.
2. Insert “CQ Computer Basics Test Disk” into the Floppy A drive and power ON the computer. (This is the leftmost drive if your computer has two floppy drives.)
3. After a few seconds a display will appear with the computer information.
4. Verify the “Ext. Memory Size: 130048KB” is displayed in the upper right corner. (This confirms that the memory is installed and functioning.)

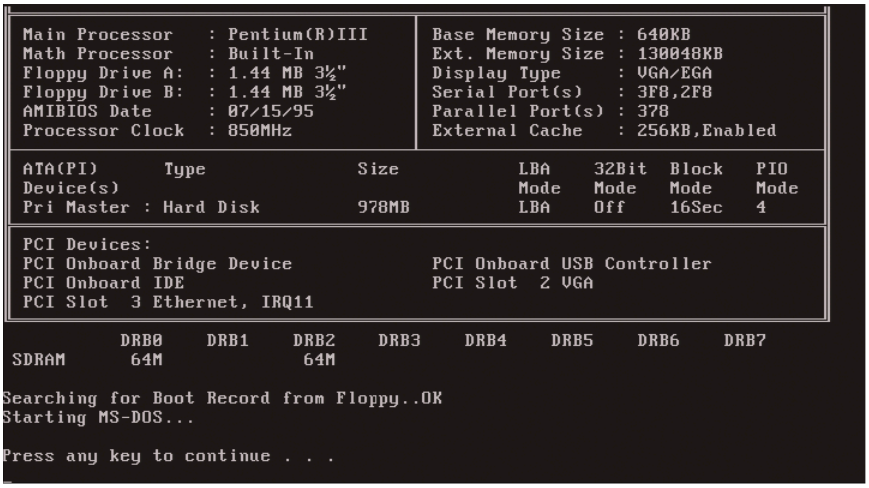

Fig. 3

5. Press any key to continue……The next screen will show this:

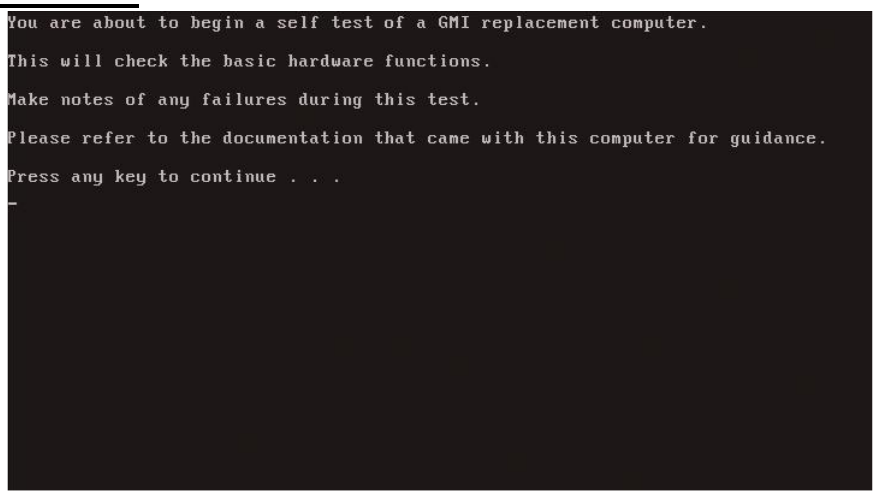

Fig. 4

6. Press any key to continue……The Network card tests will begin automatically.

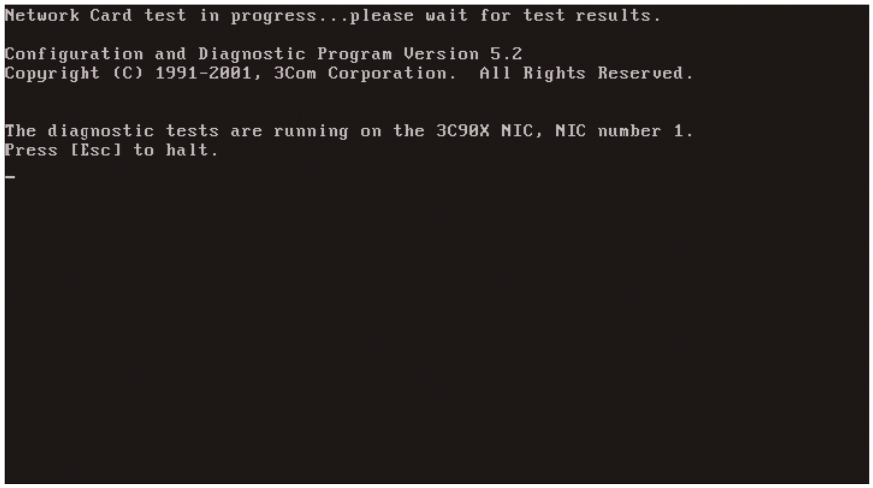

Fig. 5

7. The results will be displayed after a short period of time.
8. Confirm the “Group 1 Tests” all passed.

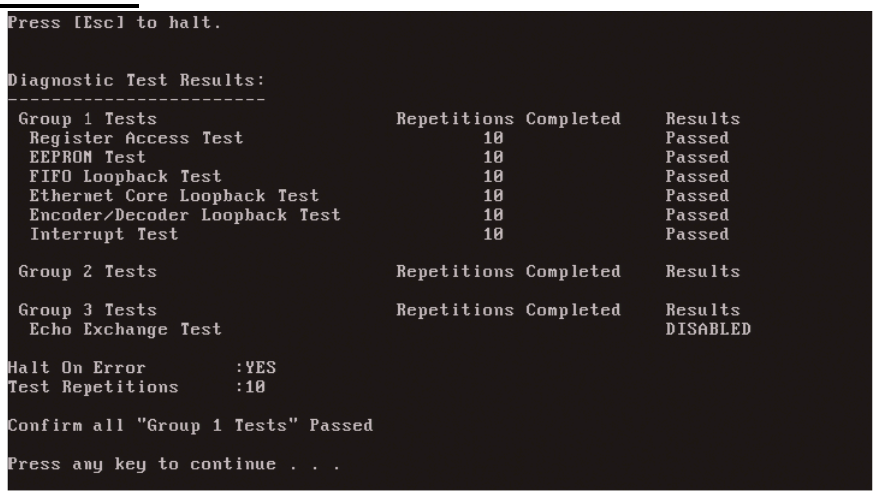

Fig. 6

9. Press any key to continue…… This will begin a test of the disk storage system by copying a file from the floppy to the disk. A file comparison will then be performed to verify operation of the internal disk.

10. Confirm the file copy completed successfully with “1 file(s) copied”.

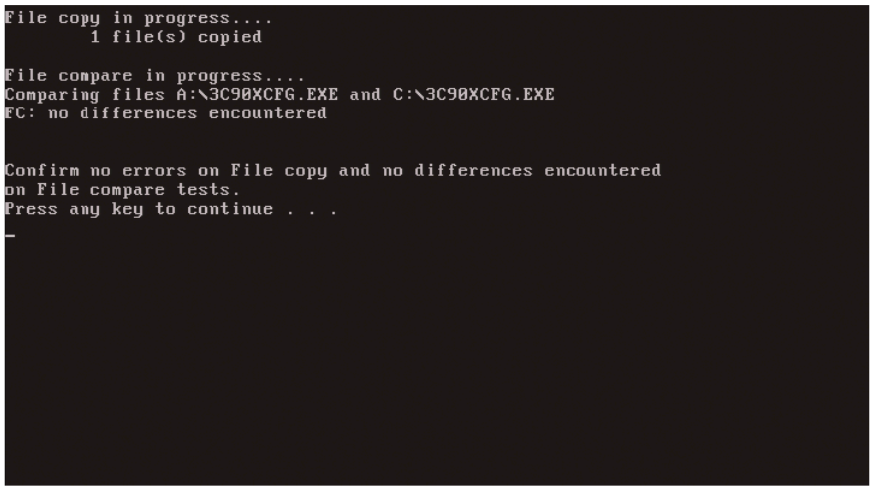

Fig. 7

11. Confirm the file compare completed with “no differences encountered”.
12. Press any key to continue…You will see the following screen indicating testing is complete.

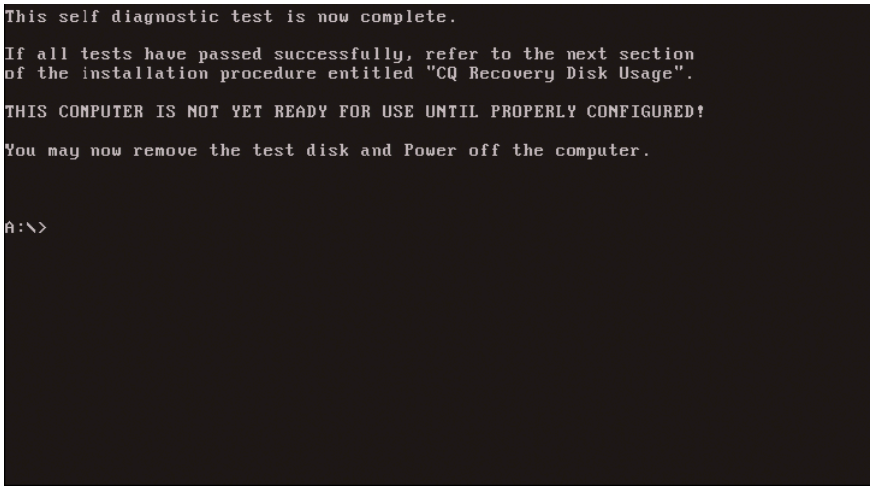

Fig. 8

13. If any of the tests failed, skip to “Computer Inspection” section.
14. Tests are complete. Remove Disk and Power OFF the computer.

* The computer has now been tested at a very basic level of hardware. The only add in cards tested with this procedure are the video card and Ethernet (NIC) card. The main purpose of these tests is to verify if a computer is completely dead.

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Computer Inspection (only required if any steps within the "Test" section failed)

Warning: ESD protection required. *HAZARDOUS VOLTAGE INSIDE!*

1. Disconnect AC line cord from power outlet.
2. Put on the ESD Wrist Strap using the instructions included with the wrist strap.

Fig. 9

3. Remove the 4 Phillips screws which hold the top cover onto computer.
4. Attach the other end of the ESD wrist strap to the unpainted surface of the computer.

Fig. 10

5. Visually check to make sure all ribbon cables and power cables are fully seated to their connections by pushing on the connectors. It is not uncommon for a cable between a device and a component to become loose or disconnected altogether in transit.
6. Check all printed circuit boards (PCBs) to verify they're fully seated into the computer slots.
7. Verify the memory modules are fully seated into the motherboard.

8. Detach ESD wrist strap from computer chassis and reattach the cover.
9. Repeat Section 1 (Basic Computer Test).
10. If computer still fails after repeating the test, please contact GMI Customer Service.

7. ColorQuick Host Computer

The ColorQuick Host computer is a DOS based computer. The newest versions of this hardware run with CF cards. (Older revisions use a HDD) The CF cards contain the operating system as well as all necessary configuration files and applications needed to operate the ColorQuick Host. Under normal operating conditions, the Host boots from the CF card. Each Host computer will contain a NIC card at a minimum. This computer may also contain one of several add-in cards. These add-in cards are used to communicate to OEM ink control consoles. There are Arc Net cards, RS-232, and RS-422 cards. The reason for the various add-in cards is because different OEM ink consoles require different methods of interfacing with them. It should be noted that these Host computers with the different add-in cards are NOT interchangeable with systems that do not require those particular add-in cards.

The ColorQuick Host has a floppy disk drive. Under normal circumstances, there should be NO DISK in this drive. It is only used for re-configuring with a configuration disk or for loading files to the HDD or CF card.

There are also various generations of Host computers. Not all generations of Hosts are compatible with all versions of software. These generations are denoted by the "model number". The model number can be found on a silver label on the back of the computer. All Host computers start with model numbers of 090G100xxx-xx. The first 3 digits after 090G100 are the generation of the computer. As of this writing, the following are valid generations:

- 090G100140-xx
- 090G100185-xx
- 090G100213-xx
- 090G100262-xx

All versions of software are capable of running the first three generations shown above. However, to run a 090G100262-xx generation of Host, you MUST have v4.0 software or greater. This generation of hardware has components that require specific drivers that only the new software has. You cannot run software older than v4.0 on this generation of Host computer. The required drivers are IN the software executables and not available to load separately.

The final two digits of the model number (after the dash) denote the configuration of the hardware. (and in some cases, the base software configuration on the HDD) In most cases, these last two digits have a one-to-one relationship between the generations, so a 090G100213-30 computer can be used in place of a 090G100262-30 computer. If you are in doubt about the compatibility of two computers, please call GMI Tech Support to verify compatibility. Have your system number and software version handy before calling. There are over 60 different model / configurations of Host computers in existence as of this writing.

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NOTE: There are also some versions of the above model numbers that start with 090G10**P**xxx-xx. The "**P**" instead of the zero denotes a computer with a perforated cover. These are used only in locations where excessive ambient temperatures require their use. Perforated covers should not be used in excessively dusty or dirty conditions.

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Here are two sample Host computers that explain some of the connections and add-in cards.

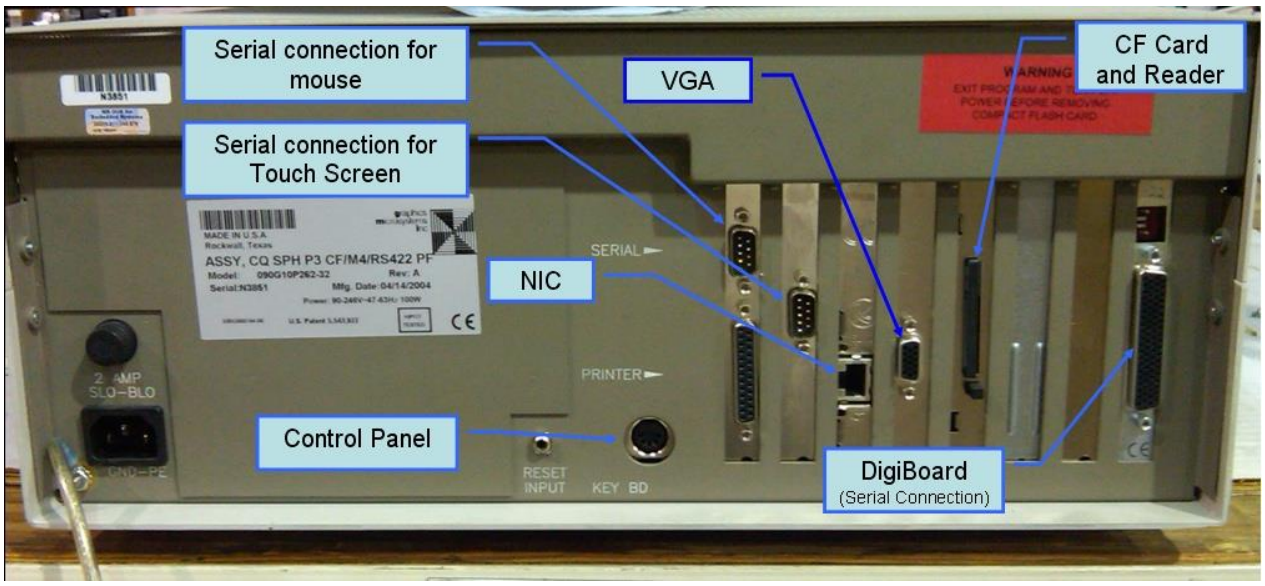

Fig. 11 – Host Computer w/ Digi-Board Card

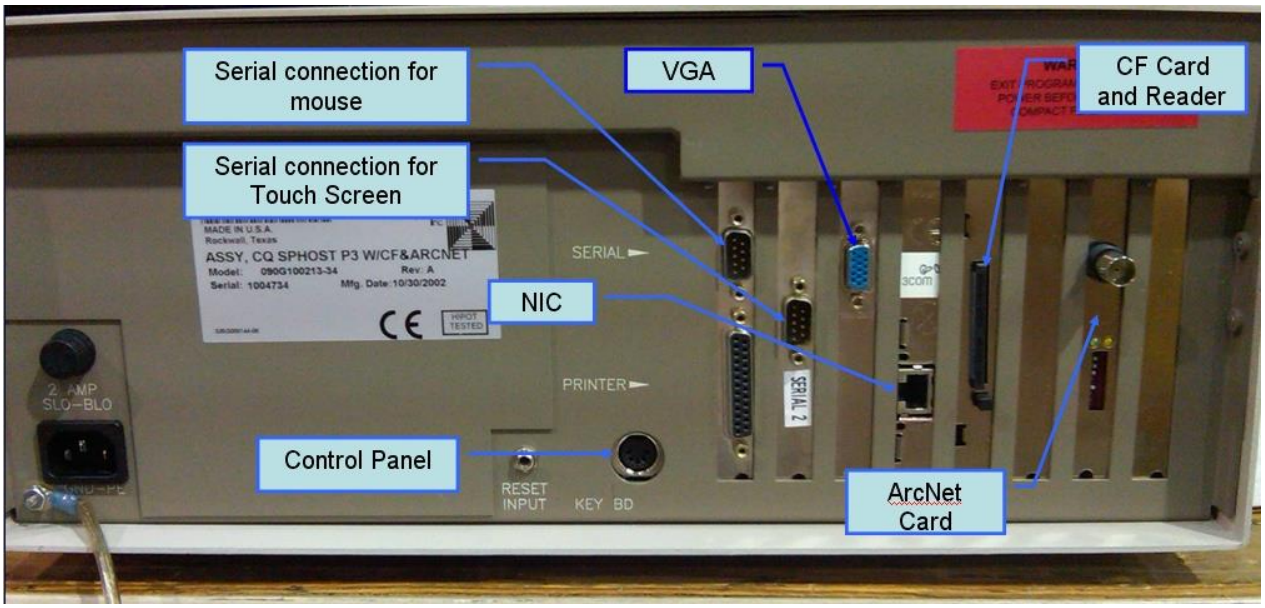

Fig. 12 – Host Computer w/ ArcNet Card

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There are several scenarios that may present themselves to indicate trouble with a Host computer and they are as follows.

Scenario 1 – No Power

1. Fuse – There is a fuse holder on the back of the computer. Remove it to see if it has blown. If you are unsure, use a continuity meter to verify. Replace if blown. (3A, Slo-blo)
2. Main Power Supply – Make sure the power cord is fully inserted into the back of the computer. This IEC connector can sometimes make the cord look like it is plugged in but in reality can be loose and not making any connection. Do not neglect to make sure that the power outlet is actually live by checking it with a meter or other tester. If your system has an isolation transformer, make sure that both input and output sides of this are actually live. All of this may sound simple, but it is surprising the number of people that merely assume this is all correct.

Note: *The remainder of these steps requires you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

3. Switch - Perhaps the power switch in the front panel is faulty. Use a continuity checker to check the switch. Note that sometimes the green light on these switches may not illuminate, even if the switch is still fully functional.
4. Computer Power Supply – Check that when the power switch is on, power is actually being supplied to the mains of the PS. Also check the output. Make sure that the cable from the PS to the motherboard is securely seated. Try reseating if necessary.
5. Bad Component – Disconnect power cables and ribbon cables from the drives, one drive at a time, and try re-powering the system after each drive is disconnected. If the system still fails to power up, try removing each add-in card. (Leave the video card for last)
6. Motherboard Components – Remove and reinstall memory DIMMS, inspect for physical damage. Remove and re-install the heatsink and CPU, check that the CPU fan (if equipped) is connected to the proper terminal on the motherboard. NEVER attempt to power up the system without the heatsink installed. Doing so may cause near instant damage to the CPU.
7. If all of the above fail, then you likely have a defective power supply or defective motherboard. (Neither of which are available for sale as separate components)

Scenario 2 – Power comes on – Screen is dead

1. Monitor – Make sure the monitor is plugged into a good power outlet by testing the outlet with a tester or other known, operating component such as a light. If the cord is not permanently attached to the monitor, make sure it is securely seated in the socket of the monitor. Also, ensure that the monitor is powered up BEFORE the computer is turned on!
2. Connection – Remove the monitor connector from the video card and inspect that none of the pins in the connector are bent over. Note that some missing pins in the 3 row high density connectors are normal. Also make sure of the same connection on the back of the monitor if it is not permanently attached to the monitor.
3. Faulty Monitor – Try another monitor on the system. If this powers up OK, then you have a faulty monitor and it should be replaced. Alternatively, you can try the suspect monitor on another computer. If it still does not power up or display video in that scenario, you have faulty monitor.

Note: *The remainder of these steps requires you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

4. Video Card – Remove and reseat the video adapter, making sure that the hold down screw doesn't cause the back end of the adapter to lift partially out of the connector on the motherboard. If the video adapter card is populated with removable DIMMs, remove and reseat these.
5. Defective or conflicting adapter on bus – Remove any other adapters installed, one by one, rechecking power up after each. Do NOT forget to remove the power to the computer before each removal.

Scenario 3 – Screen Comes On – System Does Not Boot

Note: *The remainder of these steps may require you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

No on-screen messages indicating boot failure:

1. Enter CMOS settings. This is most easily done on a bench away from the press but may also be done with the computer in situ if desired. You will need to connect a standard computer keyboard in place of the control panel as well as a working monitor to perform this operation. Follow the on-screen instructions when the system boots to enter CMOS, but this is usually done by hitting the <DEL> or <F1> key when the system first starts to boot. Select the CMOS option to "Restore Default Settings" or similarly phrased option. Save, then reboot. Enter the CMOS settings screen again. There are only some settings that are changed from the default. (tables listed on pages 20, 21 and 22) NOTE: If you cannot enter CMOS setup, disconnect power and remove all adapter cards from the computer except video and disconnect the drives. If you still cannot access CMOS setup when you reconnect power, then there is some defective hardware such as the motherboard, RAM, or CPU and the computer will need to be replaced.
2. If the system hangs at "Verifying DMI Data Pool", it is usually a motherboard or IDE device problem. Disconnect all IDE drive cables and see if the computer will boot as far as a "Drive Failure" or "No Boot Device" message. If not, then the motherboard is defective and you will need to replace the computer.

Missing Operating System or No Boot Device Message:

1. Make sure that the CF card is fully seated (if so equipped). Try removing the card and re-inserting. Make sure that none of the pins are bent in the reader adapter. (This can easily happen if someone tries to force the CF card in the wrong way.)
2. Make sure the IDE cables are connected to the drives and the motherboard properly by removing them and reseating them. Make sure that the power connectors on the drives are installed properly.
3. If the system still fails to boot with this message, you have a defective HDD, CF card, or CF card reader. You can try another CF card if you have the proper spare, otherwise replace the computer.

NOTE: Replacement CF cards are available from GMI Customer Service. You will need the GMI system number, CQ node ID, and software version.

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WARNING: CF cards are NOT hot swappable. Always power off the computer before removing or inserting a CF card. Failure to do so may cause permanent damage to the CF card, card reader, or motherboard.

Scenario 4 – System Boots – Locks up during or immediately after application starts

1. In some instances, if the OEM console (such as GOSS Ov3) is not communicating, the system will hang with a message that it is writing data to the Color Manager. (Such as updating templates, updating error maintenance log, etc.) To verify that a non-communicating OEM console is not the culprit, modify the last line of the GO.BAT file in the GMI directory of the Host computer. This modification overrides the system parameters of the ColorQuick system and sets it up to NOT look for an OEM console link. The line in the go.bat file will look something like this before modification:
    a. C:\GMI\TNT RR1HOST onpress COMM_DRV CQ1 OP1 **OEM** AQ_BLK_INIT=20 AQ_CYN_INIT=20 AQ_MAG_INIT=25 AQ_YEL_INIT=30
    b. Change this line to look like this: C:\GMI\TNT RR1HOST onpress COMM_DRV CQ1 OP1 **NOOEM** AQ_BLK_INIT=20 AQ_CYN_INIT=20 AQ_MAG_INIT=25 AQ_YEL_INIT=30
    c. Note that the only difference is the change from **OEM** to **NOOEM**. Your original line may or may not have the OEM in it to start with. (This was a requirement in early versions of software, but not required in later versions) If your original line did not have OEM in it, just add NOOEM.
    d. If the system now boots up all the way, then there is a problem with the OEM console not accepting communication from the ColorQuick system. Check all of the cabling to make sure it is connected correctly. If you have a filter computer (required on some Telecolor installations), make sure that it is booted up and running. If none of these things resolve the issue, there is a problem with the OEM ink console communication and must be rectified with your press manufacturer.
    e. If the system still does not boot up, proceed to other troubleshooting steps.

Note: *The remainder of these steps requires you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

2. Unplug power and remove all adapters except video. (Note that if you have an OEM ink console, you should have the NOOEM argument in the go.bat file during these tests) If the system will boot all the way, then one of the adapters may be causing the issue. Replace the cards, one at a time, and power up after each card is added to see which card it may be.
3. In some rare cases, the OS installation may fail repeatedly because a borderline component is suffering heat related failure as the system warms up. This is extremely difficult to troubleshoot with parts to swap out. Go through the steps in Scenario 3 and document all the troubleshooting steps you go through. Try rebooting several times before concluding that you have a heat related failure.

4. In both cases 2 and 3 above, the problem will need to be resolved by replacing the Host computer with another.

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Scenario 5 – System Boots and Runs

If your system boot up goes smoothly, but you have trouble accessing a particular device, the problem is as likely to be software as it is hardware.

Floppy Drive

1. If the activity light on the floppy drive stays lit all the time, the ribbon cable on the drive or the motherboard may be backwards. If that is not the case, then the motherboard drive controller may be bad or the floppy drive may be bad.
2. If the floppy drive is not detected properly by CMOS or recognized by the operating system, either the ribbon cable or power cord may be partially or improperly connected. Or, the motherboard drive controller or floppy drive may be bad.
3. For any problems reading or writing specific disks, either the drive is bad or dirty, or the disk is bad or dirty. There is also a possibility that the floppy drive that wrote the data to the diskette is incompatible with the drive trying to read the diskette due to head alignment issues in either drive.

Hard Drive

1. Any messages indicating a hard drive read or write failure is a hardware error. Try replacing the ribbon cable.
2. If a hard drive is excessively noisy or makes a continual clunking sound, it has suffered internal damage.
3. If these errors persist, either the drive or the IDE controller on the motherboard is bad.

NOTE: GMI / AVT no longer support CQ-DOS Host computers with hard drives. You may not order a new drive, nor may you install your own and ask for support on how to configure it. GMI will not be able to provide support for this action. The computer should be replaced with a new CF version computer or, if the computer is compatible and in good shape, you may be able to send it in for upgrade. Compatibility is determined by the GMI RMA dept. only and not by service personnel.

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Compact Flash Card

1. If you receive a message about a missing OS, the CF card may have come loose in the reader. The CF card is located in the back of the computer and can be accessed externally without opening the computer case. There is a small plunger next to the card and pressing this plunger will push the CF card outward from the card reader. Try removing the card and making sure there is no debris on the edge of the card where it inserts. Also check the pins inside the card reader to make sure none of these were bent over. (This can easily happen if someone tries to force the CF card in the wrong way.)
2. If the above action does not resolve the issue, you may have a faulty CF card. Try using the suspect CF card in a known good computer. If this boots OK, then the problem is in the CF card reader in the problem computer and the computer should be replaced. If the CF card will NOT boot in another known good computer, the problem is the CF card and should be replaced and re-configured.

WARNING: CF cards are NOT hot swappable. Always power off the computer before removing or inserting a CF card. Failure to do so may cause permanent damage to the CF card, card reader, or motherboard.

Network

Note: *These steps require you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

1. If the network adapter does not initialize during the boot cycle, try powering down the computer and reseating the NIC card.
2. If this does not work, try removing all other adapter cards, except video, from the computer and try again.
3. If the NIC still does not initialize during the boot process, try putting it into another slot on the motherboard.
4. If you still have a problem getting the NIC to initialize, you probably have a defective NIC. Try running the Test for a Replacement Computer which performs basic NIC tests.

Video

1. If the screen seems jumpy, particularly from a distance, it could be the monitor itself. Try replacing with a known good one to see if the problem persists.
2. In the case of CRT screens, there could be some electrical or magnetic interference from nearby electrical equipment such as a transformer, cell phone, etc. In office and factory environments, even electrical wiring in walls carrying high currents can cause interference.

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VGA

The VGA drivers are loaded via the software executable and are not located on the drive anywhere. The VGA drivers *cannot* be changed to accommodate other VGA cards, etc.

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CMOS Settings for ColorQuick Host Computers

APC Raptor AT Based Computers

Main Menu	**CQ Host – (185-xx, 213-xx, 262-xx)**
1. Enter Setup by pressing <**DEL**> key at start-up 2. From Main Menu, load default settings by selecting "**Auto Configuration with Optimal Settings**" line. 3. Perform the changes as indicated in the table below. Only the settings in the table below require attention, all other settings are set to defaults. 4. Select "**Save Settings and Exit**" and answer "**Yes**" to save changes.	
Standard CMOS Setup	
Date / Time	Set to current date and time
Floppy B:	1.44MB 3 ½
Advanced CMOS Setup	
Quick Boot	Enabled
3rd Boot Device	Disabled
PS/2 Mouse Support	Disabled
System Keyboard (***Note 2***)	Absent
Hit "DEL" Message Display	Disabled
Power Management Setup	
Power Management Mode	Disabled
PCI / Plug and Play Setup	
Plug and Play Aware O/S	YES
IRQ 3	PCI/Pnp
IRQ 5	ISA/EISA
IRQ 10	ISA/EISA
Reserved Memory Size (***Notes 5 & 6***)	64K
Reserved Memory Address (***Note 5***)	C8000
Peripheral Setup	
OnBoard Serial Port 2	Auto
Notes: 2) System keyboard is required if CMOS settings are lost; BIOS is set to absent (Keyboard DOES work if present) 5) Reserved Memory Size of 64K and Reserved Memory Address of C8000 does not allow use of 3C905CX-TX-M PCI Ethernet NIC with managed PC boot agent (BIOS) This setting with this PCI NIC places the NIC's BIOS @ C8000 and conflicts with any computer using a Digi-board. 6) Reserved Memory Size of 96K is not available. This includes "Evaluation" BIOS (though set to 96K only 64K is actually reserved)	

Table A

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Advanced/ZE Pentium System Computers

	CQ Host – (140-01)
1. Main Setup At boot-up, Press <F1> after the memory test to enter CMOS setup. Press <F5> to set up defaults.	
Set the date to current	✓
Set the time to current	✓
Select Floppy Options and set floppy B to 1.44MB, 3.5”	✓
Select “Boot Options” and…	
Disable “Third Boot Device”	✓
Set NUM LOCK	ON
Disable “Setup Prompt”	✓
2. Advanced Peripheral Setup:	
Select Advanced Peripheral Configuration	✓
Set Configuration Mode to Manual	✓
Disable Primary and Secondary IDE Ports	NO
Disable Serial Port 2 (Note 3)	NO
3. Advanced Power Management	
Select Advanced Power Management and change to DISABLED	✓
4. Advanced Plug & Play	
Select Advanced Plug & Play Configuration	✓
Select ISA shared memory size and set to 96KB	✓
Set IRQs for use by ISA cards (***Notes 2 & 3***)	IRQ 5, 10, 11, 12
5. Save	
Push <F10> to Save and EXIT. Push ENTER to EXIT SAVING CHANGES.	✓

Notes:
2) PCI Ethernet cards require IRQ 11 setting of “Available” instead of “Used by ISA Card”.
3) Touchscreens require on-board serial Port 2 ENABLED and IRQ 3 setting of “Available”.

Table B

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486 DX2/66 System Computers

	CQ Host – (140-xx)
1. Main Setup At boot-up, push <F1> after the memory test to enter CMOS setup. Push <F5> to set up defaults.	
Set the current date	✓
Set the current time	✓
Set floppy B to 1.44MB, 3.5”	✓
Select Boot Options and disable the setup prompt	✓
2. Advanced Peripheral Setup	
Select Advanced Peripheral Configuration	NO
Set Configuration Mode to Manual	NO
Disable IDE port	NO
Disable Serial Port 2	NO
3. Advanced Chipset Setup	
Select Advanced Chipset Config and push ENTER	✓
Select Scan User Flash Area and push ENTER. Then select ENABLED and push ENTER.	✓
4. Advanced Power Management	
Select Advanced Power Management and change to ENABLED	NO
Change IDE Power Down to ENABLED	NO
Set Inactivity Timer to 1 minute	NO
5. Advanced Plug & Play	
Select Advanced Plug & Play Configuration	✓
Select ISA shared memory size and set to 96KB, then….	✓
Set ISA shared memory base to C8000h	✓
Set IRQs for ISA cards	IRQ 10 & 11
6. Save	
Push <F10> to Save & EXIT. Push ENTER to EXIT SAVING CHANGES.	✓

Table C

8. Touch Screens

1. It should be noted that for a touch screen to work, certain drivers get loaded at the time the Host boots up. In order for these drivers to get loaded, the Host must FIRST find, and initialize, a MOUSE. In most cases, this is the square silver device with a black rubber pad used as a pointing device. We affectionately call it a “rat”. Most times it can be found stuffed inside the console, unused. Earlier systems had a trackball, but this pointing device has not been available for many years. If this mouse is not connected OR if it is not working, then the touch screen drivers will NOT load and the touch screen will not work.
2. If a touch screen is not working, the most likely failure is the serial interface in the touch screen itself OR the serial port of the computer it is connected to. If the touch screen in question has been functioning previously, then it is very unlikely that the problem would be the cable unless it has suffered some physical damage but it should be checked anyway.
3. If the touch is not working at all, find the rat (or mouse) and see if that device will move the pointer around the screen. If it does, move on to other troubleshooting steps. If it does not, then the defective pointing device is the problem. Replace it with a known good one and then reboot the computer. Both mouse and touch screen should now work.
4. If the mouse worked OK in #3 above, then the problem is either the serial port on the computer or the serial controller in the touch screen. Try another touch screen on the system in question or try the suspect touch screen on another known good system that uses a touch screen. This process of elimination will clearly identify either a faulty touch screen or a faulty Host computer.

Note: The monitor **MUST** be powered up before the Host computer is started. This must be done to initialize the serial controller of the monitor before the Host computer tries to communicate with it. Failure to have the monitor powered up prior to booting the Host computer will result in a failure to communicate.

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Touch Screen Calibration

Note: Prior to performing any touch screen calibration, make sure that monitor auto calibration has been performed. Once the LCD monitor power is turned on, and video and serial touch screen cables are connected to an operating computer, push the **Menu** button on the front or right hand side of the monitor. Select **Auto adjust** and confirm it following the instructions which will adjust the screen. Older CRT touch screen monitors may require manual adjustments of vertical and horizontal widths.

1. Exit ColorQuick by pushing **system** on the control panel, then touching **Exit** following the prompts.
2. Type **cd\touch** and push **ent**. (The "\" key is the blank upper left key on the keypad.)
3. Type **elocalib** and push **ent**. The Elocalib screen appears.
4. Using the arrow keys, scroll down to **0101 VESA Graphics 640 x 480 256 Colors** and push **ent**.
5. Push **C** on the control panel to calibrate in this mode.
6. When you are presented with a red crosshair target on the upper left of the screen, touch the target very accurately with your finger. Once you have done this, a new target appears at the bottom right corner of the screen. Again, touch that target. A third target appears in the top right corner. Touch this one also.
7. When you are returned to the original Elocalib screen, push **S** to save the calibration as indicated at the bottom of the screen.
8. The next screen asks, "Save points to file?" Touch **Yes** on the screen.
9. At the "File name" prompt, push **ent**.
10. At the "Update AUTOEXEC" prompt, touch **Yes** on the screen.
11. At the "File name" prompt, push **ent**.
12. Calibration is complete. To return to ColorQuick, type **cd\gmi** and push **ent**. Type **go**, then push **ent**.

Note: If you experience problems with orientation, the touch screen appears to work backwards, or the mouse does not follow your finger on the ColorQuick screen, perform the following steps:

1. From the ColorQuick Host DOS prompt, type **cd c:\touch** and then run **democal.bat**.
2. Reboot the ColorQuick Host computer and run the ColorQuick application.

The touch screen should work properly now without being center-weighted at the far edges of the display.

9. Control Panel

The control panel gives direct access to some functions that might normally take a few button pushes to get to. For example, you can get directly to the upper color bar in the form setup by pushing the "**Top Color Bar**" button. Otherwise, you would have to access this screen by going to the form setup screen first.

The control panel will beep and a light will flash in the lower right corner (above the "**DISPLAY**" button) when a button is pressed. The beep may be hard to hear in some pressrooms.

Many times when there are issues with the control panel, they can be easily resolved by loosening up the nuts that hold the control panel to its frame. As the temperature of the control panel changes, it needs to be able to expand and contract. If the mounting nuts are holding the panel too tightly, the panel can start to warp and cause contact, or intermittent contact, of various portions of the assembly. This can make the control panel appear unresponsive, even though the light may blink and you might hear the beep. Turn off the power to the computer before working on the control panel.

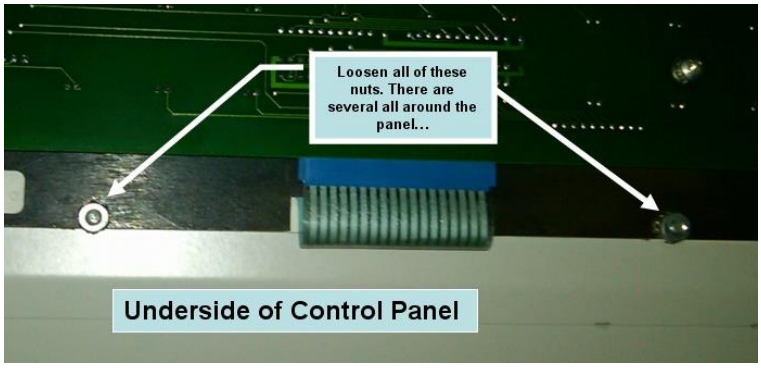

Fig. 13

If the panel fails to initiate on boot up after loosening the mounting nuts, try these steps:

1. Turn off the computer.
2. Unplug the cable from the panel jack and plug in a known, working, standard keyboard* to the cable extension.
3. Reboot the computer.
    a. If this works, you have a bad panel or it may need to have the mounting loosened as outlined above.
    b. If this still does not work, you may have a bad cable or bad keyboard controller on the motherboard. Proceed to Step 4.
4. Remove the original panel cable extension from between the standard keyboard and the computer. Plug the standard keyboard directly to the computer and reboot.
    a. If the keyboard is now recognized, you have a bad cable extension.
    b. If the keyboard still does not work, you have a faulty keyboard controller on the motherboard and will need to replace the computer. **

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***Note:** you may need an adapter if your standard keyboard has a PS/2 connector as most Host computers have an AT style keyboard connector.

**** Note:** Make sure you double check the mounting nuts of the control panel BEFORE installing a new computer. Failure to do so "may" blow the keyboard controller on your replacement PC.

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Testing a Control Panel

There is a test disk, GMI Part #061G100027-02, that you can boot up on and test the function of the control panel. This disk can be ordered via GMI Parts Dept. To use:

1. Exit the ColorQuick system normally through the system menu, if possible.
2. With the CQ Host computer off, place the test disk into the A drive of the Host computer. (This is the left floppy drive)
3. Turn on the Host computer and let it complete the boot process until you see the message “Keyboard Test” on the monitor.
4. Press every button on the control panel, one at a time, and the monitor will display the correct key name for each key.
5. Verify that the correct key name appears on the monitor, the panel beeps, and if applicable, any adjacent red lights light up with each key pressed.

NOTE: Pressing the CANCEL key will exit the program. If you accidentally press this, but want to continue the test, you can either reboot the computer or type **CQBUTTON** at the DOS prompt or press **ENTER**. This will restart the application for the button test.

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Working with a standard keyboard

If necessary, you can work with a standard keyboard temporarily while waiting for a replacement control panel. Here is a conversion list of the various keyboard commands:

Panel Function	Keyboard Comb.	Panel Function	Keyboard Comb.
Form	Ctrl j	Yes	Alt y
Results	Ctrl g	No	Alt n
System	Ctrl d	Cancel	Alt q
New	Ctrl n	Done	Ctrl x
Recall	Ctrl r	Ok	Alt * (on keypad)
Preset	Ctrl u	Show More	Alt + (on keypad)
Save	Alt e	Left	Left arrow
End	Ctrl e	Right	Right arrow
Confidence Display	Alt F1	Up	Up arrow
By-Key Display	Alt F2	Down	Down arrow
Dens. Trend Display	Alt F3	Edit Left	Shift `
Dot Gain Trend Display	Alt F4	Edit Right	Shift ‘ (End quote)
Contrast Trend Display	Alt F5	Saleable Sheet	Alt \
Dens. Numeric Display	Alt F6	Target Density	Alt b
Calc Numeric Display	Alt F7	Erase Sample	Alt z
Contrast Numeric Disp.	Alt F8	Color OK	Alt ` (By 1)
Toggle	Alt F9	Note	Ctrl o (letter o)
Select Sample	Alt F10	Flag Sample	Ctrl PageUp
Web 1 Top	Shift F2	Scan ALL	Alt t
Web 1 Bottom	Ctrl F2	Scan	Alt r
Web 2 Top	Shift F4	Display	Alt j
Web 2 Bottom	Ctrl F4	Help	Alt 0 (Zero)
AQ Correct	Ctrl F8	Tutor	F1
Blank	Ctrl F9	Undo	Alt z
Web Width	Alt , (comma)	Erase	Ctrl End
Large Up	Page Up	Large Down	Page Down
Top Template	Alt p	Bottom Template	Alt g
Top Inks	Alt a	Bottom Inks	Ctrl q
Top Color Bar	Alt s	Bottom Color Bar	Alt o (letter o)

10. OP Computer – (On Press)

The ColorQuick OP computer is a DOS based computer. The newest versions of this hardware run with CF cards. (Older revisions use a HDD) The CF cards contain the operating system as well as all necessary configuration files and applications needed to operate the ColorQuick OP. Under normal conditions, the OP boots from the CF card. Each OP computer will contain several proprietary add-in cards and a NIC card.

There are also various generations of OP computers. Not all generations of OP computers are compatible with all versions of software. These generations are denoted by the "model number". The model number can be found on a silver label on the back of the computer. All OP computers start with model numbers of 090G100xxx-xx. The first 3 digits after 090G100 are the generation of the computer. As of this writing, the following are valid generations:

- 090G100150-xx
- 090G100187-xx
- 090G100192-xx
- 090G100193-xx
- 090G100199-xx
- 090G100208-xx
- 090G100210-xx

- 090G100228-xx
- 090G100229-xx
- 090G100238-xx
- 090G100239-xx
- 090G100264-xx
- 090G100265-xx

All versions of software are capable of running the first eleven generations shown above. However, to run a 090G1002624-xx or 265-xx generation of OP, you MUST have v4.0 software or greater. This generation of hardware has components that require specific drivers that only the new software has. You cannot run software older than v4.0 on this generation of OP computer. The required drivers are IN the software executables and not available to load separately.

The OP has a floppy disk drive. Under normal circumstances, there should be NO DISK in this drive. It is only used for re-configuring with a configuration disk or for loading files to the HDD or CF card.

The final two digits of the model number (after the dash) denote the configuration of the hardware. There are different models based on physical characteristics of the computer having feet, no feet, hanging bars, right to left, left to right, etc. There are other models based on characteristics of image processor boards, servo drive chips, and other electronic board differences. If you are in doubt about the compatibility of two computers, please call GMI Tech Support to verify compatibility. Have your system number and software version handy before calling. There are over 90 different model / configurations of OP computers in existence as of this writing.

NOTE: There are also some versions of the above model numbers that start with 090G10**P**xxx-xx. The "**P**" instead of the zero denotes a computer with a perforated cover. These are used only in locations where excessive ambient temperatures require their use. It should be noted that not all locations are suitable for perforated cover. Only those locations where no excessive dust or any liquids may enter the computer case should be considered for a perforated cover installation,

specifically only those instances where the computer hangs or is otherwise mounted on its side in some fashion.

Here is a picture of the back of a sample OP computer that identifies the various cards.

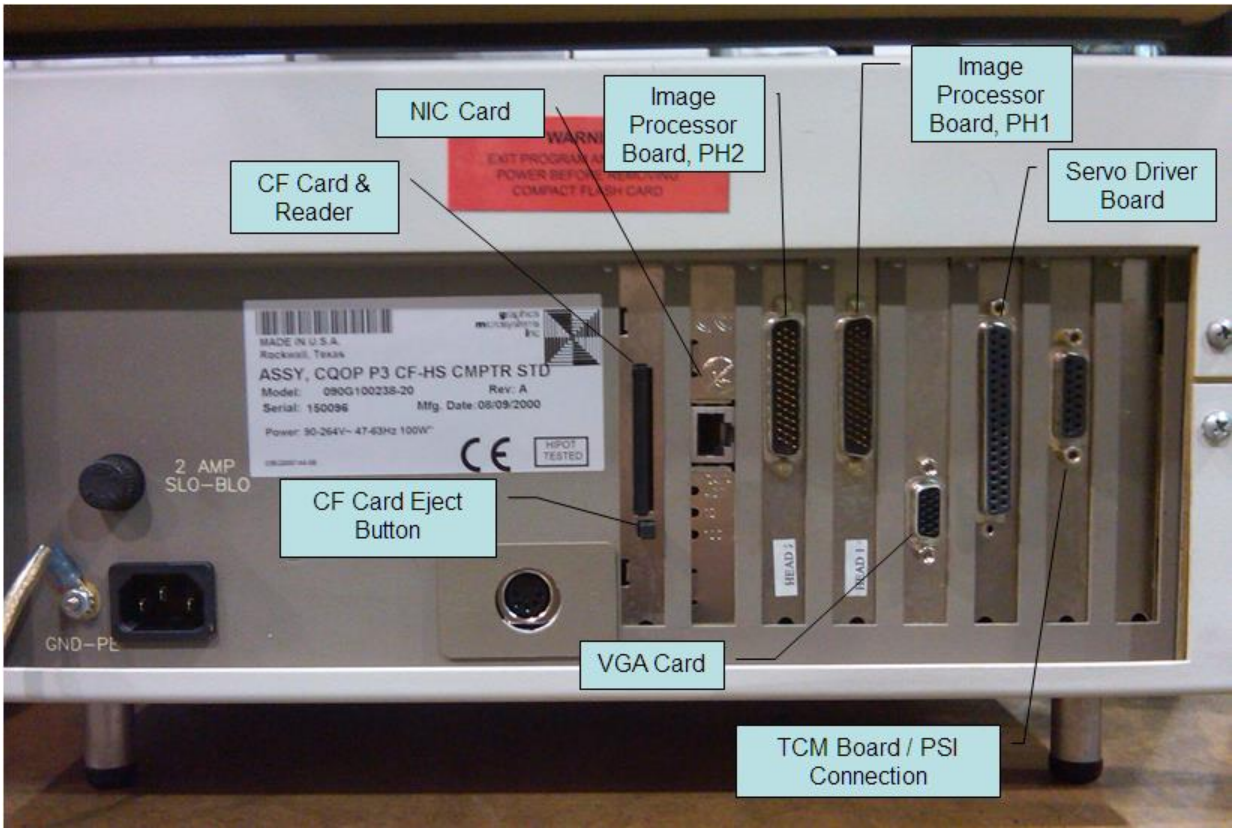

Fig. 14

- The Ethernet cable connects to the NIC card
- The white ribbon cable for Probe Head 2 connects to the image processor board.
- The white ribbon cable for Probe Head 1 connects to the image processor board.
- A monitor can connect to the VGA card.
- The black ribbon cable from the servo interconnect board connects to the servo driver board on the OP.
- The (typically) gray cable from the PSI board connects to the TCM board.

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There are several scenarios that may present themselves to indicate trouble with an OP computer and they are as follows.

Scenario 1 – No Power

1. Fuse – There is a fuse holder on the back of the computer. Remove it to see if it has blown. If you are unsure, use a continuity meter to verify. Replace if blown.
2. Main Power Supply – Make sure the power cord is fully inserted into the back of the computer. This IEC connector can sometimes make the cord look like it is plugged in but in reality can be loose and not making any connection. Do not neglect to make sure that the power outlet is actually live by checking it with a meter or other tester. If your system has an isolation transformer, make sure that both input and output sides of this are actually live. All of this may sound simple, but it is surprising the number of people that merely assume this is all correct.

Note: *The remainder of these steps requires you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

3. Switch - Perhaps the power switch in the front panel is faulty. Use a continuity checker to check the switch. Note that sometimes the green light on these switches may not illuminate, even if the switch is still fully functional.
4. Computer Power Supply – Check that when the power switch is on, power is actually being supplied to the mains of the PS. Also check the output. Make sure that the cable from the PS to the motherboard is securely seated. Try reseating if necessary.
5. Bad Component – Disconnect power cables and ribbon cables from the drives, one drive at a time, and try re-powering the system after each drive is disconnected. If the system still fails to power up, try removing each add-in card. (Leave the video card for last)
6. Motherboard Components – Remove and reinstall memory DIMMS, inspect for physical damage. Remove and re-install the heatsink and CPU, check that the CPU fan (if equipped) is connected to the proper terminal on the motherboard. NEVER attempt to power up the system without the heatsink installed. Doing so may cause near instant damage to the CPU.
7. If all of the above fail, then you likely have a defective power supply or defective motherboard. (Neither of which are available for sale as separate components)

Scenario 2 – Power comes on – Screen is dead

1. Monitor – Make sure the monitor is plugged into a good power outlet by testing the outlet with a tester or other known, operating component such as a light. If the cord is not permanently attached to the monitor, make sure it is securely seated in the socket of the monitor.
2. Connection – Remove the monitor connector from the video card and inspect that none of the pins in the connector are bent over. Note that some missing pins in the 3 row high density connectors are normal. Also make sure of the same connection on the back of the monitor if it is not permanently attached to the monitor.
3. Faulty Monitor – Try another monitor on the system. If this powers up OK, then you have a faulty monitor and it should be replaced. Alternatively, you can try the suspect monitor on another computer. If it still does not power up or display video in that scenario, you have faulty monitor.

Note: *The remainder of these steps requires you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

4. Video Card – Remove and reseat the video adapter, making sure that the hold down screw doesn't cause the back end of the adapter to lift partially out of the connector on the motherboard. If the video adapter card is populated with removable DIMMs, remove and reseat these.
5. Defective or conflicting adapter on bus – Remove any other adapters installed, one by one, rechecking power up after each. Do NOT forget to remove the power to the computer before each removal.

Scenario 3 – Screen Comes On – System Does Not Boot

Note: *The remainder of these steps may require you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

No on-screen messages indicating boot failure:

1. Enter CMOS settings. This is most easily done on a bench away from the press but may also be done with the computer in situ if desired. You will need to connect a standard computer keyboard as well as a working monitor to perform this operation. Follow the on-screen instructions when the system boots to enter CMOS, but this is usually done by hitting the <DEL> or <F1> key when the system first starts to boot. Select the CMOS option to "Restore Default Settings" or similarly phrased option. Save, then reboot. Enter the CMOS settings screen again. There are only some settings that are changed from the default. (tables listed on pages 35, 36 and 37) NOTE: If you cannot enter CMOS setup, disconnect power and remove all adapter cards from the computer except video and disconnect the drives. If you still cannot access CMOS setup when you reconnect power, then there is some defective hardware such as the motherboard, RAM, or CPU and the computer will need to be replaced.
2. If the system hangs at "Verifying DMI Data Pool", it is usually a motherboard or IDE device problem. Disconnect all IDE drive cables and see if the computer will boot as far as a "Drive Failure" or "No Boot Device" message. If not, then the motherboard is defective and you will need to replace the computer.

Missing Operating System or No Boot Device Message:

1. Make sure that the CF card is fully seated (if so equipped). Try removing the card and re-inserting. Make sure that none of the pins are bent in the reader adapter. (This can easily happen if someone tries to force the CF card in the wrong way.)
2. Make sure the IDE cables are connected to the drives and the motherboard properly by removing them and reseating them. Make sure that the power connectors on the drives are installed properly.

If the system still fails to boot with this message, you have a defective HDD, CF card, or CF card reader. You can try another CF card if you have the proper spare, otherwise replace the computer.

NOTE: Replacement CF cards are available from GMI Customer Service. You will need the GMI system number, CQ node ID, and software version.

WARNING: CF cards are NOT hot swappable. Always power off the computer before removing or inserting a CF card. Failure to do so may cause permanent damage to the CF card, card reader, or motherboard.

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Scenario 4 – System Boots and Runs

If your system boot up goes smoothly, but you have trouble accessing a particular device, the problem is as likely to be software as it is hardware.

Floppy Drive

1. If the activity light on the floppy drive stays lit all the time, the ribbon cable on the drive or the motherboard may be backwards. If that is not the case, then the motherboard drive controller may be bad or the floppy drive may be bad.
2. If the floppy drive is not detected properly by CMOS or recognized by the operating system, either the ribbon cable or power cord may be partially or improperly connected. Or, the motherboard drive controller or floppy drive may be bad.
3. For any problems reading or writing specific disks, either the drive is bad or dirty, or the disk is bad or dirty. There is also a possibility that the floppy drive that wrote the data to the diskette is incompatible with the drive trying to read the diskette due to head alignment issues in either drive.

Hard Drive

1. Any messages indicating a hard drive read or write failure is a hardware error. Try replacing the ribbon cable.
2. If a hard drive is excessively noisy or makes a continual clunking sound, it has suffered internal damage.
3. If these errors persist, either the drive or the IDE controller on the motherboard is bad.

NOTE: GMI / AVT no longer support CQ-DOS OP computers with hard drives. You may not order a new drive, nor may you install your own and ask for support on how to configure it. GMI will not be able to provide support for this action. The computer should be replaced with a new CF version or, if the computer is compatible and in good shape, you may be able to send it in for upgrade. Compatibility is determined by the GMI RMA dept. only and not by service personnel.

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Compact Flash Card

1. If you receive a message about a missing OS, the CF card may have come loose in the reader. The CF card is located in the back of the computer and can be accessed externally without opening the computer case. There is a small plunger next to the card and pressing this plunger will push the CF card outward from the card reader. Try removing the card and making sure there is no debris on the edge of the card where it inserts. Also check the pins inside the card reader to make sure none of these were bent over. (This can easily happen if someone tries to force the CF card in the wrong way.)
2. If the above action does not resolve the issue, you may have a faulty CF card. Try using the suspect CF card in a known good computer. If this boots OK, then the problem is in the CF card reader in the problem computer and the computer should be replaced. If the CF card will NOT boot in another known good computer, the problem is the CF card and should be replaced and re-configured.

NOTE: Replacement CF cards are available from GMI Customer Service. You will need the GMI system number, CQ node ID, and software version.

WARNING: CF cards are NOT hot swappable. **ALWAYS** power off the computer before removing or inserting a CF card. Failure to do so may cause permanent damage to the CF card, card reader, or motherboard.

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CMOS Settings for ColorQuick OP Computers

APC Raptor AT Based Computers

Main Menu	**CQ OP – (187-xx, 192-xx, 238-xx, 239-xx, 264-xx, 265-xx)**
5. Enter Setup by pressing <**DEL**> key at start-up 6. From Main Menu, load default settings by selecting "**Auto Configuration with Optimal Settings**" line. 7. Perform the changes as indicated in the table below. Only the settings in the table below require attention, all other settings are set to defaults. 8. Select "**Save Settings and Exit**" and answer "**Yes**" to save changes.	
Standard CMOS Setup	
Date / Time	Set to current date and time
Floppy B:	N/A (Not installed)
Advanced CMOS Setup	
Quick Boot	Enabled
3rd Boot Device	Disabled
PS/2 Mouse Support	Disabled
System Keyboard (***Note 2***)	Absent
Hit "DEL" Message Display	Disabled
Power Management Setup	
Power Management Mode	Disabled
PCI / Plug and Play Setup	
Plug and Play Aware O/S	YES
IRQ 3	ISA/EISA
IRQ 5	ISA/EISA
IRQ 10	ISA/EISA
Reserved Memory Size (***Notes 5 & 6***)	64K
Reserved Memory Address (***Note 5***)	C8000
Peripheral Setup	
OnBoard Serial Port 2	Disabled
Notes: 2) System keyboard is required if CMOS settings are lost; BIOS is set to absent (Keyboard DOES work if present) 5) Reserved Memory Size of 64K and Reserved Memory Address of C8000 does not allow use of 3C905CX-TX-M PCI Ethernet NIC with managed PC boot agent (BIOS) This setting with this PCI NIC places the NIC's BIOS @ C8000 and conflicts with any computer using a Digi-board. 6) Reserved Memory Size of 96K is not available. This includes "Evaluation" BIOS (though set to 96K only 64K is actually reserved)	

Table D

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Advanced/ZE Pentium System Computers

	CQ OP – (150-02)
2. Main Setup At boot-up, Press <F1> after the memory test to enter CMOS setup. Press <F5> to set up defaults.	
Set the date to current	✓
Set the time to current	✓
Select Floppy Options and set floppy B to 1.44MB, 3.5"	Deselect Drive B
Select "Boot Options" and…	
Disable "Third Boot Device"	✓
Set NUM LOCK	OFF
Disable "Setup Prompt"	✓
2. Advanced Peripheral Setup:	
Select Advanced Peripheral Configuration	✓
Set Configuration Mode to Manual	✓
Disable Primary and Secondary IDE Ports	NO
Disable Serial Port 2 (Note 3)	✓
3. Advanced Power Management	
Select Advanced Power Management and change to DISABLED	✓
4. Advanced Plug & Play	
Select Advanced Plug & Play Configuration	✓
Select ISA shared memory size and set to 96KB	✓
Set IRQs for use by ISA cards (***Notes 2 & 3***)	IRQ 3, 5, 10, 11, 12
5. Save	
Push <F10> to Save and EXIT. Push ENTER to EXIT SAVING CHANGES.	✓

Notes:
2) PCI Ethernet cards require IRQ 11 setting of "Available" instead of "Used by ISA Card".
3) Touchscreens require on-board serial Port 2 ENABLED and IRQ 3 setting of "Available".

Table E

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486 DX2/66 System Computers

	CQ OP – (150-xx)
1. Main Setup At boot-up, push <F1> after the memory test to enter CMOS setup. Push <F5> to set up defaults.	
Set the current date	✓
Set the current time	✓
Set floppy B to 1.44MB, 3.5”	Deselect Drive B
Select Boot Options and disable the setup prompt	✓
2. Advanced Peripheral Setup	
Select Advanced Peripheral Configuration	NO
Set Configuration Mode to Manual	NO
Disable IDE port	NO
Disable Serial Port 2	NO
3. Advanced Chipset Setup	
Select Advanced Chipset Config and push ENTER	✓
Select Scan User Flash Area and push ENTER. Then select ENABLED and push ENTER.	✓
4. Advanced Power Management	
Select Advanced Power Management and change to ENABLED	NO
Change IDE Power Down to ENABLED	NO
Set Inactivity Timer to 1 minute	NO
5. Advanced Plug & Play	
Select Advanced Plug & Play Configuration	✓
Select ISA shared memory size and set to 96KB, then….	✓
Set ISA shared memory base to C8000h	✓
Set IRQs for ISA cards	IRQ 10 & 11
6. Save	
Push <F10> to Save & EXIT. Push ENTER to EXIT SAVING CHANGES.	✓

Table F

11. Using the ColorQuick Recovery Disk

A replacement computer has minimal files on the CF card when it arrives at your plant. It will NOT have sufficient files on it to work in your system since each computer needs a specific configuration to work in a given location. GMI has provided you with a ColorQuick Recovery Disk for each of your ColorQuick systems. They are often stored on your Color Manager as "disk images" as well. Use these disks to configure a spare or replacement Host or On-Press computer for use in a given system. Each disk is labeled with the site number of the system, the ColorQuick number, and some press-specific information. **NOTE:** *The SAME disk is used to configure either the Host or the OP computer for a given node!*

IMPORTANT: *Failure to follow this procedure may result in a computer that is improperly configured and MAY shut down other GMI equipment on the same network. Further, you may corrupt valuable system files in place on the Color Manager and your only recourse to repair this may be to contact GMI Service for assistance. This may or may not eventually lead to a billable Service Call with a technician needing to visit your site to repair the damage. If you do NOT have these recovery disks, please contact GMI Service before attempting replacement of any computer.*

Please follow these steps to configure the replacement computer.

1. Verify that your Color Manager has the Hostback and/or OPback directories. If they do not exist, STOP, and contact GMI Customer Service.

2. Turn off and then remove the existing (failed) computer. Make a note of how the cables are connected.

3. Install the new computer and connect all the cables. **Do not turn on the power.**

4. Insert the correct disk for the given system.

5. Turn the power on and watch the disk drive light. After about 10 seconds, the light will come on and stay on for 30 seconds to 2 minutes. Once the light goes out, wait 10 seconds to make sure there is no further activity on the disk, then power down the computer.

6. Remove the disk and then reboot the computer. The replacement computer will run the same configuration and software as the previous one.

How These Disks Work

There are NO specific configuration files on the recovery disks themselves. The actual configuration files required to restore the Host or OP computer are stored on the Color Manager, typically in a sub-directory of the CQ_DATA directory. There should be two of these sub-directories, one is called HOSTBACK and the other is called OPBACK. Within these directories are more sub-directories, one for each CQ node. The reason these files are NOT on the configuration disk is that they will not all fit on a floppy disk. In order for the configuration disks to work, the computer must be connected to the network so that the actual configuration files can be retrieved from the Color Manager. When the computer boots up on these configuration disks, the program looks to see if the computer

requiring configuration is a Host or OP computer. Then the program looks to see which CQ node ID the disk is configured for as well as the computer name of the Color Manager. Once all of the necessary information is found on the Color Manager in the proper directory, those files are transferred to your replacement computer.

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What To Do If The ColorQuick Recovery Disk Fails

If the Recovery Disk fails due to network problems, etc., you can always manually copy the required files from the Color Manager's Hostback or OPback directories* to the CF card using a CF card reader. (*Typically D:\CQ_DATA\Hostback\CQx, or D:\CQ_DATA\OPBack\CQx)

1. Plug the CF card reader into the USB port of the Color Manager computer.
2. Insert the CF card into the reader. It should be recognized by the Operating System as a drive letter.
3. If the CF card belongs to a Host computer, continue with the Step 4 and manually copy the following files to the appropriate directories on the CF card. If the CF card belongs to an OP computer, skip to the next Section entitled "**OP Computer**". There are at least 28 different files that need to be copied to the CF card of a Host computer. (Some versions of software may have more)
4. **Root Directory** of the **C drive**:
    a. *Autoexec.bat*
    b. *Config.sys*
5. **C:\DOS** Directory
    a. Himem.sys
6. **C:\NET** Directory
    a. System.ini
    b. Protocol.ini
7. **C:\GMI** Directory
    *a. Go.Bat **
    b. CGA80WOA.FON
    c. *CQ####.sys* (where #### is your 4 digit system number)
    d. Colorbar.sys
    e. Inks.sys
    f. Options.sys
    g. Precal.sys
    h. Rules.sys
    i. Spectral.sys
    j. Web_Ref.sys
    k. *Active.sys*
8. **C:\DIGI** Directory
    a. Xidos5.sys
    b. *Xim232.sys*
9. **C:\TOUCH** Directory
    a. Elograph.cal
10. These files need to be UNZIPPED before they are copied to the CF card. HOSTSOFT.zip will contain the following files and they all need to be put in the **C:GMI** Directory:
    a. rr1host.exp
    b. *As10lang.*** (Note, there will be more than 1 As10lang.*** file…they ALL need to be transferred. There are typically at least 8 files w/ this name, but different extensions.)

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** - A note about the **GO.BAT** file. There are **TWO** of these files on the CF card. One is in the root directory and one is in the C:\GMI Directory. **THEY ARE NOT THE SAME FILE!** Do not mix these up.*

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OP Computer

1. Copy the following files to the appropriate directories on the CF card. There are 7 different files that need to be copied.
2. **Root Directory** of the **C: Drive:**
    a. *Autoexec.bat*
    b. *Config.sys*
3. **C**:**\NET** Directory
    a. *System.ini*
    b. *Protocol.ini*
4. The following files need to be UNZIPPED before they are copied to the CF card. OP_SOFT.zip will contain the following files and they all need to be put in the **root directory** of the CF card.
    a. *Op1main.exe*
    b. *Messages.bin*
    c. *FgKernel.asc*

12. On Press Module – (OPM)

There are several components all within the on press module. These include, but are not limited to, the following:

1. OP Computer
2. Servo Drives
3. Probe Heads & Carriages
4. Press Signal Interface Board
5. Servo Interconnect Board
6. Isolation Transformer
7. Calibration Plaques
8. Power supply
9. PH Beams
10. White Ribbon Cables
11. Various interconnecting cables.
12. Read Rollers
13. Guarding, etc.

As nearly all of these components are interrelated to each other, a failure on one component can easily mimic a failure in another component. This can make troubleshooting these components individually very problematic as there are very few "static" tests that can be done without extensive tools and lab equipment to perform these tasks. This is why you will often find tech support specialists asking you to swap major components with known good components to try to narrow in on the most likely suspect component. Some of these tactics will be brought out here, but we will also attempt to define how the components interact so that the troubleshooter may apply their own logic.

The OPM receives power to the terminal strip usually found at the bottom of the OP cabinet. (See Fig. 16 for a typical "generic" wiring schematic.) From there, it splits off to power a couple of power supplies as well as an isolation transformer. The isolation transformer supplies power to the OP computer. The large 24V power supply provides power to the servo drives and safety relay / circuit. The smaller, DIN rail mounted, 24V power supply provides power to the press events. When the OPM door is opened or if a mushroom button on the module is depressed, the power is cut to the OP computer only! Power is still live inside the cabinet. Whenever work is performed on the OPM, you should turn off the mushroom button before opening the OPM door. If the work is more involved than just cleaning the PH, cal plaque, or some very basic troubleshooting on the OP computer, then you should turn off the main power supply to the cabinet as well. **WARNING:** ***The mushroom button on the outside of the cabinet should ALWAYS be OFF when closing the OPM door to avoid rapid power cycling of the OP computer if the door opens and closes quickly and repeatedly on the safety door switch.***

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OPM Initialization

When an OPM starts up, the OP computer boots and will initialize the servo drives and probe heads. When power is first applied, there is an LED on each servo drive that will be red. Once the servos receive a command from the OP to initialize, this LED will turn green. (See Fig. 15) The first servo drive should move the PH slightly toward the direction of the middle of the web (away from the servo drive), then abruptly stop and start moving back toward the servo drive. (Home) The PH carriage will reach the near limit switch and stop, and then the servo drive will abruptly drive the PH over the calibration plaque. Then the same procedure will occur on the other PH. Then the first PH will be positioned over the white tile and you should see some flashing light. The same will then happen for the other PH. That completes the initialization process. If this does not happen, then the OPM is not ready to go and you will not be able to scan.

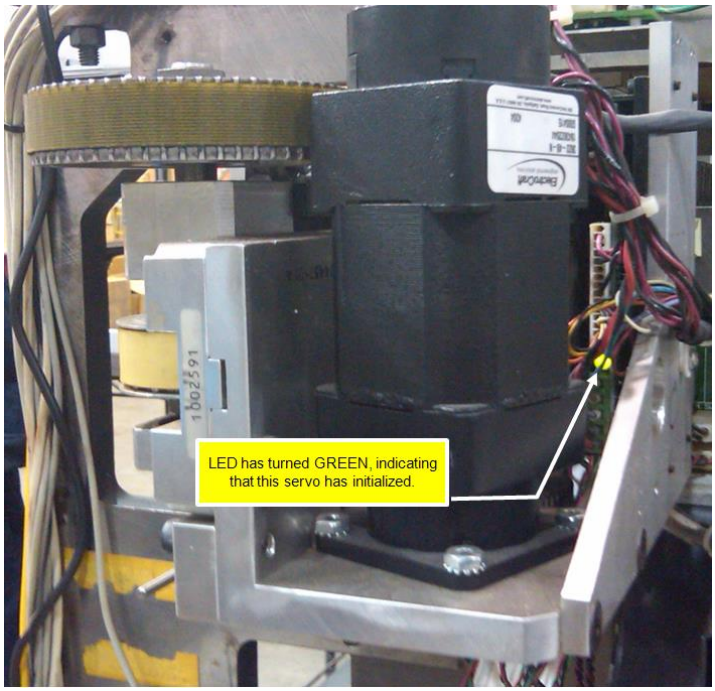

Fig. 15

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Typical OP Wiring Reference Drawing

Please note that this is only a typical diagram. Your OP may or may not follow this wiring exactly.

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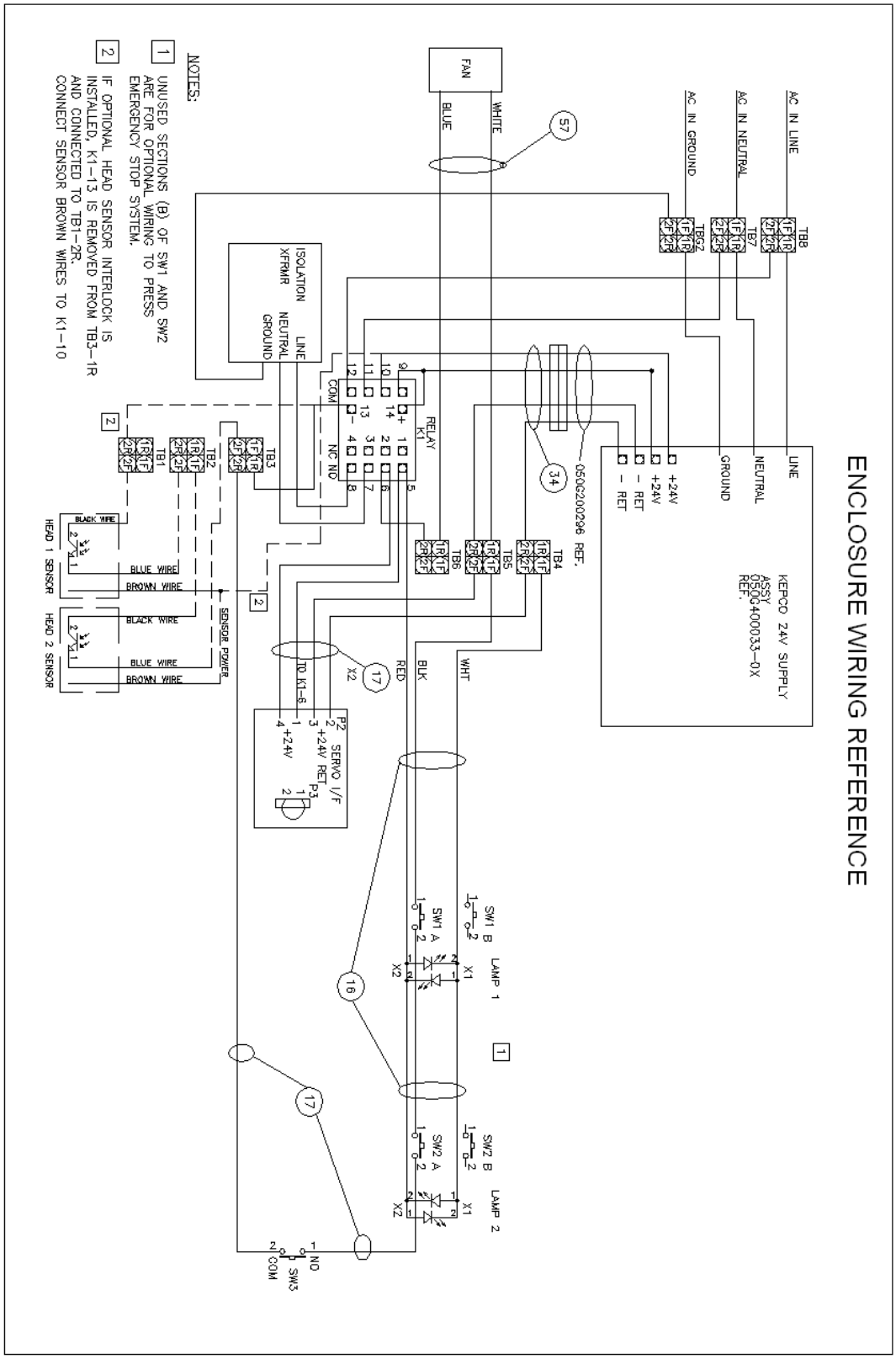


Fig. 16

There are several things that can go wrong with the OP initialization. Here are some scenarios.

Scenario 1 - Both Heads Never Move During Initialization

1. Check that there is actually power to the OPM.
2. Check that the power light on the OP power switch has turned green. (Although this light can sometimes burn out, so you may want to use an alternate method to determine that the computer has actually been turned on.)
3. Check that the LED lights on the servo drive amplifier boards turn red at power up. If so, then they are receiving power from the 24V supply. If not, check the output of the large 24V power supply. The output voltages are labeled on the power supply.
4. Check that the LED lights on the servo drive amplifier boards turn green after a few minutes. If so, then they have been addressed by the OP computer. If not, the OP computer may not have booted completely or there may be some other problem. Connect a monitor to the VGA output of the OP computer and reboot. Observe that the computer completes the boot cycle and loads a program. You should see a GUI like this:

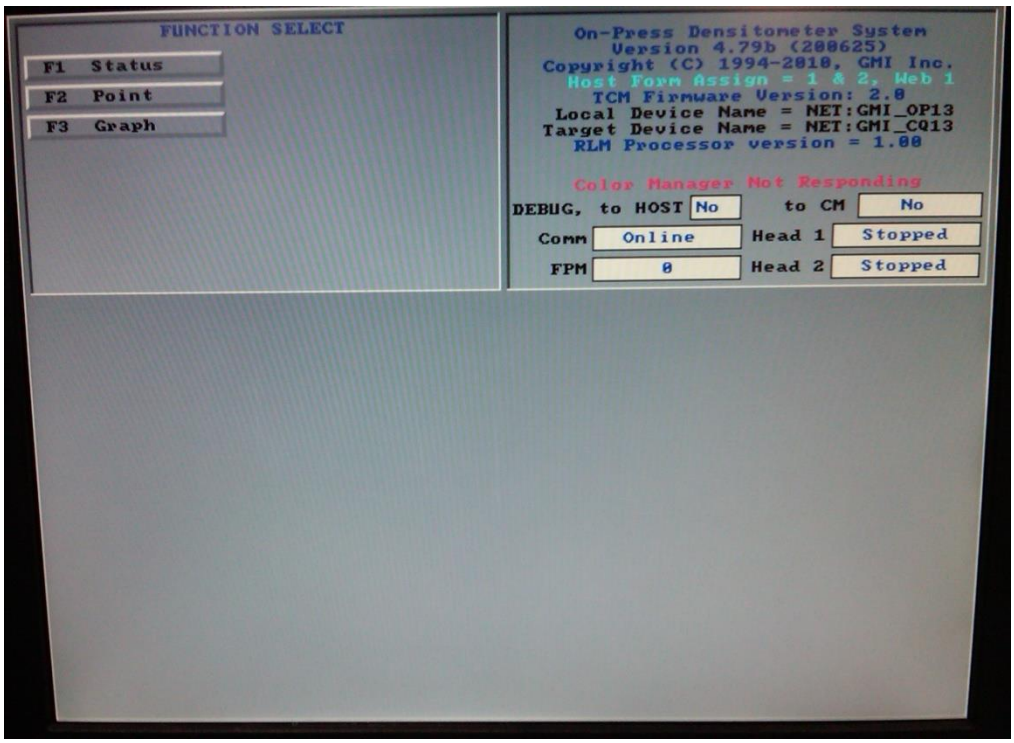
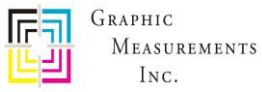


Fig. 17

5. If the above screen does not come up, (such as a black screen or a DOS prompt with possibly an error message) unplug all cables to the OP computer except video and power and try

rebooting. If the computer still does not boot to the GUI, you have a problem with the OP computer. Refer to Section 6 of this troubleshooting guide for further troubleshooting steps on the computer itself.

6. If the GUI does come up after unplugging all of the cables, turn it back off and try plugging each cable back in, one at a time, rebooting after each cable connection. The recommended order of plugging cables back in would be:
    a. Ethernet cable
    b. PSI cable (Round gray cable)
    c. Servo Interconnect Cable (Black ribbon cable)
    d. Hd1 Probe Head Cable (White ribbon cable)
    e. Hd2 Probe Head Cable (White ribbon cable)
7. If the OP computer fails to boot to the GUI at any point after plugging in one of the cables mentioned above, move on to the appropriate section for troubleshooting that component.
8. If the GUI does come up, but the heads do not move, refer to the upper right corner of the GUI and check the following items:
    a. Check that there is a version. (The version you have may differ from the version shown here)
    b. Check that there is a TCM version. Valid versions are 1.3, 1.9, and 2.0. If you see 0.0 then the TCM board may need reseating as it is not reporting a version. If reseating this board does not restore a TCM version, replace the OP computer.
    c. Check for any error messages in RED. In the example above, it shows that the Color Manager is not responding. If you see something else such as “Running without camera, carriage or measurement components” then there is a problem initializing one or more of the components in the OPM. Go back to Step 6 and try that to see if you can locate the specific component failure.



Scenario 2 - One Head Only Never Moves During Initialization

1. Check that the LED light on the servo drive amplifier board turns red at power up. If not, you may have a problem with the servo drive, servo interconnect board, servo interconnect cable, or the servo driver board in the OP. Try swapping these parts with known good parts until you can find a faulty component. The recommended order of swapping these parts, based on probability of failure and assuming there is no visible damage to any of the components, would be:
    a. Servo Drive
    b. Servo Interconnect Cable
    c. OP Computer
    d. Servo Interconnect Board
2. Check that the LED light on the servo drive amplifier board turns green after a few minutes. If not, you may have a problem with the servo drive or servo driver board in the OP. Try swapping these parts with known good parts. Recommended order of swapping these parts, based on probability of failure and assuming there is no visible damage to any of the components, would be:
    a. Servo Drive
    b. OP Computer
3. If the LED does turn green, but the head never moves, then you likely have a faulty servo drive. Replace with a known good servo drive. In rare cases, the fault may also be the OP computer. Replace that if the replacement servo drive did not solve the problem.
4. If none of the above steps have resolved the issue of one head not moving during initialization, you may have a faulty beam limit switch or limit switch harness. Refer to the section on troubleshooting limit switches for further information.

Scenario 3 – A Head Moves Slowly Outward Toward the Web Only

1. If this occurs and it never starts to move toward the servo drive end (toward you), then the likely problem is the home limit switch. Refer to the section on troubleshooting limit switches for further information.

Scenario 4 – A Head Moves Slowly Inward, Never Moving Away From You

1. If this occurs and it never makes a move toward the web (away from you), then the likely problem is the far limit switch located at the far end of the beam. Refer to the section on troubleshooting limit switches for further information.

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Scenario 5 – One or Both Heads Start To Initialize, but one may shoot out across the web.

1. You may have an incompatible OP computer if this happens after replacing the OP computer. Verify with GMI service on the compatible model numbers. Have your system number, OP model numbers, and software revisions handy before calling.
2. There may be a bad limit switch or shorted limit switch harness. Try disconnecting the black ribbon cable from the OP computer and rebooting. BE READY TO TURN THE OP COMPUTER OFF QUICKLY IF NECESSARY! If the heads do not shoot out over the web but instead try to return home as they normally would, you likely have a bad limit switch or shorted limit switch harness. Refer to the section on troubleshooting limit switches for further information.
3. If the heads still shoot out across the web with the black ribbon cable disconnected, then there may be a problem with the servo drive itself. Try changing the suspect servo drive with another known good servo drive.

*** Alternate Method of Troubleshooting OPM Initialization Problems**

1. You can swap the connections for the servo and limit switches at the servo interconnect board on the back wall of the OP Module.
2. Then you must swap the white ribbon cables at the OP computer.
3. Then you must modify the autoexec.bat file on the root drive of the OP computer. On the last line it will either say “STD_SERVO” or it will say “REV_SERVO”. Whichever your batch file states, you must change this argument to the alternate one. Once this is done, the lower servo, limit switches, and PH are being operated by the upper channel of the OP computer. If your failure moves to the opposite beam, then the problem is from the interconnect board, the OP computer, or the interconnecting cable between the two.
4. Remember to put your autoexec.bat file back to original after you swap the cabling back.

IMPORTANT! – *The servo drive cable and limit switch cable must **ALWAYS** be connected with the same axis on the interconnect board to avoid damage to the system!*

Fig. 18 – Servo Interconnect Board

13. Troubleshooting Beam Limit Switch Problems

There are three limit switches on each beam. These are activated by a vane (Item 30 in Fig. 48) mounted on the back of the PH carriage. As you stand at the servo drive side of the beams, the switch nearest you is the near limit. The one near the cal plaque is the home limit, and the furthest switch from you on the other end of the beam is the far limit. Each set of switches is connected via a harness that plugs into the servo interconnect board on the back wall of the OP module. Problems with the limit switches or associated wiring may appear as servo drive or OP computer problems. To perform the limit switch checks, you need to have a working OP computer.

Note: *The remainder of these steps requires you to open the computer case and should only be attempted by qualified personnel. Remember to utilize an ESD wristband to avoid electrostatic damage to the internal components.*

1. Remove the On-Press computer case cover so you can view the servo controller LEDs.

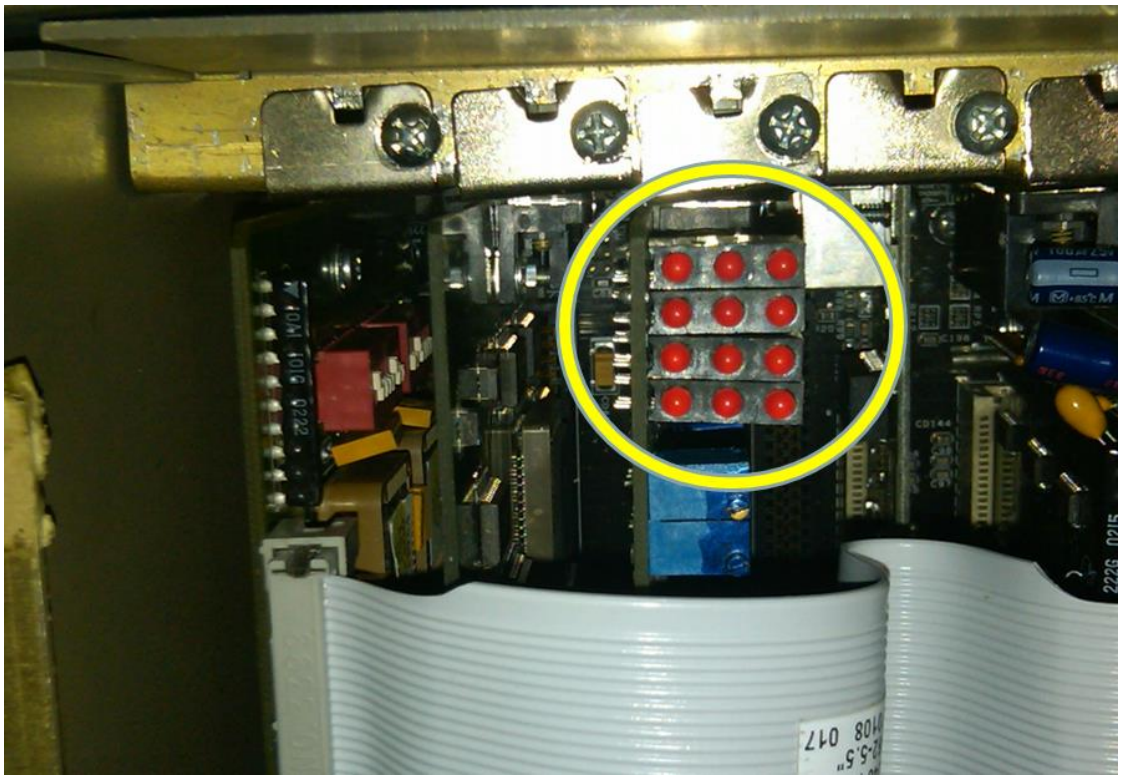

Fig. 19 – OP Computer Top Removed - LEDs

2. Insert a blank diskette into the OP computer floppy drive and power on the On-Press unit and OP computer.
3. Perform Axis 1 fixture limits and basic servo operation checks (Refer to the Servo Controller Board's Diagnostic LEDs drawing below.) Manually move the head very slowly.
4. Confirm servo encoder LEDs (A1 & A2) alternately toggle on and off.

5. Manually move head from outside of enclosure to the inside mechanical stop.
6. Confirm Home Sensor LED (B3) toggles from On to Off.

7. Confirm Near Limit Sensor LED (B2) toggles from On to Off.
8. Manually move head to Gear-end mechanical stop.
9. Confirm Far Limit Sensor LED (B1) toggles from On to Off.
10. Perform Axis 2 fixture limits and basic servo operation checks (Refer to the Servo Controller Board's Diagnostic LEDs drawing below.) Manually move the head very slowly.
11. Confirm servo encoder LEDs (C1 & C2) alternately toggle on and off.
12. Manually move head from outside of enclosure to the inside mechanical stop.
13. Confirm Home Sensor LED (D3) toggles from On to Off.
14. Confirm Near Limit Sensor LED (D1) toggles from On to Off.
15. Manually move head to Gear-end mechanical stop.
16. Confirm Far Limit Sensor LED (D2) toggles from On to Off.
17. Any abnormality occurring in these steps typically indicates a fault in the limit switch, switch harness, servo interconnect board, servo interconnect ribbon cable, or OP computer. Inspect the wiring closely, it is very difficult to spot pinched harness wires.

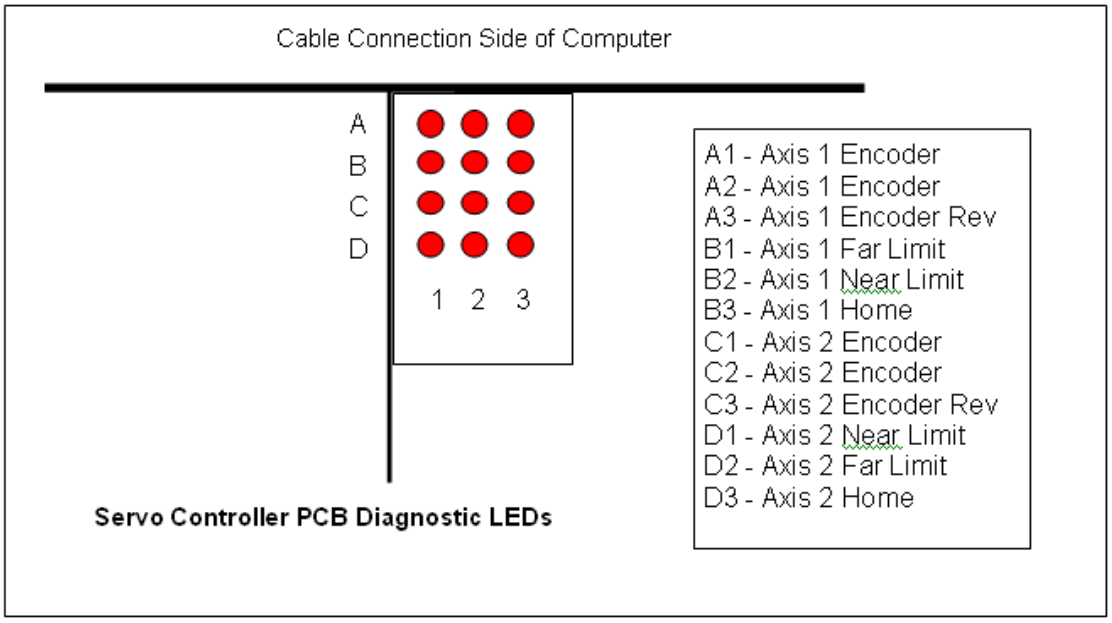

Fig. 20

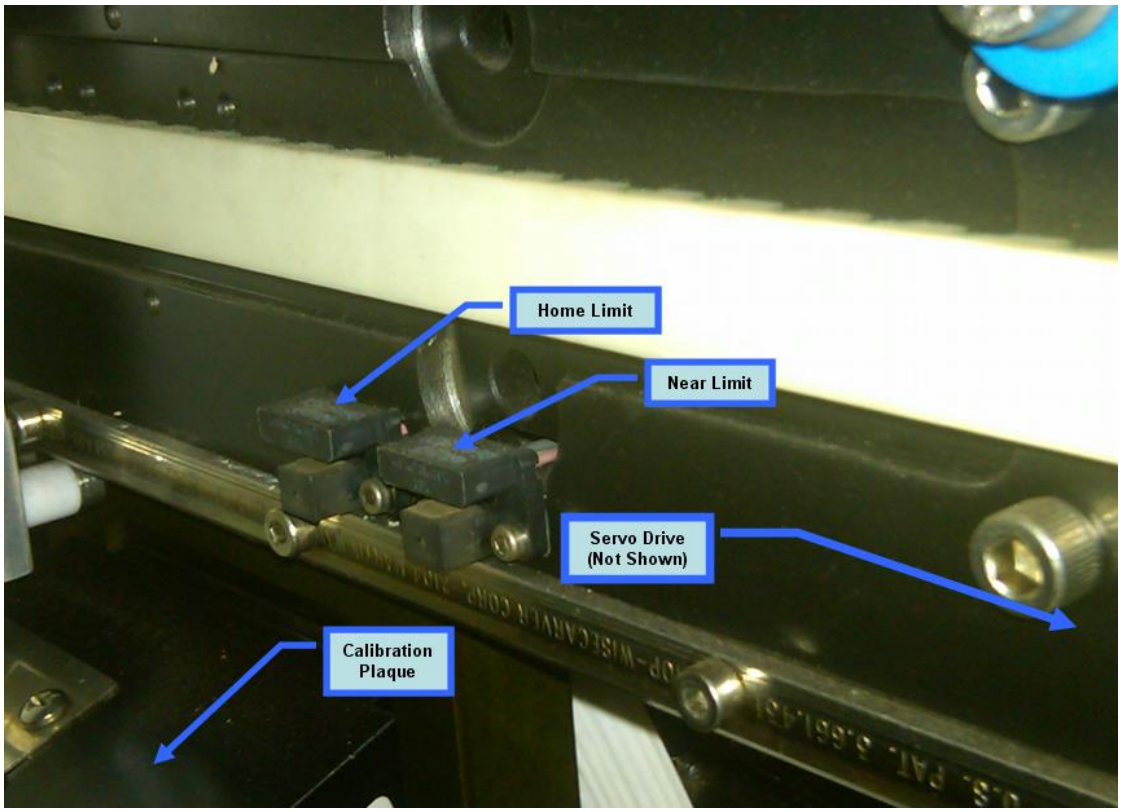

Fig. 21 – Position of Home and Near Limits

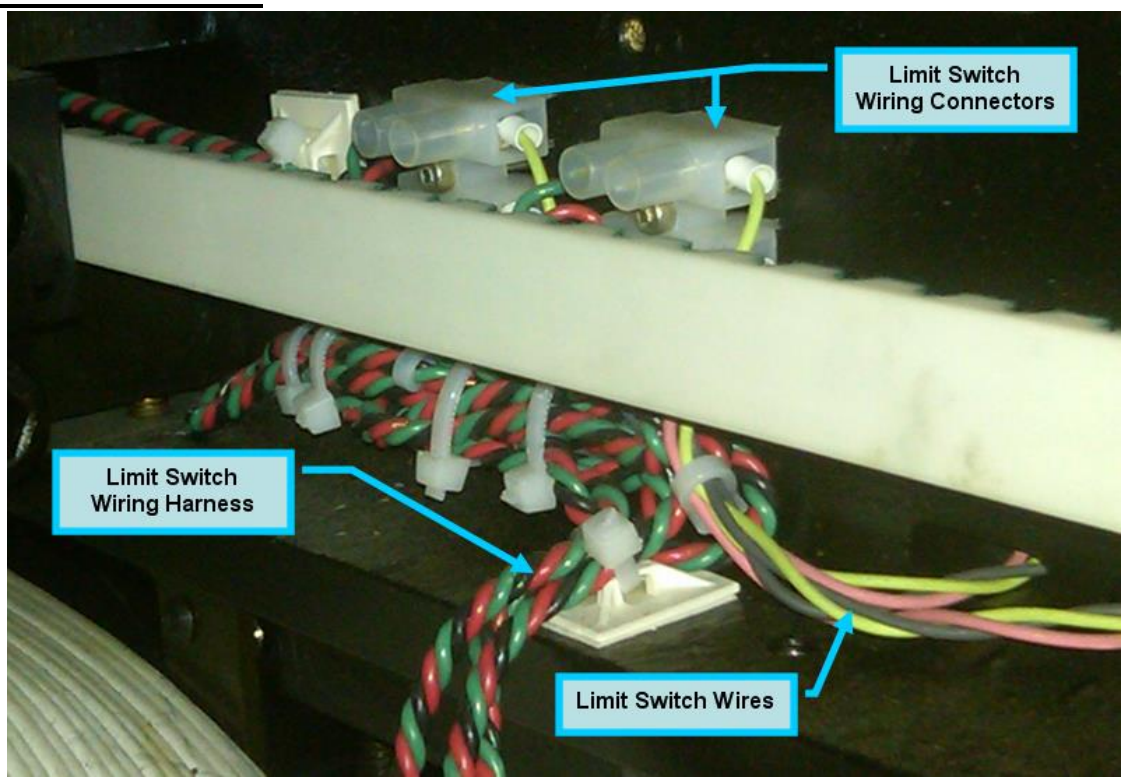

Fig. 22 – Back side of beam – Limit Switch Wiring

14. PSI Boards

The Press Signal Interface Board (PSI) receives signals from the press and sends these messages to the OP computer via the PSI cable. The PSI cable plugs into the TCM board on the OP computer. The PSI is a silver box typically located on one of the side walls of the OPM.

Signals received at the PSI board include the encoder signal and press event signals such as blanket wash, splice, impression on, and a spare that is used for various reasons based on your purchased options. (or the spare may not be used at all)

There are two generations of the PSI Board. There is the PSI I and the PSI II. The PSI I is the original version and is still used unless a specific installation requires the PSI II. The PSI I version is about 3 ½" x 4 ½". The PSI II version measures about 3 ½" x 9". The encoder feed to the PSI may come from Hall Effect sensors, or it may come from a digital encoder. The type of encoder signal defines how the encoder signal is connected. The section on encoders will cover some typical connections.

There are three connectors on the PSI I board that all deal with the encoder signal. These are the A channel, B channel, and an impression pulse. While an impression pulse was not always utilized, the A and B channels are always used at a minimum. These A and B connectors are the two that are side by side.

The press event signals are typically isolated via Red Lion converters. The actual Red Lion converter used depends on the input voltage of the press signal. Most press signals are 24VDC, but installations do sometimes differ. The connector on the top of the PSI is where the press signals are connected after they are buffered by the Red Lion converters.

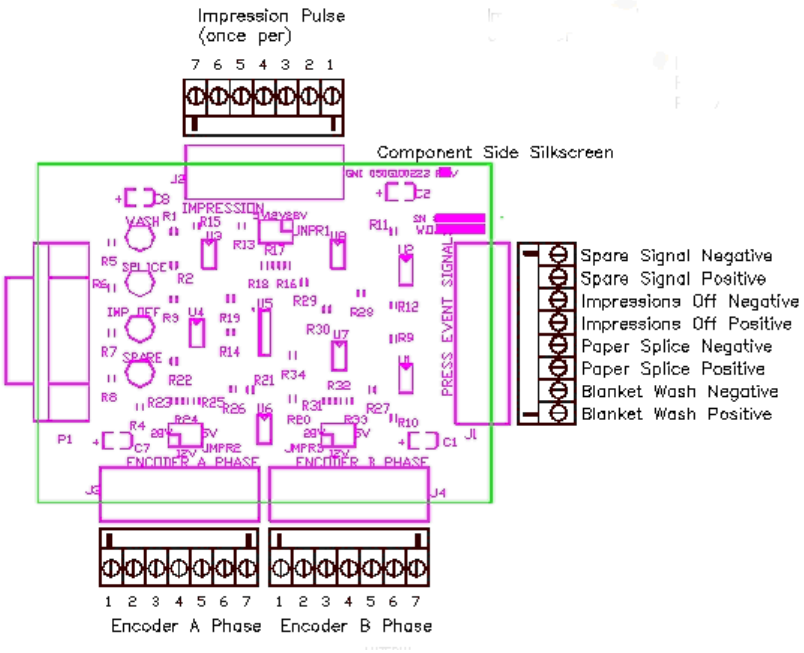

Fig. 23 – PSI I Board Layout

Press Events

If you do not have a multimeter and are in doubt about whether or not a press event signal is occurring, you can remove the cover of the PSI board. There are 4 LEDs under the cover. Note that the LEDs do not line up with the input, so this can be confusing. When a press event is active, this LED will light up. Typically, all signals are normally low except the impression off which is normally high. (though not always) Thus, when the press is running production and no event is occurring, the impression off LED is normally lit with all other LEDs off until that event occurs. So, when a blanket wash occurs, for example, the blanket wash LED should light up, even if momentarily. Sometimes these press event signals remain high during the entire event. The duration of the signal is determined by the press manufacturer or the electrician that set up the signal on the press side at the time of installation. There are, of course, exceptions. GMI Tech Support will not be able to help you determine what type of signal was originally installed or the duration of a signal as this information is not tracked from the original installation. Changes to these signals from the press side can negatively affect system function and/or performance so those type of changes should be carefully considered before being implemented.

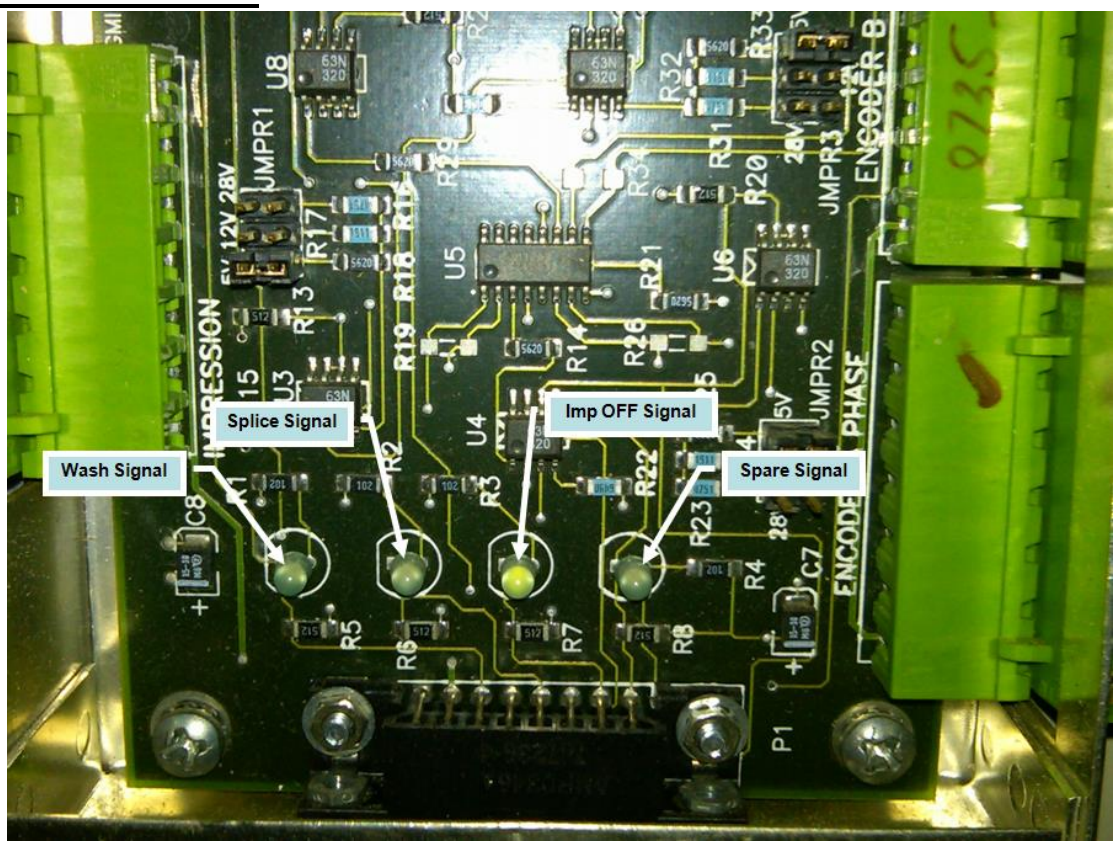

Fig. 24 – PSI 1 – Press Signal LED Indicators

If a press event signal is in question, use a voltmeter to measure the input voltage at the Red Lion converter as well as the output voltage of the Red Lion. Replace the Red Lion if found to be defective, but be sure to replace with the same part number as there are several Red Lion convertors and they all look the same physically.

15. Encoders

The encoder signal is the heartbeat of the ColorQuick system. Any problem with the encoder signal will manifest itself in incorrect scanning which can in turn lead to over inking or under inking issues or other undesirable behavior.

The ColorQuick system encoder specifications require that the uniformity of the encoder pulse signal not exceed +/- 1.5% variation of any individual encoder pulse period with respect to the average period for all of the encoder pulses that occur within one impression. Any variation above this specified limit results in the possibility of unacceptable measurement timing errors, and incorrect measurement data.

If the encoder pulses are not uniform, the same number of encoder indexes that span the distance between the camera and measurement events ***may not span the same elapsed time as would uniform pulses.*** This disparity introduces an error in the corrected measurement location based on target area location information determined from the camera image, and may result in an incorrect measurement. This issue is detailed in Fig. 25 below.

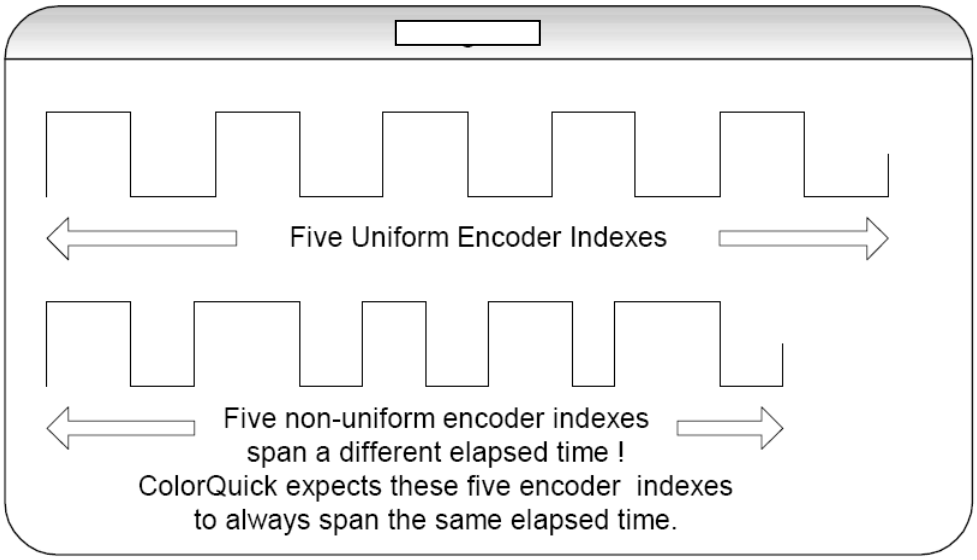

Fig. 25

Independent Uniformity Measurement

Independent measurement and verification of encoder uniformity can be performed with any instrumentation capable of measuring the period of sequential encoder pulses for the duration of the printing impression. The individual encoder period measurements are then compared to the average encoder period for one printing impression.

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There are several different ways that encoder signals may be obtained on the press for your ColorQuick system. In all cases, the encoder signal is supplied to the PSI board. These types include:

1. Hall Effect Sensors on a GMI supplied gear. (Not all versions have a Z sensor!)

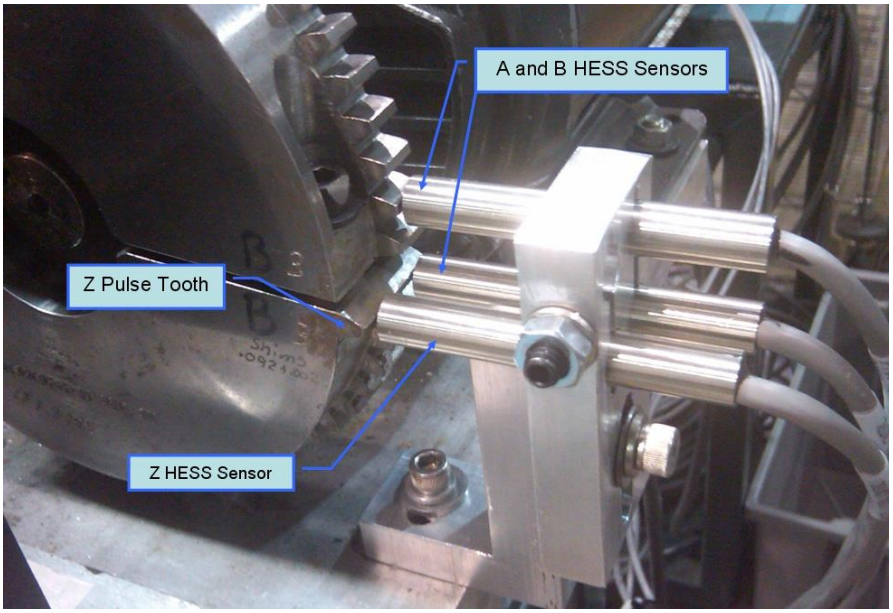

Fig. 26

2. Digital Encoder (such as a BEI) supplied by either GMI or the press manufacturer.

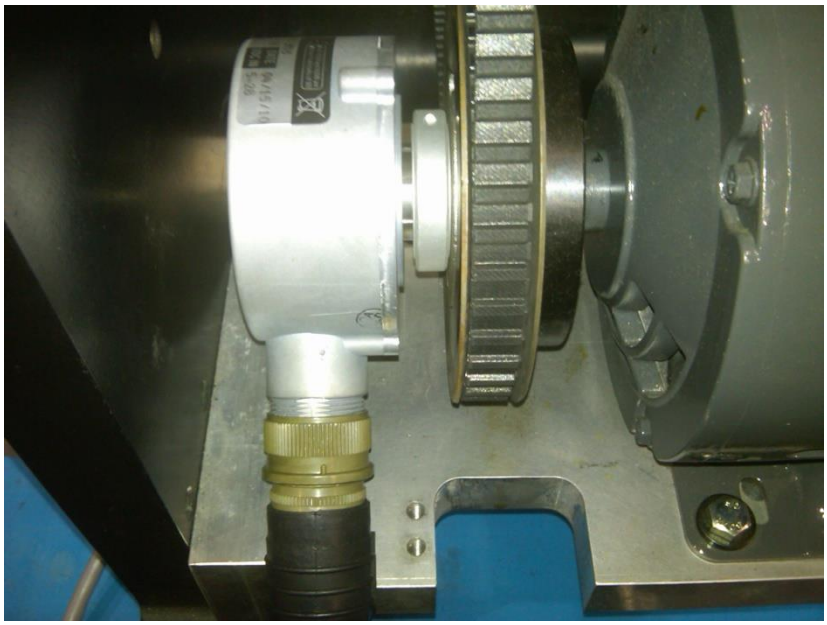

Fig. 27

3. Digital input from press drive. (again supplied by the press manufacturer) This can connect from a multiplier board or BEI Isolator module, or some other press defined connection.

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Split Gears

A Note concerning GMI supplied, split gears: These split gears should NOT be moved from their location, nor should the bolts ever be loosened. Doing so may cause your system to be unstable or completely unusable. The gap distance between the two halves was adjusted during the installation of the system using tests in the system only available to the installer. Initially, the gaps must be within .002 of each other. Further fine tuning was done during installation. If you need to move or remove the split gear from its original location, please contact GMI Service.

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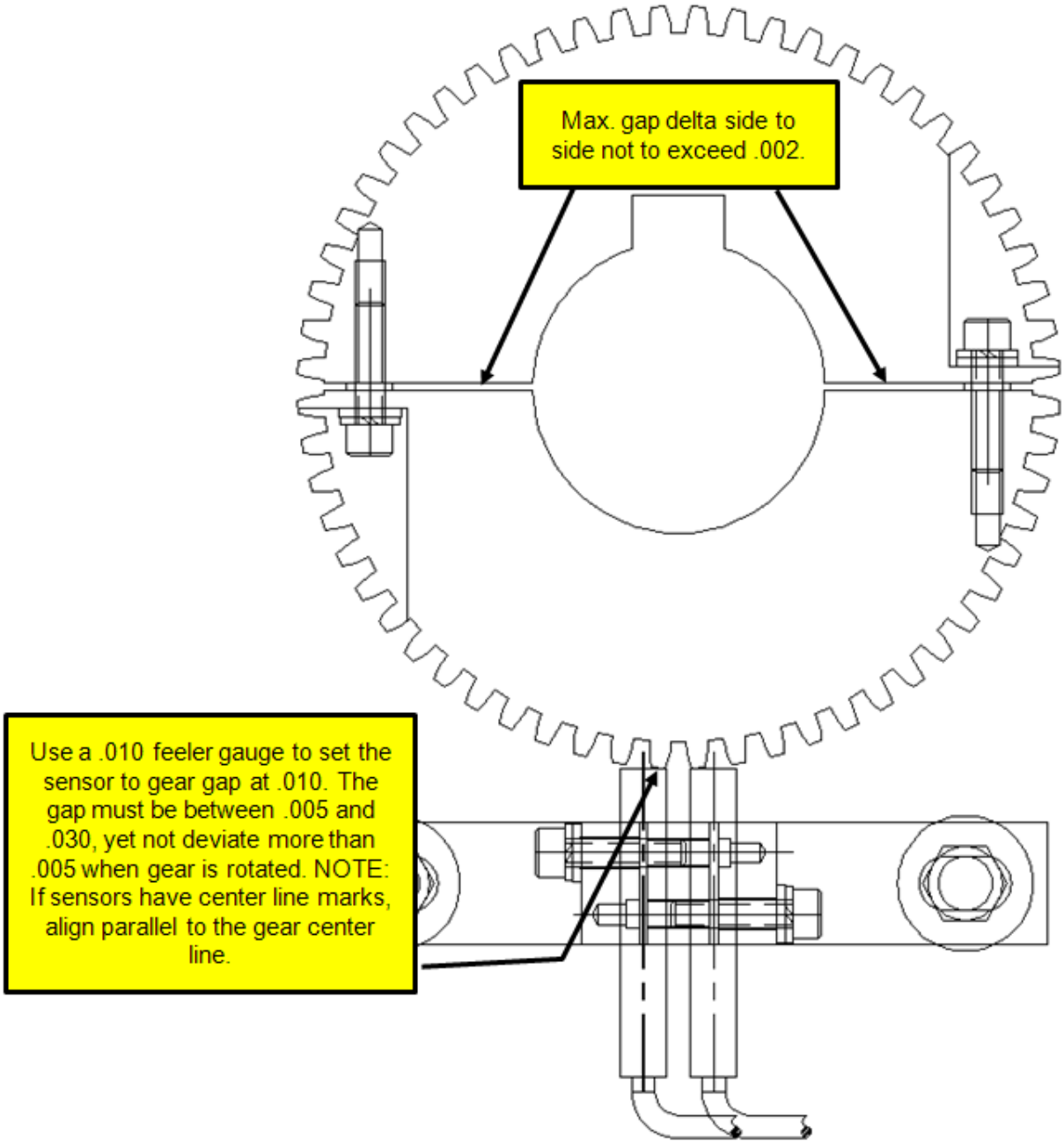

Fig. 28 – Split Gear

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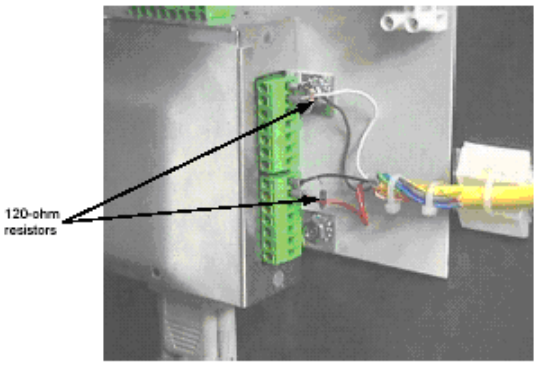
Both “A” and “B” encoder inputs to the PSI board must be working for the speed signal and impression count to work correctly. Normally phase B is used for speed reference and phase A is used for direction sensing.

If phase B is not working you will not get any speed or impression count. If phase A is not working but B is, you may or may not get an impression count but you will get a speed indication.

If phase A is not working it may not be immediately apparent since the speed and impression count at the CQ Host will still work correctly. The system will take longer to find the colorbar after press stoppages were the press has been moved in reverse.

If phase A and B are connected to the PSI board in reverse the speed signal will work but the impressions will not increment.

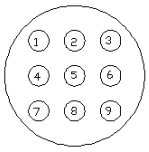
GMI PSI Board Connections



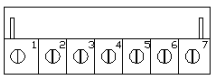
Encoder connections on GMI PSI board

Fig. 29

WIRE SIDE VIEW



TOP SIDE VIEW



9 PIN 016G101009	COLOR	FUNCTION	TERM. BLOCK PLUG 016G600015
PIN 1	RED	+12V	PIN 1
PIN 2	BROWN	DC SIGNAL	PIN 2
PIN 3	BLACK	GND	PIN 3
PIN 5	BARE DRAIN	SHIELD	PIN 3
	BLACK	JUMPER	PIN 6

Fig. 30

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Hall Effect Sensors

Important Notes:

1. Before any swapping of cables or connectors on the PSI board, remember to turn the power OFF! Failure to do so will cause permanent damage to the PSI board and / or TCM board.
2. Built up grease in the gear teeth should be cleaned out.

Running On One Sensor

When there is no FPM AND no impression count increase when the system is told to scan, one of the sensors on the gear encoder has likely gone bad. To get the encoder working correctly you can get the system to use only one sensor. Since you initially don't know which one is failing it may take some parts or connection swapping.

Step 1

- End any job you are scanning.
- Turn off the power to the OP by pressing the red (or yellow) stop button on the side of the OP.
- Remove the brown wire from Pin 2 of the Encoder A Phase.
- Make sure the bare wire is insulated since it will have power when the OP is turned back on.
- Make sure the Jumper wire from pin 3 to pin 6 remains connected.

Step 2

- Turn the OP power back on
- Create a new test job.
- With the press running: Verify the FPM is working
- With the press running: Verify the impression count is changing

Step 3: If there is no FPM or impression count.

- Turn the power off at the OP.
- Reconnect the brown wire to pin 2 of the connector.
- Exchange the "Encoder A Phase" and the "Encoder B phase" connectors.

Repeat STEP 1 through STEP 2.

- If you have identified one sensor as the failure, check the termination at the PSI board connector, and the AMP connector at the gear end of the cable.
- Also check pins and termination of the AMP connector of the failing sensor.
- No impression count from either sensor may indicate a mechanical problem at the gear location.
- Check to make sure that both Hess sensors are gapped to .010" from the encoder gear and that they are both centered over the gear teeth.
- If you still do not get an impression count from either sensor the supply voltage may be the problem. Use a voltmeter and measure the voltage at pins 1 and 3 of each phase at the PSI board. Pin 3 is

ground and pin 1 is 12V+. If you do not get any voltage here check the cable from the PSI board to the OP computer and make sure that is connect securely. If you still do not have power, open the OP computer, and check output voltages of the power supply as this is where the power for the PSI board originates.

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Digital Encoder Signals

Encoder signals are sometimes provided as a digital signal from the press. This can be a digital encoder mounted somewhere on the press or it may be a digital signal provided from the press drive system. In either case, the troubleshooting is largely the same as used for the HESS Sensors. It is still important that the supply voltages to the PSI board are present, but these voltages are NOT sent to the digital encoder as they are with the HESS sensors. Normally, the digital signal arrives to the PSI board in the form of 2 wires per phase. The wires are connected to pin 6 (positive) and pin 7 (negative). These two wires "may" have a resistor connected between them at the PSI connector. You can check the resistor with a meter, but you must completely disconnect it from the circuit to do so. If the resistor has failed, it is possible that the entire PSI board has failed as well.

Checking Encoder Inputs (Common to all encoder types)

Using an oscilloscope, monitor the incoming signals with Phase A connected to the A channel of the scope and Phase B connected to the B channel of the scope. It is important that the two phases are approximately 90 degrees out of phase with each other. (See Fig.31) If this phasing changes to the point that their rise cross each other, it can cause the OP computer to sense that condition as a change in direction and scanning will be aborted and the impression count at the Host will stop incrementing.

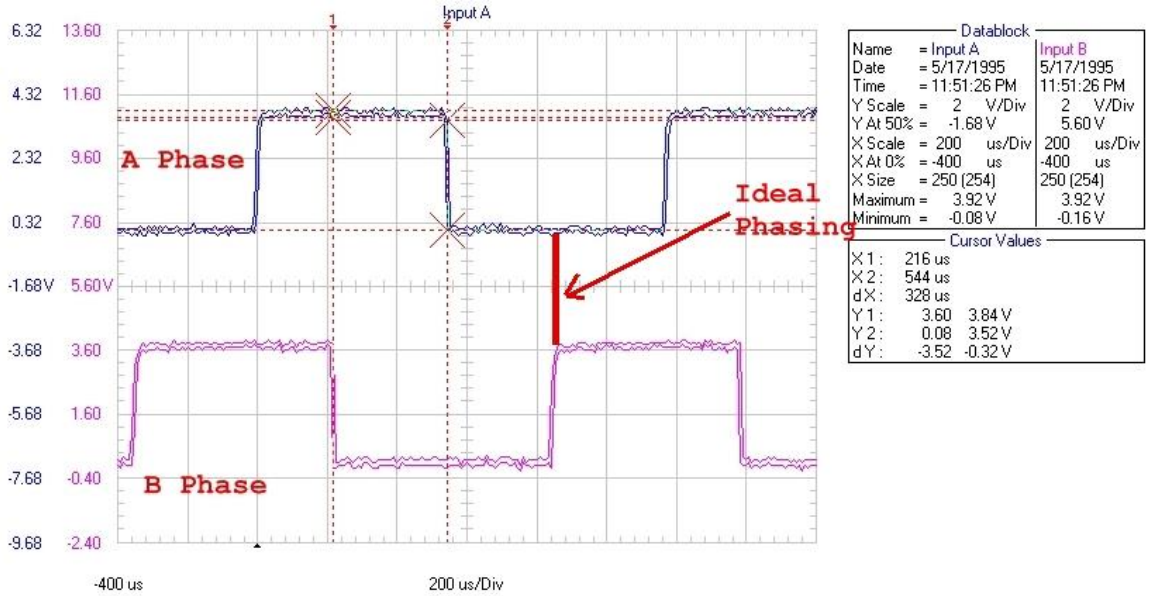

Fig. 31

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BEI Isolator Modules

In many cases of a digital encoder signal, a BEI Isolation module is supplied to buffer the encoder signals to the PSI board. This module electrically isolates the input and output voltages while maintaining signal accuracy. Check the inputs and outputs of this module as well. Not all isolator modules are the same, so be sure to obtain the exact model number before ordering replacement.

Encoder Divide Module (EDM)

With some digital encoder interfaces, the signal supplies too high a frequency and needs to be divided down to be usable by the TCM board in the OP computer. (The maximum TCM frequency for the TCM board is 96K and can be calculated by taking the number of pulses per cutoff and multiply by the max speed in IPH.)

The EDM accomplishes this by dividing down the incoming signal. The EDM (if you have one) is supplied as part of the cable between the PSI board and the OP computer. It is a black box in the middle of the cable. If the EDM was not required as part of the original installation, then one was not supplied and you only have a cable between the PSI and the OP computer.

The EDM is programmable. Your existing EDM was programmed at installation, but if you get a replacement you may need to set it up. Under the round plastic cap is a bank of DIP switches. The EDM is only capable of dividing the incoming signal by 2, 4, 8, or 16. Here is a chart that explains the settings for the various divisions:

DIPSWITCH CONFIGURATION					
Divide By	SW-1	SW-2	SW-3	SW-4	SW-5-8
2	ON	OFF	OFF	OFF	OFF
4	OFF	ON	OFF	OFF	OFF
8 (default)	OFF	OFF	ON	OFF	OFF
16	OFF	OFF	OFF	ON	OFF

Table G

If you have an EDM and all of your troubleshooting steps of the encoder have failed to this point, obtain a straight thru cable to install between the PSI and the OP computer. If you now get a very high press speed indicated, then you likely have a faulty EDM.

Fig. 32 - BEI Isolator

Fig. 33 – Encoder Divide Module

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Impression Pulse (aka "Z" pulse)

In some cases, an impression pulse may be provided. This is always the case with a digital signal, but it is not always the case with a HESS sensor. The impression pulse connector, *if not used*, should have a jumper between pin 3 and 6 if your TCM version is 1.9 or above. This is because v1.9 or above TCM revisions could pick up noise and falsely interpret it as an impression pulse. This could lead to aborted scans, long locate times, etc.

When the impression pulse IS used, one pulse is used per impression size to help assist with colorbar locate by calculating the offset between the pulse and the actual location of the colorbar. If you think that this pulse is causing a problem with locate time, etc., disconnect it and install the aforementioned jumper wire as a test. This impression pulse has nothing to do with speed or impression count.

The impression pulse may come from the Z pulse of a digital encoder or it may be provided as a third HESS sensor in the case of the HESS Sensor gear type encoders.

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16. Probe Heads

The very first step in troubleshooting any suspect probe head should be to run the basic system tests in the system \ diagnostics menu. (See Section 8.4 of the ColorQuick Service Manual for more details on how to access and run the tests) The PASS / FAIL results of the system tests are not so important and can, in fact, be mis-leading. A PH can pass a system test and still not be able to scan properly. What is important in the system test is the results codes that follow the PASS / FAIL indicators. With respect to the PH, the camera and measurement systems results, as well as two images for every PH are important. Here is a representation of the test results screen:

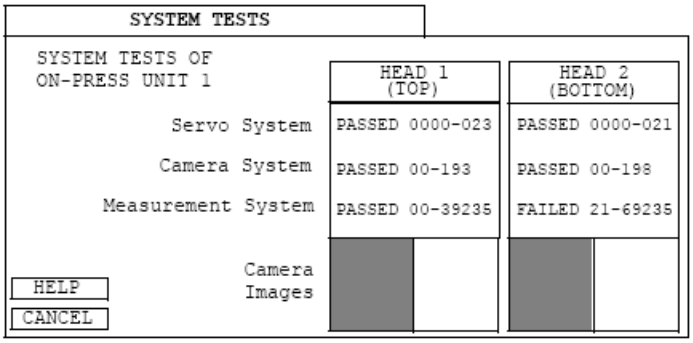

Fig. 34

Camera System Test

The camera system test gets a camera image over the black hole and another image over the white plaque. The image taken over the black hole is expected to have a very low white level while the image taken over the white plaque should have a high white level.

Result Code: **xx-nnn**

nnn	White Plaque White Level (180 to 200 typical)

Black Hole Image	
0	Successful
1	Camera Error
2	White Level Too High Error (greater than 50)

White Plaque Image	
0	Successful
1	Camera Error
2	White Level Low (greater than 90 and less than 130)
3	White Level Too Low Error (less than 90)

Fig. 35

For the nnn result above, the min. level is ~135, max is ~200.
Assuming the first two digits in the results code are zeroes, if the results (nnn) are below the minimum, clean the camera glass and white tiles on the cal plaque with alcohol. If that fails,

replace the PH with another and try again. If the poor test result persists on that surface, you may have a faulty OP computer.
Also, assuming the first two digits of the results code are zeroes, if the results (nnn) are above the max, replace the PH with another and try again. If the poor test result persists on that surface, you may have a faulty OP computer.

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Measurement System Test

The camera system test takes a measurement over the black hole and another measurement over the white plaque. The measurement taken over the black hole is expected to have a very low sample A/D peak value while the measurement taken over the white plaque should have a high A/D peak value.

Result Code: **xx-nnnnn**

nnnnn	White Plaque A/D Peak (30K to 50K typical)

Black Hole Measurement	
0	Successful
1	Measurement Error
2	A/D Peak Too High Error (greater than 3000)

White Plaque Measurement	
0	Successful
1	Measurement Error
2	A/D Peak Too Low Error (less than 5K)

Fig. 36

For the nnnnn result above, the min. level is ~25K, max is ~60K.

Assuming the first two digits of the results code are zeroes, if the results are below the minimum, clean the white tiles on the cal plaque. Remove the black hole, clean out, and replace. Finally, remove the PH from the carriage, remove the cone on the underside of the PH, and clean the fiber optic array under the cone using alcohol and a cotton swab. (See Fig. 40) If that does not improve the test result, replace the PH with another and try again. If the poor test result persists, you may have a faulty OP computer or white ribbon cable.

Assuming the first two digits of the results code are zeroes, if the results are above the maximum, then replace the PH with another and try again. If the poor test result persists on that surface, you may have a faulty OP computer.

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Camera Images

In the system tests results, there are also two images taken by the camera and these are an important part of the test in determining the current state of any PH.

The black image should be completely black with no white spots in it. If there are, try cleaning both the PH and the cal plaque completely. If that does not improve the black image, try another PH. If the poor black image persists, you may have a faulty OP computer or white ribbon cable. Check the connections of the white ribbon cable at the OP computer as well as at the PH. There is a positive acting slide connector on the white ribbon cable that can sometimes not be installed properly. If the black image looks like a starlit night with a lot of white pinholes in it, you definitely have a poor connection between the OP and the PH. Again, this can be a faulty connection or a faulty ribbon cable.

The white image should be completely clear with no black or dark gray spots in the image, although the image may not be completely white. The important thing is that the image looks clean. If it is not, then clean both the PH and cal plaque assembly completely. If that does not improve the white image, try another PH.

If a poor white image persists, you may have a faulty OP computer or white ribbon cable. Check the connections of the white ribbon cable at the OP computer as well as at the PH. There is a positive acting slide connector on the white ribbon cable that can sometimes not be installed properly. If the image has a lot of bright white pinholes in it, you definitely have a poor connection between the OP and the PH. Again, this can be a faulty connection or a faulty ribbon cable.

In Fig. 37 below, the black and white images on Head 1 look OK. The white image on Head 2 is dirty. Both the white tile and the camera glass should be cleaned to remove the grime that shows up in this image.

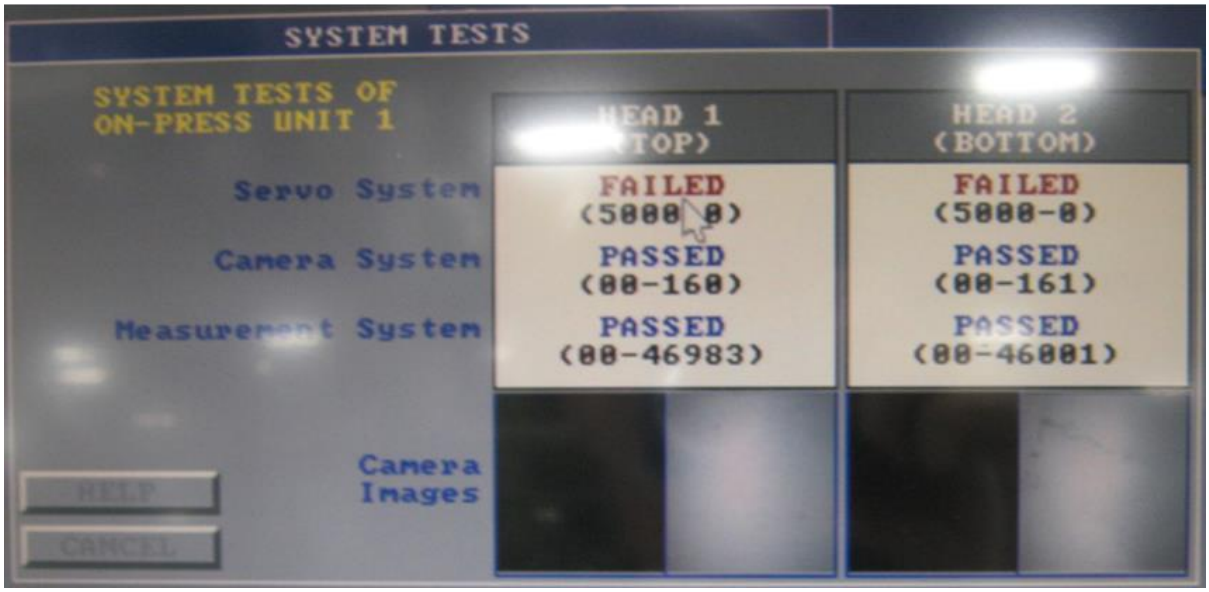

Fig. 37

In Fig. 38 below, Head 1 images look good. The black image is OK for Head 2, but the white image is dirty. The white tile and the camera glass both need to be cleaned. In addition to the poor white image, this test shows low camera test. The 20-119 result code indicates that the white level is low (greater than 90, but less than 130). The 119 is the actual white level. This can likely be corrected by just cleaning the glass and white tile, but if both have been cleaned and the result code is still less than 130, then another PH should be tried to see if the problem is the PH or some other component.

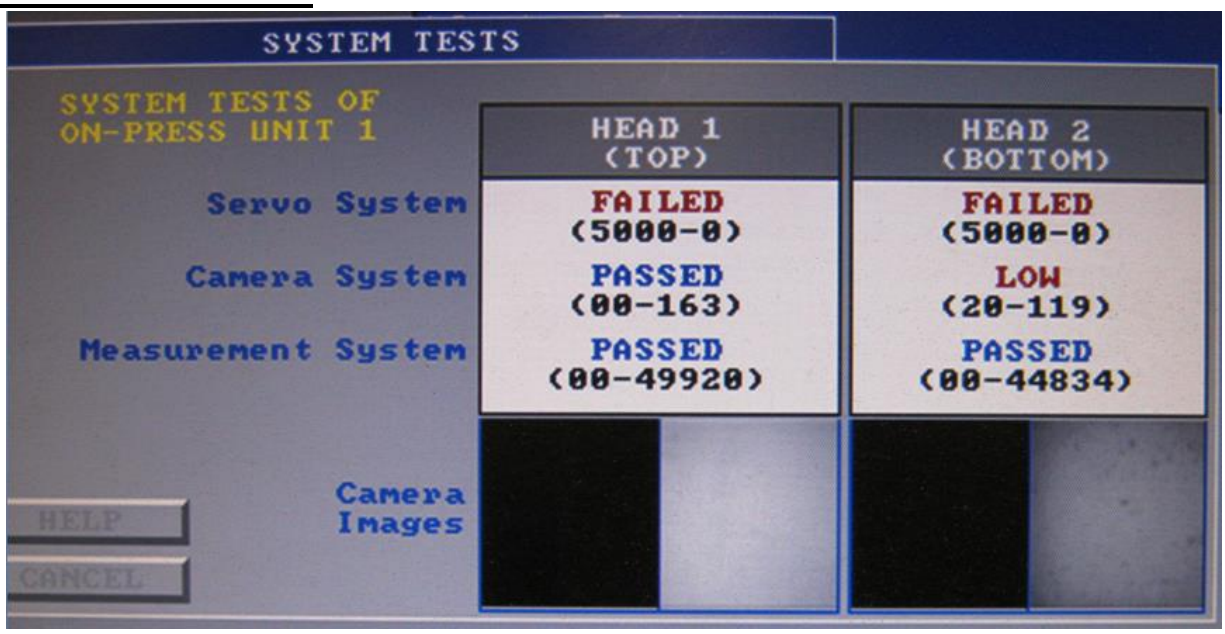
SYSTEM TESTS
SYSTEM TESTS OF ON-PRESS UNIT 1
HEAD 1 (TOP)
HEAD 2 (BOTTOM)
Servo System
FAILED (5000-0)
FAILED (5000-0)
Camera System
PASSED (00-163)
LOW (20-119)
Measurement System
PASSED (00-49920)
PASSED (00-44834)
Camera Images
HELP
CANCEL

Fig. 38

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Probe Head & Calibration Plaque Maintenance (Standard Heads)

Maintenance of the probe heads must be done periodically. The frequency that this is required depends greatly on the environmental conditions where the PH is operating, etc. When working on the PH, take care that it does not receive any major shock as this may cause mis-alignment of the optics, etc. requiring factory repair.

1. Turn off the power to the OPM by turning off one of the switches on the outside of the OP. In most cases, this is a mushroom style button. Leave this switch in the OFF position throughout the procedure.
2. Open the OP cabinet door and manually push the heads out of the doghouse and over the read roller so that they can be accessed from the sides of the OPM.
3. The PH is held on with 2 SHCS, one on each side of the PH. Using a 9/64" allen wrench, loosen both screws slightly, then remove one entirely. Leave the other in so that you can re-position your hands to remove the final screw while holding the PH up from the bottom so it does not fall off after removing the last screw.
4. The PH may come off in easily at this point or it may require a bit of wiggling to remove it. Once it is off, place it on a table of convenient work height.
5. Turn the PH upside down so that you can access the nose cone and camera window. See Fig. 39 for orientation of components on the underside.

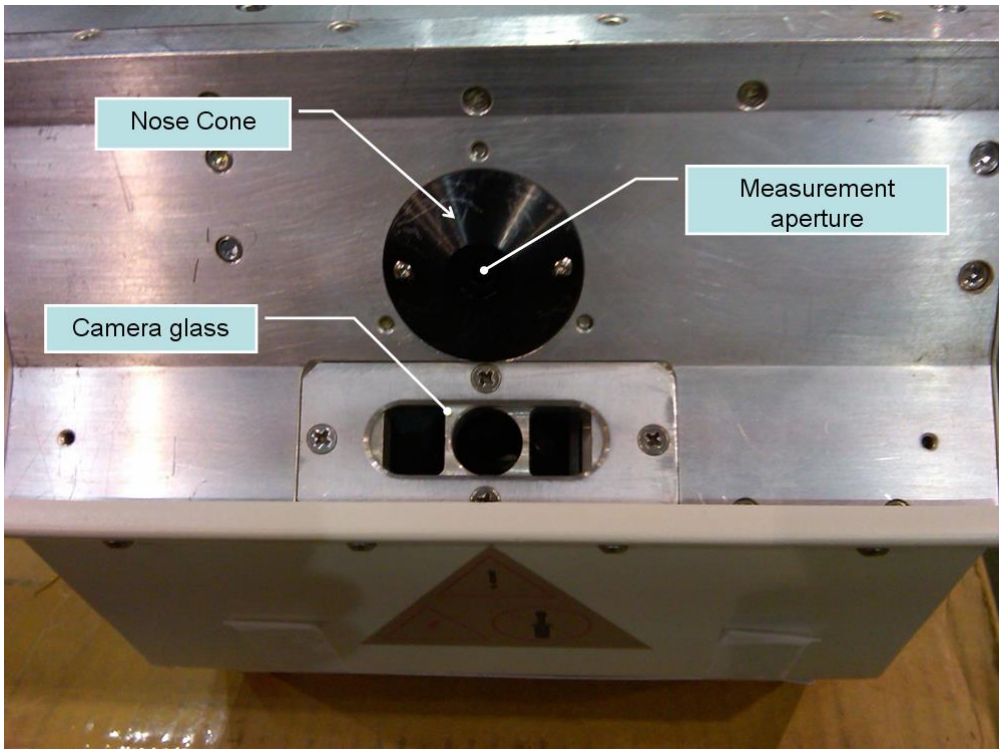

Fig. 39 – Underside of standard PH

6. Clean the camera glass with alcohol and a soft cloth. If necessary, the glass can be removed from the PH to clean it on both sides by removing the 4 Phillips head screws and the aluminum frame. This should only be necessary in extreme circumstances.

7. Examine the nose cone and inspect it for obstruction and/or damage. Debris may accumulate in the measurement aperture and it will need to be cleaned out. It is important to NOT let debris fall INTO the aperture. Tilt the PH so nothing will fall into it. Use tweezers to remove paper debris. If necessary, the cone can be removed if there is a build up of ink, etc. This requires a very small hex wrench, .050, to remove the two button head screws that hold it on. The cone can then be removed.

8. Under the cone is a fiber optic array of 18 elements that may need to be cleaned. Since the light from the PH exits through this fiber optic array and it is this same light that reflects off the swatch and back to the spectrophotometer, this array must be perfectly clean. The recommended method is with a cotton swab and alcohol. See Fig. 40.

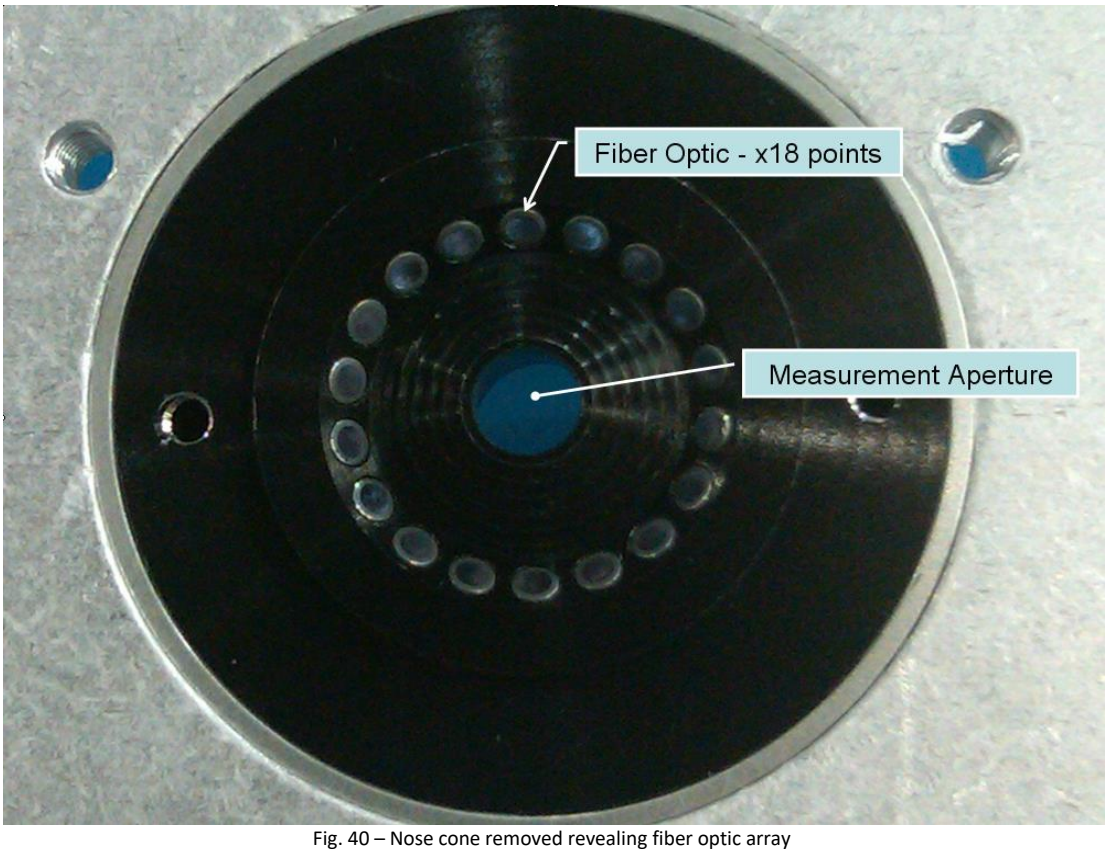

Fig. 40 – Nose cone removed revealing fiber optic array

9. After the glass, nose cone, and fiber optic array have all been cleaned, any parts removed from the PH should be replaced. *These are the ONLY elements of the PH that are user serviceable!* Any other service required on the PH should be returned to the factory for repair.
10. Before replacing the PH back into the system, you should thoroughly clean the calibration plaque. Remove the spring from the underside of the sliding cover. The spring merely sits in a groove on each post and it not permanently attached to either post. See Fig. 41.

11. Remove the sliding cover and clean it completely on all surfaces. This will keep dirt and dust from easily falling back from the cover to the cal plaque when it is replaced.

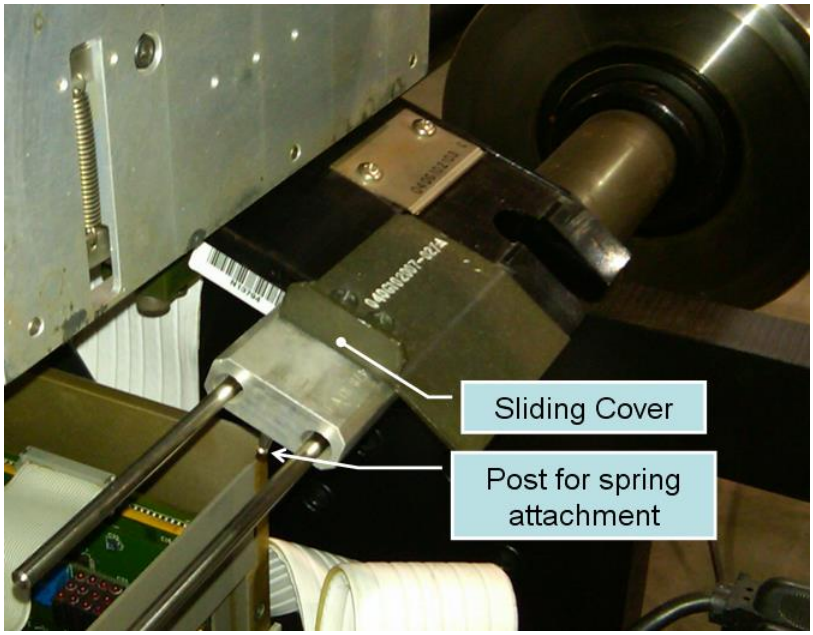

Fig. 41

12. Using a soft rag dampened with some alcohol, completely clean the entire cal plaque. Remove all dust etc. from all surfaces. Again, this will help to keep the cal plaque cleaner for a longer period of time.
13. Using alcohol, thoroughly clean the white tiles. (Both of them) These should be pristine. Be careful not to scratch these tiles.

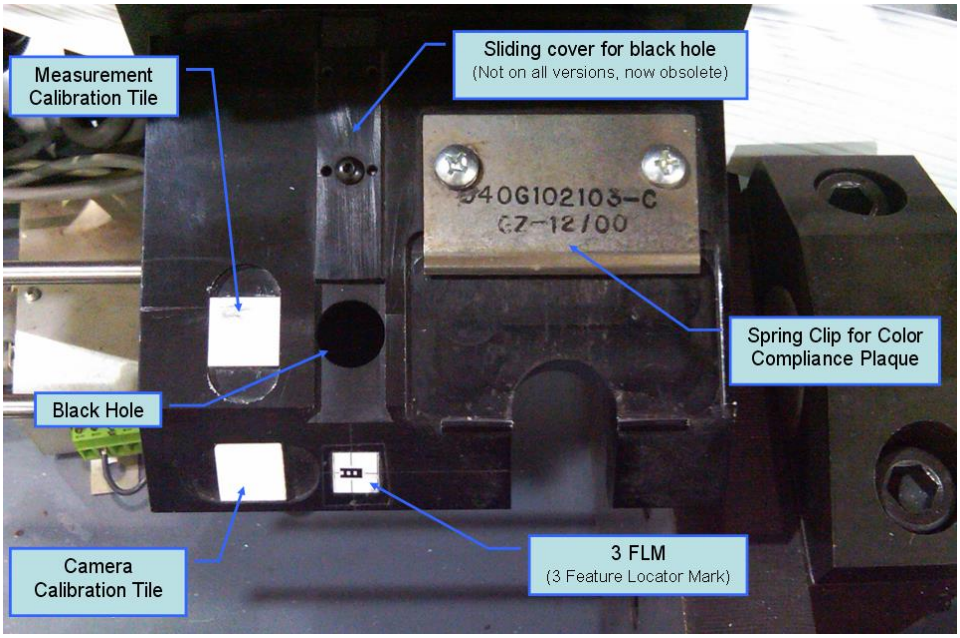

Fig. 42

14. On the underside of the cal plaque is a “black hole assembly”. Reach under the cal plaque and give this a half twist to remove it. The black hole is basically a cup with a cone in the bottom of it. When the spectrophotometer shines light down into this black hole, the light reflects down and to the side so that no light can reflect back. This is how the spectrophotometer compares pure black (or lack of light) to the pre-defined values of the white measurement tile. Any dust or debris in this black hole can reflect light back and cause a mis-calibration of the PH. Blow it out and replace it giving it a half twist to secure it.

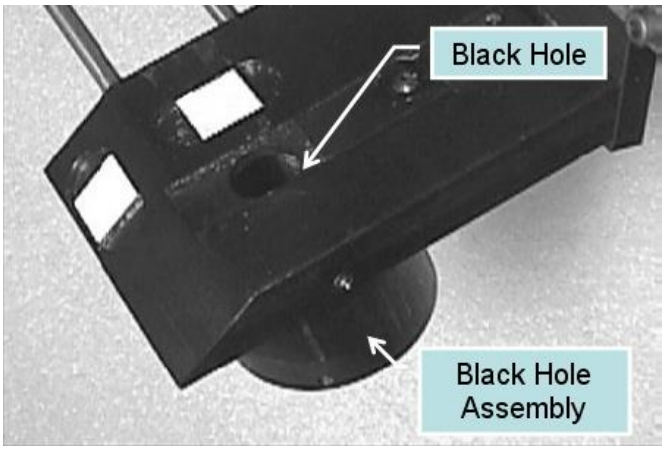

Fig. 43


Fig. 44 – Black Hole Assembly

15. Clean the rods for the sliding cover. DO NOT BEND THEM!
16. Replace the sliding cover and spring. IMPORTANT! - Check that the cover slides freely.
17. Replace the PH onto the same carriage that it was removed from. Do not mix them up unless you are prepared to also run the Head Replacement Procedure immediately following and before any production scanning! Secure the PH tightly with both SHCS.
18. Perform the same steps 1 – 16 on the other PH.
19. Move the PHs slightly off the sliding cover of the cal plaque.
20. Close the OPM door.
21. Turn on the mushroom button on the outside of the OPM and observe that BOTH PHs initialize properly before attempting any system tests OR scanning.

***Nose Cones On The Probe Heads** - Cones can sometimes receive damage from web up devices, wear, etc. While some wear on the nose cone is acceptable, any major wear or damage should result in a nose cone replacement. A check should be made to determine root cause of the wear or damage.

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Probe Head Maintenance (Stay Clean Heads)

Stay Clean PHs generally require less frequent cleaning than the standard versions in like environmental conditions. The procedure for maintaining the Stay Clean version of the PH is largely the same. The major differences are as follows:

1. There is a quick disconnect air fitting on the PH (near the top) that must be disengaged before you can remove the PH.
2. There is no camera glass to clean.
3. There is a filter/regulator assembly that must be cleaned and drained, if necessary.

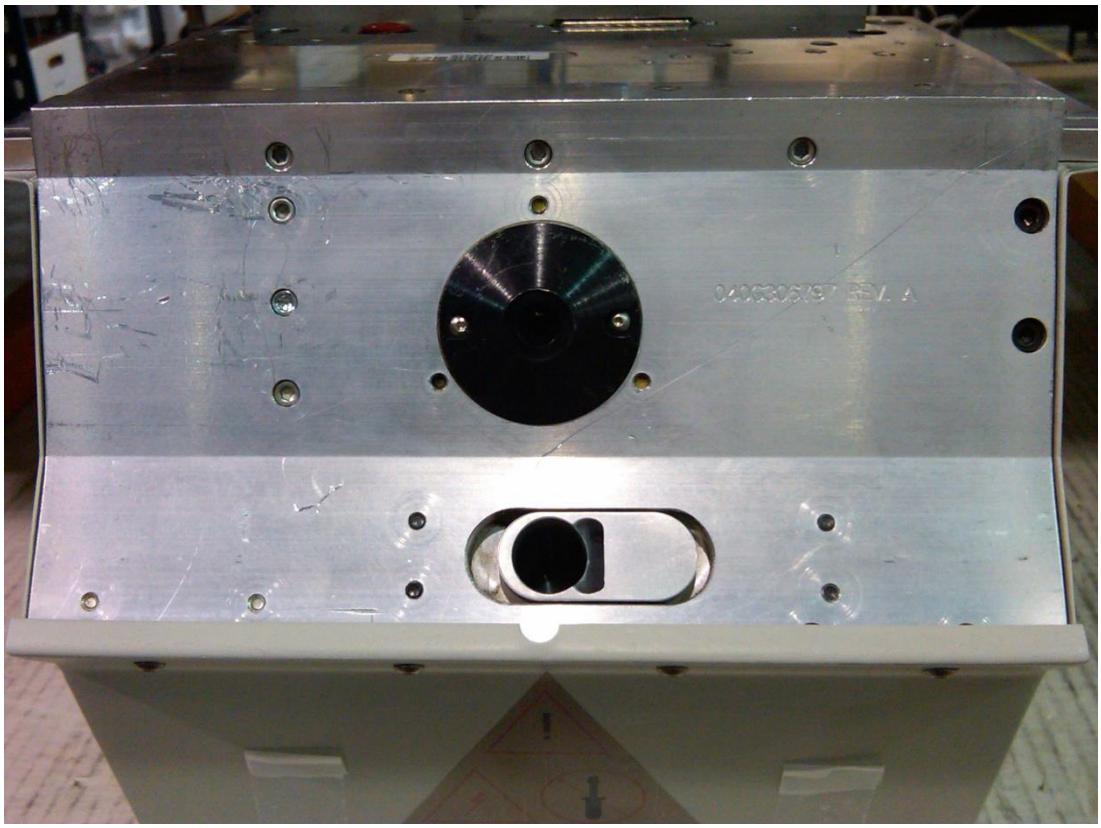

Fig. 45 – Underside of a Stay Clean PH

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17. Calibration Plaques

There are several “generations” of calibration plaques. The very early versions did not contain an area to hold a calibration standard (or T-REF). All recent generations look very similar to the one in the illustration below. There are some calibration plaques that have added components and are of the “stay-clean” variety. Those have some air plumbed to them to keep contaminants off from the white tiles and they have a special sliding cover over these tiles.

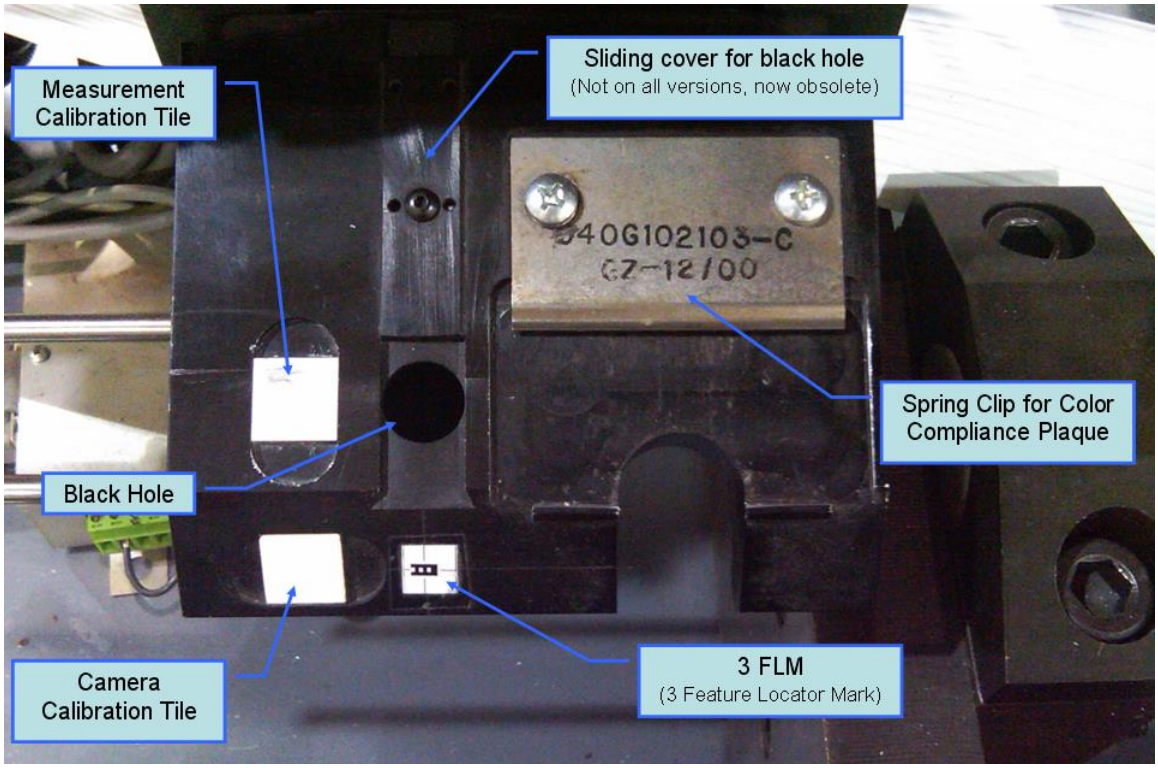

Fig. 46

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White Tiles

The white tiles (measurement and camera) of the calibration plaque are what are known as the "CRM", or "Certified Reference Material". These tiles have been measured by an independent laboratory and they have a known spectral response. Each tile is unique! There is a calibration certificate for every cal plaque assembly and these are usually stored in the console or in a pocket inside the door of the OPM. The values on this calibration certificate are programmed into the Host computer. As such, the calibration plaques ARE NOT INTERCHANGEABLE with other CQ systems, nor can they be replaced by the end user. This procedure must be done by a qualified GMI technician with the proper alignment tools and access to the appropriate menus to enter the calibration values into the system. Further, if a white tile becomes damaged, the entire assembly must be replaced…you cannot replace just the white tile. Here is an example of a damaged tile that would require replacement of the assembly:

Fig. 47 – Scratched Tile

The 3FLM On The Calibration Plaque

This 3FLM is not used in normal scanning. The 3FLM is ONLY used when a Color Compliance Test is being run. (See Color Compliance Testing in Section 9.5 of the ColorQuick Service Manual) Early models had the 3FLM applied with special, non-reflective tape. New versions have a glass cover. The PH finds this 3FLM during the check and from there knows where exactly to find the 5 swatches on the Color Standard. If this 3FLM is missing or damaged, you cannot run the Color Compliance Check in that location.

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The Sliding Cover for the Black Hole

These are not on all versions of the calibration assemblies and in fact have been removed completely on later revisions. It's original purpose was to aid the installer to keep the plunger on a dial indicator from falling into the hole. However, these covers can sometimes slide down unexpectedly during normal operations and cause scanning problems, so they are no longer used.

Black Hole

The sole purpose of this assembly is to create a condition where no light is reflected back into the spectrophotometer during calibration of the PH. This assembly must be kept clean and IN PLACE. There are two tabs on the cup that hold it into the underside of the calibration assembly. There is also a spring loaded detent that helps keep the cup from turning on its own and falling out. The detents sometimes wear out and are available as a replacement, if necessary.

Spring Clip for Color Compliance Check

Like the 3 FLM, the only time this is used is during color compliance checking. It keeps the Status-T web reference completely seated in the assembly during the checks.

Sliding Cover

The purpose of the sliding cover is to keep debris and other contaminants off from the tiles and out of the black hole when the PH is out over the web and scanning. The cover is kept in place by a spring. This spring is secured by a groove in each post that it attaches to. The sliding cover also has some plastic bushings in it that help it to slide on the guide rods. This cover MUST move easily. Cleaning of the guide rods and some silicone applied with a rag to the guide rods will keep it operating smoothly.

Serial Number

There is also a unique serial number on every calibration plaque assembly. The S/N matches the certificate of calibration for the CRM.

18. Beam and Calibration Plaque Alignments

Beam and cal plaque alignments should only be performed by trained GMI service personnel. These alignments require special built alignment tools. It is highly recommended that an annual service visit be scheduled to check these alignments. DO NOT ATTEMPT these alignments yourself. These components must be precisely in alignment on both X and Y axis for proper operation. Any major mis-alignment can render your ColorQuick system unusable and may even cause damage.

Any time work is performed on the beams or carriages, such as v-rail or v-wheel replacements, these alignments need to be performed.

Minimal clearance checks

You can use feeler gauges to check the clearance of the PH nose cone to the calibration tile as well as the read roller. To perform these checks, all surfaces must be clean and free from damage. A worn or damaged nose cone, for instance, nullifies the accuracy of this check.

Nose Cone to White Tile Check

Using a feeler gauge, measure the distance between the nose cone and the white measurement tile. The nominal measurement is .034 ± .004. This means that the minimum measurement is .030 and the maximum measurement is .038. If your measurement falls outside this tolerance, your system may not be scanning properly.

1. Check that the cone is not damaged or worn and is securely attached.
2. Check that the PH is securely attached to the carriage.
3. Check that the calibration plaque or tile is not damaged. (The white tile should be flush with the body of the plaque, use a straight edge to verify)
4. Check that the carriage has not come off from the v-rails.
5. Check for damage on the v-rails or v-wheels.

If items 1 – 5 above are OK, then your system requires a service call for cal plaque alignment.

Nose Cone to Read Roller Check

Using a feeler gauge, measure the distance between the nose cone and the read roller. Make sure that there is NO paper on the roller; you must measure metal to metal. The nominal measurement is .038 ± .008. This means that the minimum measurement is .030 and the maximum if .046. If your measurement falls outside this tolerance, your system may not be scanning properly.

1. Check that the cone is not damaged or worn and is securely attached.
2. Check that the PH is securely attached to the carriage.
3. Check that the read roller is not damaged or built up with ink, paper dust, or other contaminants.

4. Check the bearings on the read roller. Make sure they are not worn or loose. Use a pry bar with a block of wood on the roller for protection and a dial indicator to check for excess bearing play if in doubt about the condition of the roller bearings.
5. Check that the carriage has not come off from the v-rails.
6. Check for damage on the v-rails or v-wheels.

If items 1 – 6 above are OK, then your system requires a service call for beam alignment.

19. Probe Head Carriages

Probe head carriages have a set of V-wheels that ride on V-rails on the beam. In very early versions of the carriages, they contained 2 V-wheels at the top and on the bottom there was a sliding block mounted on a spring loaded arm that rode on the bottom V-rail. These are now obsolete. Current versions of the carriages have 3 V-wheels, 2 at the top and 1 mounted on the spring loaded arm at the bottom.

PH Carriage Maintenance

The only maintenance required for the carriages is to keep the V-rails and V-wheels clean and lightly lubricated. These should be lubricated with lightweight machine oil such as 3-in-1 Oil, etc. Oil is only required on the surfaces of the V-wheels and V-rails as the V-wheels and arm have permanently sealed bearings. Use a rag to apply a thin coat of oil to the rails. See the red arrows in Fig. 48 for oiling points on the carriage.

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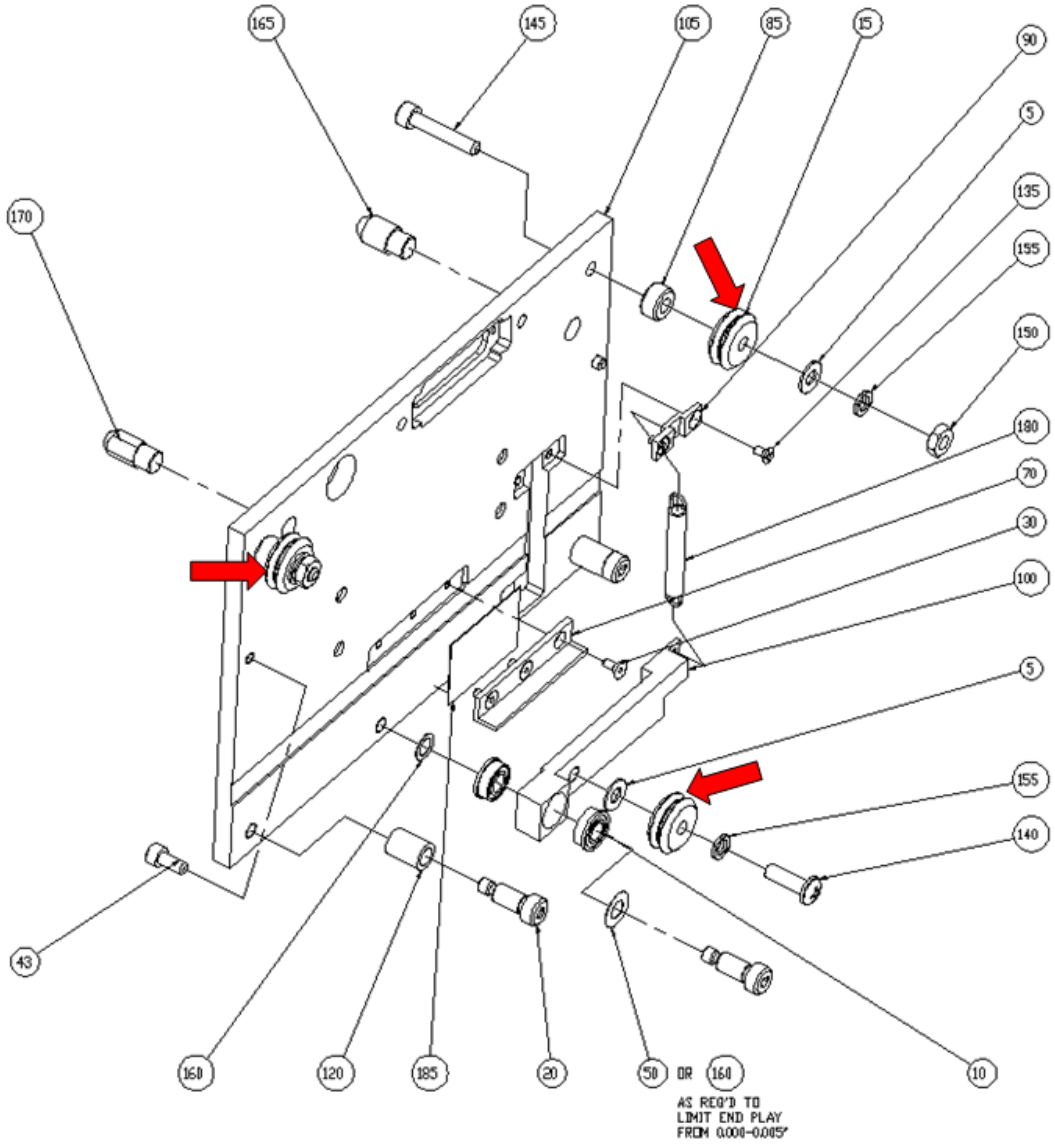

Fig. 48

20. White Ribbon Cables

The white ribbon cables carry all of the power and data between the OP computer and Probe Heads. They are mounted in a flexible track called an “energy chain”. These white ribbon cables are quite flexible, but they can wear out over time and can be damaged quite easily as well. If the cable is suspect, you can “ring out” the connections with a multimeter, but sometimes a broken conductor in the ribbon cable may only show an open (or short) when the ribbon is in a certain position of flex.

Where the cable connects to the OP computer, there is a special sliding clip on the connector that creates a lock of the connector onto the card in the OP computer. This ensures that the cable does

not come loose during system operation. The clip must be slid before removing the cable and then slid back into position after the cable is reconnected.

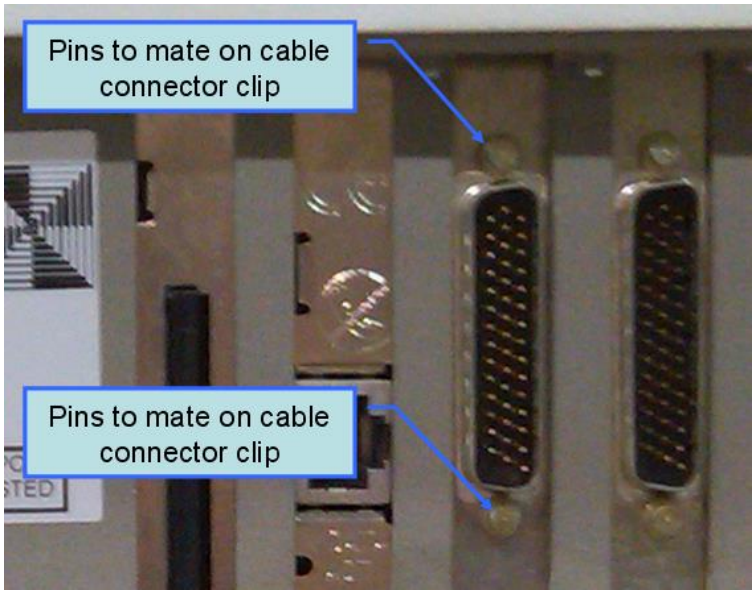

Fig. 49

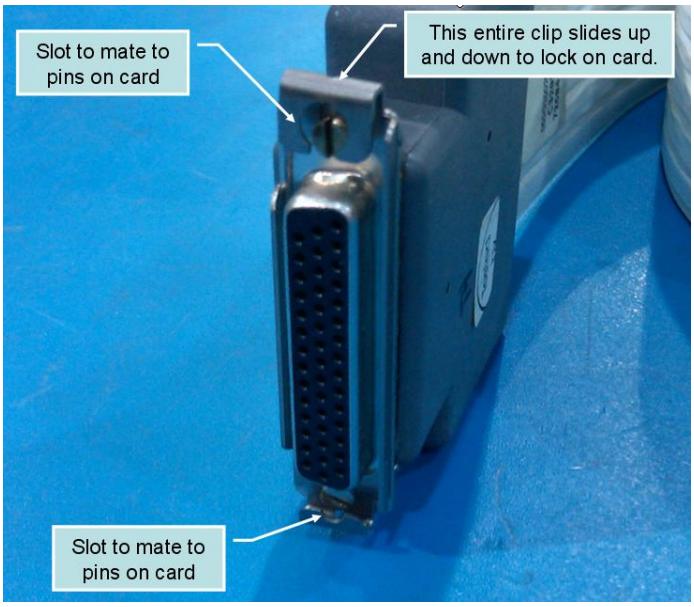

Fig. 50

The end-to-end connection of this cable is straight thru one-to-one. However, some conductors are not used. If you decide to check continuity, here is a table of the conductors used:

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PROBE HEAD CABLE ASSEMBLY PIN OUT

DB44 PIN #	WIRE	DB44 PIN #	WIRE
1	PAIR #1 WHITE	23	NO CONNECTION
2	PAIR #2 WHITE	24	NO CONNECTION
3	PAIR #3 WHITE	25	GROUND #2 AWG
4	PAIR #4 WHITE	26	GROUND #2
5	PAIR #5 WHITE	27	+18 VOLTS AWG 18
6	PAIR #6 WHITE	28	+18 VOLTS
7	PAIR #7 WHITE	29	GROUND #3 AWG
8	PAIR #8 WHITE	30	GROUND #3
9	PAIR #9 WHITE	31	PAIR #1 BLACK
10	PAIR #10 WHITE	32	PAIR #2 BLACK
11	PAIR #11 WHITE	33	PAIR #3 BLACK
12	PAIR #12WHITE	34	PAIR #4 BLACK
13	PAIR #13 WHITE	35	PAIR #5 BLACK
14	NO CONNECTION	36	PAIR #6 BLACK
15	NO CONNECTION	37	PAIR #7 BLACK
16	+12 VOLTS AWG 18	38	PAIR #8 BLACK
17	+12 VOLTS	39	PAIR #9 BLACK
18	GROUND #1 AWG 18	40	PAIR #10 BLACK
19	GROUND #1	41	PAIR #11 BLACK
20	−12 VOLTS AWG 18	42	PAIR #12 BLACK
21	−12 VOLTS	43	PAIR #12 BLACK
22	NO CONNECTION	44	NO CONNECTION

Fig. 51

Ordering Replacement White Ribbon Cables

There are several different lengths of white ribbon cables. They are specific to the size of the OPM and the beam length for your system. Contact GMI Parts/Tech Support with your system number to ensure that you order the proper cable.

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Replacing a White Ribbon Cable

Make sure that the power is off to the OPM and OP computer before connecting or disconnecting a white ribbon cable.

There are a number of parts that must be removed in order to replace this cable. Of all of the procedures on a ColorQuick system, this is probably the most difficult and delicate to perform. Extreme care must be taken to not kink the replacement white ribbon cable or damage it in any way. This is also the most expensive cable in your system.

1. Turn off the power to the OPM.
2. Remove the PH from the carriage.
3. Disconnect the white ribbon cable from the OP computer.
4. Remove the two Phillips screws holding the cable support (Fig. 53) to the carriage. (Fig. 52)

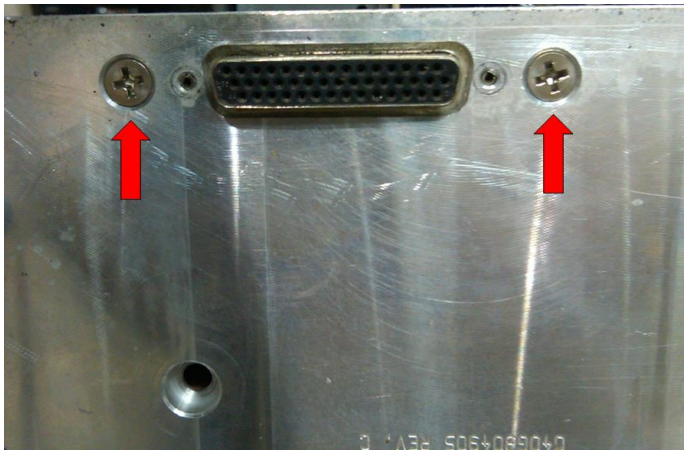

Fig. 52

5. Remove the small button head (or Phillips) screws holding the black cover on the cable support.
6. Work the white ribbon cable connector free from the cable support. There are two pins in the cable support that capture the two holes on either side of the D-SUB connector. DO NOT remove the pins from the cable support. (Fig. 54)

Fig. 53 – Cable Support

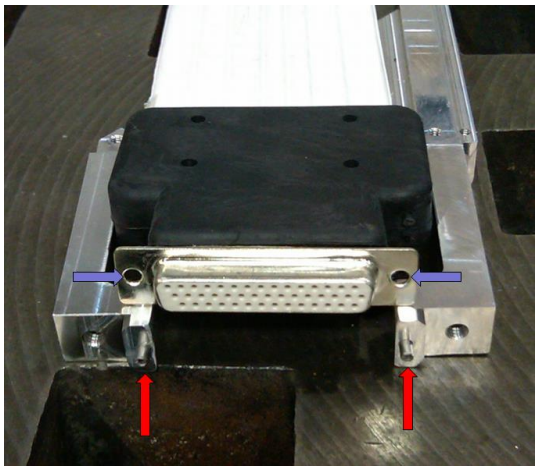

Fig. 54

7. At this point, the cable should be free and you can move it back and forth in the black energy chain (track). Take the old cable and lay it out flat at both ends as it exits from the track.
8. Take the new cable and orient it properly so that you can tape one end of the new cable to the opposite end of the old cable. You will be using the old cable to pull the new cable into the track. **MAKE SURE** that you get the new cable with the correct side up so that when the connector is folded into position to attach to the carriage, the connector will be oriented as shown in Fig. 52. If you get this wrong the first time, you will need to pull the cable back out to flip it over.
9. Tape PH connector end of the NEW cable to the OP connector end of the OLD cable.
10. You can now use the old cable to pull the new cable into the energy chain.
11. Once the new cable is fully in the energy chain and the old cable is clear, you can un-tape the two and discard the old white ribbon cable.
12. Now assemble the new white ribbon cable into the cable support. Make sure that the two pins on the support are seated into the holes on the new D-SUB connector.

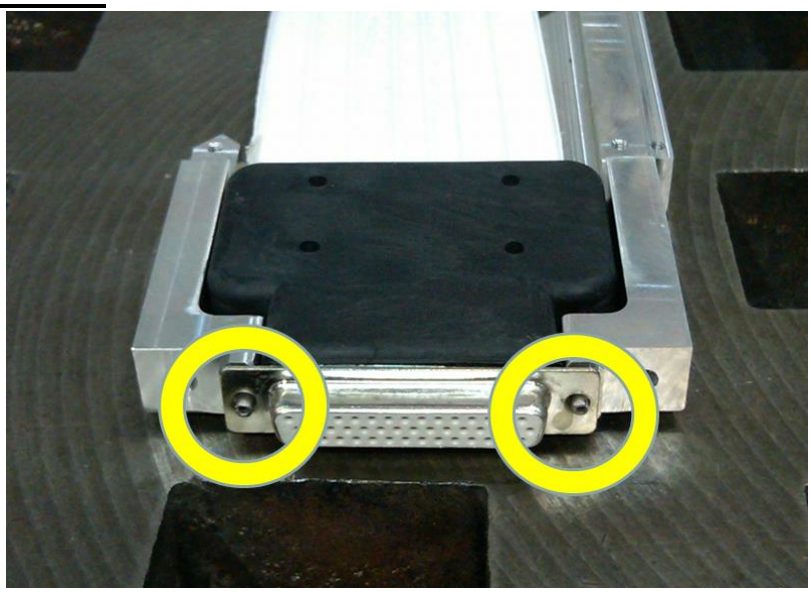

Fig. 55

13. Now install the black cover back onto the cable support.
14. You can now re-install the entire cable support assembly back onto the PH carriage. NOTE: Be sure that the orientation of the D-SUB connector is correct as shown in Fig. 52 so that the PH connector can match up to it. If this is wrong, you will need to remove the white ribbon cable completely from the energy chain and flip it over.

15. Make sure that the white ribbon cable is not too loose or too tight within the energy chain. When the ribbon cable is lying in the energy chain, it should be able to move freely with the energy chain without binding up. If the ribbon cable is too close to the inside curve of the energy chain, this can cause the energy chain to buckle when the PH is moving back and forth. This can lead to premature cable wear and possibly positional errors of the PH while scanning. See Fig. 56 and 57 for incorrect and correct slack in the white ribbon cable.

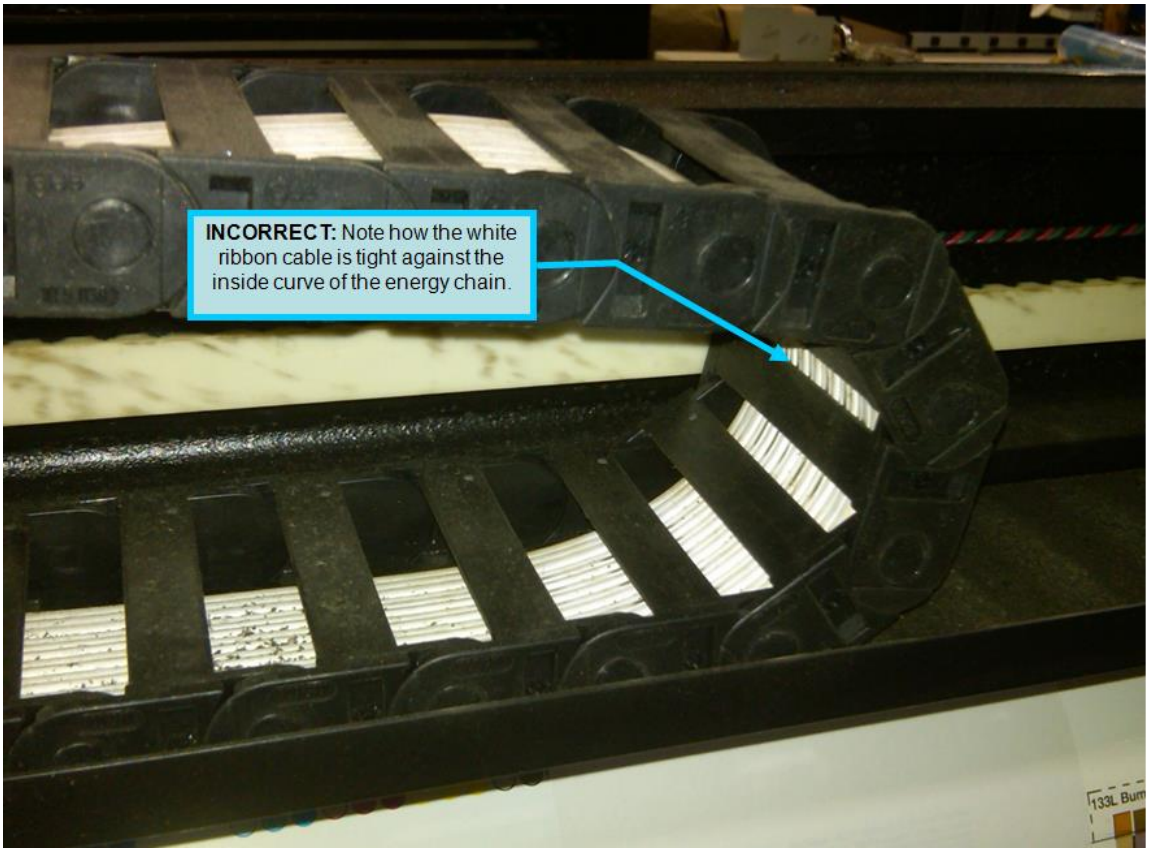

Fig. 56 – Incorrect Slack

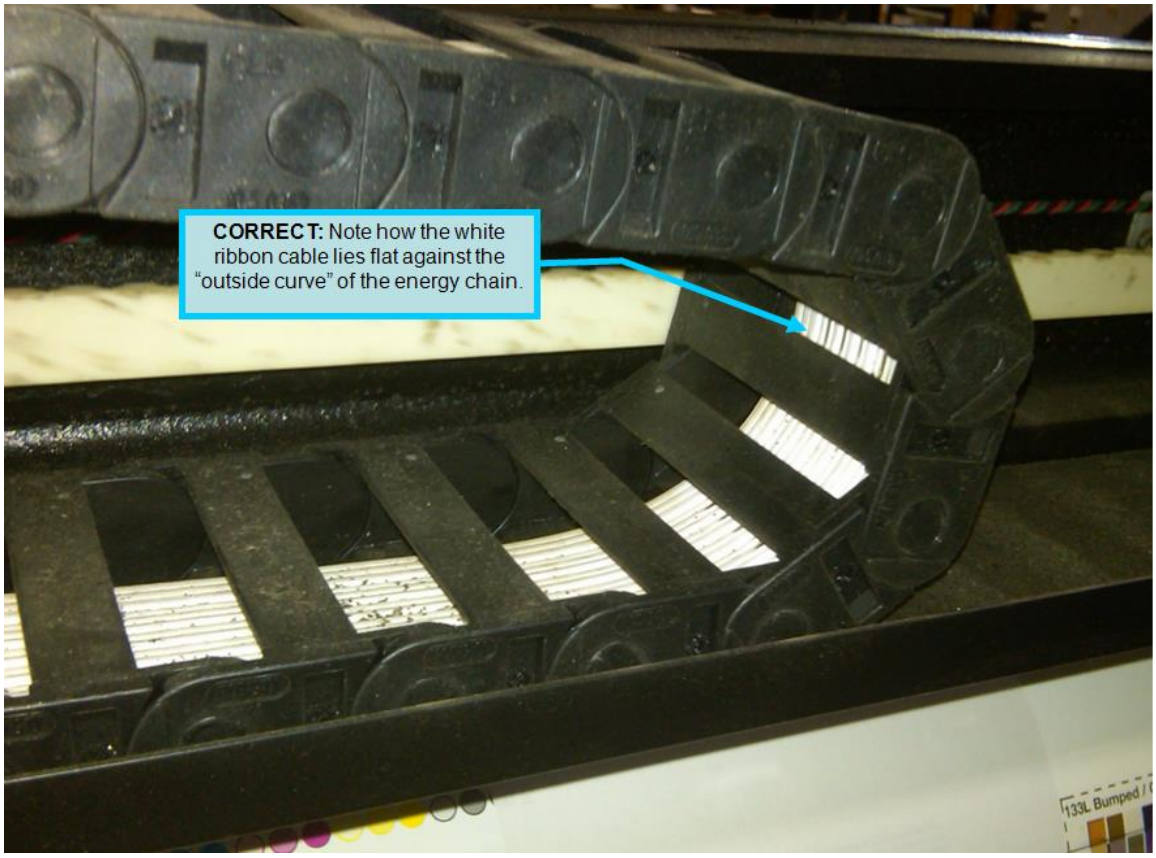

Fig. 57 – Correct Slack

16. Once the proper slack is feed into the energy chain, you can reconnect the white ribbon cable to the OP computer.
17. Excess length of white ribbon cable inside the OP enclosure should be tucked under the OP computer when possible. This will help to keep it out of harm's way. It is important to not kink or crease the cable at any point. It should be rolled gently.

21. Servo Drives

Servo drive initialization is covered under the OPM initialization in a previous chapter of this document.

Servo Tests

For safety, the scanner head does not move onto the web if the press is not moving. Also, the test aborts if the press speed drops below the minimum scan speed (300 FPM for standard systems, 175 FPM for carton). The servo system test makes a total of four position moves, checking the controller's final position against the requested position on all moves. The final two moves check the home sensor location against its location from the previous move. Like the camera and measurement tests, the PASS / FAIL result of this test is not as important as are the result codes. Here is a chart on how to interpret these codes:

Result Code: **xxxx-nnn**

nnn	Combined position difference of all moves in hundredths of mm (25 = 0.0025cm)

Move #1	From Current Position To Black Hole
0	Successful
1	Servo Error
2	Destination Position Error (greater than 2.0mm)

Move #2	From Black Hole to 0.5cm
0	Successful
1	Servo Error
2	Destination Position Error (greater than 2.0mm)

Move #3	From 0.5cm to Fixture Center
0	Successful
1	Servo Error
2	Destination Position Error (greater than 2.0mm)
3	Home Sensor Location Error (greater than 50 counts difference from its location in move #2)

Move #4	From Fixture Center to 0.5cm
0	Successful
1	Servo Error
2	Destination Position Error (greater than 2.0mm)
3	Home Sensor Location Error (greater than 50 counts difference from its location in move #3)

Fig. 58

NOTE: A result of 5000-00 means that the system did NOT run a servo test because the press was not running above the minimum scan speed! Although the system reports this as a failure, it is NOT a failure of the hardware and the test should be run again with the press running.

The *nnn* numbers should be small; typically anything less than 50 can be ignored. Anything greater and you may have a problem with the servo drive or something may be obstructing the path of the PH. If there are any errors in the first 4 digits, it could be something major or it could be something

as simple as an energy chain that is bound up or a sliding cover on the calibration plaque that does not slide easily. Remove the sliding calibration plaque cover and try again. If that does not resolve the error, turn the power off to the OP and manually move the PH the entire length of the beam, paying close attention to any portion of the travel that may seem to bind.

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An often overlooked point on the beam itself is the idler housing assembly for the pulley that guides the long, white linear belt. These pulleys can receive damage severe enough to separate the flange from the pulley and cause intermittent binding as well as permanent damage to the linear belt if not caught in time.

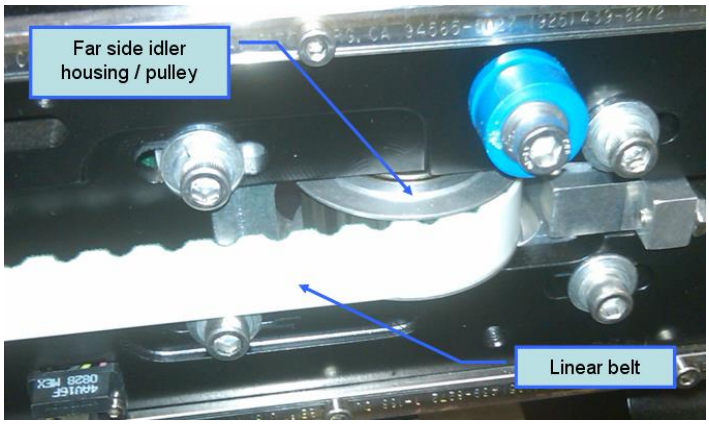

Fig. 59

Other possible issues with servo drives are worn or loose belts. These should be inspected and replaced if necessary. The white/clear belt from the intermediate shaft to the beam pulley is auto-tensioned when installing the servo drive since the servo drive mount is spring loaded. The black belt from the motor to the intermediate shaft has no tensioning mechanism. NEVER ROLL A BELT OVER A FLANGE! This can damage the belt.

Servo Drive Replacement

This is covered in Section 7.9 of the ColorQuick Service Manual. No calibration of a replacement servo is required. This is automatically done when rebooting the OP computer.

Servo Drive Part Numbers

As of this writing, there are 4 different part numbers in use for the servo drives. There are RH and LH assemblies as well as different length pigtails for each. The longer pigtails are used on Ecocool systems whereas most standard OP modules use the standard length pigtails. While the longer pigtail versions can be used in place of the shorter version, you cannot use the short version in place of the longer version.

Part Number	Description
055G400126-01	ASSY, SERVO CQ LH
055G400126-02	ASSY, SERVO CQ RH
055G400126-03	ASSY, SERVO CQ ECOCOOL LH
055G400126-04	ASSY, SERVO CQ ECOCOOL RH

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Determining LH or RH Assemblies

To determine the proper assembly orientation, when you are standing at the end of the beams near the servo drives (typically on the computer side of the beams as well, although this is not always the case), the LH assembly is on your left side and the RH assembly is on your right side. See Fig. 60.

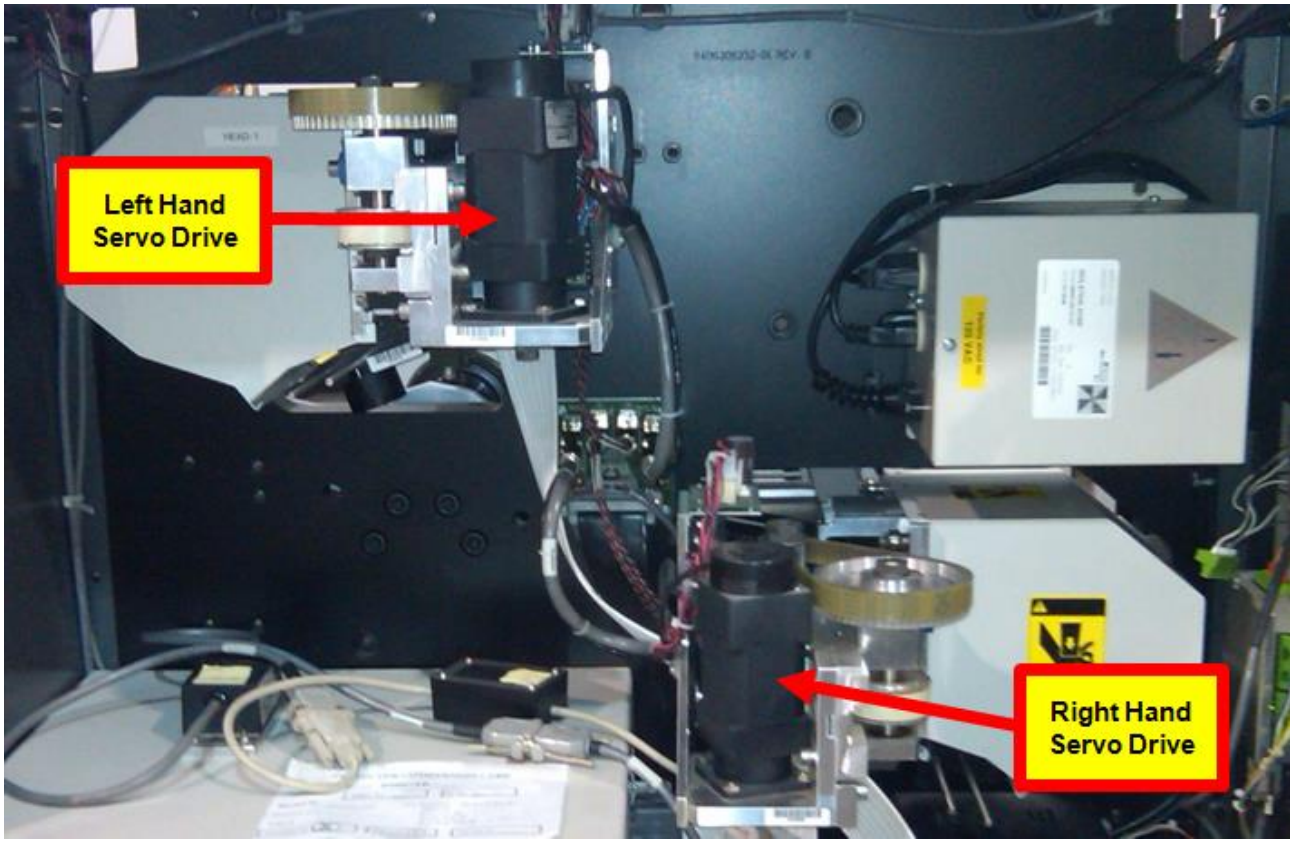

Fig. 60 – Servo Drive Orientations

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Power Supply

The power supply for the servo drives is the large PS mounted in the OPM. This provides 24 volts. Typical amperage draw under normal operating circumstances for the PS is 4 – 6 amps with a peak of 7 – 12 amps. Anything greater than this value may be an indication of a faulty servo drive or binding PH carriage. This amperage can be checked with a clamp style ammeter.

Fig. 61 – 24V Power Supply (Older style)

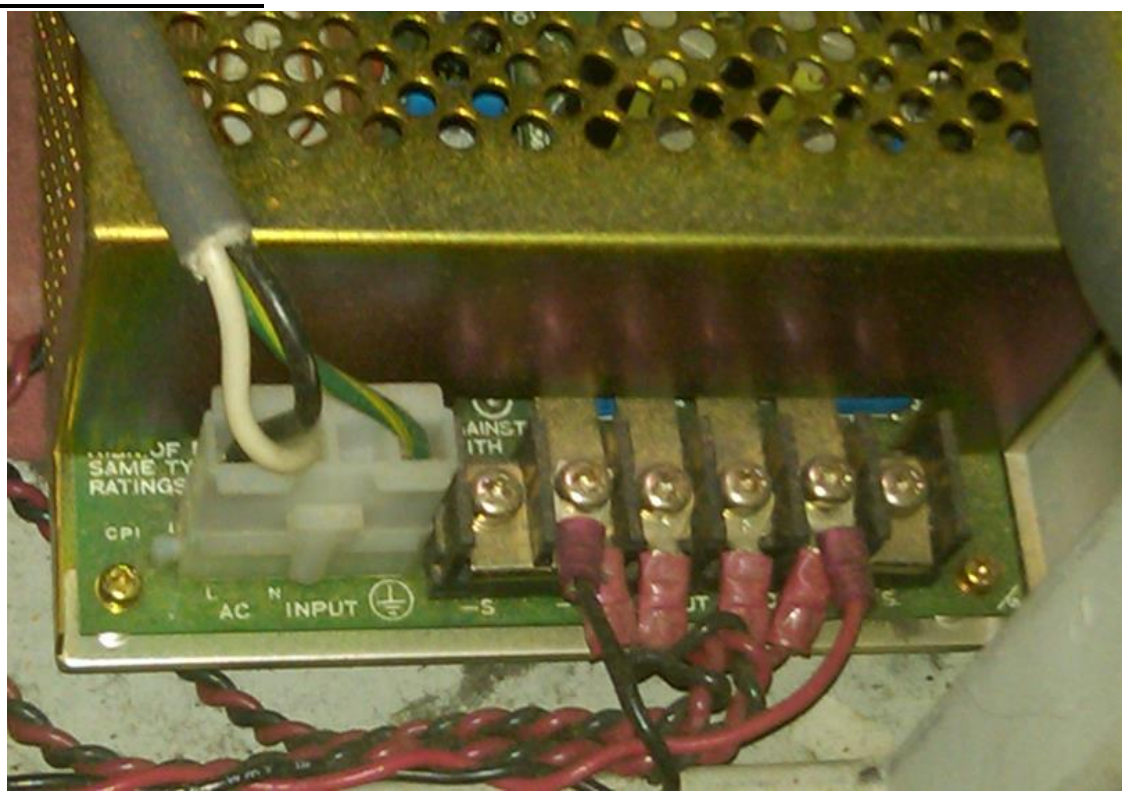

Fig.62 – 24V Power Supply Connections (Older style)

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22. Network Problems

Below is a common network diagram of a multi ColorQuick system. This represents a typical 3 system ColorQuick layout with 2 Microcolor Ink Console interfaces and 1 Telecolor or Omnicon style Ink Console interface. There are many other iterations of what your network may consist of and not all possibilities can be covered here.

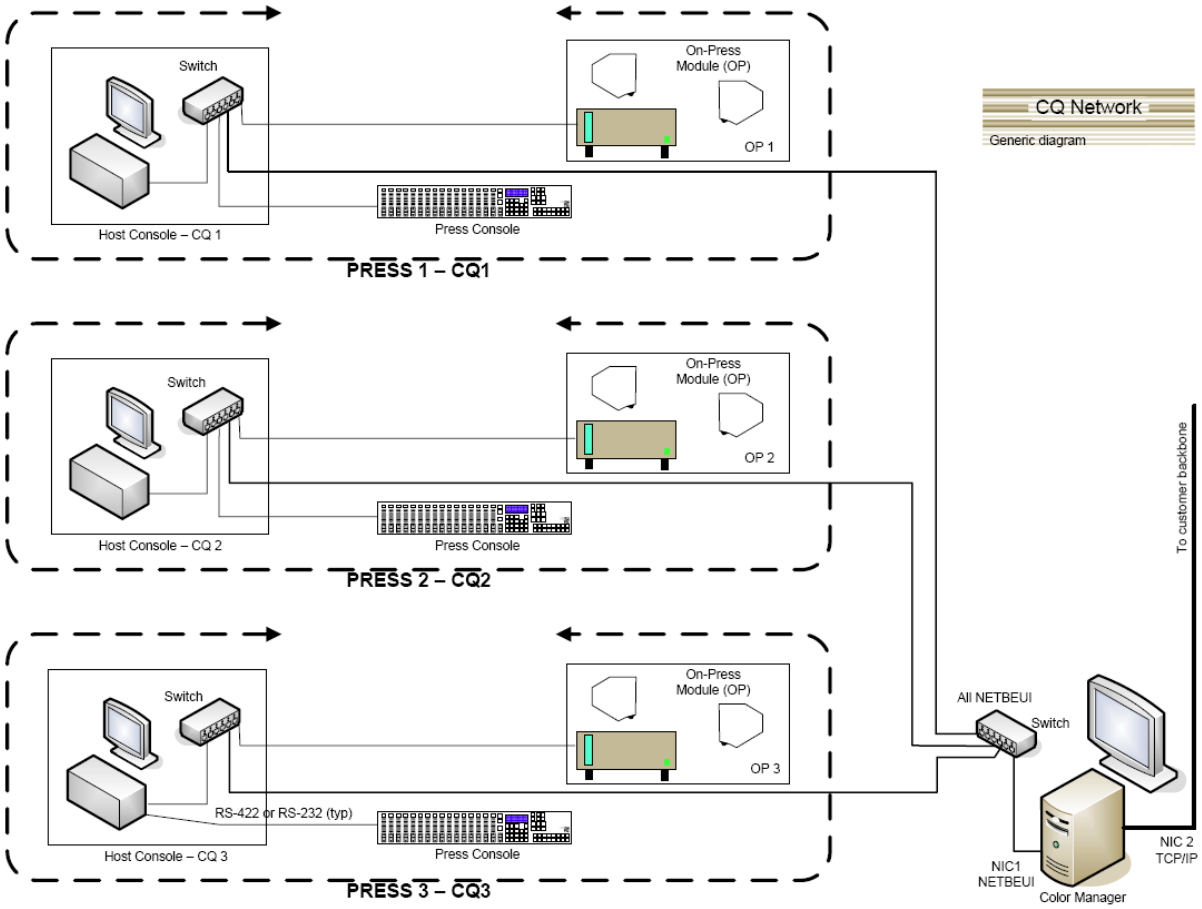

Fig. 63

- ALL Ethernet communication within a ColorQuick system uses NETBEUI protocol!
- The Host computer talks to the Press Console, the OP computer, and the Color Manager.
- The OP computer talks to the Host computer and the Color Manager.
- The Press Console talks to the Host computer and, in the case of Microcolor II, it also talks to the Color Manager.
- The Color Manager talks to the Host, OP, and sometimes the Press Console. (If Microcolor II)
- In no instance does the OP computer talk to the Press Console.

- In most cases, the network is dedicated between the Color Manager and the systems at the press. In some instances though, this is part of the customer network. The dedicated network is preferred, but some customers insisted on utilizing their own network.
- The secondary NIC in the Color Manager is used for remote access by GMI Tech Support to stored and forensic data. No direct access to the press is available in the CQ-DOS system.

Ethernet Cables and Switches

There are a number of standards on the planet regarding Ethernet cabling and connections. Typically one of the more important items to keep in mind is that a network should adhere to one of them and not a bunch of them. GMI utilizes a CAT 5, shielded and twisted pair cable. (STP) All runs are kept to 100 meters (328 ft.) or less between connection points. When it comes to terminating the RJ-45 connector at the end of the Ethernet cable, the GMI system was installed using the wiring standard shown here in Fig. 64. Pair order and polarity of each pair are critical. Communications will fail if two wires of either pair are reversed. BOTH ends of a cable must be wired in the same pattern. If you re-terminate any connectors, please use the same standard shown in Fig. 64. There is also an entire Ethernet Installation Manual, GMI Part #090S900074.

HUB END	WIRE	PCB END
1	White/Orange	1
2	Orange	2
3	White/Green	3
4	Blue	4
5	White/Blue	5
6	Green	6
7	White/Brown	7
8	Brown	8
Body	Drain Wire*	NC

* Crimp drain wire to metal body on hub end of cable.

Fig. 64

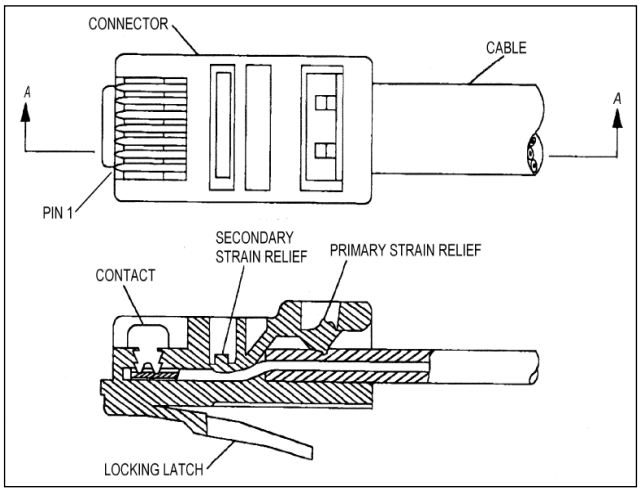

Fig. 65

GMI has used two kinds of Ethernet hubs and switches to date. The original Bay Network hubs were used in the early days. These were limited to 10 mbps and are no longer used, or available.

Netgear switches have been the standard in GMI installations for several years. They are available in 8 port and 16 port varieties and are auto sensing / auto switching. They are unmanaged, meaning that there are no settings or configurable parameters required to use them. The device automatically configures itself when you plug in a cable.

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Fig. 66

The device has some LED indicators. One is the power indicator. There is also an LED on each side of the port that tells you if it is connected at 10 or 100 mbps. (Some connections MUST be 10 mbps, so do not be alarmed if one of your ports is only registering 10 mbps.) One of these LEDs should light up when connected and the computer is on. The same LED blinks when there is activity on the network for that port.

If the Power LED is not lit, you may have a bad power adapter.

These switches can sometimes go bad. Do not hesitate to try another, known good switch when you are having network or communication problems.

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Network Error Messages

Network problems typically manifest themselves in one of the following ways:

1. **The Host reports that the Color Manager is offline.** (Blue warning box in the middle of the screen (Fig. 67) that can be dismissed from the normal operating GUI, but if you go into the "System menu", the yellow, Color Manager offline box (Fig. 68) is persistent and cannot be dismissed from this screen until connection is restored.)

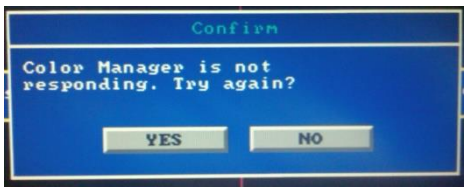

Fig. 67

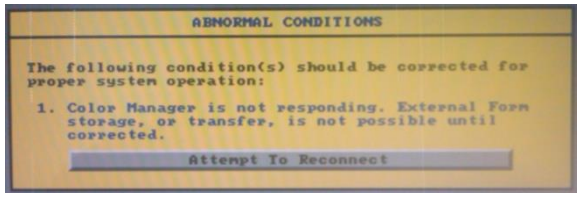

Fig. 68

2. **The Host reports that the OP is offline.** (Yellow warning box in the middle of the screen (Fig. 69) stating that the "Scanner is not on". Also, the SCAN button in the lower right corner of the GUI turns RED.)

Fig. 69

3. **The Host reports that the Press Console is offline.** (Yellow warning box in the middle of the screen (Fig. 70) that the "Press Console is not responding to communications".)

Fig. 70

A. - If the Host shows that the **Color Manager is offline** only, but not the OP, check the following:

1. Make sure that the Color Manager is booted up to the OS.
2. Check that the network cable is plugged into the appropriate NIC on the Color Manager.
3. Check that all switches in the network path between the Host and the Color Manager are on. Try unplugging them from power to reboot the switch if necessary.
4. Try swapping the network cables to other open ports on the switch if possible. Sometimes these ports can go bad. (Reboot the switch after swapping the cables!)
5. Try another switch.

6. As a last resort, you can turn off the Host computer, unplug all of the cables from it, and hook up the Host near the Color Manager if there is an open port on that switch. (This will eliminate any cable problems between the press console and the Color Manager location.)

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B. - If the Host reports that the **OP is offline** only, but not the Color Manager, check the following:

1. Make sure that the OP computer is actually booted up. Use a monitor on the OP if needed to see if the OP computer is actually live and booted to a GUI.
2. Check that the network cable is plugged into the OP computer.
3. Check that the switch (es) in the network path between the Host and OP are on. Try unplugging them from power to reboot the switch if necessary.
4. Try swapping the network cables to other open ports on the switch if possible. Sometimes these ports can go bad. (Reboot switch after swapping the cables!)
5. Try another switch.
6. Try the computer test disk (Section 6) to perform basic tests on the OP NIC.
7. As a last resort, you can turn off the OP computer, unplug all of the cables from it, and hook up the OP near the Host. (This will eliminate any cable problems between the Host and the OP Module location.)

C. - If the Host reports that both the **Color Manager** *and* the **OP** (and possibly the Press Console) **are offline** only, check the following:

1. Make sure that the network cable is plugged into the back of the Host computer.
2. Check that the switch (es) in the network path to either computer is on. Try unplugging them from power to reboot the switch if necessary.
3. Try swapping the network cable to another open port on the switch if possible. Sometimes these ports can go bad. (Reboot switch after swapping the cables!)
4. Try another network cable from the Host to the switch.
5. Try another switch.
6. Try the computer test disk (Section 6) to perform basic tests on the Host NIC.
7. As a last resort, try another Host computer. (Remember to configure it properly!)

D. – If the Host reports that the Press Console is offline, the troubleshooting steps to follow depend on the type of press console you have.

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Microcolor II

This system uses Ethernet to talk to the Host computer.

1. Make sure that the network cable is plugged into the back of the Microcolor II system computer.
2. Check that the switch (es) in the network path between the Host and Microcolor II system computer are on. Try unplugging them from power to reboot the switch if necessary.
3. If you have CIP3 presetting capability on your Microcolor console, try recalling a CIP3 form to see if you get a network error. If so, you may have a NIC or computer problem on the MC system computer.
4. Try swapping the network cables to other open ports on the switch if possible. Sometimes these ports can go bad. (Reboot switch after swapping the cables!)
5. Try another network cable from the Microcolor II system computer to the switch.
6. Try another switch.
7. Try the computer test disk (Section 6) to perform basic tests on the Microcolor II system computer NIC.

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Telecolor II and Omnicon Ov2

This system communicates via a RS-232 Digi-board in the Host and thus uses serial communication (not Ethernet) to talk to the Telecolor. In some cases, a "Filter Computer" is used between the Host computer and the Telecolor computer. The Filter computer is only used to filter out excessive sweep messages from the communication between the Telecolor and the Host computer. If you have this interface, follow these troubleshooting steps:

1. Check to see if you have a filter computer. This box looks just like the Host computer and sits somewhere between the Host computer and the Telecolor computer. If you have one, make sure that it is on. It boots from a floppy. There is not much to see on a display if you hook one up to it. (There is no GUI)
2. Check the cable coming out of the back of the Host computer. There is an octopus cable with several connectors on it. Only one of them is connected to another cable going out toward the Filter computer / Telecolor. See that it is securely connected.
3. Check the entire length of this cable going to the Filter computer. There may be a short pigtail changing the connector size from 25 pin to 9 pin or vice versa. All should be secure.
4. Check that this cable is securely connected to the Filter computer.
5. Check the other cable coming out of the Filter computer and going to the Telecolor computer. Again, there may be a pigtail changing the connector size from 25 pin to 9 pin or vice versa. All should be secure.
6. If all of these cables are secure and the Filter computer is on, it may be any of the following items causing this error:
    a. The Telecolor may have lost its configuration for CLC. Consult with GOSS on verifying this.
    b. The Telecolor may have issues with its network. Typically, it is found that the Telecolor may have faulty Gabnet cards, etc. that cause this communication problem. Consult with GOSS on verifying this.

Refer to the AutoQuick User and Service Manuals for Telecolor and Omnicon Ov2, GMI Part #060U471080-02 and 060S471080-02, for further operational hints and troubleshooting.

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Omnicon Ov3

This system communicates via a RS-422 Digi-board in the Host and thus uses serial communication (not Ethernet) to talk to the Omnicon.

1. Check the cable coming out of the back of the Host computer. There is an octopus cable with several connectors on it. Only one of them is connected to another cable going out toward the Omnicon. See that it is securely connected.
2. This cable goes to a Red Lion RS-422 to RS-232 converter. (ICM5) This converter is typically located in the Omnicon cabinet near the "Rose" computer. Check that the converter is powered. (24V)

Fig. 71 – ICM5 Converter

3. There is another cable that goes from the converter to the back of the Omnicon computer. See that both ends are securely connected.
4. Check the settings on the converter. They should be:

Settings	Dip Switch	ON/OFF
9600 Baud	1	OFF
19200 Baud	2	ON
38400 Baud	3	OFF
57600 Baud	4	OFF
115200 Baud	5	OFF
Pull Down	6	OFF
Pull Up	7	OFF
4 Wire / 2 Wire	8	OFF
4 Wire / 2 Wire	9	OFF
120 ohm Termination	10	OFF
422 / 485	1	OFF
422 / 485	2	OFF
NC	3	OFF
DCE / DTE	4	ON
DCE / DTE	5	ON
DTE / DCE	6	OFF
DTE / DCE	7	OFF

Fig. 72

Red Lion	Terminal #	Wire Color	DB9 Pin #	GMI Digi-Board
RX-B	6	Brown/White	8	RX +
RX-A	7	White/Brown	9	RX -
TX-B	3	Blue/White	6	TX +

TX-A	4	White/Blue	7	TX -
GND	5	Drain Wire	5	GND

Fig. 73

Refer to the AutoQuick User and Service Manuals for GOSS Omnicon Ov3, GMI Part #060U471080-03 and 060S471080-03, for more operational hints and troubleshooting.

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MAN Roland – PECOM 95

The interface to the PECOM 95 console is provided via a single ArcNet connection from the CQ Host to the press ArcNet hub. (This is typically connected to Port 8 on the OEM hub, but your installation may have required something different.)

If you are experiencing communication problems and have the PECOM 95, check the following:

1. Check that the ArcNet cable is firmly attached to the BNC connector on the back of the Host.
2. Check that the ArcNet cable is firmly attached to the press ArcNet hub.
3. Ensure that all terminating resistors are in place as applicable.
4. Try another port on the press ArcNet hub if available.
5. Try another ArcNet cable between the Host and the press ArcNet hub.
6. Check the connection from the Host to the Color Manager. There have been instances found where a loss of communication between the Host and the Color Manager, even if intermittent loss, can cause the Host to report that the Press Console is not responding. If you have a fiber optic cable between the Host and the Color Manager, try changing the media converters.

If you have a replacement Host computer and this is the first time you put it in and have a communication issue with the Press Console, check the following:

1. Verify that the Host was configured for the proper CQ Node ID.
2. Ensure that you did not dislodge any terminating resistors when connecting the PC.
3. Check to see which model ArcNet card is in the Host. There are 3 types of ArcNet cards, PC130E, PCX-CXB, and AN-520 BT. Figures 74, 75, and 76 are views of all three card types:

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PC130E

Fig. 74

PCX-CXB

Fig. 75

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AN-520 BT Card

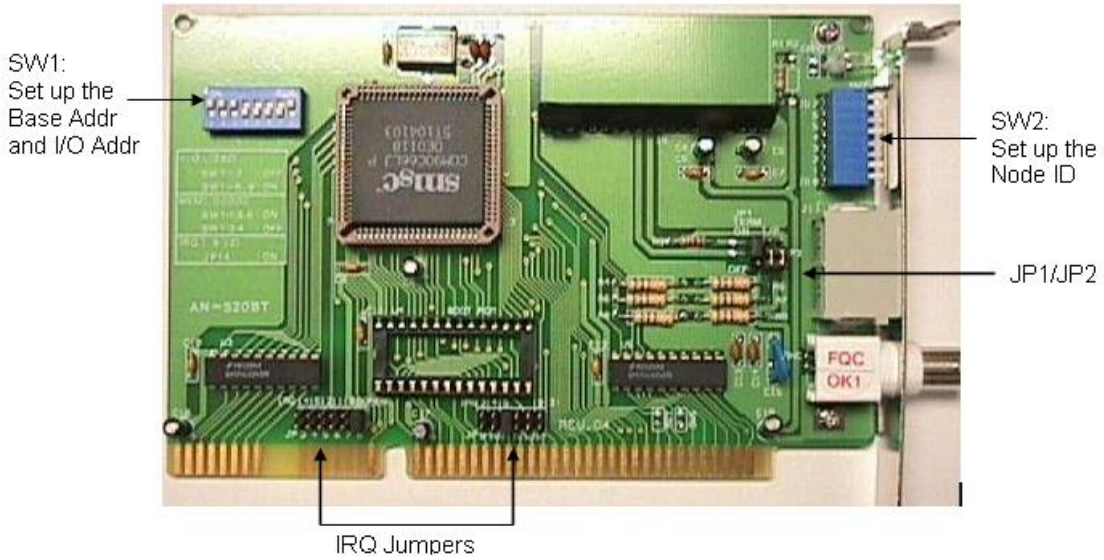

Fig. 76

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4. Next, verify the settings on your card according to the following chart:

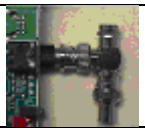
	Settings	PC130E	PCX-CXB	AN-520 BT
Base Addr / IO Addr	D400 / 350			
IRQ	5			
Node	226 (dec) E2 (hex)			
Star (Termination)	Open			N/A
JP1 / JP2	Off / Off	N/A	N/A	
ENROM / ET	Close	N/A		

Fig. 77

Refer to the AutoQuick User and Service Manuals for MAN Roland PECOM 95, GMI Part # 060U471080-06 and 060S471080-06, for more operational hints and troubleshooting.

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MAN Roland – PECOM 2004

The ColorQuick system uses Ethernet to communicate to the PECOM 2004 console. However, the PECOM console uses a TCP/IP protocol and the CQ Host uses a NETBIOS protocol. As these two protocols cannot talk to each other directly, another computer is used to translate messages between the protocols. This computer is called a "Gateway".

The Gateway computer is a Windows based computer. There are 2 NIC ports on this computer. One connects to the Host computer network (through a switch) and the other port connects to the PECOM 2004 console typically through another switch on the press side. Figure 25 shows a general overview of the cabling diagram:

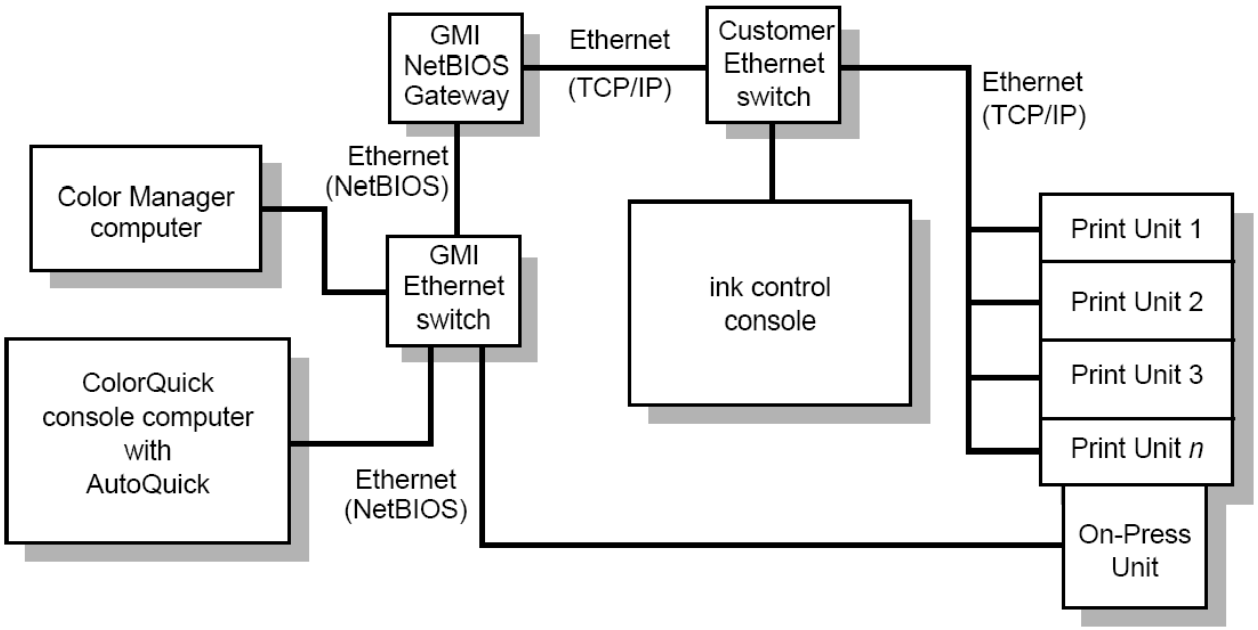

Fig. 78

This system is rather more complex. Refer to your AutoQuick User and Service Manuals for PECOM 2004, GMI Part #060U471080-18 and 060S471080-18, for further operational hints and troubleshooting.

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Clarios Troubleshooting Guide

The section for the Clarios troubleshooting replaces section 7 of this manual for troubleshooting ColorQuick host computers. All other sections in this manual in regard to the OnPress components still apply for Clarios.

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Table of Contents

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Clarios Overview

The Clarios system is a Windows base system that replaces the end-of-life CQDOS ColorQuick host computer. The Clarios system eliminates the need for any NetBIOS gateway and filter computer, there are 2 NIC ports on this computer. The PRESS_NET connects to all components on the press, On-Press Units and OEM ink consoles (PRESS_NET, typical IP addresses for this is 172.31.X .X). The GMI_NET may connect to other GMI products, Color Manager's and CIP3 computers (GMI_NET). The typical IP addresses for GMI_NET is 10.101.20.X(x being the press node)

Figure 79 shows the typical layout of the Clarios system. NOTE: Some OEM consoles may have additional components to allow for communications between the GMI system and ink desk.

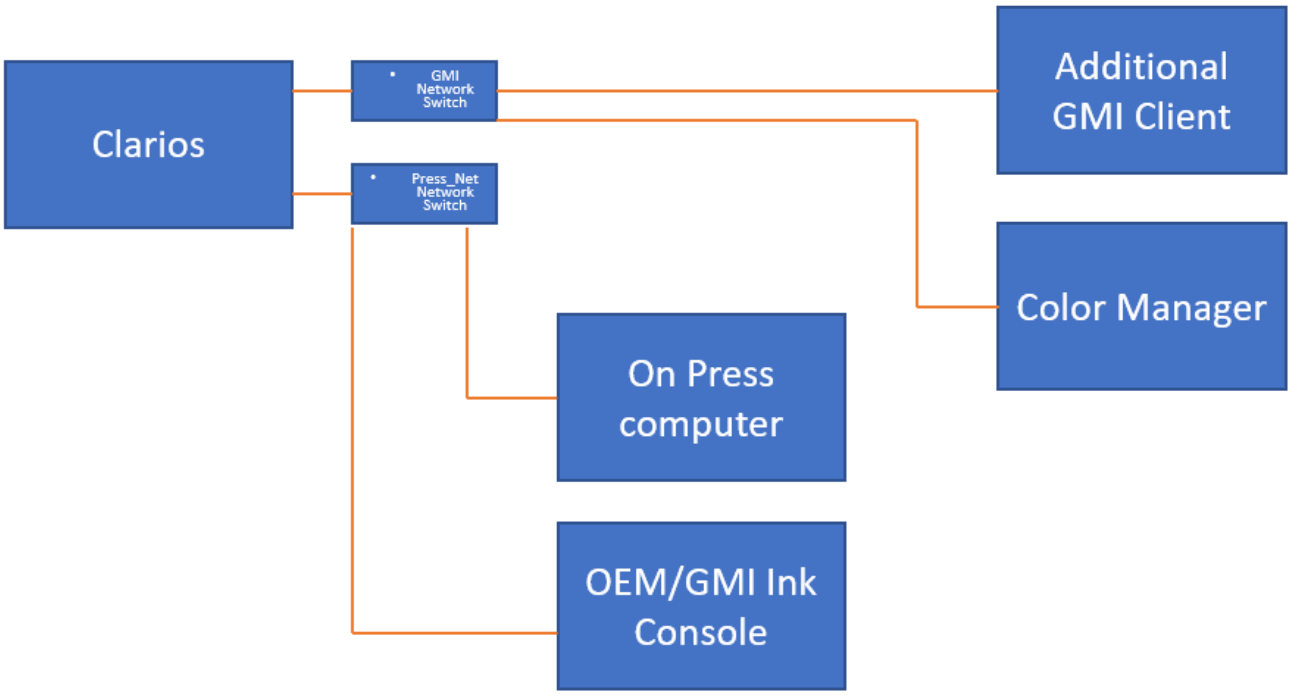

Fig. 79

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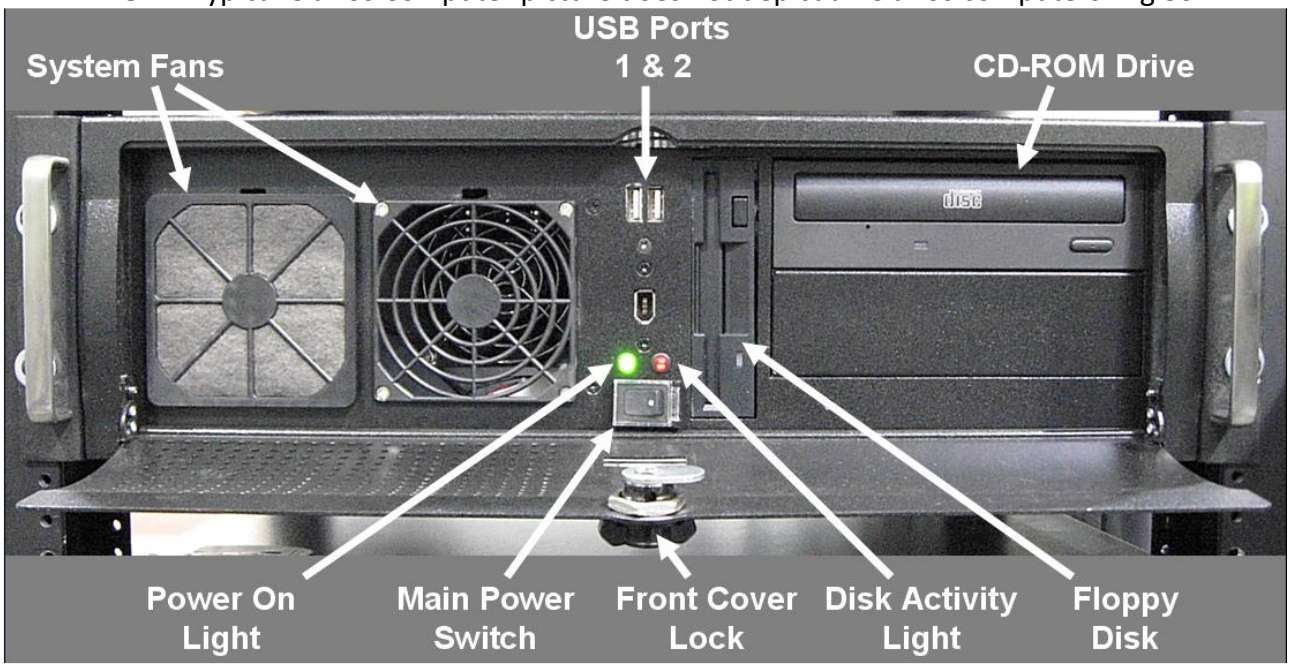
Clarios Computer Components:

NOTE: Typical Clarios Computer picture does not depict all Clarios computers**.** Fig 80



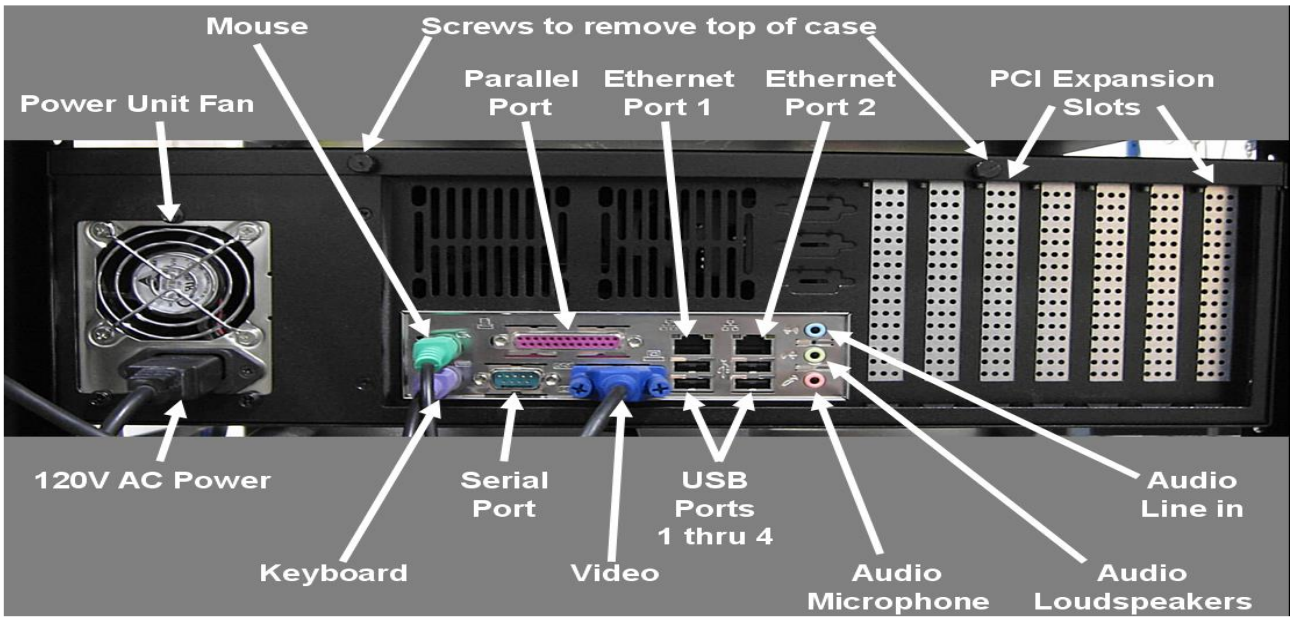


Fig 80

ColorQuick/Clarios/ Troubleshooting Guide

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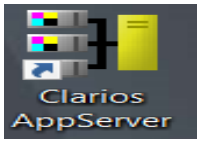
Clarios Start up.

Once the computer is started the Clarios system will automatically launch the Application server and the Client application automatically. There are also 2 icons on your desktop that can also be used to launch the programs. The Application server will need to be launched prior to the client.

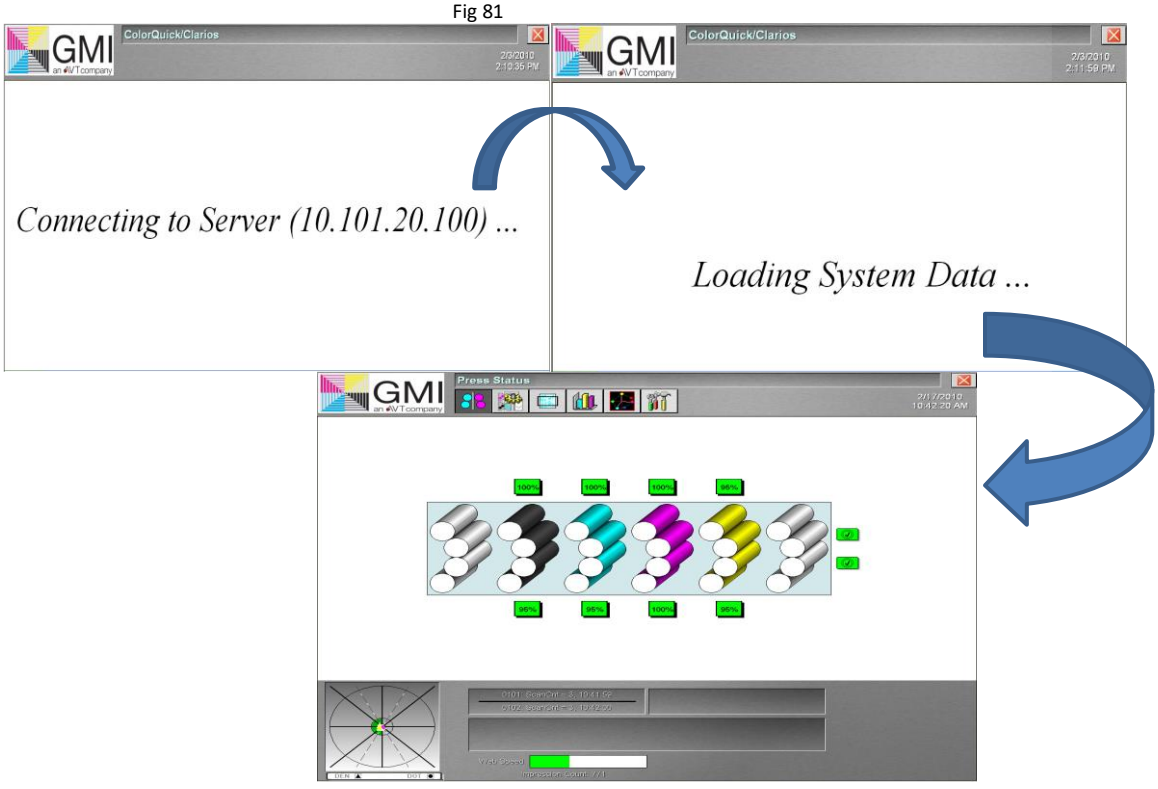
The application server icon appears as below. And will automatically place in the bottom taskbar when launched:



The Client application appears as below:

Once both applications are launched your screen will show connecting to the Server for a brief period of time. You will see the following screens:

Fig 81



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Clarios Computer will not boot:

1. Confirm that the computer has power to the power cord plugged in the back of the Clarios computer.
    a. All Clarios computers come with a UPS backup unit. A faulty UPS unit or one that is turned off can cause booting issues.
    b. You may run an alternative power source for testing. It is recommended that an approved UPS be used, this is for computer protection and an automatic “graceful” shutdown of the Clarios system should power be out for an extended period. All systems are autodetect regarding incoming voltages 120/240.
    c. If the system still does not boot, then the unit may need to be returned to GMI for repair.

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Client does not connect to AppServer:

1. If the system fails to boot and below screen does not change state as previously described Fig 81 and goes not further than shown in fig 82:

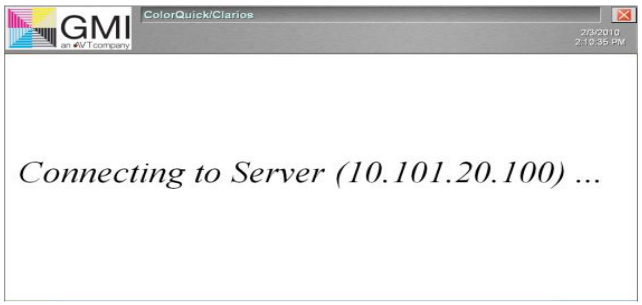
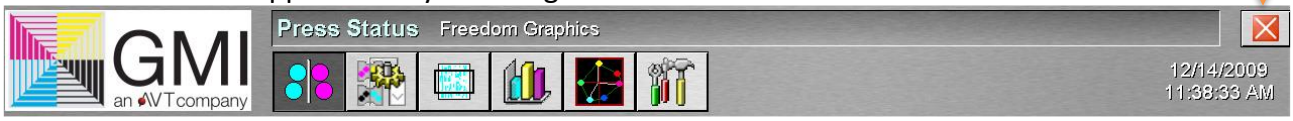


Fig 82

2. Exit the application by selecting the exit button on the GUI. Exit button:



   a. Confirm that the application server located at the bottom of the task bar is not present. The symbol is shown as below icon: Fig 83.

Fig 83.

3. Shut down and reboot system as in any windows computer.

Fig 84

Clarios does not connect to Appserver:

1. **Job Queue is full**. Should the job queue have an excessive number of jobs in the list the system could crash. This queue is meant for only "active jobs" and should not have more than a few jobs in it. After a job is finished should be moved to the Archive queue for storage. If the system has reached this state, it will be necessary to manually remove the active job file and let the system rebuild the JobQueue.xml. This is preferably performed via remote support from GMI or IT personnel. There are other files in the system that may accidentally be deleted, causing the system to be unusable. Fig 85

2. Delete the JobQueue.xml by navigating to: C:\GMI\CQ and delete the file named JobQueue.xml. This file can also be renamed should you not want to delete it.
    a. Reboot the system and system should launch normally.

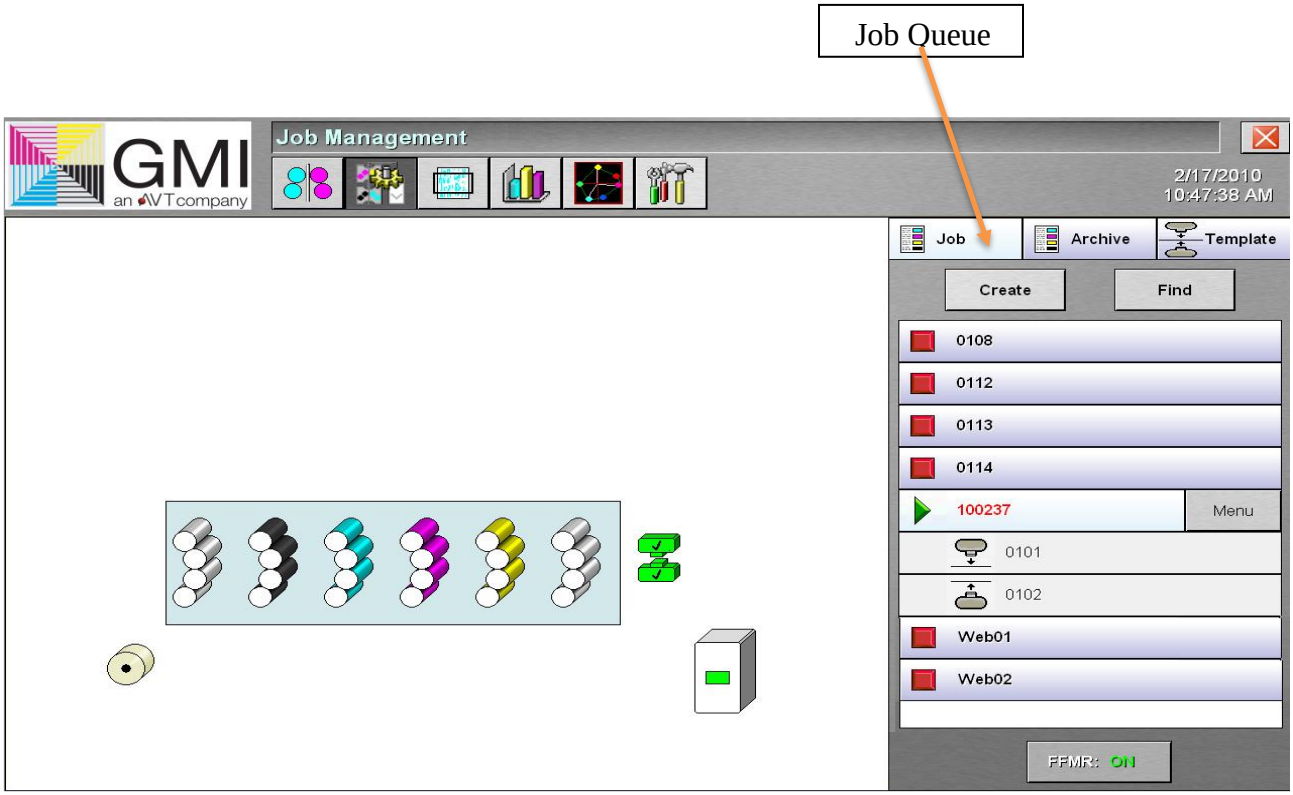


FIG 85

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Clarios Application Server.

1.The Clarios server application typically runs in the background (out of operator's normal view). The server application supports communication to the On-Press module(s), PLC(s), key console(s), and workstation(s). The Application server has a total of 6 communication boxes that shows communication between the Appserver and the op computer, GUIClient and the ink desk. Fig 86

SERVER-ONPRESS: shows communication from Clarios Server to ONPRESS unit
ONPRESS-SERVER: shows communication from ONPRESS unit back to SERVER
SERVER-GUICLIENT: shows communication from GUI to server. NOTE: GUI is the application that the operators use under normal conditions.
GUICLIENT-SERVER: shows communication from GUICLIENT to SERVER
SERVER-OEM: Shows communications from SERVER to the OEM/GMI ink desk.
OEM-SERVER: Shows communications from OEM/GMI ink desk to server.

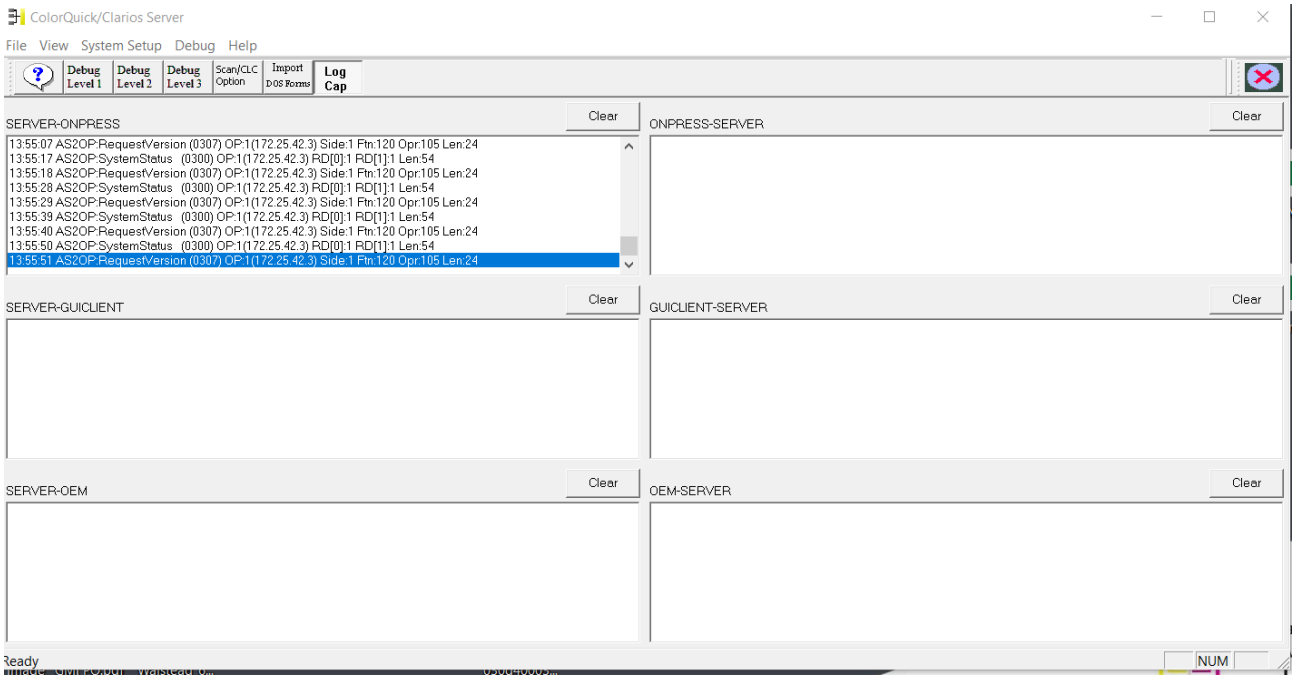

Fig 86

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Clarios RAID server:

Many Mercury, Clarios, Color Manager, and CIP3 Server computers have twin, RAID hard disk drives with specific RAID Controllers. These drives will automatically 'mirror' each other's contents using a RAID 1. An exact duplicate of all information written on one drive will be written on the twin drive. In the event of a hardware failure that impairs the operation of one drive (such as a corrupt disk sector, a drive motor failure, or other physical failure), the computer will automatically read and write to/from the other, twin disk. A warning message will be displayed. Fig 87

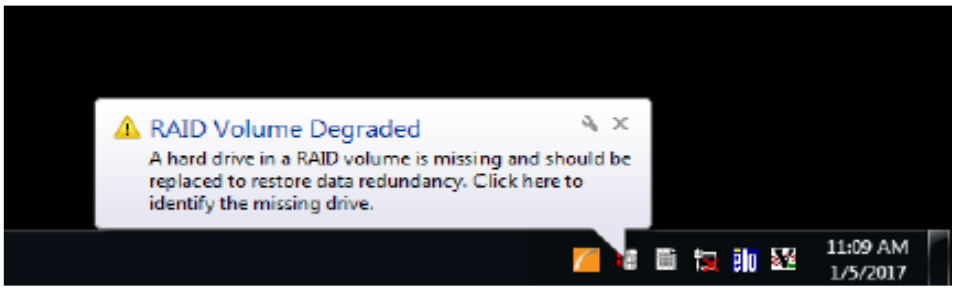

Fig 87

1. Locate the defective drive by following the below steps: Fig 88
2. Turn the computer off, and then pull the lower drive out. Then try to reboot. If it will not boot, then the lower drive is good and the upper drive is bad. If it does boot, then the lower drive is bad and the upper drive is good.. The hardware ID of the drive is expected in a certain order on the RAID controller.
3. While you have the lower drive out, the label on the drive itself will show what size it is. This will help determine what size replacement drive is sent to you.

DO NOT SWAP THE DRIVES BETWEEN TOP AND BOTTOM.

Fig 88

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Replacing the RAID drive:

1. Shut down computer.
2. Move the slider to the left. Insert a finger into the hole, move the latch to the right and pull the handle out as shown in picture below Fig 89
3. Remove the entire carrier with the drive in it.
4. Insert the new drive into the slot and lock it in place.
5. Turn the power on. The computer should tell you that it has discovered a new hard drive and it will begin its recovery process.
6. The recovery takes less than 2 hours, and you may continue to use the server while it recovers. It will notify you when the recovery is complete, but you may miss the on-screen message.

Fig 89

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Clarios I-Boot Module:

All Clarios W7 and Windows 10 IoT, Enterprise, H21H2, LTSC communicate uses TCPIP protocol. When a new system or a upgrade is installed an I-boot module is installed at the Onpress computer. The I-boot functions as a remote re-boot of the OP for logged in field service support and when the press stops production for a period the OP computer will go through an automatic reboot to move data files from the OP to the Clarios server computer. The I-boot should never be bypassed or eliminated as the OP would fill up with data files and become sluggish or inoperable.

1. Power comes into the I-boot then to the OP computer. Ethernet connection also passes thru the I-Boot module. Each I-Boot has an assigned IP address and should not be exchanged with other systems as it will not communicate properly. All I-Boots has an IP address labeled on them and can be pinged via the Clarios server. Fig 90, 91 and 92

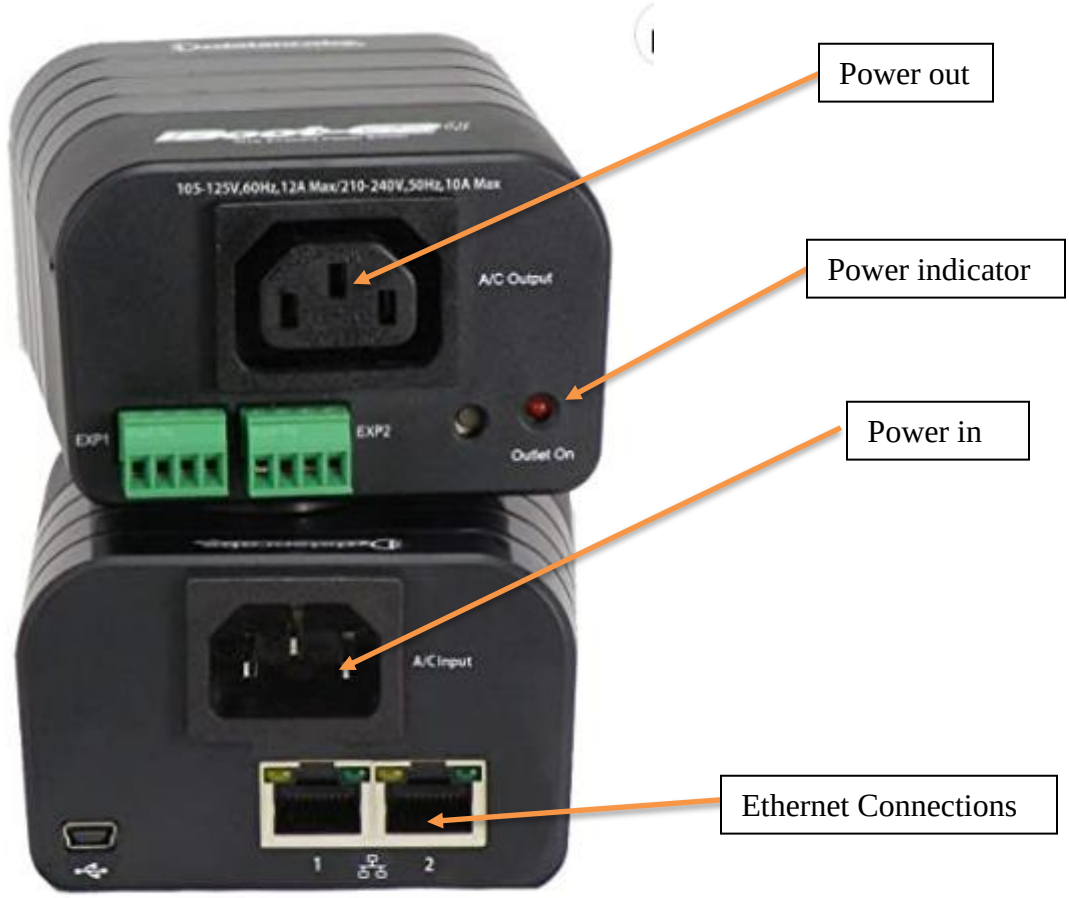

Fig90

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Clarios I-boot

Fig 91

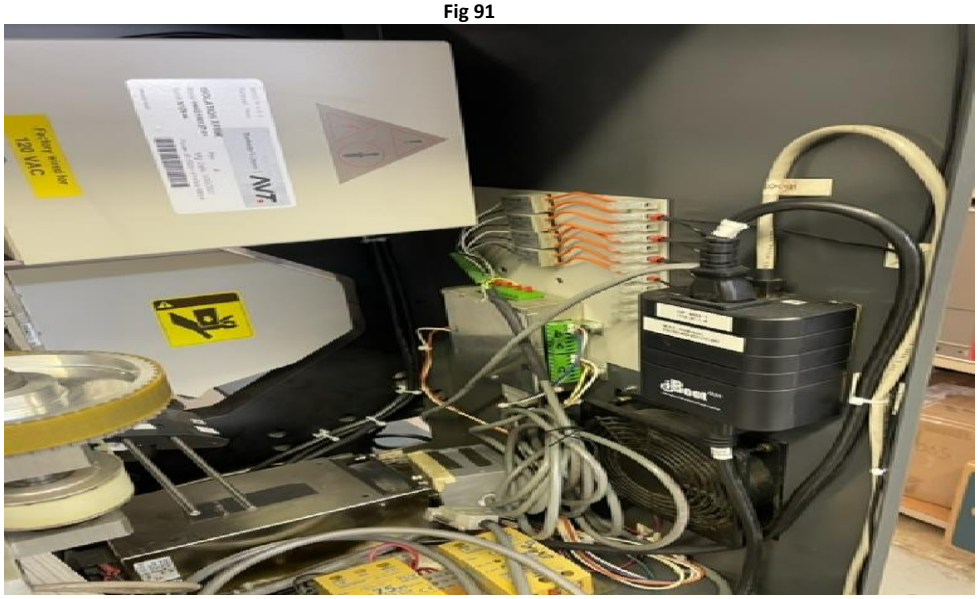

Fig 92

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Clarios System Tools

The Clarios system has several tools that are available to the operator to test the camera, servo drive and measurement of the probe heads. As well as setting a new probe head so that it accurately measures a swatch

2. **System test**
   Touch the **Utilities** button on the main toolbar. On the Utilities view, touch the **Diagnostics** tab to display the Diagnostics Selection List. Some systems require a password to access this feature the following passwords may be used: **1 or 59431**

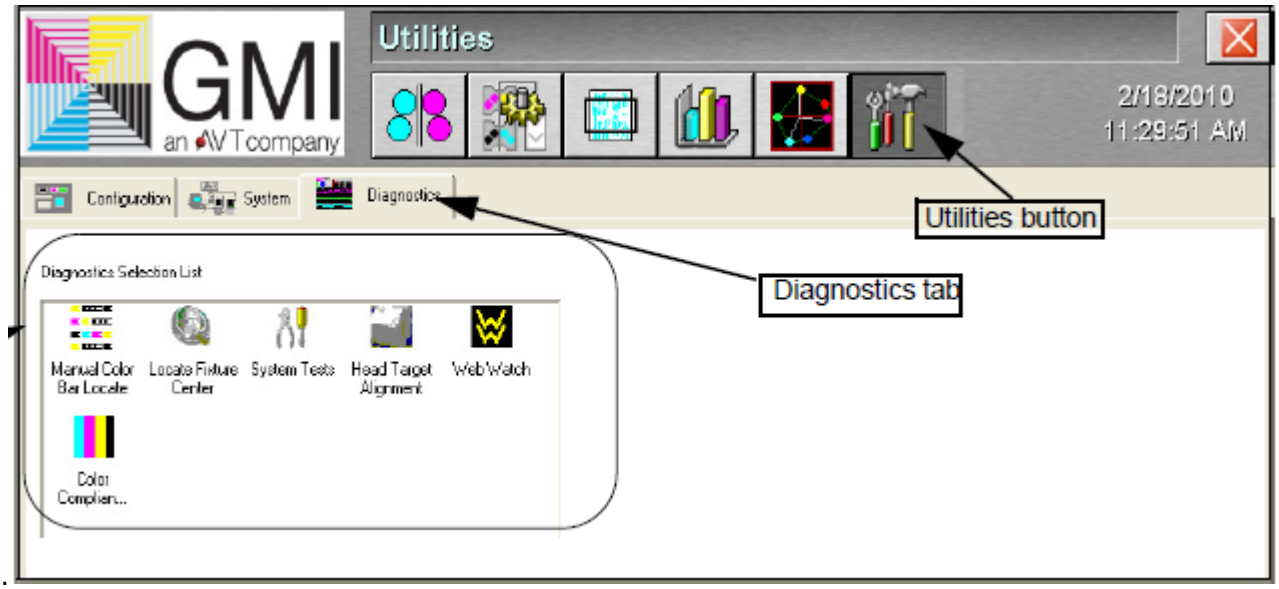

Fig 93

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System test continued:

1. Select the OP you wish to test, some system may have more than 1 OP.
2. Touch the System **Test** button Figure 94

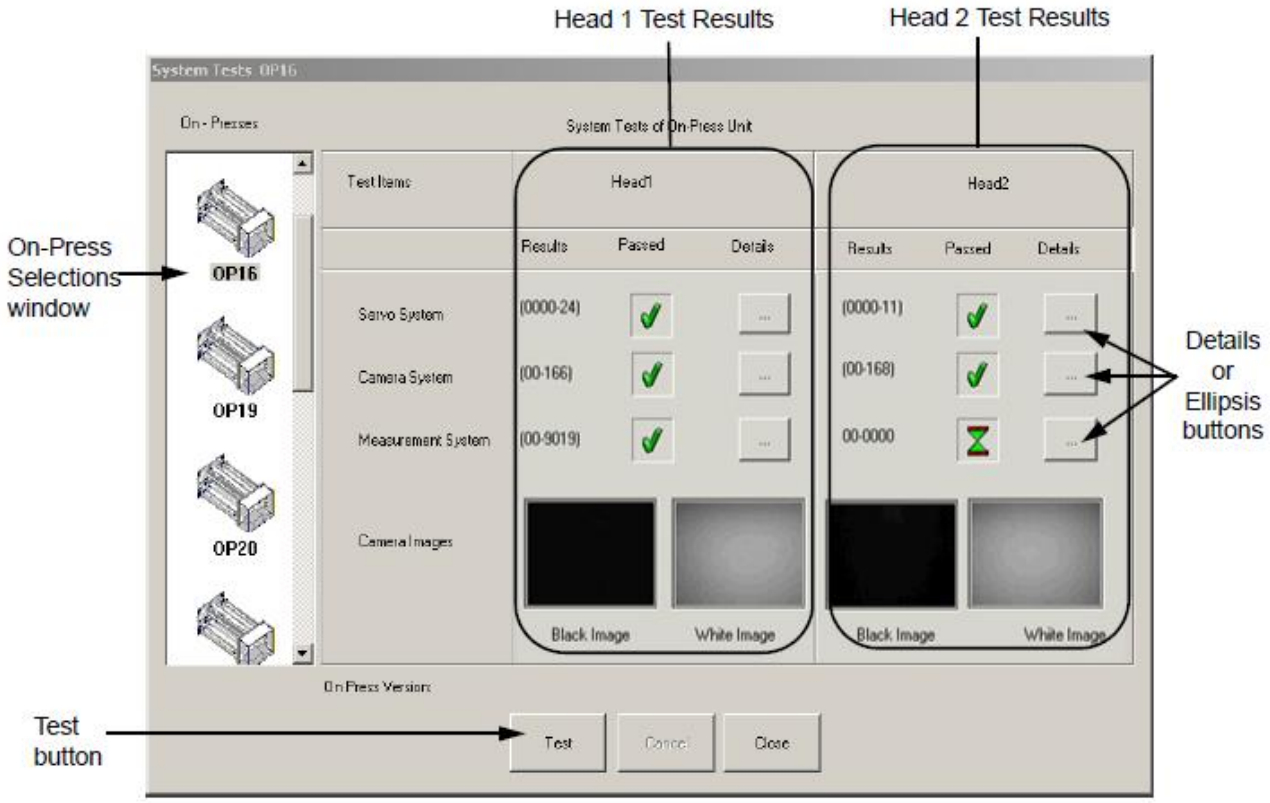

Figure 94

3. The results will display on the screen as shown in Fig 94 above. Test should be performed 3 times when testing a questionable surface.
4. Should 1 surface fail you can swap the camera from top surface to bottom surface to verify if the issue stayed on the questionable surface or followed the camera. Replace camera and run head alignment procedure if new camera is installed.

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System Test Continued

Camera System Test

The camera system test gets a camera image over the black hole and another image over the white plaque. The image taken over the black hole is expected to have a very low white level while the image taken over the white plaque should have a high white level.

Result Code: **xx-nnn**

nnn	White Plaque White Level (180 to 200 typical)

Black Hole Image	
0	Successful
1	Camera Error
2	White Level Too High Error (greater than 50)

White Plaque Image	
0	Successful
1	Camera Error
2	White Level Low (greater than 90 and less than 130)
3	White Level Too Low Error (less than 90)

Fig. 95

For the nnn result above, the min. level is ~135, max is ~200.
Assuming the first two digits in the results code are zeroes, if the results (nnn) are below the minimum, clean the camera glass and white tiles on the cal plaque with alcohol. If that fails, replace the PH with another and try again. If the poor test result persists on that surface, you may have a faulty OP computer.
Also, assuming the first two digits of the results code are zeroes, if the results (nnn) are above the max, replace the PH with another and try again. If the poor test result persists on that surface, you may have a faulty OP computer.

System Test Continued

Measurement System Test

The camera system test takes a measurement over the black hole and another measurement over the white plaque. The measurement taken over the black hole is expected to have a very low sample A/D peak value while the measurement taken over the white plaque should have a high A/D peak value.

Result Code: **xx-nnnnn**

nnnnn	White Plaque A/D Peak (30K to 50K typical)

Black Hole Measurement	
0	Successful
1	Measurement Error
2	A/D Peak Too High Error (greater than 3000)

White Plaque Measurement	
0	Successful
1	Measurement Error
2	A/D Peak Too Low Error (less than 5K)

Fig. 96

For the nnnnn result above, the min. level is ~25K, max is ~60K.

Assuming the first two digits of the results code are zeroes, if the results are below the minimum, clean the white tiles on the cal plaque. Remove the black hole, clean out, and replace. Finally, remove the PH from the carriage, remove the cone on the underside of the PH, and clean the fiber optic array under the cone using alcohol and a cotton swab. (See Fig. 40) If that does not improve the test result, replace the PH with another and try again. If the poor test result persists, you may have a faulty OP computer or white ribbon cable.

Assuming the first two digits of the results code are zeroes, if the results are above the maximum, then replace the PH with another and try again. If the poor test result persists on that surface, you may have a faulty OP computer.

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System Test Continued

Camera Images

In the system tests results, there are also two images taken by the camera and these are an important part of the test in determining the current state of any PH.

The black image should be completely black with no white spots in it. If there are, try cleaning both the PH and the cal plaque completely. If that does not improve the black image, try another PH. If the poor black image persists, you may have a faulty OP computer or white ribbon cable. Check the connections of the white ribbon cable at the OP computer as well as at the PH. There is a positive acting slide connector on the white ribbon cable that can sometimes not be installed properly. If the black image looks like a starlit night with a lot of white pinholes in it, you definitely have a poor connection between the OP and the PH. Again, this can be a faulty connection or a faulty ribbon cable.

The white image should be completely clear with no black or dark gray spots in the image, although the image may not be completely white. The important thing is that the image looks clean. If it is not, then clean both the PH and cal plaque assembly completely. If that does not improve the white image, try another PH.

If a poor white image persists, you may have a faulty OP computer or white ribbon cable. Check the connections of the white ribbon cable at the OP computer as well as at the PH. There is a positive acting slide connector on the white ribbon cable that can sometimes not be installed properly. If the image has a lot of bright white pinholes in it, you definitely have a poor connection between the OP and the PH. Again, this can be a faulty connection or a faulty ribbon cable.

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System Test Continued

Servo drive initialization is covered under the OPM initialization in a previous chapter of this document.

Servo Tests

For safety, the scanner head does not move onto the web if the press is not moving. Also, the test aborts if the press speed drops below the minimum scan speed (300 FPM for standard systems, 175 FPM for carton). The servo system test makes a total of four position moves, checking the controller's final position against the requested position on all moves. The final two moves check the home sensor location against its location from the previous move. Like the camera and measurement tests, the PASS / FAIL result of this test is not as important as are the result codes. Here is a chart on how to interpret these codes:

Result Code: **xxxx-nnn**

nnn	Combined position difference of all moves in hundredths of mm (25 = 0.0025cm)

Move #1	From Current Position To Black Hole
0	Successful
1	Servo Error
2	Destination Position Error (greater than 2.0mm)

Move #2	From Black Hole to 0.5cm
0	Successful
1	Servo Error
2	Destination Position Error (greater than 2.0mm)

Move #3	From 0.5cm to Fixture Center
0	Successful
1	Servo Error
2	Destination Position Error (greater than 2.0mm)
3	Home Sensor Location Error (greater than 50 counts difference from its location in move #2)

Move #4	From Fixture Center to 0.5cm
0	Successful
1	Servo Error
2	Destination Position Error (greater than 2.0mm)
3	Home Sensor Location Error (greater than 50 counts difference from its location in move #3)

Fig. 97

NOTE: A result of 5000-00 means that the system did NOT run a servo test because the press was not running above the minimum scan speed! Although the system reports this as a failure, it is NOT a failure of the hardware and the test should be run again with the press running.

The *nnn* numbers should be small; typically anything less than 50 can be ignored. Anything greater and you may have a problem with the servo drive or something may be obstructing the path of the PH. If there are any errors in the first 4 digits, it could be something major or it could be something as simple as an energy chain that is bound up or a sliding cover on the calibration plaque that does not slide easily. Remove the sliding calibration plaque cover and try again. If that does not resolve the error, turn the power off to the OP and manually move the PH the entire length of the beam, paying close attention to any portion of the travel that may seem to bind.

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Head Target Alignment

The head target alignment refers to the distance between the measurement aperture and the center of the camera relative to the radius of the roller. Fig 98.
This procedure should be performed after a replacement head has been installed or probe heads have been moved from one surface or another. The head target alignment sets the camera to measure the Swatch in the middle. Failure to perform this procedure may result in the head measuring the Swatch in conjunction with white paper, thus producing inaccurate density readings.

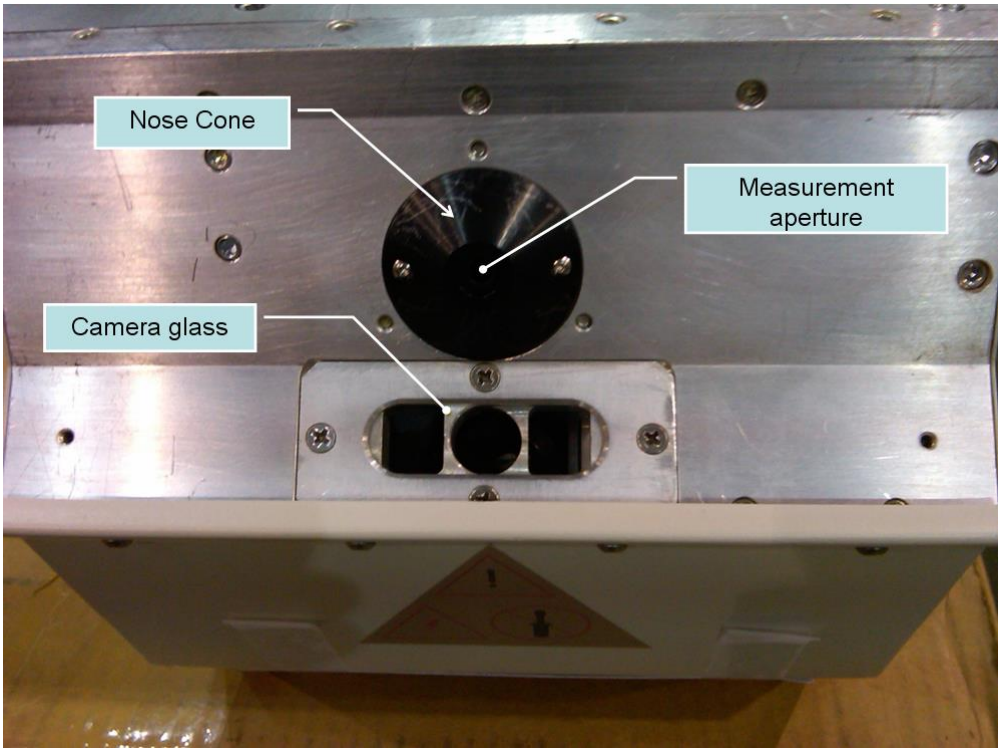

Fig. 98

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Head Target Alignment

1. Touch the Head Target Alignment icon.
2. The system will go out and locate on the color bar.
3. Once the colorbar has been located use the control buttons to navigate to a solid swatch (black is preferred) .
4. Once you have locked on the swatch to be measured select the **Done** button, you will then be prompted to execute test procedure.

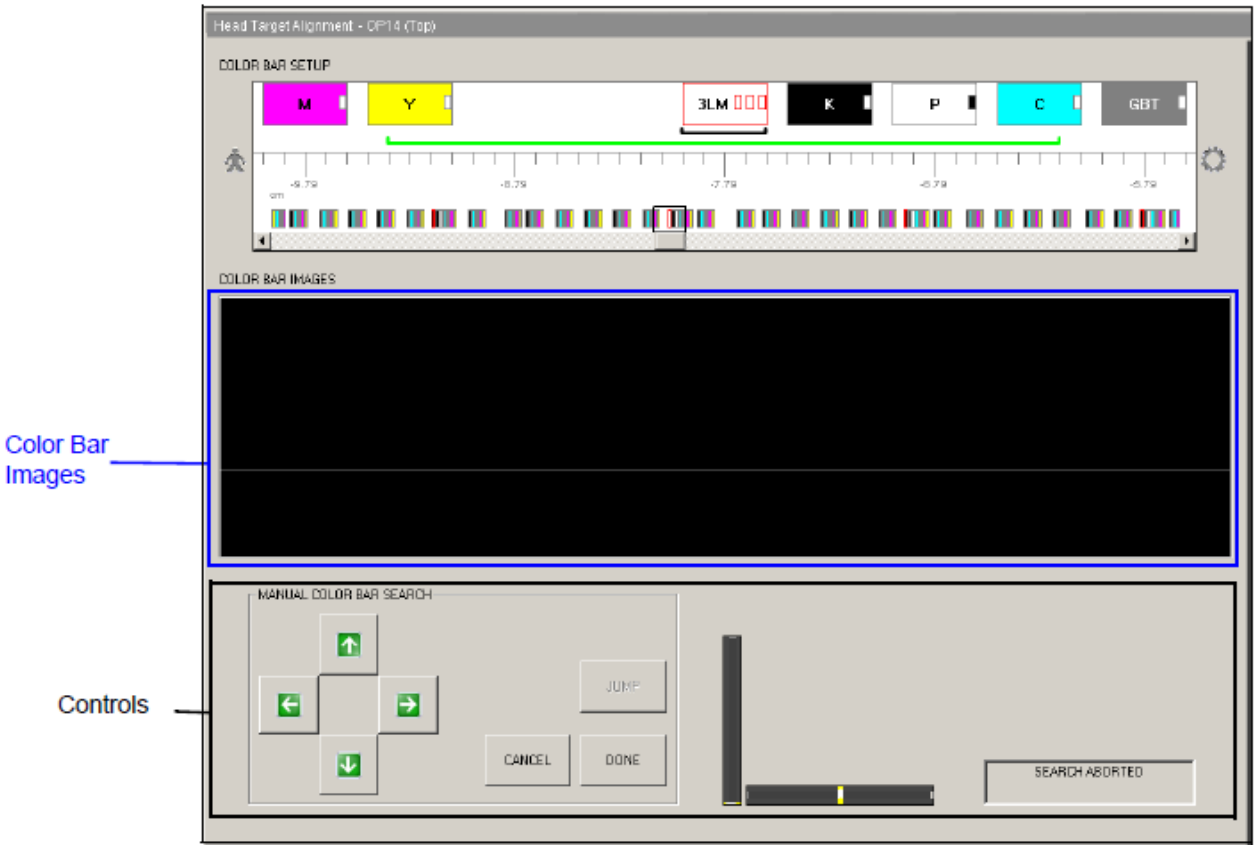

Fig 99

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Head Target Alignment continued

1. The system will measure the height of the color bar and give you a suggested value to the preferred set point. It is always a good practice to confirm the suggested value and the graph. The green line on the graph below represents density and the middle of the plateau is the center of the swatch being measured. In this case a value of 2.58 would be sufficient.

2. Should you wish to manually enter a value when the test is complete the Clarios will prompt you for a suggested value. Select the NO option then the system will prompt you to enter a value manually. Using a keyboard, you may enter the preferred number.

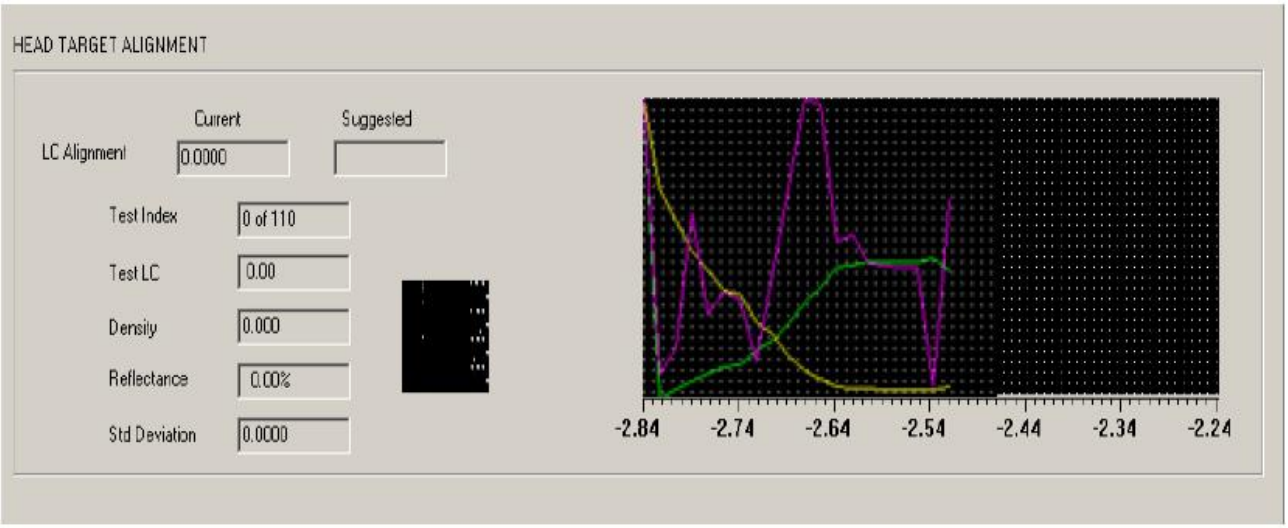

Fig 100

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Ink Desk GMI/OEM Interface:

1. The Clarios system interfaces to the GMI or OEM ink desk. These key values can be seen on the Clarios Key Position view by selecting the Key Position Tab Fig 101.

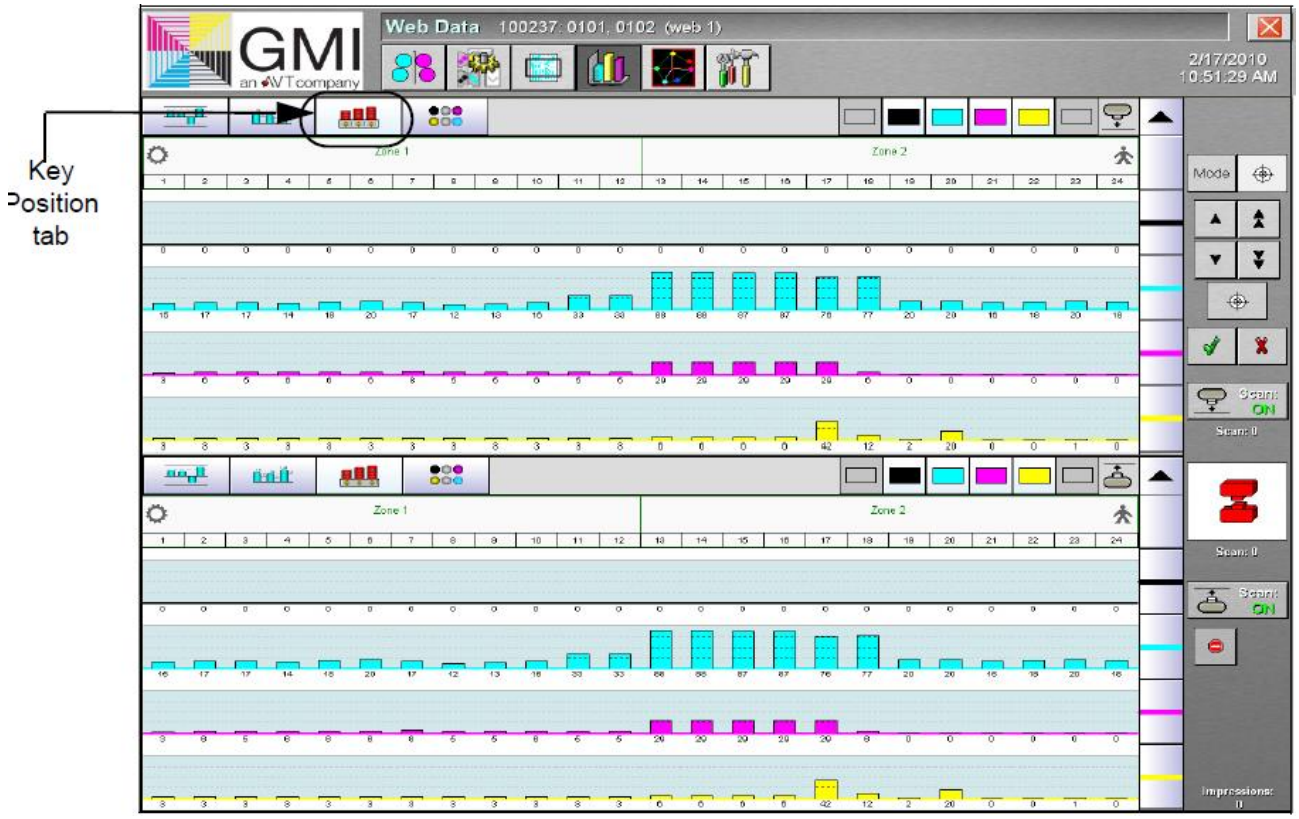

Fig. 101

2. If no results are seen in this screen there is no communication between the Clarios system and the ink console. This may result in the system not being able to go in the Closed Loop Mode and not moving keys. Usually, a simple reboot of the ink console and the Clarios resolves this issue.

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Typical OEM interfaces

1. **Clarios to Mercury**
    a. Clarios and Mercury connect with an ethernet connection via a switch.
    b. Both the Mercury and Clarios can be pinged via the command prompt to check connectivity**.**
2. **Clarios to Telecolor:**
    a. Clarios communicates with the Telecolor console via an “octopus cable” located at the back of the Clarios computer. This cable connects to the back of the main Telecolor ink desk computer.
3. **Clarios to OmniColor:**
    a. Clarios communicates with the OmniColor console via an “octopus cable” located at the back of the Clarios computer. This cable connects to the back of the main OmniColor ink desk computer
4. **Clarios to OV3:**
    a. Clarios connects to the OV3 system via an “octopus” cable to a 422 cable that connects to a 422/232 convertor located in the GOSS electrical cabinet. Then a 232 cable connects from the back of the “Rose” computer to the 422/232 converter.
5. **Clarios to Pecom 04**
    a. Clarios connects to the Pecom system via an ethernet connection. This is a predefined IP address set by MANROLAND**.**
6. **Clarios to Pecom95:**
    a. Clarios connects using an ethernet connection to a ARCNET convertor. The ARCNET converter connects using the existing MAN ARCNET cable.
7. **Clarios To Mitsubishi**
    a. Clarios connects using and “ocotpus” cable located at the back of the Clarios to the designated Mitsi ink console using a DB25 cable and a 6 pin connector to the back of the ink console board**.**
8. **Clarios to Komori**
    a. Clarios connects using a DB9 connection from the back of the computer to a converter then connects via 232 to the Komori console

This is not an exhaustive list of all the connections for Clarios but is the most common.

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ColorQuick/Clarios/ Troubleshooting Guide

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Revision History

Revision Date	Revised By	Version	Section/Page Numbers	Revision Description
12/17/2010	Tim Rose	A	All	Initial Release.
5/10/2011	Tim Rose	B	2, 16, 32, 77, 92, 98	FE Corrections, Copyright
10/1/2013	Tim Rose	C	1, 2, 74, 96	2013 Copyright, Dates
5/2/2014	Tim Rose	D	29	2014 Copyright, Dates, Fig. 14
04/6/23	DS	E	134-160	Clarios added