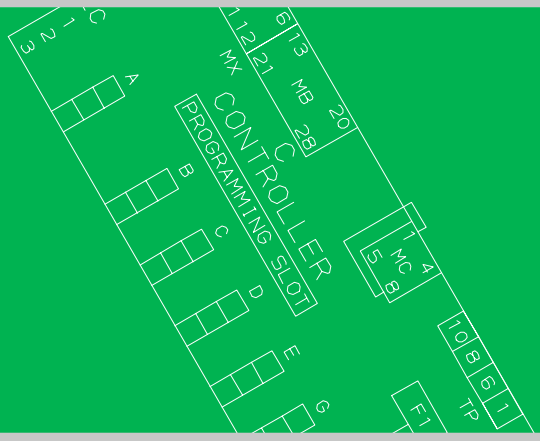
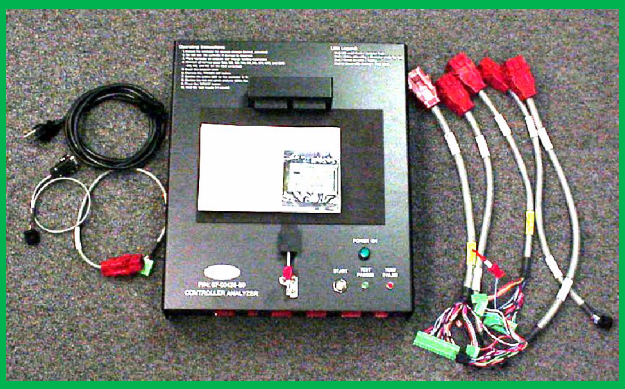
Carrier®

Container Refrigeration



# OPERATING INSTRUCTIONS

for

# P/N 07-00428-00

## Controller Analyzer

98-50600 Rev A

## Forward

This manual is intended for the service technician who will be servicing and troubleshooting Carrier Transicold Container refrigeration equipment with an ML2i or ML3 microprocessor controller. The technician should be familiar with the operation of the container refrigeration unit and be able to determine system faults as opposed to controller faults. The analyzer is a diagnostic tool. Once the technician has determined the controller to be the likely system fault it should be confirmed with the use of this tool.

## Contacting Carrier Transicold

For technical support or to obtain information regarding service of the analyzer, contact:

Carrier Transicold
PO Box 4805
Carrier Parkway, TR20
Syracuse, NY 13221
Attn: Container Service Engineering Department

E-Mail to: Container products@carrier.utc.com

For assistance in English in USA and Canada:
Dial 1-800-668-6283 (1-800-ONTO-CTD)

For assistance in English from the rest of the world:
Dial the AT&T access number for the Country you are in.
When asked either dial or tell the operator you need, 800-668-6283.

For assistance in Asia in four languages, English, Mandarin and dialects, Korean and Japanese, use the Asian hotline number.
Dial the International access code (IAC) for the country you are in followed by the hotline number 800-6686-8000.

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# SECTION 1 — INTRODUCTION AND SPECIFICATIONS

## 1.1. Introduction

The analyzer, when used with the proper software, will test all inputs and outputs of the ML2i and ML3 controllers, as well as internal functions in accordance with Carrier Transicold specifications and tolerances. The analyzer determines if circuits and components in the controller are within specification and alerts the operator as to whether the controller is functional or if the controller should be replaced in the container unit and the faulty controller returned for repair.

## 1.2. Specifications

The specifications for the controller analyzer are listed in the following tables.

| ELECTRICAL | |
|---|---|
| Power requirements | |
| * AC Line Voltage…….. | 115VAC/60Hz, or 230VAC/50Hz |
| Fuses: | |
| Power Plug Module Fuses – Qty. (2), FU5, FU6…….. | 1.6 Amps Glass Type |
| Rear Panel Fuses – Qty. (4), FU1, FU2, FU3, FU4…..… | 1.6 Amps Glass Type |

* 115VAC and 230VAC are selectable via the back panel power plug assembly.

| PHYSICAL | | |
|---|---|---|
| Dimensions: | U.S. Units: | Metric Units: |
| Width<br>Length<br>Height | 15 inches<br>16.83 inches<br>5.5 inches | 391 mm<br>427.5 mm<br>139.7 mm |
| Weight | 33 Lbs. | 15 Kg. |

| ENVIRONMENTAL | | |
|---|---|---|
| | Operation: | Storage: |
| Temperature: | 5°C (40°F) to 50°C (120°F) | -40°C (-40°F) to 85°C (185°F) |

## 1.3. Safety Considerations

Throughout this manual, blocks of text may be printed in bold type. These blocks are notes, cautions, or warnings and are used as follows.

**NOTE:** A note indicates important information that helps you make better use of your analyzer.

**⚠ CAUTION**

A caution denotes a hazard. It calls attention to a procedure or practice, which if not correctly performed or adhered to could result in damage to, or destruction of part, or all of the test equipment.

**⚠ WARNING**

A warning also denotes a hazard. It calls attention to a procedure or practice, which if not correctly performed or adhered to could result in personal injury.

## 1.4. Unpacking the Analyzer

Before you begin setting up the analyzer, check to see that you have received the following items in your package. Analyzer/controller interface cables are packed in a box marked "CABLES/PARTS", do not discard this box without removing interface cables. ML2i controller analyzer software card is packed underneath the Analyzer in the shipping carton.

**Note**: Analyzer ML3 software card (P/N: 12-50078-04) is **not** included and will be available at a later date. Contact your local Field Service Engineer for availability.

Analyzer (P/N: 07-00428-00)
Analyzer ML2i software card (P/N: 12-50078-06)
Power Cable U.S. standard (P/N: 07-00428-62)
Analyzer/controller Interface Cables, Qty: (6)

- Cable P1 - KE/KB Cable P/N: 07-00428-55
- Cable P2 - KD Cable P/N: 07-00428-56
- Cable P3 - KC/KA Cable P/N: 07-00428-57
- Cable P4 - QC/CF/KH/MC Cable P/N: 07-00428-58
- Cable P5 - MB Cable P/N: 07-00428-59
- Cable P6 - MA Cable P/N: 07-00428-60

Download Cable (P/N: 22-01737-06)
User's Manual (P/N: 98-50600-01)
Spare Fuses- Qty. 5: (P/N:07-00428-61)

**NOTE:** Retain the original shipping box and all packaging. The shipping box is specially designed to protect the analyzer during shipping. Should the analyzer need to be returned for service or repair, pack it in original shipping box to help prevent shipping damage.

# SECTION 2 —LAYOUT AND SETUP

**⚠ WARNING**

## Do not test ML2 controllers!
## Analyzer is designed to test ML2i and ML3 controllers only.

### 2.1. Analyzer Layout and Identification:

**NOTE: Read and understand all information in this operation manual prior to testing controllers on the analyzer.**

Figure 2.1a and 2.1b show the layout of the analyzer components. You should familiarize yourself with this layout for ease of operation. The connectors used on the analyzer to connect to the controller are the same types that are used on the container unit. This is done for ease of identification.

All connections between the analyzer and controller are made from the front of both units. There are six (6) interface cables that plug into the lower section; all interface cables are labeled with the designation for the corresponding controller connectors (MA, MB, MC, etc.).

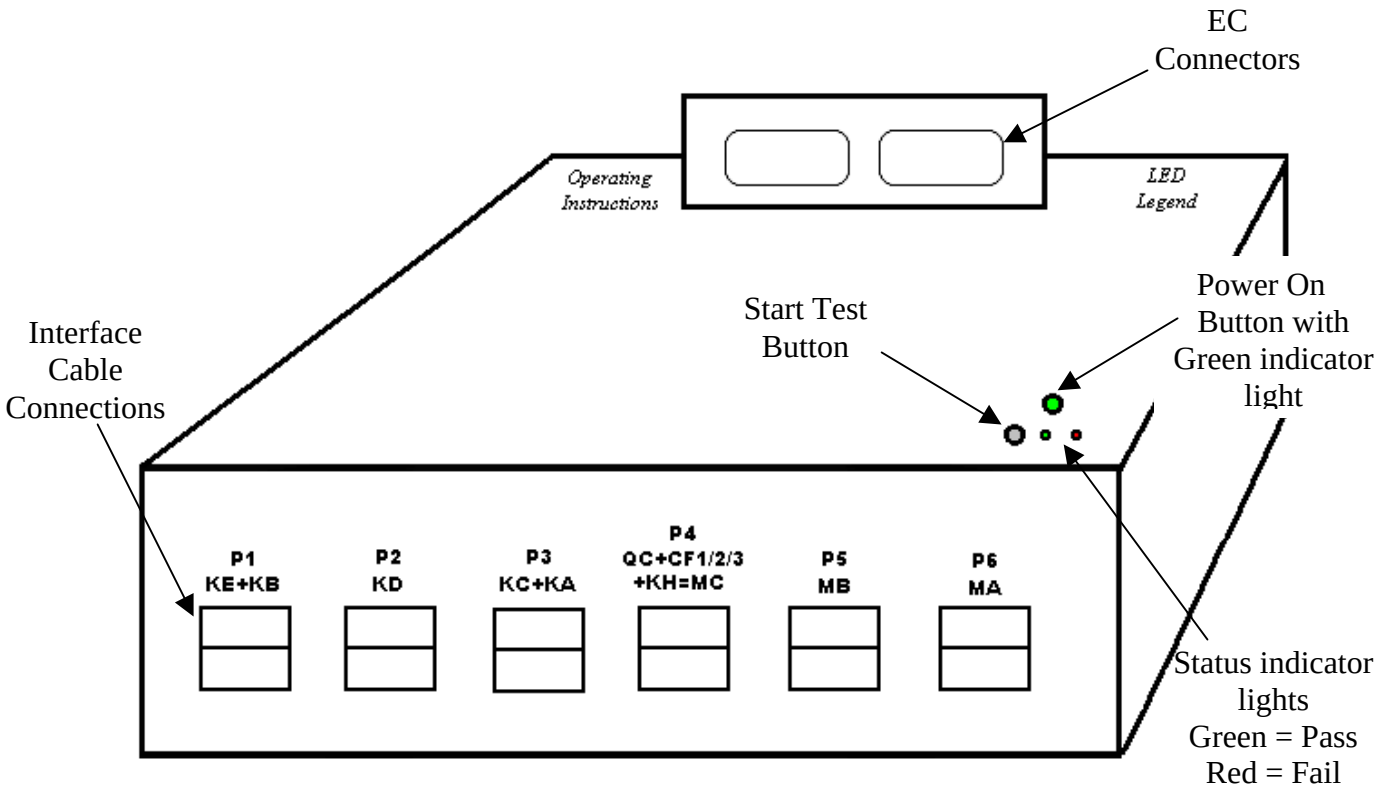



**Figure 2.1a**
**Front View**

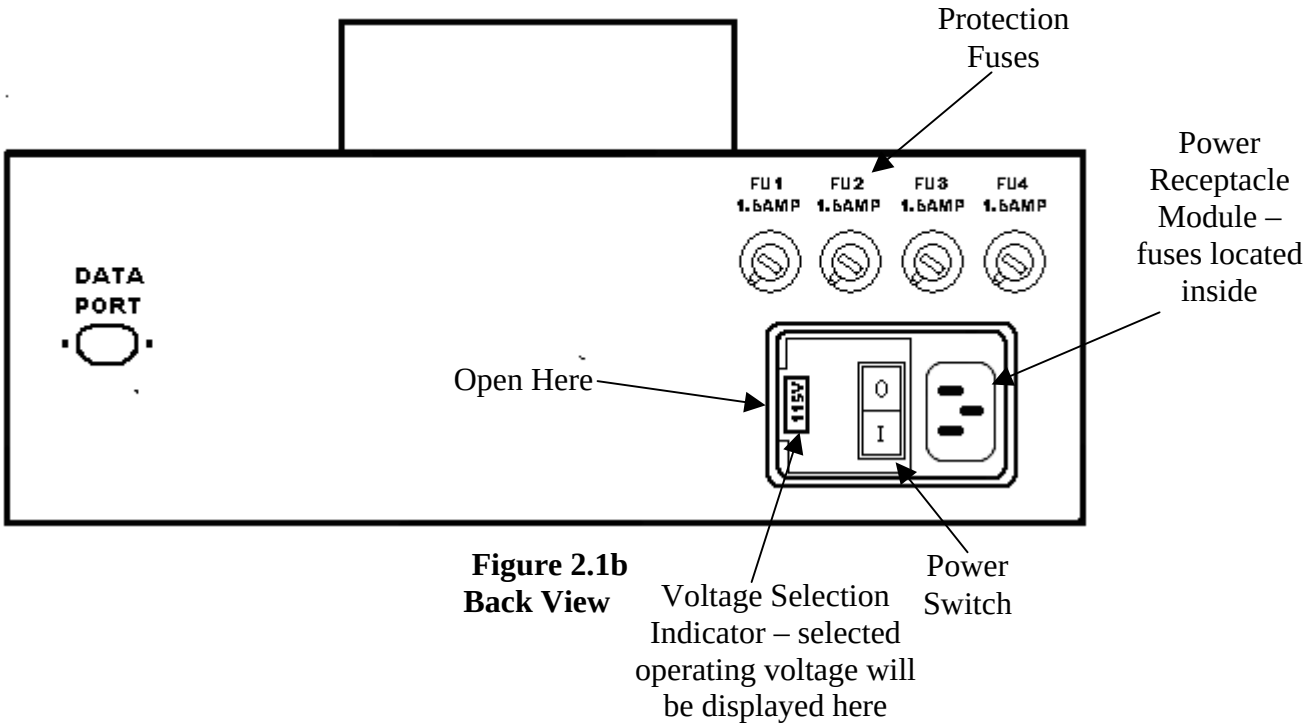



**Figure 2.1b**
**Back View**

**Note**: The "Data Port" is used for manufacturing test purposes only (not for general use).

## 2.2. Line Voltage Selection

**⚠ CAUTION**

Prior to initial analyzer operation, ensure analyzer is configured for proper operating voltage (230 V. or 115 V.).

**Note:** Analyzer is **pre-configured** from the factory for **230 Volt operation**.

The power receptacle also functions as the voltage select switch for 115V or 230V operation. The following describes how to configure the unit for the correct operating voltage for your location.

1. Using a small flat blade screwdriver, gently pry outwards to open the module cover, opposite the receptacle end as shown in figure 2.1b.

2. Once the cover has been opened, gently pry the fuse holder from the housing using the flat blade screwdriver.
3. Grasp the module and remove from the housing.
4. Rotate the module 180 degrees and reinsert the module into the housing.
5. Close the cover of the housing and **confirm the desired voltage (115 V. or 230 V.) is visible in the display window** as shown figure 2.2a and figure 2.2b.
6. Insert power cord into power receptacle and verify that cord is fully seated in receptacle.

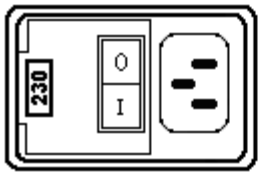



Figure 2.2a

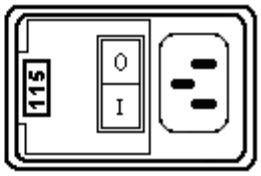



Figure 2.2b

**NOTE:** The analyzer is supplied with a power cable that has a standard IEC connector with a US type plug. If an alternate power cable configuration is required, purchase a plug adapter locally.

## 2.3. Set-up

Once the analyzer has been unpacked and the operator is familiarized with the layout, the interface cables can be connected to the analyzer. The cables are labeled with analyzer connector designation and should only be plugged into the appropriate locations on the analyzer. Ensure that the label on the cable and the one on the analyzer match each other. For example, cable P1 must be connected to analyzer connector P1. Install all cables as shown in Fig. 2.3b. Be sure to fully insert cable in analyzer connectors until you hear them click into place. Then give each cable a slight tug to verify that the cable is fully inserted and secure.

**⚠ CAUTION**

As shown in Figure 2.3a, some of the connectors are keyed, **DO NOT FORCE** the connectors. Make sure the proper cable is connected to the proper connector.

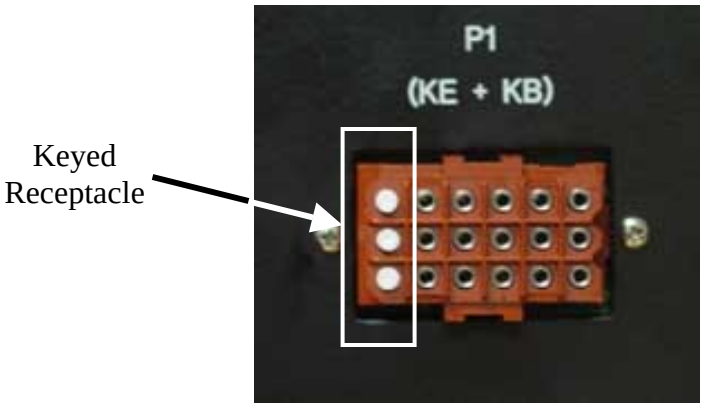



**Figure 2.3a**


**Figure 2.3b**

**CAUTION**

**As shown in Figure 2.3c, do not clip test leads that are not being used to connector wires as wire damage may occur.**


**Figure 2.3c**

# SECTION 3 — ANALYZER OPERATION

**⚠ CAUTION**

Before performing any controller testing with the analyzer, visually inspect and smell the controller to be tested for any signs of damage such as: burned traces, discolored or melted enclosure, melted or charred connectors, blown fuses or any signs of obvious damage. These types of controllers should **NOT BE TESTED ON THE ANALYZER.**

**Background**: The use of the **"Golden Controller"** is important to verify the functionality of the analyzer prior to performing actual testing of controllers. This series of steps must be performed after initially receiving the analyzer, and then whenever analyzer test results are in question. **The use of the "Golden Controller" is the only method of determining the controller analyzer (including connectors) is operating correctly**.

The "Golden Controller" should be **new and unused**. **DO NOT** use a controller from a container unit for this purpose, as the state of the controller cannot be guaranteed. When preparing to test an ML2i controller use an ML2i "Golden Controller", when preparing to test an ML3 controller use an ML3 "Golden Controller".

## 3.1 First Time Use Of Controller Analyzer : "Pre-test" procedure using ML2i or ML3 "Golden Controller":

*NOTE: ALWAYS **run pretest procedure as outlined below** BEFORE **testing ANY controller. Do this** every **time on** every **controller as this will determine whether controller can be tested.***

1. Allow "Golden Controller" and analyzer to stabilize to room temperature before starting test procedure.
2. Place "Golden Controller" to be tested on desktop next to analyzer.
3. As shown in figure 3.1a, connect the **KA connector ONLY** to KA plug on "Golden Controller". Do not place "Golden Controller" in analyzer.

**Note: Do not install software card.**

4. Turn analyzer power on using main power switch located on rear panel of analyzer.
5. On the top of the analyzer, push the red handled latch forward to closed position.
6. Press the green "power on" button, it illuminate green.
7. Check the amber flashing status LED located between the MA and MB connectors on the "Golden Controller" see Figure 3.1a. It should be flashing at rate of once per second. It may take up to 20 seconds to begin flashing. The flashing LED is an indication that the main controller processor is functional. If the status light is not flashing the controller should not be tested on the analyzer or used in a unit. This test verifies basic controller functionality; if the LED does not flash the controller is defective and should be replaced.
   See Figure 3.2c - Analyzer Operation Flowchart.
8. Open red handled latch, and wait 15 seconds to allow controller power supply to dissipate.
9. Disconnect KA cable to controller.
10. "Golden Controller" is now ready to perform main test sequence.

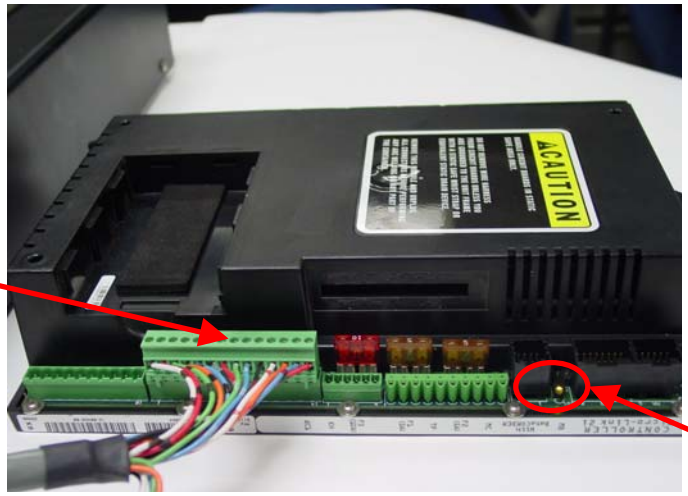


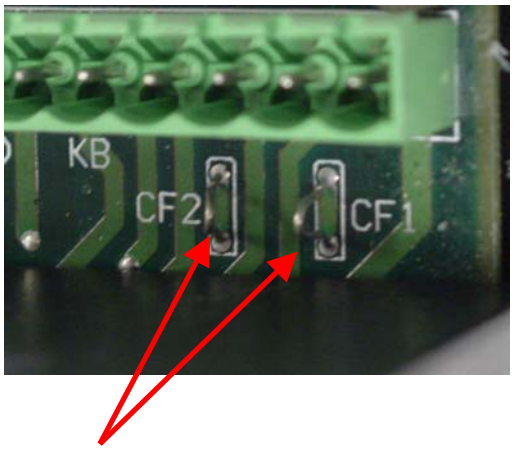

**Figure 3.1a**

## 3.2. First Time Use Of Analyzer : Main Test Sequence Using ML2i or ML3 "Golden Controller":

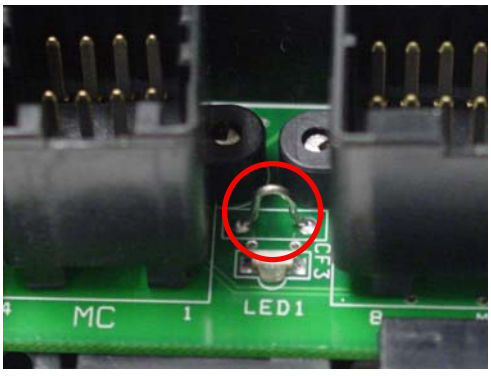
**⚠ CAUTION**

**NEVER** remove the software card, or remove any cables with the red handled switch in the closed position. Always open the red handled switch and **wait at least 15 seconds** BEFORE removing the software card or cables.

1. Inspect the EC connector pins on rear of controller for damaged, corroded or dirty pins. Clean EC pins using electrical contact cleaner or isopropyl alcohol prior to testing.
2. Inspect CF1 and CF2 connections located behind KB connector (ML2i and ML3) and CF3 located between MB and MC connectors (ML3 only) on the controller to be tested – ensure that the pins are free of coating or any substance that would prevent a good connection with analyzer push clip connectors, CF1, CF2 and CF3. If a coating is present, remove it as the push clip connectors CF1, CF2 and CF3 must make a good connection for the analyzer to test correctly. See figure 3.2a and 3.2b.




CF1 and CF2 (ML2i, ML3)
**Figure 3.2a**




CF3 (ML3 only)
**Figure 3.2b**

3. Turn the analyzer on via the main power switch located on the rear panel, place the controller to be tested on top of the analyzer, and align the EC connector on the controller with the analyzers EC plugs as shown in figure 3.3a.

Controller aligned with analyzer

**Figure 3.3a**

4. Advance the latch forward using the handle to secure the controller for testing as shown in figure 3.3b. Ensure proper seating of the EC connections as shown in figure 3.3c.

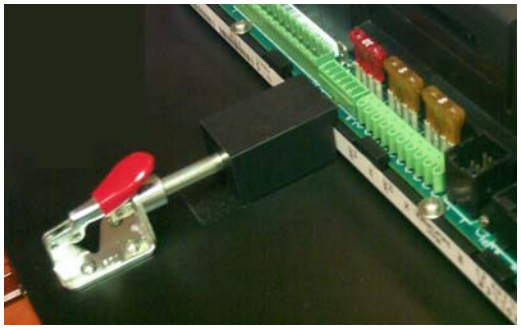


**Figure 3.3b**
**Latch Engaged**

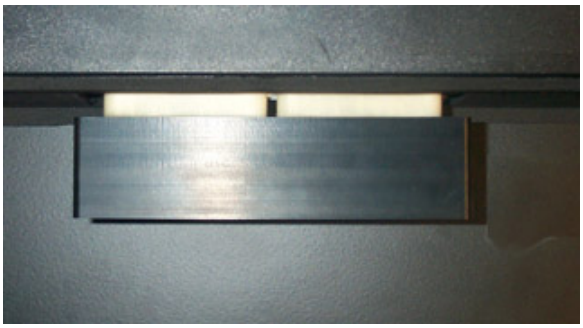
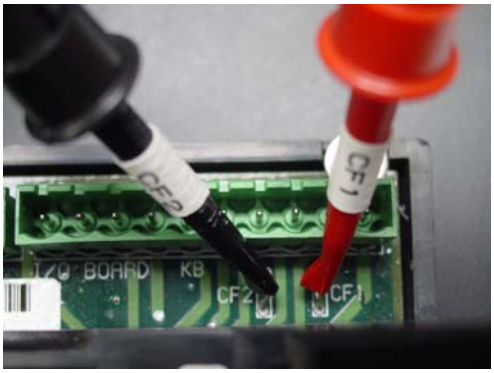
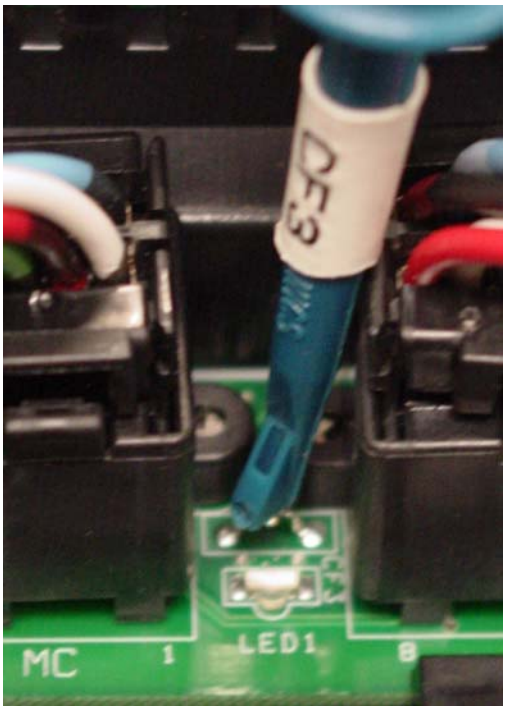


**Figure 3.3c**
**EC Plug secure**

5. For ML2i controller, locate the two push clip connectors labeled CF1 (RED) and CF2 (BLACK) on the P4 cable and connect them to the corresponding connections on the controller as shown in figure 3.3d. For ML3 controller, connect CF1, CF2 as shown in figure 3.3d **and** also connect CF3 (Blue) on P4 cable to the CF3 connector located between MB and MC on the ML3 controller as shown in Figure 3.3f.




**CF1, CF2**
**ML2I, ML3**
**Figure 3.3d**




**CF3 (ML3 ONLY)**
**Figure 3.3e**

6. Locate the QC1 connector on the controller; verify that QC1 is clean and free of any corrosion or coating. If required clean connection QC1 on the controller with contact cleaner or isopropyl alcohol. Locate the QC1 wire on the cable labeled P4. Connect this wire to the QC1 terminal on the controller, which is located directly behind pin KA14 as shown in figure 3.2f.

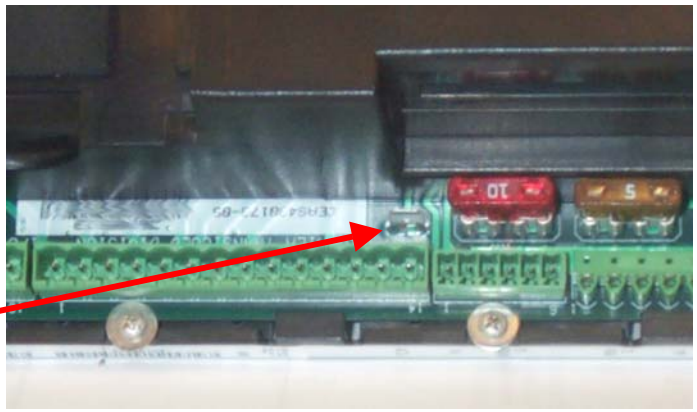



**Figure 3.2f**

7. Insert the remaining connectors into the appropriate receptacles (MA, MB, MC, KH, KA, and KB) for the ML2i controller. To test an ML3 controller there are 3 additional connectors (KE, KD, and KC) that must be connected.
8. Insert the appropriate ML2i or ML3 controller test software card into controller, depending on which controller is being tested.
9. Confirm that all connectors are in place and secure and the software card has been inserted.
10. Press the "POWER ON" button, it should illuminate green.
11. Check the amber LED **on the controller**, it should be flashing, and this may take up to 20 seconds. If the LED is not flashing refer to the troubleshooting section 6.1.

12. The RED and GREEN STATUS LED's of the analyzer should be alternately flashing. This indicates that the analyzer is ready for operation.
13. To begin testing press the "START BUTTON" once.
14. Once the "START BUTTON" has been pushed both STATUS LED's will turn **ON**, indicating testing is in progress.
15. If test sequence does not start (STATUS LED's continue to alternate flashing RED and GREEN), refer to Troubleshooting Section 4.3.
16. When the test has completed either a flashing RED (failed) or GREEN (passed) STATUS LED will indicate the test results. The testing process takes approximately 12-14 minutes. The "Golden Controller" should **ALWAYS** return a pass (green) test result. This step verifies the performance of the analyzer. Proceed to step # 18 if this test result is green. If this test result is red proceed to step #17. See flow chart figure 3.2g.
17. **"Golden Controller" main test returns RED test result** – if the "Golden Controller" returns a RED test result or does not initiate the test sequence, open the red handled latch, reconfirm that the cable and push clip connections, (CF1, CF2 and QC1) are correct and that the correct software card is fully inserted in the controller and then repeat the test. If a RED test result continues, repeat test sequences #3.1 and #3.2 using another controller. If this controller successfully passes it becomes the "Golden Controller". If failures persist, there is a problem with the analyzer or cables. Do not perform additional testing. Contact Carrier Transicold Service Engineering.
18. **Once testing has been successfully completed (GREEN) LED light**, open the red handled latch, wait at least 15 seconds, remove the software card and disconnect the analyzer cables.
19. After your "Golden Controller" has successfully passed test sequences #3.1 (Pre-test) and #3.2 (Main Test sequence) you are ready to begin testing unit controllers.
20. If you wish to re-test controller that is currently on the analyzer proceed as follows;
    Press the" Start Button" once- the RED and GREEN LED's of the analyzer should be alternately flashing. This indicates that the analyzer is ready for operation. Then press "Start Button", again both LED'S will turn **ON**, indicating testing is in progress.

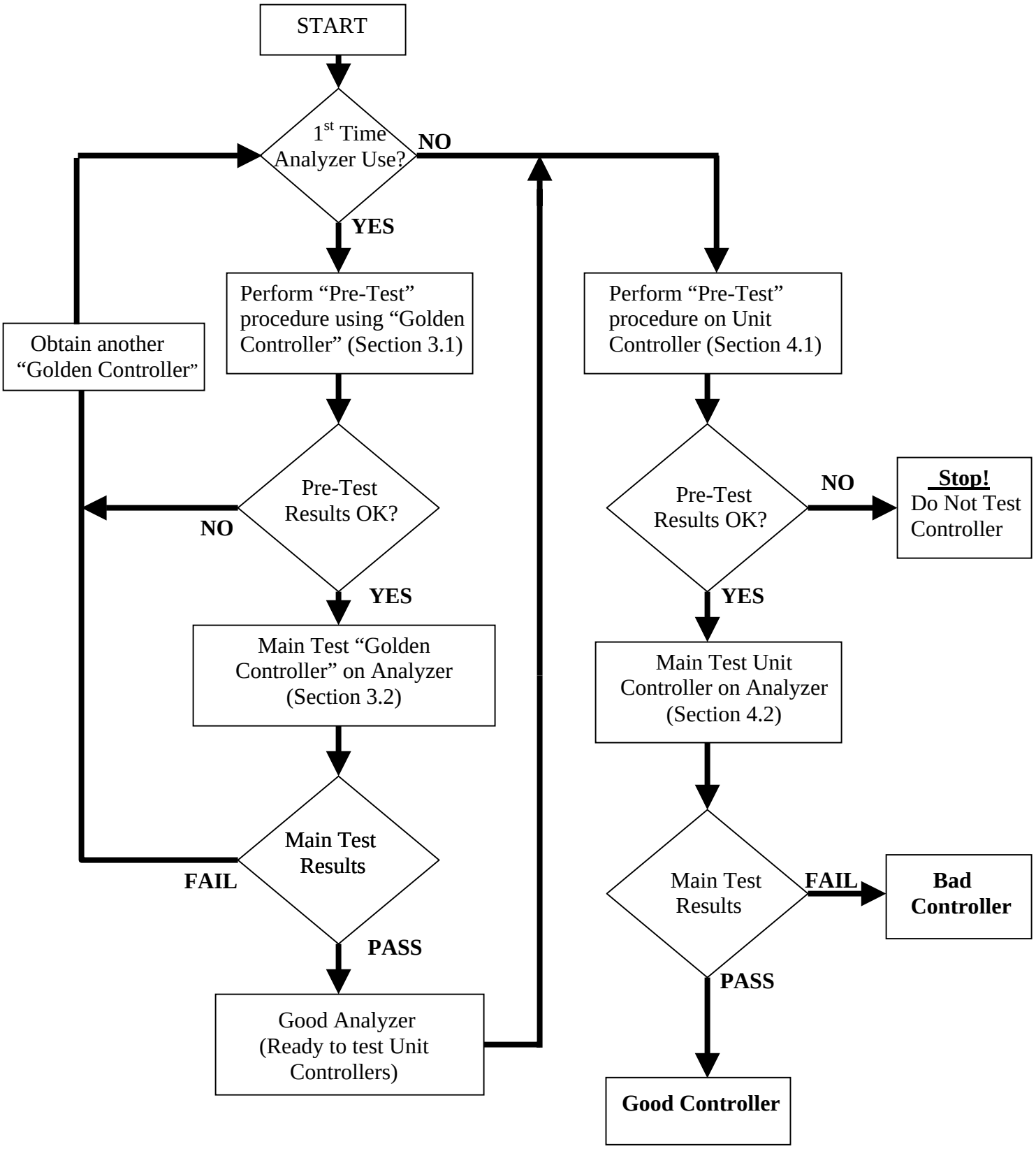



**Figure 3.2c – Analyzer Operation Flowchart**

# 4.0. TESTING CONTROLLERS

## 4.1 "Pre-test" Procedures for Testing ML2i or ML3 Controllers

**NOTE:** **ALWAYS** run pretest procedure as outlined below **BEFORE** testing any controller. Do this **every** time on **every** controller, as this will determine whether controller can be tested.

1. Remove controller to be tested from unit and bring it to test area where analyzer is located.
2. Allow controller and analyzer to stabilize to room temperature before starting test procedure.
3. Place controller to be tested on desktop next to analyzer.
4. As shown in figure 4.1a, connect the **KA connector ONLY** to KA plug on controller. Do not place controller in analyzer.

**Note: Do not install software card.**

5. Turn analyzer power on using main power switch located on rear panel of analyzer.
6. On the top of the analyzer, push the red handled latch forward to closed position.
7. Press the green "power on" button, it illuminate green.
8. Check the amber flashing status LED located between the MA and MB connectors on the controller, see Figure 3.1a. It should be flashing at rate of once per second. It may take up to 20 seconds to begin flashing. The flashing LED is an indication that the main controller processor is functional. If the status light is not flashing the controller should not be tested on the analyzer or used in a unit. This test verifies basic controller functionality; if the LED does not flash the controller is defective and should be replaced.
9. Open red handled latch, and wait 15 seconds to allow controller power supply to dissipate.
10. Disconnect KA cable to controller.
11. The controller is now ready to perform main test sequence.

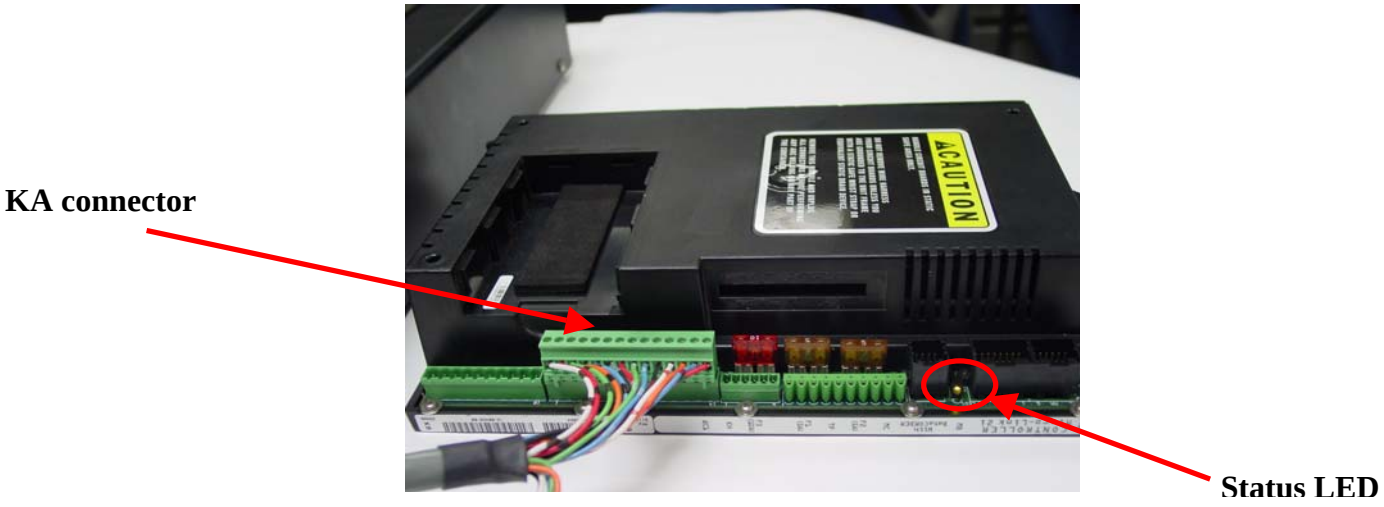


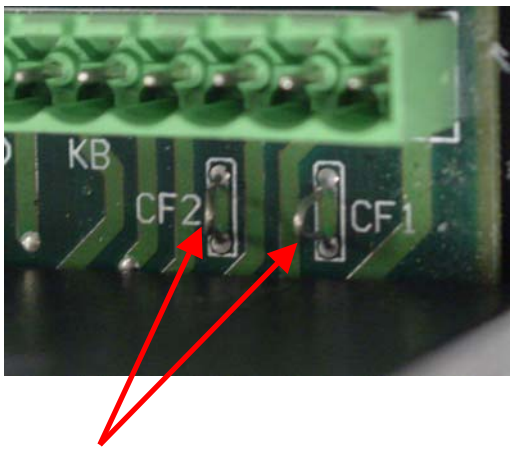

**Figure 4.1a**

## 4.2. Main Test Sequence testing ML2i or ML3 "Golden Controller":

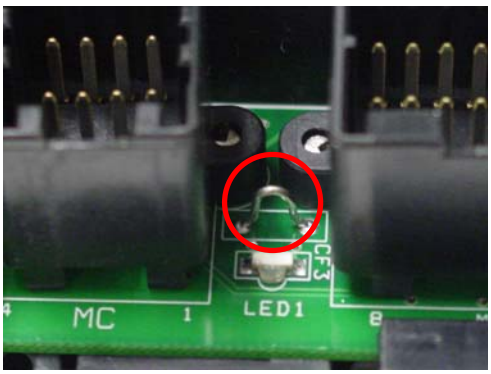
**⚠ CAUTION**

**NEVER** remove the software card, or remove any cables with the red handled switch in the closed position. Always open the red handled switch and wait at least 15 seconds BEFORE removing the software card or cables.

1. Inspect the EC pins on controller for damaged, corroded or dirty pins. Clean EC pins using electrical contact cleaner or isopropyl alcohol and a soft bristled brush.
2. Inspect CF1 and CF2 connections located behind KB connector (ML2i and ML3) and CF3 located between MB and MC connectors (ML3 only) on the controller to be tested – ensure that the pins are free of coating or any substance that would prevent a good connection with analyzer push clip connectors, CF1, CF2 and CF3. If a coating is present, remove it, as the push clip connectors CF1, CF2 and CF3 must make a good connection for the analyzer to test correctly. See figure 4.2a and 4.2b.




**CF1 and CF2 (ML2i, ML3)**
**Figure 4.2a**




**CF3 (ML3 only)**
**Figure 4.2b**

3. With main power switch on, place the controller to be tested on top of the analyzer, and align the EC connector on the controller with the analyzers EC plugs as shown in figure 4.3a.

Controller aligned with analyzer

**Figure 4.3a**

4. Advance the latch forward using the handle to secure the controller for testing as shown in figure 4.3b. Ensure proper seating of the EC connections as shown in figure 4.3c.

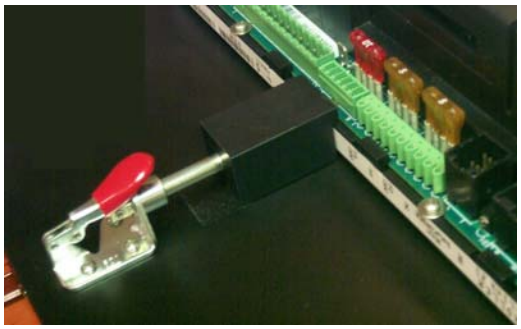


**Figure 4.3b**
**Latch Engaged**

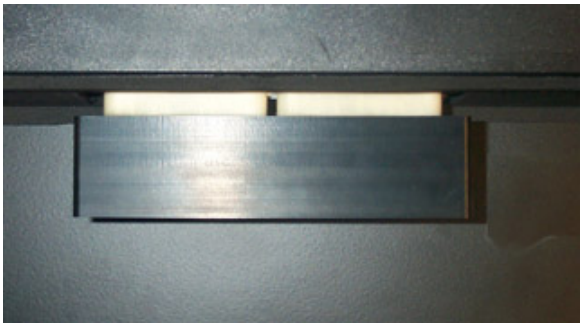
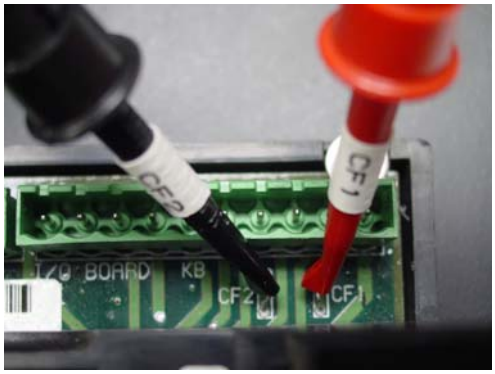


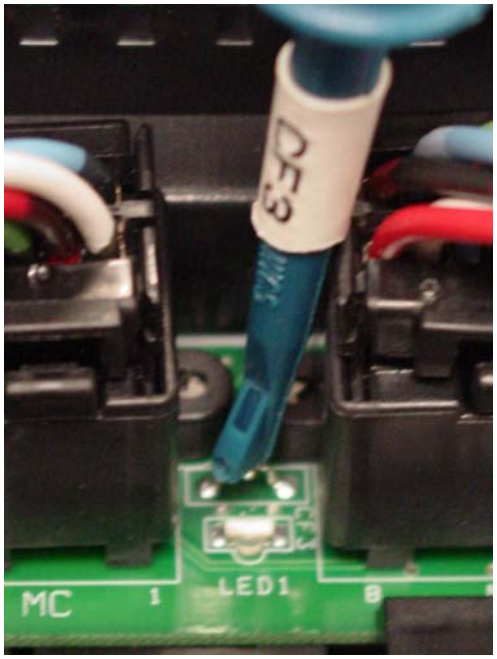
**Figure 4.3c**
**EC Plug secure**

5. For ML2i controller locate the two push clip connectors labeled CF1 (RED) and CF2 (BLACK) on the P4 cable and connect them to the corresponding connections on the controller as shown in figure 4.3d and 4.3e. For ML3 controllers connect CF1, CF2 as shown and also connect CF3 (Blue) on P4 cable to the CF3 connector located between MB and MC on the controller as shown in Figure 4.3f.




**CF1, CF2**

**(ML2i, ML3)**
**Figure 4.3d**




**CF3 ML3 only**
**Figure 4.3e**

6. Locate the QC1 connector on the controller; verify that QC1 is clean and free of any corrosion or coating. If required clean connection QC1 on the controller with contact cleaner or isopropyl alcohol. Locate the QC1 wire on the cable labeled P4. Connect this wire to the QC1 terminal on the controller, which is located directly behind pin KA14 as shown in figure 4.2f.

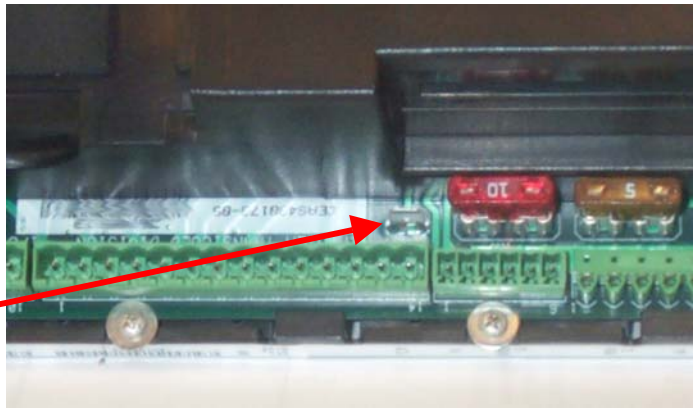



**Figure 4.2f**

7. Insert the remaining connectors into the appropriate receptacles (MA, MB, MC, KH, KA, and KB) for the ML2i controller. To test an ML3 controller there are 3 additional connectors (KE, KD, and KC) that must be connected.
8. Insert the appropriate ML2i or ML3 controller test software card into controller, depending on which controller is being tested.
9. Confirm that all connectors are in place and secure and the software card has been inserted.
10. Press the "POWER ON" button, it should illuminate green.
11. Check the amber LED **on the controller**, it should be flashing, this may take up to 20 seconds. If the LED is not flashing refer to the troubleshooting section 6.1.
12. The RED and GREEN LED's of the analyzer should be alternately flashing. This indicates that the analyzer is ready for operation.
13. To begin testing press the "START BUTTON" once.
14. Once the "START BUTTON" has been pushed both LED's will turn **ON**, indicating testing is in progress.
15. If test sequence does not start (LED's continue to alternate flashing RED and GREEN), refer to Troubleshooting Section 6.3.
16. When the test has completed either a flashing RED (failed) or GREEN (passed) LED will indicate the test results. The testing process takes approximately 12-14 minutes. **Proceed to step # 18 if this test result is green. If this test result is red proceed to step #17.** See flow chart figure 4.2g.
17. **Controller main test returns RED test result** – if the controller returns a RED test result or does not initiate the test sequence, open the red handled latch, reconfirm that the cable and push clip connections, CF1, CF2 (ML2i), CF1, CF2, CF3 (ML3) and QC1 (ML2i and ML3) are correct and that the correct software card is fully inserted in the controller and then repeat the test.
18. **If main test returns Red test result again** - controller is faulty and should not be used in container unit. After test has finished, open the red handled latch, wait at least 15 seconds, remove the software card and disconnect the analyzer cables.
19. **Once testing has been successfully completed (GREEN) LED light**, open the red handled latch, wait at least 15 seconds, remove the software card and disconnect the analyzer cables.

20. If you wish to re-test controller that is currently on the analyzer proceed as follows;
    Press the" Start Button" once- the RED and GREEN LED's of the analyzer should be alternately flashing. This indicates that the analyzer is ready for operation. Then press "Start Button", again both LED'S will turn **ON**, indicating testing is in progress.

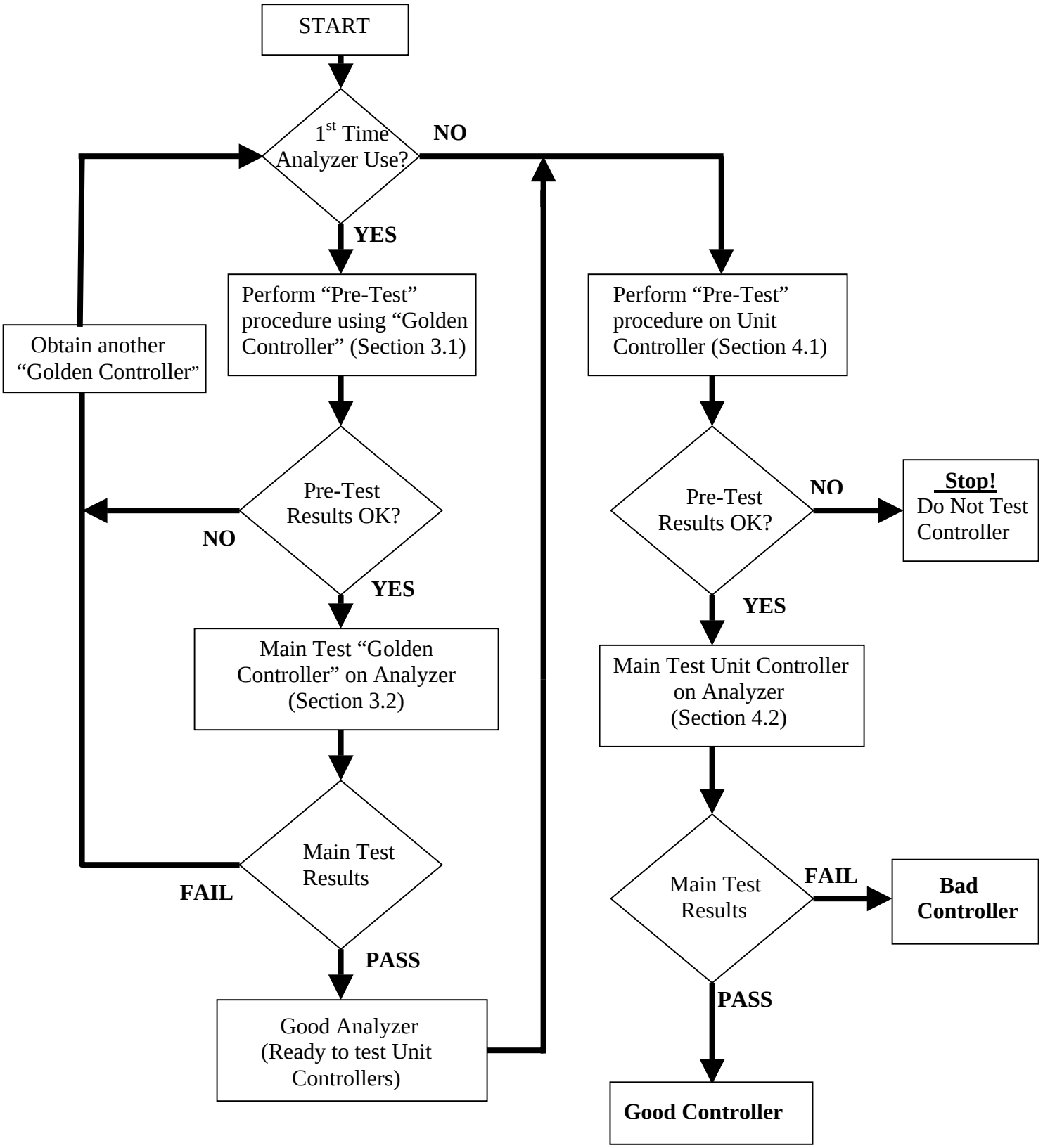



**Figure 4.2c – Analyzer Operation Flowchart**

# SECTION 5 — MAINTENANCE

## 5.1 Introduction

This section presents maintenance information for the Carrier Transicold controller analyzer and includes service information, handling, disassembly/reassembly instruction, troubleshooting, cleaning, and storage information.

## 5.2 Service Information

The conditions of the analyzer warranty are provided at the back of this manual. There are no serviceable components within the analyzer. Analyzers in need of repair should be sent prepaid to the following address:

***Carrier Transicold***
Building TR-20 Receiving
Carrier Parkway
Syracuse, NY 13221
U.S.A.
Attention: Service Engineering – Analyzer Repair

For all repairs, please provide a detailed description of the problem(s) encountered with the analyzer.

When packing the unit for shipment, use the original shipping container and packaging material to provide adequate protection during transit.

## 5.3 Handling Precautions

The analyzer should be used in a location that is clean, static free, and placed on a stable work area. This will help to ensure years of trouble free operation.

## 5.4 External Cleaning

**⚠ WARNING**

**To avoid electric shock or analyzer damage, never get water inside the case. To avoid analyzer damage, never apply solvents i.e. spray cleaners, degreasers, etc on or near the analyzer.**

Should the analyzer case require cleaning, **"UNPLUG THE UNIT BEFORE CLEANING"** and wipe the case with a cloth, lightly dampened with water. A mild detergent solution may be used if needed.

## 5.5 Storage

For optimum protection, store the unit indoors in a dry, dirt and dust free location.

# SECTION 6 — TROUBLESHOOTING

**⚠ WARNING**

**These service instructions are for use by qualified personnel only. To avoid electric shock, do not perform any procedures in this section unless you are technically qualified to do so.**

Before performing any troubleshooting procedure the technician should confirm the error using a known good controller sometimes referred to as a "Golden Controller". See sections 3.1, 3.2 and Analyzer operation Flowchart Figure 3.2c.

| Section | Problem | Possible Cause | Solution |
|---|---|---|---|
| 6.1 | Controller status LED does not flash after "Green" power button is depressed. | No power to Controller<br><br>Controller Malfunction | Check with good controller<br><br>Check fuses of controller and analyzer<br><br>Check voltage at Controller connector KA10, should read 18 volts<br><br>Continuity check analyzer/controller wiring harnesses for open/broken wires<br><br>Contact regional field Service Engineer |
| 6.2 | No Analyzer Operation (Green Power On Indicator does not light) | Unit is Unplugged<br><br>Power Switch is Off<br><br>Latching mechanism not fully engaged<br><br>Blown Fuse (F1, F2, F3, F4, F5, F6) | Plug into power source<br><br>Turn On rear Power Switch<br><br>Engage Latch<br><br>Check fuses<br><br>Contact regional field Service Engineer |

| | | | |
|---|---|---|---|
| 6.3 | Analyzer will not run test.<br><br>(Start button does not start test when depressed) | Program Card not properly inserted<br><br>Analyzer connections<br><br>Controller damaged | Turn off power and reinsert program card<br><br>Check CF1, CF2, CF3 terminal are clean and push clips are making good connection. Verify all analyzer/controller cable connections are tight and fully engaged.<br><br>Check analyzer operation with “Golden Controller” |
| 6.4 | Analyzer red LED flashes rapidly (5 times per second) | Bad Controller<br><br>Bad Controller Analyzer | Confirm analyzer is functioning properly using “Golden Controller”<br><br>Contact regional field Service Engineer |
| 6.5 | Green Power On light does not illuminate | Blown bulb | Replace bulb |
| 6.6 | Golden Controller fails | Analyzer cable connections<br><br>Golden Controller faulty | Power cycle analyzer and repeat test<br><br>Check all analyzer/controller cable connections are tight and fully engaged<br><br>Test another “Golden Controller” |

# SECTION 7 — CONTROLLER DATACORDER DOWNLOADING

## 7.1 Introduction

This section contains the procedure for downloading controller DataCorder information that is stored in the DataCorder. The Analyzer, during operation will not corrupt any information stored in the DataCorder. This feature can be used if the analyzer determines the controller to be faulty and you wish to interrogate the controller DataCorder for trip data.

**NOTE**: This procedure will download Container unit operation data that is stored on the controller DataCorder only. **It DOES NOT download analyzer test results**.

## 7.2 Downloading

**⚠ CAUTION**

**This procedure must be followed in the steps provided to ensure that there is no damage to the analyzer or controller.**

1. Place the controller on a firm surface, near the analyzer.

**⚠ CAUTION**

**Do not interrogate the controller with the controller installed in the analyzer.**

2. Locate the cable from the analyzer labeled P3 (KC + KA)
3. Plug the KA connector into the KA receptacle of the controller.
4. Locate the additional cable supplied with the analyzer P/N 22-01737-05
5. Plug the cable into the MA receptacle of the controller.
6. Connect the other end of this cable to either a DataReader P/N 12-00377-01, or to a PC using Dataview or Dataline software.
7. Engage the latching mechanism on the analyzer forward, and press the power on button.
8. You can now interrogate the controller using the DataReader or PC. For further information about interrogation refer to CTD manual 62-02575-07.

# SECTION 8 — LIST OF REPLACEABLE PARTS

## 8.1 Introduction

This section contains the parts list for the controller analyzer part number 07-00428-00. The components are listed numerically by CTD Part number, followed by a description and total quantity required.

## 8.2 How to obtain parts

Components may be ordered directly from Carrier Transicold Replacement Components Division, or local service centers using the CTD part numbers listed below.

## 8.3 Spare Parts List

| CTD PART NUMBER | DESCRIPTION | QUANTITY |
|---|---|---|
| 07-00428-55 | KE/KB CABLE | 1 |
| 07-00428-56 | KD CABLE | 1 |
| 07-00428-57 | KC/KA CABLE | 1 |
| 07-00428-58 | QC/CF/KH/MC CABLE | 1 |
| 07-00428-59 | MB CABLE | 1 |
| 07-00428-60 | MA CABLE | 1 |
| 07-00428-61 | 1.6 AMP FUSE | 6 |
| 07-00428-62 | POWER CORD | 1 |
| 12-50078-04 | ML2i SOFTWARE CARD | 1 |
| 22-01737-06 | DOWNLOAD CABLE | 1 |

**Note**: The following part is not currently available. Contact your local Field Service Engineer for availability.

| | | |
|---|---|---|
| 12-50078-06 | ML3 SOFTWARE CARD | 1 |

# SECTION 9 — WARRANTY

## 9.1 Warranty Requirements

The MicroLink 2i/3 Controller Analyzer shall be warranted for a period of one (1) year from the date of shipment from Carrier Transicold. This warranty shall cover defects in materials and workmanship (excluding external cables) under the following conditions:

- Carrier Transicold will require notification of any equipment that is being returned under warranty. Please contact your local Field Service Engineer prior to shipment.
- The equipment should be returned in its original shipping container during the warranty period.
- CTD reserves the right to reject any warranty claim for damage that may have been incurred through mishandling or misuse of the equipment.
- Evidence of analyzer misuse, tampering or breakage of the unit warranty seals voids the warranty.

## 9.2 Warranty Return Information

Malfunctions that occur within the limits of the warranty will be corrected at no cost to the purchaser. Analyzers in need of repair should be sent prepaid to the following address along with a detailed description of problem or symptoms.

***Carrier Transicold***
Building TR-20 Receiving
Carrier Parkway
Syracuse, NY 13221
U.S.A.
Attention: Service Engineering – Analyzer Repair