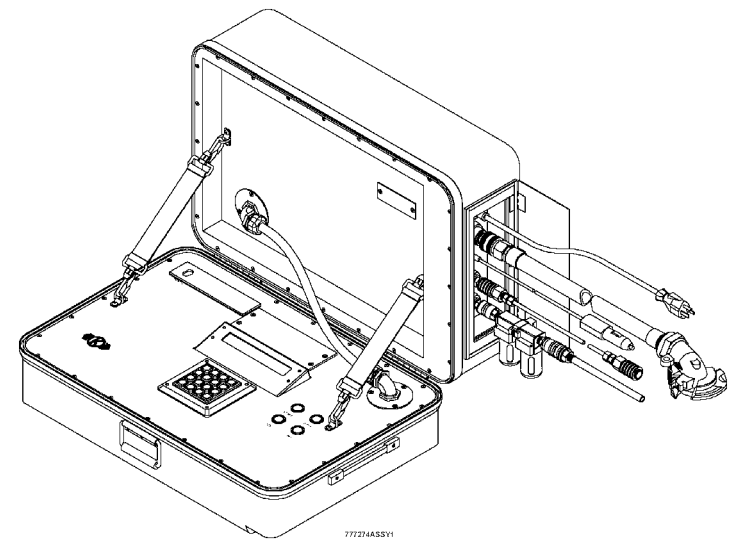


COMPUTERIZED SINGLE CAR TEST DEVICE

OPERATORS MANUAL
I.P. 176



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AIR BRAKE
CORPORATION**
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Table of Contents

1.0	Introduction	4
2.0	Safety	7
3.0	CSCTD Features	10
4.0	Power and Power Up Sequence.....	14
5.0	Main Menu	17
6.0	Daily Test Of The CSCTD	19
7.0	Standard Single Car Test.....	30
8.0	Special Tests.....	35
9.0	Annual Test Of The CSCTD.....	39
10.0	Printing Reports	46
11.0	Downloading A Report To A Computer	48
12.0	Utility Menu	52
12.2	Options.....	52
12.3	Recalibrate Pressure Transducer.....	52
12.4	Clear Memory.....	54
12.5	Initialize Memory	54
12.6	Set Date/Time	55
12.7	Set Test Device Number	57
12.8	Check Battery Voltage and Used Memory Space.....	59
12.9	Run Valve Test	60
12.10	Test Flow Meter	61
12.11	Toggle Brake Warning Light Off	61
12.12	Did This CSTD Come With a Test Coupling...	62
13.0	Logoff.....	63
14.0	Shutdown.....	64
15.0	Keypad Usage	65
16.0	Removal/Installation Of The Battery	66
17.0	Piston Travel	67
18.0	Check Sheet Sample	68
19.0	Procedure to Install Eeprom 778604 For the CSCTS	69
20.0	Questions and Answers.....	73

Index of Figures

Figure 1	CSCTD	10
Figure 2	EZ Mate Quick Disconnect.....	12
Figure 3	90/80 psi Regulator Access Cover.....	24
Figure 4	CSCTD and Rail Car	30
Figure 5	Device for Quarterly Test of the CSCTD	41
Figure 6	Computer Screen View for Report Download.....	50
Figure 7	Computer Screen View of the Report Template	51
Figure 8	Computer Screen View of a Downloaded Report.....	51
Figure 9	Electronic Panel Battery Cover	69
Figure 10	Battery Leads Grommet	70
Figure 11	Eeprom (U3) Notch on IC	71

1.0 INTRODUCTION

1.1 This Single Car Test Device (CSCTD) is an AAR approved computerized testing device. It is DC powered, compact, rugged and portable. Design provisions allow for either hanging the device from a rail car ladder or laying out flat while testing.

1.2 The CSCTD tests the functionality of a rail car brake system in accordance with AAR Code of Air Brake System Tests, Standard S-486 and AAR Field Manual Rule #3, latest revision to include:

AAR Test Section 2.3 -
Daily Test for Testing the Device

AAR Test Section 3.0 -
Standard Test for Freight Brake Equipment

AAR Test Section 4.0 -
Special Tests to include:
Manual Application and Release Test
Retaining Valve Test
Brake Cylinder Pressure Tap Leakage Test
Brake Pipe Leakage Test
System Leakage Test
BC Leakage Test per Rule 88
Empty/Load Test
1" Ball Test

1.3 The onboard 12 Volt battery is capable of running the CSCTD for up to 16 hours. There are three ways to power the device and two ways to charge the onboard battery. The user can continue testing while charging the battery with 110 VAC. See Section 3.3.

1.4 The test device requires only the simplest of pneumatic connections: Filtered Supply Air (100 psi (689 kPa) minimum and 120 psi [827 kPa] maximum), Brake Pipe and Brake Cylinder.

WARNING

UNITS STARTING AT CO-XXXX WILL HAVE A SAFETY VALVE INSTALLED TO PROTECT THE UNIT AGAINST PRESSURES ABOVE 120 PSI (827 kPa). IF THE SAFETY VALVE IS ACTIVATED THE AIR SUPPLY MUST BE TURNED OFF AND THE PRESSURE REDUCED BEFORE TESTING CAN BE DONE.

1.4.1 Testing performed by:

1.4.1.1 Making the appropriate connections to the CSCTD and the rail car with the supplied hoses or making the appropriate connections to a Printer or Computer.

1.4.1.2 Turning 'ON' the test device.

1.4.1.3 Following the instruction prompts on the screen to select the appropriate test/function via the Main Menu. See Section 5.3.

1.5 The CSCTD weighs approximately 71 lbs (32.2 kg). The approximate length, width and depth with the hangers open is 24" X 16" X 16" (609.6 mm x 406.4 mm x 406.4 mm).

- 1.6 The CSCTD has on-board memory capable of storing test data in excess of 500k (approximately 250 pages/reports). When 500k of memory has been used the CSCTD warns the user. This allows for uploading of test data to a host PC or printing the test reports after testing has been completed.
- 1.7 For instructions specific to non U.S. applications of the CSCTD, refer to the Utility menu.

2.0 SAFETY

2.1 WARNING

HIGH PRESSURE AIR WILL BE PRESENT IN THE TEST DEVICE AND ASSEMBLY BEING TESTED. PRESSURE WILL VENT FROM VALVE EXHAUST PORTS WHEN CSCTD IS MANIPULATED OR WHEN CONTROL DEVICES ARE OPERATED. TO MINIMIZE THE RISK OF PERSONAL INJURY FROM PRESSURE EXHAUSTING, ENSURE THAT ALL PERSONS STAND CLEAR OF THE EXHAUST PATH AND THAT HEARING PROTECTION AND EYE PROTECTION ARE WORN AT ALL TIMES.

2.2 WARNING

ELECTRICAL POWER IS PRESENT. TO MINIMIZE THE RISK OF PERSONAL INJURY FROM ELECTRICAL SHOCK, ENSURE THAT POWER AND/OR SWITCHES ARE TURNED OFF PRIOR TO MAKING ANY ELECTRICAL CONNECTIONS/DISCONNCTIONS.

2.3 WARNING

IN ORDER TO AVOID PERSONAL INJURY AND/OR DAMAGE TO THE CSCTD, NEVER ATTEMPT TO MOVE THE CSCTD WHILE THE UNIT IS OPEN. ALWAYS SHUT THE UNIT AND SECURE THE LATCHES.

- 2.4 **Audible Warning:** When a brake application or release is commanded, the CSCTD first gives both visual and audible warnings, then allows the brake operation to take place. Keep hands clear of brakes/brake rigging. The audible warning is approximately 85 dB.
- 2.5 **Memory Warning:** When 75% of the available memory has been filled a warning is displayed to alert the operator that memory space is getting low. Data should be downloaded and/or printed and the memory cleared. When 90% of the available memory has been filled, the unit will not allow a new test to begin until the data has been downloaded and/or printed and the memory cleared. The user will have to follow the instructions to print or download test records, then clear memory (See paragraph 12.3).
- 2.6 **Battery Warning:** Observe the Battery voltage when displayed. If you receive the warning message:

**TEST DEVICE BATTERY/ VOLTAGE: XX.XX VOLTS,
CHANGE/CHARGE BATTERY TO AVOID DATA LOSS**

either charge the battery with 110 VAC plugged into the CSCTD or follow the procedure to replace the battery. See section 16.0. The battery warning will be displayed at 12 VDC or less. When the battery voltage drops below 11.5 VDC the unit will not allow a new test to begin until the unit is plugged in or the battery is replaced.

- 2.7 **Battery Charging:** The battery can be recharged with the CSCTD in any position except upside down (Hanger Brackets down).
- 2.8 **Battery Disposal:** The battery is fully recyclable and should be accepted at locations that accept common automotive starter batteries.
- 2.9 **Battery Storage:** When the CSCTD is not used for long periods of time, remove the battery, charge it fully and store in a place where humidity is low. Unsatisfactory storage conditions may cause deterioration in battery performance and shorten service life. Storing an uncharged battery for a year or longer can also shorten service life.
- Alternate batteries as needed. Keep a stored battery in the upright position and do not apply strong vibrations or shocks.
- 2.10 For more information on the battery, battery safety and proper handling, access the website www.panasonic.com and look in Industrial Components.

3.0 CSCTD FEATURES

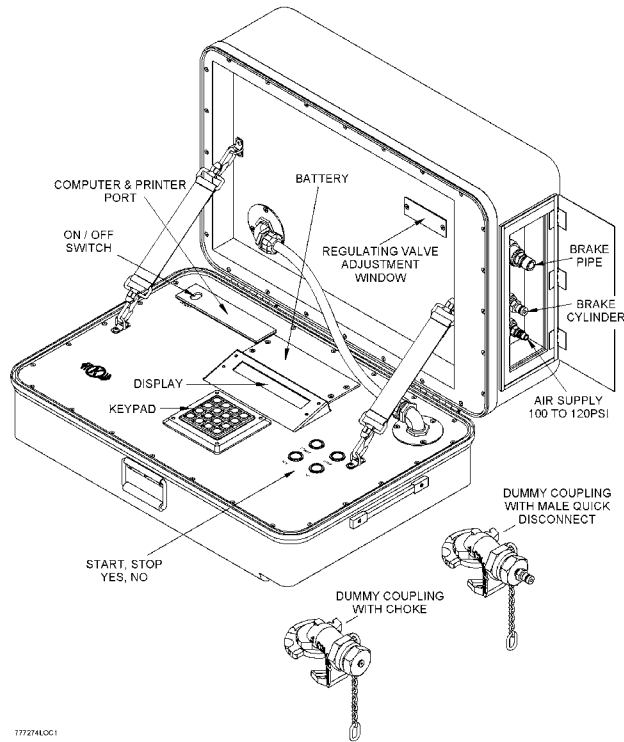


Figure 1

- 3.1 **Hanger Brackets** - Collapsible brackets allow the user to hang the CSCTD from the rail car ladder if he/she so desires.
- 3.2 **Keypad** - The keypad is set up similar to a phone keypad and allows the user to input/change certain information.
- 3.3 **Power** - The CSCTD normally runs from the supplied 12 VDC battery, but the user can still

operate when 110 VAC (standard detachable power cord) is plugged in charging the battery. Also, the device can be powered from a 12 VDC car/truck lighter jack with the supplied 12 VDC cord when 110 VAC is not available.

3.4

NOTE

Start and Stop buttons are being removed from future devices and are no longer used on current devices.

Yes - No, Start - Stop Buttons - The user utilizes these buttons to answer test prompts from the device. The start button is green and the stop button is red.

3.5

Power ON Switch - Turns the CSCTD On and Off.

3.6

Detachable Straps - When detached, the CSCTD will lay flat.

3.7

Adjustment Window - Accessed by the user for adjustment of the 90 psi and/or 80 psi regulator setting(s).

3.8

Computer Port - Standard DB-9 pin computer port to download files to a computer. Uses a Standard DB-9 male to female serial cable.

3.9

Printer Port - Standard DB-25 pin interface port to print the test files obtained. Uses a Standard DB-25 male to female parallel printer cable.

- 3.10 **Display Screen** - the Screen displays the prompts (questions and statements) from the CSCTD. The input information provided by the user is viewed here also.
- 3.11 **Air Filter/Mist Separator** - keeps moisture and contaminants from entering the device. Both have push button discharge ports located at the bottom of each bowl and should be cycled daily.
- 3.12 **EZ Mate Quick Disconnect** - Allows the user to turn the supply air off/on at the CSCTD without uncoupling the hose. See Figure 2.

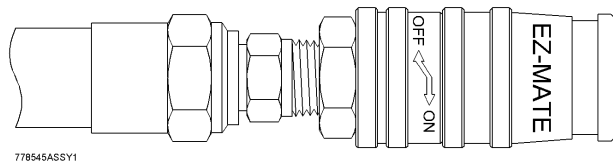


Figure 2

- 3.13 **Graceful Shutdown** (Easy Stop to Start Function) - If the user is required to shutdown during a test, pressing the 'Shift' key (release it), then press the 'Enter' key and release it (do not hold both keys down together). Testing will then terminate and Brake Pipe pressure will vent to 0 psi (0 kPa). The CSCTD will then prompt the user with instructions to shutdown the device.
- 3.13.1 The CSCTD will automatically store in memory where testing was stopped. Upon returning to the test mode, testing will resume at approximately the point in the test where the device was shutdown.

WARNING

IF ANY COMPONENT IN THE BRAKE SYSTEM WAS ALTERED OR REPLACED WHILE THE TEST DEVICE WAS SHUT OFF, YOU MUST ANSWER NO TO "CONTINUE WITH LAST TEST?" AND START THE TEST FROM THE BEGINNING.

- 3.13.2 When testing is resumed, the CSCTD will automatically return to the last subtest completed and testing will start from that point, not the beginning. The CSCTD will then prompt the user:

CONTINUE WITH LAST TEST?

Press 'YES' to continue testing, press 'NO' to start the test from the beginning.

4.0 POWER AND POWER UP SEQUENCE

- 4.1 With the CSCTD box open, turn 'ON' the power to the CSCTD. The power switch is located in the upper left corner of the control panel.
- 4.2 When the unit is first turned on, the display will show the current software version and revision date on the screen for approximately 3 seconds. After which, the CSCTD will automatically sequence to the prompt:

RUN OEM VERSION?

- 4.3 **OEM NOTE:** The Original Equipment Manufacturer (OEM) Testing format is intended for use by new car builders. If the OEM Test is selected, the Input/Output information is more detailed and the 4 (four) hour brake cylinder leakage test is mandatory.

- 4.3.1 By answering 'NO' to the question:

RUN OEM VERSION?

the test format will contain less detailed Input/Output information and the 4 (four) hour brake cylinder leakage test is optional. The simplified format is intended for cars being tested on the repair track and cars repaired under Rule 88.

- 4.3.2 Both test formats complete the same routines per S-486.
- 4.4 Whether or not the Original Equipment (OEM) or Repair Track Test is selected by the user, the screen will automatically sequence through four (4), possibly five (5), message screens in the following order:

TEST DEVICE BATTERY/ VOLTAGE: XX.XX VOLTS

The low battery message will appear if battery voltage is low.

- 4.5 The following warning flashes on the screen:

WARNING: BRAKE RIGGING MAY BE IN MOTION AT ANY TIME. KEEP CLEAR. STAY SAFE.

This is followed by the prompt:

IS IT SAFE TO APPLY THE BRAKES?

Pressing the YES button proceeds to:

PRESSURE TRANSDUCER SELF-CALIBRATION

NOTE

The displayed reading should be approximately equal to local barometric pressure.

If you do not accept the reading and press the NO button, the prompt returns to the brake warning before allowing calibration. If you accept the reading and press the YES button, the following appears:

MAIN MENU

RUN DAILY TEST ON DEVICE - SECTION 2.3?

- 4.4.1 **BATTERY NOTE:** If the voltage level is below 12 volts, the CSCTD will automatically provide the following warning:

**TEST DEVICE BATTERY/ VOLTAGE: XX.XX VOLTS,
CHANGE/CHARGE BATTERY TO AVOID DATA LOSS**

If the battery voltage drops below 11.5 VDC the unit will not allow a new test to begin until the unit is plugged in or the battery is replaced.

- 4.4.2 Simply plug the CSCTD into a 110 VAC outlet with the cord that is supplied with the unit (this is a standard computer power cord). The user may operate the CSCTD while it is plugged in and charging, but plugging the CSCTD in after use will ensure a properly charged battery. To change the battery, refer to section 16.0 of this manual.

5.0 MAIN MENU

- 5.1 When turned 'ON', the first prompt displayed on the screen is a question, i.e.:

RUN OEM VERSION?

If a new car is being tested, select 'YES', if this test is being conducted on a repair track or on a car repaired under Rule 88, select 'NO'. Selecting either 'YES' or 'NO' will bring the user to the Main Menu.

- 5.1.1 **NOTE**

If the operator inadvertently enters the wrong answer, simply turn the power 'OFF', wait a few seconds, then turn the power 'ON' and re-start.

- 5.2 The user can step through the main menu options listed by pressing the 'NO' button. When 'NO' is pressed, the next function of the Main Menu will be displayed. If the last function of the Main Menu:

SHUTDOWN?

is displayed on the screen and the operator wishes to return to the beginning of the Main Menu, simply press 'NO' again and the CSCTD returns to the beginning of the Main Menu. By answering a Main Menu question with the 'YES' button, the user starts the test/function that is displayed on the screen.

5.3 The Main Menu of the CSCTD contains the following options:

RUN DAILY TEST ON DEVICE - SECTION 2.3?
RUN STANDARD SINGLE CAR TEST - SECTION 3.0?
RUN SPECIAL TEST?
RUN ANNUAL TEST ON TEST DEVICE OR
TEST COUPLING CALIBRATION?
PRINT REPORT?
SEND REPORT TO PC?
UTILITY MENU?
1) The user warning "IS IT SAFE TO APPLY
THE BRAKES?" can be toggled on to off.
2) Test devices will soon be equipped with an
internal choke that will be used for calibration
of the flowmeter during the daily test. This will
eliminate the need for the dummy coupling
with choke. To condition the test device to use
the internal choke it must be turned on from
the Utility menu.
LOGOFF?
SHUTDOWN?

It is suggested that the first time a new unit is used, the operator advance to the Utility Menu and perform the following tasks:

1. Initialize memory
2. Set Date and Time
3. Enter Test Device Serial Number

Return to Main Menu.

6.0 DAILY TEST OF THE CSCTD

Reference: AAR Standard S-486 (current revision),
Section 2.3

NOTE

Do not connect pressure prior to being prompted.

NOTE

If not already familiar with the usage of the keypad, the user should read Section 15.0, Keypad Usage prior to performing the Daily Test.

6.1 The following steps are required to perform the Daily Test of the CSCTD.

6.1.1 Ensure the air supply is disconnected.


6.1.2 If the power switch is not 'ON', turn the power switch to the CSCTD 'ON'. Make the appropriate selection as defined in Section 5.1. If the Daily Test is the only test to be conducted, pressing either 'YES' or 'NO' will bring the user to the Daily Test.

6.1.2.1 Observe the Battery voltage. If you receive the warning message:

**TEST DEVICE BATTERY/ VOLTAGE: XX.XX VOLTS,
CHANGE/CHARGE BATTERY TO AVOID DATA LOSS**

either charge the battery with 110 VAC plugged into the CSCTD or follow the procedures to replace the battery (See section 16.0).

6.1.2.2 At this point a memory warning may appear on the screen. The user will have to follow the instructions to print or download test records, then clear memory (See section 12.4).

6.1.3 

will now display for 3 seconds followed by the prompt:



Press the 'YES' button to proceed to the Daily Test.

NOTE

Pressing the 'NO' button will toggle to the next menu item.

Repeatedly pressing 'NO' will step through the menu, returning to the "Run Daily Test on Device - Section 2.3?" selection.

NOTE

For Section 6.1.4 and 6.1.5, see Section 15.0, Keypad Usage.

6.1.4 The user will then be prompted to enter his/her name or I.D./clock number. The CSCTD will allow from 1 to 10 characters (alpha or numeric) entered to satisfy this prompt. Press the 'Enter' key to continue.

6.1.5 The user will be prompted to validate the serial number of the CSCTD. If it is incorrect, the user will be prompted to enter the correct serial number. This number is located on the NYAB name plate.

6.1.6 The user will then have a series of prompts displayed on the screen. In order to continue to the next prompt, the user should follow the directions of each prompt and MUST press the 'YES' button. Pressing 'NO' will not allow the user to continue.

6.1.6.1 

is the first prompt. In order to prevent contamination from entering the unit and causing a malfunction, all users should blow out the supply line. It is also very important that the supplied air filter/mist separator be utilized in the test set up. Press 'YES' to continue.

6.1.6.2

HAS THE SUPPLY LINE BEEN CONNECTED TO THE TEST DEVICE?

is the second prompt. Connect the supply line and open the supply cock to the device. See Figure 1. Press 'YES' to continue.

6.1.6.3

IS THERE A DUMMY COUPLING WITH QUICK DISCONNECT CONNECTED TO THE GLADHAND?

is the third prompt. Connect the supplied Brake Pipe hose to the device, then connect the dummy coupling with the male quick disconnect to the Brake pipe coupling. See Figure 1. Press 'YES' to continue.

6.1.6.4

HAS THE BC TUBE BEEN CONNECTED TO THE CSCTD AND DUMMY COUPLING?

is the fourth prompt. Connect the supplied Brake Cylinder hose to the CSCTD B.C. port (See Figure 1), then connect the Brake Pipe dummy coupling with the male quick disconnect to the other end of the B.C. tubing quick disconnect. Press 'YES' to start the Daily Test. Testing starts automatically.

6.1.6.4.1 The warning:

SUPPLY PRESSURE BELOW 100 PSI

will appear on the screen if supply pressure is below 100 psi (689 kPa). Ensure special E-Z mate quick disconnect is 'ON' allowing pressure to the CSCTD supply input (See Figure 2). Also ensure supply pressure is turned on and above 100 psi (689 kPa) and below 120 psi (827 kPa).

6.2 Follow and answer the screen prompts and test questions using the 'YES' and 'NO' buttons to continue.

6.2.1 First the CSCTD automatically checks the dual pressure regulator 90 psi (620 kPa) setting, indicating the setting on the screen. The screen will indicate a passed valve by prompting the user:

DO YOU WANT TO MAKE FURTHER ADJUSTMENTS?

If the valve passed, pressing 'NO' will continue with the 80 psi (551 kPa) regulator check. Also note that even though the valve passed the test, the user is still given the option to adjust.

6.2.1.1 The CSCTD will indicate the same prompts for the 80 psi (551 kPa) regulator check as it did for 90 psi (620 kPa). Pressing 'NO' allows the user to continue with the Daily Test.

- 6.2.1.2 If either the 90 psi (620 kPa) or 80 psi (551 kPa) regulator check fails, the screen will indicate a failed valve, prompting the user:

DID YOU ADJUST REGULATOR SETTINGS?

Pressing 'YES' will automatically perform a re-check of the regulator.

- 6.2.1.3 To adjust the regulator, remove the cover to the adjustment window of the device. If the valve failed at the 90 psi (620 kPa) setting, the 90 psi (620 kPa) adjustment screw will be in the window. If the valve failed at the 80 psi (551 kPa) setting, the 80 psi (551 kPa) adjustment screw will be in the window.

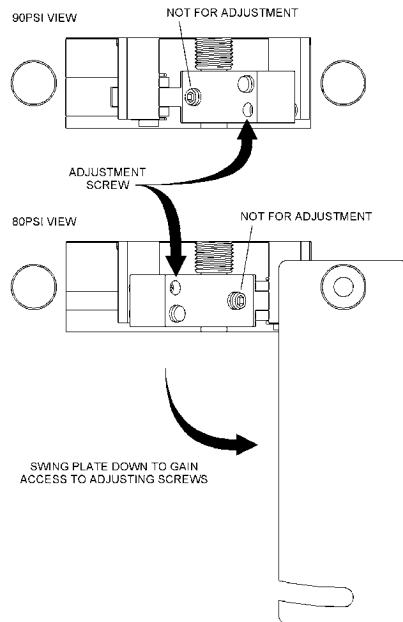


FIGURE 3

- 6.2.1.4 For the 90 psi (620 kPa) adjustment, insert an allen wrench (5/64) into the set screw and turn the set screw counterclockwise to increase the setting and clockwise to decrease the setting. The 90 psi (620 kPa) adjustment range is 89 to 92 psi (613 to 634 kPa). Conversely, for the 80 psi (551 kPa) adjustment, insert an allen wrench (5/64) into the set screw and turn the set screw clockwise to increase the setting and counterclockwise to decrease the setting. The 80 psi (551 kPa) adjustment range is 78 to 81 psi (537 to 558 kPa).

- 6.2.1.4.1 Do not change the adjustment more than 1/2 turn at a time. It is suggested that the air supply is turned off while changing the position of the adjusting screws and then turned back on.

WARNING

REMOVE THE ALLEN WRENCH PRIOR TO RECHECKING THE SETTING BECAUSE THE MECHANISM MAY CYCLE WHEN PRESSURIZED. THE ALLEN WRENCH MAY BE EXPELLED FROM THE UNIT BY FORCE CAUSING INJURY TO PERSONNEL.

- 6.2.1.5 To check the adjustment, supply pressure must be turned 'OFF' then 'ON'. Simply turn the EZ Mate quick disconnect off, then on, then press 'YES'. The user does NOT have to turn the CSCTD 'OFF' for the adjustment procedure. The CSCTD will re-check the setting when 'YES' is pressed. Repeat the procedure until the desired pressure setting is attained.

6.2.2

NOTE

If there is an internal flow meter calibration choke, the test device will go from the leakage test, described in paragraph 6.2.3 directly to the flow check as described in paragraph 6.2.4.

6.2.3 Next the CSCTD performs a leakage test. If the leakage test passes, pressure will be exhausted followed by a prompt appearing on the screen:

HAS THE DUMMY COUPLING BEEN REMOVED?

The user should then disconnect the dummy coupling. Press 'YES' to continue.

6.2.3.1 If the leakage test fails, pressure will be exhausted followed by a prompt appearing on the screen:

HAS THE BC TUBE BEEN DISCONNECTED FROM THE DUMMY COUPLING?

The user should then disconnect the Brake Cylinder hose from the Brake Pipe dummy coupling. Press 'YES' to continue and a second leakage check will be performed.

6.2.3.2 The results of the second leakage check will determine if the Brake Cylinder Hose or the CSCTD is leaking. At the completion of the second leakage check the operator will be instructed to repair or replace the Brake

Cylinder Hose or take the CSCTD out of service for repair.

6.2.4 A flow check with the 0.28mm choke is performed next. Units starting with S/N CO-xxxx have an internal calibration choke and the test will continue when selected. If an external test coupling is being used, A prompt appears on the screen:

IS A TEST COUPLING WITH 0.28MM CHOKE INSTALLED?

The user should then connect the choked coupling to the Brake Pipe coupling and press 'YES' to continue testing.

6.2.4.1 If the flow check with the 0.28mm choke fails, pressure is exhausted and a prompt appears on the screen:

DID YOU INSPECT, CLEAN OR REPLACE THE 0.28MM CHOKE?

The user is then allowed to replace or repair the choke, re-install and press 'YES' to re-test.

6.2.4.2 **NOTE**

If there is an internal flow meter calibration choke and the flow test fails, the operator is instructed to remove the unit from service for repairs

- 6.2.5 When the flow check is complete, pressure will be exhausted and the following prompt will display on the screen:

HAS THE TEST COUPLING BEEN REMOVED?

The user should then disconnect the 0.28mm choked coupling or dummy coupling and brake cylinder tube. Press 'YES' to continue.

- 6.2.6 Next the CSCTD performs a Brake Pipe leakage test. A prompt appears on the screen:

IS THERE LEAKAGE AT THE GLADHAND?

The user should soap test the open gladhand. With no leakage noted, press 'NO' to finish the Daily Test returning to the Main Menu.

- 6.2.6.1 If the Brake Pipe leakage test fails, pressing 'YES' will first exhaust pressure from the CSCTD, then prompt the user to:

DISCONNECT THE SUPPLY LINE AND REMOVE THE UNIT FROM SERVICE FOR REPAIRS

The Main Menu will reappear on the screen allowing the user to repeat the Daily Test.

- 6.3 Upon completion

RUN DAILY TEST ON DEVICE - SECTION 2.3?

will appear on the screen followed by the prompt:

MAIN MENU

This indicates that the CSCTD has passed the Daily Test.

- 6.3.1 The test will not complete its cycle until all sections of the test pass.
- 6.3.2 Toggle the power switch to the 'OFF' position.

7.0 RUN STANDARD SINGLE CAR TEST

Reference: AAR Standard S-486 (current revision),
Section 3.0

NOTE

Do not connect pressure prior to being prompted.

NOTE

The user should read Section 15.0, Keypad Usage prior to performing the Standard Single Car Test.

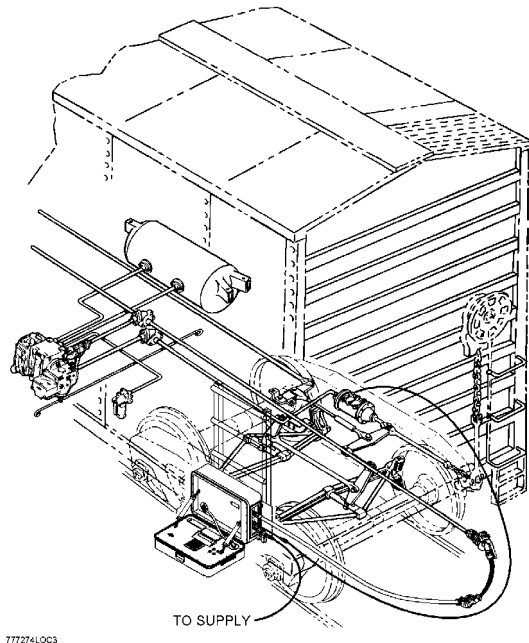


FIGURE 4

- 7.1 The following steps are required to perform either the OEM version or the Standard Single Car Test.
- 7.1.1 Ensure the air supply is disconnected and the brake system drained thus preventing an undesired application while performing hands-on brake/rigging inspections.
- 7.1.2 If the power switch is not 'ON', turn the power switch on the CSCTD to the 'ON' position. The menu selection:

RUN OEM VERSION?

will be displayed on the screen. If the user is testing a new car select 'YES'. If the user is conducting a Single Car Test on the repair track or a car repaired under Rule 88, select 'NO'.

- 7.1.2.1 Observe the Battery voltage. If you receive the warning message:

**TEST DEVICE BATTERY VOLTAGE: XX.XX VOLTS,
CHANGE/CHARGE BATTERY TO AVOID DATA LOSS**

either charge the battery with 110 VAC plugged into the CSCTD or follow the procedures to replace the battery. See section 16.0.

- 7.1.2.2 At this point a memory warning may appear on the screen. The user will have to follow the instructions to print or download test records, then clear memory.

7.1.3

MAIN MENU

will now display for 3 seconds followed by the prompt:

RUN DAILY TEST ON DEVICE - SECTION 2.3?

Press the 'NO' button to proceed.

7.1.4 The user will then be prompted to:

RUN STANDARD SINGLE CAR - SECTION 3.0?

Press the 'YES' button to proceed.

7.1.5 The user will then be prompted to enter his/her name or I.D. and car number.

7.1.5.1 For an OEM selection, additional information will be requested at this point if the OEM testing format was selected at paragraph 7.1.2. For prompts that have no input available, the user will have to enter a space or a 0 (zero), then press enter to continue.

7.1.5.2 For a repair track selection, the user should enter his/her name or I.D. number and car number.

7.1.5.3 The CSCTD will allow from 1 to 10 characters (alpha or numeric) entered to satisfy this prompt. Press the 'Enter' key to continue.

7.1.6 The user will then receive a series of prompts displayed on the screen about the rail car, set up and inspections. With the answers the user inputs, the software will devise the test. Correct car criteria entered by the user to the CSCTD is very important.

7.1.6.1 For prompts related to piston travel, see section 17.0.

7.1.6.2 Some displayed prompts will not advance until a preprogrammed answer is entered. This suggests to the operator that he must perform some action before continuing with testing.

7.1.7 The user will then be prompted to:

RUN STANDARD SINGLE CAR - SECTION 3.0?

The user can now connect supply air to the CSCTD. See Figure 4. Press the 'YES' button to proceed.

7.2 The CSCTD follows the parameters outlined in S-486, Section 3 for Standard Single Car Testing.

7.2.1 The user will have several prompts relating to the Preliminary Procedures and Inspections as outlined by S-486.



WARNING

DO NOT SHUT THE CSCTD OFF WHILE MAKING REPAIRS. THE DEVICE WILL GUIDE THE OPERATOR THROUGH THE REPAIR AND RETURN TO THE PROPER POINT IN THE TEST.

- 7.3.1 Anytime a failure is detected the CSCTD will provide the operator with Brake Pipe and Brake Cylinder pressure at the time of failure and a suggested diagnostic and repair path. After acknowledgement of the failure by the operator, Brake Pipe pressure will be drained and the operator will be prompted to drain the reservoirs and complete the repair. The test will then resume from a point in the test as determined by the failure.
- 7.3.1 As individual test segments pass, testing will progress forward. If a test segment fails, it will be necessary to make repairs before the CSCTD will move to the next test.
- 7.3.2 When troubleshooting test failures, operator observations play an important part in locating the cause of the failure.

8.0 Special Tests Section

Reference: AAR Standard S-486 (current revision), Section 4.0

- 8.1 The Special Test Section of the CSCTD contains the following options:

RUN MANUAL APPLICATION RELEASE TEST?
 RUN RETAINING VALVE TEST?
 RUN BRAKE CYLINDER PRESSURE TAP - LEAKAGE TEST?
 RUN BRAKE PIPE LEAKAGE TEST?
 RUN SYSTEM LEAKAGE?
 RUN BC LEAKAGE TEST PER RULE 88?
 RUN EMPTY/LOAD SYSTEM TEST?
 RUN 1" BALL TEST
 RETURN TO MAIN MENU?

- 8.2 The Special Tests can NOT be printed or downloaded to a PC.
- 8.3 The following steps are required to perform the Special Tests.
- 8.3.1. Ensure the air supply is disconnected.
- 8.3.2 Turn power switch on the CSCTD to the 'ON' position.
- 8.3.3 When the menu selection:

RUN OEM VERSION?

is displayed on the screen, select 'YES'.

8.3.3.1 Observe the Battery voltage. If you receive the warning message:

**TEST DEVICE BATTERY VOLTAGE: XX.XX VOLTS,
CHANGE/CHARGE BATTERY TO AVOID DATA LOSS**

either charge the battery with 110 VAC plugged into the CSCTD or follow the procedures to replace the battery. See section 16.0.

8.3.3.2 At this point a memory warning may appear on the screen. The user will have to follow the instructions to print or download test records, then clear memory.

8.3.4

MAIN MENU

will now display for 3 seconds.

8.3.5 It is now safe to apply air pressure to the CSCTD.

8.3.6

RUN DAILY TEST ON DEVICE - SECTION 2.3?

will appear on the screen, press the 'NO' button to proceed.

8.3.7

RUN STANDARD SINGLE CAR TEST - SECTION 3.0?

will appear on the screen, again press the 'NO' button to proceed.

8.3.8 Next

RUN SPECIAL TEST?

will appear on the screen. Pressing the 'YES' button will bring the user to:

SPECIAL TEST SUB MENU?

This will appear on the screen for approximately three seconds, automatically scrolling to the first special test.

8.3.8.1 The user can now scroll through the Special Test Sub Menu by pressing the 'NO' button. When the Special Test desired by the user appears on the screen, select 'YES' for that test.

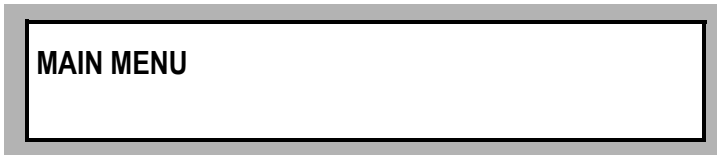
8.3.9 Follow and answer the screen prompts and test questions using the 'YES' and 'NO' buttons for rail car set up.

8.3.9.1 The warning:

SUPPLY PRESSURE BELOW 100 PSI

will appear on the screen if supply pressure is below 100 psi (689 kPa). Ensure supply pressure is above 100 psi (689 kPa) and below 120 psi (827 kPa).

- 8.3.10 Upon completion the user will be prompted to place certain devices/cocks into open/closed position and to disconnect the CSCTD from the car (normalizing the car for service). At this time



will appear on the screen. This is the user's indication that testing is complete.

9.0 ANNUAL TEST ON THE CSCTD

- 9.1 Prior to calibration of the CSCTD it is recommended that you replace the elements in both the Air Filter and Mist Separator. It is also recommended that the operating software be updated to the latest revision.

- 9.2 To order an Annual Maintenance Kit, which includes a Filter element, a Mist Separator element and a service interval sticker, contact NYAB and order part number 781056.

- 9.3 To check for the latest software release log on to www.nyab.com, select the TECHNICAL PAMPHLETS tab and menu item Other. If your software needs to be updated, contact NYAB and order:

Part Number 781057 for Assembly 777274 or
Part Number 781058 for Assembly 777273.

See Section 19.0 for installation instructions.

- 9.4 NYAB Sales
748 Starbuck Ave.
Watertown, NY 13601
Fax: 315 786-5675
Phone: 315 786-5200
- 9.5 The following instructions cover replacement of the Filter and Mist Separator elements.
- 9.5.1 Start with the Mist Separator, (NAFD2000-N02-2) in a clean environment, unscrew the sediment bowl and set aside. Using a Philips Head Screwdriver, remove the screw, which holds the ele-

ment in place, remove the element and discard. Using clean dry high-pressure air, blow any loose contaminants from the mist separator housing and sediment bowl. Install a new element and replace the plastic element retainer and screw and tighten the screw until the split washer is compressed. Replace the sediment bowl, tighten until it just touches the o-ring then continue tightening 1/4 turn. Do not over tighten the sediment bowl.

9.5.2 Continue with the Air Filter, (NAF2000-N02-2) in a clean environment, unscrew the sediment bowl and set aside. Using a suitable wrench, unscrew the filter element, remove the element and discard. Using clean dry high-pressure air, blow any loose contaminants from the air filter housing and sediment bowl. Install a new element and hand tighten the element until it is snug. Replace the sediment bowl, tighten until it just touches the o-ring then continue tightening 1/4 turn. Do not over tighten the sediment bowl.

9.6 Continue with the calibration of the Computerized Single Car Test Device.

9.7 Every 365 days the Computerized Single Car Test Device must be calibrated and the test coupling with the 0.28 mm choke must be calibrated per latest AAR requirements.

The external dummy coupling with choke must be calibrated every 92 days.

The internal flow calibration choke is calibrated every 365 days with the test device.

9.8 In order to calibrate either the CSCTD or the test coupling, a device for quarterly test of the single car-testing device - alternate 1 must be available. An illustration of the testing apparatus is shown in Figure 5 below and in Section E of the AAR manual of standards and recommended practices, Specification S-486 Section 5.0.

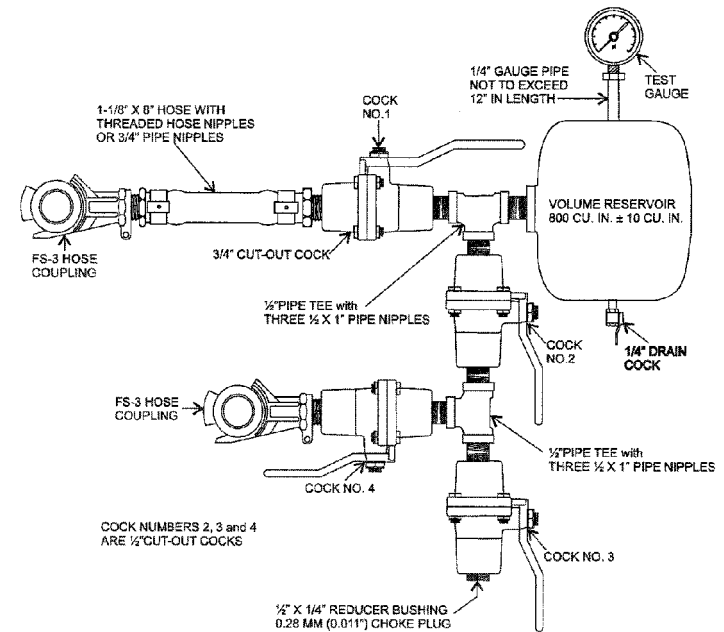


Figure 5.1 Device for quarterly test of the single car testing device - alternate 1

FIGURE 5

Reference: AAR Standard S-486 (current revision), Section 2.3

NOTE

Do not connect pressure prior to being prompted.

NOTE

If not already familiar with the usage of the keypad, the user should read Section 15.0, Keypad Usage prior to performing the Annual Test.

9.9 The following steps are required to perform the Annual Test of the CSCTD.

9.9.1 Ensure the air supply is disconnected.

WARNING

IF THE DEVICE BEING CALIBRATED HAS AN INTERNAL FLOW CALIBRATION CHOKE, IT MUST BE ACTIVATED BEFORE PROCEEDING.

9.9.2 If the power switch is not 'ON', turn the power switch to the CSCTD 'ON'. Make the appropriate selection as defined in Section 5.1. If the Annual Test is the only test to be conducted, pressing either 'YES' or 'NO' will bring the user to the Annual Test.

9.9.2.1 Observe the Battery voltage. If you receive the warning message:

**TEST DEVICE BATTERY/ VOLTAGE: XX.XX VOLTS,
CHANGE/CHARGE BATTERY TO AVOID DATA LOSS**

either charge the battery with 110 VAC plugged into the CSCTD or follow the procedures to replace the battery (See section 16.0).

9.9.2.2 At this point a memory warning may appear on the screen. The user will have to follow the instructions to print or download test records, then clear memory (See section 12.4).

9.9.3

MAIN MENU

will now display for 3 seconds followed by the prompt:

RUN DAILY TEST ON DEVICE - SECTION 2.3?

Press the 'NO' button until the following screen appears.

**RUN ANNUAL TEST ON TEST DEVICE
OR TEST COUPLING CALIBRATION?**

Press the 'YES' button to proceed to the Annual Test.

NOTE

Pressing the 'NO' button will toggle to the next menu item.

Repeatedly pressing 'NO' will step through the menu, returning to the Annual Test selection.

NOTE

For Section 9.9.4 and 9.9.5, see Section 15.0, Keypad Usage.

9.9.4 The user will then be prompted to enter his/her name or I.D./clock number. The CSCTD will allow from 1 to 10 characters (alpha or numeric) entered to satisfy this prompt. Press the 'Enter' key to continue.

9.9.5 The user will be prompted to validate the serial number of the CSCTD. If it is incorrect, the user will be prompted to enter the correct serial number. This number is located on the NYAB name plate.

9.9.6 The user will then have a series of prompts displayed on the screen. In order to continue to the next prompt, the user should follow the directions of each prompt and MUST press the 'YES' button. Pressing 'NO' will not allow the user to continue.

9.9.6.1

HAVE YOU BLOWN OUT THE SUPPLY LINE?

is the first prompt. In order to prevent contamination from entering the unit and causing a malfunction, all users should blow out the supply line. It is also very important that the supplied air filter/mist separator be utilized in the test set up. Press 'YES' to continue.

9.9.6.2

HAS THE SUPPLY LINE BEEN CONNECTED TO THE TEST DEVICE?

is the second prompt. Connect the supply line and open the supply cock to the device. See Figure 1. Press 'YES' to continue.

9.9.6.3 Continue to follow the prompts in order to complete the Annual Test on the CSCTD.

9.10 Immediately following the completion of the calibration process, it is recommended that you:

9.10.1 Print the calibration results.

9.10.2 Apply a new Service Internal/Calibration sticker to the CSCTD. The next required calibration will be one year from the date of the most recent calibration. (A new sticker is included in the Filter Maintenance Kit.)

10.0 PRINT REPORT

10.1 This menu option allows all report(s) to be printed (Daily test and Annual Test of the device and car reports).

10.2 Prior to selecting 'YES' for:

PRINT REPORT?

the user must connect a standard printer to the DB-25 printer port, turn the printer 'ON', then press the 'YES' button.

10.2.1 Any Dot Matrix or Ink Jet printer may be used with the CSCTD providing that the printer drivers are local to the printer. Some printers, such as laser printers and some ink jet printers, have the printer drivers residing in the host computer and can not be used with the CSCTD.

10.2.2 If the user does NOT want to print and 'YES' is inadvertently pressed without a printer plugged in, the user must turn the CSCTD 'OFF' then 'ON' and sequence back to his/her point of function to continue.

10.3 With the printer 'ON' and plugged into the CSCTD, press the 'YES' button and the print options menu will be activated. Print options include: print all reports in memory, print reports for a specific car number, print all reports for a specific date and print daily test result for a specific date.

10.4 After the user has completed printing all reports, the CSCTD will automatically prompt the user.

WOULD YOU LIKE TO CLEAR MEMORY NOW?

CAUTION

IF THE USER NEEDS TO DOWNLOAD TESTING TO A PC, DO NOT CLEAR MEMORY AFTER PRINTING REPORTS!

10.4.1 Pressing the 'YES' button will activate a second cautious prompt in case the user has changed his/her mind. Pressing 'YES' a second time clears all memory.

10.4.1 When all memory has been cleared, the CSCTD automatically recalibrates the Pressure Transducer, then sequences back to the Main Menu for 3 seconds, then to the Daily Test of the Device. The user can now step through the Main Menu to his/her next task of choice.

10.5 After printing, if the user does not want to clear memory when prompted, selecting the 'NO' button returns the user to the Main Menu.

10.6 For an example of a printed report, see Section 18.0.

11.0 DOWNLOADING A REPORT TO A PC

11.1 This menu option allows data to be downloaded directly to a PC.

11.2 The software now allows downloading of all data, not just car test data as in previous releases. On the C: drive of the host computer, in the CSCTD Reports folder, there will be a folder automatically created for Daily Tests and Annual Tests the first time one of these file types is downloaded. The files that are created can be opened, viewed, and printed using Excel. Some column width formatting may be required in order to create usable printouts.

When downloading data from the CSCTD to the host computer the following tests results are selectable for download:

- Daily Test Data
- Annual Test Data
- Car Test Data

11.2.1 The host PC must have Windows 98 version or higher.

11.2.2 Installation can be done directly from the supplied CD or the files can be copied to two floppy discs and installed per instruction 11.3 and 11.3.1.

11.3 Create a new folder in the 'C' drive of the host PC and name it 'Download Software'.

11.3.1 Install the two floppy discs into the host PC, copy the files 'setup.exe', 'setup.lst', 'Csctdr1.cab' and 'Csctdr2.cab' to the new folder 'Download Software'.

11.3.2 Ensure all other applications are closed. Open the CD in Windows Explorer or the folder 'Download Software' and double click on 'setup.exe' to start the installation process. If all applications have been closed in preparation for software installation, select 'OK', if they have not been closed select 'EXIT'.

11.3.3 'Install' will appear on the PC screen followed by 'CSCTD Reports Download Setup'.

11.3.4 Click the start button to install. The start button is the square box with the PC pictured in the box.

11.3.5 If not already selected, select 'CSCTD Report Applications' box. Then, select the 'Continue' box. After a few seconds, the box 'CSCTD Report Download Setup was completed successfully' will appear on the screen. Click on the 'OK' box.

11.4 TO DOWNLOAD FILES:

11.4.1 Connect a Standard RS232 Computer Communications cable (9 pin to 9 pin, female to male) from the CSCTD to the PC.

11.4.2 Scroll through the CSCTD Main Menu and stop at the prompt:



SEND REPORT TO PC?

Do not press the 'YES' button yet.

- 11.4.3 At the host PC, click on 'START'>PROGRAMS>CSCTD REPORT DOWNLOAD'.
- 11.4.4 The box pictured (See Figure 6) will appear on the screen of the PC. Click on the 'Connect' button pictured, which will toggle 'No Connection' to 'Ready to receive data'. This completes the setup for the CSCTD 'Reports Download'.

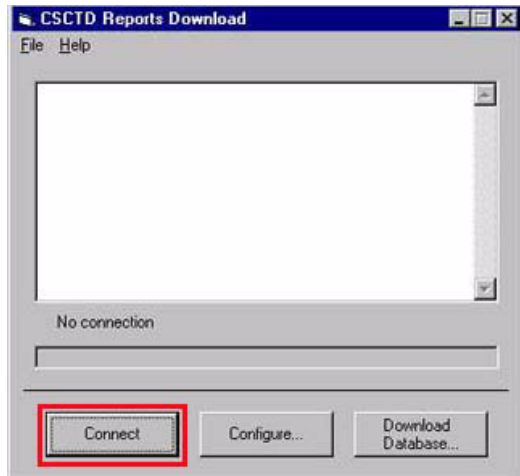


Figure 6

- 11.4.5 Select the 'YES' button on the CSCTD. This will start the flow of data from the CSCTD to the host computer. The data download can be watched on the PC screen. Wait for the download of data to be completed at which time a data file will automatically be generated to hold the new downloaded data.
- 11.4.6 At the host PC, click on 'START'>PROGRAMS>CSCTD REPORT APPLICATIONS'. Then, select 'CSCTD Download Database and open the file.

- 11.4.7 With the report template open (as viewed in Figure 7), click on the 'Load Data' button (right side of the screen). If the PC has a small screen, the user may need to scroll to the right to locate the 'Load Data' button. Click on the 'Load Data' button.

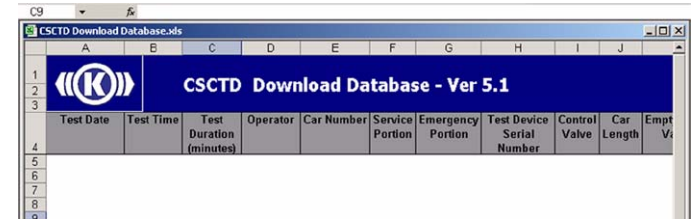


Figure 7

- 11.4.8 Go to the folder C:\CSCTD Reports and change 'Files of Type' to All Files(*.*). Find the .CSV file saved by the CSCTD Reports Download by date and time (See Figure 8) and click OK. Data from the .CSV file will be appended to any existing data in the report.

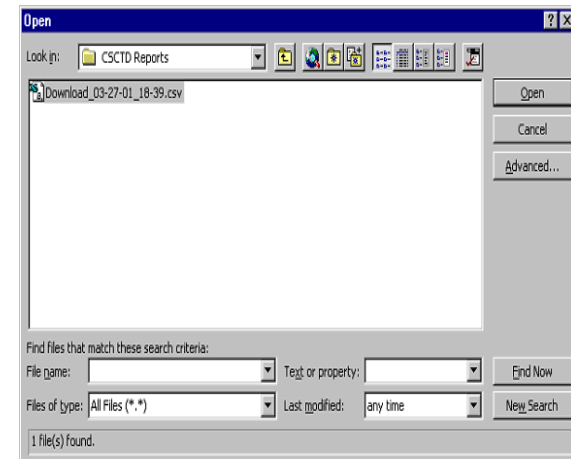


Figure 8

12.0 UTILITY MENU

- 12.1 This section explains how and why to use the Utility Sub Menu functions.
- 12.2 The Utility menu contains options that will periodically be helpful to the user. As before, the user can step through the options listed by pressing the 'NO' button. When 'NO' is pressed, the next function of the Utility Sub Menu will appear. These options are as follows:

RECALIBRATE PRESSURE TRANSDUCER?
CLEAR MEMORY?
INITIALIZE MEMORY?
SET DATE/TIME?
SET TEST DEVICE NUMBER?
CHECK BATTERY VOLTAGE AND USED
MEMORY SPACE?
RUN VALVE TEST?
TEST FLOW METER?
TOGGLE BRAKE WARNING TO 'OFF'
DID THIS CSCTD COME WITH A TEST COUPLING?
RETURN TO MAIN MENU?

12.3

RECALIBRATE PRESSURE TRANSDUCER?

NOTE

Air supply and hose connections are not required for this operation.

- 12.3.1 This function recalibrates the pressure transducer against atmospheric pressure and stores the pressure correction factor in memory.

- 12.3.2 Step through the Main Menu selections. When

UTILITY MENU

appears on the screen, select 'YES'.

- 12.3.3 The Utility Sub Menu will appear for 3 seconds then

RECALIBRATE PRESSURE TRANSDUCER?

will appear on the screen, select 'YES' to recalibrate the pressure transducer.

- 12.3.4 When calibration of the pressure transducer is complete, the CSCTD will prompt the user to

RETURN TO MAIN MENU?

This prompt will automatically appear on the screen. Pressing 'YES' will return the user to the Main Menu. Pressing 'NO' will return the user to the beginning of the Utility Sub Menu.

12.4

WARNING

PRIOR TO CLEARING OR INITIALIZING MEMORY ENSURE ALL TEST DATA HAS EITHER BEEN UPLOADED TO A COMPUTER OR PRINTED (SEE SECTION 10.0 AND/OR 11.0).

12.4.1



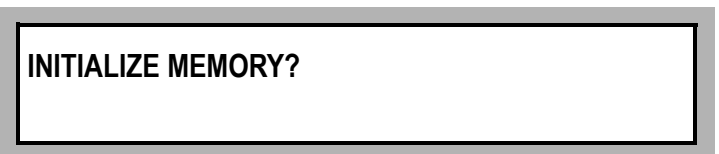
NOTE

Air supply/hose connections are not required for operation 12.4, 'CLEAR MEMORY' or 12.5, 'INITIALIZE MEMORY'.

12.4.2

This function clears the memory of all test data, while retaining operation information, test device information and other variables.

12.5



12.5.1

This function completely clears the memory of all information except for date and time.

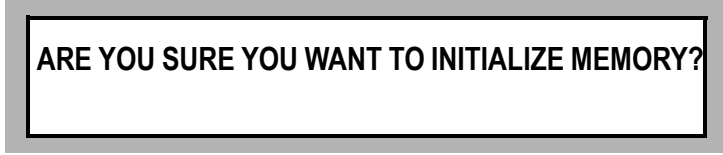
12.5.2

Step through the Utility Sub Menu selections. When



appears on the screen, select 'YES' to continue.

12.5.3 The user will then be prompted by a question

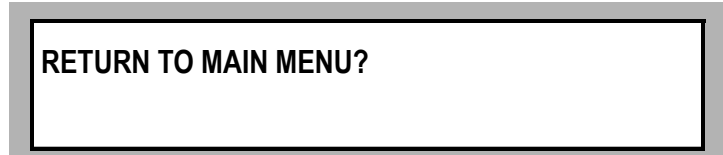


CAUTION

THIS FUNCTION WILL ERASE ALL DATA PERMANENTLY IF THE 'YES' BUTTON IS SELECTED.

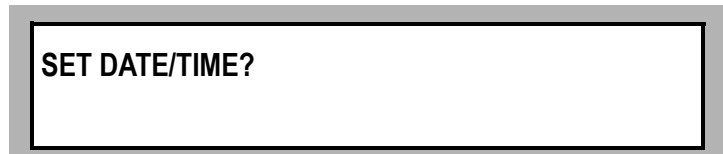
12.5.4 Press the 'YES' button and all memory will be cleared.

12.5.5 Upon clearing all memory, the CSCTD will prompt the user to



This prompt will automatically appear on the screen. Pressing 'YES' will return the user to the Main Menu. Pressing 'NO' will return the user to the beginning of the Utility Sub Menu.

12.6



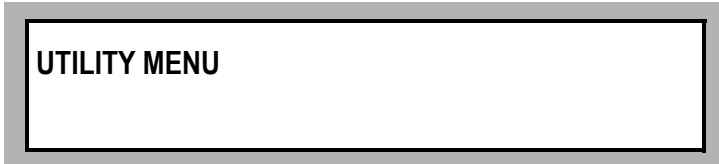
NOTE

Air supply is not required for this operation.



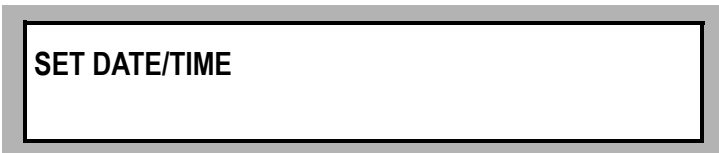
12.6.1 This function allows the user to change the date and time that will be stored in the CSCTD for print out and report purposes.

12.6.2 Step through the Main Menu selections. When



appears on the screen, select 'YES'.

12.6.3 Step through the Utility Sub Menu selections. When



appears on the screen, select 'YES'.

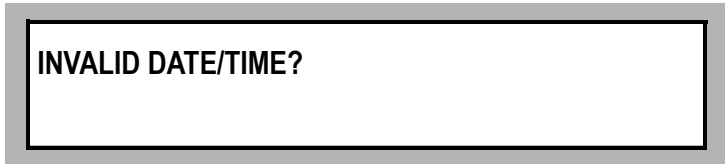
12.6.3.1 Using the keypad enter the date using the following format: MMDDYYYY followed by the 'ENTER' key.

12.6.3.2 Using the keypad enter the time using the following format: HHMMSS followed by the 'ENTER' key.

12.6.3.3 The CSCTD will accept either a standard entry or military/zulu entry when setting the 'hour'. The CSCTD does not recognize a.m. or p.m.

Example: 2:45 p.m. can either be entered as 0245 or 1445 (seconds omitted in this example).

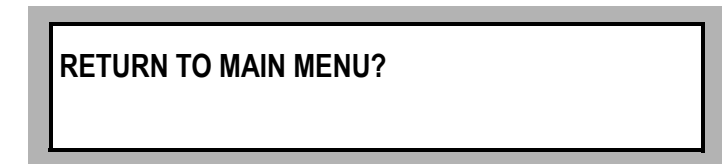
12.6.4 If the user inadvertently enters a 'gross' incorrect date or time and presses the 'ENTER' key, the CSCTD will automatically reject the entry with the prompt:



and will return the user to the original prompt of entering the date/time.

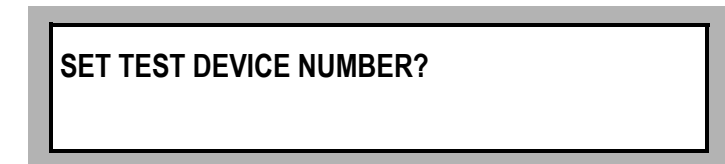
12.6.5 When the user has finished entering the date and time, the CSCTD will prompt the user to verify if the date/time entered is correct.

12.6.6. Selecting 'NO' will allow the user to re-enter the date and time. Pressing 'YES' prompts the user to



Pressing 'YES' will return the user to the Main Menu. Pressing NO will return the user to the beginning of the Utility Sub Menu.

12.7



NOTE

Air supply and hose connections are not required for this operation.

12.7.1 This function prompts the user to enter the serial number of the CSCTD and then stores it in memory.

12.7.2 Step through the Main Menu selections. When

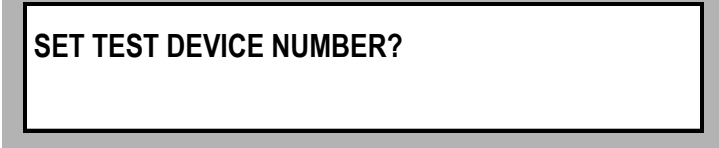


appears on the screen, select 'YES'.

12.7.3 The Utility Sub Menu will appear for 3 seconds then



will appear on the screen. Step through the Utility Sub Menu selections. When

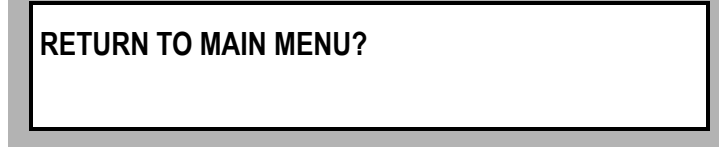


appears on the screen, select 'YES'.

12.7.4 Using the keypad enter the test device serial number, found on the NYAB nameplate, followed by the 'ENTER' key.

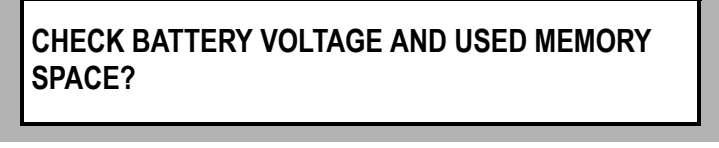
12.7.5 When the user has finished entering the test device serial number, the CSCTD will prompt the user to verify if the serial number is correct.

12.7.6 Selecting 'NO' will allow the user to re-enter the serial number. Selecting 'YES' will prompt the user to



Pressing 'YES' will return the user to the Main Menu. Pressing NO will return the user to the beginning of the Utility Sub Menu.

12.8



NOTE

No air supply is required for this operation.

12.8.1 This function displays the current battery voltage. A fully charged battery will read approximately 13.5 volts. This function checks how much available memory space is currently being used.

12.8.2 Step through the Main Menu selections. When



appears on the screen, select 'YES'.

12.8.3 Step through the Utility Sub Menu selections. When

CHECK BATTERY VOLTAGE AND USED MEMORY SPACE?

appears on the screen, select 'YES'.

12.8.3.1 When the 'YES' button is depressed, the display will automatically show the battery voltage for approximately three seconds. The display will then scroll to the memory prompt showing the user what percent of the available memory space is being used.

12.8.4 Upon completion, the user is prompted to

RETURN TO MAIN MENU?

Pressing the 'YES' button returns the user to the Main Menu, selecting the 'NO' button returns the user to the beginning of the Utility Sub Menu.

12.9 RUN VALVE TEST

12.9.1 The Valve Test of the CSCTD is only for use by qualified New York Air Brake/KNORR Brake personnel. All users should disregard this section. Press the 'NO' button to continue.

12.10 TEST FLOW METER

12.10.1 The Flow Meter Test of the CSCTD is only for use by qualified New York Air Brake/KNORR Brake personnel. All users should disregard this section. Press the 'NO' button to continue.

12.11

TOGGLE BRAKE WARNING OFF?

12.11.1 This function allows the user to turn OFF the Operator Brake Warning "Is it safe to apply/release the brakes?"

12.11.2 Step through the main menu selection. When

UTILITY MENU

appears on the screen, select "YES".

12.11.3 Step through the Utility Menu selection. When

TOGGLE BRAKE WARNING OFF?

appears on the screen, select "YES".

12.11.4 When the YES button is depressed, the warning is turned off and the prompt returns to the next selection on the Utility Menu.

12.12

DID THIS CSCTD COME WITH A TEST COUPLING?

12.12.1 Selecting 'YES' sets the internal sequence to prompt the user to use the external test coupling and then the prompt returns:

RETURN TO MAIN MENU?

Selecting 'NO' sets the internal sequence to use the internal choke and then the prompt returns:

RETURN TO MAIN MENU?

12.12.2 Upon completion, the user is prompted to

RETURN TO MAIN MENU?

Selecting the 'YES' button returns the user to the Main Menu, selecting the 'NO' button returns the user to the beginning of the Utility Sub Menu.

13.0 LOGOFF

LOGOFF?

13.1 'Logoff?' (when 'YES' is selected) automatically removes the current user's name and car data from the test storage buffer and returns the user to the Main Menu. At the beginning of the next test performed, the "next" user will have to log in his/her name and car information prior to testing. This feature should be used when the CSCTD is changing users, such as a shift change. Operator name and/or I.D. appears on the printed report.

13.2 Selecting the 'YES' button returns the user to the Main Menu, selecting the 'NO' button prompts the user to:

SHUTDOWN?

14.0 SHUTDOWN

14.1 When prompted to



SHUTDOWN?

pressing 'NO' will return the user to the Main Menu prompt:



RUN DAILY TEST ON DEVICE - SECTION 2.3?

The user now can sequence through the Main Menu for additional testing if so desired.

14.2 Pressing 'YES', the shutdown function terminates CSCTD operation. When selected, the unit first gives both visual and audible warnings, then vents pressure from the car Brake Pipe.

14.3 The user will then be prompted:



IT IS NOW SAFE TO TURN OFF THE CSCTD

Turn 'OFF' the unit and disconnect all hoses.

15.0 KEYPAD USAGE

15.1 In several areas of the test code the user must enter alphanumeric characters. The keypad feature is used for this purpose. It is set up similar to a cellular phone keypad.

15.2 For Example, locate the number '3' on the keypad noting the letters 'D, E, F' underneath it on the same button. If the user wants the number '3' displayed, only press this key once.

Pressing this same key twice displays the letter 'D'. Pressing this same key three times displays the letter 'E'. If the user wants the letter 'F', this key has to be pressed four times.

15.2.1 The user must momentarily pause between key strokes to properly advance the cursor to the next screen position.

15.2.2 The arrow keys allow movement of the cursor forward and backward in the display.

15.2.3 The back key allows the user to step back through the car information input list in order to correct/change data inputs. Once the testing phase has begun, the back key is no longer active.

16.0 REMOVAL/INSTALLATION OF THE BATTERY

- 16.1 Open the CSCTD, locate the battery access cover plate (see Figure 1) and remove the four (4) cover screws, then remove the access cover plate to the battery.
- 16.2 Carefully remove the wires from the terminals, noting the location of the positive and negative terminals, then remove the battery.
- 16.3 If the battery that was removed is to be charged, charging can be performed in any position except upside down.
- 16.3.1 For long periods of non use, it is recommended to remove the battery and charge using the optional battery charger, do not leave plugged in to 110 VAC. Charge time using the optional battery charger is approximately 4 hours.
- 16.3.2 Normally to charge the battery, just plug the device into 110 VAC for nominally 8 hours.
- 16.4 To install another battery, observe polarity and attach the red lead to the (+) positive terminal and the black lead to the (-) negative terminal.
- 16.5 Re-install the battery to the CSCTD, but prior to securing the access cover, turn power 'ON' checking the connections, then install the access cover.

17.0 PISTON TRAVEL

- 17.1 Piston travel measurements taken during testing must fall within the ranges listed in order to pass test.

17.2 BODY MOUNTED:

<u>Cylinder</u>	<u>Piston Travel</u>
10 x 12 (254 x 304.8)	7" to 9" (177.8 to 228.6 mm)
8-1/2 x 12 (215.9 x 304.8)	7" to 9" (177.8 to 228.6 mm)
7-1/2 x 11 (190.5 x 279.4)	7" to 9" (177.8 to 228.6 mm)
7-1/2 x 12 (190.5 x 304.8)	7" to 9" (177.8 to 228.6 mm)
12 x 10 (304.8 x 254)	5" to 7" (127 to 177.8 mm)
7-5/8 x 12 (193.7 x 304.8)	5" to 6" (127 to 152.4 mm)

17.3 TRUCK MOUNTED:

<u>Cylinder</u>	<u>Piston Travel</u>
Elcon National	2-1/4" to 3-3/4" (57.2 to 95.3 mm)
Wabtec TMX	1-1/2" to 3" (38.1 to 76.2 mm)
Wabtec UBX	3-1/4" to 5-1/4" (82.6 to 133.4 mm)
UNIFRATE	3" to 4-1/2" (76.2 to 114.3 mm)
ABSCO	5" to 6-3/4" (127 to 171.5 mm)
Misner	7-1/2" to 10" (190.5 to 254 mm)
TTX II	7" to 9" (177.8 to 228.6 mm)
Thrall	2-3/4" to 4-1/4" (69.9 to 108 mm)
WABCOPAC II	1-3/4" to 3" (44.5 to 76.2 mm)
EXT-100	1-3/4" to 3" (44.5 to 76.2 mm)
TMB-60	1-3/4" to 2-1/4" (44.5 to 57.2 mm)
NYCOPAC/WABCOPAC	3/4" to 3" (19.1 to 26.2 mm)
NYCOPAC IIA	Within required limits

18.0 CHECK SHEET SAMPLE

CSCTD TEST REPORT----- PAGE:
 DATE PRINTED:----- 05/04/01 FRI
 TIME PRINTED:----- 11:25:14
 TEST DATE:-----05/03/01 THURS
 TEST TIME:----- 15:38:16
 OPERATOR-----LARRY
 CAR----- 1
 SHOP NUMBER----- 3
 ORDER NUMBER----- 4
 CAR TYPE----- 5
 TRACK POSITION----- 5
 TEST DEVICE NUMBER----- --AO-0011
 CONTROL VALVE----- DB60L
 CAR LENGTH----- 100
 EMPTY LOAD VALVE----- YES
 BP VENTING DEVICE----- VENT VALVE

<u>TEST</u>	<u>VALUE</u>	<u>PASS/FAIL</u>
3.3		PASS
3.4.2.1	37.32 PSI (257.3 kPa)	PASS
3.4.2.1	52.57 PSI (362.5 kPa)	PASS
3.4.2.2	0.25 PSI (1.7 kPa)	PASS
3.5	45 SCIM (0.74 slm)	

19.0 PROCEDURE TO INSTALL EEPROM 778604 FOR THE CSCTD.

WARNING

BEFORE STARTING THIS PROCEDURE PRINT OR DOWNLOAD ANY DATA YOU WISH TO KEEP, THEN INITIALIZE THE MEMORY.

NOTE

All work to be performed using ESD Procedures

NOTE

The following procedure is for the Production CSCTD, Part Number 779322.

- 19.1 Make sure the AC power cord is not connected.
- 19.2 Remove the battery cover on the Electronic panel as shown in Figure 9.



Figure 9

- 19.3 Disconnect the battery leads from the battery. Note the polarity.
- 19.4 Remove (24) screws holding the Electronic panel to the suitcase.
- 19.5 Place some foam or similar pad material on the pneumatic panel. (protection for the Electronic panel when flipped over).
- 19.6 Carefully lift up the Electronic panel and lay down on the previously laid down pads.
- 19.7 Remove the (12) screws securing the EMI tray to the panel as shown in Figure 10.

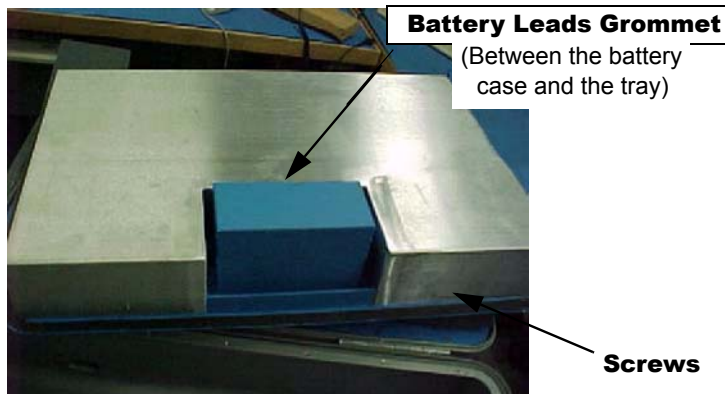


Figure 10

- 19.8 Carefully remove the EMI tray. You will need to remove the battery supply leads grommet from the EMI tray and set the EMI tray aside.

- 19.10 On the computer remove the EEPROM (U3), identified with the CSCTD label on it, using proper extraction tooling.
- 19.11 Install the newly supplied IC. Note the orientation of the IC to the computer PCB. The notch on the IC is oriented towards the H10 connector as shown in Figure 11.

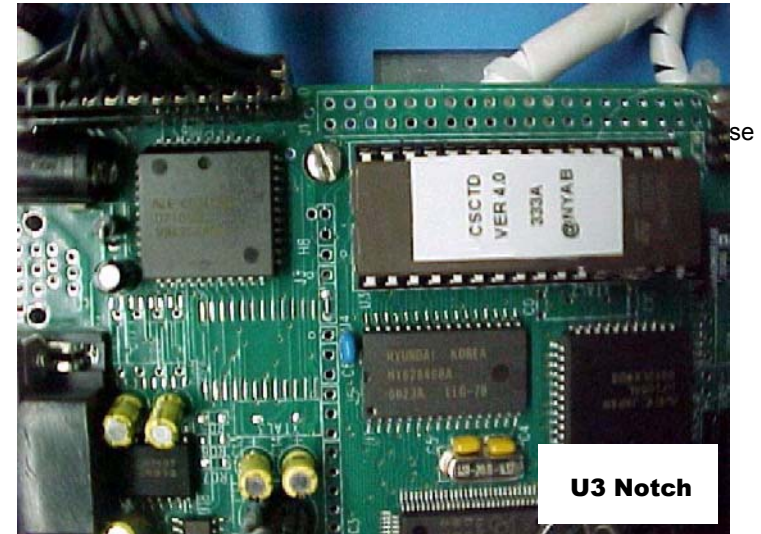


Figure 11

NOTE

Be careful not to bend any of the pins on the IC

- 19.13 Re-install the EMI tray by first placing the battery cables grommet into the previously removed position of the EMI tray.
- 19.14 Re-install the (12) screws.

- 19.15 Re-insert the panel to the suitcase and secure with (24) screws. Prior to installing the (24) screws apply a light film of silicone sealant to the tapered-head of the screws.
- 19.16 Re-connect the battery leads to the battery. Note proper polarity.
- 19.17 Re-install the battery cover.
- 19.18 Power up the unit, and note that the unit powers up.
- 19.19 Go to Utility function and “Initialize Memory”, “Set/Verify the Date and Time” and “Set the Test Device Number”.

20.0 QUESTIONS AND ANSWERS

- Q1. When I perform the tests, valves inside the CSCTD appear to be sticking.**
- A1. Check incoming air supply pressure. If pressure is above 120 psi, valving inside the CSCTD will not function properly. Reduce pressure to the CSCTD to a minimum of 100 psi and a maximum of 120 psi.
- Q2. The alarm sounds when I first turn the unit on.**
- A2. This is part of the normal power up sequence for the CSCTD.
- Q3. The message 'AIR PRESSURE BELOW 100 PSI' appears.**
- A3. Check to ensure supply pressure is at least 100 PSI (110 PSI is preferred).
- A3. Ensure The EZ Mate quick disconnect is turned 'ON'.
- Q4. My flow meter is giving me incorrect readings and I've checked the chokes and air hoses.**
- A4. Check to ensure supply pressure is at least 100 PSI but less than 120 PSI (110 PSI is preferred).

Q5. I am prompted to 'CLEAR MEMORY'.

A5. The memory in the CSCTD is reaching maximum and needs to be cleared. See Section 12.4.

Q6. I don't get a display when I turn on the power.

A6. If the user can plug into 110 VAC, do so, then power up and let the battery charge. If the user is not near 110 VAC, change the battery per section 16.0 of this manual. The replaced battery should then be placed on charge.

Q7. My display works but, the valves don't open or close.

A7. If the user can plug into 110 VAC, do so, then power up and let the battery charge. If the user is not near 110 VAC, change the battery per section 16.0 of this manual. The replaced battery should then be placed on charge.

Q8. I don't get a display when I turn on power, and I have a fully charged battery.

A8. Check to ensure the battery leads are connected properly to the battery [red to (+) and black to (-)].

A8. If the user can plug into 110 VAC, do so, then power up. If the display appears normal, unplug 110VAC.

If the display again goes dead, call and return CSCTD to New York Air Brake for Service.

A8. Check the fuse on the Power Supply Board located under the electrical panel. Follow instructions in Section 19.

Q9. I select 'Print Report' and nothing happens.

A9. If the printer is not on, turn it on and the report will start to print. Special tests can NOT be printed.

A9. Ensure the printer cable is connected at both ends and there is a report stored in the CSCTD.

A9. Check to ensure you are using the right style printer.

Q10. I select to send report to PC and nothing happens.

A10. Ensure computer cable is connected at both ends, and there is a report in memory to send, and that the cable is not a null modem cable.

A10. Ensure the proper software has been downloaded to the host computer.

A10. Ensure that the serial connection is configured for the correct COM port. It is not necessary to use COM1 but the configuration must be set correctly.

A10. Ensure the host computer Serial Port is configured correctly, as follows:

At the host PC, click on 'START'>PROGRAMS>CSCTD REPORTS APPLICATIONS>CSCTD REPORT DOWNLOAD'.

When the screen appears, press 'configure' and the following information appears:

Serial Port is COM 1
Baud Rate = 19,200
Data bits = 8
Parity = None
Stop bits = 1
Flow Control = None

Q11. Where do I go to get service on the CSCTD?

A11. Call New York Air Brake for service or calibration.

Q12. Where do I go to get my CSCTD calibrated?

A12. If the proper test apparatus is available you can do your own calibration. See Section 9.0, Annual Test on CSCTD.

A12. If you do not have the proper test apparatus, call New York Air Brake for calibration.

Q13. How often must my CSCTD be calibrated?

A13. Once every 365 days.

A13. External test coupling every 92 days.