

# Service Tool Diagnostic Guide for Donaldson Filter Service Monitor

Kit No. X007999



**This service and diagnostic tool is required to monitor backpressure information stored on the Donaldson filter monitor. It is also required to reset the 'backpressure high limit' light (red lamp).**

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## Kit Contents

This X007999 kit includes:

Qty.	Description
1	CD-Rom Software for service/maintenance: DCI Console, Installation Guide and USB Drivers
1	Computer Link-up Cable

Additional Equipment:  
Personal computer (laptop recommended) with USB port

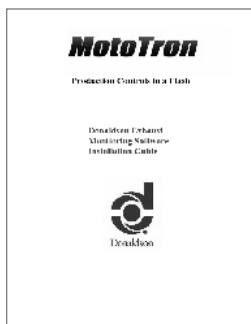
Optional Equipment: Voltmeter

## Install Service Tool Software and USB Drivers

Prior to using the service tool, install the software and USB drivers on the computer that you will use to run the diagnostics.

Software install instructions are on the CD-Rom in an Adobe Reader PDF format document.

The software install will automatically start when you load the CD-Rom.



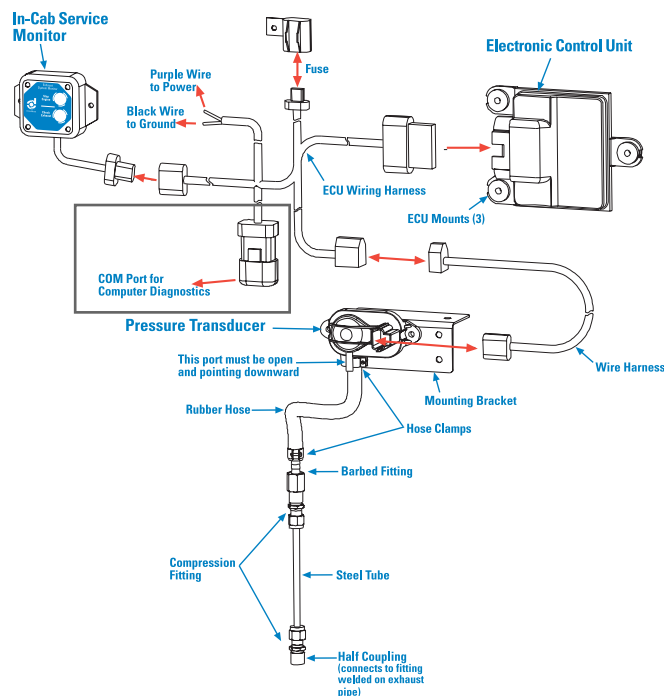
## In-Cab Filter Monitor Alerts

The in-cab filter monitor (shown on right) alerts the user of a system problem via the LED light display. The table below is a quick reference to the LED alerts and what they indicate.



Monitor LED Light Reference	
Yellow (solid on)	The backpressure is nearing the maximum limit; service the DPF at first convenience. This light will come on and off as the backpressure goes above and below the limit in real time. Trip Limit = 102" of H <sub>2</sub> O / 7.5" Hg
Red (solid on)	The backpressure has reached its maximum limit, service DPF immediately. This light will stay on continuous until the fault has been cleared with the service tool. Trip Limit = 131" of H <sub>2</sub> O / 9.5" Hg
Flashing Red (Yellow will flash also)	The backpressure is currently exceeding the high limit in real time. The yellow will be on solid during this as well.
Flashing Yellow	There is a non-backpressure related fault (i.e. wire short, bad sensor, etc). A flashing yellow can be cleared with the service tool or by fixing the problem and recycling the ignition key. The service tool will show trouble (fault) identification to help locate the problem faster. See page 5 for fault identification table.

## Location of COMS Port on Filter Service Monitor



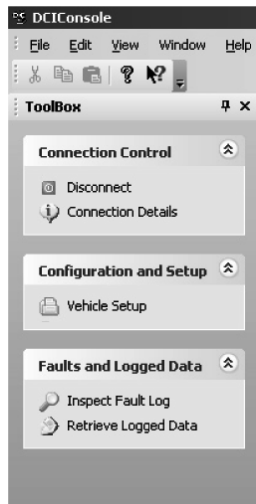
## How to Use The Diagnostic Tool

Once the red light has been tripped, the service tool must be used to clear the faults and reset the lights. The link-up cable plugs into the USB port on your computer and the filter monitor's main harness plug labeled "COMS"

1. Remove and save the protective cap from the COM Port plug on the monitor wiring harness.
2. Connect cable to filter service monitor and computer.

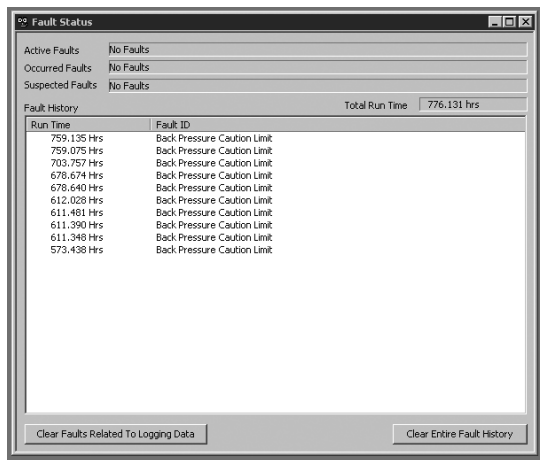
The cable supplied in this kit should be connected to the COMS Port on the monitor (position shown in schematic on the previous page) and to a USB port on your computer.

3. Turn on vehicle ignition, DO NOT start.
4. Open the DCI Console program.  
*Go to Start/Programs/Donaldson/DCI Console*
5. When the window opens click on "Connect."

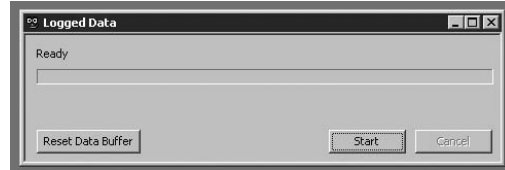


This DCI Console menu will appear after you "Connect." See menu descriptions below.

6. Select "Inspect Fault Log" from the Toolbox Fault and Logged Data menu on the left side of the screen. The following window should be on your screen. Notice the past 10 faults are listed in the Fault Status Window.



7. To retrieve the data for fault analysis, click on "Retrieve Logged Data" from the Toolbox Fault and Logged Data menu on the left side of the screen.



8. To extract the data, select "Start" to download the backpressure history. A comma-delimited text file (.txt) will be extracted for you to save on your computer.

9. To reset the red light click on "Clear Faults Related to Logging Data".

After faults have been cleared, the steady red light on the in-cab monitor should turn off. The fault history will not clear out. It always remembers the last 10 faults and will overwrite them as more add on.

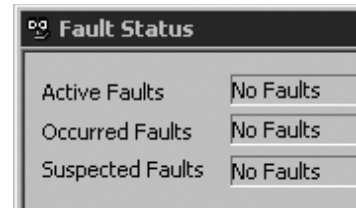
10. Click "Disconnect" from the Toolbox Connections Control menu on the left side of the screen and close DCI Console program.
11. Turn OFF Engine Ignition
12. Disconnect cable from filter service monitor.

## Fault Explanations

"Suspected Faults" are real time issues the ECU is seeing.

It is not until a "Suspected Fault" has occurred for 5 seconds that it becomes an "Active

Fault". "Active Faults" are faults that have occurred long enough that the ECU believes them to be real and are happening in real time. "Occurred Faults" are faults that have occurred since the last key up. The "Fault History" window is a running list of the last 10 faults that have occurred in this sensor, regardless of key up or fault clearing.



## DCI Console Menu Descriptions

**Disconnect** - Removes power from the link-up cable.

**Connection Details** - Details of your link-up, does not change.

**Vehicle Setup** - Optional (not required). Use as desired for vehicle maintenance. Data fields include VIN, mileage, date field and name of installer. Data does not download with file.

**Inspect Fault Log** - Displays the last ten recorded faults. Window where you clear logged faults.

**Retrieve Logged Data** - Select to download the last 50 hours of exhaust backpressure data.

## Fault Identifications (IDs), Problems and Corrective Actions

The table below is your key to understanding the fault descriptions shown in the fault status window in the DCI Console software.

Fault ID (shown on computer screen)	Monitor Alert Indicator	Problem	Corrective Actions
Back Pressure Sensor Input High	Flashing Yellow	Failed pressure transducer or shorted wire coming from sensor.	<ol style="list-style-type: none"> <li>1. Test pressure transducer (see test 1 instructions on the next page).</li> <li>2. Shorted wire between pressure transducer and ECU harness. Test harness for shorts in system (see test 2 instructions on next page).</li> </ol>
Back Pressure Sensor Input Low	Flashing Yellow	Failed pressure transducer or detached wire coming from sensor.	<ol style="list-style-type: none"> <li>1. Test pressure transducer (see test 1 instructions on the next page).</li> <li>2. Disconnected wire between pressure transducer and ECU harness. Test harness for continuity (see test 2 instructions on next page).</li> </ol>
Back Pressure Caution Limit	Solid Yellow	Back pressure has reached caution limit (Yellow Light)	The DPF is nearing a service requirement. Remove, clean and replace at next convenient time.
Back Pressure Warning Limit	Solid or Flashing Red	Back pressure has reached maximum limit (Red Light)	Remove, clean and replace the DPF. Reset the monitor by clearing the faults, as described above.
Battery Sensor Input High	Flashing Yellow	Power from vehicle to ECU voltage is high	Check vehicle battery voltage output and repair. This should be 12 volts DC. This can signal a failing alternator.
Battery Sensor Input Low	Flashing Yellow	Power from vehicle to ECU voltage is low	Check in-line fuse. Check vehicle battery voltage output and repair. This should be 12 volts DC
XDRP Sensor Input High	Flashing Yellow	ECU has experienced an internal malfunction	Clear fault log and retry. If condition persists, replace ECU.
XDRP Sensor Input Low	Flashing Yellow	ECU has experienced an internal malfunction	Clear fault log and retry. If condition persists, replace ECU.

## Pressure Transducer Testing Procedure

### Test 1

With the key on and the engine off, probe the wires on the back of the pressure transducer plug to test for the following voltages.

Red w/ Purple to Blue w/ White (hot to ground) = 4.8-5.2 volts DC

Green w/ White to Blue w/ White (pressure transducer signal to ground) = 0.5 volts DC

If the sensor is not receiving voltage, test the harness for continuity. If the harness tests positive you have a faulty ECU. A faulty ECU should return a “XDRP” error code as well.

If the pressure transducer does not output 0.5 volts DC, then it is faulty and needs to be replaced.

The transducer can also be checked using a commercially available pressure calibrator, offered from companies including Fluke. The yellow should trip at around 102" H<sub>2</sub>O (7.5" Hg) and the red should trip at about 131" H<sub>2</sub>O (8.5" Hg). You must hold this pressure for about 5-10 seconds before the lights will trip.

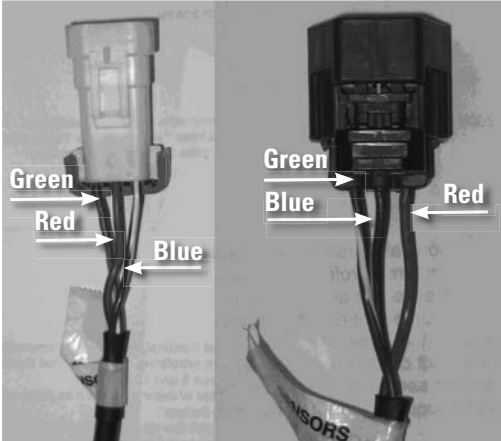
*Note: This test may trip a flashing yellow with error code “XDRP Sensor Input Low/High”. Continue on with test and clear fault when done testing.*

### Test 2

Using a digital pump tester, apply a known pressure to the pressure transducer and view the backpressure monitor response. The pressure trip points for the yellow and red lights are listed above.



## Frequently Asked Questions

<p><b>Q. After install, why do I have a solid red light before starting the vehicle?</b></p>	<p>A. Sometimes during initial install a current in-rush will trip the solid red. Reset the monitor and start vehicle.</p>
<p><b>Q: After clearing the lights, they continue to come on even when the vehicle is shut off (ignition on).</b></p>	<p>A. Make sure the wiring is correct for battery power and at the pressure transducer plug shown above.</p> <p>The purple wire is power; the black is ground on the main harness. On the pressure transducer plug the wire arrangement should match what is above, which is Red w/ purple, Blue w/ white, Green w/ white.</p>
<p><b>Q. My DPF was plugged, but the lights didn't trip</b></p>	<p>Check to make sure a hole was drilled into the exhaust pipe and that the half coupling has an air tight weld around it.</p> <p>Make sure all hose and steel lines are air tight and undamaged.</p> <p>Make sure the hose is attached to the pressure sensor on the lower barb only. (The one marked "HI"; not "REF" and the barbs are pointing down.</p> <p>The barb marked "REF" should be open to outside air and be free of debris.</p> <p>Check power to the SECM, including the in-line fuse on the main harness. A blinking light at key will show this.</p>
<p><b>Q. Why is the filter monitor showing solid red with a flashing yellow light while my engine is OFF.</b></p>	<p>The pressure transducer harness is miss-wired. Check to make sure yours matches the layout below. The white plug that plugs into the main harness should be wired accordingly: Green w/ White = A, Red w/ Purple = B, and Blue w/ White = C. The pressure transducer plug at the other end should be from left to right (while red lock tab as shown) Green w/ White, Blue w/ White, and Red w/ White.</p> 



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