



Vehicle Data Recorder
Operator Manual

Rotunda
EQUIPMENT AND SPECIAL SERVICE TOOLS



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Definitions, Acronyms, and Abbreviations

BCE	Body, Chassis and Electrical
CAN	Controller Area Network
CARB	California Air Resources Board (State Agency)
CMDTC	Continuous Memory Diagnostic Trouble Code
DCL	Data Communications Link
DDL	Diagnostic Data Link
DLC	Data Link Connector – vehicle diagnostic connector, SAE J1962
DTC	Diagnostic Trouble Code
DTC CNT	Diagnostic Trouble Code Count. Provides the number of Continuous DTCs.
ECU	Electronic Control Unit. An onboard electronic module that controls a vehicle subsystem function.
IDS	Integrated Diagnostic Software
ISO	International Standard Organization
ISO-9141	Serial communication protocol implemented in Ford and CARB versions.
LED	Light Emitting Diode
Parameter	Generic term to describe sensor, actuator, switch, etc. information that is retrieved from the module.
PCM	Powertrain Control Module
PID	Parameter Identifier. An index number used to refer to a parameter within a module without knowing its storage location.
SCP	Standard Corporate Protocol
Sleep Mode	The VDR will go into a Low Power/Standby Sleep Mode if the vehicle communications link becomes inactive for a certain period of time (typically 60 seconds). While in the Sleep Mode , the VDR display, systems, and all non-essential operating circuitry shall be turned OFF and the vehicle battery drain shall be minimal. Upon activity of any one of the vehicle links being monitored or a push of the Pendant button, the VDR will exit Sleep Mode and be ready to receive vehicle data. When returning to Normal Mode from Sleep Mode the VDR pendant will return to its previous state.
Tester	Any off-board device that may cause an ECU to enter a test mode or communicate stored codes, PIDS, or status.
UART	Universal Asynchronous Receiver Transmitter
UBP	UART Based Protocol
VDR	Vehicle Data Recorder
VIN	Vehicle Identification Number

Introduction

This guide has been produced to assist you in the installation and operation of your new Vehicle Data Recorder, VDR.

Please read and understand the important safety information contained in this guide before you install and use the VDR. You are advised to keep this guide with the VDR for reference and troubleshooting.

Please read and understand the instructions before using this equipment.

This guide contains clear instructions on assembling, connecting and preparing the VDR for use.

The information in this guide is supplementary to any Ford IDS Training Courses.

The VDR is a portable diagnostic tool used for capturing and storing vehicle communications link data during a road test, and is used with the IDS. This tool will retrieve, via the vehicle's Diagnostic Link Connector (DLC), selected parameters for processing and recording. The VDR can be installed in the customer's vehicle for obtaining data when drivability symptoms (or other customer-complaint symptoms) are encountered. The VDR can be configured with vehicle specific information using the IDS software. The process of configuring the VDR is referenced as ***Set-up***. Upon completion of vehicle testing, the VDR will pass the recorded data and any associated information back to the IDS (this process will be referenced as ***Upload***). After the data has been uploaded from the VDR, the data can be viewed the same as it is viewed in ***Datalogger Playback***.

For instructions and operations of the IDS Software, refer to the ***IDS User's Manual***.

System Components

These VDR components are listed for information only. Some of these items may be standard or optional based on the configuration appropriate to your market - please check contents against the manifest list supplied with your VDR. Some items have a Cable Identifier (Cable ID) that is displayed during vehicle diagnostic sequences to indicate the appropriate cable, adapter or other hardware required to operate the VDR as a data recorder. The following information will help you identify the system components.

Standard Equipment

Component	Part Number	Description
VDR Unit*:	078-00332	Contains the hardware and software required to communicate with the vehicle
VC-1*	078-00336	VDR 16 pin DLC Cable
VP-1*:	078-00335	VDR Pendant Cable, contains 2 LEDs and a numeric display
IDS Kit:	164-R9536	WDS to IDS Conversion kit
• VI-2*:	078-00652	IDS PC to VDR Adapter
• PwrSply*:	078-00653	IDS VDR Power Supply

*Items may not be available for individual sale

You should read and understand this safety information before installing, assembling and using this equipment.

DO observe the safety warnings and notices in this document.



This indicates the presence of a hazard that can cause serious personal injury if the hazard is not avoided.



This indicates the presence of a hazard that can cause damage to the VDR, a vehicle; other equipment connected to the VDR, or might corrupt software if the hazard is not avoided.

Proper Installation and Use of this Equipment

This equipment has been designed, manufactured and tested to meet the requirements of International Standards; however, like any apparatus, care must be taken in its installation and use.



This equipment must only be used by properly trained personnel.



Do not allow any cables of this equipment to be positioned where they can be trapped, snagged, stretched across sharp edges, or create any potential hazard.



If the VDR is being used in a moving vehicle, ensure that the VDR and cables do not distract or interfere with the driver, or form a hazard in anyway.



Do not allow any cables to become entangled with operator or driving controls. This can cause interference with driving and can cause injury.

DO use this equipment in accordance with the operating procedures.

Before carrying out maintenance and cleaning of the VDR, make sure the unit is not connected to a power source, vehicle, or PC (see *Care & Maintenance*). Use only a well-diluted, mild, non-abrasive cleaning agent applied using a soft, lint free cloth.

DO NOT use or apply undiluted cleaning agent directly to the equipment surface and do not soak the cloth. Take care that cleaning fluid does not enter connector receptacles.

DO NOT expose this equipment to spilt liquids.

DO NOT continue to use this equipment if you have ANY doubts that it may not be working properly or it is damaged in anyway. See **VDR Support Section** for instructions.

DO NOT remove any fixed covers unless you are authorized/qualified to do so.

A defective electrical earth (ground) connection to any equipment may cause an electric shock hazard. This hazard may pass through the signal cabling and to any other equipment interconnected. It is recommended that you check electrical wiring at frequent intervals and whenever alterations are made. As a part of safety requirements, the manufacturer is required to define the intended operating environment.

DO keep the VDR away from devices that generate radio interference.

NOTICE

Do ensure the VDR is not subjected to extreme temperature or prolonged exposure to direct sunlight that may cause heating of the VDR.

NOTICE

If any liquid is spilled on this equipment remove the power immediately and ensure that it is dried out completely before restoring power.

Equipment Precautions

The following warnings must be observed when using the VDR.

Underwriters Laboratories, the North American Standards Agency, require that the suppliers of all garage equipment bring the following notice to users in North America. While the requirement is specific to North America, users elsewhere are advised to follow the same precautions.

IMPORTANT SAFETY INSTRUCTIONS



WARNING

Failure to follow these instructions will increase the risk of personal injury.

1. Read all instructions.
2. Care must be taken as burns can occur from touching hot parts or surfaces.
3. **DO NOT** operate equipment if damage to unit or cord is suspected.
4. **DO NOT** let cord hang over edge of table, bench or counter or come in contact with hot manifolds or moving fan blades.

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5. ***DO NOT*** place tools or test equipment on vehicle fenders or other places inside the engine compartment.
6. Let equipment cool completely before putting away. Loop cord loosely around equipment when storing.
7. Adequate ventilation should be provided when working on operating internal combustion engines.
8. Keep hair, loose clothing, jewelry, fingers and all parts of body away from moving parts of the vehicle.
9. Use this equipment only as described in the manual. Use only manufacturer's recommended attachments.
10. **ALWAYS WEAR SAFETY GLASSES WHEN USING GARAGE EQUIPMENT.**
Everyday eyeglasses only have impact resistant lenses, they are NOT safety glasses.

SAVE THESE INSTRUCTIONS

Using the VDR

Vehicle Identification

The VDR relies on the IDS for vehicle specific information. The first step in using the VDR, in most cases, is to correctly identify the vehicle with the IDS. Begin by selecting the **Vehicle Identification** tab in the upper left corner of the IDS screen.

When the **Vehicle Identification** tab is selected, three sub-tabs will appear at the bottom left corner of the screen.

1. The leftmost sub-tab, **Vehicle Identification**, allows you to open a previous session, start a new session or displays information about the vehicle currently identified.
2. The middle sub-tab, **Log Viewer**, displays a file of information about the current vehicle diagnostic session and includes such items as the vehicle specifications, any tests completed, and the results of those tests.
3. The rightmost sub-tab, **Close Session**, allows you to finish the diagnostic session in one of the following three ways and reinitializes **Session Manager** to begin a new session:
 - **Hold** (Saves recordings) - Saves current vehicle session with any saved recordings for future use. Up to twenty sessions can be placed on hold indefinitely.
 - **Complete** (Deletes recordings) - Saves the current session but deletes any saved recordings. Completed sessions may be automatically deleted from the hard drive if hard drive space becomes limited.
 - **Delete** (Deletes session) - Deletes the entire current session and all recordings associated with that session immediately and reinitializes the **Session Manager** to begin a new session.

If the **Close Session** sub-tab is selected prior to completing the vehicle identification process, **Abort** will be the only available option, allowing you to reinitialize session.

Identifying a New Vehicle

1. Select the appropriate Diagnostic Link Connector (DLC) for the vehicle to be tested from the menu.

If more than one cable is available with the same number of pins in the DLC connector, or if there are vehicle specific differences in the DLC wiring or vehicle protocol, a further selection will appear to the right of the pin selection.

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2. Press **Tick** to continue.

IDS will attempt to automatically establish communication with the vehicle's PCM and determine the vehicle specification based on the current calibration. If the full 17-digit Vehicle Identification Number (VIN) is found, it will be displayed for confirmation, otherwise the vehicle specification will be displayed for confirmation.

3. Press **NO** if the information is incorrect and manually select the correct vehicle information.

4. Press **YES** if the information is correct.

5. The Repair Order number and Odometer reading can also be filled in at this time.

*This field might be pre-filled with partial VIN data if available from the PCM. All the fields on the screen are optional, and are used to aid in the later retrieval of the session from the **Previous Sessions** list.*

*During the confirmation and entry of vehicle information, IDS has been testing the integrity of the vehicle network communications and collecting all module configuration data and Continuous Memory DTCs (this data can be viewed in **Log Viewer**).*

Some vehicles will fail to communicate during this identification process because of a fault with the network circuits, the PCM power supply, or the PCM itself. There are also vehicles which do not have PCMs wired to the DLC (e.g. Caterpillar and Cummins diesels). If this occurs, IDS will ask if you wish to retry.

6. If a poor connection at the DLC is suspected, reconnect and press **YES**.

7. If **NO** is selected, follow all the on-screen instructions as IDS tries to determine the appropriate course of action.

If communication cannot be established after several key cycles (during which IDS is attempting to compensate for particular network faults), the list of vehicles that do not have PCMs wired to the DLC is displayed.

8. If your vehicle is not contained on this list, press **Other** which will allow you to enter one of the following three unique identifiers:

- PCM part number
- Vehicle calibration
- PCM tear tag

When the final Vehicle Specification screen appears, the vehicle has been properly identified and all applicable IDS functions are available.

Manual Vehicle Entry

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If the vehicle is not available or the vehicle has a PCM that is not wired to the DLC, the **Manual Vehicle Entry** selection may be used. **Manual Vehicle Entry** does not require a vehicle connection to create an IDS vehicle session, the vehicle session is created using data that is manually entered by the user.

1. Select **Manual Vehicle Entry** from the menu.

*A further selection may appear to the right of the **Manual Vehicle Entry** selection.*

2. Press **Tick** to continue.
3. IDS will present a list of:
 - Vehicles with a PCM that is not wired to the DLC.
 - Vehicles that do not have a standard PCM part number.
3. If the vehicle to be tested appears in the list, select the desired vehicle.
 - Press **Tick** to continue.
 - Follow all the on-screen instructions.
3. If the vehicle to be tested is not listed, select **All Other** from the vehicle list.
 - Press **Tick** to continue.
 - IDS will then allow PCM information to be entered to identify the vehicle.
 - Follow all the on-screen instructions.
3. When the final Vehicle Specification screen appears, the vehicle has been properly identified and all applicable IDS functions are available.

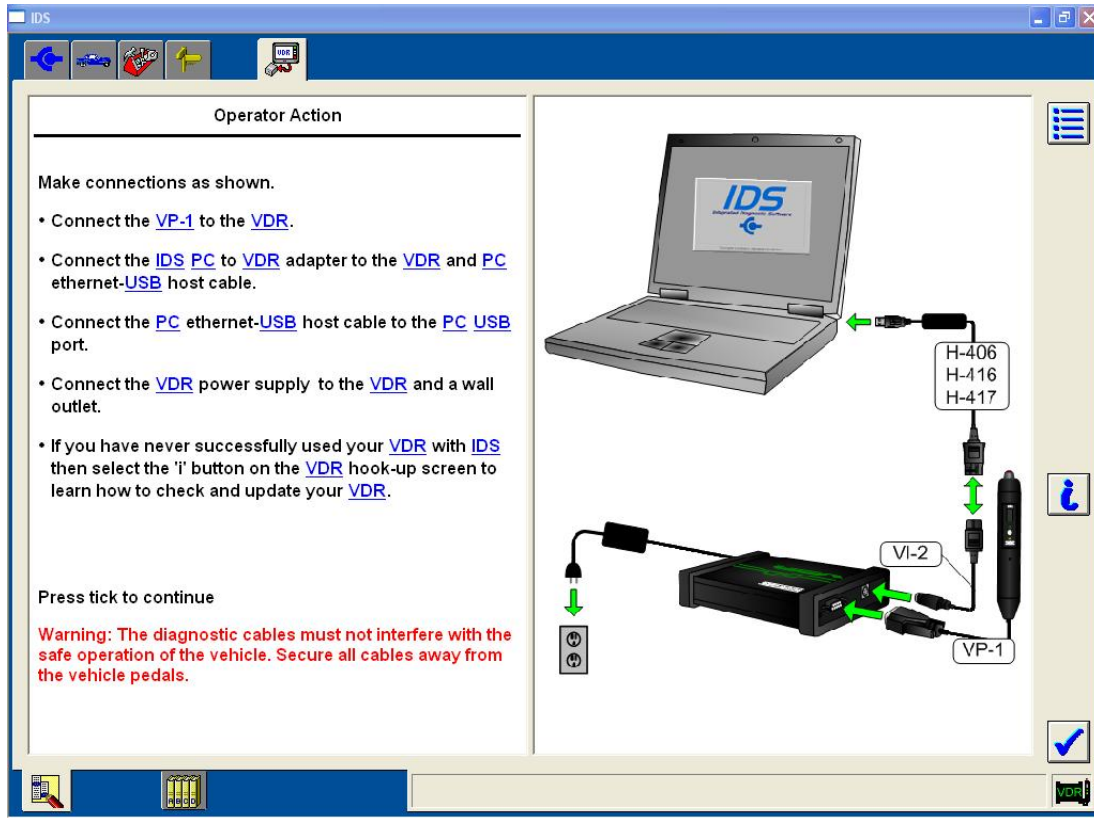
VDR Set-up from IDS

VDR **Set-up** is a menu option selectable within the toolbox top tab after **Vehicle Identification** is complete. The VDR setup will only be available on supported vehicles.

1. Select VDR **Set-up**.

*When **Set-up** is selected, a new top tab will appear displaying a Hook-up screen for making connections between the VDR and the IDS.*

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2. Connect the VDR to IDS and to the VDR power supply as shown on the IDS screen.
3. Press **Tick** to continue.

IDS will verify that the VDR can communicate with the IDS software. IDS will then run a VDR self test checking for unsaved recordings, software version, and hardware status.

 - If unsaved recordings are found on the VDR, select **Upload/Playback** to save these recordings or select **Tick** to continue with the set-up and NOT save the recordings.
 - If a later version of VDR software is available, select **YES** to update or select **NO** to continue with the set-up without updating the software. For best results, it is recommended that the VDR be updated when prompted.
 - If **YES** is selected, follow all the on-screen instructions. After the software update has completed.
 - a. Disconnect the VDR from the **power supply**.
 - b. Wait 10 seconds.
 - c. Reconnect the VDR to the **power supply**.
 - d. Press **Tick** to continue.
4. Select vehicle system or module to record data from.
5. Press **Tick** to continue.

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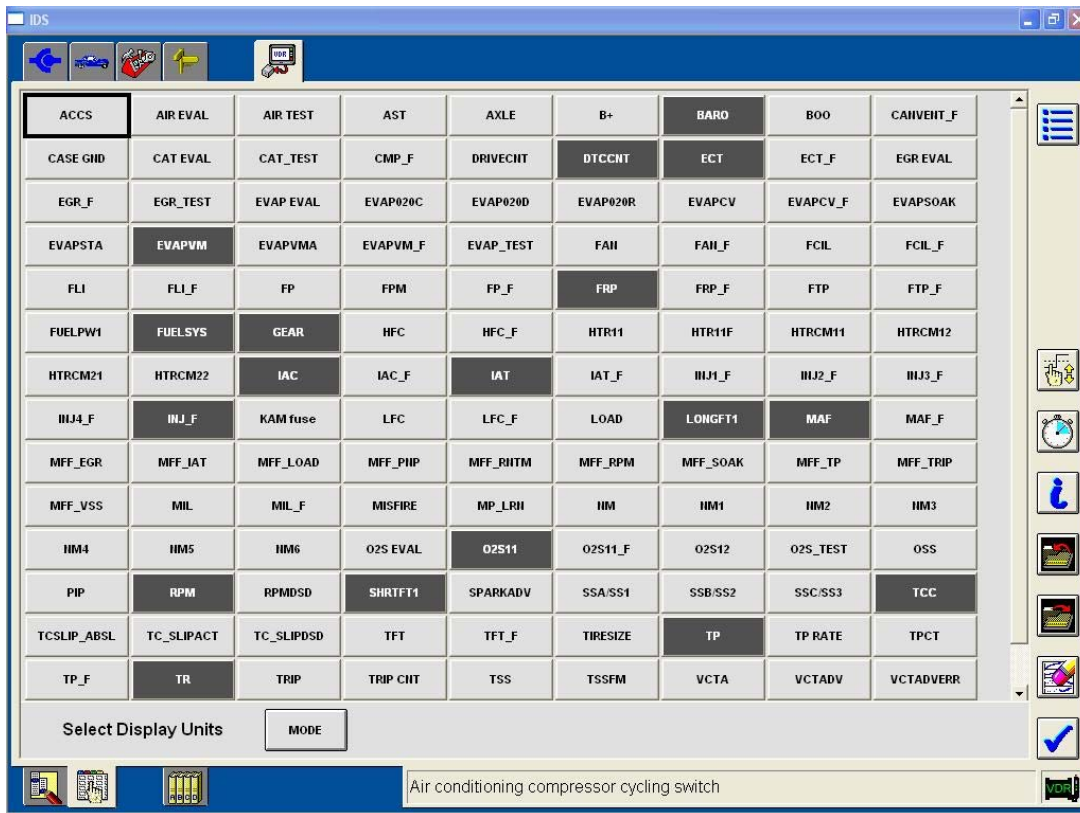
6. Select parameters (see *Parameter Selection*).
7. Select parameter settings (see *Recording Time Set-up and Trigger Set-up*).
8. Press **Tick** to continue.
9. The VDR **Download** pop-up displays user defined configurations.
10. Press **Tick** to begin download process (see *VDR Download*).

Hook-up to Vehicle screen will appear once VDR download process has been completed.

Parameter Selection

The *Parameter Selection* screen will appear with the default parameters and units selected. This screen allows the selection of parameters and units, the selection from previously saved settings, capture times, and select and deselect triggers.

The Diagnostic Trouble Code Count parameter, when available, is a pre-selected, pre-defined trigger used for auto-capture, and cannot be deselected.



To select parameters or units:

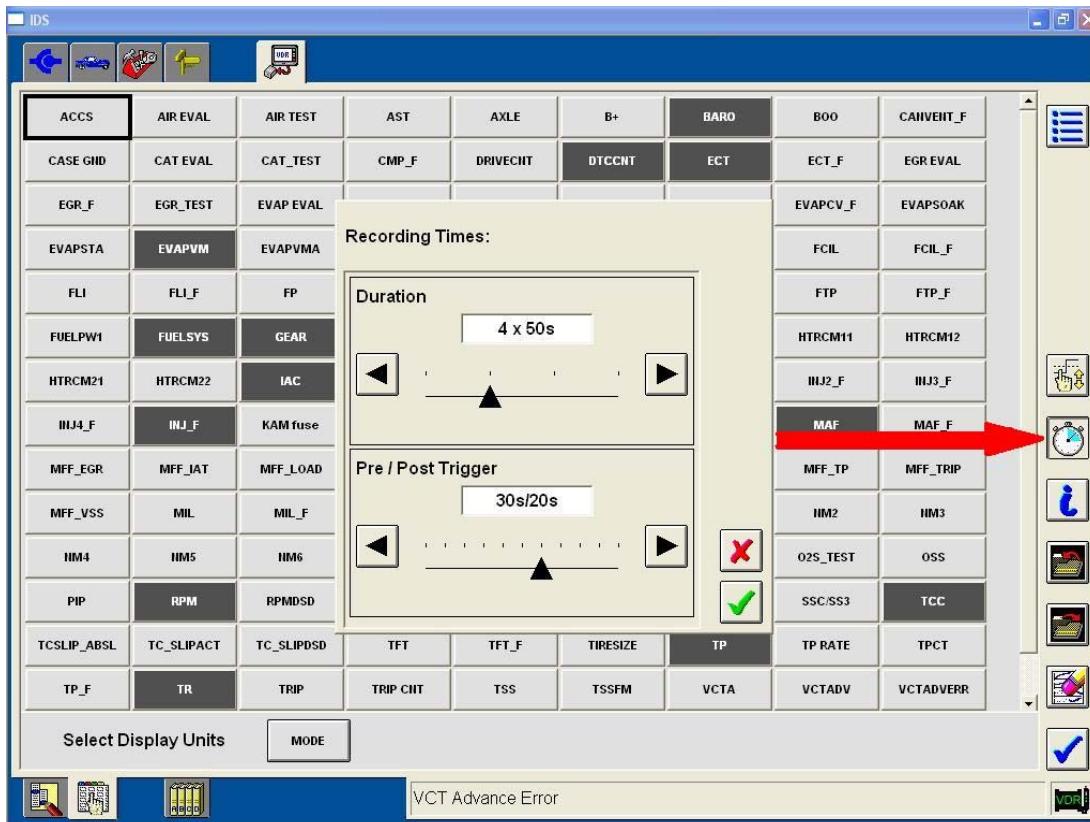
1. Select *Parameter Selection* tab.
2. Select desired parameters and units to record.
3. To save parameter, trigger, and recording time settings:

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- Select upper **File** icon to view a list of previously saved settings.
 - Enter a file name.
 - Enter an optional description.
4. To load pre-defined parameters with triggers and recording times:
- Select lower **File** Icon to view a list of pre-defined configurations.
 - Select a saved configuration.
 - Press **Tick** to load configuration.
5. Press **Tick** when parameter selection is complete.

Recording Time Set-up

The VDR can record up to 200 seconds of data. The number and duration of recordings as well as the pre/post trigger times will be available by selecting the **Stopwatch** icon located on the right side of the **Parameter** screen.



1. Select **Stopwatch** icon.
2. Set **Recordings/Duration** time.

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– Recording duration options are 25, 50, 100, and 200 seconds.

Since the VDR can store up to 200 seconds, the number of recordings will vary based on the duration selection.

3. Set **Pre/Post Trigger** time.

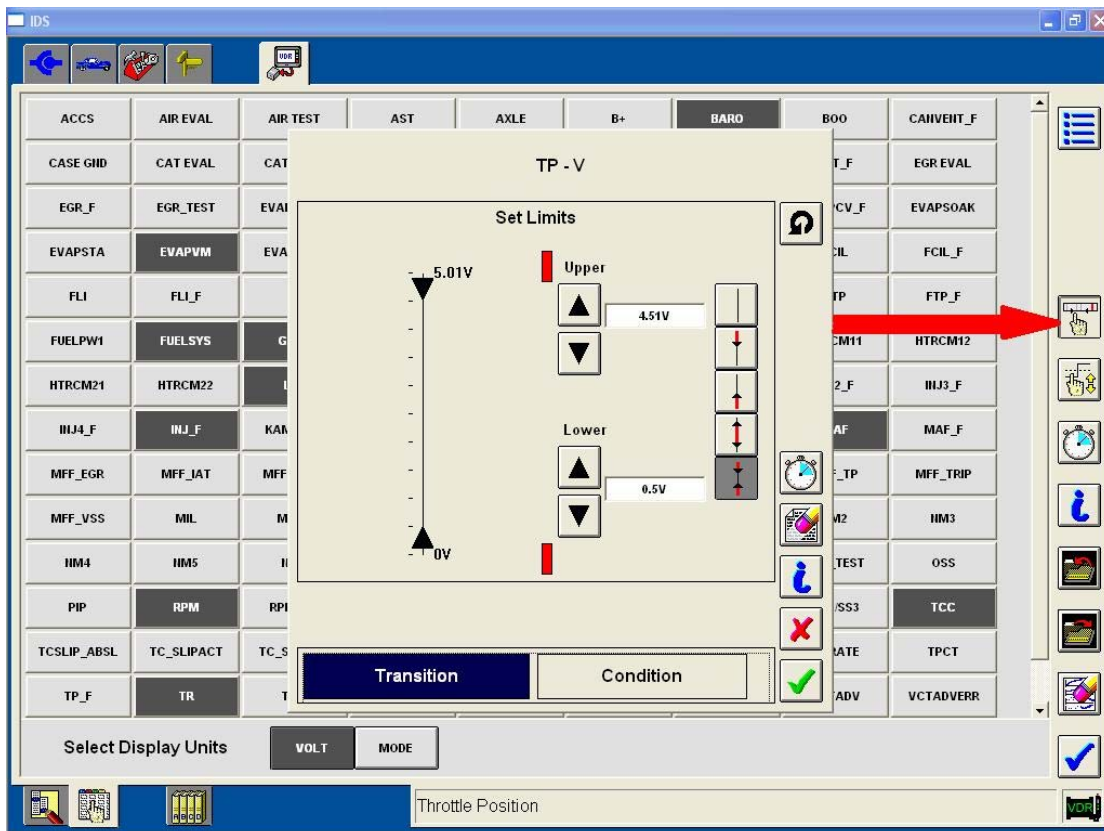
– Pre/Post trigger times are adjustable and vary with the recording duration selection.

4. Press **Tick** to continue.

Trigger Set-up

Trigger limits can be set on five parameters. Diagnostic Trouble Code Counts (DTC CNT) will always be selected, when available. DTC CNT parameters are pre-defined to make a recording when a DTC occurs.

3. Select **Trigger** icon.

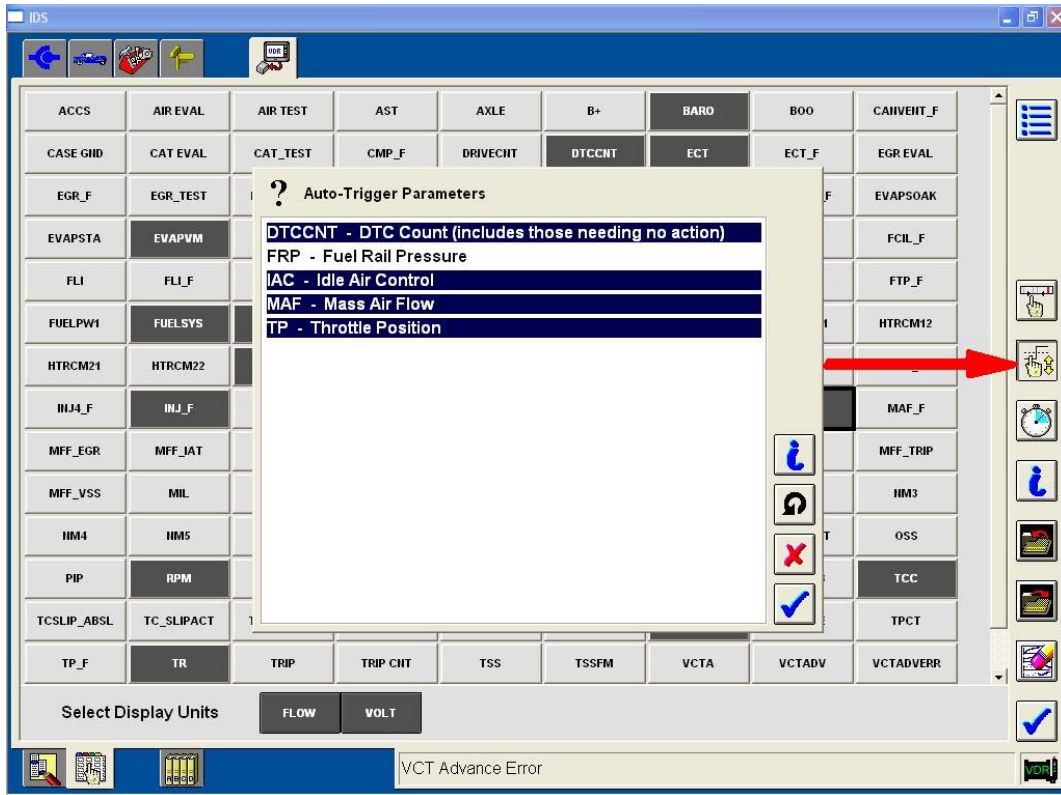


2. To set trigger limits select the **Plots Limit** and **Format** icon.

– Pressing **Tick** after selecting limits will set the trigger for auto capture.

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- If you attempt to set limits on a 6th parameter, a message stating the maximum number of parameters that can be defined as triggers has been exceeded.
- Selecting **Cancel** will return user to the Parameter Selection screen.
- Deselecting a parameter and continuing allows you to set the trigger limits on the new parameter.



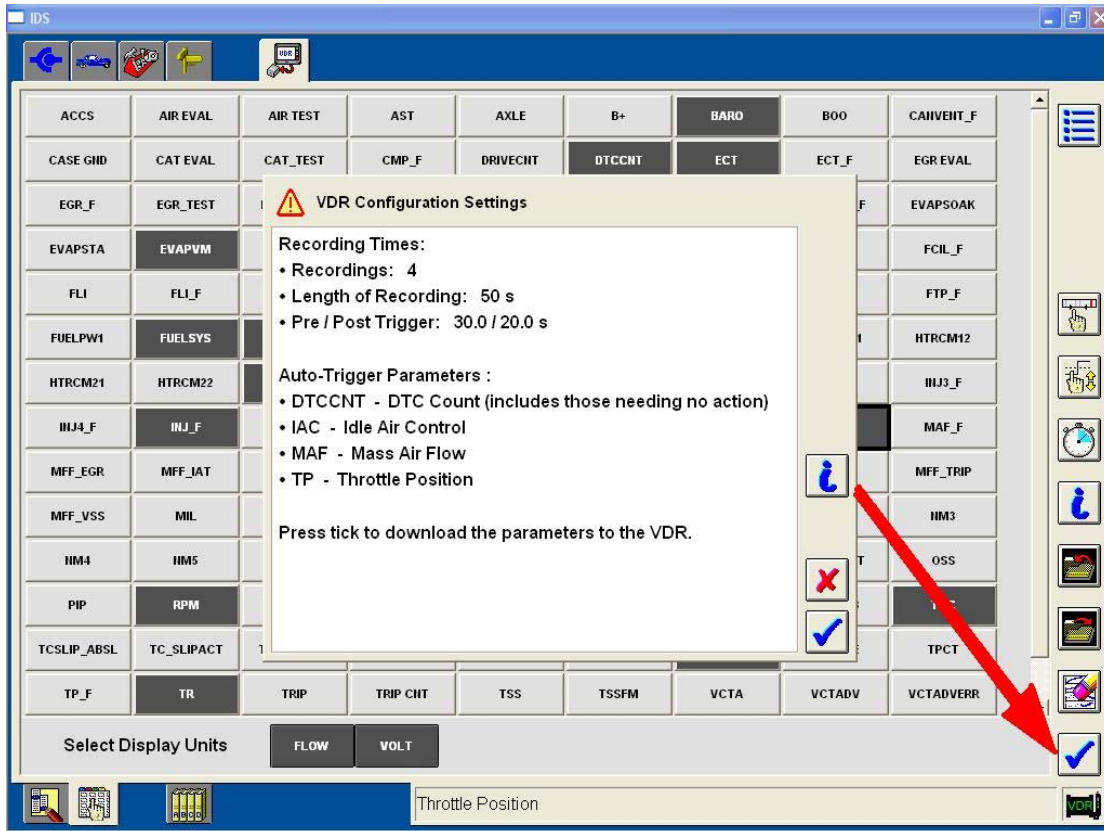
3. Press **Tick** to continue.

Download to VDR

To download to the VDR press the **Tick** on the Parameter Selection screen.

When **Download** has been selected, a message screen will be displayed showing the configuration selections to be downloaded to the VDR.

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1. Press **Tick** if configuration settings are correct.
 - Select **Cancel** to make changes.

*Once the VDR is downloaded the user can make changes to the parameters, triggers or number of recordings at the Parameter Select screen. The VDR can be downloaded again with the new configuration by selecting the **Tick**. The configuration will be retained by the VDR until the next download.*

*An audible tone will sound for 60 seconds when the VDR is disconnected from the **power supply**. Press the Trigger Button on the Pendant to stop the tone.*

Hook-up to Vehicle

Once the VDR download process has been completed, a screen will appear showing the required VDR to vehicle connections.



1. Connect the VP-1, Pendant Cable to the VDR.
2. Connect VC-1, VDR to vehicle cable to the VDR and the vehicle DLC.

NOTICE NEVER connect or disconnect the vehicle cable from the VDR while it is connected to the DLC. Failure to do so may result in a DLC fuse failure.

3. Secure the VDR vehicle cable to an appropriate spot within the vehicle so it DOES NOT become entangled with the driver or vehicle controls.

WARNING If the VDR is being used in a moving vehicle, ensure that the VDR and cables do not distract or interfere with the driver, or form a hazard in any way.

4. Secure the VDR to the inside of the vehicle out of the way of the driver, under the seat, dash, console, etc.
5. Secure the Pendant to the inside of the vehicle within easy reach of the pendant operator.



For **SAFE** vehicle operation, be sure the cables are secured away from steering, shifting, and pedal controls. Failure to do so could result in personal injury.

Control of VDR/Manually Recording Data

If customer is to drive vehicle and capture recordings on VDR, technician will inform them how many recordings can be captured, see *Recording Time Set-up* on page 13.

1. Drive vehicle as normal.
 - Make sure both indicator lights on the VDR Pendant are ON. VDR will not record data if Pendant lights are not on. If the lights are OFF Press *Trigger Button* on Pendant to activate lights.
3. Press Pendant *Trigger Button* when vehicle exhibits customer complaint(s).
3. If VDR is set-up for multiple recordings, repeat steps 1-2.

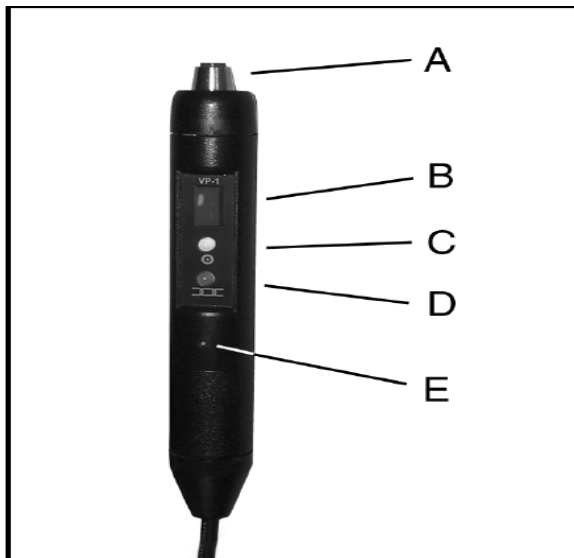
Note: If hard start conditions are being evaluated, Pendant must be activated before attempting to start the vehicle. VDR will not record data if both Pendant lights are not on. If the lights are OFF Press Trigger Button on Pendant to activate lights.

Recorded data will be retained by the VDR until it is overwritten or a new configuration is downloaded.

User Interface (Pendant)

There are five (5) different functions on the Pendant; a manual Trigger Button, a seven (7) segment LED display, a GREEN Power LED, a YELLOW Link LED, and an audible Buzzer.

- A - Manual Trigger Button
- B - LED (seven segment) Display
- C - Green Power LED
- D - Yellow Link LED
- E - Buzzer



Manual Trigger Button (A)

This is used to manually trigger a recording of vehicle information. Once the VDR has been configured, each time the Trigger Button is depressed a recording will be made.

Note: Once all recordings have been captured, pressing the Trigger Button again will overwrite the first captured recording.

- On certain vehicle applications the Trigger Button may need to be pressed to wake the VDR up from **Sleep Mode** before a vehicle recording can be made.

Note: On certain vehicle applications the VDR may not automatically wake up when the ignition key is turned ON or the vehicle is started. This is determined if the GREEN and YELLOW LEDs and the digital display window do not light up when the key is turned to the ON or RUN position. If the VDR does not automatically wake up, press the Trigger Button on the end of the Pendant to wake up the VDR. Once the Trigger Button is pressed the YELLOW Link LED will flash while the VDR attempts to establish communication with the vehicle. If communication is established, the YELLOW Link LED will stop flashing and the LED display window will illuminate. If the VDR is unable to establish communications with the vehicle, it will go back to sleep in approximately 60 seconds. If the VDR goes back to sleep, check the connections at the VDR and the DLC connection on the vehicle. If all the connections are good and secure, the ignition key is in the ON or RUN position and the VDR still does not wake up, see VDR Support Section for instructions.

LED (seven segment) Display (B)

This digital display window shows the number of recordings that have been made since the VDR was downloaded. Once the maximum number of recordings have been made, the display number will flash. While making a recording the display segments will rotate in a clockwise direction, and when the VDR is being uploaded the display segments will rotate in a counterclockwise direction. When the VDR is in **Sleep Mode** the display will be blank.

The VDR Pendant may also display other codes in certain situations. After updating the VDR software, the display window may show a "C". The flashing "C" indicates that the configuration file downloaded to the VDR has been lost and is normal after performing a software update to the VDR. The flashing "C" may also occur if the battery in the VDR fails, in this instance IDS will inform the user of this condition. An "E" may be displayed if an error occurs during the VDR software update process. If either of these two problems is encountered, see VDR Support Section for instructions.

GREEN Power LED (C)

This LED will illuminate when the VDR is connected to the **power supply**. The Power LED will also be ON when the vehicle powers the VDR and the VDR is not in **Sleep Mode**.

YELLOW Link LED (D)

This LED indicates that the VDR is communicating with the vehicle. When the VDR is communicating with the vehicle, the Link LED will be ON. If communications between the vehicle and the VDR are lost, the YELLOW Link LED will FLASH for 60 seconds and then turn OFF when the VDR goes into **Sleep Mode**. The Link LED will also FLASH when uploading recording files from the VDR to the IDS.

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BUZZER (E)

An audible tone will sound once when the VDR is powered up and when a recording is triggered. This audible tone will also sound for 60 seconds after power to the VDR is lost. To stop the tone from sounding following power loss, press the Trigger Button on the Pendant.

Note: In the event of power loss to the VDR, the configuration and recorded data are retained.

Pendant Events and Indicators

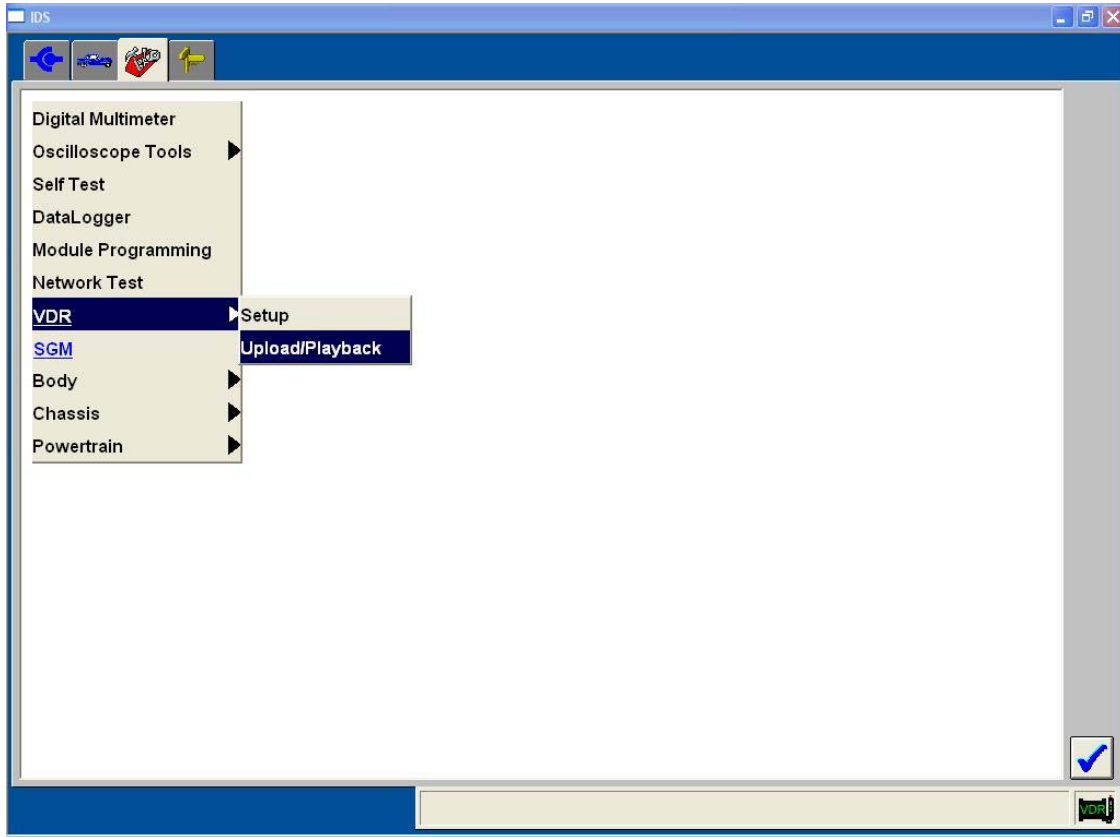
STATE	POWER GREEN	LINK AMBER	DISPLAY	BUZZER
VDR powered, no configuration File	ON	OFF	Display "C"	OFF
VDR powered, IDS downloading configuration	ON	Momentary Flashing	Display "0"	OFF
VDR powered, uploading data to IDS	ON	Flashing	Counter-clockwise rotating segment display & revert to # of recordings* at the end of upload	OFF
VDR powered, valid configuration Available	ON	OFF	# of recordings*	Beep once
Initializing communication w/the vehicle	ON	Flashing	# of recordings*	OFF
Normal operation w/the vehicle	ON	ON	# of recordings*	OFF
Trigger detected	ON	ON	# of recordings*	Beep Once
Saving file in response to trigger	ON	ON	Clockwise rotating segment display, then display # of recordings at the end of capture	OFF
VDR in sleep mode	OFF	OFF	Blank	OFF
Waking up from sleep	ON	Flashing	# of recordings*	OFF
Wake-up to sleep transition	OFF	OFF	Blank	OFF
Power to no-power transition	OFF	OFF	Blank	Beep for 60 sec. stop if trigger button pressed
Reflash failure	ON	OFF	Flashing "E"	Beep 3 or 5 times

* The 7-segment LED, in addition to displaying the number of recordings will flash if the maximum number of recordings has been reached.

VDR Upload to IDS

VDR upload to the IDS is used to retrieve recorded vehicle data from the VDR. Upload can be initiated from *VDR Set-up*, *VDR Upload/Playback* in the tool box menu, or from *VDR Upload* at the *Vehicle Identification Page*. Once *VDR Upload* has been selected, the IDS to VDR *Connection* screen will appear.

During the upload process a horizontal bar graph will be displayed on the screen indicating the status of the upload.



1. Select *VDR Upload*.
 - VDR to IDS Connection screen appears.
2. Connect the VDR to IDS and to the VDR power supply as shown on the IDS screen.
3. Press *Tick* to continue.

The IDS will establish communications with, and check vehicle information from the VDR against the vehicle information from the current active session on the IDS.

- If the vehicle information on the VDR matches the active session on the IDS, the data will be uploaded and saved with the current session (see step 4).
- If the vehicle information on the VDR does not match the active session on the IDS:

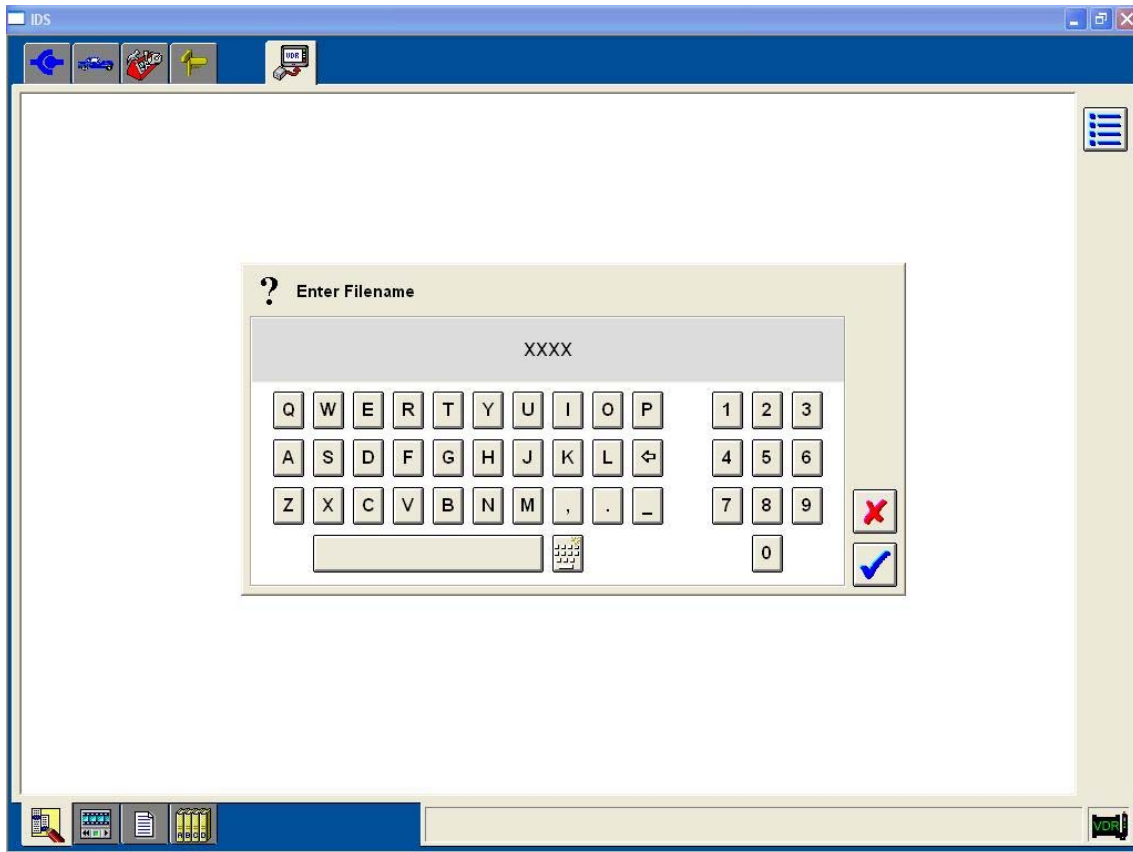
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- a. Place the current vehicle session on hold, or complete, or delete the session.
 - b. Select **VDR Upload** from **Vehicle Identification**. This will automatically pull the correct existing vehicle session, if available, or create a new session as required.
4. When upload is complete, save the recordings by entering a filename followed by a description of the file (see **File Naming**).

Parameters and modules selected during VDR Setup, but not available on the vehicle will be listed on an information screen during the upload process.

File Naming

Upon the complete upload of the last recording from the VDR, a prompt will appear to name the recordings. File management procedures and any necessary data transformations will also be done at this time.



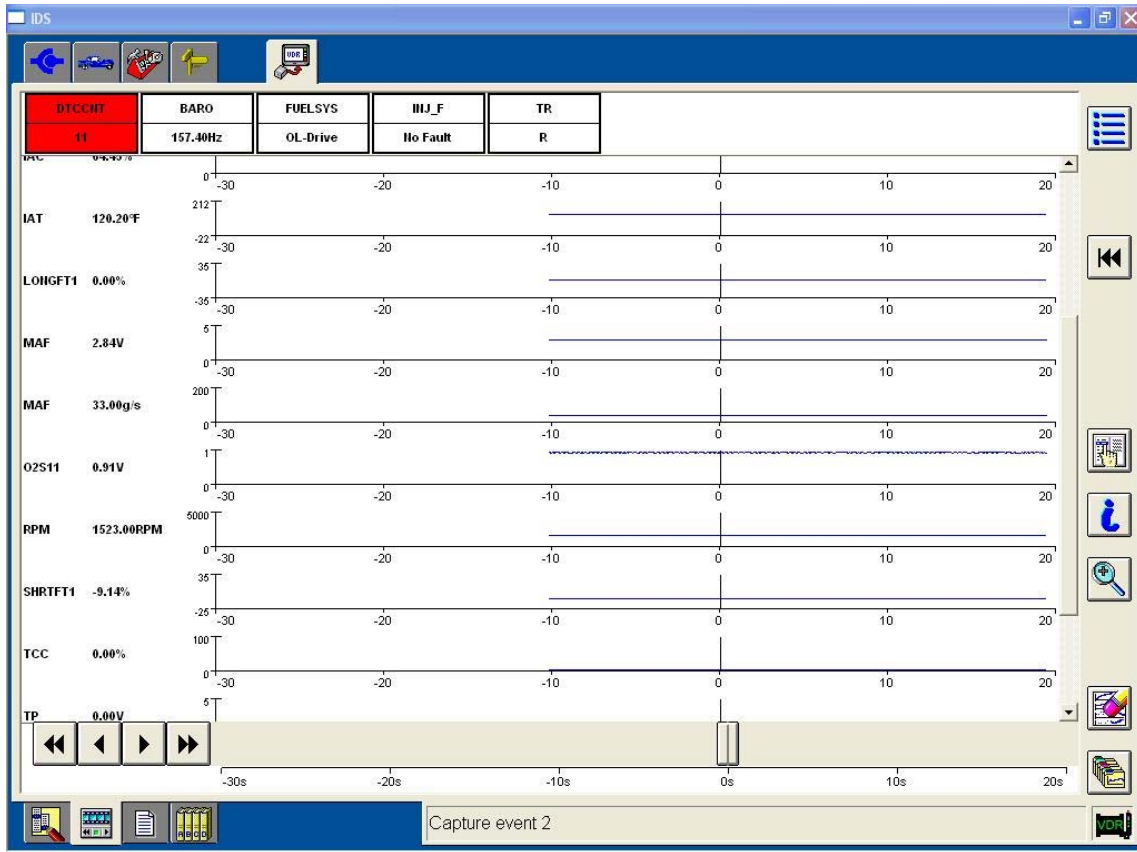
Playback

Playback will be available upon completion of **File Naming** or when entering **VDR Upload/Playback** from the toolbox menu. Selecting the **Playback** sub-tab will display a list of previously saved VDR recordings. Selecting a previous recording will display the recording as well as any associated DTCs.

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1. Select **VDR Upload/Playback** from toolbox.
2. Select **Playback** sub-tab.
3. Select a saved recording to view.

Parameters on the Playback screen are displayed in both x-y plots and digital states. The display range can be adjusted, resized or zoomed in or out. The x-y plots can also be changed to display digital, histogram, or bar graph as appropriate for the signal selected.



Parameters can also be temporarily removed from the current display. This feature only temporarily removes the parameter from the display; it does not remove the parameter from the recording or delete the data for that parameter.

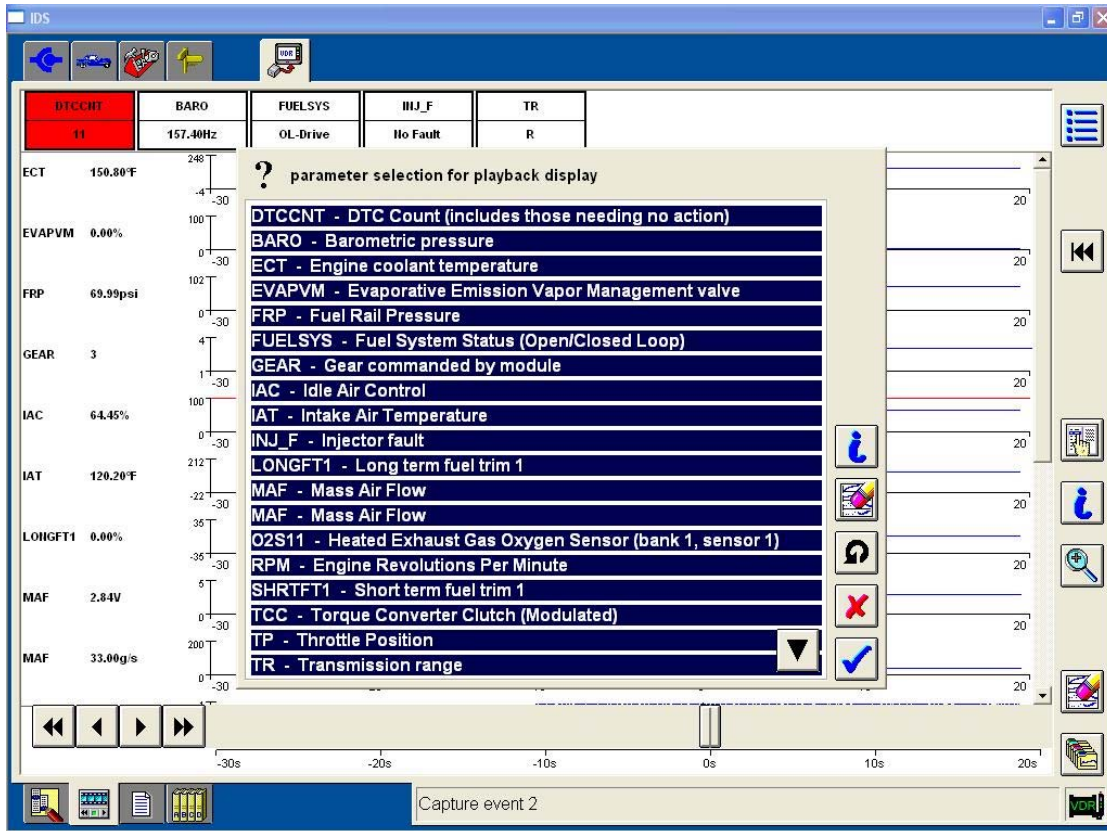
To remove a parameter from the playback display:

1. Select the **Parameter Selection** icon.
2. Select a parameter to un-highlight that parameter.

VDR Operator's Manual

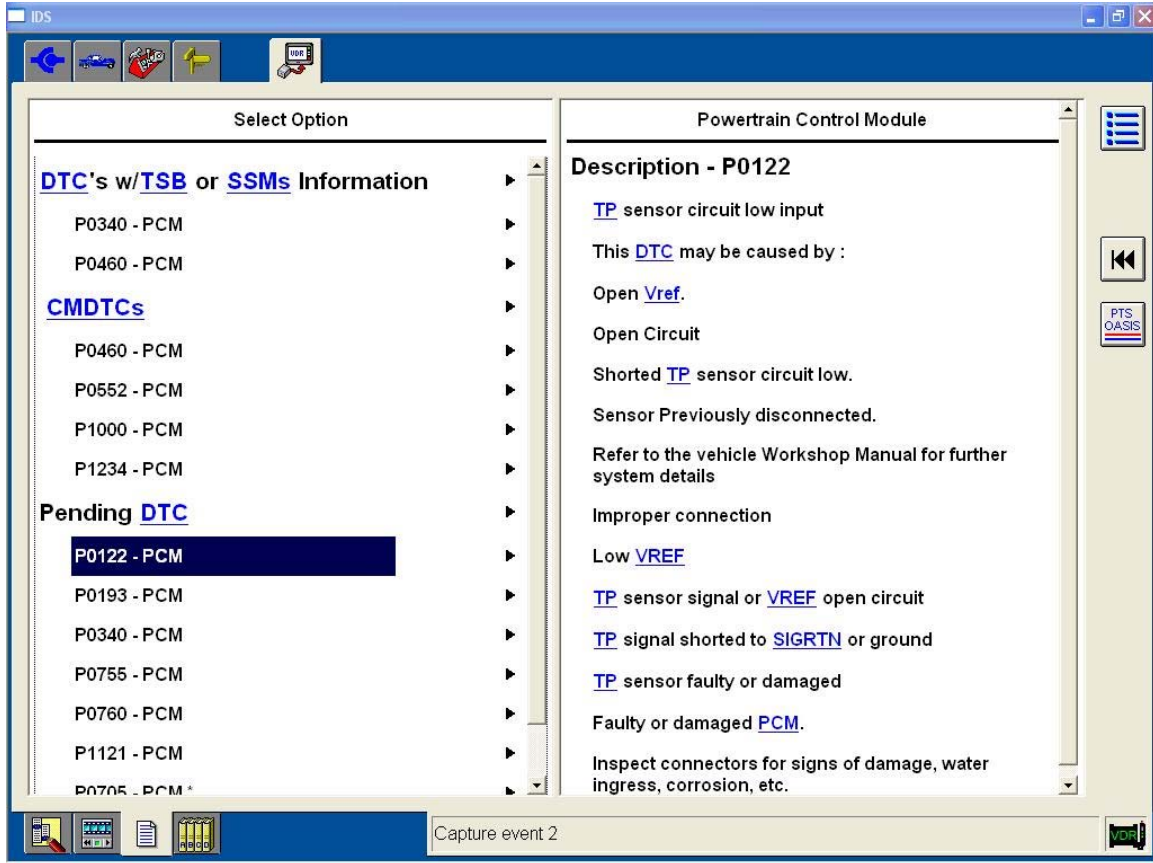
To redisplay a parameter:

1. Select the *Parameter Selection* icon.
2. Select a parameter to highlight and redisplay that parameter.



VDR Operator's Manual

The DTC screen is also available to view any DTCs that were present before or after the recording was made. Any new DTC will have an asterisk next to it. Codes are listed under CMDTCs and Pending DTCs, and the code descriptions appear when the DTC is highlighted.



Technical Specifications

Vehicle Data Recorder (VDR)

Dimension	Specification
Width	102mm (4")
Length	152mm (6")
Height	25mm (1")
Weight	286g (10oz)
Interface	Connection
VDR to IDS PC	Mini din 8-pin socket
Pendant	D 9-pin socket
Vehicle Cable	D 15-pin socket
Power Source	Specification
Vehicle Battery	D 15-pin socket
External Power Adapter	Power port
VDR Battery (Memory)	(3.3 Volt Lithium Battery not user serviceable)
VDR Expected Battery Life	5 years in normal use

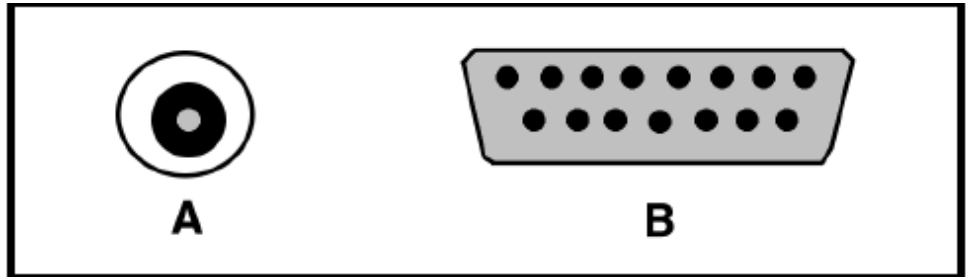
Environmental Specifications

Parameter	Specification
Operating Temperature	-40°C to 85°C (-40°F to 185°F)
Storage Temperature	-40°C to 100°C (-40°F to 212°F)
Operating Humidity	10% to 90% RH, non-condensing

Vehicle Communications Link Interface

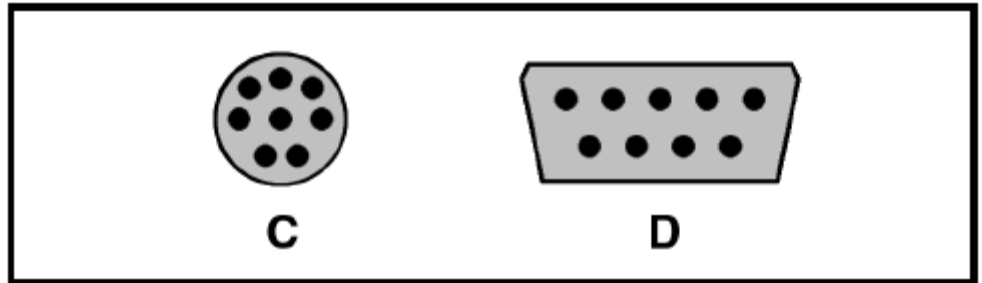
Protocol
CAN
DCL
DDL
FORD-9141
ISO-9141-2
SCP
UBP

VDR Connectors



A – External Power Adapter

B – Vehicle Cable



C – VDR to IDS

D – Pendant

Care and Maintenance

Use water or a mild detergent on a damp cloth to wipe clean the VDR unit.

Inspect all cables for damage.

Inspect for bent pins in cable connections.

Troubleshooting

Users should perform the following simple checks to determine if they can resolve any problems with the VDR.

Simple Checks

VDR will not Power ON

Make sure good cable connections are made.

Make sure there are no damaged cables.

Make sure the VDR is powered through the vehicle or power supply.

Verify the vehicle key is ON, battery voltage is normal, and the DLC power fuse has not failed.

If cables and power supply are sufficient and the VDR does not operate or operates erratically, run VDR Self Test from the IDS System Utilities.

VDR System Diagnostics

Immediately upon power up of the VDR, the VDR will conduct a self-diagnostics. If both color LEDs momentarily light, the buzzer sounds, and numeric display reads eight, self-diagnostics is okay. If not, see VDR Support Section for instructions.

VDR Powers ON but will not Operate Correctly

Run VDR self-test:

1. Within IDS, select the IDS tab and then the Systems Utilities tab.
2. Under the Miscellaneous menu select VDR Information/Update and then select Run VDR Selftest.
3. Press **TICK** to continue.
4. Follow the VDR Hook-up screen instructions.
5. Press **TICK** to continue.
6. The self-test results will appear and should read as follows:
 - RAM1 = OK
 - RAM2 = OK
 - RAM3 = OK
 - FLASH = OK
 - BATT = OK
7. If any of these results indicate FAIL, see VDR Support Section for instructions.

VDR will not Wake up from Sleep Mode

On certain vehicle applications the VDR may not automatically wake up when the ignition key is turned to the ON or RUN position. If this should happen, press the Trigger button on the end of the Pendant to wake up the VDR. The VDR will then attempt to establish communication with the vehicle. If the VDR is unable to establish communications with the vehicle, it will go back to sleep in approximately 60 seconds. If the VDR goes back to sleep, check the connections at the VDR and the DLC connection on the vehicle. If all the connections are good and secure, the ignition key is in the ON or RUN position and the VDR still does not wake up, see VDR Support Section for instructions.

Pendant Displays a Flashing “C”

After updating the VDR software, the display window on the Pendant may show a flashing "C". The flashing "C" indicates the configuration files downloaded to the VDR has been lost. This is normal after performing a software update to the VDR. A flashing "C" may also occur if the battery in the VDR fails. In this instance the IDS will inform the user of this condition. If this occurs, see VDR Support Section for instructions.

Pendant Displays a Flashing “E”

A flashing "E" may be displayed if an error occurs during the VDR software update process. If this occurs, see VDR Support Section for instructions.

Warranty

The VDR unit and cables / accessories are warranted against defects in materials and workmanship for one year after date of purchase.

WEB BASED TECHNICAL INFORMATION SUPPORT (TIS) REQUEST

Effective January 1, 2008, the process to request technical information support has changed to require the completion of a web-based TIS Request Form. The form is accessed via FMCDealer.com/Parts and Service Role/Technical Tools/PTS/Technical Hotline/TIS Assistance Request Form. Once the form is completed please select the desired service. The options are:

1. **Simple Questions or Looking for Known Concerns:** The TIS Assistance Request is submitted to the Technical Hotline for review by a Service Engineer who will post a response on PTS within 30 minutes (during normal operating hours). Select "Assistance Requests Status," then select "TIS Request Status." A page may also be sent to advise that the response is available on PTS.
2. **Need to speak to a Hotline Service Engineer:** A contact ID will be provided and a call can then be made to the Hotline. The Hotline Service Engineer will review the submitted TIS Assistance Request while speaking with the caller on the telephone. After the call, a summary of the technical direction will be posted to PTS.

This new form will allow for quicker answers to basic questions by providing:

- Self-guided frequently asked questions are answered
- Web-based response without the need to call

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