



Section 4 - Controls

4.1 Engine Digital Control Panel

The Engine Digital Control Panel (EDCP) contains controls for starting, monitoring engine performance and controlling fire pump engine operation. Refer to [Figure 4-1](#). In manual mode, the panel remains active as long as battery power is available. In auto mode, the panel is active when battery power is present on TB1, otherwise it goes into standby mode after 30 minutes of no battery voltage on TB1.

4.1.1 Warning Lamp

Illuminates (yellow) in the event that the ECM has sensed a non-mission disabling fault.

4.1.2 Fault Indicator Lamp

Indicates Fuel Injection Fault (FIF) and illuminates (red) in the event that the ECM has detected a fuel injection fault or primary sensor fault.

Engine Digital Control Panel also sends a ground signal to terminal buss #302 that sends a signal to set off an alarm on the Fire Pump System Controller to indicate a FIF fault.

4.1.3 Scroll Buttons

Used to scroll up or down when in the menus.

4.1.4 Enter Button

Used when making changes in the Menu Screen.

4.1.5 Menu Button

Opens the menu option on the display.

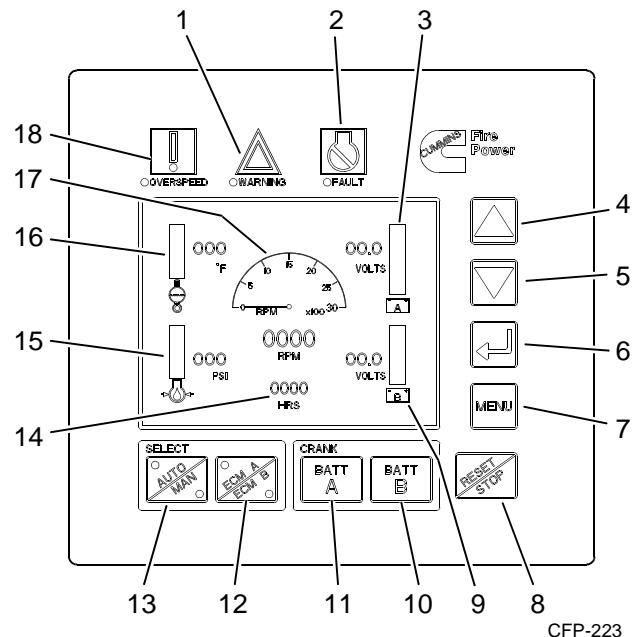
4.1.6 Overspeed RESET/STOP Button

Used to shut off engine at the Engine Digital Control Panel.

Pressing the Overspeed RESET Button after correcting an engine overspeed shutdown, resets the Overspeed Control Module, allowing subsequent restarts of the fire pump engine.

4.1.7 Battery A and B Voltmeters

The Battery Voltmeters display the charge status (VDC) of the relative battery connections.



1. Warning Lamp
2. Fault Lamp
3. Battery "A" Voltmeter
4. Scroll UP Button
5. Scroll DOWN Button
6. ENTER Button
7. MENU Button
8. Overspeed RESET/STOP Button
9. Battery "B" Voltmeter
10. Crank Battery B Momentary Start Button
11. Crank Battery A Momentary Start Button
12. ECM A/B Selector Button & Indicator Lamp
13. AUTO/MAN Mode Button & Indicator Lamps
14. Hour Meter
15. Engine Oil Pressure
16. Coolant Temperature
17. Tachometer
18. Overspeed Warning Lamp

Figure 4-1 Engine Digital Control Panel (EDCP)

4.1.8 Tachometer and Hour Meter

The Tachometer displays the engine speed in revolutions per minute (RPM) whenever the engine is operating. The Hour Meter maintains a running total of the hours of operation (run time).

4.1.9 ECM A/B Indicator LED - Applicable on Electronic Engines

The ECM Indicator LED's (yellow) will illuminate indicating the ECM being used to control the engine. If the ECM Switch is in the ECM A (normal) position, ECM A is controlling the engine. Refer to [Figure 4-1](#).

If the ECM Switch is in the ECM B (alternate) position, ECM B is controlling the engine. When the alternate (B) ECM is selected the EDCP will send a ground signal to terminal buss #301 which will send a signal to set off an alarm on the Fire pump system controller to indicate that the engine is operating on the alternate ECM.

4.1.10 CRANK BATT A or BATT B Buttons

The CRANK BATT A or CRANK BATT B Buttons initiate an immediate engine start (momentary start) using the selected A or B Crank Battery.

Crank A or B will energize Battery contactor A or B depending on which one is selected.

Both A and B buttons can be energized at the same time in the event both batteries are weak.

4.1.11 AUTO/MANUAL Mode

The AUTO/MANUAL Mode determines whether the engine starts and is controlled by the operator (MANUAL) or by an automatic signal from the fire pump system controller (AUTO). The LED lamp (yellow) is illuminated on which mode is selected.

The Manual Mode is typically used for engine setup, testing, emergency and maintenance procedures.

The AUTO Mode is used to start the engine under the control of the fire pump control system. In the AUTO mode, the fire pump engine stops upon loss of signal power from the fire pump controller.

4.1.12 Coolant Temperature Gauge

The Coolant Temperature Gauge displays the engine coolant temperature.

4.1.13 Engine Oil Pressure Gauge

The Engine Oil Pressure Gauge displays the engine oil pressure. The gauge is independent of the low oil pressure alarm.

4.1.14 Engine Overspeed Warning LED

The Overspeed Control Module monitors engine speed. If the engine RPM's exceed 115% rated

speed, the engine Overspeed Warning Lamp is illuminated (yellow).

The EDCP will send a power signal to terminal buss #3 that will send a signal to set off an alarm on the Fire pump system controller indicating that an overspeed condition has occurred.

The EDCP will automatically switch to Manual mode and will shut the engine down. After the overspeed has been reset by using the RESET/STOP button on the EDCP, the engine operation will revert to the original AUTO mode position.

NOTE: *The engine will not be allowed to restart automatically from the Fire pump system controller until the EDCP is reset.*

4.1.15 ECM Fault Code Lamps - Applicable on Electronic Engines

The AMBER Engine Warning Lamp and the RED Engine Shutdown Lamp alert the operator of an engine malfunction that are categorized as follows:

1. An illuminated AMBER Lamp indicates an engine malfunction that requires timely operator attention.
2. An illuminated RED Lamp indicates an engine malfunction that requires immediate and decisive operator response.
3. A 3-4 digit diagnostic fault code will display on the EDCP which can then be used to help describe the engine malfunction. Refer to Section 7 troubleshooting for Fault Codes.

4.1.16 Engine Stop Button

The Engine stop button is located on the left side of the EDCP enclosure and is used to stop the operation of the engine in either Manual or Auto Mode. The button must be pressed and held until the engine has stopped.

4.1.17 Engine Communications Port

This plug-in is located on the left side of the EDCP enclosure and is used for the communications connection port for Cummins Insite.

NOTE: *Insite is a Cummins, Inc. computer software tool used to monitor or report engine performance criteria.*

4.1.18 Contractor Access Port

The contractor access knock-out is located on the lower side of the EDCP enclosure. This is the only 1 inch (25.4cm) knock-out provided for the installing contractor to connect the Fire Pump system controller to the EDCP.

IMPORTANT: *If this port is not used for the installation, all warranty on the fire pump engine will be void.*

4.1.19 Engine ECM Power Supply

This plug-in is located on the lower side of the EDCP enclosure. The power supply port supplies unswitched battery power to both ECM A and ECM B on electronic engines.

4.1.20 Engine Harness Connection

This plug-in is located on the lower side of the EDCP enclosure. The Engine harness connection connects the panel to the power source, start contactors, magnetic pick-up, alternator and other engine related functions controlled by the EDCP.

4.2 Electronic Control Module (ECM) - Applicable on Electronic Engines

The engine control system is an electronically operated fuel controls system. The ECM performs diagnostic tests on most of its circuits and will activate a fault code if a problem is detected.

4.3 Engine Protection System - Applicable on Electronic Engines

The engine ECM identifies any 3-4 digit engine fault codes and illuminates the appropriate AMBER Warning Lamp or RED Shutdown Lamp on the operator Engine Digital Control Panel. Refer to [Section 7 - Troubleshooting](#) for additional Fault Code information.



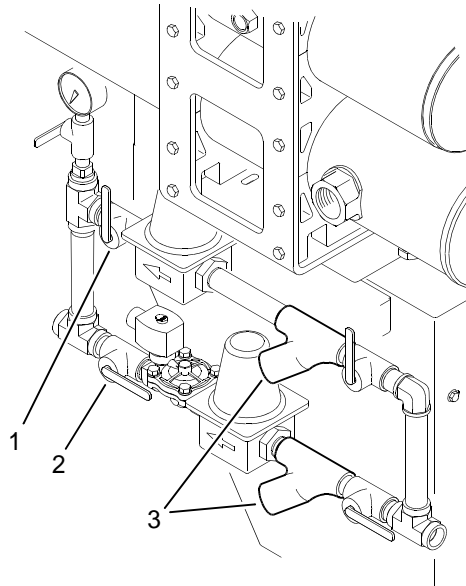
CAUTION

Normally, Cummins engines with ECMs have derate and shutdown protection calibrated into

the ECM. However, the ECM on this Cummins engine has no derate or shutdown protection. The engine will run to destruction. Therefore preventive maintenance is essential.

4.4 Raw Water Flow Control Valves

1. The fire pump system controller opens the raw water Normal Loop Solenoid Valve in either Manual or Automatic Mode. In the OPEN position, water can flow through the heat exchangers. Refer to [Figure 4-2](#). Manual raw water valves for the Automatic Loop should remain OPEN at ALL times.
2. Manual raw water valves for the Bypass Loop should be CLOSED during Automatic (fire pump system controller) operation.



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1. Bypass Raw Water Manual Outlet Valve
2. Normal Raw Water Manual Outlet Valve
3. Bypass Raw Water Manual Inlet Valve
4. Normal Raw Water Manual Inlet Valve

Figure 4-2 Normal Open Raw Water Manual Valves (typical)



Section 5 - Operation

WARNING

Before preparing the machine for normal production, complete all safety checks, remove all tools and foreign objects from the machine, ensure that all guards are in place and securely fastened and alert area personnel that the equipment will be starting.

5.1 Remote Starting Procedure

To start the engine from the Fire Pump Controller Panel:

1. Press the AUTO/MANUAL Mode Button on the engine digital control panel to place the engine in the AUTO Mode position. Refer to [Figure 4-1](#).
2. Start the engine by initiating an engine CRANK Signal from the Fire Pump Controller.

CAUTION

If the Crank Terminate Signal is absent, the engine starter motor will continue to operate. Shut the engine off immediately at the Fire pump controller panel to avoid damage to the starter.

3. The engine continues to operate as long as the RUN signal is present. When the RUN signal is terminated by the fire pump control panel, the engine stops.
4. The engine may be stopped locally by pressing the Engine Stop button on the side of the Engine Digital Control Panel.

5.2 Manual Starting Procedure

To start the engine manually from the Engine Digital Control Panel:

1. Press the AUTO/MANUAL Mode Button on the engine digital control panel to MANUAL Mode position to place engine in manual mode.
2. Press either the CRANK BATT A or CRANK BATT B Button to start the engine.

5.3 Emergency Starting Procedure

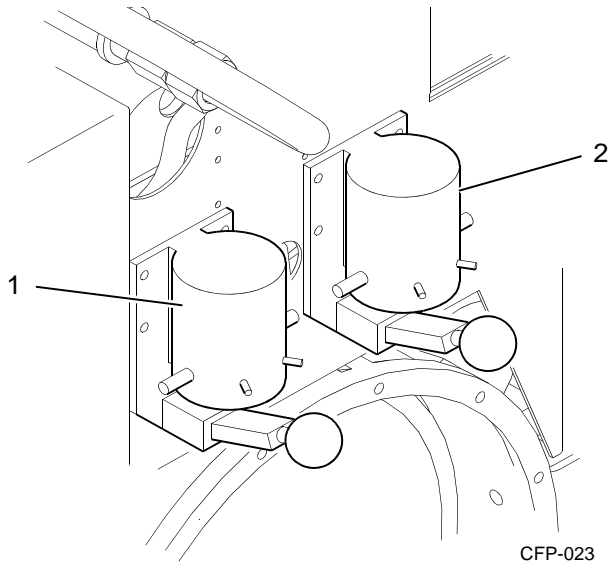
The engine starts automatically in the event of a fire emergency. However if it fails to start automatically, the engine can be started manually from the engine digital control panel:

1. If necessary, open both manual bypass valves in the raw water supply manifold (if equipped). Refer to [Figure 4-2](#).
2. Press the AUTO/MANUAL Mode Button on the engine digital control panel to MANUAL Mode position to place engine in manual mode. Refer to [Figure 4-1](#).
3. Press downward on the desired Battery contactor lever for up to 15 seconds or until the engine starts. Repeat up to three times if necessary. Refer to [Figure 5-1](#).
4. Release the Contactor Lever immediately after the engine starts.

CAUTION

To prevent damage to the starter, do not engage the starting motor more than 15 seconds. Wait 15 seconds between each attempt to start up to six attempts.

5. The engine may be stopped manually by pressing and holding the stop button on the left hand side of the Engine Digital Control Panel Enclosure.



1. Battery A Starter Contactor
2. Battery B Starter Contactor

Figure 5-1 Manual Battery Contactors (typical)

5.4 Engine Digital Panel Control Screens and Adjustments

The following menu screens are available for operator input and monitoring of engine parameters on the Engine Digital Control Panel Menu Screens.

5.4.1 Main Menu

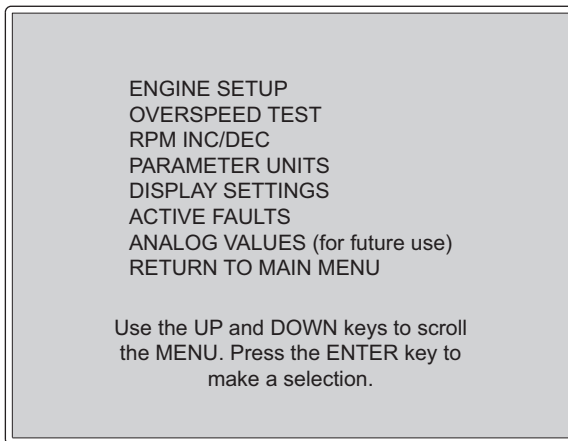


Figure 5-2 Main Menu Screen

5.4.2 Engine Set-up Screen

This screen is for Cummins Fire Power internal use.

5.4.3 Overspeed Test Screen

The Engine Overspeed Set Point was set during manufacturing and test procedures. It may, however, be necessary to adjust the overspeed set point based on the actual fire pump application.

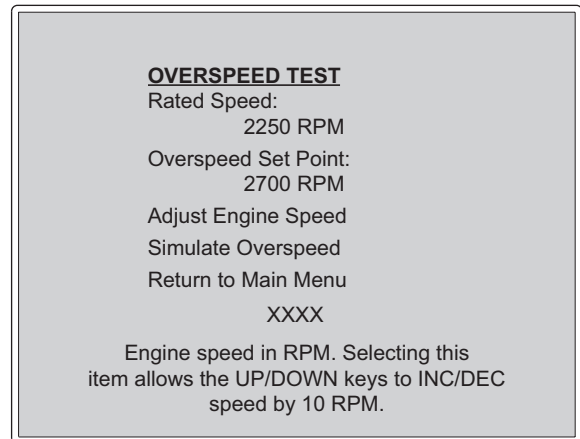


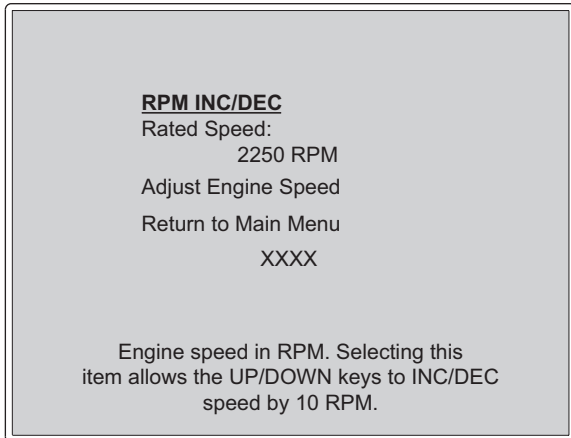
Figure 5-3 Overspeed Test Screen

The overspeed test screen will allow for two options to demonstrate overspeed:

1. Increment the engine speed up to reach overspeed set point for engine models. Example above identifies 2250 RPM.
2. Used to simulate overspeed for engine speed models above 2250 RPM or for instances when over pressurizing of sprinkler systems can cause damage.

NOTE: If Option 1 is selected above, the engine speed will have to be manually reset back to pump rated speed after overspeed test is completed. Use the RESET/STOP button to reset engine back to the original values.

5.4.4 RPM INC/DEC Screen



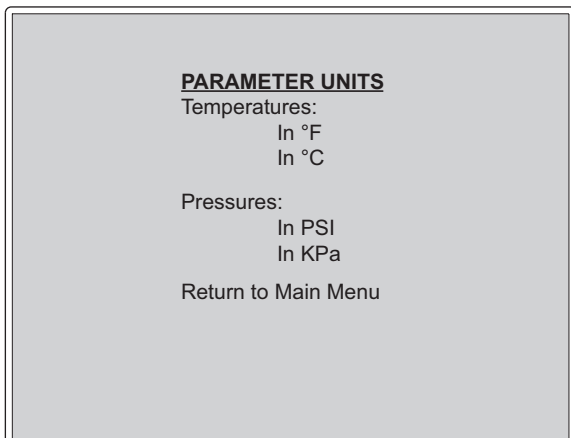
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Figure 5-4 RPM INC/DEC Screen

This screen allows operator to make adjustments by Incrementing or Decrementing the Engine operating speed for on-site adjustments. The Engine Operating Speed was factory set during manufacturing and test procedures.

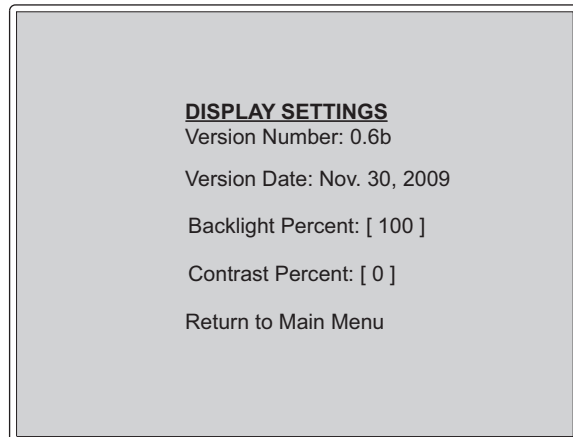
If the speed does not match the Engine RPM shown on the Factory Setting Plate, scribe the actual RPM on the Field Setting plate.

5.4.5 Parameter Units Screen



This screen will allow for English and Metric units.

5.4.6 Display Settings Screen



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Figure 5-5 Display Settings Screen

This screen will enable adjustments to the backlight and contrast for optimal viewing in varying lighting environments. The version number of the EDCP software will be indicated on this screen.

5.5 ECM Fault Codes - Applicable on Electronic Engines

The Electronic Control Module can display and record operation irregularities, which are displayed as fault codes on the Engine Digital Control Panel.

5.6 Field Acceptance Testing

The required tests are outlined in the NFPA 20 and NFPA 25 standards and shall be performed to validate Automatic and Manual operational requirements for Field Acceptance Testing.