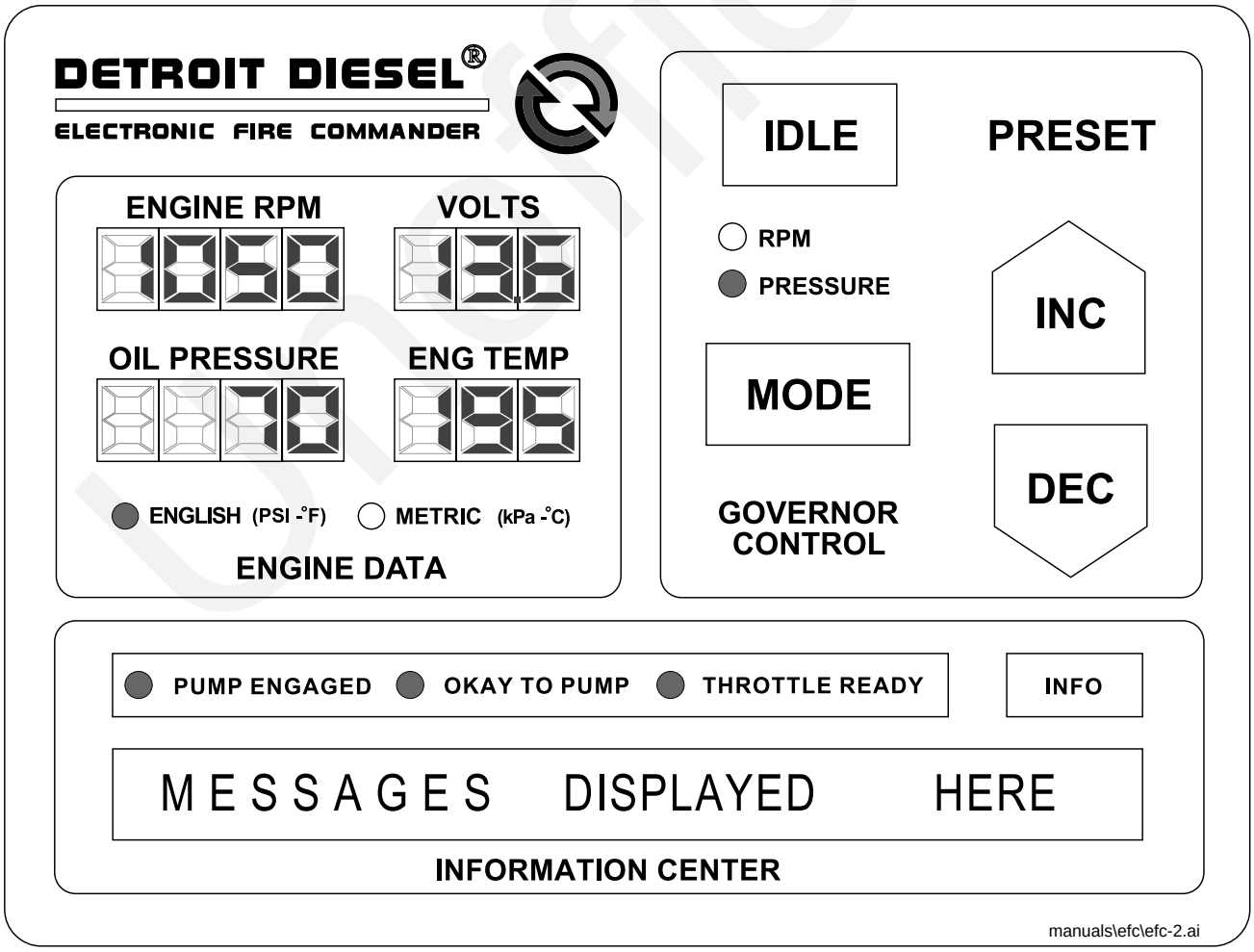
Operating the Detroit Diesel Electronic Fire Commander (EFC):

MODES:

There are two modes of operation for the Electronic Fire Commander. The RPM Mode controls the engine speed to a desired RPM and the Pressure Mode controls the engine speed to maintain a desired pump discharge pressure. The operating mode of the Fire Commander can be changed from RPM Mode to Pressure Mode and back without the need to return to idle. When the MODE switch is pressed, the Fire Commander will change from one mode to the other and utilize the RPM or Pump Pressure that is current at the time the change is made for engine control.



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Operating the Detroit Diesel Electronic Fire Commander:

RPM Mode:

The EFC must be on and the Throttle Ready LED (interlocks necessary for increased throttle operations are active) must be illuminated before any RPM adjustments can be made. The RPM LED will be on to indicate that the EFC will operate in the RPM mode.

Engine speed can be controlled to a predetermined RPM by pressing the PRESET switch. (PROGRAMMABLE FROM THE EFC MENU)
Engine speed can be increased in 25 RPM increments using the INC switch.
Engine speed can be decreased in 25 RPM increments using the DEC switch.

Pressing the IDLE switch will return the engine RPM to it's normal curb idle speed.

PSI Mode:

The EFC must be on and the PUMP ENGAGED, OKAY TO PUMP *and* the THROTTLE READY LEDs (safety interlocks for pump operation have been established) must all be illuminated before any PSI adjustments can be made. The PRESSURE LED will be on to indicate that the EFC can be operated in the PSI Mode.

Pump Pressure can be controlled to a predetermined PSI by pressing the PRESET switch.
Pump Pressure can be increased in 4 PSI increments using the INC switch.
Pump Pressure can be decreased in 4 PSI increments using the DEC switch.

Pressing the IDLE switch will return the engine to it's normal idle speed.

Engine Parameters:

Engine RPM, Oil Pressure, Temperature, and System Voltage are displayed continuously while the EFC is in operation. In addition to this, any operating parameter that would cause a Check Engine or Stop Engine Condition will be displayed on the EFC's Information Center Message Display and an audible alarm will be activated.

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Programming the Detroit Diesel Electronic Fire Commander:

Programming the EFC is simply a matter of selecting items from a menu.

To enter the programming menu, Press and hold the **MODE** and **MENU** switches at the same time until “Press Idle to Exit “ is displayed on the information center, then release both switches.
Moving through the menu is accomplished by pressing the **MENU** switch.
Change to a selection is performed by using the **INC** and **DEC** switches.
Exiting the programming menu is done in one of two ways.

Pressing **IDLE** will exit the menu and save changes.
Pressing **MODE** will exit the menu without saving changes.

Programming Menu Options:

RPM Preset Point:	(preset engine speed)
Pressure Set (PSI):	(preset PSI)
Engine Hourmeter:	(information only)
Pump Hourmeter:	(information only)
Engine Degrees:	(oil or coolant)
Pump Pressure (PSI):	(pressure reading if active)
DDEC Software Ver:	(ECU revision level)
EFC Software Ver:	(EFC revision level)
Fire Commander I/O Test:	(test switches)
Press [MODE] Test Lights:	(tests display panel)
Set Time Clock:	(set clock)
Units of Measure:	(English/Metric)
Welcome Message:	(enable/disable)
Codes Currently Active:	(information)
Connector Data:	(displays connection info.)
SAVE? [Idle=Y] [Mode=N]	(exit and save options)

Use the **MENU** switch to scroll through the menu.

Use the **INC** and **DEC** switches when the item you want to change is displayed.

When changes are complete, press **IDLE** to exit and save changes.
To exit the menu without saving changes, press **MODE**.

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Troubleshooting the Detroit Diesel Electronic Fire Commander:

The DDEC III ECM must be programmed for Pressure Sensor Governing and the Digital I/O's must be configured properly for PSG operation. Additionally the VSS should be turned off in pressure governor operation.

You can use the EFC I/O test as an aid in troubleshooting.
The INC, DEC, IDLE,MODE and PRESET switches as well as their outputs are tested.
DISPLAY
SWITCH: OUTPUT:

When a switch is pressed (IDLE for instance), it will show up as:
SWITCH: IDLE and if the output is grounded with the switch, that will show up as
SWITCH: IDLE OUTPUT: IDLE.
If an output is grounded, it will show up as OUTPUT: (function name).
This can be used to test for a grounded signal wire.

The throttle won't increase in RPM Mode.
Check:
Is the THROTTLE READY LED on? The EFC won't respond in RPM mode unless the OEM safety interlock requirements that enable the throttle are met.
Try using both the PRESET and INC switches.
Does PSG Disabled display on the information center?
If operating with PTO, is VSS enabled?
Re-initialize the EFC. (Remove power to the EFC wait 10 seconds and then repower the unit and try again.)

NOTE: The EFC performs a self-check when it is powered up. This is indicated on the EFC by a momentary lighting of all the display segments.

The throttle won't increase in Pressure Mode.
Check:
Are all three LED's (PUMP ENGAGED, OKAY TO PUMP, and THROTTLE READY) on?
Try both the INC and PRESET Switches to increase pump pressure.
Is the VSS enabled?
Re-initialize the EFC.

The THROTTLE READY LED won't turn on.
Check:
Is the parking brake on?
Is the transmission in neutral or the PTO engaged?
Check for 12 VDC at pin # 2 of the EFC 12 pin connector.

The Engine Data Display is showing all zeroes or dashes.
Check:
Are the connections at pins # 3 and # 4 of the EFC 4 pin connector attached?

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Troubleshooting the Detroit Diesel Electronic Fire Commander:

The PUMP ENGAGED and OKAY to PUMP LED's won't turn on.

Check:

All OEM safety requirements for pump operation must be fulfilled.
Is the Parking Brake on?
Is the transmission in the proper range for pump operation?
Is the PTO engaged?
Is there an OK to PUMP Signal in the cab?
Check for 12 VDC at pin #10 of the EFC 12 pin connector.

The mode won't change from RPM to Pressure.

Check:

Are the PUMP ENGAGED and OKAY to PUMP LED's on?
Is there a ground at pin #1 of the EFC 12 pin connector?
Is there a ground at pin #4 of the EFC 12 pin connector?

The PRESET switch doesn't work:

Check:

Are the proper LED's on for the mode you want to operate?
Is there a valid preset programmed into the menu?
Does the PRESET switch work in the menu I/O test?

The EFC doesn't light up.

Check:

Are the necessary switches turned on?
Is there 12 VDC between pins #1 and #2 at the EFC 4 pin connector.

Summary:

The DDC Pressure Sensor Governor operates similar to cruise control. It uses the DDEC III digital inputs and outputs (ground) to control the engine and indicators.

Digital Inputs	Pressure Governor System Enable	(ground when enabled)
	Pressure/RPM Mode Switch	(ground
	Parking Brake Interlock	
	Set/Coast On (Decrease)	(ground to decrease)
	Resume/Acceleration On (Increase)	(ground to Increase)

These inputs are programmed into the DDEC ECU and the configuration may vary, a check should be done at installation to verify which port is configured for what input.

Digital Outputs	Cruise Control Active Light	(ground when active)
	Pressure Governor Active Light	(ground when PSG pressure
	PSG Pressure Mode Achieved	mode is active)

These outputs are programmed into the DDEC ECU and the configuration may vary, a check should be done at installation to verify which port is configured for what output.

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Electronic Fire Commander (EFC) Wiring

MATING CONNECTOR 1: DT06-4S

CAVITY	CIRCUIT DESCRIPTION	DDC#	EFC INPUT/OUTPUT
A-1	DDEC Ignition Power	439	(+) System Power
A-2	DDEC Accessory Ground	953	(-) System Ground
A-3	DDEC #900 Data Link (+)	900	J1587 Serial Link
A-4	DDEC #901 Data Link (-)	901	J1587 Serial Link

MATING CONNECTOR 2: DT06-12S

CAVITY	CIRCUIT DESCRIPTION	DDC#/PORT	EFC INPUT/OUTPUT
B-1	DDEC PGS Mode Select	523/H1	Output (ground) to DDEC
	SIGNALS DDEC TO TOGGLE BETWEEN PRESSURE AND RPM MODE		
B-2	OEM Interlock POS Input	-----	Input (+12 VDC) from OEM
	PARKING BRAKE/NEUTRAL (THROTTLE READY LED)		
B-3	cavity plug	-----	No Connection
B-4	DDEC PSG-PSI Mode Active	499/F3	Input (ground) from DDEC
	GROUND FROM DDEC WHEN PSG PRESSURE MODE IS ACTIVE (PRESSURE LED LIGHTS)		
B-5	DDEC PSG Enable	543/G2	Output (ground) to DDEC
	GROUND TO DDEC TO TURN CRUISE CONTROL (PSG) ON (CRUISE ON/OFF CONTROL)		
B-6	DDEC PSG Increase	545/G3	Output (ground) to DDEC
	GROUND TO DDEC TO INCREASE RPM/PRESSURE (RESUME/ACCEL INCREASE)		
B-7	DDEC PSG Decrease	541/J1	Output (ground) to DDEC
	GROUND TO DDEC TO DECREASE RPM/PRESSURE (SET/COAST DECREASE)		
B-8	DDEC Cruise Active	----Y3	Input (ground) from DDEC
	GROUND FROM DDEC TO EFC WHEN CRUISE CONTROL(PSG) SYSTEM IS ACTIVE		
B-9	ALARM	-----	Output (ground) to Alarm
B-10	OK to PUMP Interlock POS Input	-----	Input (+12 VDC) from OEM
	PTO ENGAGED/PUMP ENGAGED		
B-11	cavity plug	-----	No Connection
B-12	Low Fuel	-----	Input (ground) from OEM

DDC circuit numbers and port assignments shown are typical but can differ from application to application.

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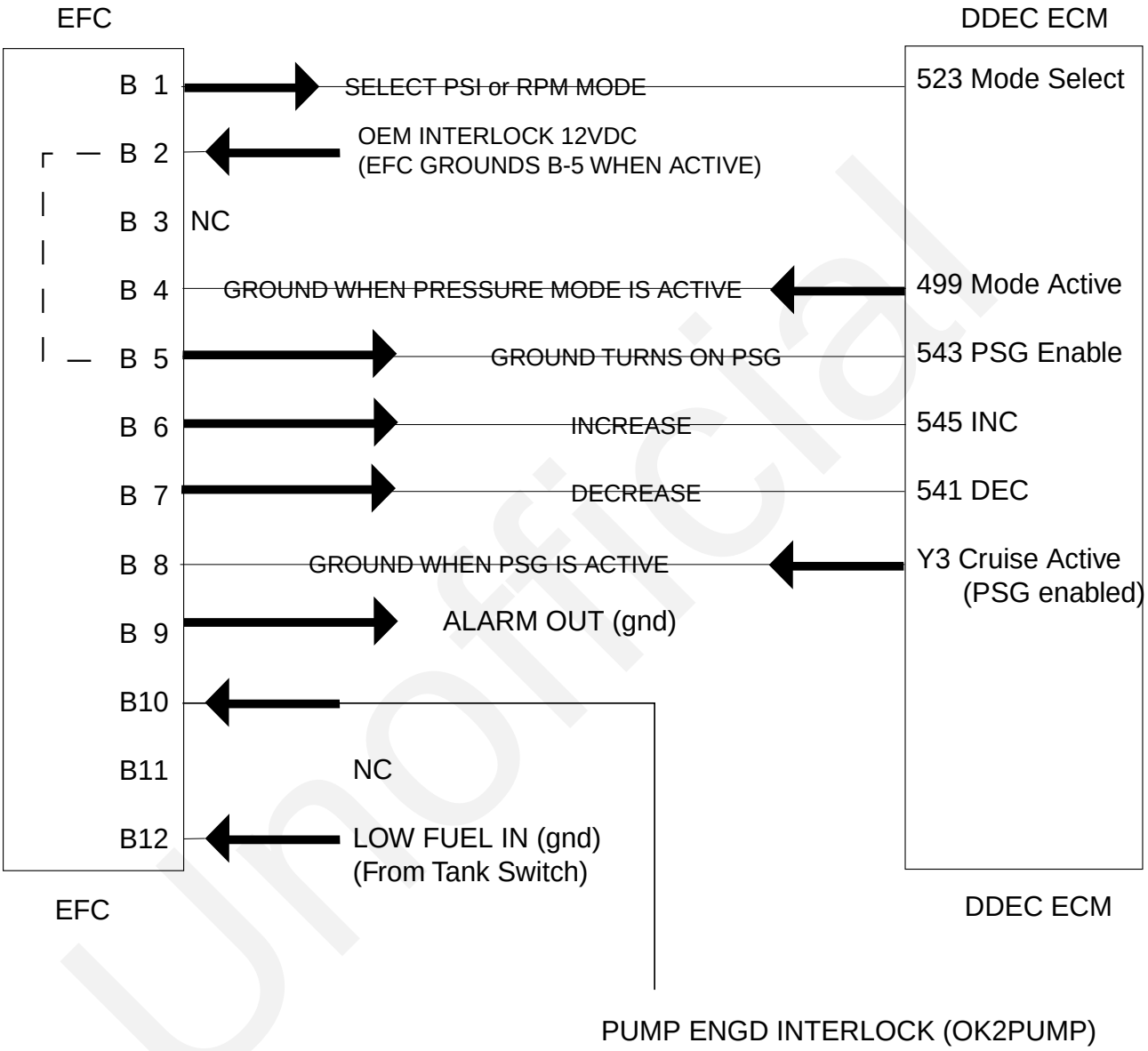
EFC
DDEC ECM
B 1
SELECT PSI or RPM MODE
523 Mode Select
B 2
OEM INTERLOCK 12VDC
(EFC GROUNDS B-5 WHEN ACTIVE)
B 3
NC
B 4
GROUND WHEN PRESSURE MODE IS ACTIVE
499 Mode Active
B 5
GROUND TURNS ON PSG
543 PSG Enable
B 6
INCREASE
545 INC
B 7
DECREASE
541 DEC
B 8
GROUND WHEN PSG IS ACTIVE
Y3 Cruise Active
(PSG enabled)
B 9
ALARM OUT (gnd)
B10
B11
NC
B12
LOW FUEL IN (gnd)
(From Tank Switch)
EFC
DDEC ECM
PUMP ENGD INTERLOCK (OK2PUMP)

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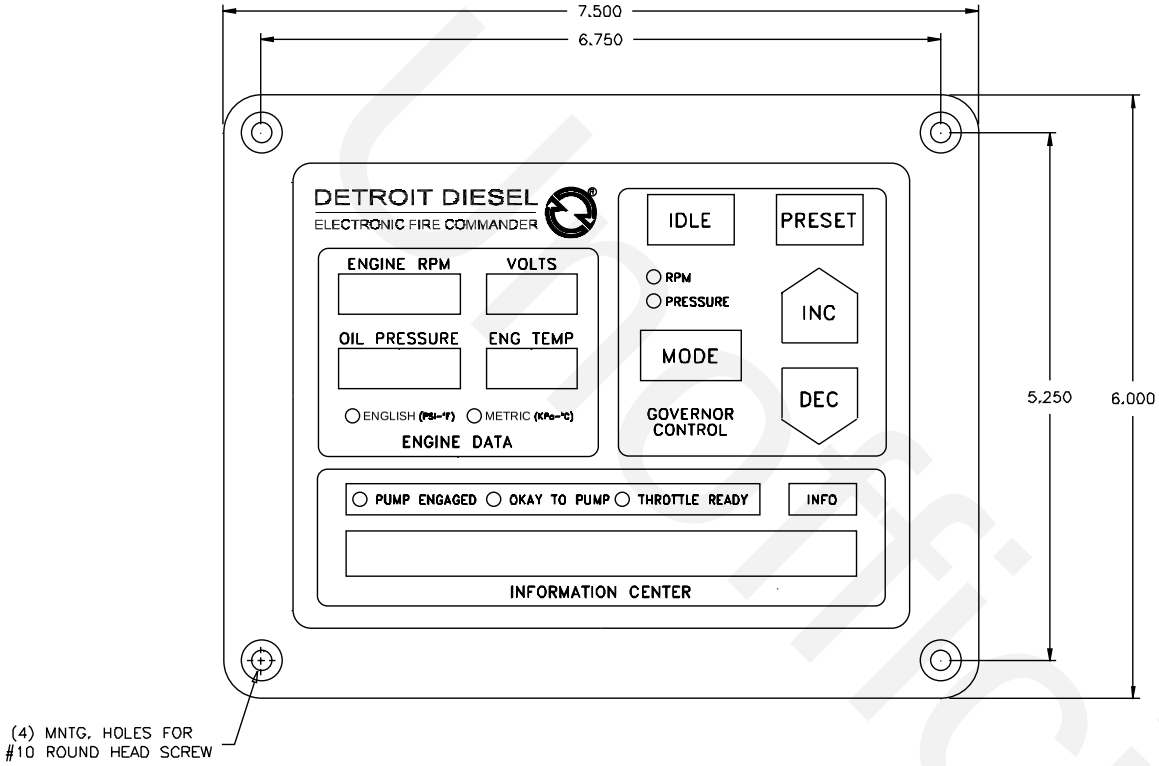
7.500
6.750
DETROIT DIESEL
ELECTRONIC FIRE COMMANDER
ENGINE RPM
VOLTS
OIL PRESSURE
ENG TEMP
ENGLISH (PSI-°F)
METRIC (KPa-°C)
ENGINE DATA
IDLE
PRESET
RPM
PRESSURE
INC
MODE
DEC
GOVERNOR CONTROL
PUMP ENGAGED
OKAY TO PUMP
THROTTLE READY
INFO
INFORMATION CENTER
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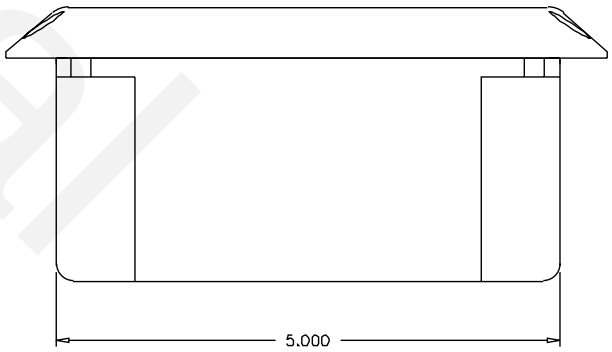
6.000
(4) MNTG. HOLES FOR
#10 ROUND HEAD SCREW

.125
2.225
2.725
6.500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