

1 INTRODUCTION


DDEC VI is a system that monitors and determines all values required for the operation of the engine. A diagnostic interface is provided to connect to an external diagnosis tester.

Besides the engine related sensors and the engine-resident control unit, the Motor Control Module (MCM), this system has a cab-mounted control unit for vehicle engine management, the Common Powertrain Controller (CPC). The connection to the vehicle is made via a CAN interface which digitally transmits the nominal values (e.g. torque, engine speed specification, etc.) and the actual values (e.g. engine speed, oil pressure, etc.).

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2 SAFETY PRECAUTIONS

The following safety measures are essential when installing DDEC VI in a vehicle equipped with a Detroit Diesel engine.

 WARNING: PERSONAL INJURY
<p>Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.</p> <ul style="list-style-type: none"><input type="checkbox"/> Always start and operate an engine in a well ventilated area.<input type="checkbox"/> If operating an engine in an enclosed area, vent the exhaust to the outside.<input type="checkbox"/> Do not modify or tamper with the exhaust system or emission control system.

2.1 STANDS

Use safety stands in conjunction with hydraulic jacks or hoists. Do not rely on either the jack or the hoist to carry the load.

2.2 GLASSES


Select appropriate safety glasses for the job. Safety glasses *must* be worn when using tools such as hammers, chisels, pullers and punches.

2.3 WELDING

Consider the consequences of welding.

NOTICE:
When welding, the following must be done to avoid damage to the electronic controls or the engine: <ul style="list-style-type: none">□ Both the positive (+) and negative (-) battery leads must be disconnected before welding.□ Ground cable must be in close proximity to welding location - engine must never be used as a grounding point.□ Welding on the engine or engine mounted components is NEVER recommended.


Wear welding goggles and gloves when welding or using an acetylene torch.

 WARNING:
FIRE
To avoid injury from fire, check for fuel or oil leaks before welding or carrying an open flame near the engine.

Insure that a metal shield separates the acetylene and oxygen which must be chained to a cart.

2.4 WORK PLACE

Organize your work area and keep it clean.

 WARNING:
PERSONAL INJURY
To avoid injury from slipping and falling, immediately clean up any spilled liquids.

Eliminate the possibility of a fall by:

- Wiping up oil spills
- Keeping tools and parts off the floor

A fall could result in a serious injury.


After installation of the engine is complete:

 WARNING: PERSONAL INJURY
To avoid injury from rotating belts and fans, do not remove and discard safety guards.

- Reinstall all safety devices, guards or shields
- Check to be sure that all tools and equipment used to install the engine are removed from the engine


2.5 CLOTHING

Wear work clothing that fits and is in good repair. Work shoes must be sturdy and rough-soled. Bare feet, sandals or sneakers are not acceptable foot wear when installing an engine.

 WARNING: PERSONAL INJURY
To avoid injury when working near or on an operating engine, remove loose items of clothing and jewelry. Tie back or contain long hair that could be caught in any moving part causing injury.

2.6 ELECTRIC TOOLS


Improper use of electrical equipment can cause severe injury.

 WARNING: ELECTRICAL SHOCK
To avoid injury from electrical shock, follow OEM furnished operating instructions prior to usage.

Check power tools before using.


2.7 AIR

Use proper shielding to protect everyone in the work area.

 WARNING: EYE INJURY
To avoid injury from flying debris when using compressed air, wear adequate eye protection (face shield or safety goggles) and do not exceed 276 kPa (40 psi) air pressure.


2.8 DIAGNOSTIC TOOLS

For mobile applications, the vehicle operator must maintain control of the vehicle while an assistant performs the diagnostic evaluations using a diagnostic tool.

 WARNING: PERSONAL INJURY
To avoid injury from loss of vehicle/vessel control, the operator of a DDEC equipped engine must not use or read any diagnostic tool while the vehicle/vessel is moving.

2.9 FLUIDS AND PRESSURE

Fluids under pressure can have enough force to penetrate the skin.

 WARNING: PERSONAL INJURY
To avoid injury from penetrating fluids, do not put your hands in front of fluid under pressure. Fluids under pressure can penetrate skin and clothing.

 **WARNING:**
HOT COOLANT

To avoid scalding from the expulsion of hot coolant, never remove the cooling system pressure cap while the engine is at operating temperature. Wear adequate protective clothing (face shield, rubber gloves, apron, and boots). Remove the cap slowly to relieve pressure.

These fluids can infect a minor cut or opening in the skin. See a doctor at once, if injured by escaping fluid. Serious infection or reaction can result without immediate medical treatment.

2.10 BATTERIES

Electrical storage batteries give off highly flammable hydrogen gas when charging and continue to do so for some time after receiving a steady charge.

 **WARNING:**

Battery Explosion and Acid Burn

To avoid injury from battery explosion or contact with battery acid, work in a well ventilated area, wear protective clothing, and avoid sparks or flames near the battery. If you come in contact with battery acid:

- Flush your skin with water.**
- Apply baking soda or lime to help neutralize the acid.**
- Flush your eyes with water.**
- Get medical attention immediately.**

Always disconnect the battery cable before working on the Detroit Diesel Electronic Controls system.

2.11 FIRE

Keep a charged fire extinguisher within reach. Be sure you have the correct type of extinguisher for the situation. The correct fire extinguisher types for specific working environments are listed in Table 2-1.

Fire Extinguisher	Work Environment
Type A	Wood, Paper, Textile and Rubbish
Type B	Flammable Liquids
Type C	Electrical Equipment

Table 2-1 The Correct Type of Fire Extinguisher


2.12 PAINT

Mask off the MCM prior to applying any paint.

NOTICE:
Do not apply paint to the MCM. The application of paint may affect the performance of the MCM.

2.13 FLUROELASTOMER

Fluroelastomer (Viton®) parts such as O-rings and seals are perfectly safe to handle under normal design conditions.

 WARNING:
CHEMICAL BURNS
To avoid injury from chemical burns, wear a face shield and neoprene or PVC gloves when handling fluoroelastomer O-rings or seals that have been degraded by excessive heat. Discard gloves after handling degraded fluoroelastomer parts.

A potential hazard may occur if these components are raised to a temperature above 600°F (316°C) (in a fire for example). Fluoroelastomer will decompose (indicated by charring or the appearance of a black, sticky mass) and produce hydrofluoric acid. This acid is extremely corrosive and, if touched by bare skin, may cause severe burns (the symptoms could be delayed for several hours).