



Operator's Manual

Our energy working for you.™



Engine Series QSL9G3

with PowerCommand® 1.1 Control

C200 D2R
C250 D2R

FOREWORD

The purpose of this manual is to provide basic, Operator-level, information relevant to an engine when used as part of a stand-by generator set assembly. Should you require further, more detailed, information regarding the engine, please contact your authorised distributor.

This manual should be read in conjunction with the relevant PowerCommand® Control Manual supplied with the generator set documentation pack. It contains additional, generator set specific, information and should form part of the documentation package supplied with the generator set.

The information contained within this manual is based on information available at the time of going to print. In line with Cummins Power Generation Limited policy of continuous development and improvement, information may change at any time without notice. The Operators should therefore ensure that before commencing any work, they have the latest information available.

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SECTION 1 – ENGINE DATA

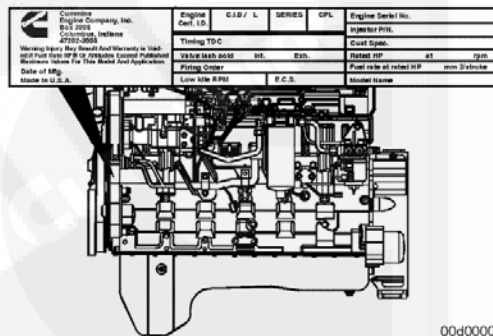
1. Engine Data

1.1 Engine Identification Plate

Each engine is provided with a Data Plate as shown below. This provides information unique to the engine.

The engine data plate shows specific information about your engine.

The Engine Serial Number (ESN) (1) and Control Parts List (CPL) (2) provide information for ordering parts and service needs.

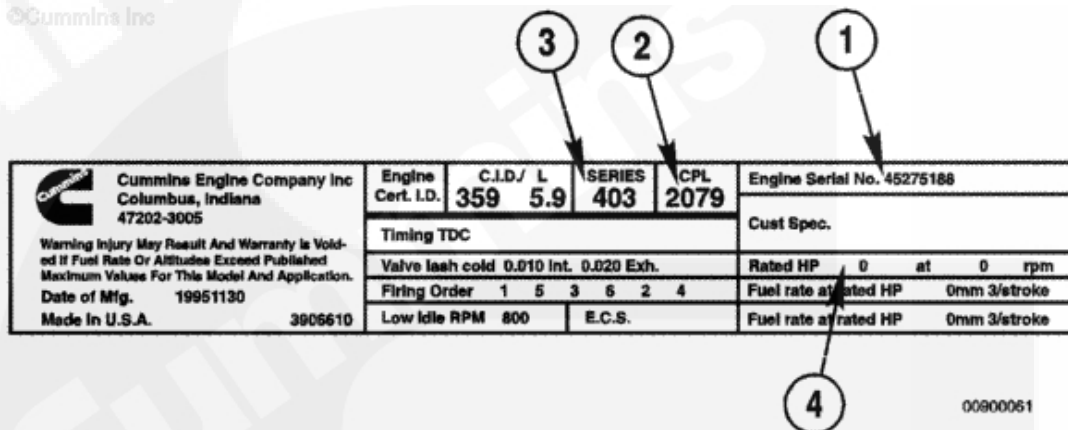


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Note: The engine data plate must not be changed unless approved by Cummins Engine Company Inc.

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KEY

- 1. Engine Serial Number (ESN)
- 2. Control Parts List (CPL)
- 3. Model
- 4. Horsepower and rpm Rating

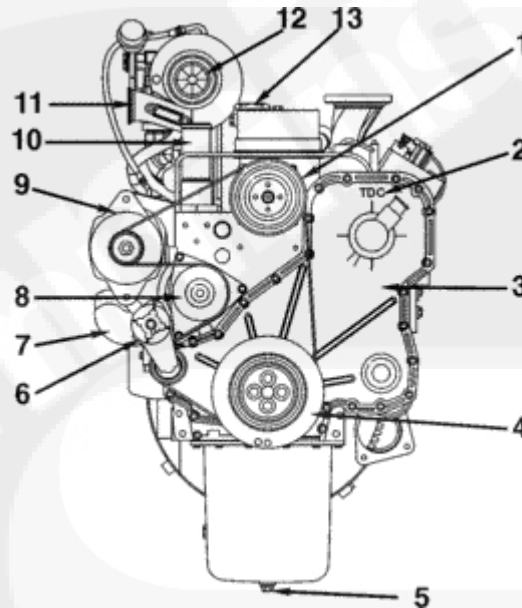
1.2 Engine Diagrams

The following illustrations show the locations of the major external engine components, filters, and other service and maintenance points on a typical QSL9 engine. Some external components will be at different locations for different engine models.

1.2.1 Engine Views

1.2.1.1 Front View

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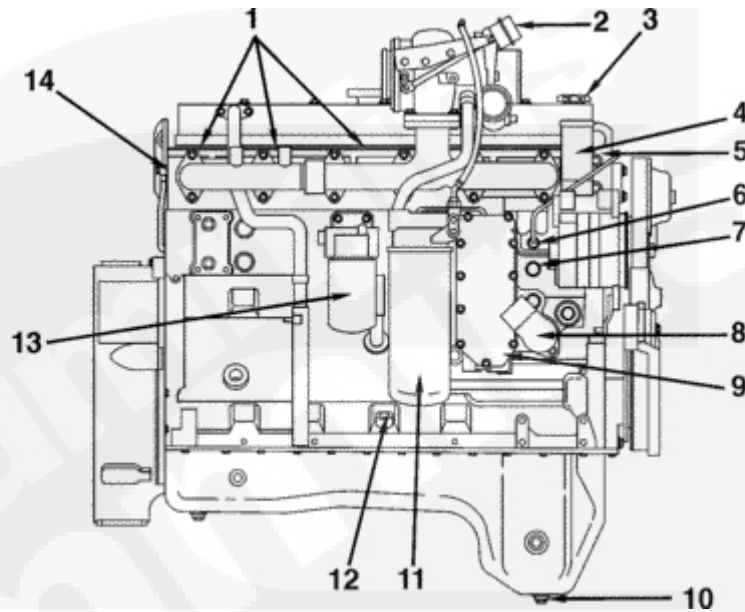
KEY

- | | | | |
|----|----------------------------|-----|-------------------------|
| 1. | Fan Pulley | 8. | Water Pump |
| 2. | Top Dead Centre (TDC) Mark | 9. | Alternator |
| 3. | Front Gear Cover | 10. | Water outlet |
| 4. | Vibration Damper | 11. | Turbocharger Air Outlet |
| 5. | Oil Drain Plug | 12. | Turbocharger Air Inlet |
| 6. | Automatic Belt Tensioner | 13. | Oil Fill Cap |
| 7. | Water Inlet | | |



1.2.1.2 Exhaust Side

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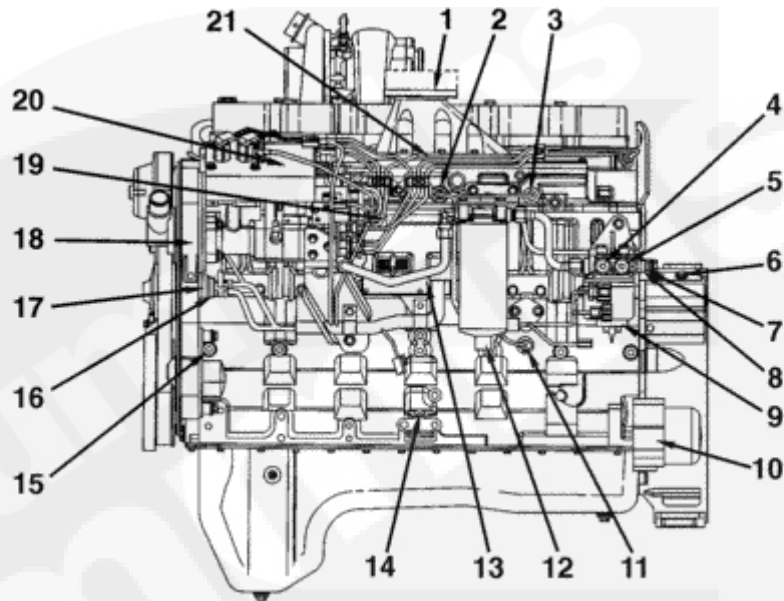
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KEY

- | | | | |
|----|---------------------------------|-----|---------------------------------------|
| 1. | ½-inch (NPTF) Coolant Taps | 8. | Coolant Inlet |
| 2. | Turbocharger Wastegate Actuator | 9. | Lubricating Oil Cooler |
| 3. | Oil Fill Cap | 10. | Oil Drain Plug |
| 4. | Coolant Outlet | 11. | Oil Filter |
| 5. | Front Engine Lifting Bracket | 12. | Dipstick |
| 6. | Coolant Temperature Sensor | 13. | Coolant Filter |
| 7. | Coolant Heater Port | 14. | Injector Drain Fuel Outlet Connection |

1.2.1.3 Fuel Pump Side

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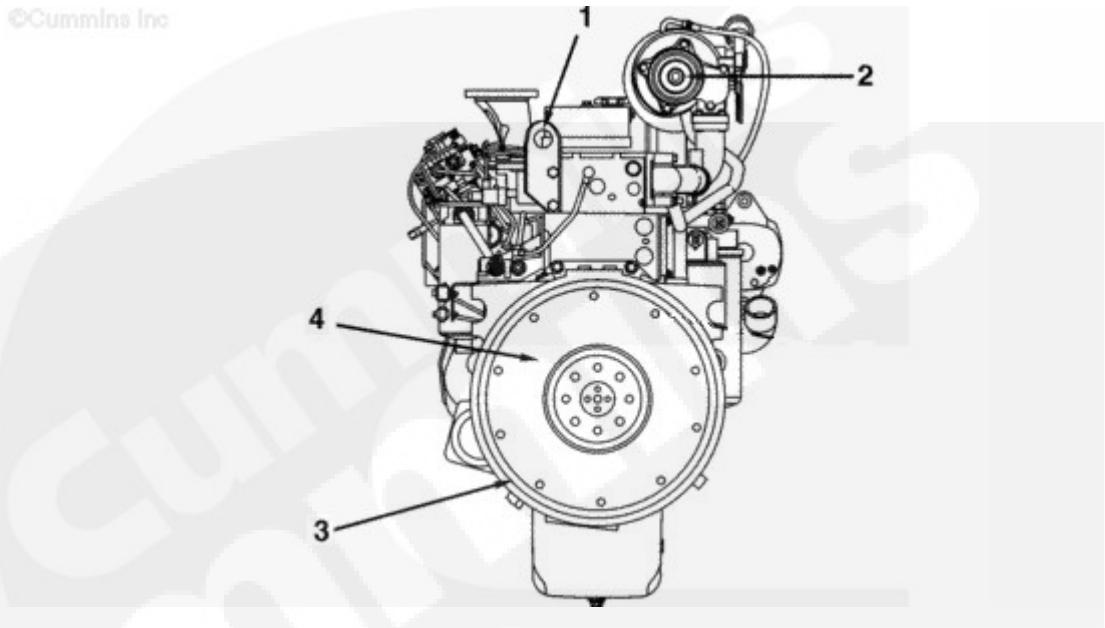
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KEY

- | | |
|--|--|
| 1. Engine Air Inlet | 12. Fuel Filter/water Separator |
| 2. Intake Manifold Pressure Sensor | 13. Electronic Control Module (ECM) |
| 3. Intake Manifold Temperature Sensor | 14. Dipstick |
| 4. M10 (STOR) Fuel Pressure After-lift Pump | 15. M10 (STOR) Oil Pressure Port |
| 5. M10 (STOR) Fuel Pressure Before-lift Pump | 16. Engine Position Sensor (EPS) – (inboard) |
| 6. Magnetic Pickup Location 3/4-16 UNF | 17. Engine Speed Sensor (ESS) – (outboard) |
| 7. Fuel Return Connection | 18. Engine Dataplate |
| 8. Fuel Inlet Connection | 19. High-pressure Fuel Lines |
| 9. Fuel Lift Pump | 20. Fuel Injection Pump (CAPS) |
| 10. Starter Mounting Flange | 21. Intake Air Heater |
| 11. Oil Pressure Sensor | |

1.2.1.4 Rear View

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KEY

- | | | | |
|----|-----------------------------|----|------------------|
| 1. | Rear Engine Lifting Bracket | 3. | Flywheel Housing |
| 2. | Turbocharger Exhaust Outlet | 4. | Flywheel |

1.3 Acoustic Information (1500 rpm)

Model	C200 D2R	C250 D2R
Engine	QSL9G3	QSL9G3
Enclosed Set Acoustic Data – LWA (Based on using a standard Cummins' canopy, and 50Hz set operating with doors closed) ^{1, 2}	97	96
^{1.} Doors closed figures are measured using 2000/14/EC guaranteed sound power levels ^{2.} Based on 75% load For Noise Spectrum Figures refer also to Health and Safety Manual (0908-0110-00) Inline with the CPGK policy of continuous improvement these figures are subject to change.		

1.4 Acoustic Information (1800 rpm)

Model	C200 D2R	C250 D2R
Engine	QSL9G3	QSL9G3
Enclosed Set Acoustic Data – LWA (Based on using a standard Cummins' canopy, and 60Hz set operating with doors closed) ^{1, 2}	100	100
^{1.} Doors closed figures are measured using 2000/14/EC guaranteed sound power levels ^{2.} Based on 75% load For Noise Spectrum Figures refer also to Health and Safety Manual (0908-0110-00) Inline with the CPGK policy of continuous improvement these figures are subject to change.		

1.5 Engine Performance Data

			Fuel Consumption ¹
Engine Performance Data at 50Hz			Standby/Full Load (L/Hr)
C200 D2R	QSL9G3		50
C250 D2R	QSL9G3		61

Engine Performance Data at 60Hz			Standby/Full Load (L/Hr)
C200 D2R	QSL9G3		64
C250 D2R	QSL9G3		76
^{1.} Refer to Data Sheets for other applications Inline with the CPGK policy of continuous improvement these figures are subject to change.			

SECTION 2 - GENERATOR SET INFORMATION (POWERCOMMAND® 1.1 CONTROL)

2. Generator Set Information (PowerCommand® 1.1 Control)

2.1 Scope

This section describes the additional information required for the operation and maintenance of the QSL9 Series generator sets.

The main components of a typical QSL9 generator set are shown below.

For installation specific drawings refer to drawings supplied with the generator set documentation package.

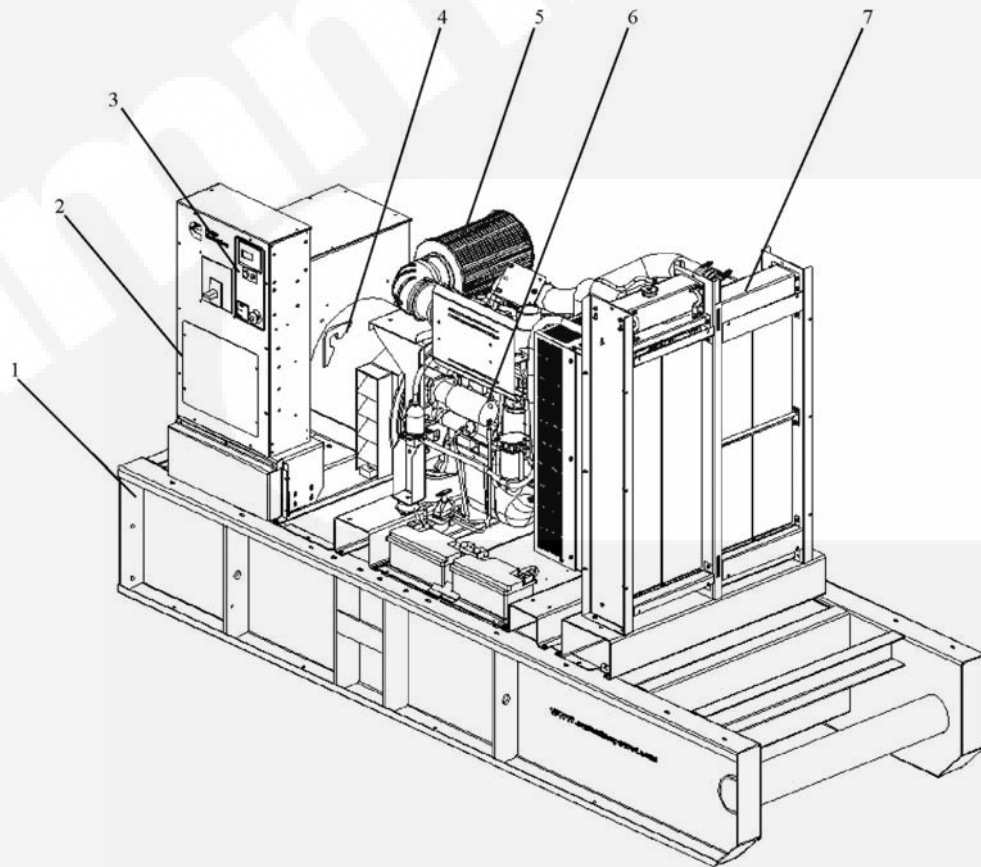


Figure 1 Typical QSL9 Generator Set

KEY

- | | | | |
|----|---------------------|----|-------------|
| 1. | Bed-frame | 5. | Air Cleaner |
| 2. | Control Housing | 6. | Engine |
| 3. | PC1.1 Control Panel | 7. | Radiator |
| 4. | Alternator | | |

2.2 Control Panel

The Control Panel layout, for the QSL9 generator set, has been re-configured whilst utilising the same components as the smaller, standard sets. Refer to Figure 2.

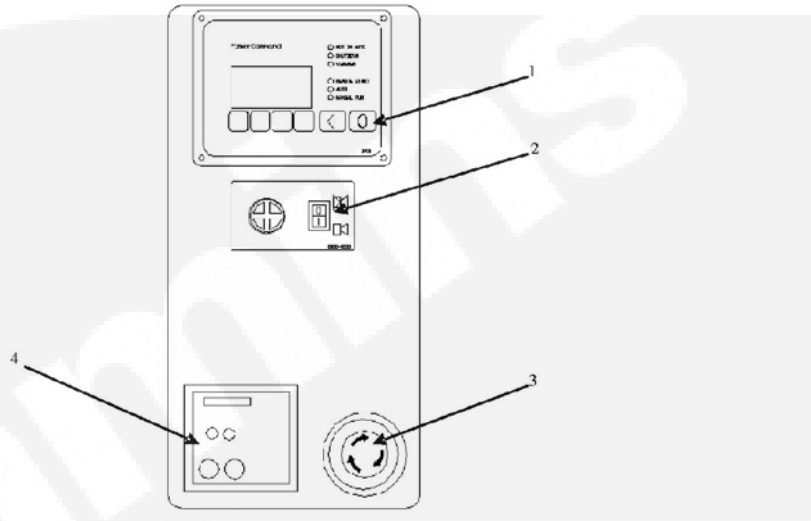


Figure 2 QSL9 Control Panel

KEY

- | | | | |
|----|-----------------------|----|---------------------------|
| 1. | Display Module | 3. | Emergency Stop Button |
| 2. | Alarm Module (option) | 4. | Earth Fault Unit (option) |

2.2.1 Emergency Stop Button

For the QSL9 configured generator sets the Emergency Stop Button is situated on the lower, right hand side of the Control Panel. Push this button in for an Emergency Shutdown of the engine. (Refer to the Controller Manual).



Note: Refer to Section 2.3.1.

2.2.2 Operating Modes

The QSL9 configured generator sets operate with Off, Manual Run, and Auto Modes.



Note: Sleep Mode, and Battle Short Mode operation are not applicable to this set.



2.3 DC Electrical System

The standard control system for the QSL9 configured generator sets operate on 24V DC battery power.

A 24 volt battery system provides multi-attempt engine starting and DC power for the generator system.



Note: It may be necessary to upgrade the battery system if the generator set will be operating in arctic conditions.

2.3.1 Battery Disconnection

Prior to disconnection/isolation of the generator set battery supply (24V DC), and with the generator set at rest, the Emergency Stop system should be activated for a minimum of 30 seconds. This is to allow engine control run data to be saved to non volatile memory. If this procedure is not followed, data may become corrupted and impair the efficient operation of the generating set.

In the event of battery disconnection/isolation without Emergency Stop activation a fault will be registered within the engine control system and annunciated via the generator set control display as Fault Code 251 'Unknown J1939 Fault'.

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