



2013 Western States Highway Equipment Managers

August 26-29, 2013

Fred McKee

Powertrain Sales Manager





- John Thomas, Regional Vice President
- Stu Russoli, Vocational Product Manager
- John Stuart, Manager Gov't and Muni Sales
 - Tobin Heddin, District Manager

Mountain West Truck Center

Ron Johnson Sr.
Ronnie Johnson
Matt Mayoros

Discussion

- 2014 GHG Regulations
- OBD 2013
- Service Information Rule (S.I.R.)
- Natural Gas OEM
- Natural Gas, Retrofit
- Truck Customer Portal

Mack Trucks, Inc.

GHG 2014 Truck and Engine Certification

- All 2014 model year Mack Trucks are GHG 2014 vehicle certified
 - GHG Label available for all models
 - US and Canada
 - Export and Mexico not required
- Beginning in Jan/March 2014, all MP engines will be completely GHG engine certified

GHG Regulation

EPA: Separate standards for...

ENGINES

- Three engines service classes
 - Light Heavy-Duty (class 2b – 5)
 - Vocational (class 6 – 7 and 8)
 - Tractor (class 6 – 7 and 8)

VEHICLES

- Three types of heavy-duty vehicles (referred to as “averaging sets”)
 - Heavy-duty Pickup Trucks and Vans (class 2b - 3)
 - Vocational Vehicles, incl. buses (class 2b - 8)
 - Combination Tractors (class 7 – 8)

EPA's GHG Standard

ENGINE

Light Heavy
Duty

Vocational

Tractor

VEHICLE

HD Pickups

Vocational

Tractor

GHG 2014 Regulation

- New Greenhouse Gas Emissions (GHG) and Fuel Efficiency Standards for Engines and Vehicles
 - Issued by the Environmental Protection Agency (EPA) and National Highway Traffic Safety Administration (NHTSA), DOT.
 - These final rules are valid as of November 14, 2011
 - EPA's GHG emission standards will begin with model year 2014.
 - NHTSA's fuel consumption standards will be voluntary in model years 2014 and 2015, becoming mandatory with model year 2016 for most regulatory categories.
 - Both standards allow early compliance from 2013
 - Regulated vehicles must meet the emission requirements of this regulation throughout their useful life.
 - The standards regulate the lifetime emission of GHG (EPA) and lifetime consumption of fuel (NHTSA)
-
- The standard values for engines and vehicles are used to calculate the lifetime emissions and consumption
 - Each engine's and vehicle's lifetime GHG emission and FC are calculated based on their certification value
 - The total amount of lifetime GHG emission and FC for all sold products during a year are calculated per OEM and averaging set (class 6-7 and class 8)

GHG 2014 Regulation (Continued)

- If the total amount is lower than the corresponding standard lifetime GHG emission and FC value, the OEM gets positive credits
- An annual result showing a credit deficit must be balanced by a surplus within 3 years in each averaging set; (note: credits expire after 5 model years)
- This action affects companies that manufacture, sell, or import into the United States new heavy-duty engines and new Class 2b through 8 trucks, including combination tractors, school and transit buses, vocational vehicles such as utility service trucks, as well as ¾-ton and 1-ton pickup trucks and vans.
- New standards for MHD and HHD Engine Green house gas exhaust emissions of CO₂, CH₄, and N₂O
- New vehicle standards for class MD and HD (CO₂ and refrigerants)

The Regulation, ENGINE

- Final rule issued August 2011. Regulation takes effect Jan 1, 2014.
- Emission limits
 - CO₂

Tractor	637 g/kW-hr (475 g/hp-hr) SET
Vocational	760 g/kW-hr (567 g/hp-hr) FTP
 - N₂O, CH₄ 0.107 g/kW-hr (0.08 g/hp-hr) FTP
 - Nox, particulates, HC, CO and OBD requirements remain at US10/OBD13 levels
- Engines can be certified in 2013 to generate early credits (included in P3159 OBD13)
- Averaging, Banking & Trading
 - No trading between engines and vehicles or across size classes, except for “super-credits” for advanced technologies (e.g Hybrids)
 - Vocational and tractor engines are counted within the same size class e.g. class 7-8, thus credits are valid over the full HDEP range
 - Accounting reported annually. Yearly deficit must be balanced within 3 years
 - Natural gas engines: Credits for compression ignited engines (P3168) are included with diesel engines. Spark ignited engines are counted with gasoline engines.
- Deterioration Factor for CO₂
 - Zero DF is assigned

The Regulation, VEHICLE

- Vehicle-based standard calculated via a vehicle simulation model

– Input parameters:

1. Aerodynamics
2. Steer tire rolling resistance
3. Drive tire rolling resistance
4. Vehicle Speed Limiters
5. Weight reductions
6. Extended Idle Reduction

Greenhouse Gas Emissions Model (GEM)

Identification

Manufacturer Name: Vehicle Configuration: Date: 25-Aug-2011

Vehicle Family: Vehicle Model Year: 2014

Regulatory Subcategory

- Class 8 Combination - Sleeper Cab - High Roof
- Class 8 Combination - Sleeper Cab - Mid Roof
- Class 8 Combination - Sleeper Cab - Low Roof
- Class 8 Combination - Day Cab - High Roof
- Class 8 Combination - Day Cab - Mid Roof
- Class 8 Combination - Day Cab - Low Roof
- Class 7 Combination - Day Cab - High Roof
- Class 7 Combination - Day Cab - Mid Roof
- Class 7 Combination - Day Cab - Low Roof
- Heavy Heavy-Duty - Vocational Truck (Class 8)
- Medium Heavy-Duty - Vocational Truck (Class 6-7)
- Light Heavy-Duty - Vocational Truck (Class 2b-5)

Simulation Inputs

- 1 Coefficient of Aerodynamic Drag:
- 2 Steer Tire Rolling Resistance [kg/metric ton]:
- 3 Drive Tire Rolling Resistance [kg/metric ton]:
- 4 Speed Limiter [mph]:
- 5 Weight Reduction [lbs]:
- 6 Extended Idle Reduction: (sleeper only)

Simulation Type

- Single Configuration
- Plot Output
- Multiple Configurations

RUN

- Other Requirements not for GEM calculations:

– Air Conditioning Refrigerant:

- Loss of refrigerant may not exceed 1.5% per year

– Labeling:

- The label must identify used emission control systems

The Good News

GHG Reporting

- The end of year report must be submitted within 90 days after the end of the model year
- Emission levels are averaged within vehicle or engine averaging set for a given model year
- Three outcomes for each averaging set at the end of the model year
 - Deficit, Neutral or Credit
- Credits
 - Can be banked or sold on the “open” market
 - Expire five (5) years after the model year in which they are earned
 - Advanced Technology and early credits (Model Year 2013 only) have a 1.5 multiplier
- Deficits must be balanced within 3 years

Engine Updates to meet GHG 2014 regulations

- Updates have been made on the 11L, 13L and 16L engines to meet the GHG 2014 and will be available starting Jan 2014 (11L + 13L) and Mar 2014 (16L)
 - In cylinder combustion optimization
 - Modified torque curves
- Other feature enhancements for reliability, operating cost, performance, and durability improvements

Engine Fuel Economy Improvements


Preliminary results versus US10 tractor applications
based on test cell measurements

MACK	
MP7	1.60%
MP8	.70%
MP10	-

Chassis Label

GHG Specific Fields

Truck Record Fields



VEHICLE EMISSION CONTROL INFORMATION
MACK TRUCKS, INC.

VEHICLE FAMILY IDENTIFICATION: EVPT2TRAC900 VIN: 1M1AW21Y1EM035682
REG. SUB-CATEGORY: CLASS 8 COMBINATION - SLEEPER CAB - HIGH ROOF
DATE OF MANUFACTURE: January 2013
VEHICLE EMISSION CONTROL SYSTEM:
L RRA ATS ARE
THIS VEHICLE COMPLIES WITH U.S. EPA REGULATIONS FOR 2014 HEAVY DUTY
VEHICLES.

On-Board Diagnostics OBD



- Heavy-duty OBD (On-Board Diagnostics) is an extension of the OBD rules to the heavy-duty industry
- Available in passenger cars for many years now and is beginning to be used, starting in 2010, on heavy-duty engines
- On-board diagnostics system in the engine controller that's designed to detect any component failure anywhere on the vehicle that could affect emissions
- HD-OBD is being implemented as a means to verify that the emissions standards set forth by the EPA and CARB are being met
- Emissions requirements remain unchanged from EPA-2010.

What/who is affected?

- All models featuring Mack engines that are to be registered for service in the U.S. and Canada *are affected*. (HD-OBD regulations are harmonized between the U.S. and Canada.)
- **All** Heavy Vehicle and Engine OEMs in North America must abide by the same set of legal requirements with regards to the HD-OBD regulation
- There are no commercial benefits for the customer
- **All OEM's must be clean from day one and are required to provide real in-use data to EPA proving compliance over the in-use life of the vehicle.**

SIR – Service Information Rule

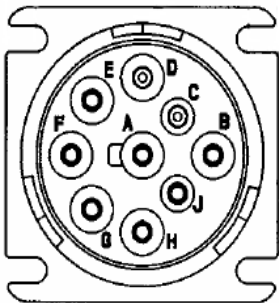
- All emissions related service and diagnostics information MUST be made available for purchase for independent service providers.
- Mack will meet this by selling subscription access to Impact
 - 48 hours, 30 days, 1 year increments
 - Models covered are GU, CXU, CHU, TD, MRU, LEU
 - Contains service info for engine, electrical and drivetrain
 - Purchase through eMedia
- Access to schematics viewer and emission recalls through **Trucks Customer Portal**

SIR – Service Information Rule

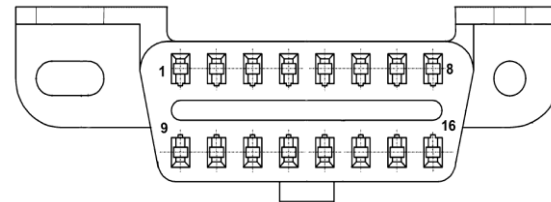
- Diagnostic information and reprogramming of emissions related ECUs must also be made available to independents.
- Mack will meet this by selling subscriptions to PTT
 - Two price points:
 - Diagnostic access only
 - Diagnostic access + reprogramming of VECU, EECU, ACM

Off-Board Diagnostic Connector

- The connector receptacle changes on Mack-engine-equipped vehicles for 2013 to SAE J1962 shown below
- Export vehicles (e.g. Latin & South America) with pre-EPA 2010 emissions level are not affected. Also, Australia is not currently affected
- Why? Changing to an alternate HD-OBD protocol provides higher bandwidth for engine software download and future expansion capabilities
- Engine software download speed reduced to 11 minutes (down from 18)
- Regulatory demand matches the connector to the HD-OBD protocol
- *ALL* of Mack's competitors are expected to maintain the current North American path with the SAE J1939-13 receptacle



**Current Receptacle
SAE J1939-13**



**2013 Receptacle
SAE J1962**

Natural Gas

MACK TERRAPRO — NATURAL GAS

THE TRUCK OF CHOICE FOR TRASH COLLECTION
NOW AVAILABLE WITH NATURAL GAS



NATURAL GAS ENGINES

- LOWER GREENHOUSE (CO₂) EMISSIONS
- REDUCE DEPENDENCY ON FOREIGN OIL
- LESSEN A TRUCK'S CARBON FOOTPRINT
- DELIVER OUTSTANDING HORSEPOWER
- PROVIDE EXCEPTIONAL TORQUE
- USE LESS EXPENSIVE FUEL



2010 ISL G Natural Gas

ISL G



Three Way Catalyst
Aftertreatment

- Passive device
- Packaged as a muffler
- Maintenance Free



Stoichiometric Combustion
Cooled EGR

- Same rated speed as ISL diesel
- 30% more torque at idle
- 5% Better Fuel Economy

ISX12-G NOTABLES

- 4 cycle, spark ignited, in-line 6 cylinder, turbocharged
- Displacement – 11.9 liters (726.2 cu in)
- Peak rating: 400 HP, 1450 lb-ft
- EPA/CARB certified at or below EPA10 emission levels
- Will operate on CNG or LNG
 - Capable of using 100% Bio-methane
- Three Way Catalyst after-treatment
- Engine braking (240HP@2100rpm)
- Manual/Automatic Transmissions
 - No AMT at launch (~6 months later)
- Reduced Noise vs. Diesel
- 2 Year / 250,000 Mile Warranty
 - Extended Coverage options are yet to be determined, and will be published prior to launch



Fuel Usage

CNG

CNG

CNG/LNG

LNG

1700

1600

1500

1400

1300

1200

1100

1000

Power (HP)

Torque (lb-ft)

Range

REFUSE

CONSTRUCTION

REGIONAL

LONG HAUL

500

450

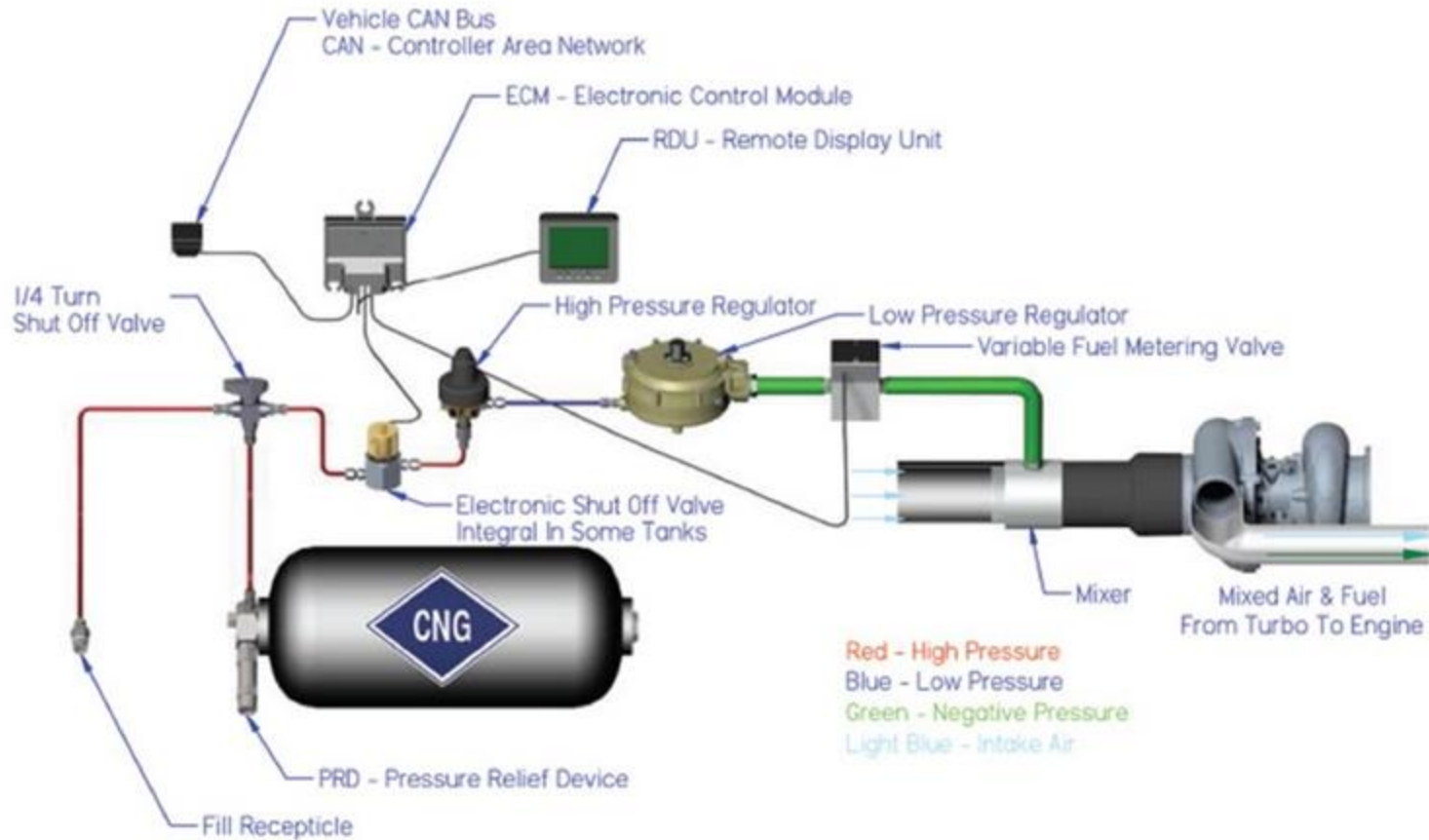
400

350

300



Retrofit Natural Gas



California is special



Thursday, July 18, 2013

UP LINKS

- [Reducing Air Pollution - ARB Programs](#)
- [Diesel Activities](#)
- [Mobile Sources](#)
 - [Mobile Vehicles and Equipment](#)
 - [DECS](#)
 - [Installation / Maintenance](#)

PROGRAM LINKS

- [Advisories](#)
 - [Enforcement](#)
 - [Mobile Source](#)
 - [Mobile Source Mail Outs](#)
- [Background](#)
- [Currently Verified Technologies](#)

Heavy-Duty Diesel Emission Control Strategy Installation and Maintenance

This page last reviewed June 4, 2013

BUYER BEWARE

A verified DPF is required for regulatory credit toward in-use regulations for diesel engines operating in California

Currently Verified Devices

Training / Videos

How to find and install DPFs

Frequently Asked Questions

Engine with DPF Maintenance

Have a complaint?



Every day, on and off-road diesel engines create air pollutants that can adversely affect human health. ARB requires engine manufacturers to meet strict pollution standards for newer engines. However, fleet owners may need to install a verified diesel emission control strategy to clean up emissions from older, dirtier diesel engines. A diesel emission control strategy is a technology that, if maintained properly, reduces harmful air pollution from diesel engine exhaust before it is emitted into the air.

DEF Quality Sensor

- Ultrasound based platform that measures the speed of sound of the fluid being present in the DEF tank
- Detects if diesel fuel is present in the DEF tank
- Alarm the DEF dosing pump, enabling it to stop injection of diesel and thereby preventing hazardous situations
- Detects any non-compliance DEF (32.5% urea and 67.5% demineralized water by weight)
- Instructs the dosing unit to stop injection and thereby preventing any non-compliance DEF from entering the catalyst
- Enables HD-OBD to report on any discrepancy from standard settings
- Will likely assist in roadside checks or during annual testing by reporting the use of any non-compliance DEF

Trucks Customer Portal

Trucks Customer Portal

search



Welcome Cheryl Lilly

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▲ | APPLICATIONS | CONTACTS | RECALLS



Mack Trucks



» click here to view the Mack Trucks site

Customer Support

Monday-Friday, 7AM-8PM
Saturday, 8AM-5PM
Phone: (800) 247-0039
Email: dlrcomm@volvo.com

LEARN MORE ABOUT OUR APPLICATIONS BY CLICKING ON THE TOP MENU "APPLICATIONS". You may not have access to all of the applications listed. Contact your Mack representative for access and further information.

applications

- » Electrical Schematics - Mack
- » Fleet Impact
- » Training (LMS)

related links

- » Dex - quality used truck parts
- » eMedia Center - Mack
- » Premium Tech Tool
- » training videos

Recalls



Mack safety recalls



For copies of archived recall documents or information not found below, contact Regulatory Affairs at vna.regulatoryaffairs@volvo.com.

date	document name	type	size	
11/09/2012	SC0365, Back Feed through DRL Module		224.2 KB	
02/07/2012	SC0364, Windshield Wiper Linkage Hardware		134 KB	
27/01/2012	SC0363, Bendix® ATR-6™ Valve		1.1 MB	
24/02/2012	SC0362, FXL Front Axle Beam		186.8 KB	
24/01/2012	SC0361, FAW Front Axle Beam		861.7 KB	
14/03/2012	SC0360, Alternator Ground to Starter		98.5 KB	
30/11/2011	SC0359, Meritor RD-23-164 Drive Axle Assembly Bracket		35.7 KB	
20/11/2011	SC0358, Fontaine Ultra LT Fifth Wheel		254.5 KB	

Applications

Trucks Customer Portal

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home > applications

training videos

applications

APPLICATION LEGEND

- ADMIN
- PARTS
- SERVICE
- WARRANTY
- SALES
- TRAINING

Electrical Schematics - Mack
schematics from 2000 to current vehicle - contains all electrical and circuit information, wire identification and color coding, harness layout drawings and component locations

Fleet Impact
access VIN specific parts and service information

Training (LMS)
access the Learning Management System (LMS)

PRIVACY | © COPYRIGHT


These are the same applications that the user sees on the home page, however with a description.

Also, each application item is color coded as to whether it is parts related, service related, training related, etc.

Electrical Schematics Viewer

The Mack Electrical Schematics Viewer allows fleets to access vehicle wiring schematics.

Electrical Service Documentation Viewer - Internet Explorer, optimized for Bing and MSN



Mack Trucks
Electrical Wiring Documentation
Updated: March 23, 2012

[Release Notes](#)

This Viewer update includes:

- Updated 2011 MRU US10 wiring diagrams
- Updated 2011 MRU WITH GAS wiring diagrams

Select a Production Date:

2011

Select a Vehicle Series:

CHU-CXU-GU-TD | (US10)

[View Wiring Diagrams](#)



Mack Trucks Electrical Wiring Documentation 2011 CHU-CXU-GU-TD Chassis

System Wire Diagram Table of Contents Click on system name below to view Diagrams

Aftertreatment	Lighting, Exterior
Air Conditioning & Heating	Lighting, Interior
Anti-Lock Brakes & Traction Control	Mirrors, Heated & Power
Body Builder Interface	Optional Circuits
CB Posts & Audio Systems	Power Distribution
Chassis Solenoids	Power Door Locks & Power Windows
Cigar Lighter & Horns	Sleeper Circuits
Dash Cluster	Starting & Charging
Data Link	Transmission Controls
Engine Controls	Vehicle Control Unit
Ground Distribution	Windshield Wiper/Washer
Junction Block, Trailer Cable	

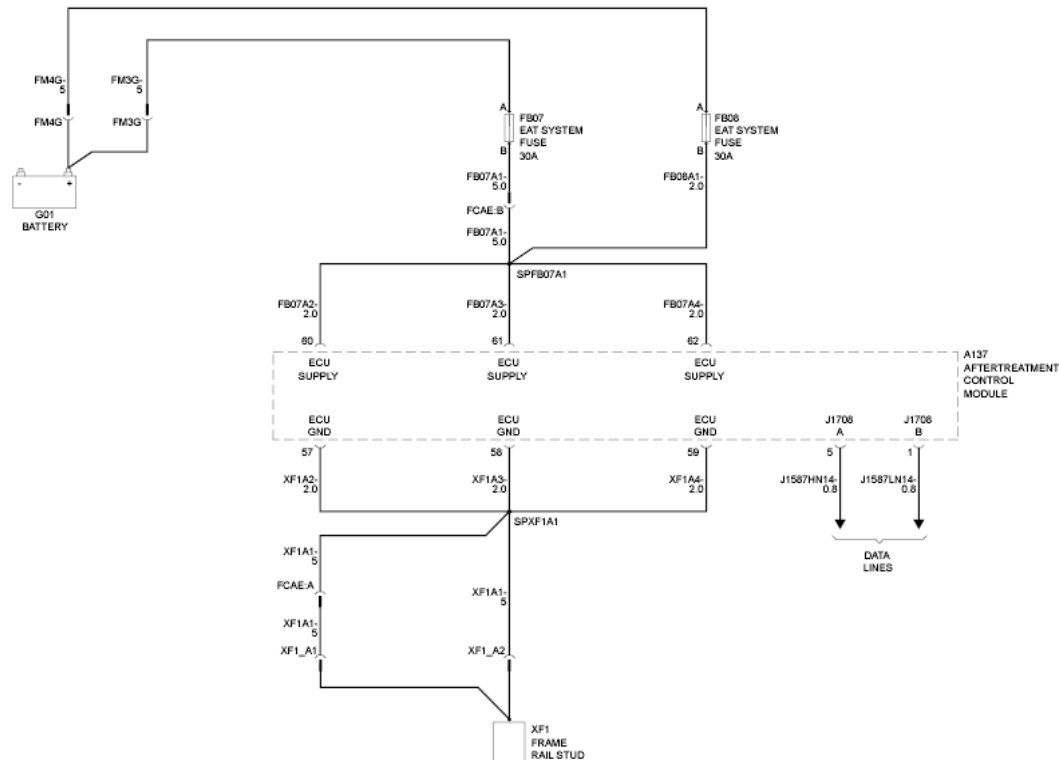
Expand Left-Menu for all Wiring Diagrams

[Search for Components](#) | [Select another Chassis](#)

Aftertreatment Wire Diagrams:

- DPF System: Regeneration Inhibit Switch
- SCR System: Aftertreatment Diesel Exhaust Fluid Line Heater 1 & 3, Solenoid Valves (Cummins ISL Engine)
- SCR System: Aftertreatment Diesel Exhaust Fluid Pump (Cummins ISL Engine), Aftertreatment Diesel Exhaust Fluid Tank Level/Temperature Sensor
- SCR System: Aftertreatment Diesel Exhaust Fluid Pump, Aftertreatment Diesel Exhaust Fluid Tank Heater Valve, Aftertreatment Diesel Exhaust Fluid Dosing Valve, Aftertreatment Diesel Exhaust Fluid Line Heater 1 & 3
- SCR System: Aftertreatment Diesel Exhaust Fluid Tank Level/Temperature Sensor, Aftertreatment Diesel Exhaust Fluid Pump, DPF Temperature/Pressure Sensor Assembly
- SCR System: Aftertreatment Outlet NOx Sensor, Aftertreatment Intake NOx Sensor
- SCR System: Cummins Crossover Connector (Cummins ISL Engine)
- SCR System: NOx Sensors (Cummins ISL Engine)
- SCR System: Power, Ground, Data Lines
- SCR System: Power, Grounds, & Data Lines (Cummins ISL Engine)

SCR System: Power, Ground, Data Lines Wire Diagram



[Return to Table of Contents](#)

[Select another Chassis](#)

[Search for Components](#)

Fleet Impact



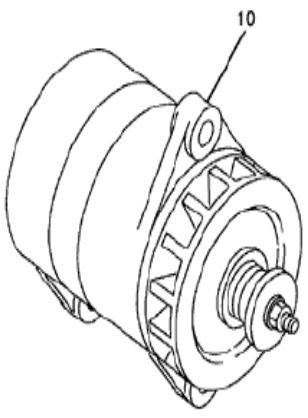
Fleet Impact allows fleets to access VIN specific parts and service information



Impact

Including: Major unit serial numbers, parts breakdowns and service bulletins

ALTERNATOR
Identity: 32110-K00123



None

	Pos.	Part No.	A	Description	Notes		
<input type="checkbox"/>	0010	3974791	1	ALTERNATOR AY; ALTER...			

Users can search for needed parts, view illustrations and part number information with the click of a button!

32100-0002

Search values

Chassis ID VIN Model Function group

M056 1011 1M1AN11YXDM001011 CHU

Fgrp	Component description	Part No.	Description	Serial No.
		21567764	sensor	00106370
		21567763	sensor	00090381
2100	ENGINE	83052055	Description not available	994566
2100	ENGINE ADD. INFO	21371318	Description not available	H1*H
2100	ENGINE START TIME		Description not available	20120403182520
2330	FUEL FILTER HOUSING	21336013	fuel filter housing	
2545	DIESEL PARTIC FILTER	21415914	muffler	T12400002373255
2551	TURBO	21559605	turbocharger	P1203271635
2581	UREA DOSING SYSTEM	21063597	control unit	12051740
2581	UDS PUMP UNIT	21577511	pump unit	
2584	UDS DOSING VALVE	21577030	dosage valve	12022021031
2586	MUFFLER AFTERTREATM.	21311953	muffler	T12400002392504
2840	SDS,EECUENGINE ADAPT	21747640	Description not available	
2840	CSW,UDS	22006179	Description not available	
2840	ENGINE, DATA SET 1	21634660	Description not available	
2840	ENGINE, DOWNLOADER	20968695	Description not available	
2840	ENGINE, MAIN SW	21942570	Description not available	

Major Unit part numbers and serial numbers available under Components

Search values

Chassis ID VIN Model
 M056 1011 1M1AN11YXDM001011 CHU



Pos	Component description	Values	Description
1	Manufacturing date	4/2/12	
2	Marketing type	CHU614	
3	Truck model	CMM 86T	MACK CONVENTIONAL, MEDIUM X, MED HIGH CAB POS, 8*6 TRACTOR
4	Gross combination weight	GCW65.0	65.0 TONNES, GROSS COMBINATION WEIGHT
5	Rear axle gear ratio	RAT3.91	RATIO 3.91, REAR AXLE
6	Radio code	0000	
7	Doorkey code	MM165	

Also able to find critical VIN specific information such as: assembly date, paint codes, radio codes and key codes

Navigate

Search
 Chassis ID
 VIN
 Model

Function group

Information type

[Additional search values](#)

Service Search - Chassis ID M056 1011 (VIN 1M1AN11YXDM001011, CHU, CHU614)

Fgrp	Title	Info type	ID/Operation	Date
<input type="checkbox"/>	00 Disassembly Instructions, Complete Vehicle	Description, Design...	---	4/5/11
<input type="checkbox"/>	000 Basic Data Gathering	Diagnostics		4/24/12
<input type="checkbox"/>	030 Conversion Charts Manual (1-003)	Specifications	---	1/12/10
<input type="checkbox"/>	170 Diesel Fuel	Description, Design...	---	6/29/11
<input type="checkbox"/>	170 General Safety Practices	Repair		1/18/12
<input type="checkbox"/>	170 PI0711, Vehicles Shipped without an Operators Manual	Bulletins/Information	---	3/4/11
<input type="checkbox"/>	170 Stock Vehicle Maintenance	Description, Design...	---	3/28/13
<input type="checkbox"/>	175 Approve	Specifications	---	2/5/13
<input type="checkbox"/>	175 Cab, Lu	Service and mainten...		7/13/13
<input type="checkbox"/>	175 Chassis	Service and mainten...		7/13/13
<input type="checkbox"/>	175 Drivesha	Service and mainten...		7/13/13
<input type="checkbox"/>	175 Lubricat	Service and mainten...		7/13/13
<input type="checkbox"/>	175 Oil and f	Bulletins/Information	---	4/2/13
<input type="checkbox"/>	175 Power S	Service and mainten...		4/2/13
<input type="checkbox"/>	175 Rear Ax	Service and mainten...		4/2/13
<input type="checkbox"/>	175 Transm	Service and mainten...		4/2/13
<input type="checkbox"/>	177 Addition	Service and mainten...		7/13/13
<input type="checkbox"/>	177 Basic ar	Forms	---	
<input type="checkbox"/>	177 Protec	Service and mainten...		7/13/13

Service information includes:
 Bulletins/Information
 Description, Designs, Function
 Diagnostics
 Forms
 General Information
 Repair Procedures
 Schematic Diagrams
 Service and Maintenance
 Specifications

Fleet Impact

- Great Value – No charge for this tool
- Once access is granted
 - eLearning Training session available through Learning Management System in Trucks Customer Portal
- Users can be added any time
- VIN's can be added/removed any time
- Electrical Schematics Viewer access included

WELCOME TO THE MACK
ELECTRONIC
INFORMATION
SYSTEM



Intelligent Navigation

Class-8 Service Information

Medium Duty Service Information

On-Line Publications

Engine Tune-Up Publications

Failure Analysis Publication

Freedom Publications

Product Improvement Campaigns

**Right-Hand Drive Australian
Publications/Service Bulletins**

Service Alerts

Service Bulletin Manuals

Version en Español

Quick Links

[Electrical Wiring
Diagrams](#)

[Quick Reference
Guides](#)

[Terms Of Use](#)

This application is designed for Internet Explorer version 6-9 only.

ELECTRONIC INFORMATION SYSTEM **Class 8**

1 COMPONENT CATEGORIES	2 PUBLICATION TYPES	3 MODELS	4 SERVICE CATEGORIES	5 SERVICE INFORMATION TYPES
Engine	Service Information			



Quick Links

Electrical Wiring Diagrams



- General
- Engine**
- Suspension
- Driveline
- Brakes
- Transmission
- Steering
- HVAC
- Body/Cab
- Control Systems
- Frame
- Axle

PUBLICATION TYPES

Service Information



Pick Publication -- Webpage Dialog

Please click on the publication that you wish to view.

- 19-003 — LE Model Service and Repair with E-Tech™ Engine
- 19-005 — LE Model with MACK ASET Engine Service and Repair
- 3-301 — Mack Diesel and Natural Gas Engine Oil Analysis
- 5-101 — E7 Engine Overhaul Manual
- 5-102 — E9 V-8 Engine Overhaul Procedures
- 5-103 — E5 2-Valve Head Engine Overhaul Manual
- 5-106 — E-Tech™ Engine Service Manual
- 5-107 — Natural Gas Engine Eco-Tech - E7G Service Manual
- 5-108 — Mechanical Marine Engine M-E7 Operating, Maintenance and Service Manual
- 5-109 — ASET™ AI and AC Engines Service Manual
- 5-110 — ASET™ AI Diesel Engines Service Manual
- 5-111 — ASET™ AC Diesel Engine Service Manual
- 5-112 — MACK® MP7 DIESEL ENGINE SERVICE MANUAL ('04 EMISSIONS REGULATIONS

OK Cancel

Done

This application is designed for I

Thank You



Natural Gas Paper

Compressed Natural Gas (CNG) and
Liquefied Natural Gas (LNG) Maintenance
Facility Considerations for Heavy Truck
Dealers and Fleet Operators

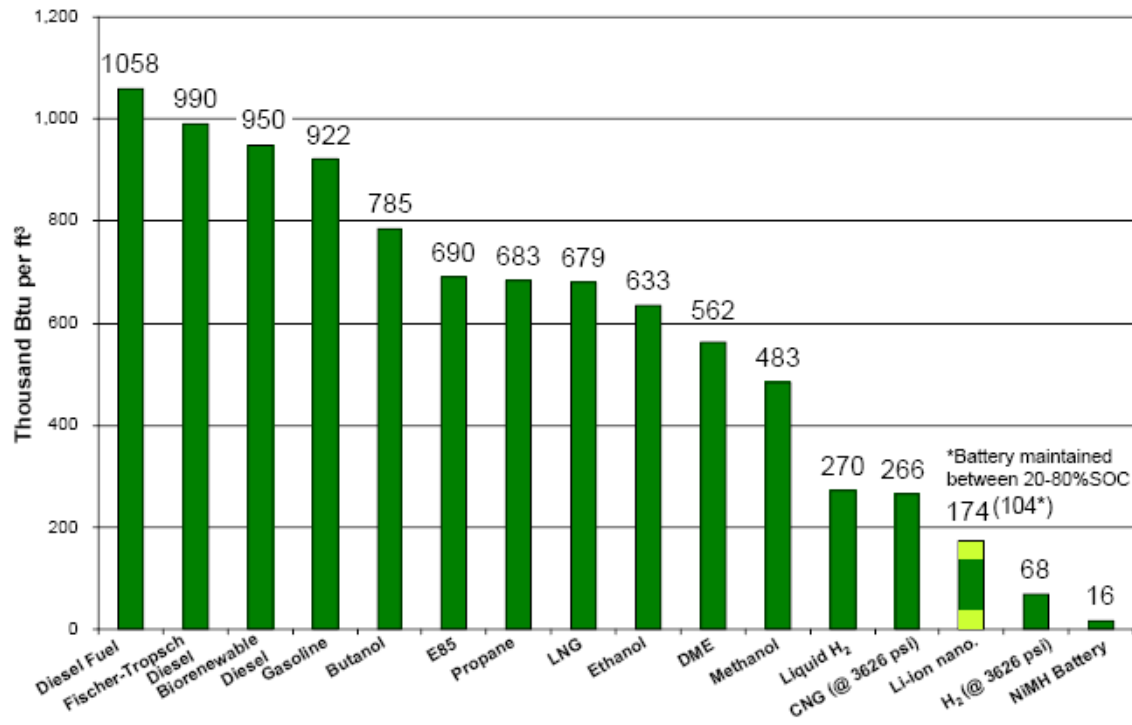


USEFUL LINKS

- US DOE Alternative Fuels Data Center
 - <http://www.afdc.energy.gov/>
- LNG – the safe fuel
 - <http://www.youtube.com/watch?v=18jB74GtZwg&feature=related>
- Cummins Westport
 - <http://www.cumminswestport.com/>
- Clean Energy Fuels
 - <http://www.cleanenergyfuels.com/>
- Agility Fuel Systems
 - <http://www.agilityfuelsystems.com/>



Energy Density of Fuels



	Regulation	MP7 SCR	Regulation	ISL-G
	US10	Actual	US10	Actual
g/bhp-hr				
Nitrogen Oxide NOx	0.20	0.106	0.20	0.11
Particulate Mater PM	0.01	0.001	0.01	0.01
Non-Methane Hydrocarbons NMHC	0.14	0.002	0.14	0.13
Carbon Monoxide CO	15.50	0.001	15.50	1.20