

MACK TRUCKS

WSHEMA

Aug 24, 2015



MIKE REARDON, RVP WESTERN REGION

DAVID MCKENNA, DIRECTOR TECHNICAL SALES

TOBY HEDDEN, DISTRICT MANAGER

AGENDA

1. Future Emission Regulations
2. Body Builder Integration & Support
3. Uptime Telematics – Guard Dog Connect

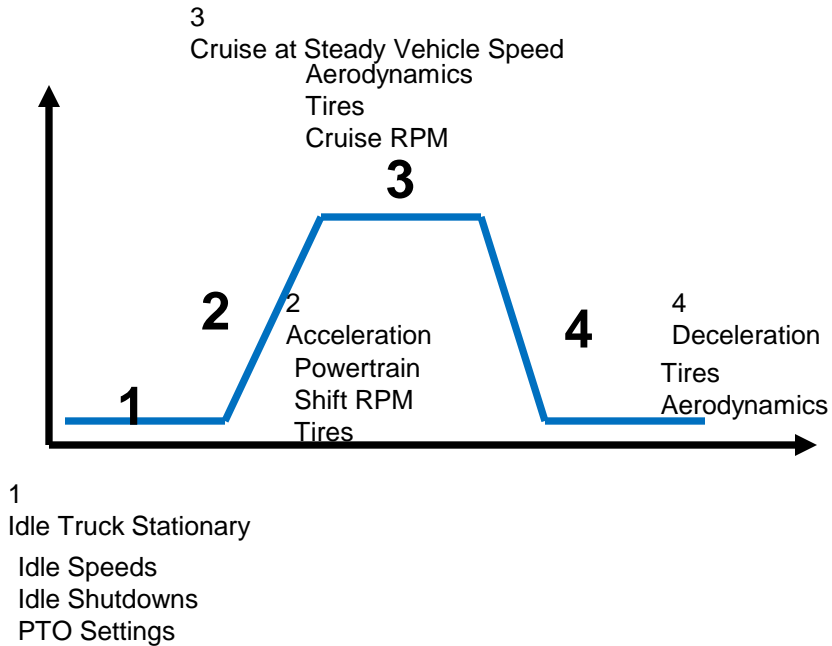


TRANSPORT TOPICS, JULY 2009

“ I would think we are about done with any future HDDE EPA exhaust emission regulations.”

David McKenna, Director Powertrain Sales & Marketing

Fuel Consumption Profile



Innovative Technologies are Required

GHG SUMMARY

GHG 2014 / 2017

2014 MY: 3% improvement over 2010 avg. highway tractor and vocational

Low rolling resistance tires = Full compliance for vocational vehicles!

2017 MY: 6% improvement over 2010 avg.

Hardware Updates:

- New turbocharging technologies.
- New fuel systems.
- 2 speed coolant pump.
- New “wave” pistons.
- New “1 box” EATS solution.

GHG 2017 MP8



New systems		
Engine system	Air and gas	EGR Colside, Mixing Chamber, Inlet Manifold, Intake Throttle Valve, EGR Delta Pressure Sensor
	Fuel injection	LP system, HP system with F2 , F2 injector
	Combustion	
	PCU	Wave pistons
	Crank	Engine block, Crankshaft seal , crankshaft
	Valve train	Valvetrain (common rail), Assembled Camshaft
	CCV	
	Engine lubrication	
	Auxillaries drive	Hydraulic belt tensioner , fan belt, auxiliary belt
	Starter system	
Coolant system	Fluid distribution	
	Coolant flow	2 Stage Coolant Pump (for fuel conscious applications)
	Coolant temp	
Electrical system	Electrical system platform	EECU 12V (F2)
	Communication system	Signal harness
	Electrical power management	Power cables
EATS system	Reduction system	Cuz, Nox Sensors
	Oxidation system	DOC
	Noise attenuation system	EATS one-box
	Liquid preparation system	Bosh Injector
	Filtration system	PM-sensor

BODY BUILDER SUPPORT

Mack Body Builder Support

- New Group consists of fulltime dedicated sales and service personnel to support body builder activity
- Assume ownership and responsibility to direct content and updates to the Body Builder manuals as well as connected reference materials or systems
- System Owner for bodybuilder website for Mack as well as case management to interface with customer or bodybuilder issue resolution
- Coordinate delivery of training with Trucks Academy for body builders with instructor led and eLearning options

BODY BUILDER SUPPORT

Mack Body Builder Support

- Prepare/support business cases to support the development processes to improve body installation and product acceptance in the marketplace
- Provide Direct input to Sales Engineering to improve 'body ready' order and build processes (Plug N Play concept)
- Work directly with key suppliers in the resolution of installation & performance issues
- Act as liaison with body companies to ensure compliance to industry standards and requirements

BODY BUILDER SUPPORT

Mack Body Builder Support - Contacts

Service Information and Manuals

- www.macktrucks.com > Trucks > Body Builder
- 2007, 2010 and 2013 body builder service information kits
- *Under development:* (FAQ, wiring schematics, CAD Layout and file transfer)

Phone Support

- **800-868-6225, opt 1** for Commercial Mack Body Builder Support
- **877-770-7575** for Aftermarket Mack Body Builder Support

BODY BUILDER SUPPORT

Where to Find Mack Body Builder Support Resources

The image displays three screenshots from the Mack eMedia website, illustrating the navigation path to Body Builder support resources. Red arrows highlight key elements:

- Top Screenshot:** Shows the main navigation menu with 'TRUCKS' circled in red. A red arrow points to this menu item.
- Middle Screenshot:** Shows the sidebar navigation with 'Body Builders' circled in red. A red arrow points to this category.
- Bottom Screenshot:** Shows the 'Body Builder' product page. A red arrow points to the 'Data File' link in the 'Product Details' section, which is also circled in red.

The screenshots show the following content:

- Top Screenshot:** Navigation menu: TRUCKS, PARTS & SERVICES, POWERTRAIN & SUSPENSIONS, COMMUNITY. Main banner: 'Conquer the Endless Highway' for the Mack Pinnacle truck.
- Middle Screenshot:** Sidebar navigation: BY SERIES (Pinnacle, Granite, TerraPro, Titan), View All Trucks, BY CATEGORY (Body Builders, Pinnacle Day Cab, Mack Lean System).
- Bottom Screenshot:** Product page for '2010 BodyBuilder Service Information Kit, CHU, CXU, GU, LEU, M, PV776-K-BodyBuilder-M2010'. Product details include: Bodybuilder, Electrical Wiring, Connections, US2013, CHU, CXU, LEU, MRU; PV776-89078919; 2013 BodyBuilder Service Information Kit, CHU, CXU, GU, LEU, M, PV776-K-BodyBuilder-M2013; Bodybuilder, Electrical Data Busses CXU, CHU, GU, TD, MRU and US2013; PV776-89089759; Bodybuilder, Parameter Programming, CXU, CHU, GU, TD, MRU, US2013; PV776-89125023. Product details also include: Bodybuilder, Holiday Cards; Legacy Information (pre 2000); Online Service Information; Marketing Historical; Facts Information; Facts Support & Marketing; Premium Tech Log; Service Bulletins; Service Information; Service Marketing; Material; Training; Warrants/Certificates.



CHASSIS PACKAGING

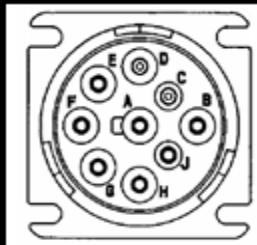


CLEAN BACK OF CAB & CAB MOUNTED EXHAUST

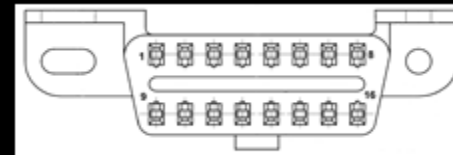


OFF-BOARD DIAGNOSTIC CONNECTOR

- The connector receptacle changes 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 improved 38%
- Regulatory demand matches the connector to the HD-OBD protocol



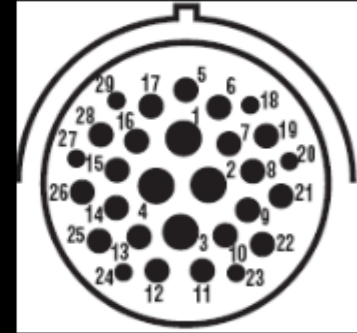
Current Receptacle
SAE J1939-13



2013 Receptacle
SAE J1962

BODYLINK III

- Power and lighting circuits are included.
- PTO inputs & remote speed control inputs to V-MAC IV are provided
- neutral and park brake signals provided.
- Wiring is attached for the optional BodyLamp and assignable switch pack.



BODYLINK III BODYBUILDER CONNECTOR

POST DESCRIPTION

- 1 BATTERY POWER (30A)
- 2 IGNITION POWER (30A)
- 3 STOP LAMP
- 4 TAIL LAMP
- 5 REVERSE SIGNAL
- 6 LH TURN
- 7 RH TURN
- 8 AUX SW #1 (IGN-20A)
- 9 AUX SW #2 (BATT-15A)
- 10 AUX SW #3 (IGN-15A)
- 11 AUX SW #4 (IGN-15A)
- 12 AUX SW #5 (IGN-10A)
- 13 AUX SW #6 (DOWN-15A)
- 14 AUX SW #6 (UP-15A)
- 15 PARK BRAKE SIGNAL

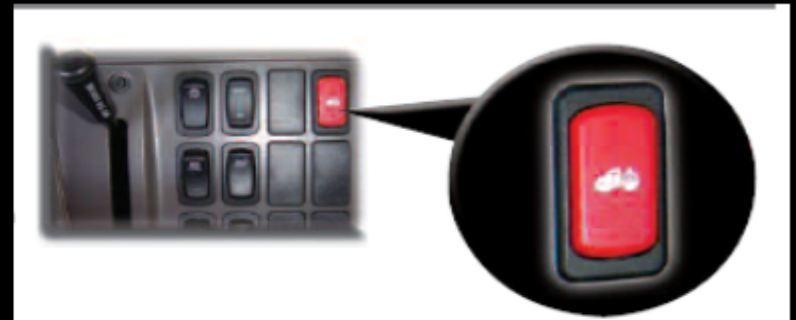
POST DESCRIPTION

- 16 NEUTRAL SIGNAL
- 17 BODYLAMP GROUND INPUT
- 18 PTO #1
- 19 PTO #2
- 20 SPEED CONTROL ON/OFF
- 21
- 22
- 23 SPEED CONTROL SET/DECAL
- 24 SPEED CONTROL RESUME/ACCEL
- 25
- 26
- 27 LH TURN/STOP
- 28
- 29 RH TURN/STOP

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BODYLINK III ASSIGNABLE SWITCHES

- Option for 6 assignable dash rocker switches
- Switches match the existing Mack 'D' panel rockers with provisions for a removable plastic insert
- The inserts carry the icon or text functions common to dump and refuse bodybuilders
- The switches provide a 12v output to the BodyLink III pins #8-14
- BodyLamp is carried over for US10.
- Illuminates when a bodybuilder input signal thru BodyLink III is grounded.
- Typically used to alert drivers that the body is in an up or partially up position.
-

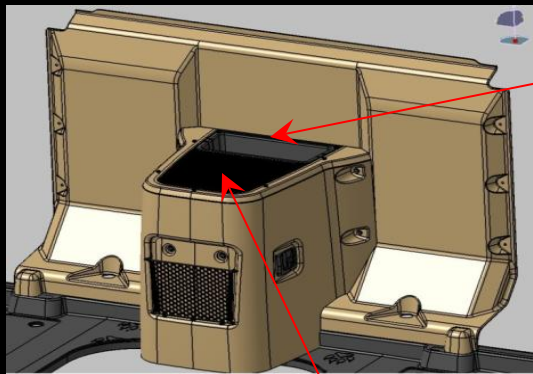


HEAVY DUTY CAB WIRE HARNESS PROTECTION

- Polyester jacket for abrasion resistance
- In Production since April 2013

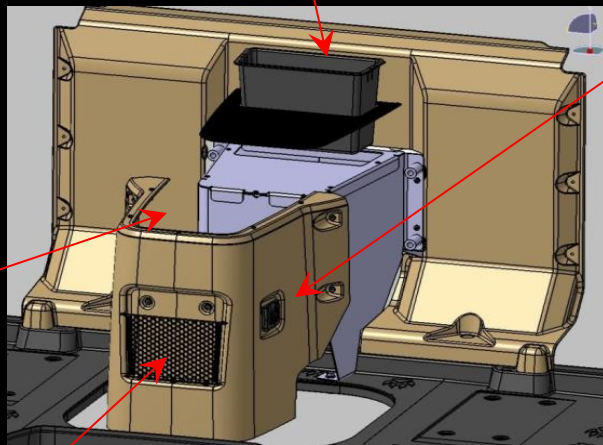


BODY BUILDER CONSOLE



Installed view

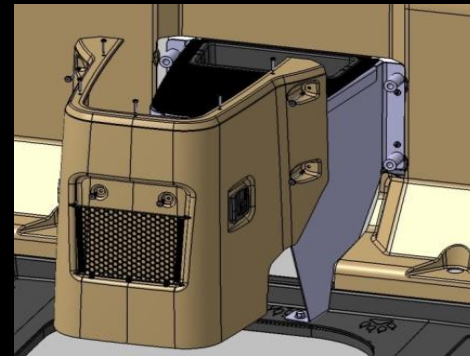
Mounting area for body controls OR hinged, locking lid / writing surface



Exploded view

Recessed storage area covered by expandable net

Hooks (1 each side) for hanging trash bag



Removable for Transmission Access

BODY BUILDER CONSOLE

Color matched
Body control mounting
Interface with BodyLink III



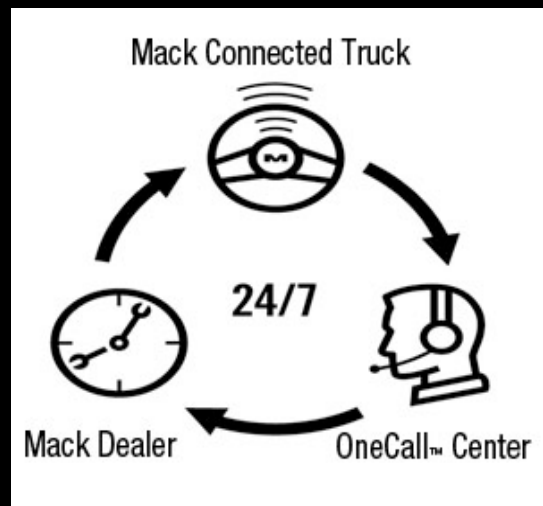
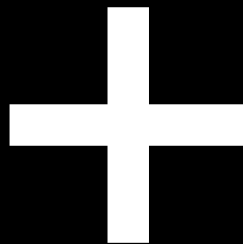
GUARDDOG[®] CONNECT

SAY HELLO TO YOUR UPTIME ALLY



GUARDDOG CONNECT

GuardDog Connect connects our GuardDog system to a 24/7 network of support staff and service providers, so there's always someone there when you need them. It's designed to increase uptime and give drivers peace of mind.



GUARDDOG CONNECT

1. Identifies

If something happens to your truck on the road, GuardDog Connect lets you know immediately.

- Fault codes
- Diagnostic needs
- Maintenance milestones
- Solutions



GUARDDOG CONNECT

2. Alerts

At the same time you're seeing the problem, GuardDog Connect lets our OneCall customer care center know about the problem.

- Decision makers
- Mack's OneCall customer care center
- Mack dealers and service providers



GUARDDOG CONNECT

3. Serves

A real person works with the customer's decision maker to order parts, schedule service along the truck's route, and instruct the driver where to go.

- Schedules repairs
- Makes sure parts and staff are available
- Communicates to all parties keeping everyone on the same page
- Tracks maintenance and repair information, reducing administrative costs



GUARDDOG CONNECT PROGRAM

Standard and free of charge for two years with MP(Mack Power):

- *MACK Pinnacle™*
- *Titan by MACK*
- *MACK Granite® models*

Two years free of charge service includes:

- MACK ASIST
- MACK OneCall®
- GuardDog® Connect

Extended GuardDog Connect service is available

- 1-, 2-, and 3-year terms available at time of new vehicle order
- Aftermarket renewals also available from 1- to 5-year terms

GUARDDOG CONNECT WEBSITE

Customers can find information about the GuardDog Connect Services by visiting

www.macktrucks.com/guarddogconnect

The website provides the latest video on GuardDog Connect and the brochure for the services can be downloaded from the website





MACK®