

DAIMLER

2015 WSHEMA Conference

Anchorage Alaska

Monday August 24 2015

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Michael Good – Product Strategy



Mercedes-Benz



BHARATBENZ

- **Freightliner Products**
- **Product Support**
- **GHG17/OBD16**
- **A Measure of Success**



- **Freightliner Products**

SD Vehicle Configurations

108" BBC



Set-Back Axle (SBA) Day Cab Truck



Set-Back (SBA) Extended Cab Truck



Set-Back Axle (SBA) Crew Cab Truck

114" BBC



Set-Forward (SFA) Day Cab Truck



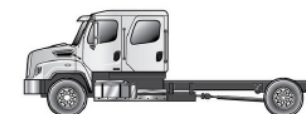
Set-Forward Axle (SFA) Extended Cab Truck



Set-Back Axle (SBA) Day Cab Truck



Set-Back Axle (SBA) Extended Cab Truck



Set-Back Axle (SBA) Crew Cab Truck



Set-Back Axle (SBA) Day Cab Tractor

Cab Interior

108" & 114" BBC

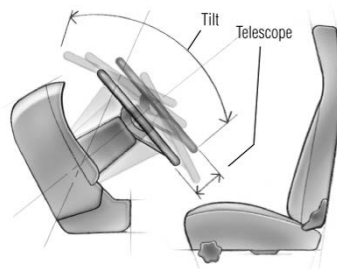
Dash

The ergonomically designed driver's area features an automotive style dashboard, easy-to-read LED-backlit gauges and controls that are within easy reach. Flat dash configuration standard with optional wing dash configuration available.



Telescoping Steering Wheel

The 108SD and 114SD offer an optional telescoping steering wheel with foot-controlled release on the adjustable steering column.



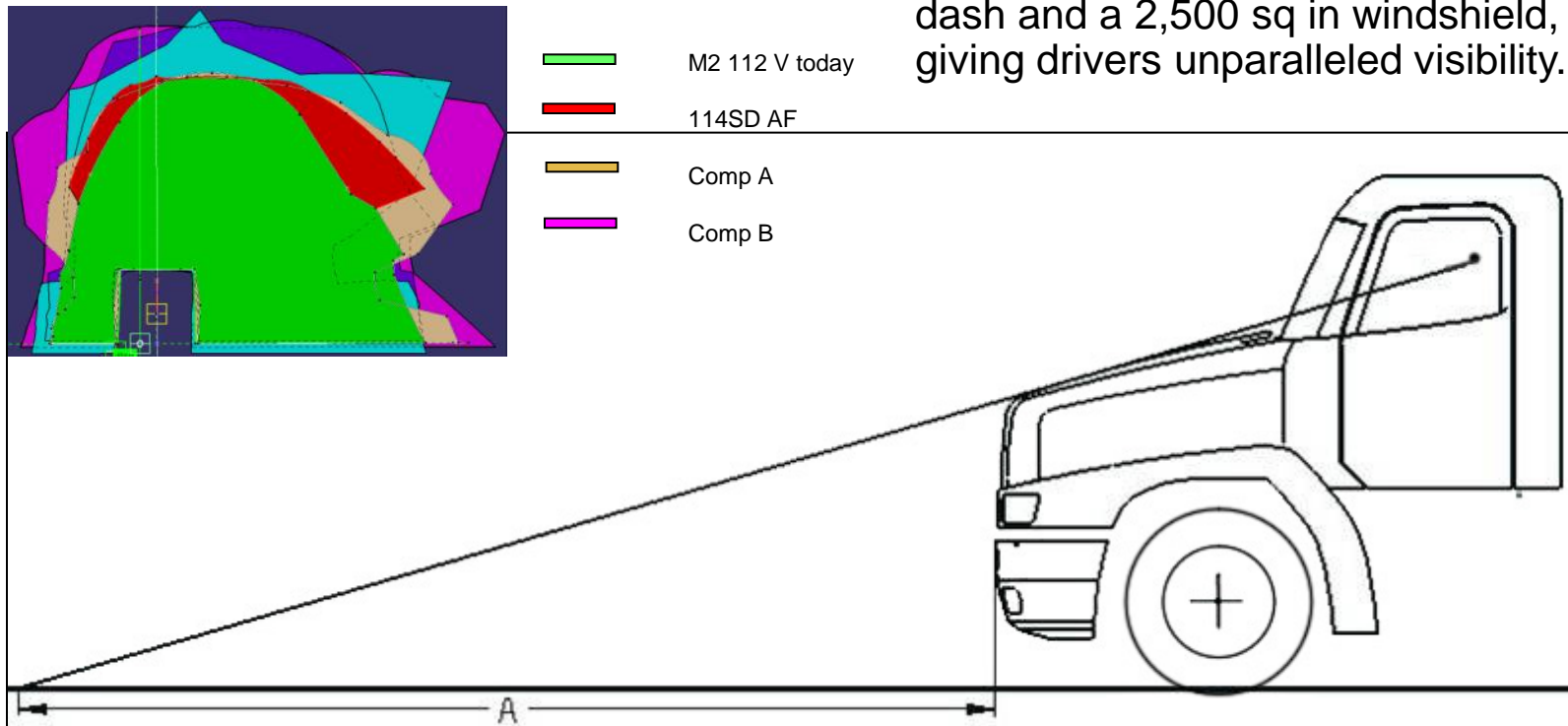
HVAC System

An advanced heating and air conditioning system provides excellent air flow for uniform temperature control throughout the cab. With 14 vents, including 2 in each door, the 108SD and 114SD have the best HVAC system in its class.



Safety – Visibility with Unobstructed View Competitive Benchmark

The 108SD and 114SD feature an aerodynamic sloped hood, low profile dash and a 2,500 sq in windshield, giving drivers unparalleled visibility.



	114SD AF	Comp A	Comp B
BBC	114"	116.5"	107"
Eye to Ground at C/L Vehicle	20.1	20.1	26.6
Obstructed ground (sq. m)	76.8	83.7	95.3

Safety - Vocational Cab

Meets requirements of “Swedish A-Pillar” test standard

Swedish A-Pillar Test: 3306lb steel barrel into the driver’s upper A-pillar



SAE Roof Strength: The roof supports the GAWR of the front axle up to 22,000lbs.

Occupant’s space is retained

Meets SAE J2422 roof strength requirements

SAE Roof Impact: 13,000 lbs energy impact to the roof corner

Our tough vocational cab meets stringent A-pillar impact, rollover and back wall impact tests, making sure drivers are in one of the safest cabs available in the market.



Safety – Cab Entry and Egress

Large door handles

- Easy to grip and operate with work gloves on

Cab doors are tall, wide and strong

- Easy cab ingress and egress with 62 degree opening
- Multiple interior entry/egress grab handles

Easy Grip Exterior Grab Handles

- Optional rubber inserts to improve grip in snowy conditions



The 108SD and 114SD have a number of features to keep drivers safe and productive. A low step-in height with slip-resistant dual steps, a large door opening and strategically placed exterior and interior grab handles enhance safety and help reduce driver fatigue.

Multiple Municipality Configurations Available



BBC: 106 - 122 Inch

Configuration: Truck/Truck with Tow/ Tractor

Axle Setting: 31"/29.5" Set Forward – 42/48" Set Back

Engine: ISB/ISL/ISLG/ISX/DD13-15-16

Transmission: Manual/Automated/Automatic

Front Ratings: 8,000lbs – 23,000lbs

Rear Ratings: 21,000lbs – 78,000lbs



Snow Plow



- Side of hood air intake with snow door and under hood intake
- Heated windshield
- Snow plow light hook-up
- Belly plow body with high ground clearance
- Snow plow c-channel mid-ship cross member



Sewer Vac's and Street Sweepers



Partnering with America's top vocational truck equipment manufacturers to ensure seamless integration and optimized configurations. Dedicated TEM representatives at OEM to OEM level



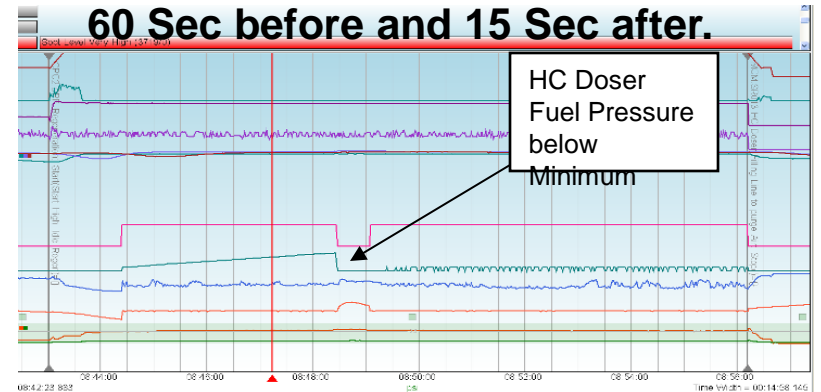
Refuse and Waste Disposal



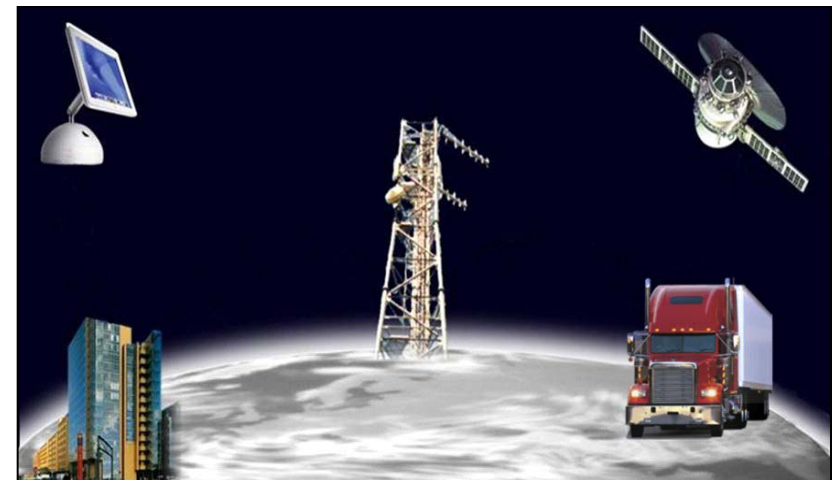
- **Support**

What is Virtual Technician? Remote DDEC Flight Recording Data

- The Virtual Technician module is a telematics link to the Freightliner/Detroit Customer Support Center.
- Live data transmission to the CSC enabling a proactive versus reactive service repair approach.
- On the fly diagnostics, parts availability and repair scheduling.
- Repair NOW – Repair later – Ignore diagnosis



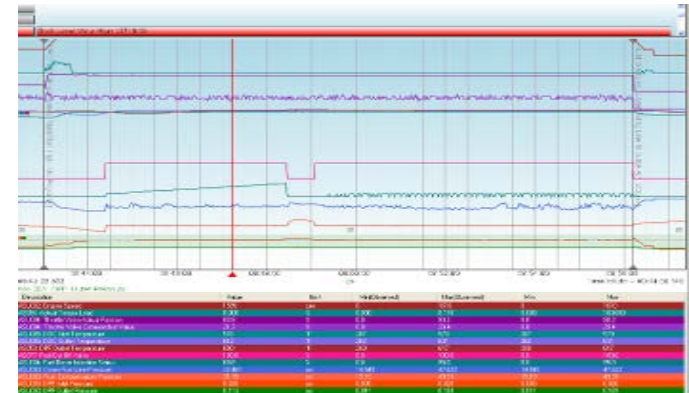
Description	Value	Unit	Min(Observed)	Max(Observed)	Min	Max
ASL002 Engine Speed	1555	rpm	0	1876	0	1876
ASL004 Actual Throttle Pos	67.00	%	0.000	87.116	0.000	100.000
ASL004 Throttle Valve Actuator Position	83.8	%	0.0	83.2	0.0	88.2
ASL004 Throttle Valve Commanded Value	21.2	%	0.0	29.4	0.0	29.4
ASL005 DDC Inlet Temperature	579	F	207	629	207	679
ASL005 DDC Outlet Temperature	612	F	262	652	262	651
ASL023 DPF Outlet Temperature	610	F	260	617	260	617
ASL027 Fuel Oil Pressure	180.6	psi	0.0	190.8	0.0	190.6
ASL004 Fuel Doser Feedback Status	638	%	0.0	55.0	0.0	55.0
ASL003 Diesel Fuel Line Pressure	32.461	psi	14.548	27.622	14.545	47.622
ASL003 Fuel Compressor Pressure	31.75	psi	14.75	26.93	14.75	46.93
ASL003 DPF Inlet Pressure	0.308	psi	0.076	0.820	0.076	0.308
ASL003 DPF Outlet Pressure	0.113	psi	0.041	0.181	0.041	0.181



Service Information Captured (Snapshot)

5. Flight Recording

1. Telematics
 - GPS location, Altitude, and Date/Time
2. Instrument Cluster Unit (ICU)
 - Odometer Mileage
3. Powertrain ECU's
 - Diagnostic Trouble Code (DTC)
 - "Ring Buffer" captures 66 Parameters
 - Engine "Vitals", Fuel System, Air System, EGR System, ATD System, DEF Support Systems, System Battery Voltage
4. Customer Information
 - Fleet name, unit number, VIN, ESN and fleet contact e-mail obtained during registration of VT Unit



Remote DDEC flight recording data

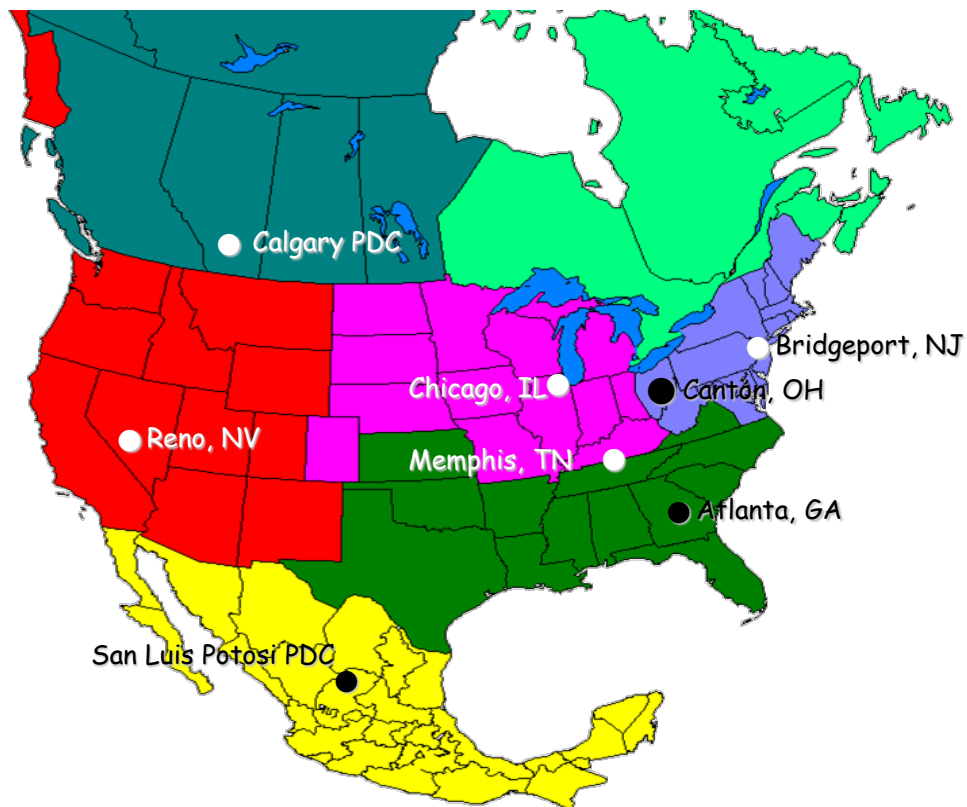
- Captures 60 seconds before and 15 seconds after the code occurs
- Viewable and playable with the current DDDL Diagnostic Tool
- Identifies the cause of the code and establishes the corrective action
- Format familiar to Technicians

69 Western Region Dealers

Including two in Alaska and one in Hawaii

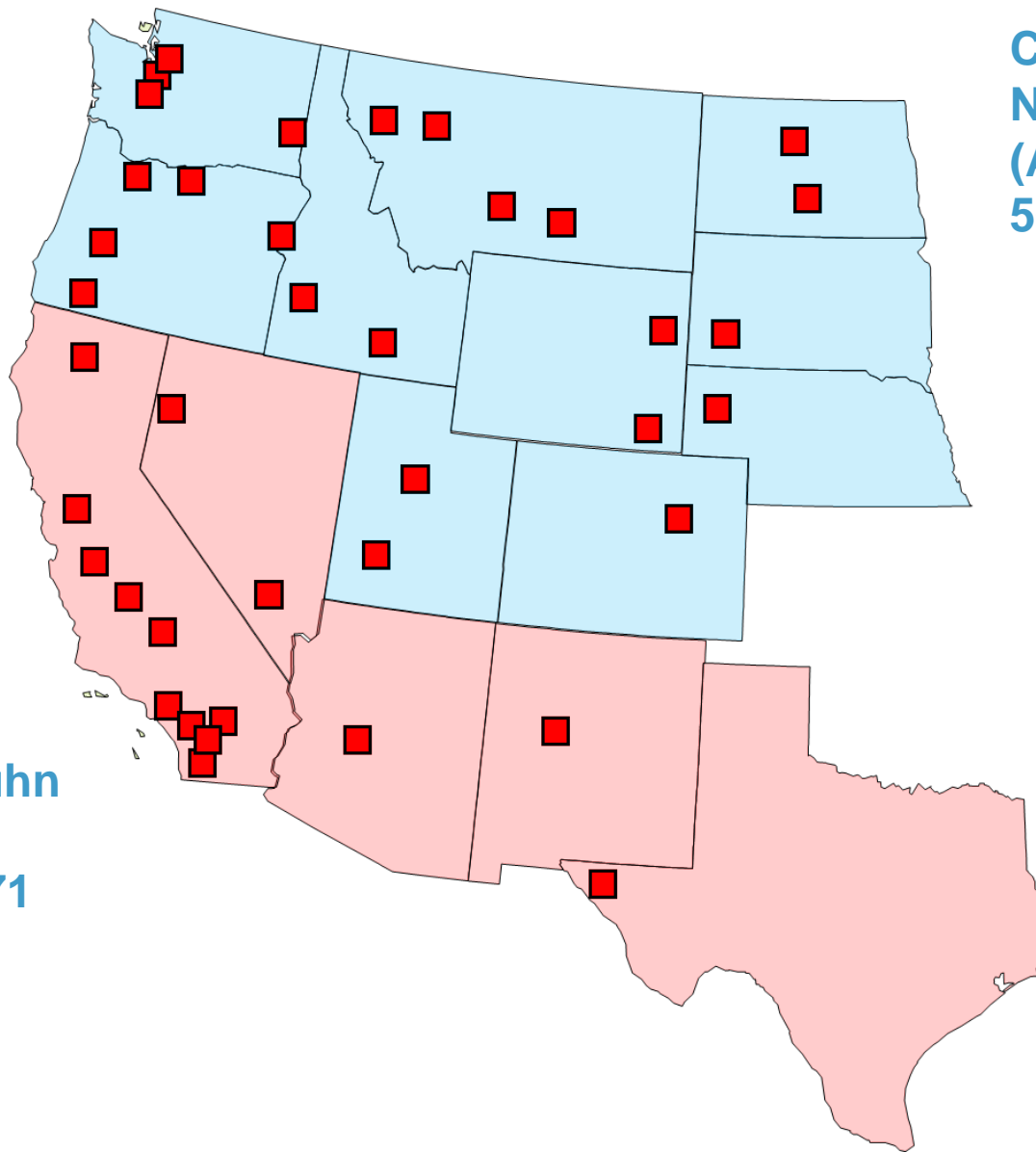


Repair Parts: North American Network



- **8 Distribution Centers in North America**
- **Over 2000 suppliers**
- **Over \$280M in Inventory**
- **98% National Fill Rate on stocking parts (Industry leading)**

Western Region Vocational Sales



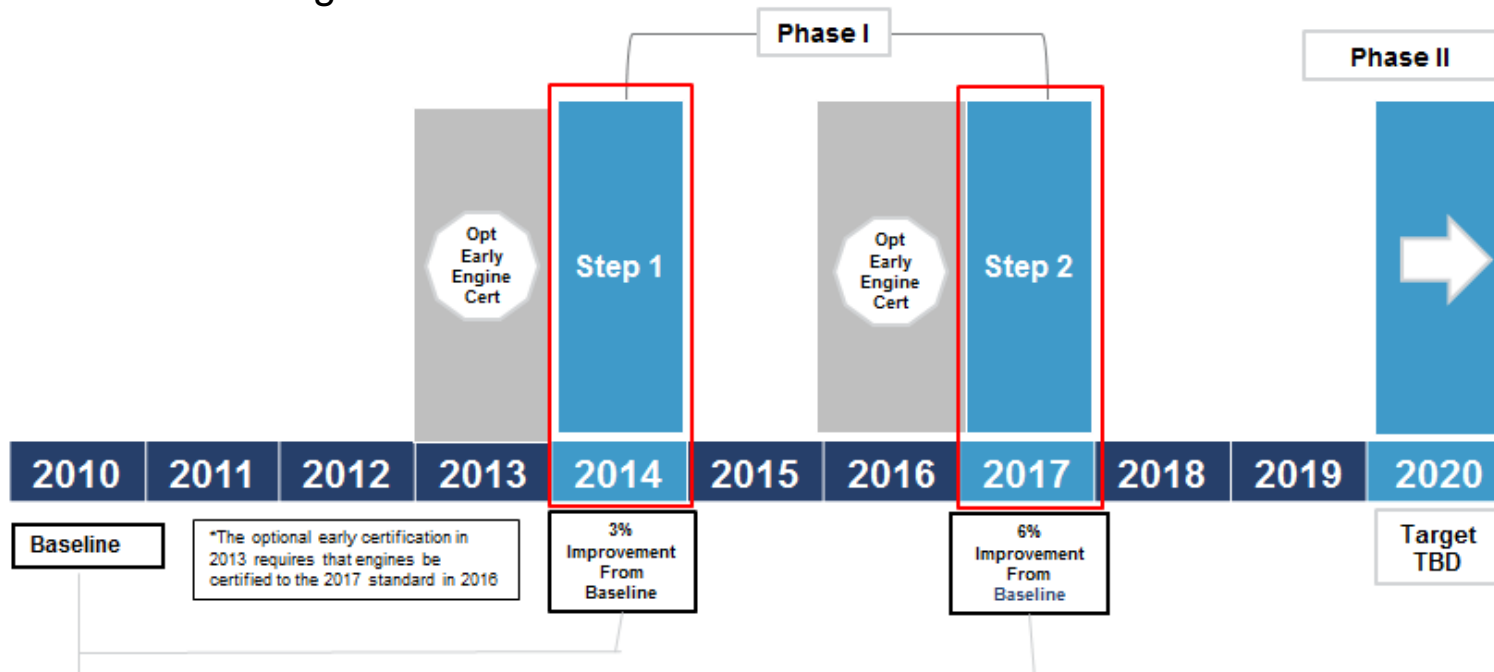
Chris Arnold
Northwest
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503-970-8892

Tanya Appuhn
Southwest
503-702-5471

- **GHG17/OBD16**

Joint EPA & NHTSA – GHG Regulations

- Began with GHG14 requirements for different truck types (using 2010 as baseline)
- GHG14 represented the first step of Phase 1 green house gas reduction requirements with a 3% reduction in CO2 over the EPA test cycle
- GHG17 is Step 2 of Phase 1 and requires an additional 3% reduction
- Regulatory requirements beyond 2017 are not yet defined
- DTNA exceeded the Step 1 targets for GHG14 and as a result is better positioned to meet GHG17 targets





GHG17 Engine Power Ratings

DD13 Power Ratings	
Horsepower HP @ 1625 RPM	Torque Lb-ft @ 1075 RPM
350	1350
370	1250
380	1450
410	1450
410	1550
410	1650
435	1550
450	1550
450	1650
470	1650
505	1850

DD15 Power Ratings	
Horsepower HP @ 1625 RPM	Torque Lb-ft @ 1075 RPM
400*	1750*
455	1550
455	1650
475	1650
505	1650
505	1750

DD16 Power Ratings	
Horsepower HP @ 1800 RPM	Torque Lb-ft @ 1100 RPM
500	1850
530	1850
560	1850
560	2050
600	1850
600	2050

DD15 Cruise Power Ratings	
Horsepower HP @ 1625 RPM	Torque Lb-ft @ 1075 RPM
475/505	1650

DD15 Multi-Torque Power Ratings	
Horsepower HP @ 1625 RPM	Torque Lb-ft @ 1075 RPM
455	1550/1750

DD13 Multi-Torque Power Ratings	
Horsepower HP @ 1625 RPM	Torque Lb-ft @ 1075 RPM
410	1450/1650

* Integrated Detroit Powertrain (IDP)

(Coming soon for DD13 400/1750 rating)

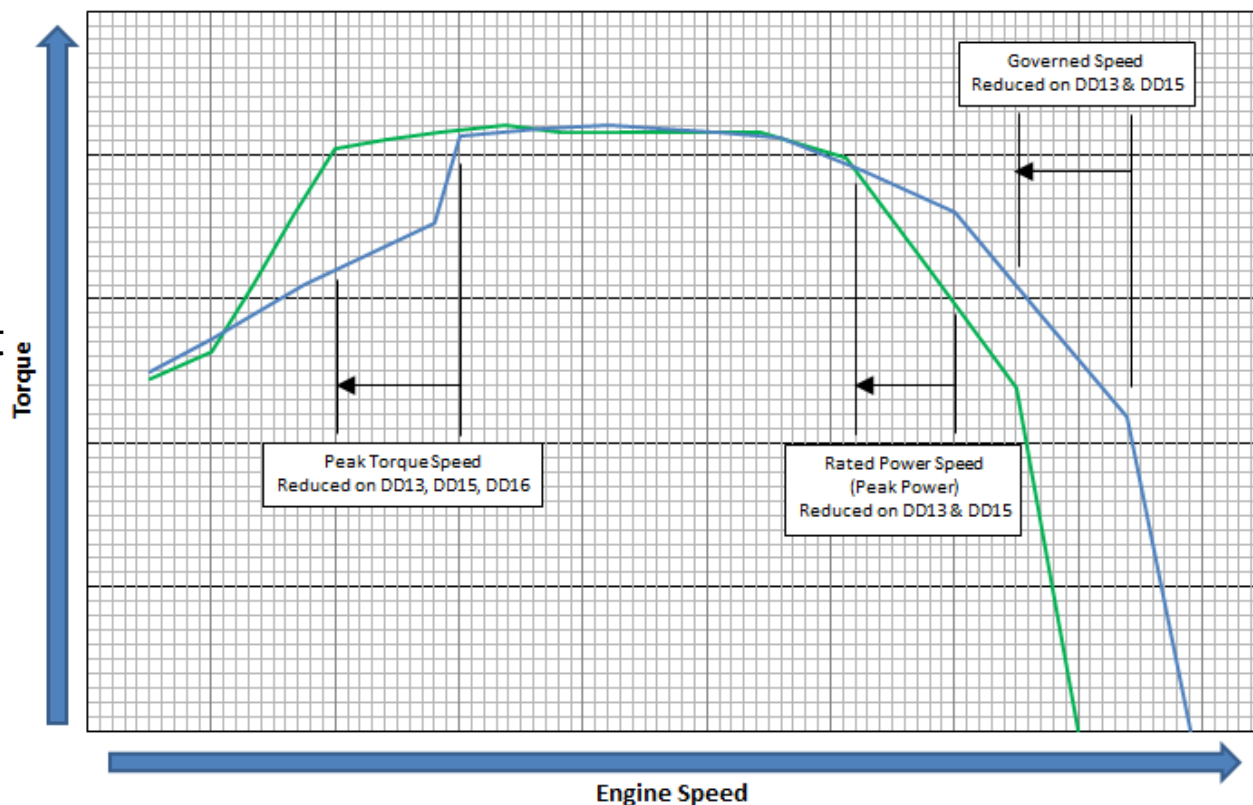
Engine Performance Curve Comparison

Peak torque moves from 1240 RPM to 1075 while the typical operational range of 1100 to 1600 remains nearly constant.

The operational range for the power curves is mostly unchanged but peak power achieved earlier. By cruising at lower RPM's, peak power will be achieved at the same relative increase in RPM.

These curves will reward manual drivers for earlier upshifts and delaying down shifts.

Rating Improvements
GHG14 vs. GHG17



Downspeeding and Fuel Economy

The GHG17 performance curves for the DD13 and DD15 allow for a lower engine RPM operating range. This change allows for faster axle ratios to be used. This makes Spec'ing even more critical to realize the advantage of these new ratings.

A few tips to keep in mind when its comes to **Powertrain Spec'ing**:

- Spec'ing is not an exact science
- You know your customer best
- All customer specs should be reviewed on a yearly basis
 - Technology is advancing faster than in the past
 - What worked last year may not be optimized this year
 - Avoid ordering more of the same
- Contact your Detroit Technical Sales Representative (TSR) for help



Operating at lower engine speeds

- Reduces fuel injections
- Reduces friction
- Reduces heat

Determining Correct Engine Displacement

DETROIT DD13

- **Less than 80,000 miles per year**
- Less than 470 HP
- Less than 1,650 lb.-ft. torque
- GVW less than 80,000 lbs.
- Day Cab
- Weight sensitive
- **REPTO/FEPTO more appropriate**
- Average load factors less than 35%
- Stop & Go Application
- High idle time

DETROIT DD15

- **Greater than 80,000 mile per year**
- Optimum HP Range of 455-505 HP
- Optimum Torque Range from 1,550 to 1,750lb.-ft. torque
- Ideal for 60,000-105,000 lbs. GVW
- **Fuel economy conscious**
- Longer life (trade cycle)
- Average load factors from 40% - 50%

DETROIT DD16

- Maximum of 600 HP
- Maximum of 2,050lb.-ft. torque
- **GVW from 80,000 – 130,000 lbs.**
- Residual value (up-rate to 600 HP and 2,050lb.-ft. torque)
- **Most aggressive average load factors greater than 50%**
- Large Sleeper Cabs & Vocational Trucks
- Detroit's highest gradeability
- Detroit's highest displacement
- **On-road / Off-road applications**

DD13

Construction, Dump, Refuse, Municipality and Distribution Services

DD15





































Distribution Services, Mining, Logging, Construction, Oil & Gas, Heavy and Specialty Haul

DD16

Construction, Oil & Gas, Heavy and Specialty Haul, Mining and Logging

- **A Measure of Success**

Class 6-8 Vocational Market Performance: US & Canada

		2010 (Baseline)		2014		2015 YTD		2015 YTD	
Super Segments		SoM	Market Leader	SoM	Market Leader	SoM	Market Leader	#2 Competitor	#3 Competitor
	Specialized Hauling	35%		25%		22%		 20%	 17%
	Utility	46%		44%		42%		 25%	 10%
	Food & Beverage	30%		37%		39%		 19%	 13%
	Government	46%		36%		32%		 29%	 17%
	Construction	35%		19%		19%		 18%	 18%
	Refuse	26%		24%		26%		 19%	 18%



Michael Good
Product Strategy Manager – TEM's
Freightliner Trucks

Overhead Switch Trim Panels



WORK SMART™



Data codes:

- **679-010** (DR only) OH INST PANEL TRIM & MTG BRKT W/O DRIVER SIDE PANEL
- **679-011** (Pass Only) OH INST PANEL TRIM & MTG BRKT W/O PASS SIDE PANEL
 - **679-012** (DR & Pass) OH INST PANEL TRIM & MTG BRKT W/O DRIVER OR PASS SIDE PANELS

Models:

- M2 106, 108SD, 114SD, 112

What it is

- Overhead switch trim rings for customer installed switch panels
- Provides the bracketry and trim panel but no switch panels

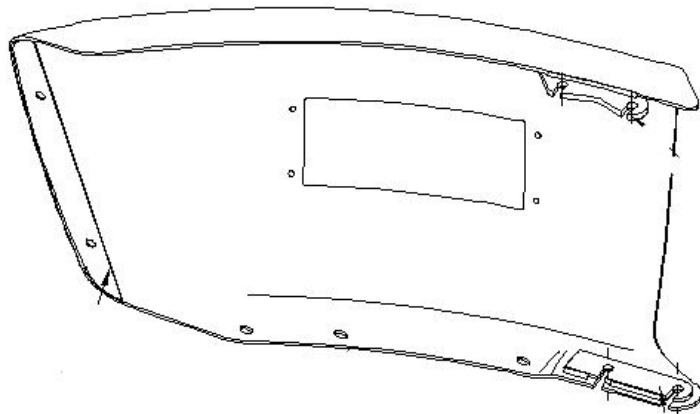
Why it is important

- No need to dispose of unused factory panels
 - Allows an OEM quality trim finish

When it is available

- Now

Speaker Cutouts in Bumper



Data codes:

- **556-1A4** 3-PC 14" CHRML STL BMPR W/ COLLAPSBLE ENDS & LH/RH WING CUTOUTS FOR FED FM100 SPKRS
- **556-1A5** 3-PC 14" CHRML STL BMPR W/ COLLAPSBLE ENDS LH/RH WING C/O FOR CAST PRD SA3502 SPKRS

Models:

- M2 106

What it is

- Factory cutout for bumper mounted speaker/siren

Why it is important

- Saves time on installation
- Clean factory finish to prevent rust and corrosion

When it is available

- Now

Cummins ISB 220HP/600 FT LB



WORK SMART™



Data code:

- **101-20F** (CUM ISB 6.7-220 220 HP @ 2400 RPM, 2600 GOV, 600 LB/FT @ 1600 RPM)

Models:

- M2 106

What it is

- A new engine rating exclusive to Freightliner that improves fuel efficiency with Allison Fuel Sense

Why it is important

- Improved fuel economy with Cummins ISB and Allison Fuel Sense

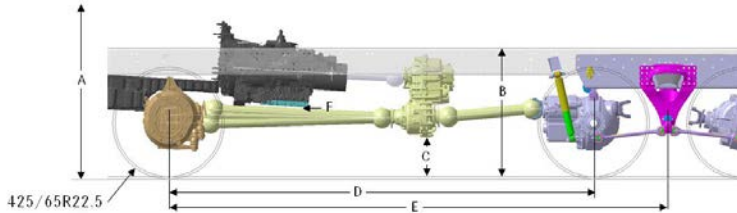
When it is available

- Q1 2015 (3/2/2015)

All Wheel Drive Expansion



WORK SMART™



Data code:

- **400-1F7** MX-18-120HR 18,000# single front drive axle with HR carrier

Model:

- M2106

What it is

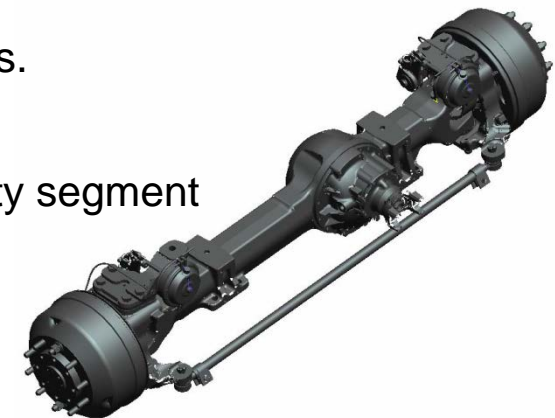
- Larger rated front drive axle 18,000 lbs.

Why it is important

- Provides increased M2106 axle ratings for Utility segment

When it is available

- In production 2/2015



ICU3S Instrument Cluster



WORK SMART™



Data code:

- **811-042** - ICU3S, 132X48 DISPLAY W/DIAGNOSTICS, 28 LED WRNG LAMPS & DATA LINKED

Models:

- M2106, M2112, 108SD, 114SD

What it is

- Improved instrument cluster display
 - 811-042 replaces 811-011

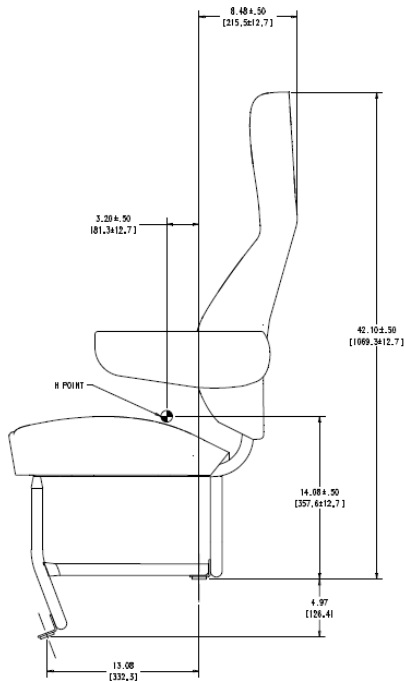
Why it is important

- Moves from a small segmented display to a 132x48 PIXEL display
 - Improved diagnostic messaging in the display

When it is available

- Early 2015 (3/2015)

Passenger Under Seat Storage



Data code:

- **760-1J2** BASIC HIGH BACK NON-SUSPENSION TOOL BOX PASSENGER SEAT

Models:

- M2106, M2112, 108SD,

What it is

- Storage under fixed passenger seat

Why it is important

- Provides additional in cab storage

When it is available

- Q3 2015

24 Inch Mirror Mounted Antenna



WORK SMART™



Data code:

- 753-XXX TBD

Models:

- M2 106, M2 112, 108SD, 114SD

What it is

- 24 inch mirror mounted antenna

Why it is important

- Reduced height prevents interference with body mounted components
 - AM/FM/WB antenna

When it is available

- Q3 2015

Improved Fixed Key



WORK SMART™



Data code:

- **657-1AE** All locks keyed the same and non-removable ignition key

Models:

- M2 106, M2 112, 108SD, 114SD

What it is

- Improved fixed key that cannot be removed

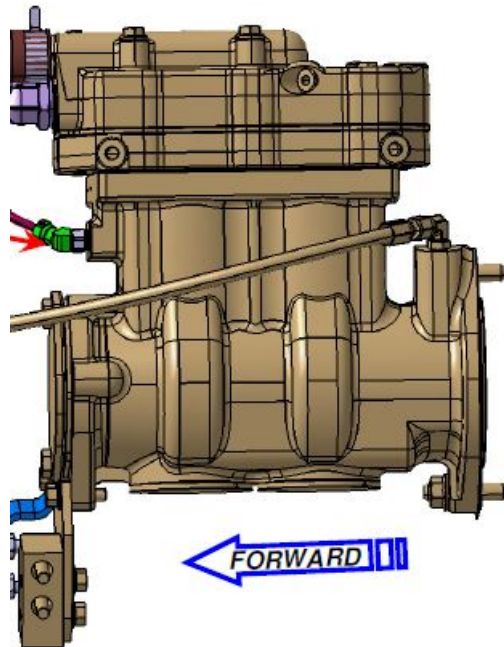
Why it is important

- Easier to turn with gloved hands

When it is available

- Q3 2015

30.4 CFM Air Compressor



Data code:

- **107-043** CUMMINS 30.4 CFM AIR COMPRESSOR WITH INTERNAL SAFETY VALVE

Models:

- 108SD

What it is

- 30.4 CFM Air Compressor with the Cummins ISL engine

Why it is important

- Higher CFM air compressor
- Eliminates the need for a second compressor

When it is available

- July 2015



Camera System



Radar System

Data codes:

- **73B-005** – WABCO Onlane lane guidance system w/15 min off timeout & drowsy driver
 - **736-1AF** – WABCO Onguard collision warning, adaptive cruise control & collision mitigation

Models:

- M2106

What it is

- Active safety system for lane departs and/or obstacle detection

Why it is important

- Provides driver assistance for accidental lane departure
 - Improved collision mitigation through the radar

When it is available

- Q3 2015

3 Batteries Over Cylindrical Fuel Tank



WORK SMART™



Data code:

- **282-001-** SGL BATT BOX FRM MTD LH SIDE UNDER CAB

Models:

- 114SD

What it is

- 3 Batteries mounted above a cylindrical fuel tank under the cab

Why it is important

- Increased fuel capacity

When it is available

- SBA 114SD w/ DD13 – Proposed Q3 2015
 - SFA 114SD w/ DD13 – Q4 2015

Multiple other data codes

763-1AH, 763-1AJ,
763-1AK, 763-1AM,
763-1AP, 763-1AR,
763-1AT, 763-1AU,
763-1AV, 763-1AW,
763-1AW, 763-1AX,
763-1AY, 763-1A0

Data code:

- **763-1AH** 3PT FIXED D-RING RET DR
ST BLT W/ STAT IND LT&AUD ALRM;NO
PASS ST BLT

Models:

- M2106, 108SD, 114SD, 112

What it is

- Audible buzzer when seat belt is not engaged

Why it is important

- Safety reminder to operators to wear seatbelt

When it is available

- July 2015



THANK YOU!