Product Update

Tim Ellsworth
Manager, Product Planning
2020 NTEA Work Truck Show

Topics

1. 2020 ISUZU Product Highlights
2. Product Update
    1) 20MY Class 3&4 Gas Running Change
    2) 21MY Class 5 Gas New Model
    3) 21MY Class 6 Diesel Enhancement
3. Minor Changes and Option / Accessory
4. Application Support

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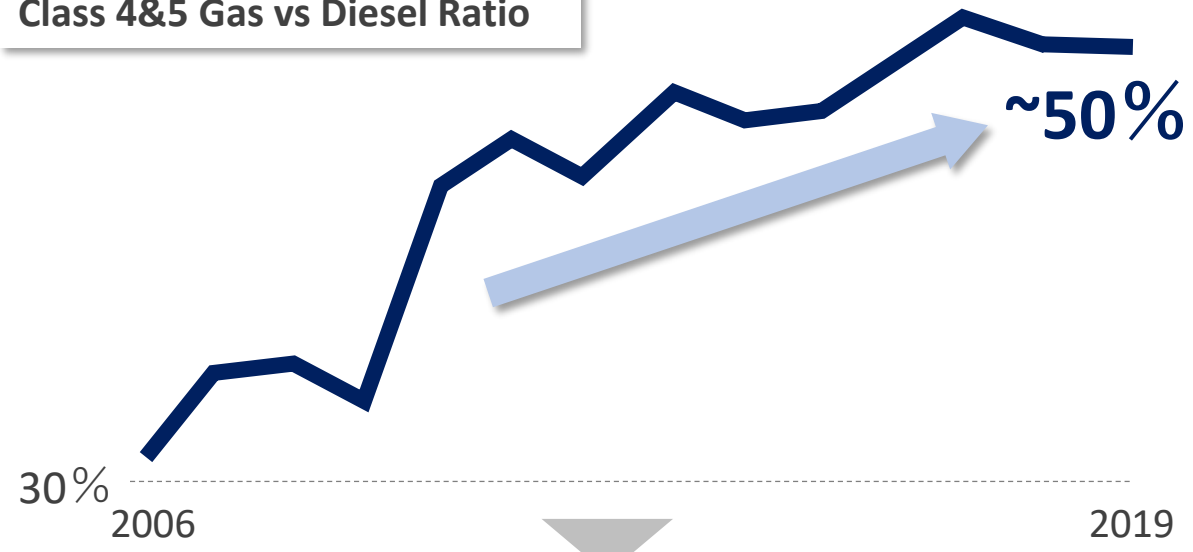
ISUZU Product Highlights

- Gas engine utilization has grown significantly in the past 13 years, approximately half of the market has changed to gas engines.
- Class 7&8 (CDL) driver shortage is serious - a shift to CL6 is expected.

Class 4&5 Gas vs Diesel Ratio



ATA's Driver Shortage Report 2017

ISUZU

- ❖ Class 3&4 : Improve engine performance and fuel efficiency with new engine
- ❖ Class 5 : Introduction of class 5 gas vehicle

ISUZU

- ❖ CL6 : Introduce air suspension option

ISUZU

Model Line Up

	Class 3 10,001 - 14,000	Class 4 14,001 - 16,000	Class 5 16,001 - 19,500	Class 6 19,501 - 26,000
Diesel		NPR HD NPR XD	NQR NRR	FTR
Gas	NPR	NPR HD	New NQR NRR	

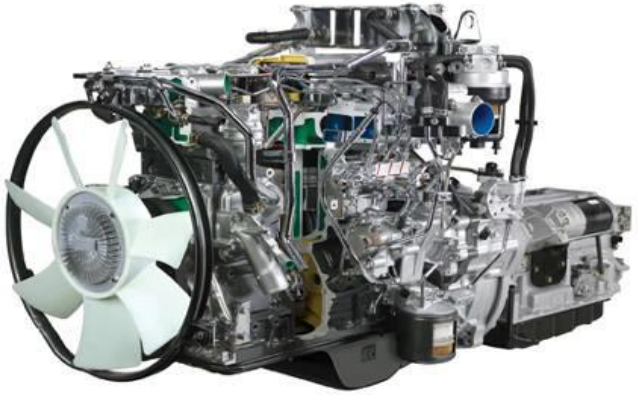
New Gen V Gas Engine
GM (L8T) 6.6L Gasoline

New Class 5 Models

Class 6 Air Suspension

Isuzu N-Diesel – Tried-and-True

- Class 4 & 5 N-Diesel
  - 14,500 lbs. to 19,500 lbs. GVWRs
  - PTO Capable
  - Isuzu 5.2L 4HK1-TC Diesel Engine
  - 375,000 B10 Life



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Class 3&4 Update Overview

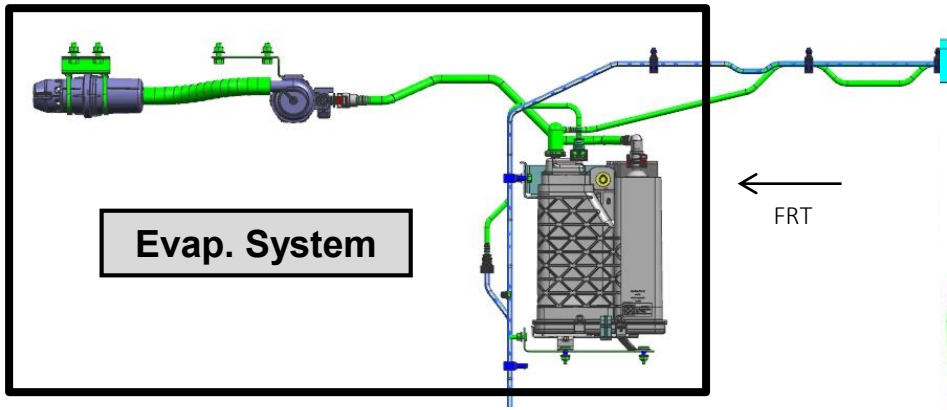
- GM Gen V gas engine with E93 ECM
- Larger stainless steel fuel tank
- Add fuel tank zone module (FTZM)
- Exhaust routing change
- Change to CAN I/P meter
- BOC from 6.5” to 7.7”
- Increase steering angles
  - CL3: 42 deg. → 49.5 deg. w/ 16” wheels
  - CL4: 42 deg. → 46.5 deg. w/ 19.5” wheels

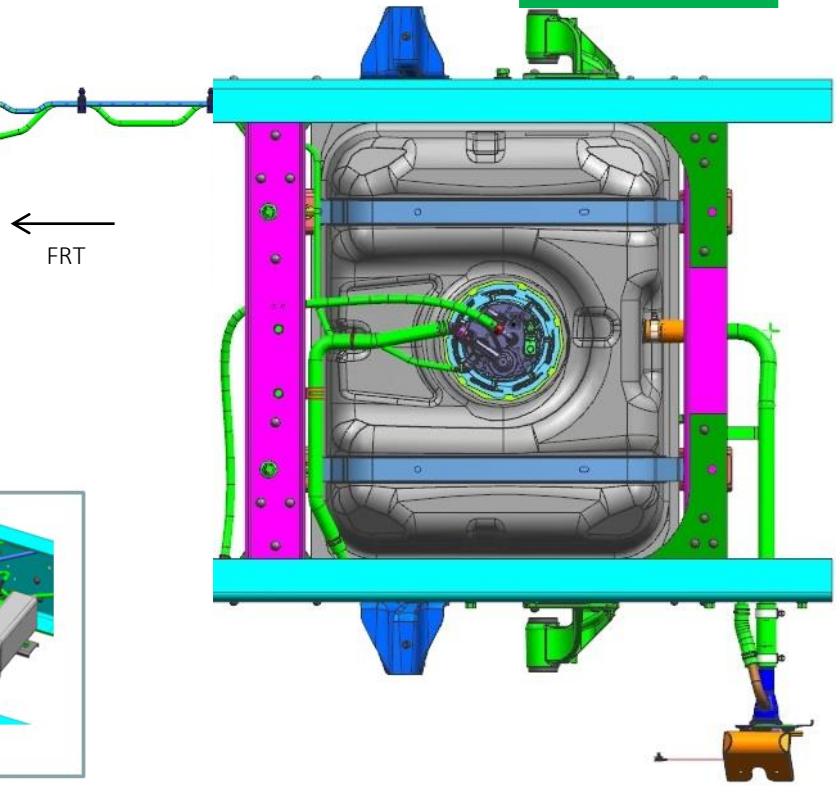
Class 3&4 Gas Engine

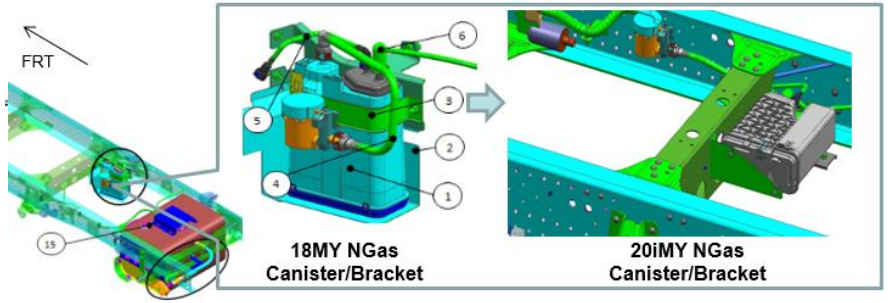
- NEXT GEN gas engine prepares for future GHG
  - Improved fuel economy compared to L96
  - Reduced CO2 emissions for GHG
  - GM L8T 6.6L (400CI)
    - Precise and efficient direct injection fueling
    - Variable valve timing improves fuel economy and emissions
    - Durable cast-iron block
  - Low speed torque producer with increased HP
- GM E93 ECM
- Mated to 6L90 transmission

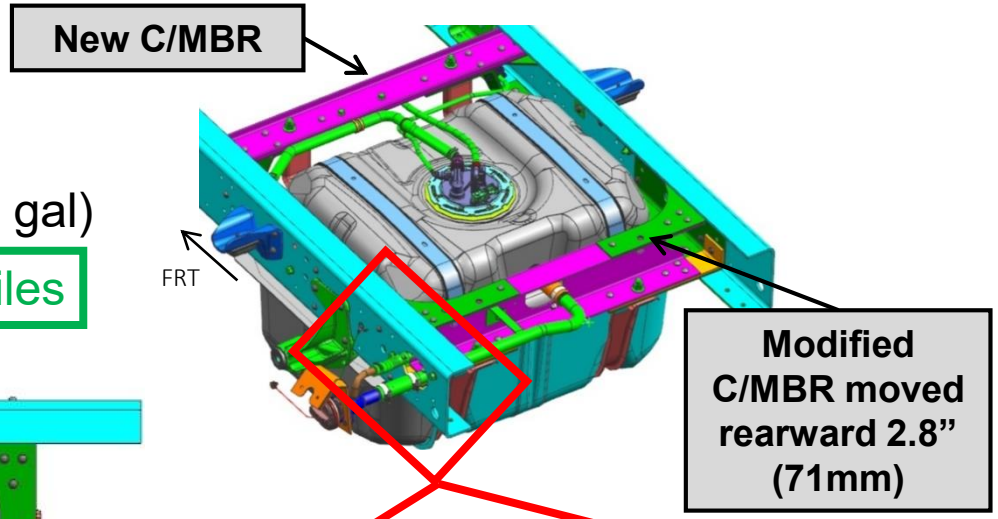
Fuel Tank – Class 3&4

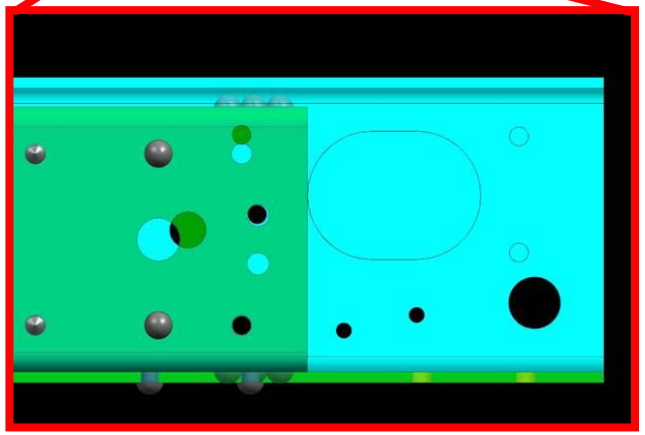
- Stainless steel fuel tank w/ increased capacity (30 gal → 38.6 gal)
- Increases driving range → assume 9 mpg x 8.6 gal = 77.4 miles





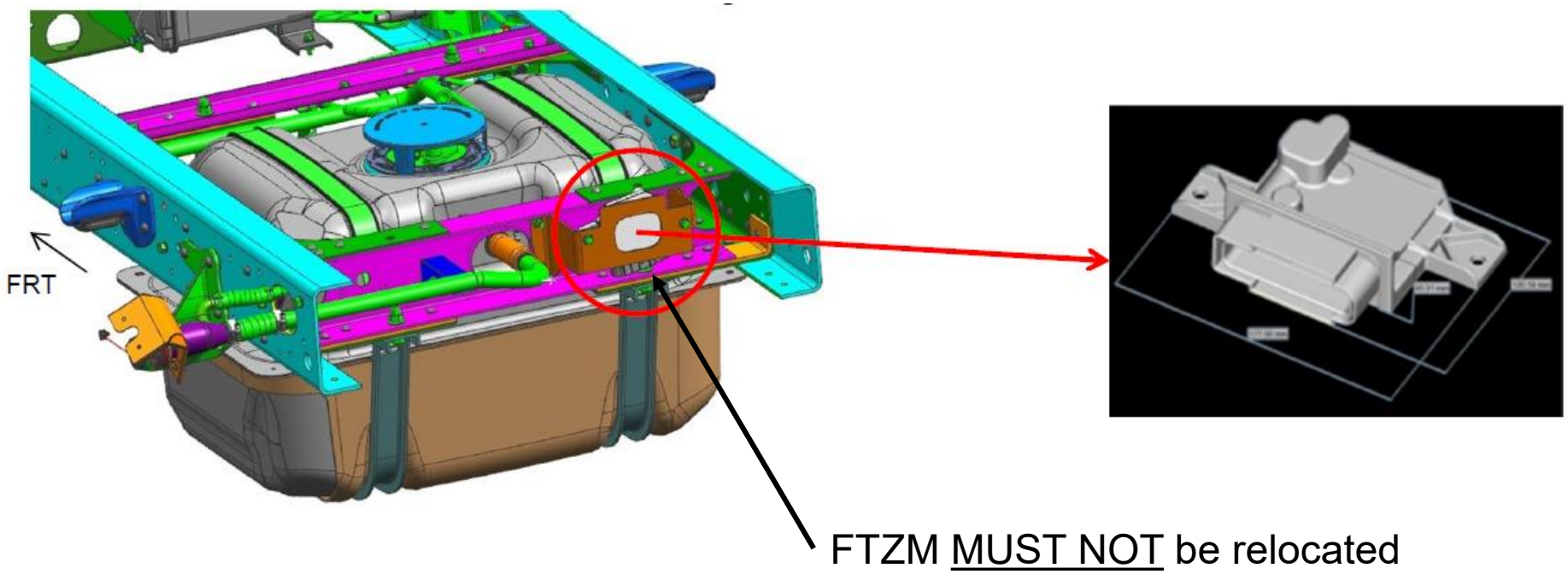






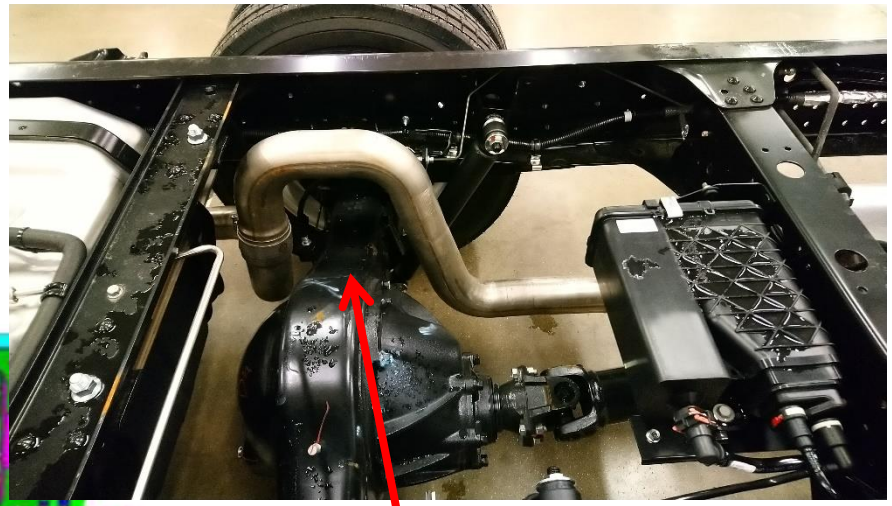
Fuel Tank Zone Module – Class 3&4

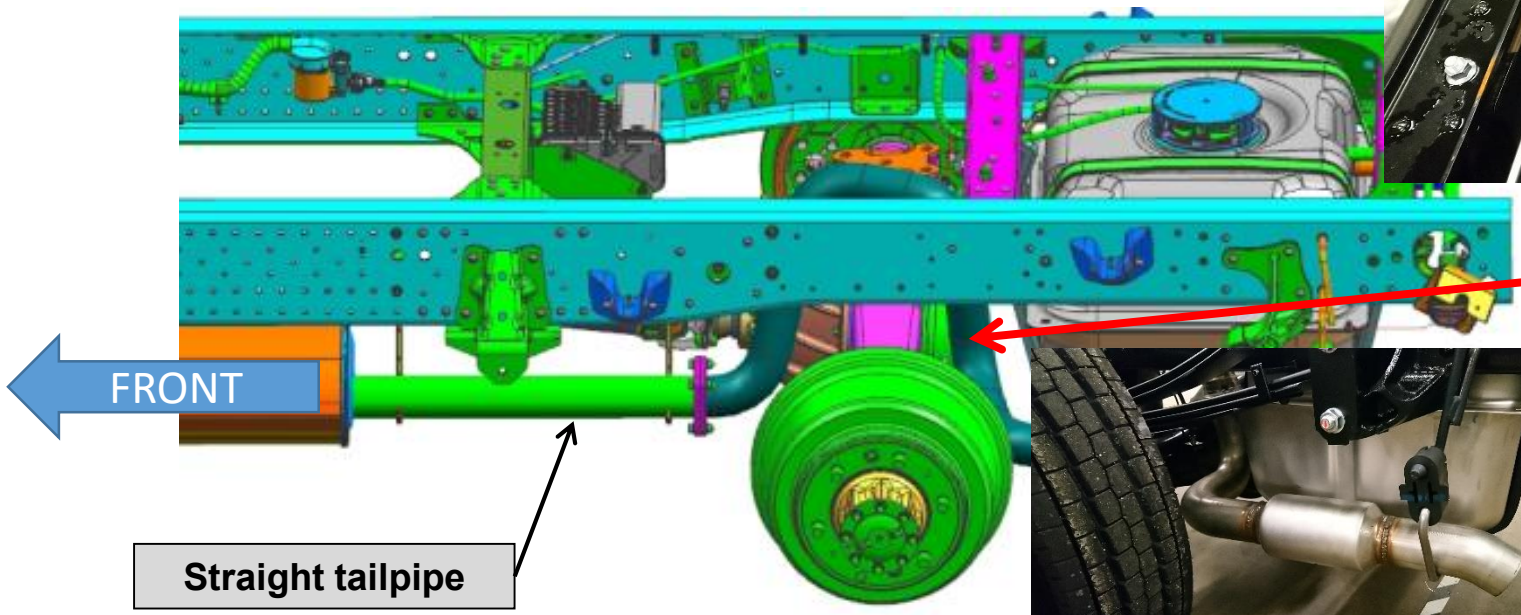
- Add fuel tank zone module (FTZM)
  - Fuel pump control removed from E93 ECM → standalone module



Exhaust – Class 3&4

- Exhaust routing change for emissions
  - GM engine off natural vacuum



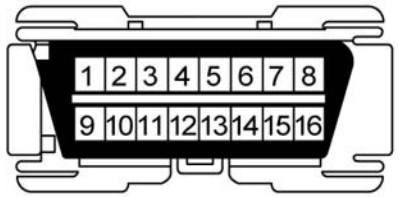


Over axle tailpipe

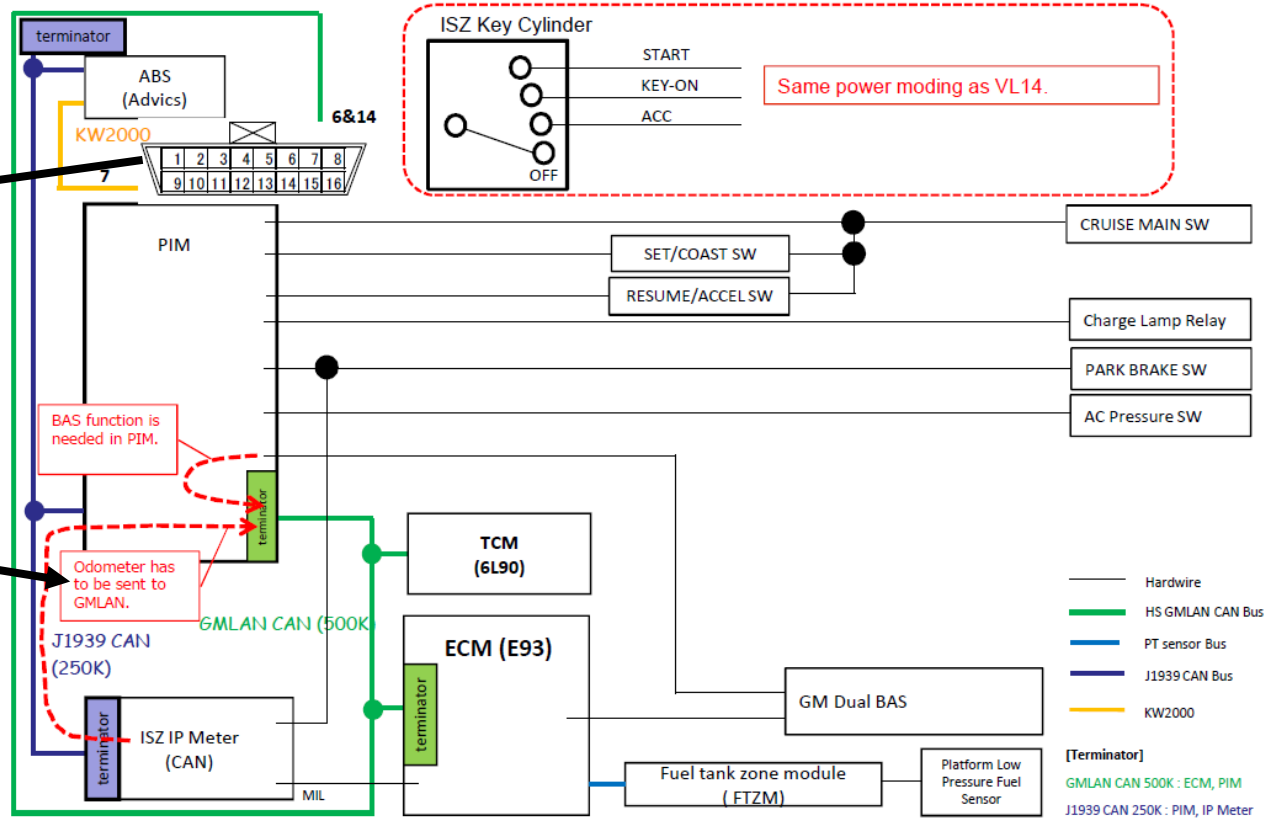
Rear exhaust exit

Electrical Architecture – Class 3&4

- Change to CAN I/P Meter to meet OBD regulatory requirement

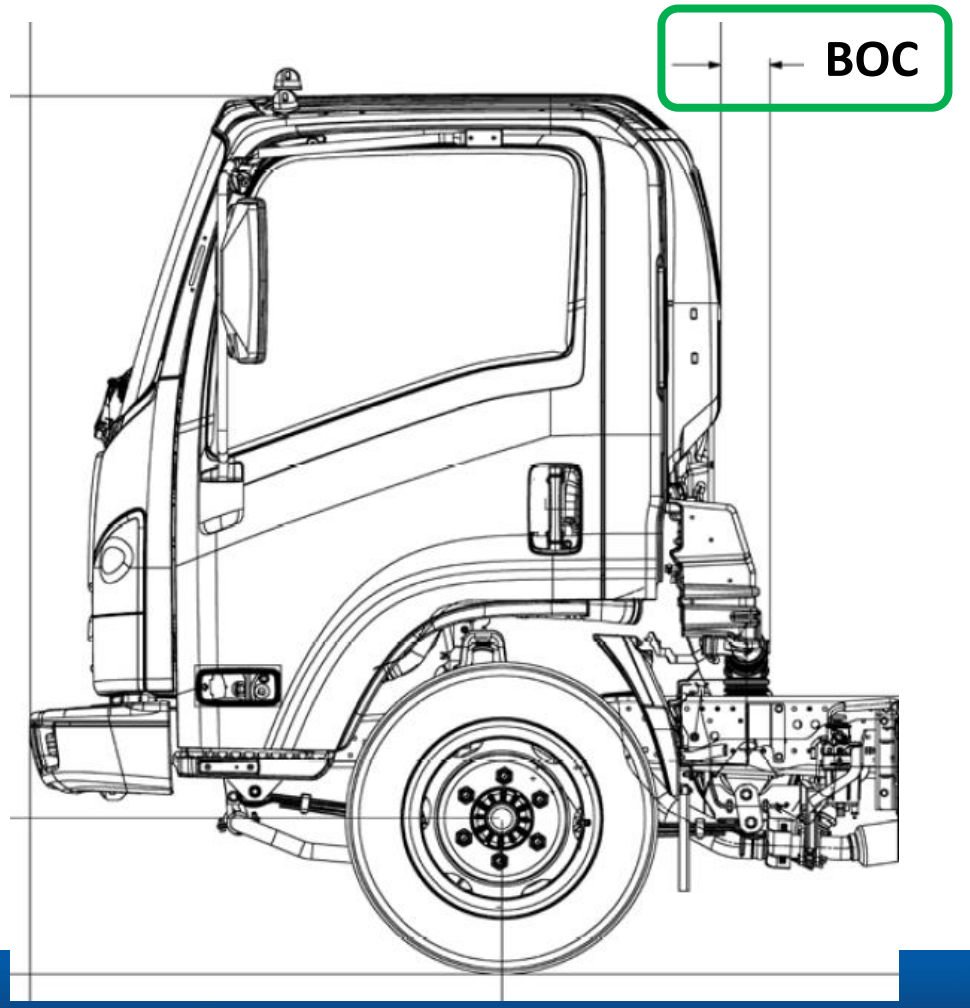


Odometer value sent to GMLAN for scan tool output



Back of Cab – Class 3&4

- Change single cab BOC to 7.7”
- Common with N-Diesel



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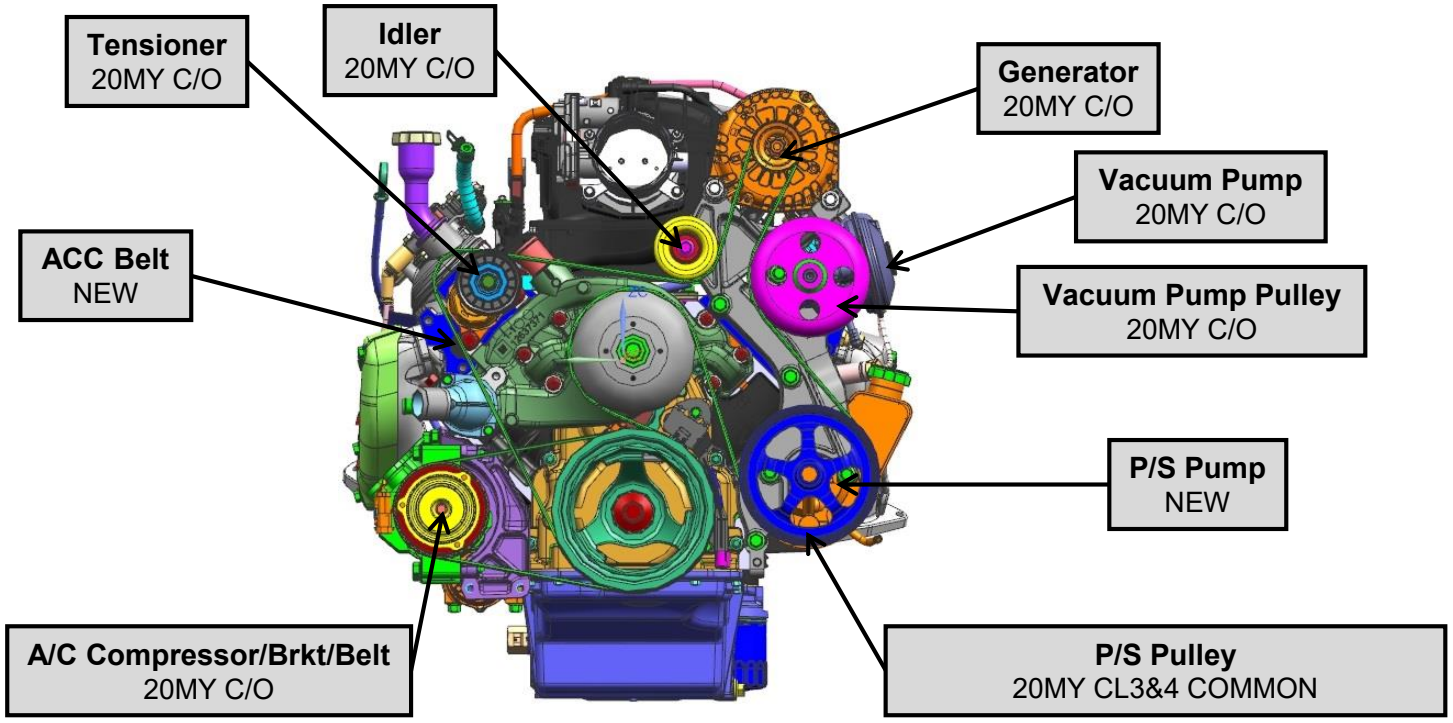
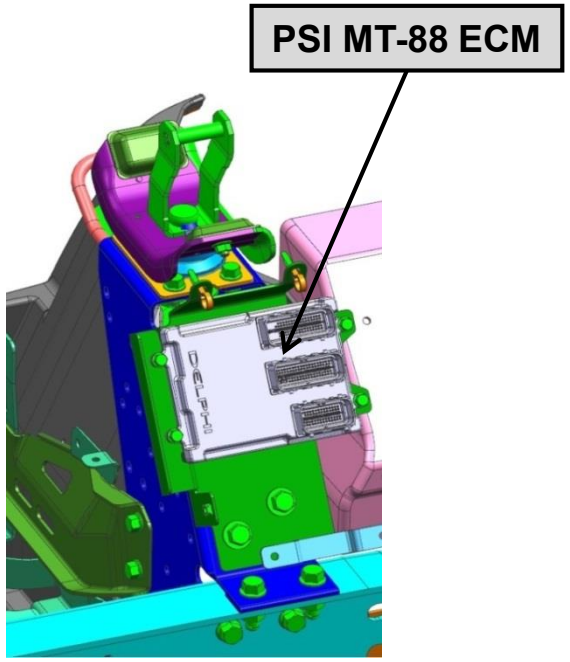
Class 5 Update Overview

- PSI 6.0L gas engine with MT-88 ECM
- Allison LCT1000 transmission with PTO
- 4 wheel disc brake system
- CAN I/P meter
- Larger stainless steel fuel tank
- Exhaust routing change
- BOC from 6.5” to 7.7”
- Improved steering angle
  - 42 deg. → 46.5 deg. w/ 19.5” wheels

Engine – Class 5

- Introduce PSI 6.0L gas engine & PSI MT-88 ECM (SAE J1939 500k)
  - PSI engine = GM's L96 engine





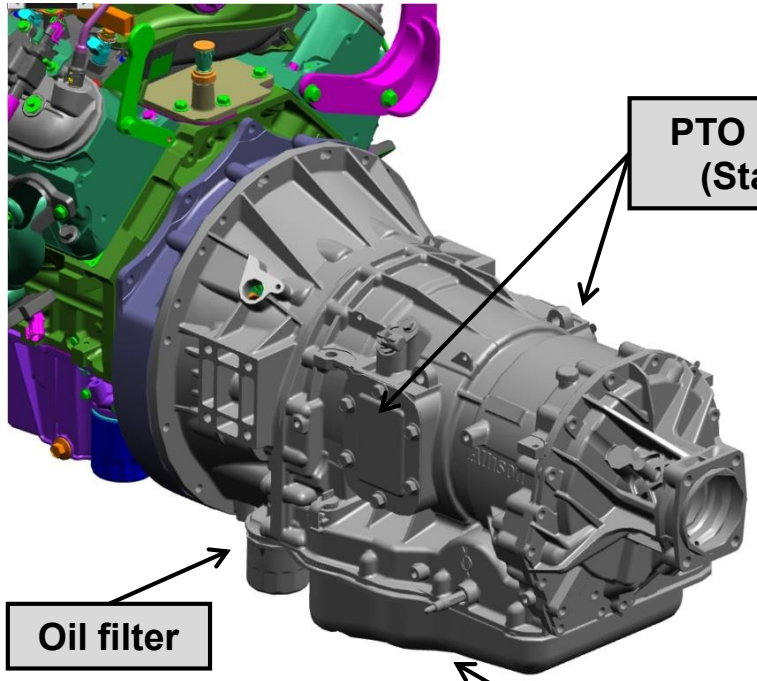
Transmission – Class 5

- Introduce Allison LCT1000 transmission & Allison TCM

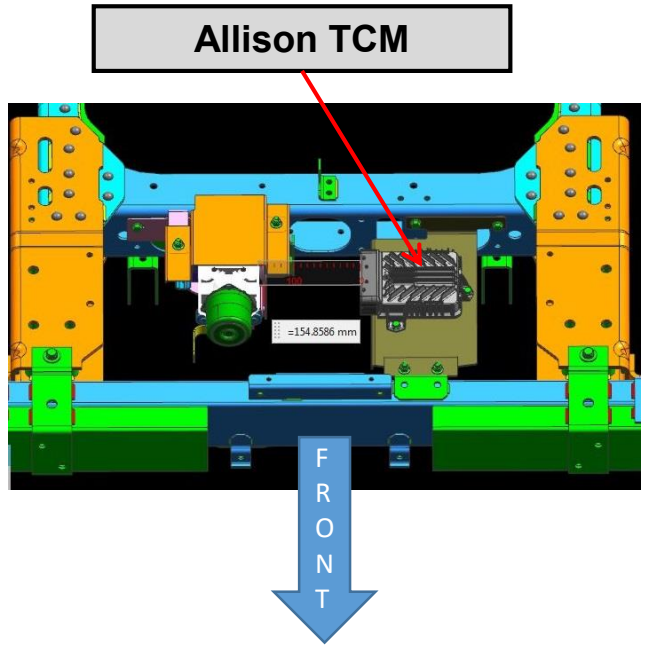
Transmission Shift Impact - Change PRNDL:

Current:
P / R / N / D6 / D4 / 2 / 1

New:
P / R / N / OD / 3 / 2 /1

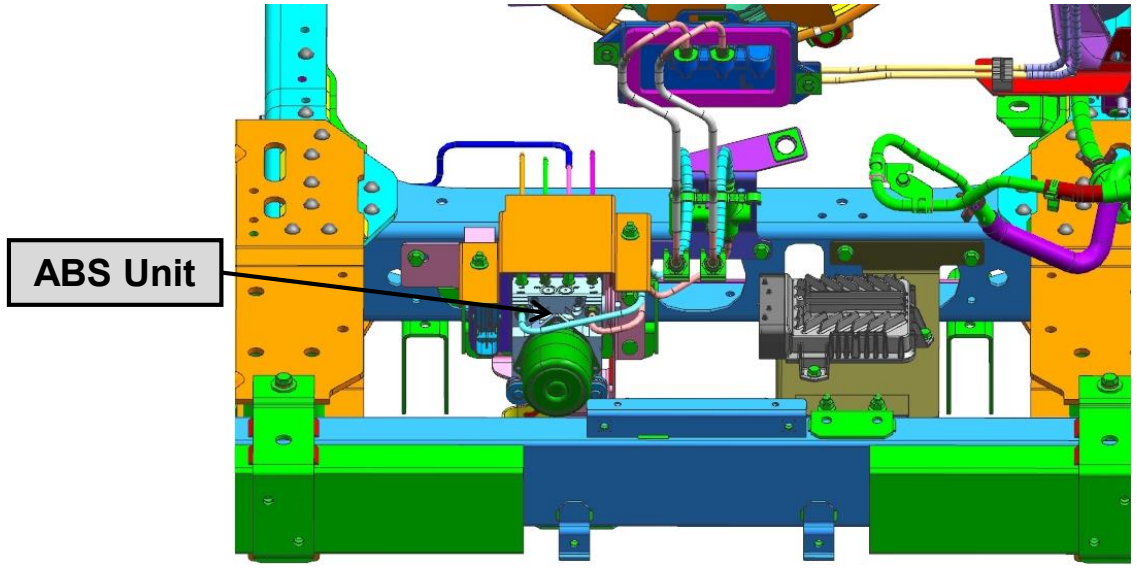


Gear Ratio	1st	3.100
	2nd	1.810
	3rd	1.410
	4th	1.000
	5th	0.710
	6th	0.610
	Rev.	4.490
Final	Ratio	**5.570**



Brakes – Class 5

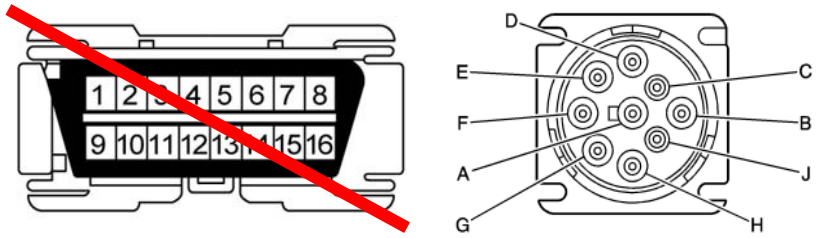
- Introduce higher capacity (Class 5) RR disc brakes
  - Front Ø363mm x 42mm Disc
  - Rear Ø348mm x 42mm Disc
- Implement Vacuum + PA (power assist) Brake System w/ ABS

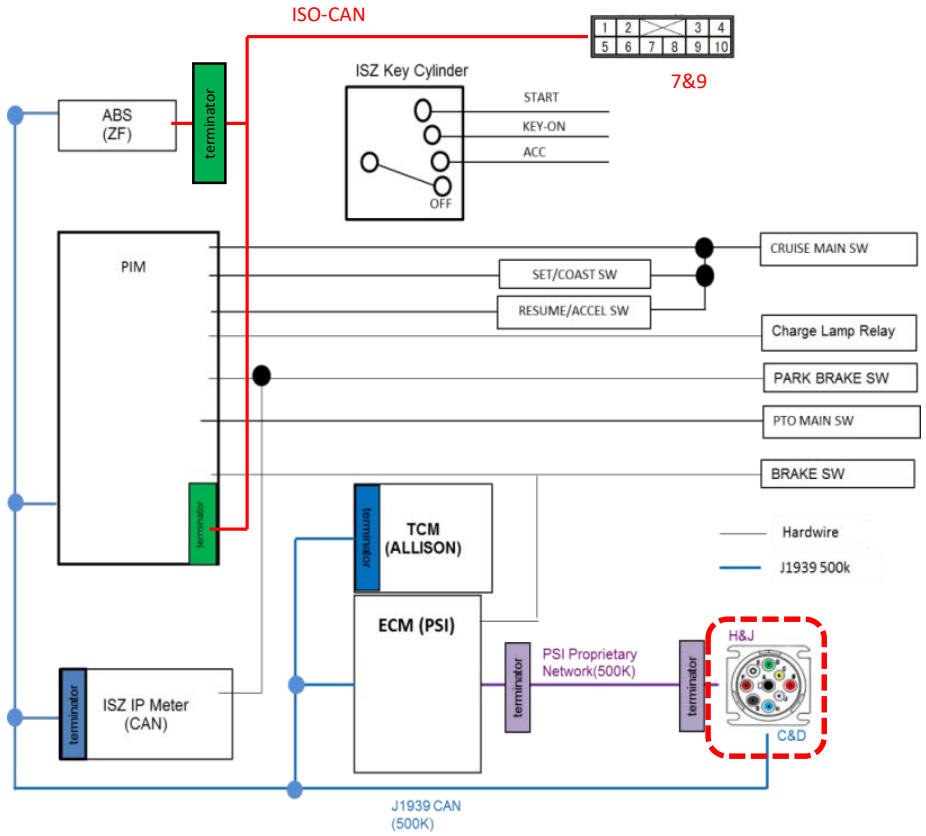


Electrical Architecture – Class 5

- CAN I/P Meter (SAE J1939 500k)

- Delete GM-LAN
- CAN (J1939) 500kbps
- Change diagnostic connector
  - ECM/TCM/PIM/ABS
  - Trapezoid → Round

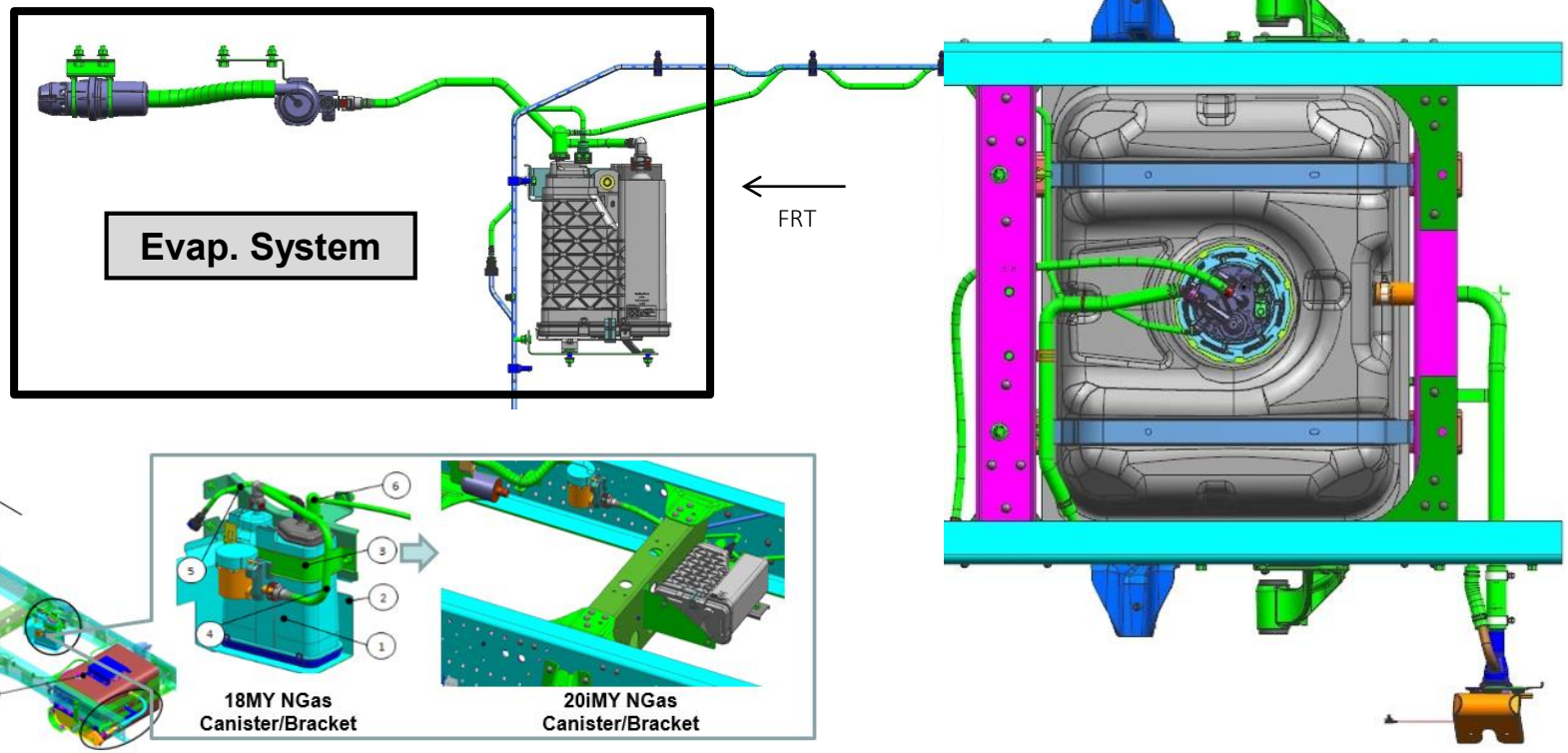


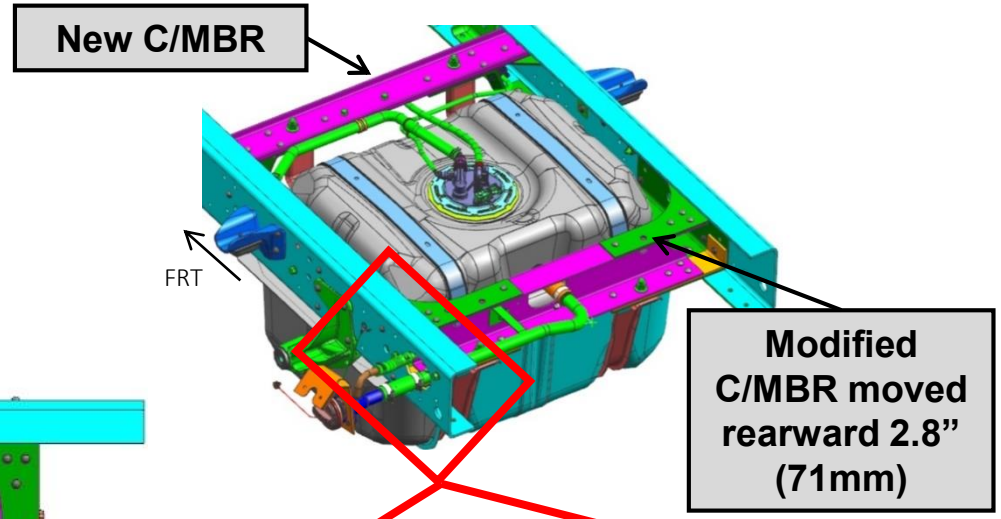


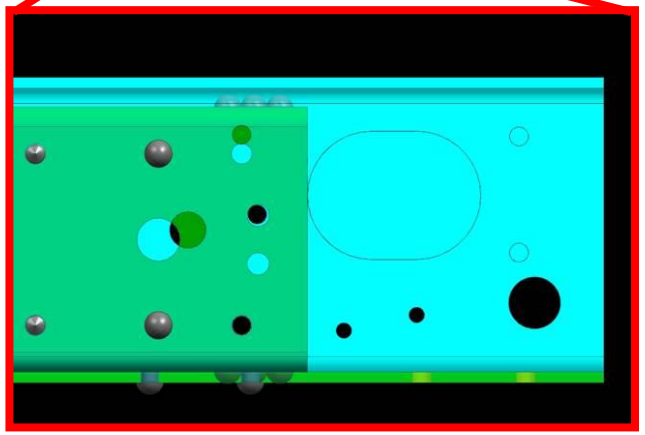
21MY N-Gas

Fuel Tank – Class 5

- 38.6 gal stainless steel fuel tank common with Class 3&4

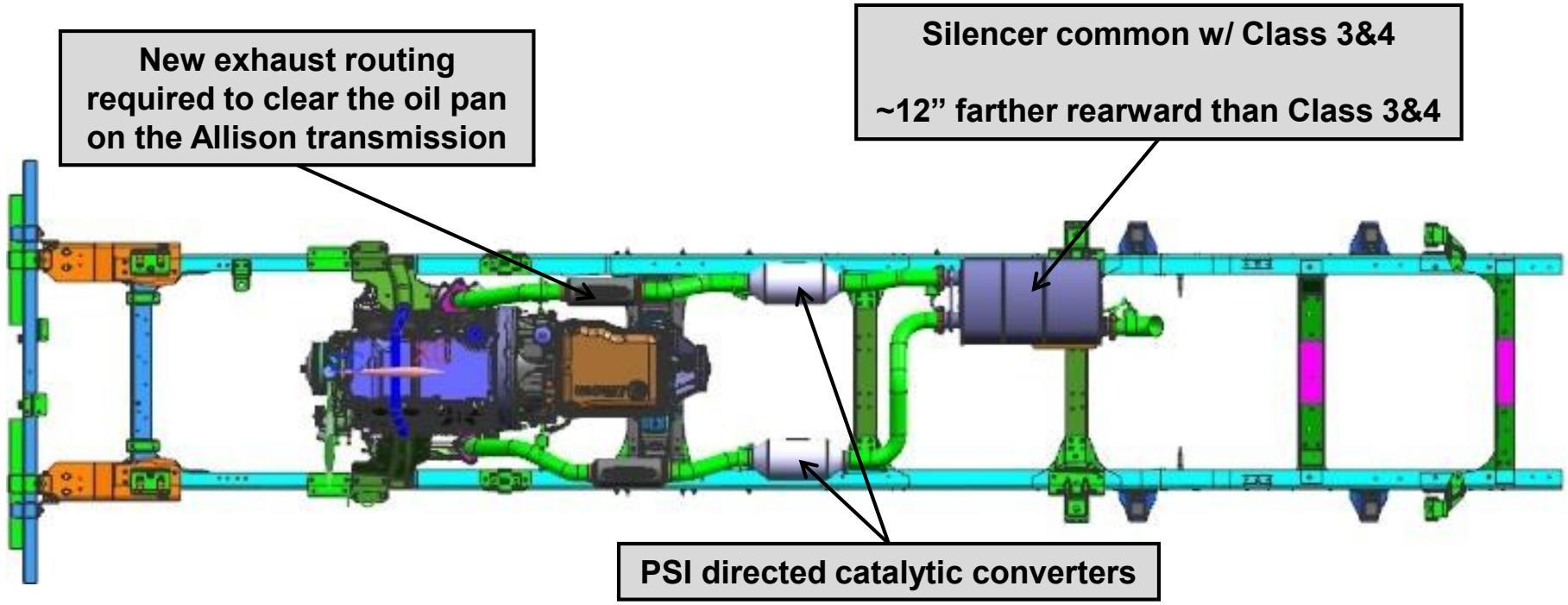






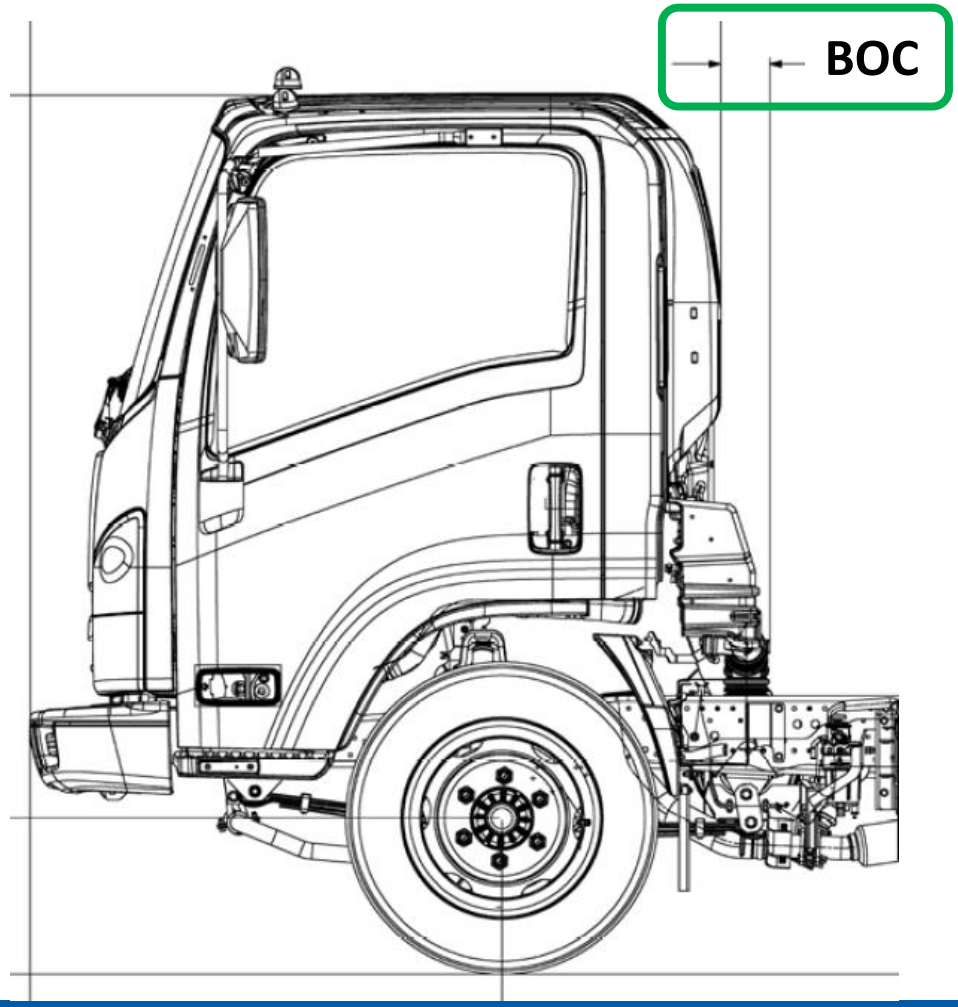
Exhaust – Class 5

- Route exhaust pipes straight back to clear the transmission oil pan
- Eliminated 109” W/B - insufficient exhaust pipe length



Back of Cab – Class 5

- Single Cab BOC = 7.7”
- Common for all single cab N-Series models



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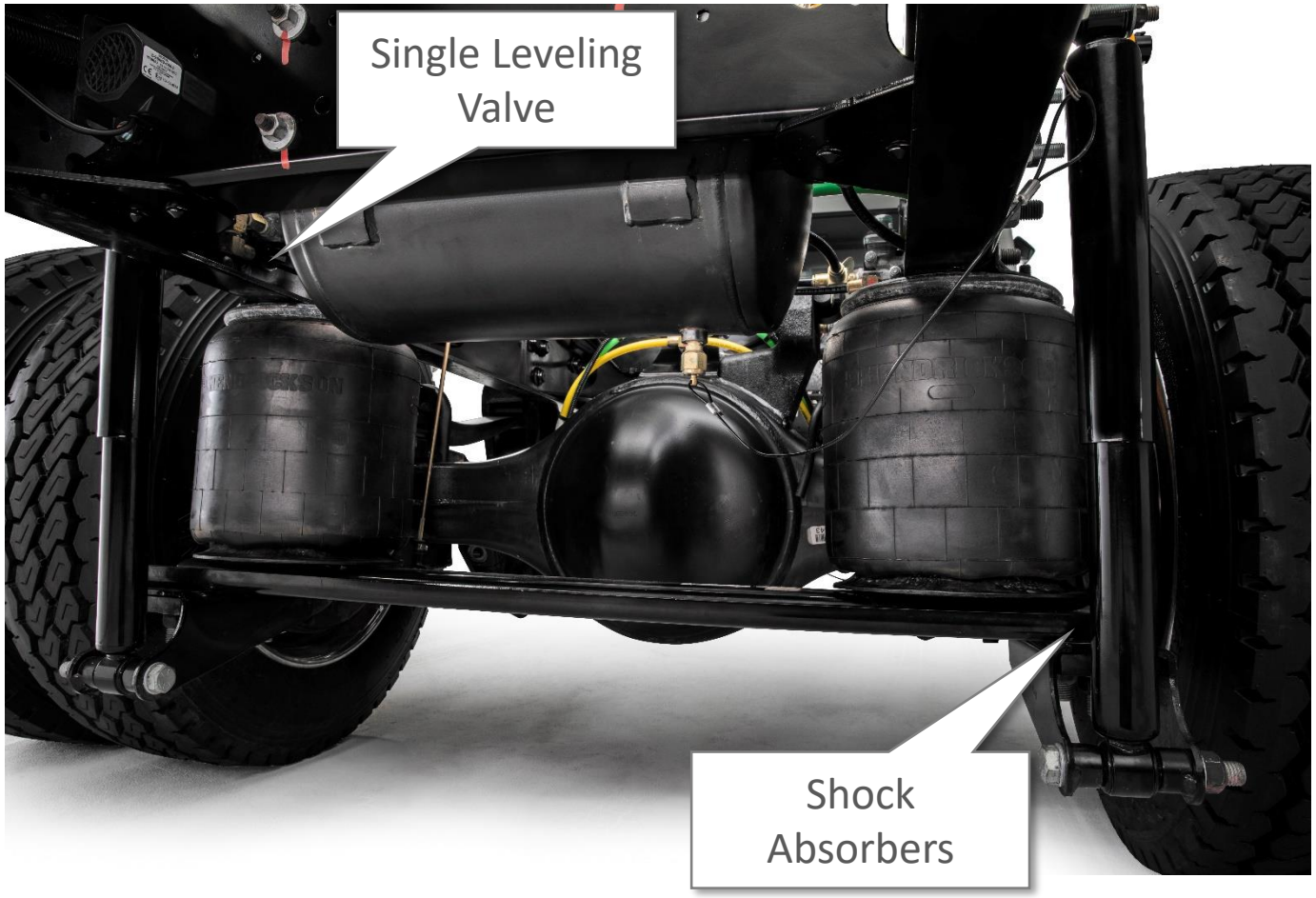
Air Suspension

- Hendrickson HAS 230 Air Suspension
  - ➢ Superb Ride Quality
  - ➢ Available May 2020



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20MY Class 3 Gas Tire Changes

- Reduce Rolling Resistance for Fuel Economy Improvement

215/85R16

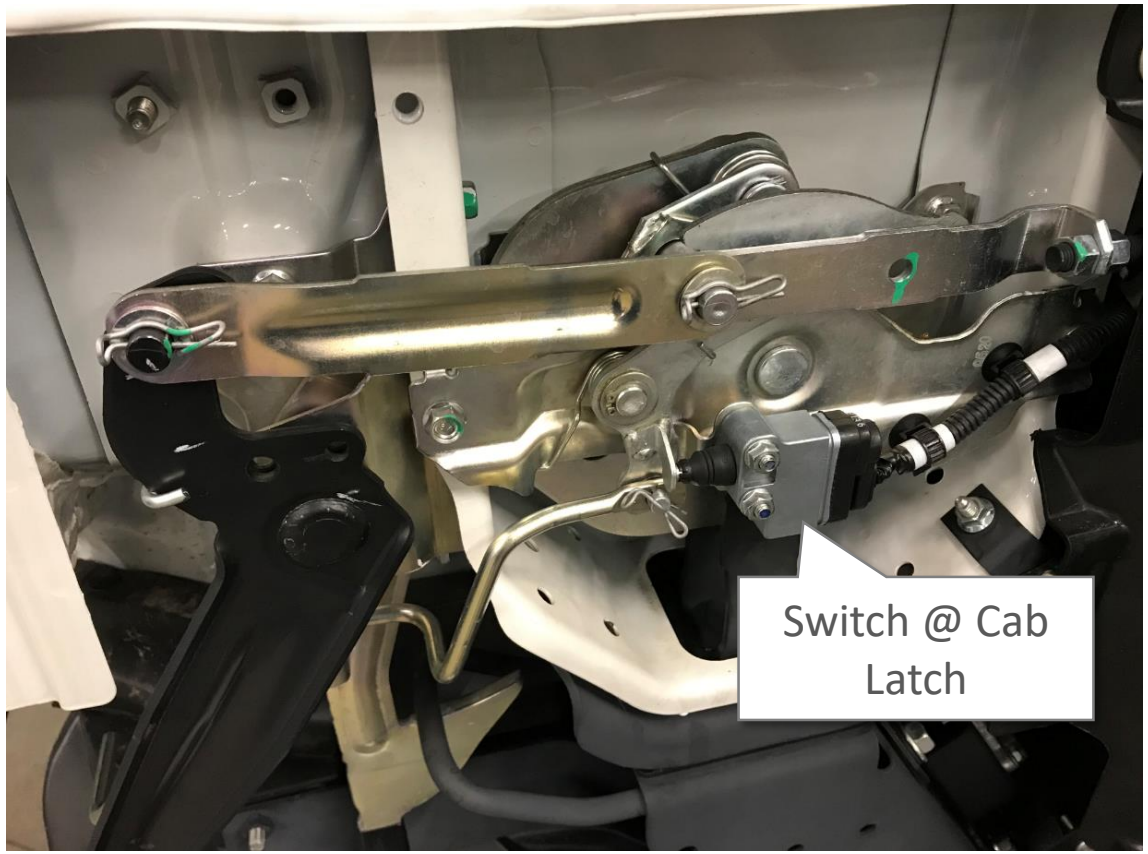
Yokohama
TY213A → TY213B
(Same tread pattern)

Cab Latch Switch & Indicator

- Add switch to cab and indicator lamp w/ buzzer to IP

20MY Class 3&4 Gas

21MY Class 4&5 Diesel



N-Diesel
N-Gas
FTR

Audio System Option

- ❑ Alpine iLX-207 Head Unit
  - 7" VGA touch screen display
  - Apple CarPlay compatible
  - Android Auto compatible
  - USB & Aux
  - Bluetooth hands-free
  - 1 Rear Camera Input Prewired

- ❑ Now Available

- ❑ Option Code I1V

N-Diesel
N-Gas
FTR

BU Camera Option

- ❑ Alpine HCE-C1100 Camera
  - 23’ cable for install to body
  - Protective shroud
- ❑ Now Available
- ❑ Option Code I2V (includes iLX-207)

Electrical Section of Body Builder Guide

Isuzu Back Up Camera Installation Overview

Back Up Camera Installation Kit Part Numbers

Isuzu Back Up Camera Mounting Information

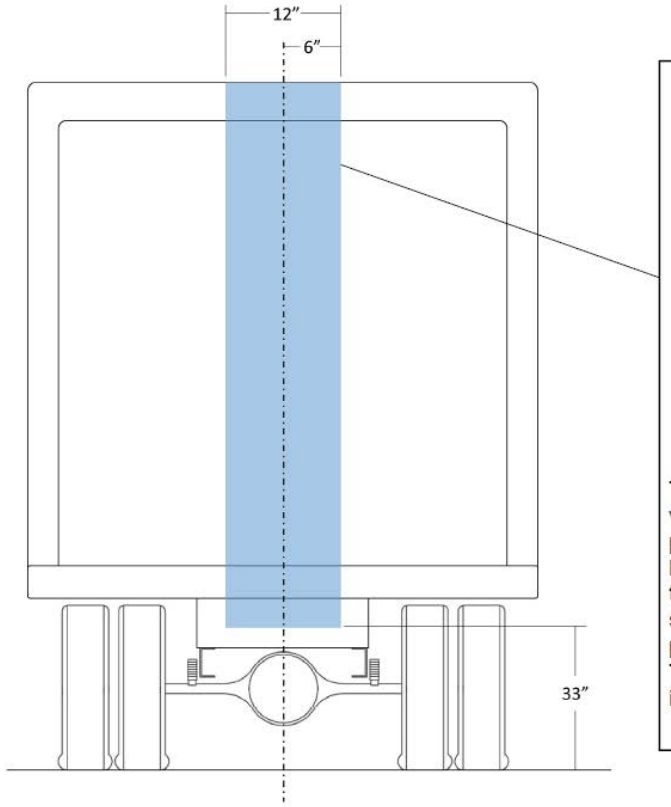


Figure 6 – Camera Mounting Area

HCE-C1100 Camera Mounting Plate Hole Pattern

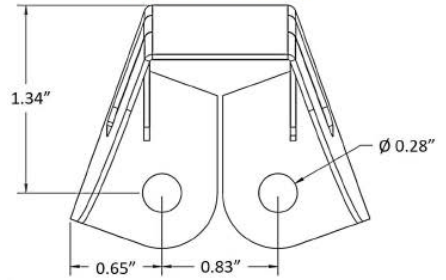


Figure 7 – Camera Mounting Hole Pattern

The Alpine HCE-C1100 camera should be mounted within the shaded area shown in Figure 6 to ensure proper rear visibility. In addition to the two mounting holes shown in Figure 7, a third hole is needed for the camera harness. This camera harness hole should be protected with a rubber grommet to prevent damage to the wiring that will pass through it. The rubber grommet and fasteners will not be included with the camera installation kit.

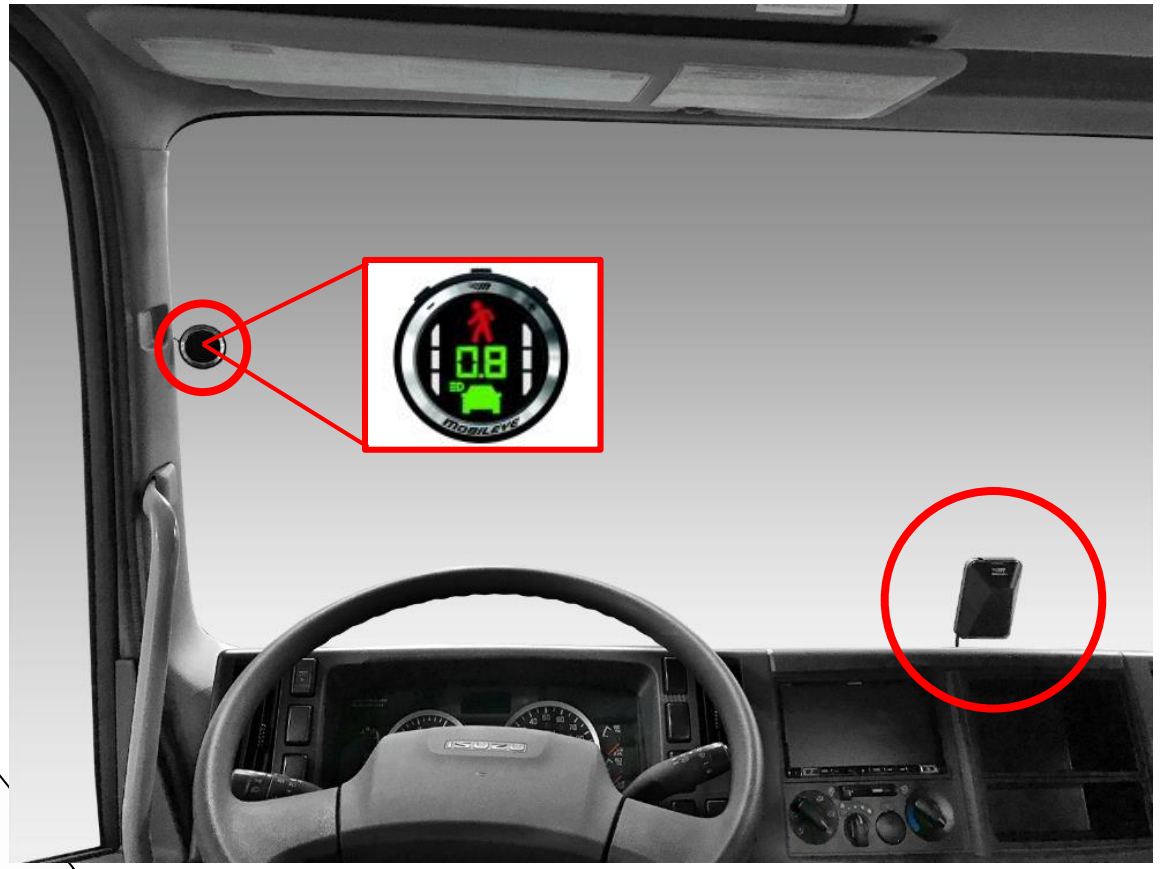
N-Diesel
N-Gas
FTR

Collision / Lane Depart Warning

- Mobileye (optional)
  - Forward Collision Warning
  - Pedestrian Collision Warning
  - Lane Departure Warning
  - Headway Monitoring and Warning
  - Speed Limit Recognition

- Option Code I4V

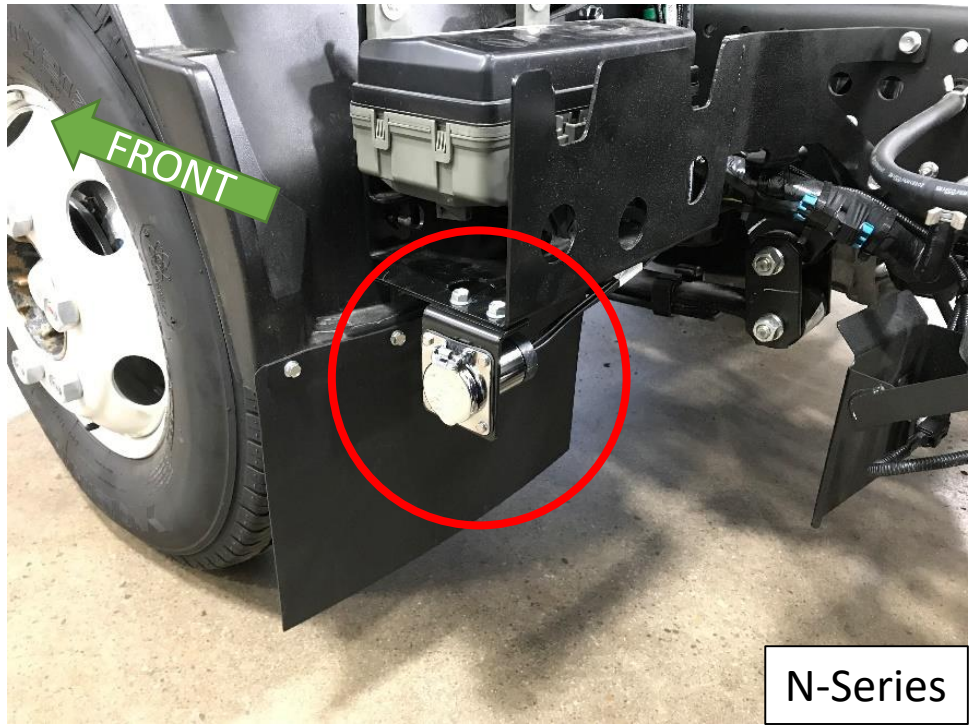
- Now Available



N-Diesel
N-Gas
FTR

Heater Cord Receptacle

- Addition of Receptacle for Engine Block & Oil Pan Heater
- Now Available



Options

- N-Diesel & FTR
  1. I3W – Cold Weather Pack (Block Heater & Heated Fuel Filter)
  2. I3V – Cold Weather Pack w/ Oil Pan Heater
  3. I5W – Oil Pan Heater
- N-Gas
  1. I4W – Block Heater

N-Diesel
N-Gas
FTR

Spare Keys

- 2 additional keys, 4 keys in total
- Option Code I3Z
- Now Available

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Thank You!

Questions?

Reference
Up-fitter Considerations

VIN Label

- Contains important information about the vehicle and must not be covered.

INCOMPLETE VEHICLE MFD BY/
VÉHICULE INCOMPLET FABRIQUÉ PAR

ISUZU MOTORS LIMITED
JAPAN/JAPON 04/2015
THIS VEHICLE IS AN INCOMPLETE VEHICLE./LE VÉHICULE EST UN VÉHICULE INCOMPLET.
GVWR/PNBV: 6,577KG(14,500LB)
GAWR/PNBE: 2,431KG(5,360LB)
(FRONT/AV.) 215/85R16E TIRES/PNEU
16X6K RIMS/JANTE
550KPA(80PSI), COLD TIRE PRESSURE/PRESSION À FROID
GAWR/PNBE: 4,482KG(9,880LB)
(REAR/ARR.) 215/85R16E TIRES/PNEU
16X6K RIMS/JANTE
550KPA(80PSI), COLD TIRE PRESSURE/PRESSION À FR
DUAL/DOUBLE
GCWR/PNBC: 9,299
VIN/NIV: JA 000224
TYPE:

SAMPLE

VE ON CONTROL INFORMATION
/INF ON DE CONTRÔLE DES ÉMISSIONS DE VÉHICULES

THIS VEHICLE COMPLIES WITH U.S. EPA AND CALIFORNIA REGULATIONS FOR 2017 HEAVY-DUTY VEHICLES.
/CE VÉHICULE EST CONFORME AUX RÉGLEMENTS DE L' EPA DES ÉTATS-UNIS ET DE LA CALIFORNIE RELATIFS AUX VÉHICULES UTILITAIRES LOURDS DE 2017 .

VEHICLE FAMILY CODE; HSZX2V0CVLHD
/CODE DE FAMILLE DE VÉHICULES

REGULATORY SUB CATEGORY
/SOUS-CATÉGORIE DE RÉGLEMENTATION;

VOCATIONAL VEHICLES AT OR BELOW 19,500 POUNDS GVWR
/VÉHICULES SPÉCIALISÉS DE OU INFÉRIEURS
À 8,845 KG/19,500 LB(PNVB)

EMISSION CONTROL IDENTIFIERS; LRRA
/IDENTIFICATEUR DE CONTRÔLE DES ÉMISSIONS

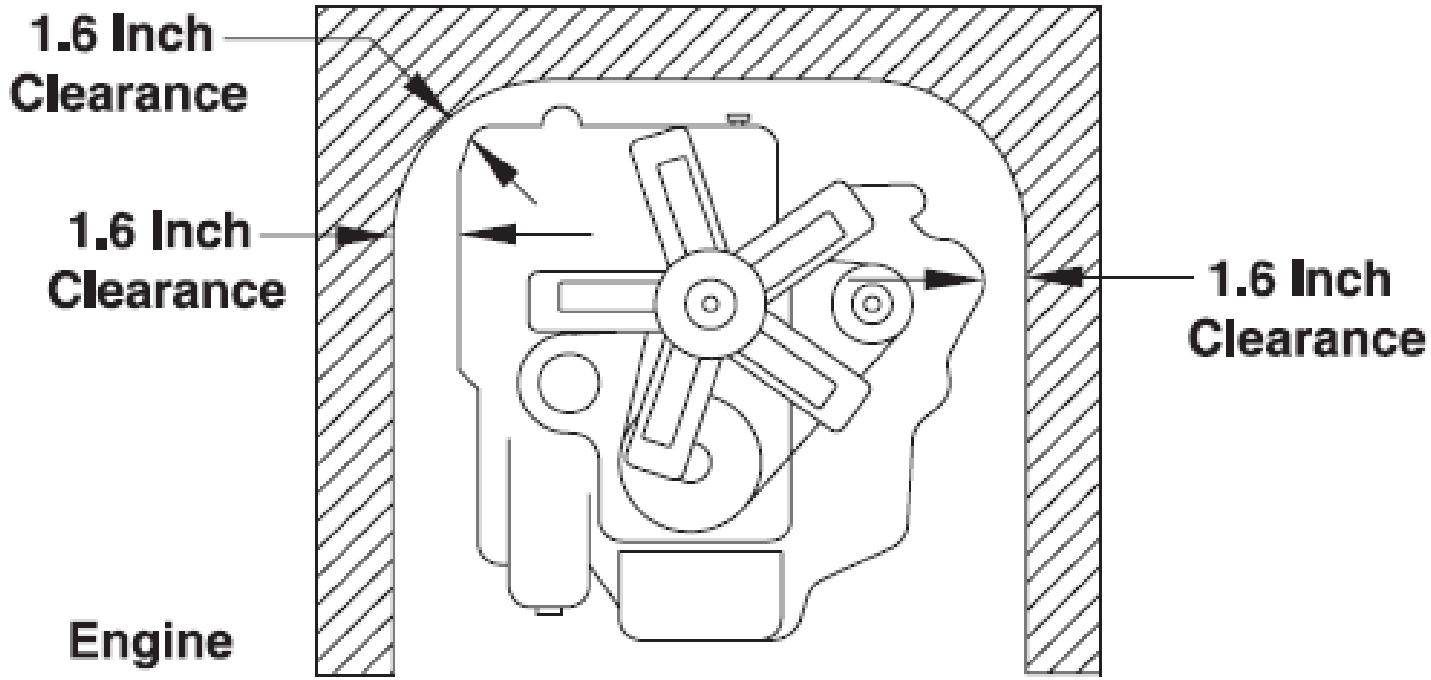
ISUZU 8983285440

Component Clearance

- Design and installation of bodies and/or special equipment should allow for appropriate chassis component clearances.

Examples

- Engine
- Transmission
- Prop Shaft
- Axles
- Wheels / Tires
- Exhaust System
- Brake Lines
- Fuel Lines



See Body Builders Guide for recommended clearances per model.

Serviceability

- Access to items that require routine service should not be obstructed.

Examples

- Engine Oil
- Coolant
- Transmission Fluid
- Fan Belts
- Batteries
- Brake System and Fluid
- Fuel Filler
- DEF Fill

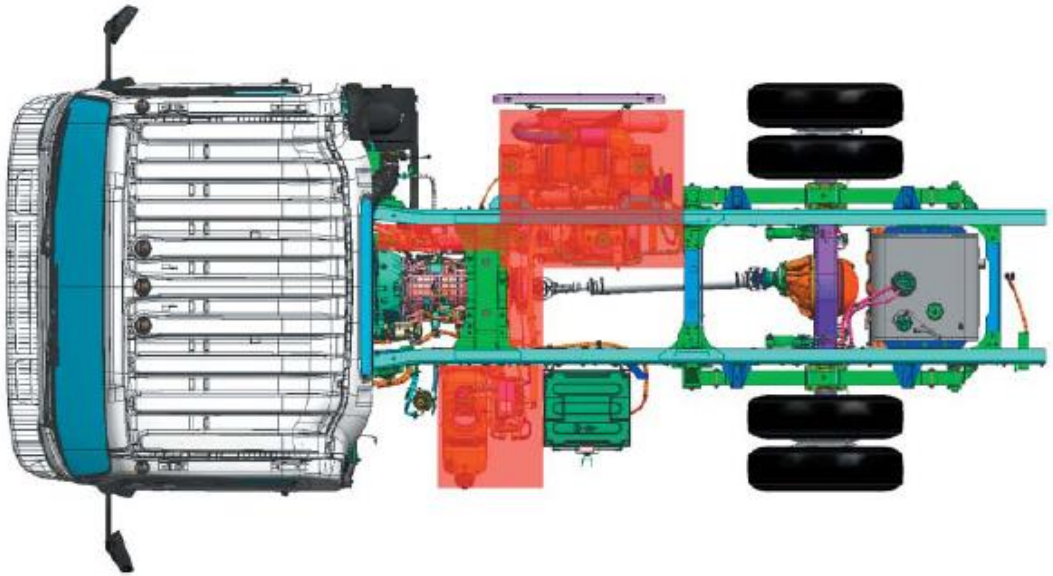
Diesel Coolant Lines

- All Isuzu Diesel trucks MY 2011+ emissions use engine coolant heat to meet DEF thaw guidelines.
- Auxiliary heaters may NOT draw heat from engine coolant.
- Energy used for auxiliary heating may increase DEF thaw times beyond acceptable guidelines.
- Auxiliary heaters must include a self-contained heat source.

Diesel Emission Devices

No modification zones

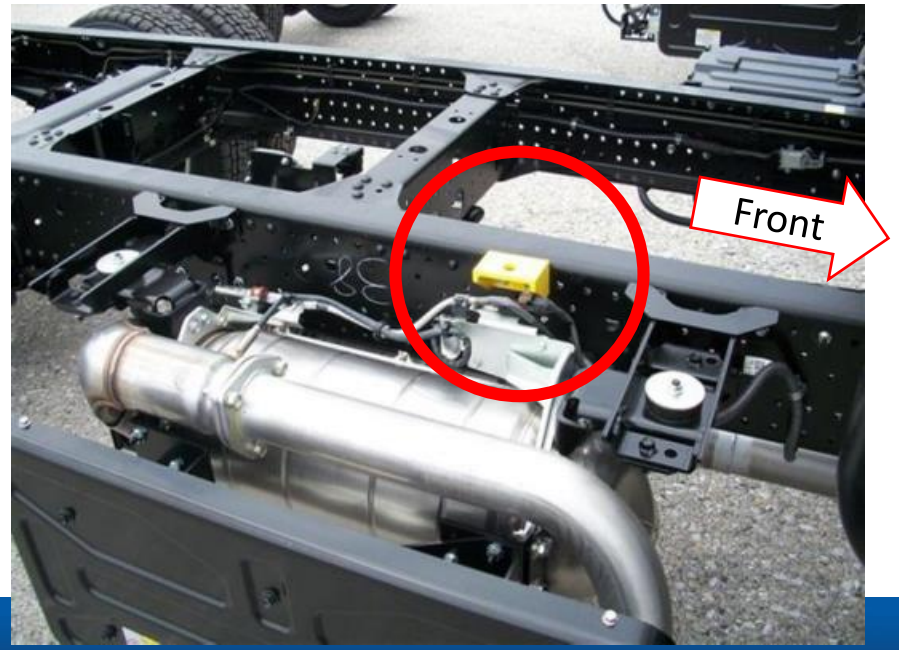
- DEF tank
- DEF lines
- Coolant lines
- Exhaust after treatment

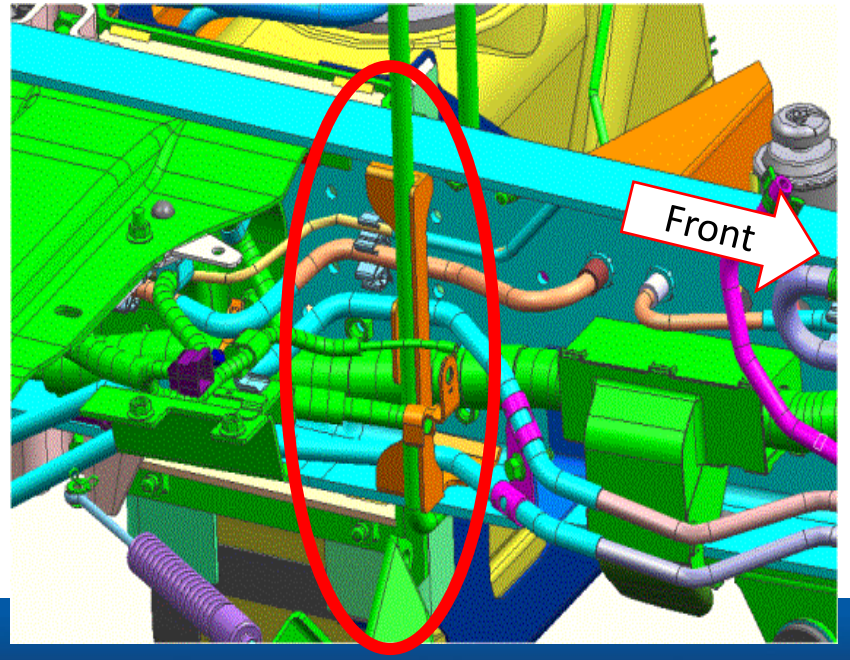


- Modification may cause calibration issues and void emissions compliance.

Special Bolt Placement (N-Series)

- Body mounting bracket on RH chassis rail.
- Reinforcement block w/ U-bolt on LH chassis rail.
- Traditional U-bolt w/ wood reinforcement other locations.





FTR Body Mounting

152” & 170” wheelbases need 3x
188” - 248” wheelbases need 5x

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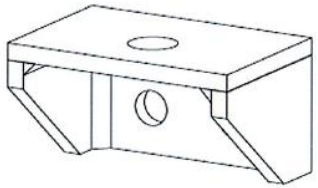

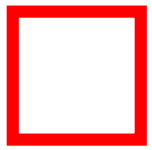

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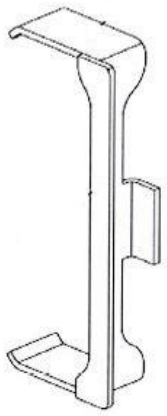
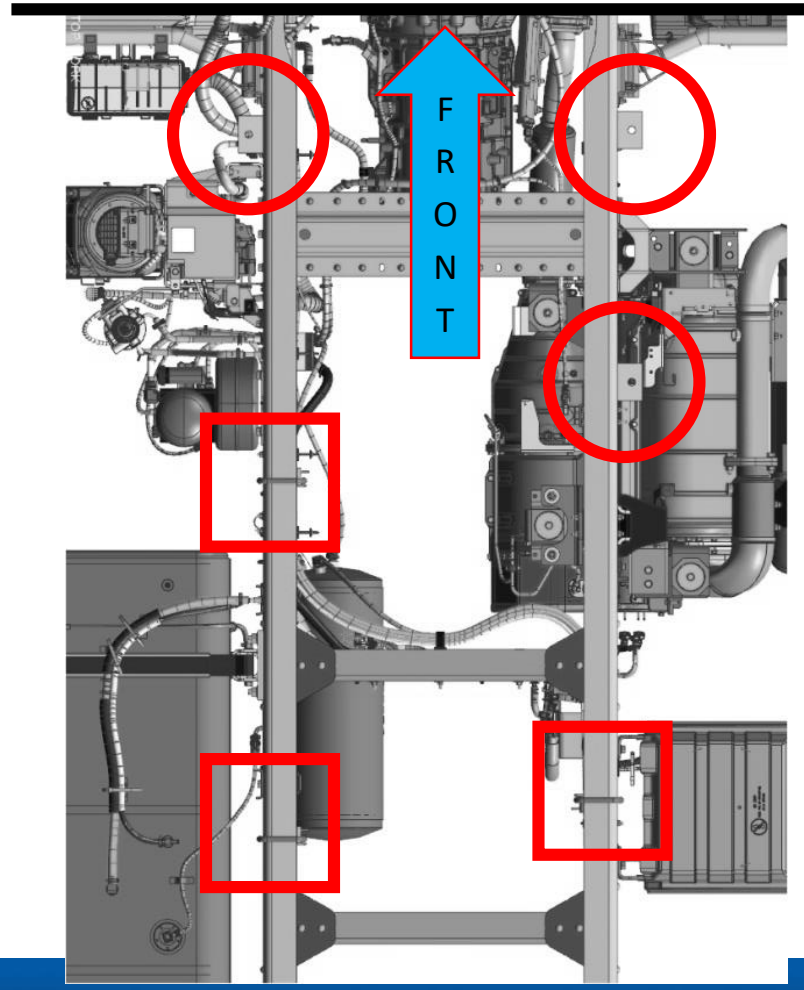


Actual BOC

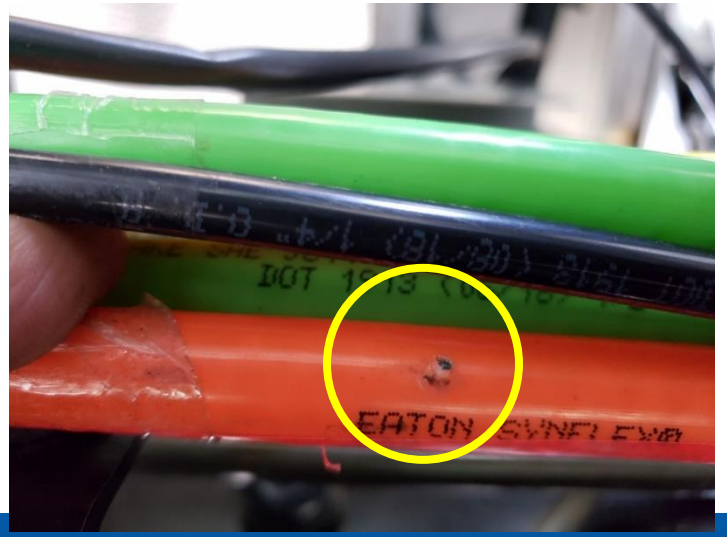


J-Hook Body Mounts (N-Series)

- Isuzu frames are not designed for J-hook mounting.
- This style of mounting may cause frame deformation and will void frame warranty.

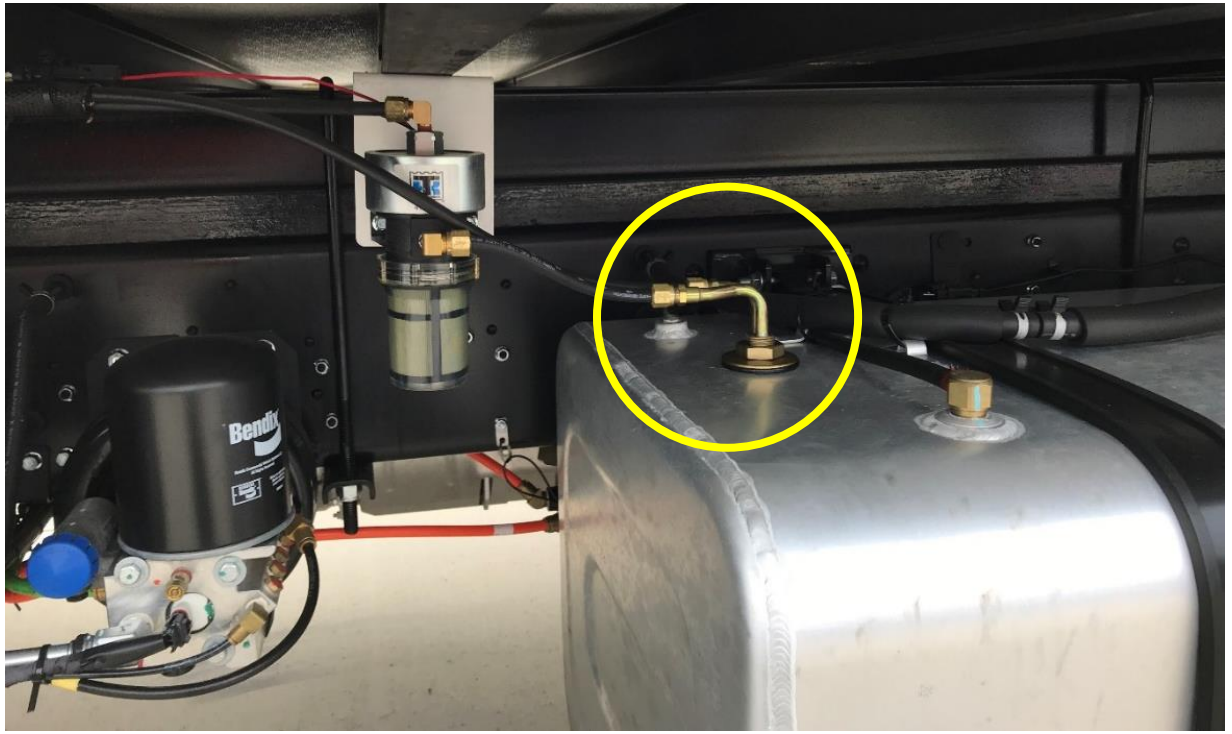
Frame Modifications

- Frame modification is allowed.
- Follow Body Builder Guide for proper procedure.
- Incorrect modification procedures may lead to frame failure.
- Welding consideration.



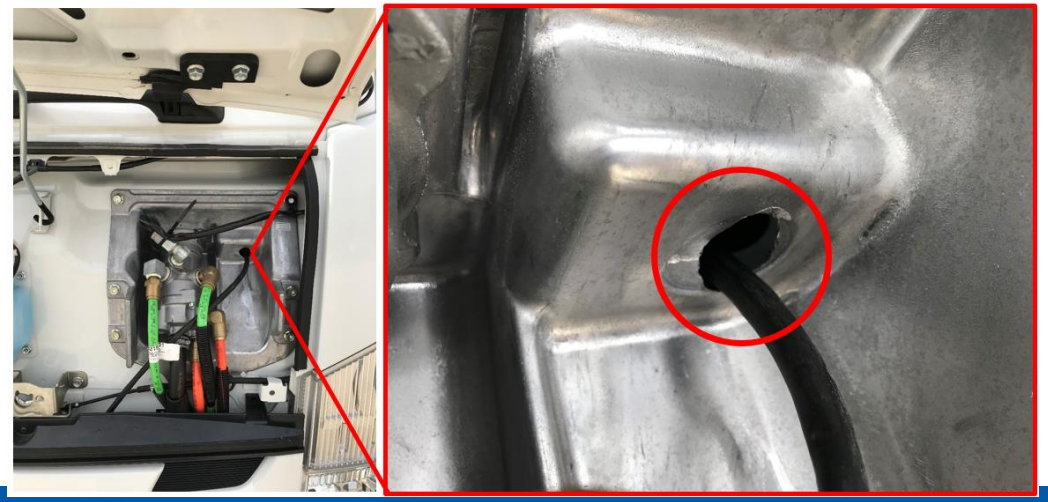
Refrigeration Install & Fuel Tank Mods

- Use caution to prevent debris from entering fuel tank.
- Drain fuel tank before modification.
- Flush fuel tank after modification.



Wiring Comments

- Harness splicing is NOT recommended.
- Disconnect negative battery cable before chassis welding or any electrical modification.
  - To prevent ECM malfunction, wait 3 min after ignition key is in LOCK position.
- Use proper torque for battery cable terminal when reconnecting battery.
- Provide harness protection near sharp edges.
- Star washers may create insufficient ground connections.



Batteries

Low voltage common causes

- Low ambient temperatures
- Vehicle storage
- Relocated batteries
- Battery cable length/size
- Corrosion
- Engine start and stop
- Auxiliary electrical equipment
- Lighting systems left on

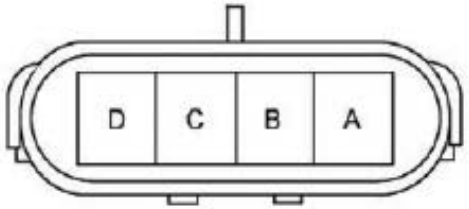
- Isuzu electrical systems have become more sensitive to electrical integrity and require healthy circuits.

Body Builder Connector

- Located at the end of the frame.

Packard 4-pin Weather Pack connector

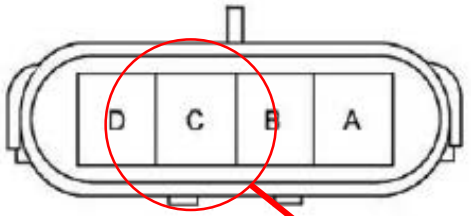
- A: Marker lamps
- B: Hot wire
- C: Rear dome
- D: Ground



- Reference Body Builders Guide for Part Numbers.

Dome Lamp Switch

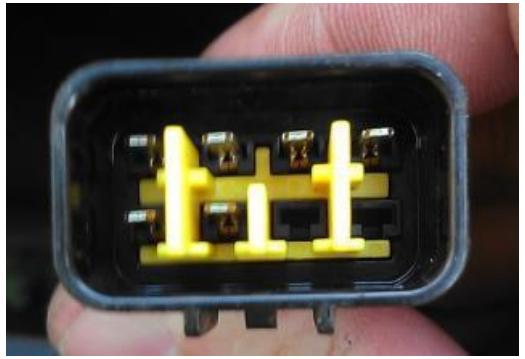
- Installed as standard on N-Series & FTR.



C : Rear Dome Circuit

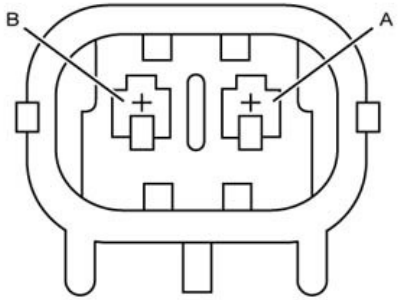
Tail Lamp Connectors

- Tail lamp harness connectors can be ordered through Isuzu dealers.
- Connectors match OE end of frame.
- Chassis harness side P/N: 897364-5300
- Tail lamp side P/N: 897364-5310



Back Up Alarm Connector

- Located near the last cross member at LH frame rail.



2-pin connector

- A: Ground
- B: BU Alarm Supply Voltage

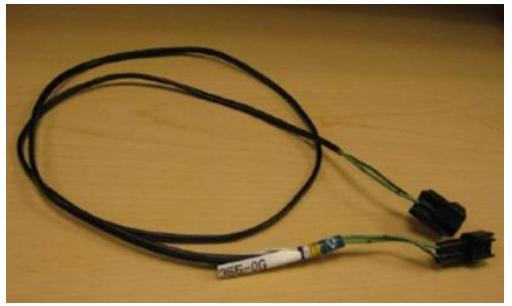
- Reference Body Builders Guide for Part Numbers.

Prop Shaft Parts

WB Modification Harnesses

- Harness splicing should be avoided if possible.
- Extension harnesses are available:
  - N-Diesel extension harness (H-101)
    - P/N: 8980626380 (QTY 1)
  - N-Diesel harness mounting clips
    - P/N: 5097003230 (QTY 5)
  - N-Gas rear ABS sensor extension harness
    - P/N: 8972193550 (QTY 2)
  - N-Gas harness mounting frame clips
    - P/N: 5097090120 (QTY 10)

Supports up to 212” WB



N- Diesel Fuel Filler

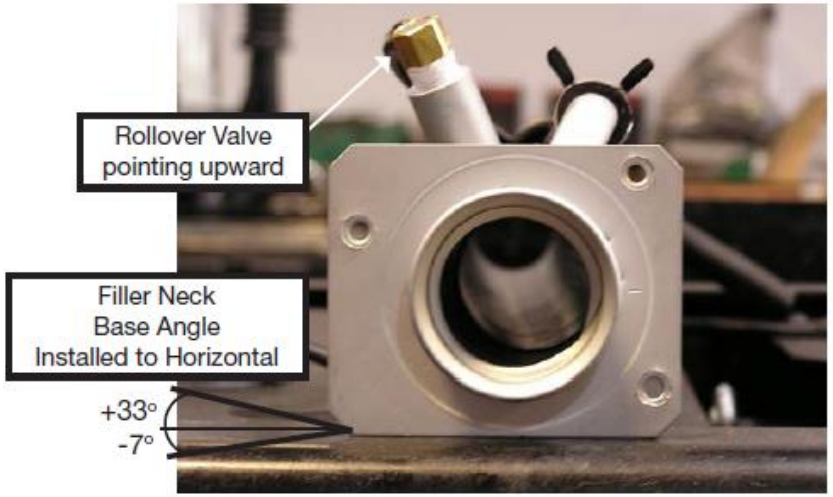
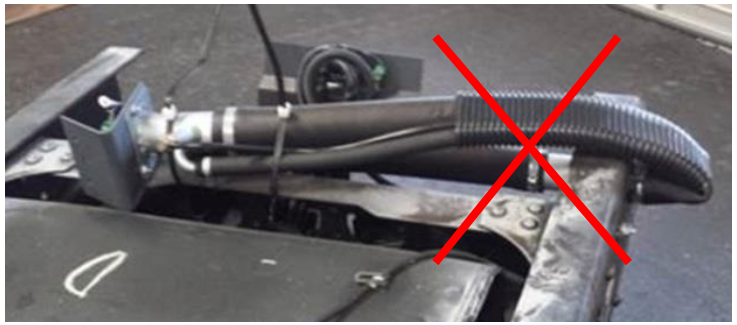


Figure 10.34.2

- Fuel filler orientation
- Rollover valve up

Figure 10.33.1

- Splash back valve
- LH frame rail
- Flat side up



⚠CAUTION

DO NOT RESTRICT OR KINK THE FUEL TANK VENT HOSE.

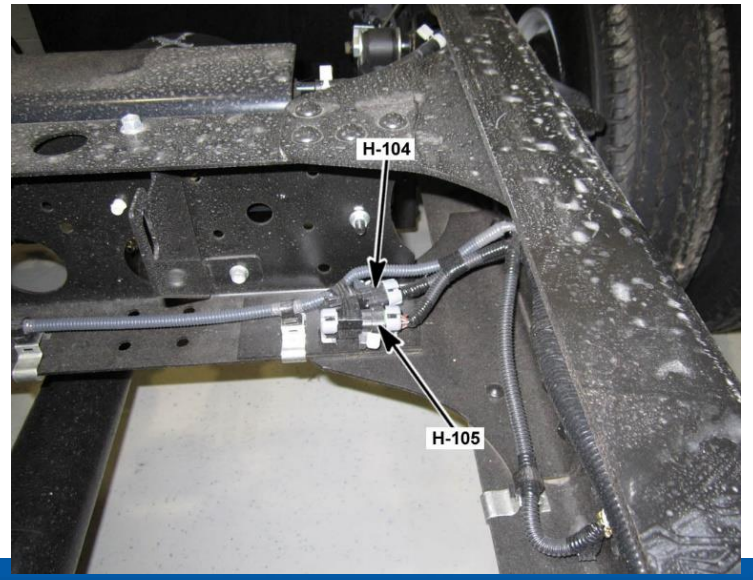
OPERATING THIS VEHICLE WITH A RESTRICTED OR KINKED FUEL TANK VENT HOSE MAY CAUSE SERIOUS DAMAGE TO THE FUEL TANK AND/OR FUEL INJECTION PUMP. CONTINUED OPERATION MAY CAUSE ENGINE FAILURE.

Power Take Off

- Reference the Body Builder Guide for an entire section dedicated to PTO.
- ECM communication to prevent DTCs.
  - Recommended using Isuzu PTO switches and chassis connectors.
  - Remote PTO controllers must signal PTO activation to ECM.

PTO Main & Idle Switches

PTO Connector on Chassis



N-Series Application Approval Support

- Bodies up to 91” inside height DO NOT require engineering approval if:
  - Vertical CG is less than 63 inches above ground,
  - More than 30% of weight is located on front axle AND
  - A successful weight distribution was completed without exceeding axle GAWR when level loaded to GVWR.

- Bodies with a 97” inside height maximum should follow the Isuzu engineering approval process.
  - This process should be initiated by the selling truck dealer.