BMC

10.06.2023
ST-YH-2914

DECLARATION LETTER FOR DISTRIBUTORSHIP

TO THE CONTRACTING AUTHORITY of
MATERIAL RESERVES AGENCY, CHISINAU MUNICIPALITY,

We, as BMC Otomotiv Sanayi ve Ticaret A.Ş., located at Kemalpaşa Mah. Kemalpaşa Caddesi No: 288 Pınarbaşı, 35060 İzmir / Türkiye hereby declare and confirm that **AGROTRAC PRIM S.R.L.** located AT MD-2002, Republica Moldova MD, str A. Mateevici 99.A, or. Stauceni, is our official exclusive distributor for all sales & after-sales services and also authorized to provide warranty and post warranty obligations of BMC Trucks in the territory of Moldova Republic.

Kindly submitted for your information.

BMC

Export Sales Manager - Commercial Vehicles

B.Tarık OZELER

BMC
OTOMOTİV SAN. ve TİC. A.Ş.

BMC 417

LIGHT TRUCK

CABIN
TYPE
Low Roof - Without Bed
CAB SUSPENSION
Mechanical
AXLE CONFIGURATION
4X2

ENGINE
BRAND / MODEL
Cummins B4.0EVI E170
TYPE
Turbo Intercooler Diesel
NUMBER OF CYCLINDERS
4
DISPLACEMENT
3.956 L
MAX. POWER
168 PS (120 kW) @ 2400 rpm
TORQUE
600 Nm @ 1100-1800 rpm

TANKS
FUEL TANK CAPACITY (3365 WB)
130 L
FUEL TANK CAPACITY (3845 WB)
200 L
ADBLUE TANK CAPACITY
18 L

GEAR BOX
BRAND / MODEL
Eaton ES0-6106 (Manual)
NUMBER OF GEARS
6 Forward, 1 Reverse
GEAR RATIO
6,195:1 ; 0,775:1 (Reverse: 5,69:1)
CLUTCH
362 mm (Single Disc)

AXELS
FRONT AXLE
Load Capacity
3200 kg
REAR AXLE
Number of Differential Speeds
Single Speed
Gear Ratio
3.889:1
Load Capacity
6400 kg

SUSPENSION
FRONT AXLE
Leaf Spring, Telescopic Shock Absorbers
REAR AXLE
Leaf Spring, Telescopic Shock Absorbers
ANTI-ROLL BAR
Front and Rear Axle

TYRES
SIZE / NUMBER
215 / 75 R 17.5, 6+1

RIMS
SIZE
6.0 J x 17.5

PERFORMANCE
TOP SPEED (LIMITED) (KM/H)
90
TURNING BADIUS (M)
3365 WB ; 6.7 - 3845 WB ; 7.3

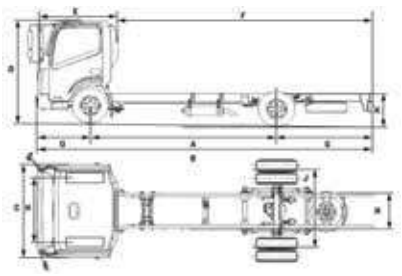
ELECTRICAL SYSTEM
BATTERIES
2 x 12 V / 92 Ah
ALTERNATOR
28 V, 90 A
STARTER
24 V, 3,6 kW

STEERING SYSTEM
TYPE
Hydraulic

BRAKE SYSTEM
BRAKE SYSTEM TYPE
Air brake, Disc brake, ABS, ESC, HSA, ASR, AEBS, LDWS

CHASIS
CHASSIS PROFILE
"C" Section

STANDARD ACCESSORIES
Digital Air Conditioner (Multimedia Control)
Bluetooth, Radio/MP3 Player
MP5 Multimedia
Advanced Emergency Braking System (AEBS)
Lane Departure Warning System (LDWS)
Hill Start Assist (HSA)
Electronic Stability Control (ESC)
Cruise Control
Digital and Analog Cluster
Central Locking System (Remote Control)
Tire Pressue Monitoring System (TPMS)
Power Steering
Steering Wheel Control Buttons
Automatic Headlights
Daytime Running Lamps (LED)
Side Marker Lights
Fog Lights
Adjustable Headlights
Rear View Camera
Rear Parking Sensor
Heated Exterior Mirrors
Electrically Controlled Windows
Fabric Seats
1 (Driver) + 2 (Passenger) Seat Configuration
Adjustable Driver's Seat
Hand-Lever Controlled Engine Brake
Safety Belt (3 Pcs)
Side Door Document's Area
Car Lighter, Ashtray
USB Charger
Sun Visor
Glove Box
Upper Shelves Inside the Cabin
Cup Holder
Tow Hook (Rear & Front)
Lockable Fuel Tank Cap
Lockable AdBlue Tank Cap
PTO Preparation
Spare Tyre



DIMENSIONS (mm)

A: Wheelbase	3365	3845
B: Overall Length	6155	7055
C: Overall Width (Excluding Mirrors)	1995	1995
D: Overall Height	2390	2390
E: Cabin Length	1682	1682
F: Useful Chassis Length	4473	5373
G: Rear Overhang	1590	2070
H: Front Track	1710	1710
J: Rear Track	1800	1800
K: Chassis Height	865	850
N: Chassis Width	850	850
O: Front Overhang	1110	1110

WEIGHTS (KG)

	LEGAL	TECHNICAL
MAX. WEIGHT LOADED FRONT AXLE	2935	3200
MAX. WEIGHT LOADED REAR AXLE	6065	6400
GROSS VEHICLE WEIGHT	9000	9600

CURB WEIGHT (KG)

WHEELBASE	3365	3845
CURB WEIGHT	3025	3130
PAYLOAD	5975	5870

BMC OTOMOTİV SANAYİ VE TİCARET A.Ş.
Kemalpaşa Caddesi No:288 Pınarbaşı 35060 Bornova / İZMİR TÜRKİYE 444 9 262 www.bmc.com.tr

EC CERTIFICATE OF COMFORMITY

VEHICLE CATEGORY N2 (Incomplete Vehicles)

The Undersigned;

FEVZİ BALCI

(GROUP LEADER)

hereby certifies that;

0.1. Make (Trade name of manufacturer)	**BMC**
0.2. Type	**415N22**
Variant (a)	**NYSL411**
Version (a)	**90Y39120M75VI**
0.2.1. Commercial name	**BMC 417**
0.4. Vehicle category	**N2**
0.5. Name and address of manufacturer	**BMC OTOMOTİV SANAYİ VE TİCARET A.Ş. Kemalpaşa Cad. No: 32 35060 İZMİR**
0.6. Location and method of attachment of the statutory plates	**IN THE CABIN, AT THE BEHIND SIDE OF THE DRIVER SEAT - RIVETED.**
Location of the identification number	**IT IS MOUNTED WITH THE NUMBERS ON THE RIGHT CHASSIS ARM.**
0.9. Name and address of the manufacturer's representative (if any)	-
0.10. Vehicle identification number	
0.11. Date of Manufacture of Vehicle	**02.08.2024**

conforms in all respects to the type described in approval (TR*2007/46*8128*04) type-approval number including extension number) issued on 26/04/2024 and cannot be permanently registered without further approvals.

Place /Date: İZMİR 22.10.2024	Signature: BMC OTOMOTİV SAN. ve TİC. A.Ş.

General construction characteristics

1. Number of axles	2	and wheels	6
1.1. Number and position of axles with twin wheels	1		2. AXLE
2. Steered axles (number, position)			1, FRONT
3. Powered axles (number, position, interconnection)			1, (2nd AXLE)

Main dimensions

4. Wheelbase				4.1. Axle spacing			
1-2	3845 mm	2-3	-		3-4	-	
5.1. Maximum permissible length	12000 mm			6.1. Maximum permissible width			2550 mm
8. Fifth wheel lead for semi-trailer towing vehicle (maximum and minimum)						-	
12.1. Maximum permissible rear overhang						7045 mm	

Masses

14. Mass of the incomplete vehicle in running order 14.2 Actual Mass				6520 kg
14.1. Distribution of this mass amongst the axles				
1. 1865 kg	2. 1110 kg	3. -	4. -	5. -
15. Minimum mass of the vehicle when completed				6520 kg
15.1. Distribution of this mass amongst the axles				
1. 1865 kg	2. 1110 kg	3. -	4. -	5. -
16. Technically permissible maximum masses				
16.1. Technically permissible maximum laden mass				9000 kg
16.2. Technically permissible mass on each axle				
1. 3200 kg	2. 6400 kg	3. -	4. -	5. -
16.3. Technically permissible mass on each axle group				
1. -	2. -	3. -	4. -	5. -
16.4. Technically permissible maximum mass of the combination				-
17. Intended registration/in service maximum permissible masses in national/international traffic				
17.1. Intended registration/in service maximum permissible laden mass				9000 kg
17.2. Intended registration/in service maximum permissible laden mass on each axle				
1. -	2. -	3. -	4. -	5. -
17.3. Intended registration/in service maximum permissible laden mass on each axle group				
1. -	2. -	3. -	4. -	5. -
17.4. Intended registration/in service maximum permissible mass of the combination				- kg
18. Technically permissible maximum towable mass in case of				
18.1. Drawbar trailer	-	18.2. Semi-trailer		-
18.3. Centre-axle trailer	-	18.4. Unbraked trailer		-
19. Technically permissible maximum static mass at the coupling point				-

Power plant

20. Manufacturer of the engine		CUMMINS	
21. Engine code as marked on the engine		B4.0EVIE170	
22. Working principle	COMPRESSION IGNITION	23. Pure electric	-
23.1. Hybrid (electric) vehicle	-	24. Number and arrangement of cylinders	4 INLINE
25. Engine capacity	3956 cm3	26. Fuel	DIESEL
26.1. Mono Fuel / Bi fuel / Flex fuel		27. Maximum net power	125 kW @ 2400RPM
28. Gearbox (type)	MANUAL		

Maximum speed

29. Maximum speed	90 km/h

Axles and suspension

31. Position of lift axle (s)	-
32. Position of loadable axle (s)	-
33. Drive axle(s) fitted with air suspension or equivalent	-
35. Tyre /wheel combination	215/75 R 17.5 / 4x2/2

Brakes

36. Trailer brake connections mechanical/electric/pneumatic/hydraulic	-
37. Pressure in feed line for trailer braking system..... bar	-

Coupling device

44. Approval number or approval mark of coupling device (if fitted)	-
45. Types or classes of coupling devices which can be fitted	-
45.1. Characteristics values	D...-... / V...-... / S...-... / U...-...

Enviroment performance

46. Sound level Stationary: 84 dB(A) at engine speed: 1800 min-1 Drive-by: 75 dB(A)									
47. Exhaust emission level: EURO VI OBD E									
48. Exhaust emissions Number of the base regulatory act and latest amending regulatory act applicable EU 595/2009...EU 2019/1939									
1.1. test procedure: ESC / WHSC EURO VI									
CO:	0.0059 gr/kWh	THC:	0.0008 gr/kWh	NOx:	0.151 gr/kWh	THC+NOx:	0.1518 gr/kWh	Particulate	0.0029 gr/kWh
NH3:0.3 5 p p m Particulate: 5.84E+11									
2. test procedure: ETC / WHTC EURO VI									
CO:	0.028 gr/kWh	NOx:	0.072 gr/kWh	NMHC:	- gr/kWh	THC:	0.008 gr/kWh	CH4:-	NH3: 0,24 ppm Particulate: 0.002 gr/kWh
Particulate: 1.96E+11 48.1 CORRECTED VALUE OF SMOKE ABSORPTION COEFFICIENT (m^{-1}): On the engine sticker									

Miscellaneous

52. Remarks: The vehicle has 1 driver seat and 2 crew seats.

ARSLAN
Makina Sanayi Ticaret Ltd. Şti.

TECHNICAL SPECIFICATIONS

Dimensions (approx.)

- Volume : 5m3
- Length : 3700 mm
- Width : 2040mm
- Height : 700mm

Superstructure

- Floor : 3 mm thickness **ST37** quality iron sheet.
  Side covers : 2 mm thickness **ST37** quality iron sheet.
  Side walls are openable by swinging (pendulum) and up-to-down.
- Front cover : 2 mm thickness **ST37** quality iron sheet.
- Rear door : 2 mm thickness **ST37** quality iron sheet.
  Rear door is openable by swinging (pendulum).

Hydraulic System (Hyva set)

- Telescopic cylinder.
- Limit control safety valve.
- PTO included

Painting:

Before the painting, the body is washed with special chemicals to purify the waste materials and cleaned by sand blasting method.
After the pasting on the necessary surfaces of the body, the two-coat epoxy primer and two-acrylic paint is applicated on the body.
All painting applications are made in the painting cabin..

Accessories

- Mudguard for the rear tyre group
- Tool box
- Reflector mounting on the rear door.
- Side bars
- Spare Wheel carrier on front wall

Warranty

Arslan Damper gives 2 (two) year guarantee against manufacturing defects.

*****PICTURES FOR REFERENCE**


BMC
34 G 83357


BMC
BMC 417
EURO 6


Digitally signed by Ivanicenco Stanislav
Date: 2025.01.27 11:59:39 EET
Reason: MoldSign Signature
Location: Moldova
MOLDOVA EUROPEANA


MAKEDONYA
BMC 417
BMC
EURO 5


BMC 417
EURO 5

e9*595/2009*2019/1939E*31145*00

Comunicación Relativa a una[1] / *Communication Concerning [1]*:

Homologación de tipo CE / *EC type-approval*
~~extensión de la homologación de tipo CE~~ / ~~*Extension of EC type-approval*~~
~~la denegación de homologación de tipo CE~~ / ~~*Refusal of EC type-approval*~~
~~la retirada de homologación de tipo CE~~ / ~~*Withdrawal of EC type-approval*~~

de un tipo de vehículo con motor homologado en lo que respecta al Reglamento (CE) 595/2009, conforme a las medidas de ejecución establecidas por el Reglamento (UE) 582/2011. / *of a type of a vehicle with an approved engine with regard to Regulation (EC) No 595/2009 as implemented by Regulation (EU) No 582/2011.*

Reglamento (CE) 595/2009 y Reglamento (UE) 582/2011, modificado en último lugar por (EU) Nr. 2019/1939 / *Regulation (EC) No 595/2009 and Regulation (EU) No 582/2011, as last amended by (EU) No. 2019/1939:*

Número de homologación de tipo CE / *EC type- Approval No.*: e9*595/2009*2019/1939E*31145*00
Motivos de la extensión **/** *Reason for extension*: 00

Sección I / *Section I*

0.1. Marca (Nombre comercial del fabricante) / *Make (Trade name of manufacturer)* : BMC

0.2. Tipo / *Type* : 415_595_2009_B4.0EVIE170

0.3. Medio de identificación del tipo, si está marcado en el componente/unidad técnica independiente / *Means of identification of type, if marked on the component/separate technical unit*: NP / *NA*

0.3.1. Ubicación de estos distintivos / *Location of that marking* : NP/ *NA*

0.4. Nombre y dirección del fabricante *Name and address of manufacturer* : BMC Otomotiv Sanayi ve Ticaret A.Ş.
Kemalpaşa Cad. No:288 35060 Pınarbaşı İzmir-Türkiye

0.5. En el caso de componentes y unidades técnicas independientes, localización y método de fijación de la marca de homologación de tipo CE / *In the case of components and separate technical units, location and method of affixing of the EC approval mark:* NP/ *NA*

0.6. Nombre(s) y dirección(es) de la(s) plantas de montaje / *Name(s) and addres(es) of assembly plants* : BMC Otomotiv Sanayi ve Ticaret A.Ş.
(1) Kemalpaşa Caddesi No:288 35060
Pınarbaşı İzmir – Türkiye
(2) Doğanlar Mah. 1580 sok. No : 31
Pınarbaşı İzmir – Türkiye

0.7. Representante del fabricante, (en su caso) / *Name and address of manufacturer's representative (if any)* : BMC TRUCKS SL
CARRE TRAMUNTANA, NUM. 16
17469 VILAMALLA - (GIRONA)

(1) Tachar lo que no proceda / *Srike out what does not apply*

Sección II / *Section II*

1. Información complementaria (si procede) /*Additional information (where applicable):* Ver Adenda */ see Addendum*

2. Servicio técnico responencargado de realizar los ensayos / *Technical service responsible for carrying the tests*: IDIADA

3. Fecha del acta de ensayo/ *Date of test report*: 26/02/2024

4. Número del acta de ensayo / *Number of test report*: TR24030002

5. Observaciones (si las hay) / *Remarks (if any):* Ver Adenda */ see Addendum*

6. Lugar / *Place:* Madrid

7. Fecha / *Date:* Ver firma electrónica / *See electronic signature*

8. Firma / Signature:

EL DIRECTOR GENERAL DE ESTRATEGIA INDUSTRIAL Y DE LA PEQUEÑA Y MEDIANA EMPRESA
P.D. Orden ITU/103/2024, de 8 de febrero de 2024

Anexos */ attachments:* Expediente de homologación */ Information package.*
Acta de ensayo / *Test report.*

(1) Tachar lo que no proceda / *Srike out what does not apply*

Anexo - Información adicional sobre esta Homologación de tipo

Condiciones de la autorización y pie de recurso

Los vehículos, sistemas, componentes o unidades técnicas independientes fabricados en virtud de esta homologación de tipo deben estar identificados y portar las marcas correspondientes según la reglamentación aplicable.

La producción en serie de vehículos, sistemas, componentes y unidades técnicas independientes debe realizarse de acuerdo con la documentación de homologación. Todo cambio en la producción individualizada requerirá autorización expresa previa por parte de la Autoridad de Homologación Española.

Cualquier modificación en los datos incluidos en el certificado de homologación, como el nombre de la empresa, representante en la UE, dirección y las plantas de fabricación deben ser comunicados inmediatamente a la Autoridad de Homologación Española.

La homologación perderá su validez cuando la misma haya sido retirada o el tipo ya no cumpla con los requisitos legales. La retirada tendrá lugar siempre que hayan dejado de cumplirse los requisitos necesarios para la concesión y mantenimiento de la misma, cuando el fabricante no pueda demostrar a la Autoridad de Homologación el cumplimiento con los requisitos y procedimientos para garantizar la conformidad de la producción, en caso de que el titular no cumpla con sus obligaciones inherentes a la homologación o cuando se determine que el tipo homologado no cumple con los requisitos de seguridad y medio ambiente.

La Autoridad de Homologación de Tipo española podrá verificar el cumplimiento de las obligaciones del fabricante en cualquier momento. En particular, se podrá comprobar la correspondencia del producto con el tipo homologado, así como las medidas establecidas para garantizar la conformidad de la producción. A tal efecto se podrán tomar o solicitar las muestras necesarias. Se permitirá el acceso sin trabas a las instalaciones de producción y almacenamiento a los empleados o representantes de la Autoridad de Homologación Española.

La autorización objeto de esta resolución de homologación de tipo no es transferible. Los derechos de marca de terceros no se encuentran afectados por esta homologación.

Contra la presente Resolución, que no pone fin a la vía administrativa, podrá interponerse recurso de alzada [1] ante la Dirección General de Estrategia Industrial y de la Pequeña y Mediana empresa, o ante la Secretaría de Estado de Industria, en el plazo de un mes a partir del día siguiente a su notificación, de conformidad con los artículos 121 y 122 de la Ley 39/2015, de 1 de octubre, del Procedimiento Administrativo Común de las Administraciones Públicas.

[1] Nota: Para interponer recurso de alzada deberá acceder al siguiente enlace:
https://sede.serviciosmin.gob.es/es-es/procedimientoselectronicos/Paginas/detalle-procedimientos.aspx?IdProcedimiento=157

Annex - Additional Information on this Type Approval

Collateral clauses and right to appeal (Courtesy translation)

All vehicles, systems, components or separate technical units which correspond to the approved type are to be identified and marked according to the applied regulation.

The serial fabrication of vehicles, systems, components or separate technical must be in exact accordance with the approval documents. Changes in the individual production are only allowed with express consent of the Spanish Type Approval Authority.

Changes in the data included in the approval certificate, such as the name of the company, EU representative, address and the manufacturing plant are to be immediately disclosed to the Spanish Type Approval Authority.

The approval expires if it is withdrawn or if the type approved no longer complies with the legal requirements. The revocation can be made if the demanded requirements for issuance and the continuance of the approval no longer exist, if the manufacturer cannot demonstrate to the Type Approval Authority that it comply with the requirements and procedures to guarantee the conformity of production, if the holder of the approval violates the duties involved in the approval or if it is determined that the approved type does not comply with the requirements of traffic safety or environmental protection.

The Spanish Type Approval Authority may check the proper exercise of the conferred authority taken from this approval at any time. In particular, this means the compliant production as well as the measures for conformity of production. For this purpose, samples can be taken or have taken. The employees or the representatives of the Spanish Type Approval Authority may get unhindered access to the production and storage facilities.

The authorization contained with issuance of this approval is not transferable. Trade mark rights of third parties are not affected with this approval.

This approval does not conclude the administrative channel and can be appealed [2] within one month after notification, according to articles 121 and 122 of Ley 39/2015, de 1 de octubre, del Procedimiento Administrativo Común de las Administraciones Públicas. The appeal is to be addressed to Dirección General de Estrategia Industrial y de la Pequeña y Mediana empresa, or Secretaría de Estado de Industria.

[2] *Note: Appeal on the following link:*
https://sede.serviciosmin.gob.es/es-es/procedimientoselectronicos/Paginas/detalle-procedimientos.aspx?IdProcedimiento=157

IDIADA Turkey:

Ağaoğlu My Office Barbaros
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Spain

Tel. +34 977 166000
Fax +34 977 166007
e-mail: idiada@idiada.com

INFORME / *REPORT* Nº TR24030002

EMISIONES DE VEHÍCULOS PESADOS
REGLAMENTO (CE) 595/2009, Y REGLAMENTO (UE) 582/2011 CUYA ÚLTIMA MODIFICACIÓN ES EL REGLAMENTO (UE) 2019/1939 /
EMISSIONS FROM HEAVY DUTY VEHICLES
REGULATION (EC) 595/2009, AND REGULATION (EU) 582/2011 WHICH IS LAST AMMENDED BY REGULATION (EU) 2019/1939

Solicitante / *Applicant*	:	BMC Otomotiv Sanayi ve Ticaret A.Ş. Kemalpaşa Cad. No:288 35060 Pınarbaşı İzmir-Türkiye
Fabricante / *Manufacturer*	:	BMC Otomotiv Sanayi ve Ticaret A.Ş. Kemalpaşa Cad. No:288 35060 Pınarbaşı İzmir-Türkiye
Vehículo o ~~entidad técnica o elemento~~ / *Vehicle or ~~technical entity or element~~*		
Marca / *Mark*	:	BMC
Tipo / *Type*	:	415_595_2009_B4.0EVIE170
Denominación comercial / *Commercial description*	:	BMC 415, 415, N75, N82, N60, N80, 417 9XX, ???415???, ???417???, ????9?????
Categoría / *Category*	:	N2
Lugar y fecha de emisión del informe / *Place and date of issue*	:	L'Albornar, Santa Oliva (Tarragona), 26/02/2024

CONCLUSIONES: El ~~motor~~/vehículo ensayado CUMPLE las prescripciones uniformes relativas a la aproximación de las legislaciones de los Estados miembros relativa a las emisiones de gases y partículas contaminantes de motores de vehículos contenidos en el Reglamento (CE) 595/2009 y Reglamento (UE) 582/2011, cuya última modificación es el reglamento (UE) 2019/1939.
CONCLUSIONS: The ~~engine~~/vehicle tested FULFILS the uniform provisions related to emission of gaseous and particulate pollutants from engines in vehicles pursuant to Regulation (EC) 595/2009 and Regulation (EU) 582/2011, which is last amended by Regulation (EU) 2019/1939.

Realizado/ *Performed by*

Buket Demirhan
INGENIERO DE HOMOLOGACIONES
HOMOLOGATION ENGINEER

V. Bº./ *Revised by:*

Lluís Sans Gomis
JEFE DE DEPARTAMENTO
DEPARTMENT MANAGER

ANEXO AL INFORME / *ANNEX TO THE REPORT*

1. GENERALIDADES / *GENERAL*

Solicitante / *Applicant*(1) : BMC Otomotiv Sanayi ve Ticaret A.Ş.
Kemalpaşa Cad. No:288 35060
Pınarbaşı İzmir-Türkiye

Constructor / *Manufacturer*(1) : BMC Otomotiv Sanayi ve Ticaret A.Ş.
Kemalpaşa Cad. No:288 35060
Pınarbaşı İzmir-Türkiye

2. DATOS DEL MOTOR Y VEHÍCULO ENSAYADO / *TESTED ENGINE AND VEHICLE CHARACTERISTICS*:

2.1. Motor / *Engine*

Marca / *Make*(1)	: Cummins
Tipo / *Type*(1)	: B4.5EVIE
Versión / *Version*(1)	: B4.0EVIE170
Nº Homologacion / *Approval number*(1)	: e5*595/2009*2019/1939E*0033*03

2.2. Vehículo / *Vehicle*

Marca / *Make*(1)	: BMC
Tipo / *Type*(1)	: 415_595_2009_B4.0EVIE170

Resultados de ensayo / *Test results*

2.4.1. Admisión / *Intake*:

Depresión en la entrada marcada en la Hom. Motor componente
Intake depression given by the engine type approval (1): 3.7 **kPa**

Depresión en la entrada medida
Measured intake depression: 3.29 **kPa**

La depresión medida en la entrada no excede de la marcada en la Homologación de Tipo del Motor / *The intake depression measured does not exceed the one given by the STU engine approval*.

Sí / *Yes* ~~No / *No*~~

2.4.2 Escape / *Exhaust*:

Presión en la salida (escape) marcada en la Hom. Motor componente
Exhaust backpressure given by the engine type approval(1): 40 **kPa**

Presión en la salida (escape) medida
Exhaust backpressure measured: 20 **kPa**

La presión medida en la salida no excede de la marcada en la Homologación de Tipo del Motor / *The exhaust backpressure measured on the exhaust collector does not exceed the given on the STU engine approval:*

Sí / Yes ~~No / *No*~~

2.4.2.1. Volumen sistema de escape / *Exhaust system volume*

Volúmenes del sistema de escape definido por el fabricante del motor / *Exhaust system volume permitted by the engine manufacturer*(1): 92628 **cm3**

Volumen del escape medido en el ensayo /
Exhaust system volume measured during the test: 92628 **cm3**

2.4.3. Potencia auxiliar / *Auxiliary power*

El fabricante ha declarado que la potencia absorbida por los elementos auxiliares necesarios para operar el motor no supera la declarada por el fabricante del motor / *The manufacture have declared that the power absorbed by the auxiliaries needed for operating the engine do not exceed that declared for the engine's manufacture.*

Sí / *Yes* ~~No / *No*~~

2.5. Niveles de emisión del motor de referencia / *Emission levels of the parent engine*

2.5.1. Ensayo WHSC / *WHSC test*

Tabla/*Table* 4
Ensayo WHSC / *WHSC test*

Ver homologación UTI / *See STU approval*.

2.5.2. Ensayo WHTC / *WHTC test*

Tabla/*Table* 5
Ensayo WHTC / *WHTC test*

Ver homologación UTI / *See STU approval*.

2.5.3. Ensayo al ralentí / *Idle test*

Tabla/*Table* 6
Ensayo al ralentí / *Idle test*

Ver homologación UTI / *See STU approval*.

2.5.4. Ensayo de demostración PEMS / *PEMS demonstration test*

Tabla/*Table* 6a
Ensayo demostración PEMS / *PEMS demonstration test*

Ver homologación UTI / *See STU approval*.

2.6. Medida de Potencia / *Power measurement*

2.6.1. Potencia motor medida en banco / *Engine power measured on test bench*

Tabla/*Table* 7
Potencia del motor medida en banco / *Engine power measured on test bench*
Ver homologación UTI / *See STU approval*.

* LOS RESULTADOS PRESENTADOS SE REFIEREN ÚNICAMENTE A LA MUESTRA ENSAYADA.
THE PRESENTED RESULTS REFER ONLY TO THE TESTED SAMPLE.
* QUEDA TERMINANTEMENTE PROHIBIDA LA REPRODUCCIÓN PARCIAL DE ESTE INFORME SIN PERMISO EXPRESO DE IDIADA.
THE PARTIAL REPRODUCTION OF THIS REPORT WITHOUT THE PERMISSION OF IDIADA IS COMPLETELY FORBIDDEN.
* EL LABORATORIO HA CALCULADO LA INCERTIDUMBRE DE MEDIDA ASOCIADA A LOS RESULTADOS.
MEASUREMENT UNCERTAINTY OF THE RESULTS HAS BEEN CALCULATED BY THE LABORATORY.
* LA REGLA DE DECISIÓN UTILIZADA, SEGÚN LA NORMA ILAC-G8, HA SIDO LA DECLARACIÓN BINARIA DE ACEPTACIÓN SIMPLE
THE DECISION RULE USED, ACCORDING TO THE ILAC-G8 STANDARD, WAS THE BINARY STATEMENT FOR SIMPLE ACCEPTANCE

2.7. Requisitos adicionales para motores de doble combustible / *Additional requirements for Dual-Fuel engines*

- Dual-fuel indicators and warnings:
  Dual-fuel operating mode indicator
  (Dual-fuel, Diesel, Service mode)…..... ~~VERIFICADO / VERIFIED~~

- Fuel storage system:
  Empty gaseous fuel tank warning system…..... ~~VERIFICADO / VERIFIED~~

- Performance of the vehicle in service mode:
  Vehicle speed limited to 20km/h… .....~~VERIFICADO / VERIFIED~~

~~CORRECTO / *CORRECT* /~~
~~NO CORRECTO / NOT CORRECT~~
NO PROCEDE / *DOES NOT APPLY*

3 Sistemas DAB / *OBD systems*

3.1. Demostración de DAB/ *OBD Demonstration*

Demostraciones usadas para incluir la conformidad de la instalación en el vehículo por lo que respecta a su compatibilidad con el sistema OBD del sistema de motor, el IMF, y la interfaz de comunicación por cable:
/ *Demonstrations must address the conformity of; the installation on-board the vehicle as regards its compatibility with the OBD system of the engine-system, the MI and the wired communication interface:*
Ver homologación UTI / *See STU approval*.

Ver homologación del motor e5*595/2009*2019/1939E*0033*03/
*See engine homologation e5*595/2009*2019/1939E*0033*03*

Sistema de DAB/ *OBD system:* **CORRECTO / *CORRECT* /**
~~NO CORRECTO / *NOT CORRECT*~~

3.2. Pruebas control NOx / NOx control tests

Disponibilidad de reactivo / *Reagent availability*

CORRECTO / *CORRECT* /
~~NO CORRECTO / *NOT CORRECT*~~

Calidad del reactivo / *Reagent quality*

CORRECTO / *CORRECT* /
~~NO CORRECTO / *NOT CORRECT*~~

Consumo y dosificación del reactivo / *Reagent consumption and dosing*

CORRECTO / *CORRECT* /
~~NO CORRECTO / *NOT CORRECT*~~

Fallo “tampering” control de NOx / *Tampering failure of NOx control*

CORRECTO / *CORRECT* /
~~NO CORRECTO / *NOT CORRECT*~~

Estrategia usada para la activación del modo marcha lenta / *Strategy used for creep mode activation*[1]:

1) Desactivación después de volver a arrancar / *Disable after restart*.
2) ~~Desactivación después de repostar / *Disable after fuelling*.~~
3) ~~Desactivación después de aparcar / *Disable after parking*.~~

Estrategia / *Strategy* : 1 / ~~2 / 3~~

Sistema de control NOx/ *NOx control system:* **CORRECTO / *CORRECT* /**
~~NO CORRECTO / *NOT CORRECT*~~

[1] Información proporcionada por el cliente. El laboratorio no se hace responsable de dicha información / *Information provided by the client. The laboratory is not responsible for such information*

Lugar de ensayo / *Place of the test*: Izmir/TURKEY
Fecha de ensayo / *Date of the test*: 07/02/2024

Buket Demirhan
INGENIERO DE HOMOLOGACIONES
HOMOLOGATION ENGINEER

DOCUMENTACIÓN TÉCNICA /
TECHNICAL DOCUMENTATION

INDEX

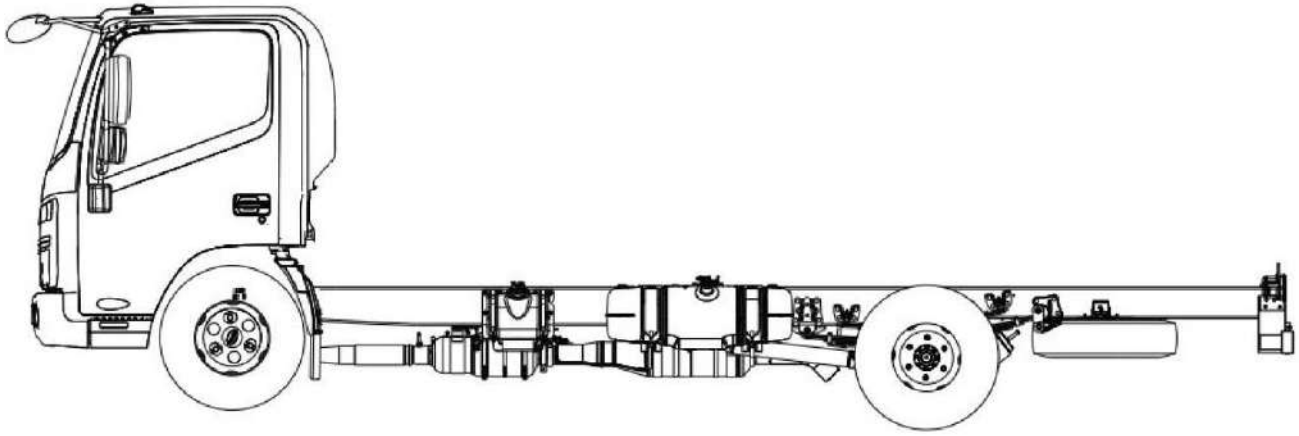
0.	GENERAL	
0.1.	Make (name of undertaking)	: **BMC**
0.2.	Type and commercial description (mention any variants)	: **415_595_2009_B4.0EVIE170** **BMC 415, 415, N75, N82, N60, N80, 417 9XX, ???415???, ???417???, ???9?????**
0.2.0.3.	~~Engine type as separate technical unit/engine family as separate technical unit~~/vehicle with an approved engine with regard to emissions and access to vehicle repair and maintenance information/~~vehicle with regard to emissions and access to vehicle repair and maintenance information (1)~~	
0.2.1.	Commercial name(s) (if available):	: Not Applicable
0.3.	Means of identification of type, if marked on the separate technicalunit	: Not Applicable
0.3.1	Location of that marking:	: Not Applicable
0.4.	Category of vehicle (if applicable)	: **N2**
0.5.	Name and address of manufacturer	: **BMC Otomotiv Sanayi ve Ticaret A.Ş** **Kemalpaşa Cad. No:288** **Pınarbaşı / İzmir – Türkiye**
0.7.	In the case of components and separate technical units, location and method of affixing of the EC approval mark	: Not Applicable
0.8.	Name(s) and address(es) of assembly plant(s)	: **BMC Otomotiv Sanayi ve Ticaret A.Ş.** **(1) Kemalpaşa Caddesi No:288 35060** **Pınarbaşı İzmir – Türkiye** **(2) Doğanlar Mah. 1580 sok. No: 31** **Pınarbaşı İzmir – Türkiye**
0.9.	Name and address of the manufacturer's representative	**BMC TRUCKS SL** **(1) CARRE TRAMUNTANA, NUM.16** **17469 VILAMALLA – (GIRONA) / ESPANA** **(2) C/ Anabel Segura, 10 3º** **28108 ALCOBENDAS (Madrid) / ESPANA**
0.10.	Location of ECE approval mark	**Near the vehicle data plate-VIN plate**

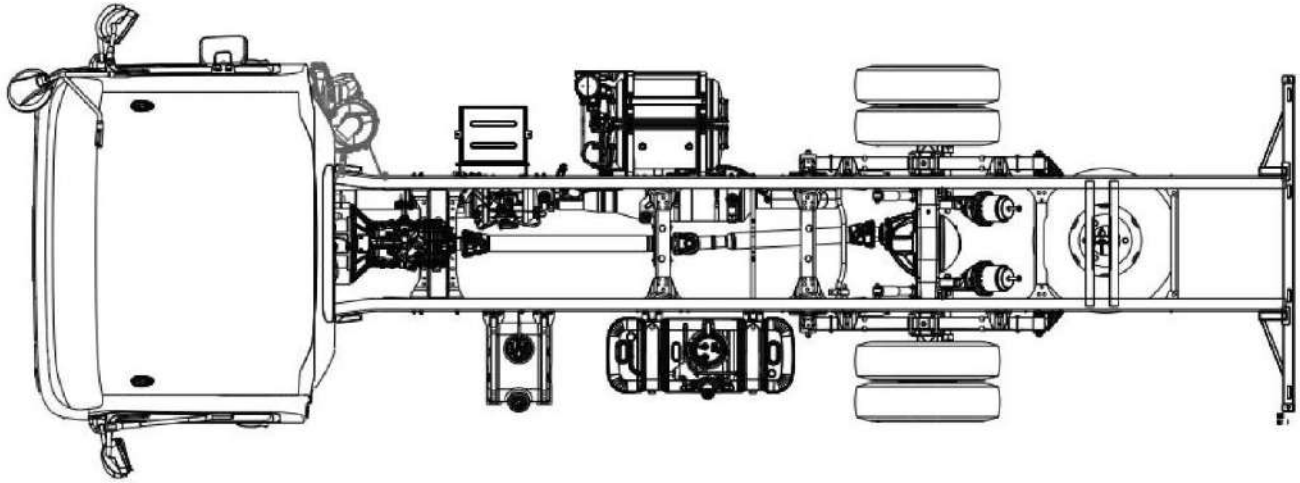
PART 2			
3.1.	**Manufacturer of the engine**	:	**CUMMINS**
3.1.1.	Manufacturer's engine code (as marked on the engine or other means of identification)	:	**B4.0EVIE170**
3.1.2.	Approval number (if appropriate) including fuel identification marking:	:	**e5*595/2009*2019/1939E*0033*03**
3.2.2.	**Fuel**	:	**Diesel/~~Petrol/LPG/NG/Biomethane/Ethanol(E85)/Biodiesel/Hydrogen~~**
3.2.2.3.	Fuel tank inlet: restricted orifice/label	:	**~~restricted orifice~~/label**
3.2.2.4.1.	Dual-fuel vehicle	:	**~~yes/~~no**
3.2.3.	**Fuel tank(s)**		
3.2.3.1.	Service fuel tank(s)	:	
3.2.3.1.1.	Number and capacity of each tank	:	**1 tank , 210 lt , 130 lt**
3.2.3.2.	Reserve fuel tank(s)	:	
3.2.3.2.1.	Number and capacity of each tank	:	Not Applicable
3.2.8.	**Intake system**		
3.2.8.3.3.	Actual Intake system depression at rated engine speed and at 100% load on the vehicle: kPa	:	**3,7 kPA**
3.2.8.4.2.	Air filter, drawings: ..... or	:	**See Annex 3.2.8**
3.2.8.4.2.1.	Make(s)	:	**Pingyuan Filter Co., Ltd**
3.2.8.4.2.2.	Type(s)	:	**1109100LE17S/1109100LE18K**
3.2.8.4.3.	Intake silencer, drawings	:	**JAC- L23043**
3.2.8.4.3.1.	Make(s)	:	**1109200E55020XZ**
3.2.8.4.3.2.	Type(s)	:	
3.2.9.	**Exhaust system**		
3.2.9.2.	Description and/or drawing of the exhaust system	:	**See Annex 3.2.9**
3.2.9.2.2.	Description and/or drawing of the elements of the exhaust system that are not part of the engine system	:	**See Annex 3.2.9**
3.2.9.3.1.	Actual exhaust back pressure at rated engine speed and at 100% load on the vehicle (compression-ignition engines only): .....kPa	:	**40 kPa**
3.2.9.7.	Complete exhaust system volume: dm3	:	
3.2.9.7.1.	Acceptable exhaust system volume (vehicle and engine system): dm3	:	**See Annex C**

3.2.12.2.7.	**On-board-diagnostic (OBD) system**	:	**The OBD system of the engines as per object is designed according lo ISO 27145 Std. and according to EC Reg. 582/2011**
3.2.12.2.7.8	OBD components on-board the vehicle		
3.2.12.2.7.8.0.	Alternative approval as defined in Point 2.4 of Annex X to Regulation (EU)No 582/2011used.	:	Not Applicable
3.2.12.2.7.8.1.	List of OBD components on-board the vehicle	:	**See Annex C**
3.2.12.2.7.8.2.	Written description and/or drawing of the MI (6)	:	Not Applicable
3.2.12.2.7.8.3.	Written description and/or drawing of the OBD off-board communication interface (6)	:	**See Annex C**
3.2.12.2.8.	Other systems (description and operation)		
3.2.12.2.8.0.	Alternative approval as defined in Point 2.1 of Annex XIII to Regulation (EU) No 582/2011 used. Yes/No	:	Not Applicable
3.2.12.2.8.1.	Systems to ensure the correct operation of NOx control measures	:	**See Annex C**
3.2.12.2.8.2	Driver inducement system	:	
3.2.12.2.8.2.1.	Engine with permanent deactivation of the driver inducement, for use by the rescue services or in vehicles specified in Point (b) of Article 2(3) of Directive 2007/46/EC	:	**Yes** **See Annex C**
3.2.12.2.8.2.2.	Activation of the creep mode 'disable after restart'/'disable after fuelling'/'disable after parking	:	**Yes, disable after restart** **See Annex C**
3.2.12.2.8.3.	When appropriate, manufacturer reference of the documentation package related to the installation on the vehicle of the system ensuring the correct operation of NOx control measures of an approved engine	:	**See Annex C**
3.2.12.2.8.8.	Components on-board the vehicle of the systems ensuring the correct operation of NOx control measures		
3.2.12.2.8.8.1.	List of components on-board the vehicle of the systems ensuring the correct operation of NOx control measures	:	Not Applicable

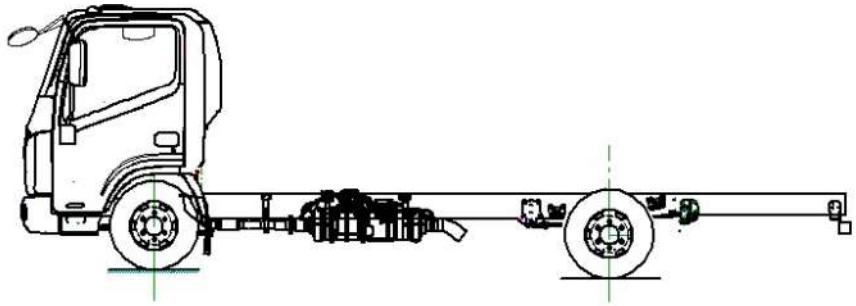
3.2.12.2.8.8.2.	Where appropriate, manufacturer reference of the documentation package related to the installation on the vehicle of the system ensuring the correct operation of NOx control measures of an approved engine	: **See Annex C**
3.2.12.2.8.8.3.	Written description and/or drawing of the warning signal[6]	: **See Annex C**
3.2.12.2.8.8.4.	Alternative approval as provided for in Point 2.1. of Annex XIII to Regulation (EU) No. 582/2011 used	: **No**
3.2.12.2.8.8.5.	Heated/non-heated reagent tank and dosing system (see Point 2.4 of Annex 11 to UN/Regulation No.49)	: **Heated**
PART 3		
16.	**ACCESS TO VEHICLE REPAIR AND MAINTENANCE INFORMATION**	
16.1.	Address of principal website for access to vehicle repair and maintenance information	: **www.bmc.com.tr**
16.1.1.	Date from which it is available (no later than six months from the date of type-approval)	: **From the date on which the vehicle is placed on the market**
16.2.	Terms and conditions of access to website	: **online registration with registration fee time limited access to web site**
16.3.	Format of the vehicle repair and maintenance information accessible through website	: **Pdf files accessible through html**

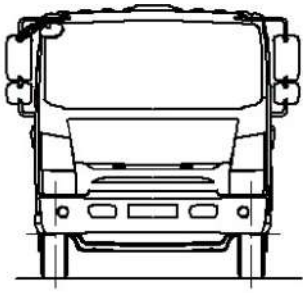
ANNEX 1.1 (1/1)

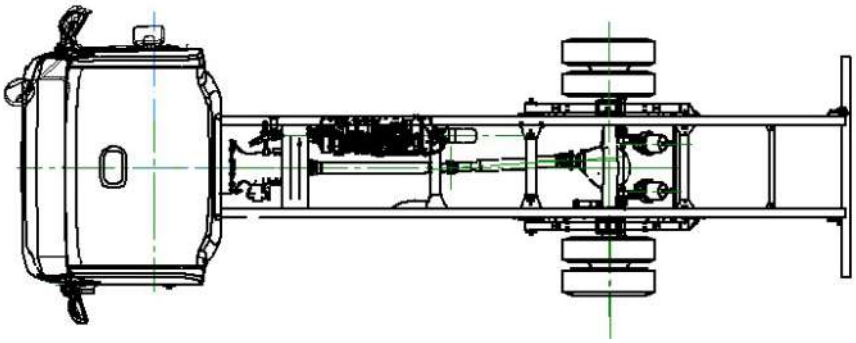


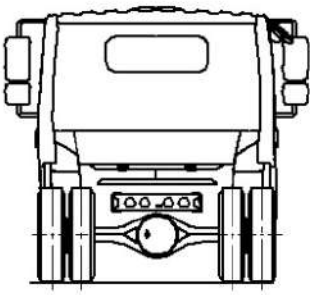


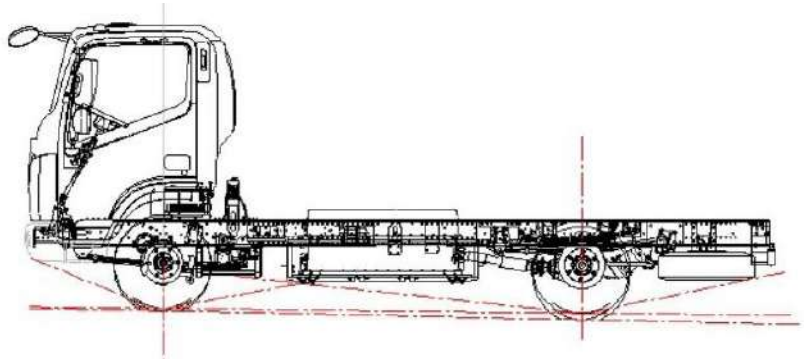
ANNEX 1.1 (2/2)

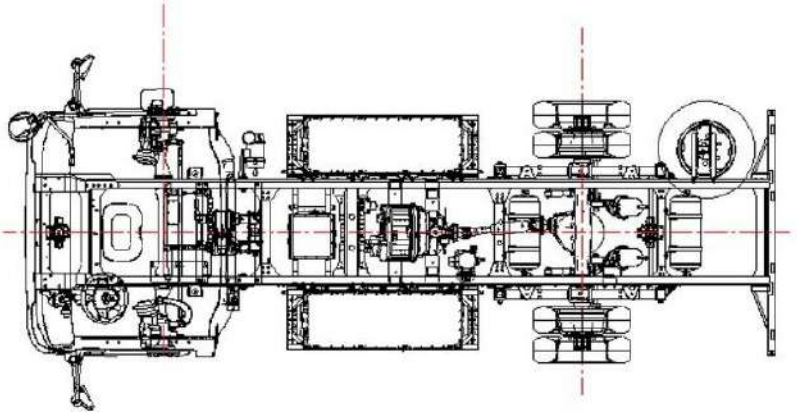


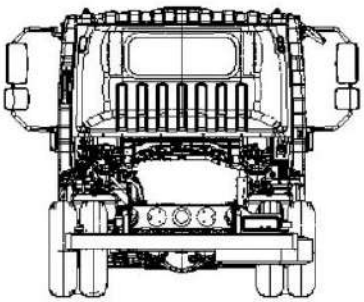






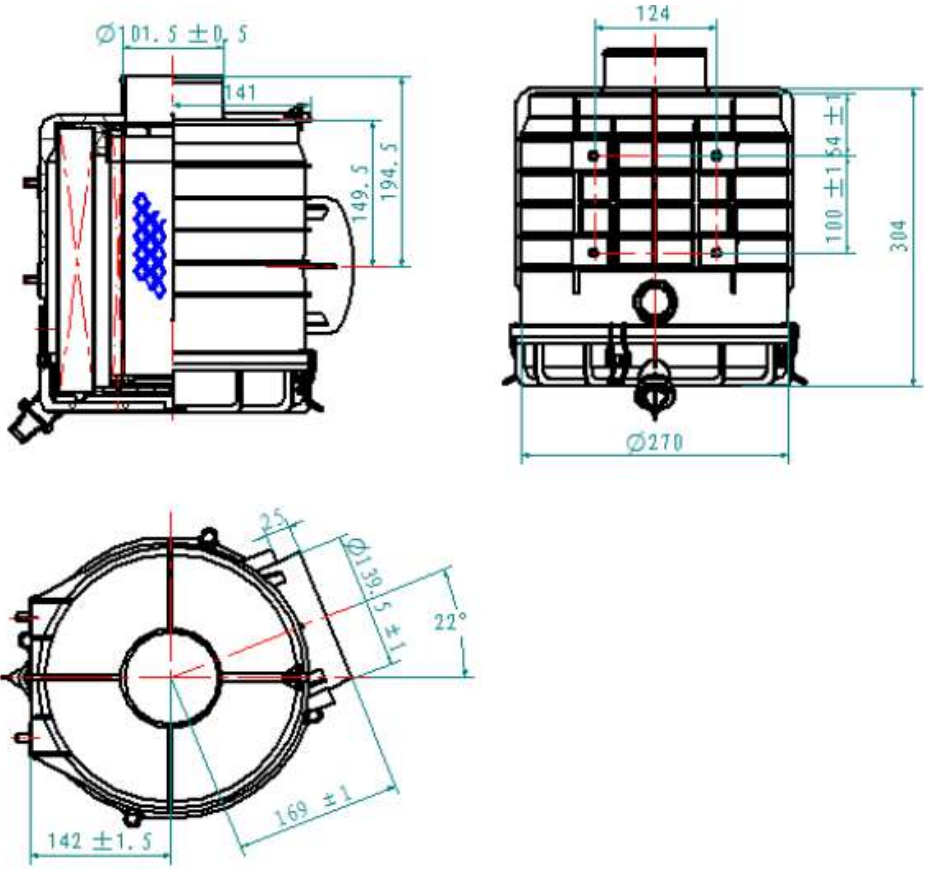






ANNEX 3.2.8 (1/5)

Air Filter

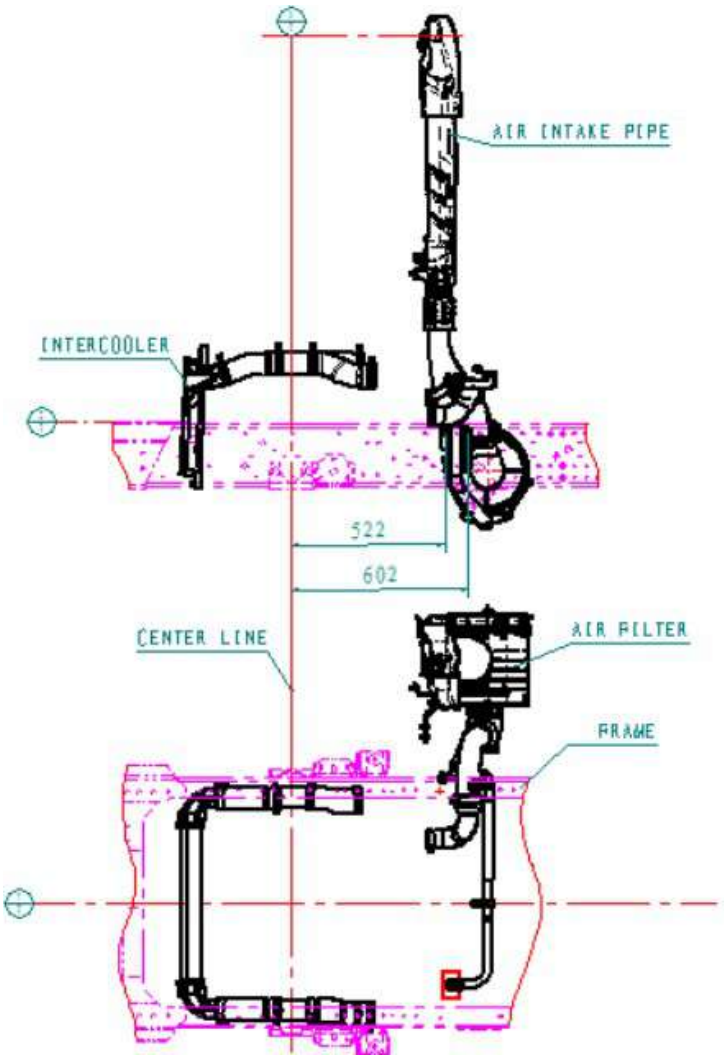


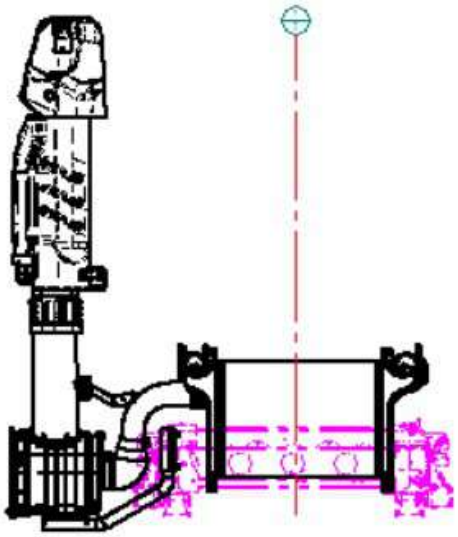
Type: 1109100LE17S/1109100LE18K

Make: Pingyuan Filter Co., Ltd.

ANNEX 3.2.8 (2/5)

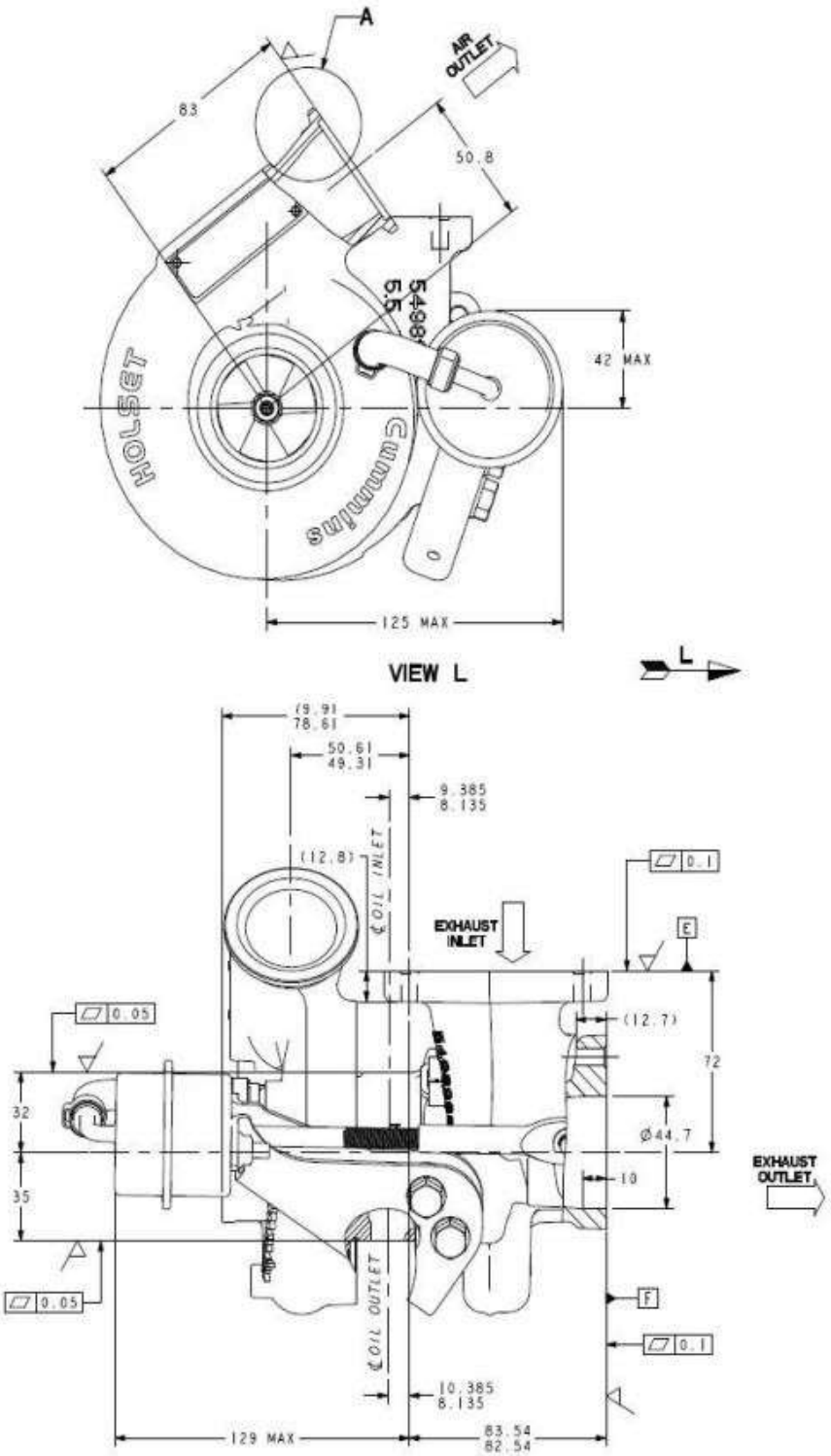
Intake System





ANNEX 3.2.8 (3/5)

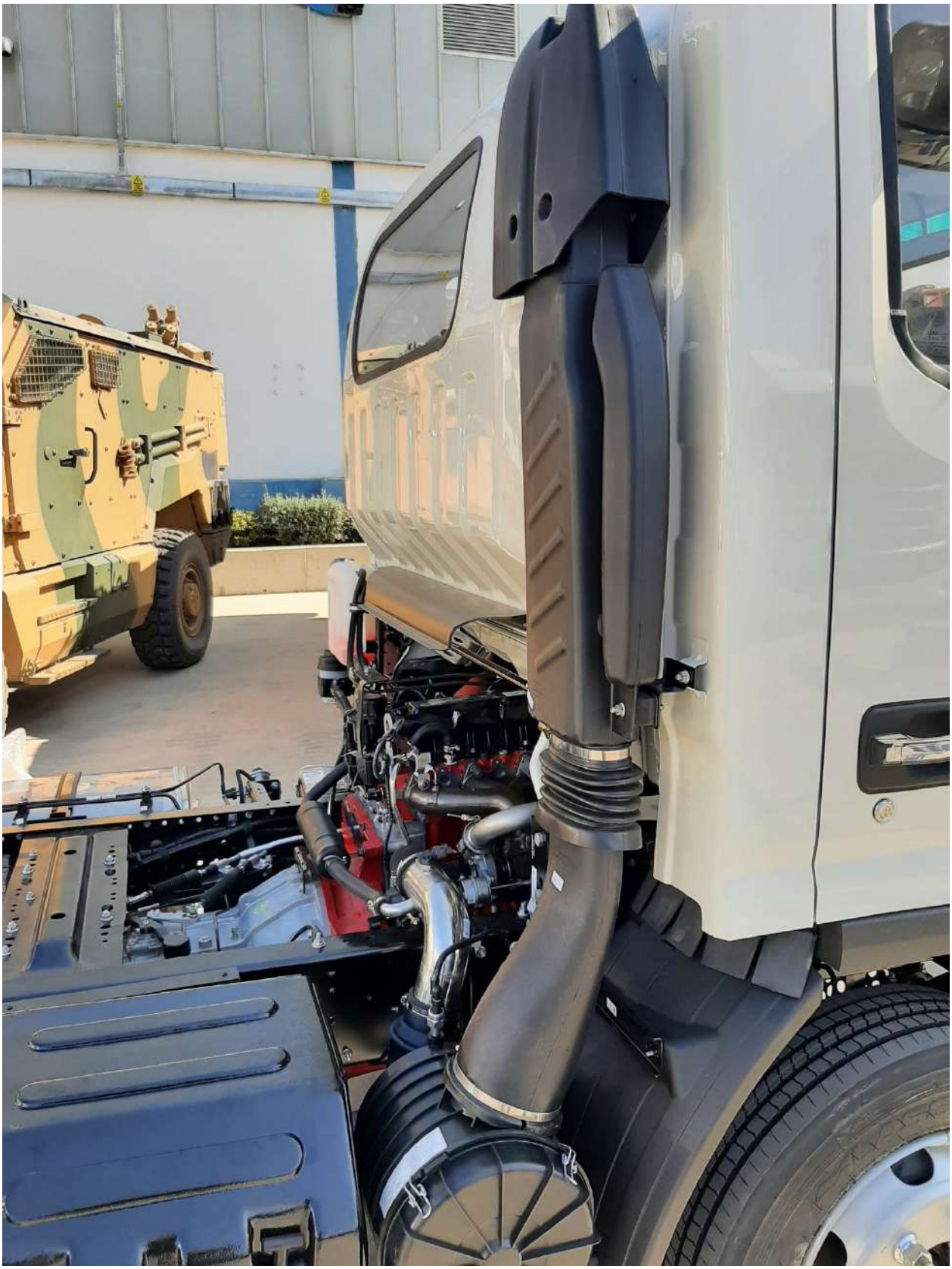
Turbocharger



Manufacture	Wuxi Cummins Turbo Technologies Co., Ltd.
Type	HE200WG

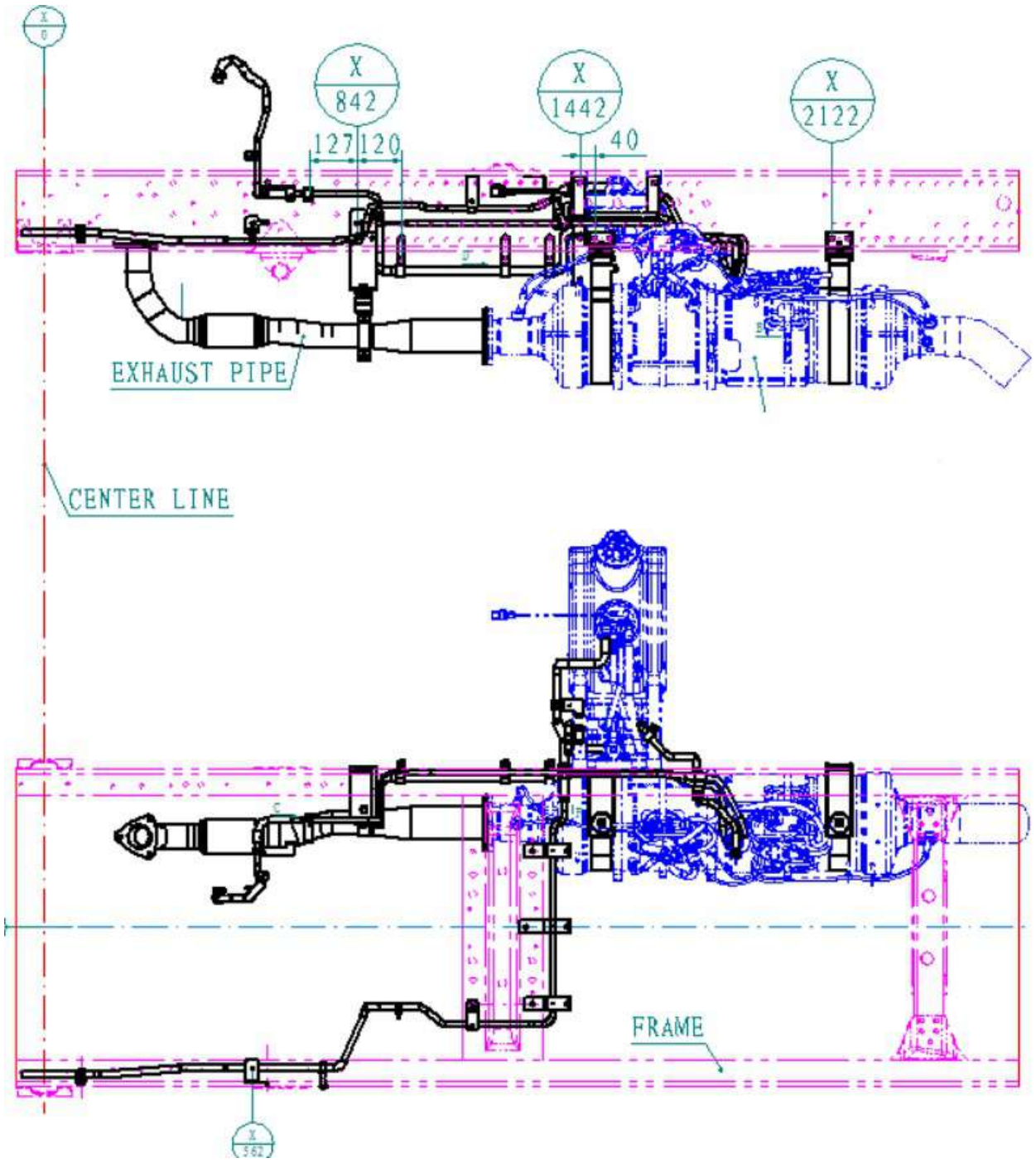
ANNEX 3.2.8 (4/5)

ANNEX 3.2.8 (5/5)



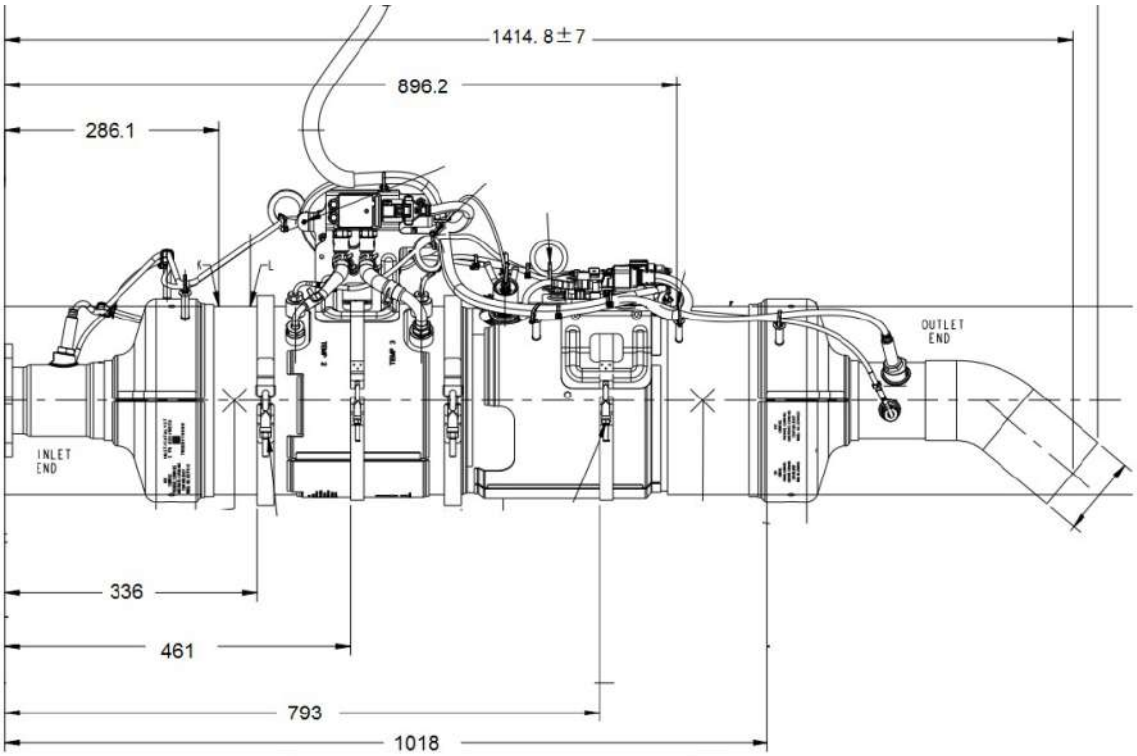
ANNEX 3.2.9 (1/2)

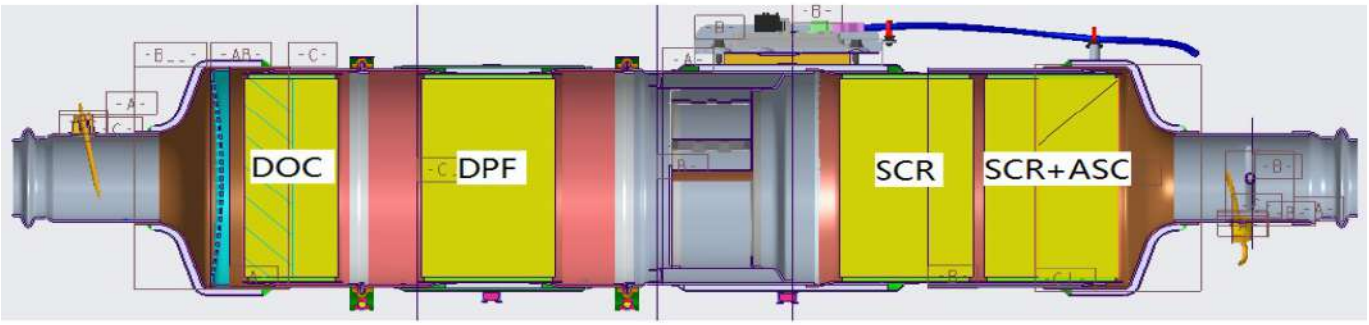
Exhaust System



ANNEX 3.2.9 (2/2)

Muffer with SCR





Make: Cummins
Type: DOCP016+DPFP0162+SCRV026
Material: Without fiber glass

Customer Engineering Bulletin

Title:	This AEB is for the following applications:
B/D4.0 NSVI Mechanical Product Information	☒ Automotive ☐ Industrial ☐ Marine ☐ G-Drive ☐ Genset ☐ Filtration ☐ Emission Solutions

Date: 18 May 2020	Refer to CEB00044 for Safety Practices, Guidelines and Procedures	CEB Number: 00814

Engine models included: B/D4.0 NSVI OBD Phase B (D1V3001BX03)

Owner: Kerry Liu	Approver: per Procedure GCE-AS-1	Page 1 of 23

This CEB is new.

Introduction

The purpose of this Mechanical Product Information is to provide information about the hardware and performance of the B/D4.0 China National Stage VI engine and aftertreatment system. The model name will be difference cause of application and approval agency. B/D4.0 NSVI for OBD phase B, followed by the rating in ps.

B/D4.0NSVIB150= 110 kW (150 PS) NSVI Truck rating

B/D4.0NSVIB160= 118 kW (160 PS) NSVI Truck rating

B/D4.0NSVIB170= 125 kW (170 PS) NSVI Truck rating

B/D4.0NSVIB185= 136 kW (185 PS) NSVI Truck rating

B/D4.0NSVIB195= 143 kW (195 PS) NSVI Truck rating

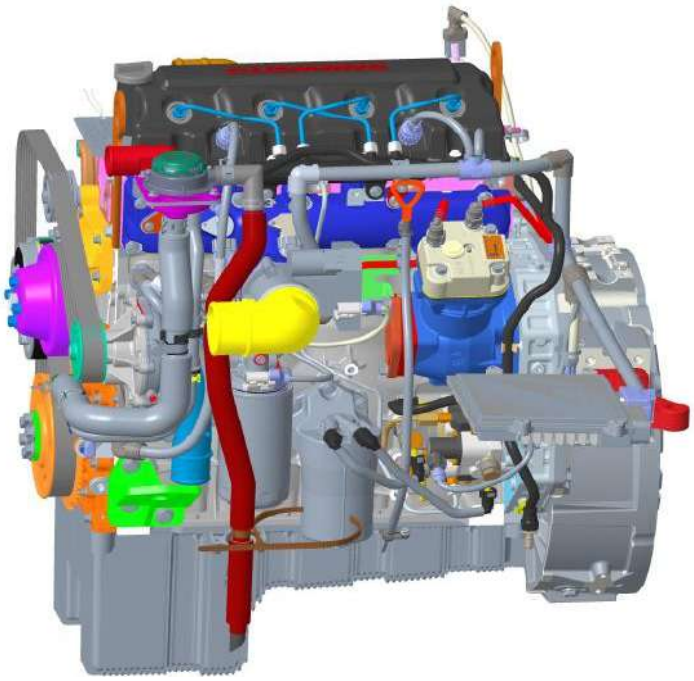


Figure 1: 3D engine models will be available through the GCE website

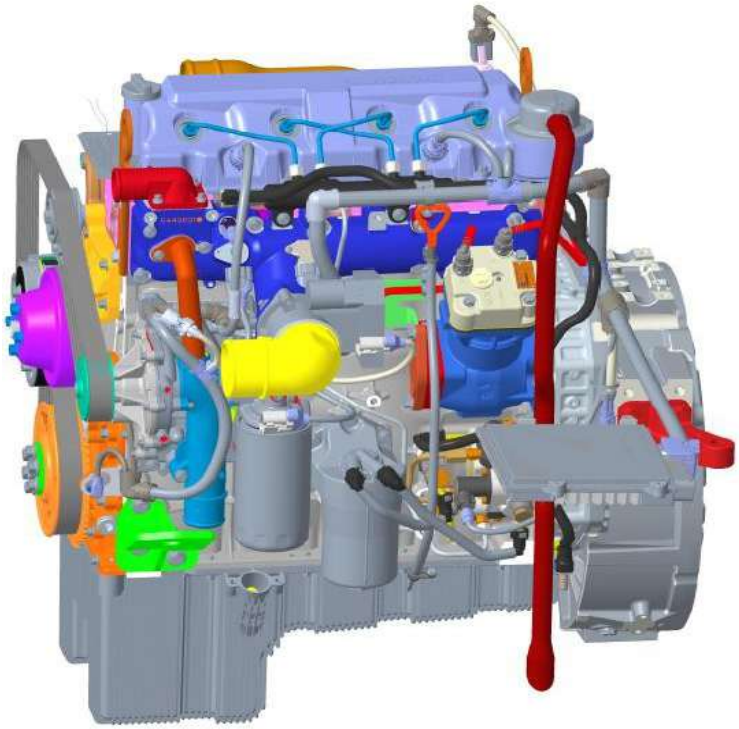


Figure 2: 3D engine models will be available through the GCE website

Table of Contents

1 General Discussion

The B/D4.0NSVI engine is designed to meet the China national stage VI legislation for on-highway emission standards. The product is being updated for phase B.

The B/D4.0 NSVI engine is the next generation of the B/D4.0 engine without cooled Exhaust Gas Recirculation (EGR), and a Cummins supplied Diesel Particulate Filter and SCR exhaust aftertreatment system and a Cummins supplied SCR Catalyst. An OEM supplied Diesel Exhaust Fluid (DEF) Tank system will also be required to meet the mandated emission standards.
The B/D4.0NSVI engine requires Ultra Low Sulphur Diesel (ULSD).

The configuration number for the B/D4.0NSVI OBD Phase B engine is D1V3001BX03.

It is a requirement that the advisor system should be use for the Installation Quality Assurance (IQA) procedure is followed for each new B/D4.0NSVI vehicle application to ensure that the application meets or exceeds Cummins' and the OEM's installation requirements. This process is in concurrence with the IQA Standard Work.

The complete list of ratings can be found on GCE under the B/D4.0NSVI Ratings Charts/Curves & Datasheets section.
The 600 Nm / 195ps is a restricted rating, you must get the approval from Chief engineer below OEM use this rating.
Major changes for the B/D4.0NSVI engine Base of F4.5NS5 engine that may impact the engine installation are:

- New HE200 WG with optimized turbo
- New Intake air throttle for B/D4.0 NSVI
- New Air transfer Pipe for B/D4.0 NSVI
- New Denso HP3 1800 bar with optimized G3S nozzles
- New Integrated valve cover/breather for B/D4.0 NSVI
- New Flywheel and Bushing released for stop/start application
- New exhaust outlet connection/manifold with diffuser and exhaust throttle.
- New Cummins aftertreatment system – DOC, DPF, SCR, Bosch supply module and dosing module.
- Additional NOx Sensor and Delta Pressure sensor with electronic module mounted on aftertreatment.
- New engine control module – CM2620.
- New wiring harness.
- New 14.5LOil Pan with new oil level gauge.

  Refer to the B/D4.0 NSVI Global Customer Engineering (GCE) web site for the latest installation and option models, performance curves and datasheets and associated Advisor Installation Requirements (AIRs) and Customer Engineering Bulletins (CEBs). This information and documentation will be published and updated as available.

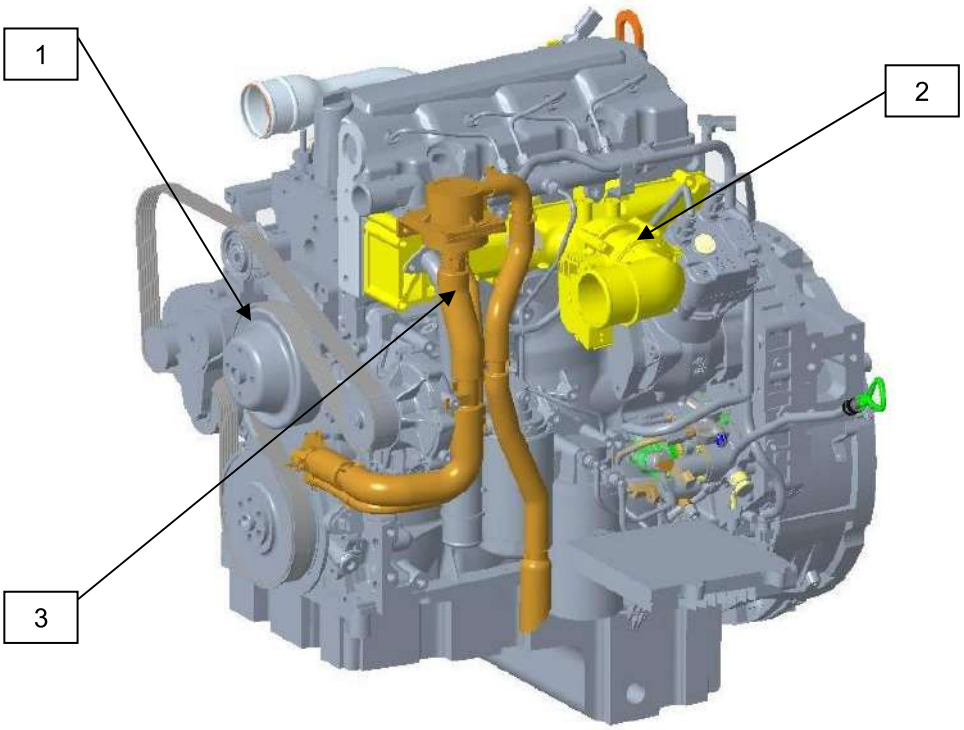


Figure 3: Major changes on B/D4.0NSVI intake manifold side

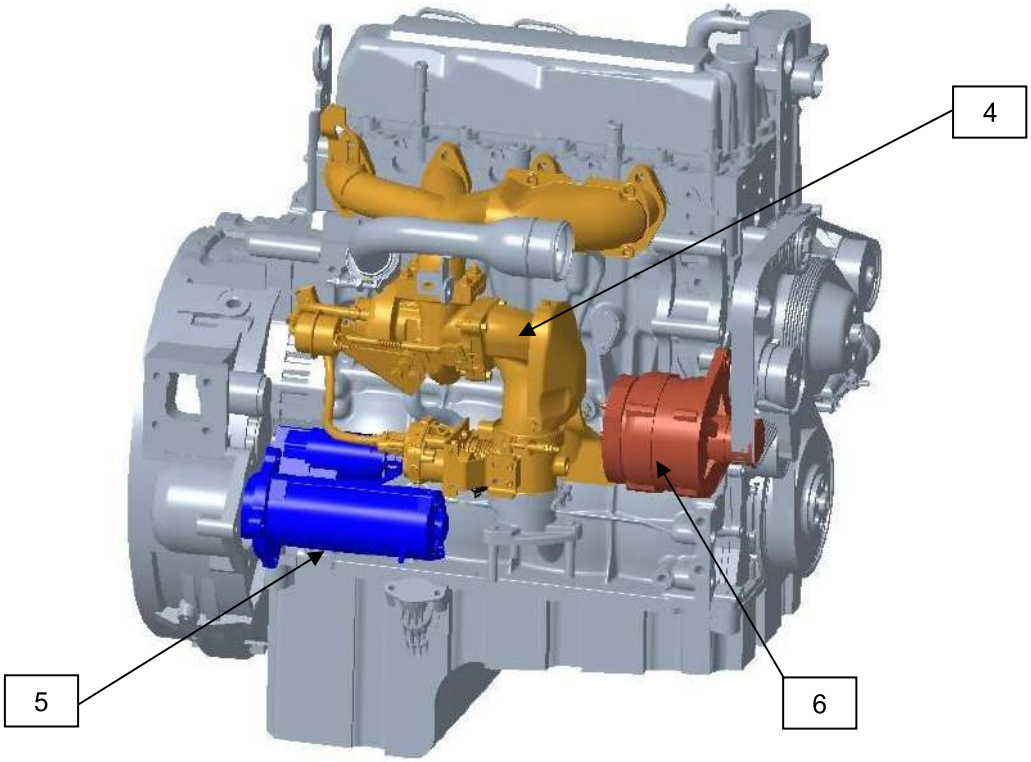


Figure 4: Major Changes on B/D4.0NSVI turbo charger side

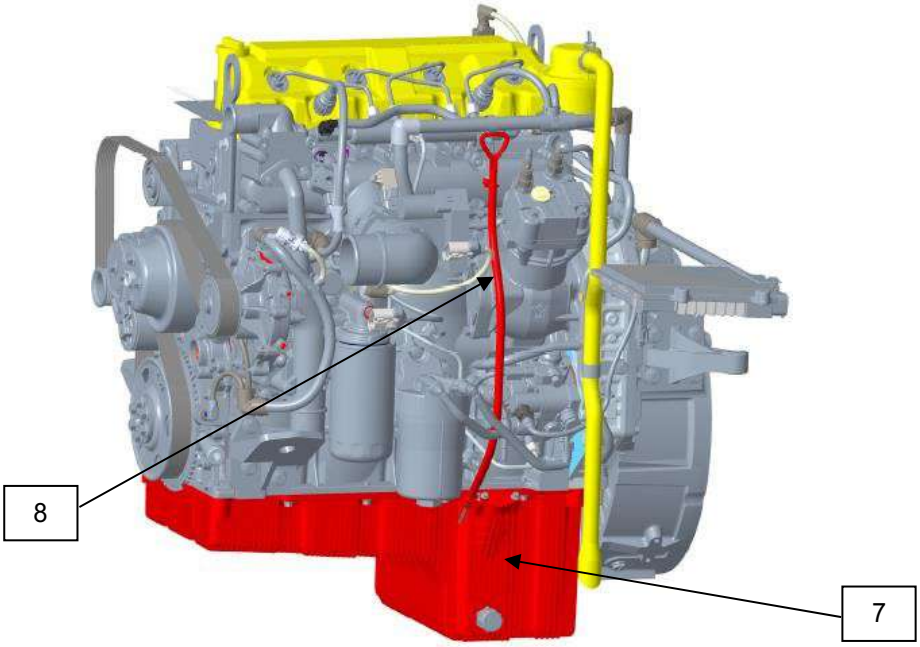


Figure 5: Major Changes on B/D4.0NSVI intake manifold side

Table 1. Major interface option on the B/D4.0 NSVI

No	Major Option
1	FEAD arrangement
2	New intake manifold with IAT options
3	Open Crankcase ventilation
4	Exhaust connection with ETV
5	Starter
6	Alternator
7	Oil pan
8	Oil level gauge

The following detail discussion is structured by engine subsystem groups that may affect engine installation. It also documents the major design changes, which may affect engine installations. Below is the General Engine Envelope, please use the installation model to get the accurate dimensions:

Table 2: Engine envelope details

Engine size base price spec for reference.

Side	B&D4.0NSVI (mm)
Height	874
Length	825
Width at widest point	762

1.1 Aftertreatment System

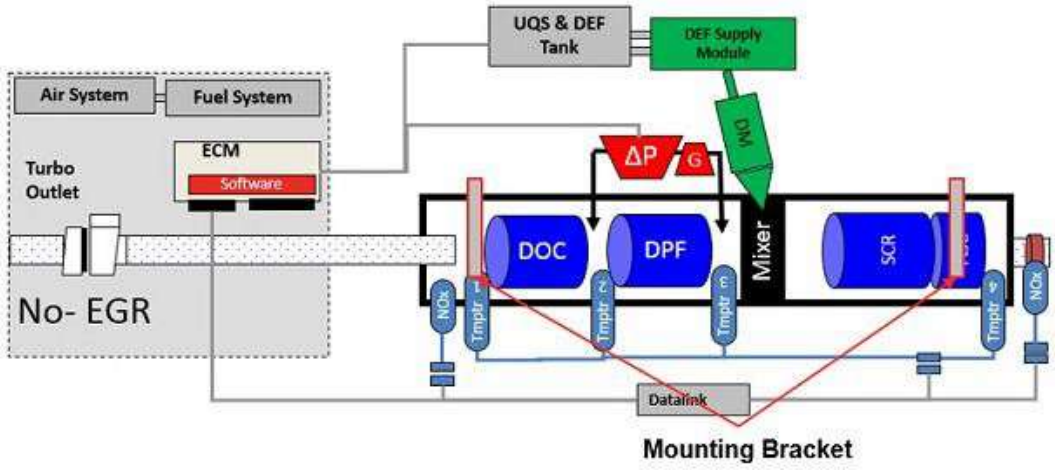


Figure 6: B/D4.0NSVI engine and aftertreatment system layout

Cummins Inc. has developed an integrated engine and exhaust aftertreatment system to meet the requirements for legislation. The B/D4.0NSVI product will utilize both a Diesel Particulate Filter (DPF) and a Selective Catalytic Reduction (SCR) exhaust aftertreatment system.
The SCR system includes a SCR Catalyst, decomposition tube/reactor, a Diesel Exhaust Fluid (DEF) Supply Module, a Dosing Module, Two NOx sensors a NOx electronics module and a DEF Tank. The Cummins supplied DPF and SCR components will be structured into the PE option group.

The DPF and SCR systems are a critical part of the total emission control system which will be certified to meet the legislation. Please refer to GCE for component availability and drawings. Details of the DPF and SCR systems are not included in this CEB. Please refer to AIR and CEB00762 for aftertreatment installation requirements, including a complete list of Cummins supplied and OEM supplied components. No post factory modifications, such as relocation of, or changes to, system components will be permitted without approval from Cummins Inc.

1.2 Air Intake System

Enter Air Intake System description here.

There are have Front and Mid two different air Intake Connections (IC Options) available. See Figure 7 and 8 for the option type, GCE and option notes for option details.

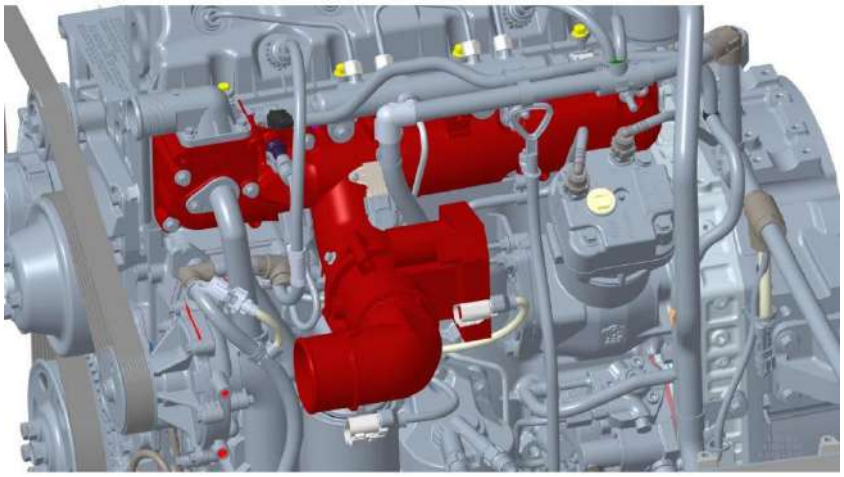


Figure 7: Air Intake Connection with Front type

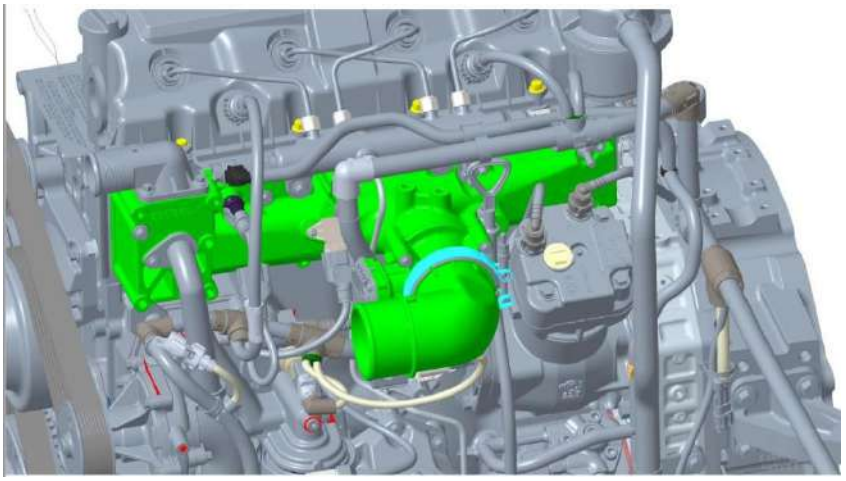


Figure 8: Air Intake Connection with Mid type

The air intake heater has been incorporated in the intake manifold (IM option) cover. A single power (+) connection is used to power the heater element. The connection stud size is M6 x 1.0 mm. See detail in CEB00713 and CEB00714, CM2620 OEM Interfaces and OEM components.

A combination temperature barometric air pressure (TBAP) sensor is structured as part of the PH option and supplied in kit by Cummins and will be used to measure the temperature and pressure of the air entering the turbocharger. The connector of the sensor must not exceed 125 °C during operation.

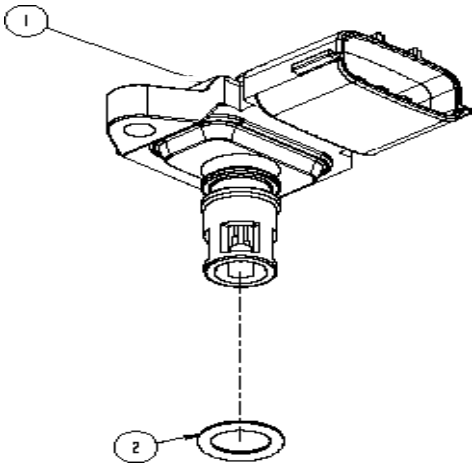


Figure 9: Combination Temperature/Pressure Sensor

The OEM must provide a mounting provision in the air cleaner housing, after the air cleaner, or in the intake tube between the air cleaner and turbocharger to install this sensor. The sensor must be placed either out of direct line-of-site of turbine, or a minimum of 300 mm away, to prevent radiated heat from affecting the sensor reading. The sensor cannot be placed in a bend and must be located away from any external heat sources or shielded so that the connector temperature does not exceed 125 °C during operation. The wiring must be routed away from heat sources or shielded to prevent damage to the sensor wiring harness. The orientation requirements highlighted below are to prevent moisture collection issues in the sensor which could affect the accuracy of the readings. The mounting hole in the sensor is 4.7 mm diameter. The sensor O-ring seal is located 5.85 mm below the mounting surface. The overall length of the sensor probe is 25.4 mm. The mounting should be designed so that a minimum of 13 mm protrudes into the air stream. See Figure 10 for sensor mounting dimensions.

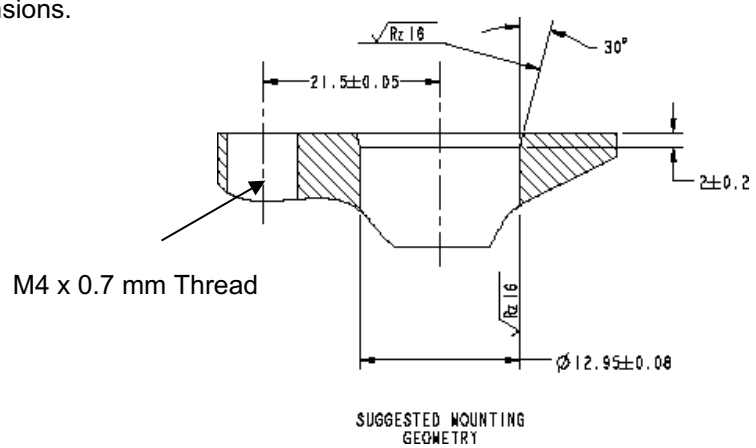


Figure 10: Sensor Mounting Dimensions

The intake air temperature/pressure sensor should be mounted with the probe tip oriented vertically downward with the tolerance range shown in Figure 11.

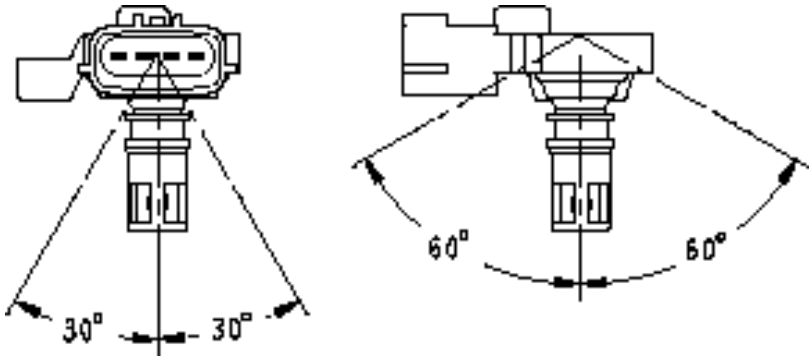


Figure 11: Sensor Mounting Orientation

The OEM's must include a jumper wiring harness for the intake temperature/pressure sensor in their own harness. Jumper harness (WR option) will be available from Cummins. Refer to OEM components CEB00714 for details.

1.3 Cooling System

The coolant flow curves for the B/D4.0NSVI will be shown on the GCE website. The maximum allowable top tank temperature is show in the FR datasheet. The nominal setting for the radiator pressure cap should be a minimum of 100 kPa (15 psi). And the cooling system setting like table 4.

All coolants must meet the standards documented in CEB00109 "Engine Coolant Performance Specifications". The engine cooling system is compatible with long life coolants.

An OEM coolant port is available in the cylinder head. Details of flows are detailed on coolant flow curves section of the GCE. The location is shown in Figure 12.

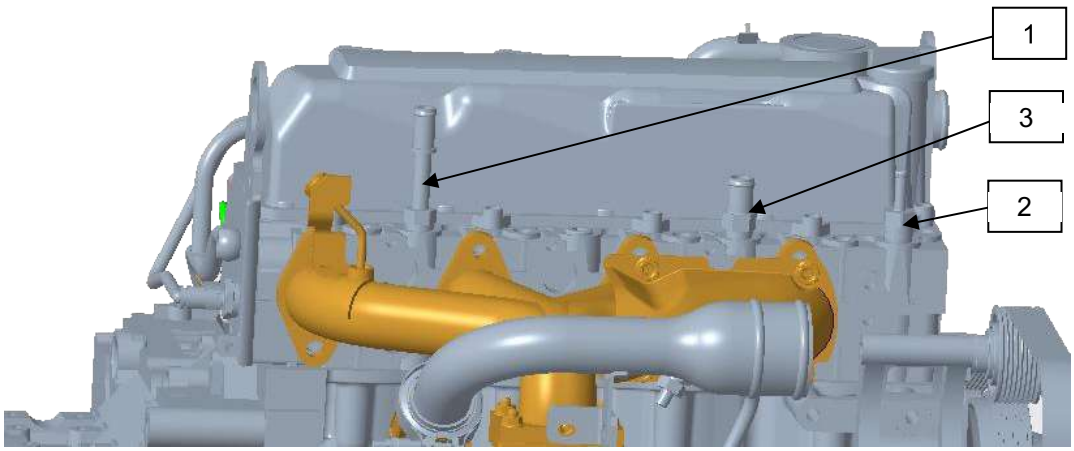


Figure 12: Engine vent positions and cab heater coolant supply port

1 = for SCR intake location

2 = vent line location

3 = cab heater location

See performance curves & datasheets on the GCE website for heat rejection data.

1.4 Electronic System

The engine operation voltage is 24V. The B/D4.0NSVI uses a CM2620 engine control module. The exhaust aftertreatment system, including SCR, I/O and controls are integrated with the new CM2620 ECM. See GCE for the OEM Wiring diagram. the ECM is remote mounted from the engine on the chassis by the vehicle builder, see CEB00721 for details of remote mounting the ECM.

The CM2620 include:
-96 Pin J2 connector including power and ground.
-J1780 and J1587 are no longer supported.

OEM electronic technical packages designed specifically for the B/D4.0NSVI are listed as follows:

- CEB00713 – CM2620 Electronic Subsystem Technical Packages - OEM Interfaces (including OEM Wiring Diagram)
- CEB00714 – CM2620 Electronic Subsystem Technical Packages - OEM Components
- CEB00715 – CM2620 Electronic Subsystem Technical Packages – OEM Programming Guide
- CEB00716 – CM2620 Electronic Subsystem Technical Packages - Serial Communications

STARTING MOTOR and ALTERNATOR matrix see Table 3 and Table 4:

Table 3: Starting motor details

Option Number	VOLTAGE	Manufacturer	Model
ST 9435	24V	DIXIE	S11-40201B
ST 9755	24V	MELCO	PSSF 24-50(85P50)
ST 9802	24V	ONGFENG MOTOR ELECTRIC	109059
ST 9804	24V	PRESTOLITE BEIJING	GM86R3001-00-0000
ST 9957	24V	HUZHOU LONGHAO	SAE#1-3 BOLT 90 DEG

Table 4: ALTERNATOR details

Option Number	AMPERAGE	Manufacturer	Model
EE 9362	70A	PRESTOLITE/DEHONG	AVIH2070K/JFZ270

EE 9733	70A	DONGFENG	213503
EE 9735	70A	PRESTOLITE	JFZ270-112-WX / DEC-FDJ
EE 9481	90A	DEHONG	JFZ290-1100-WX
EE 9708	110A	BEIJING PRESTOLITE COMPANY	AVE2119-E-0000-WX
EE 9732	110A	DONGFENG	214632

1.5 Engine Mounting

Front engine supports (EM options) are available in the following options: - Maximum diameter for damper is 250.0mm - Double mount, mounting holes threaded M16X2.0-6H. Maximum diameter for damper is 250.0 mm Front engine mount options will be offered.
STARTING MOTOR and ALTERNATOR matrix see Table 3 and Table 4:

Table 5: FRONT engine support details

Option Number	LOCATION	MOUNT TYPE
EM 9429	ON BOTH SIDES OF CYLINDER BLOCK	DOUBLE PAD
EM 9483	FRONT SIDE	SINGLE PAD
EM 9493	ON BOTH SIDES OF CYLINDER BLOCK	DOUBLE PAD
EM 9494	ON BOTH SIDES OF CYLINDER BLOCK	DOUBLE PAD

EM 9429 appearance as Figure 13.

Figure 13: Front side double pad type front engine support

EM 9483 appearance as Figure 14.

Figure 14: Front side single pad front engine support

EM 9493 appearance as Figure 15.

Figure 15: Front side double pad type front engine support

EM 9494 appearance as Figure 16.

Figure 16: On both sides of cylinder pad front engine support

The rear engine mounting pads on the flywheel housing (FH options) is available

The rear engine mounting pads on the flywheel housing (FH options) will be available with a distance across the mounting surface spacing of 490 mm (19.29 in). Also a 584 mm (23 in) mounting surface distance is available.

Table 6: REAR engine support details.

Option Number	LOCATION	MOUNT TYPE
RE 9109	EACH SIDE OF FLYWHEEL HOUSING	DOUBLE PAD
RE 9208	EACH SIDE OF FLYWHEEL HOUSING	DOUBLE PAD

RE 9109 appearance as Figure 17.

Figure 17: Each side of flywheel housing double pedestal rear engine support

RE 9208 appearance as Figure 18.

Figure 18: Rear side of pad rear engine support

1.6 Engine Braking

Exhaust brake capability will be a feature of exhaust throttle and will be available on all engine power ratings. Refer to CEB00714-CM2620 Electronic Subsystem Technical Packages - OEM Components for details and CEB00715 for programming details. Additional exhaust brakes will not be allowed on this engine（ACPL）. B/D4.0 provide the engine brake feature is an optional function in B/D4.0 engine, select the EB option to set this function. See engine braking curves and ETV Braking power curve on the GCE website.

1.7 Front End Accessory Drive System (FEAD)

The B/D4.0NSVI engine has different FEAD arrangements described below. These arrangements have been designed to offer flexibility to the OEM when designing their vehicle. When OEM installing the fan, it is

necessary to re-select bolts of suitable length. And the FA90253 bending moment is 2.5 Nm. The layout of the FEADs are shown in Figure 19 to Figure 20.

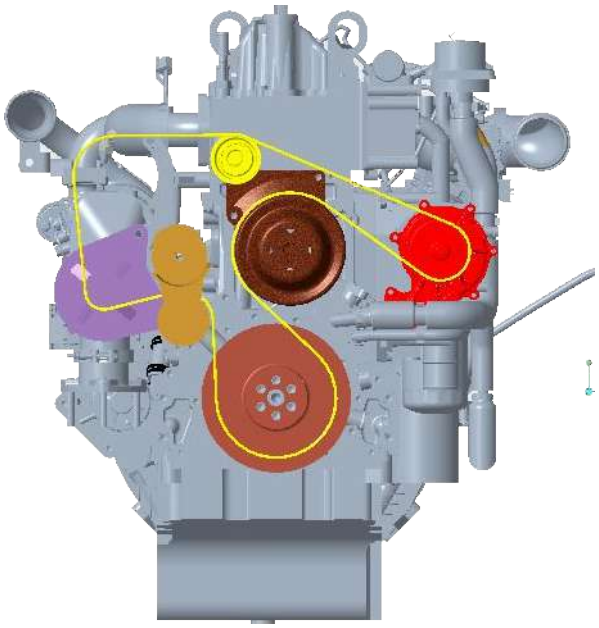


Figure 19: One alternator and one air condition compressor

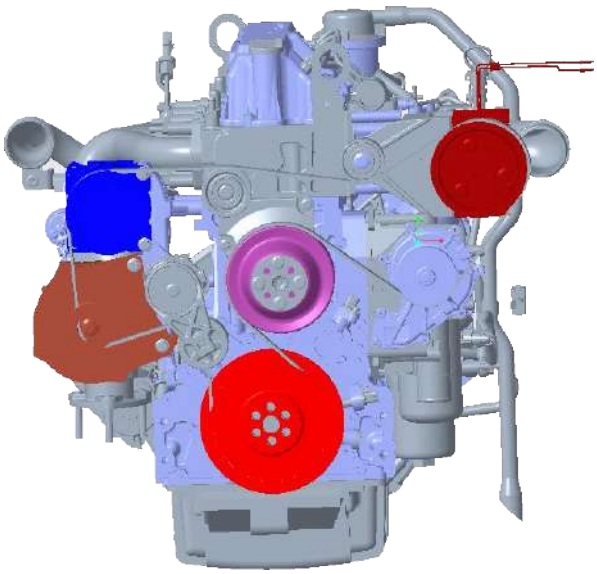


Figure 20: Twin CF arrangement

The available fan drive options for the B/D4.0NSVI engine is summarized in Table 5.

Table 6: B/D4.0NSVI Fan Drive Options

FA Option	Fan Center (Offset-mm, Height)	Fan Ratio	Bending moment
FA 9537	FAN DRIVE C/L FROM CRANK C/L	1.1:1	THE WEIGHT OF THE FAN AND LENGTH

	(MM): 210 FAN DRIVE C/L FROM ENGINE C/L (MM): 20		OF SPACERS MUST NOT EXCEED 2.5 NM AND SPACER LENGTH SHOULD NOT EXCEED 101.6MM
FA90253	FAN DRIVE C/L FROM CRANK C/L (MM): 210 FAN DRIVE C/L FROM ENGINE C/L (MM): 20	1.1:1	THE WEIGHT OF THE FAN AND LENGTH OF SPACERS MUST NOT EXCEED 2.5 NM AND SPACER LENGTH SHOULD NOT EXCEED 101.6MM

Customer supplied Fan Pulleys must not be painted. This can cause the drive belts to crack. If OEMs supply their own belts, they must use belts made from Orion compound with a Polyester cord to achieve expected reliability. All belts must be rubber backed. OEMs must not use belts made from Neoprene or ACSM material compounds.

1.8 Front Engine Power Takeoff (FEPTO)

Front power takeoff adapters will be offered these will be a 6 * M10 flange and a twin V belt pulley option capable of 285 Nm (210 lb/ft). The engine will be fitted with a rubber damper.
The center line of No.1 bearing is 13.8 mm from front face of the block.
Any OEM fitted belts must not exceed the side loading of the crankshaft above the values shown in Figure 21 and Table 7.

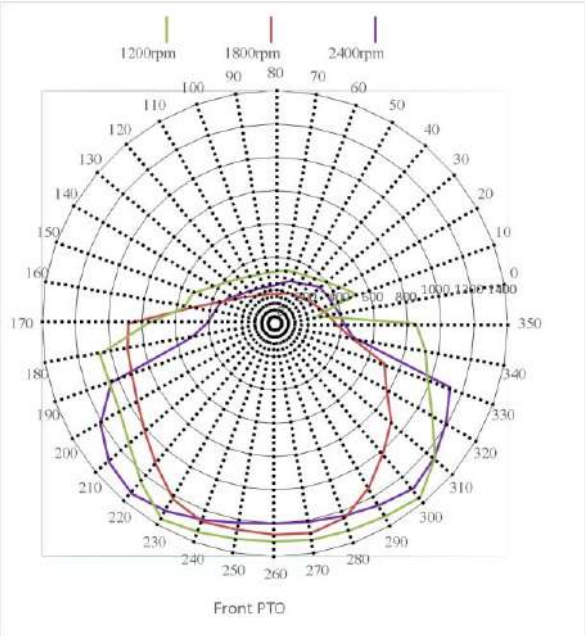


Figure 21: Allowable bending moment (Nm) at center line of No. 1 bearing

Table 7: Numerical values of bending moment at center line of No.1 bearing

	0	30	60	90	120	150	180	210	240	270	300	330
1200rpm	258	392	330	307	347	525	1066	1139	1337	1321	1363	980
1800rpm	322	228	192	179	214	372	899	1019	1270	1277	1015	702
2400rpm	390	344	270	225	251	352	519	1299	1255	1210	1295	1120

1.9 Fuel System

The fuel system on the B/D4.0NSVI engine is a Denso high-pressure common rail (HPCR) system operating at 1800 Bar with full authority electronic control. Fuel is drawn from the vehicle fuel tank, through a primary filter (pre-filter) by the engine fuel injection pump.

Fuel tubes and fittings for OEM supplied primary filters should be sized appropriately for a minimum fuel pump inlet restriction as specified on the engine datasheet.
The secondary filtration (FF option) is provided by Cummins and Cummins Filtration filter located on the pressure side of the fuel pump. The secondary fuel filter is an engine mounted option only located on the fuel pump side of the engine.
Return fuel must be returned to the tank below fuel level to prevent fuel drain back and hard starting. Fuel tank vents must be such a design as to not allow water to enter the fuel tank.

The fuel drain port is located on the fuel pump. The detail of fuel drain fitting is available in option notes.

The vehicle must not use fuel blended with lube oil or any other unapproved additive as contamination of the Denso HPCR Fuel System, Denso Fuel system and Cummins Particulate Filter system. Failures resulting from unapproved fuels will not be warrantable.

1.10 Lubrication System

The B/D4.06/SE6 can utilize both low ash oil CJ4, CK4 and CK4+. Cummins s Further details of oil types and service intervals can be found in Quick Serve Online Bulletin No 3810340 and 5411253.

The oil filter and cooler are located on the cold (left hand) side of the engine. Oil pans (OP option) will be 8, 14,14.5 liters for B/D4.0.
The maximum oil pan surface temperature is 150 °C, routing of parts such as exhaust pipes should be done to minimize heating of the oil pan. This is to be recorded during the cooling trial using a thermocouple attached to the oil pan, by tape, or a temperature sensitive label attached to the outside of the oil pan at its closest point to the oil pan.

The engine angularity limit detailed in OP option notes. The installation angle of the engine in the chassis will impact the overall vehicle angularity.

Oil fill (OB option) is through the valve cover with both front and rear fill locations and a design on the side of the engine filling directly into the oil pan. The fill location is selected via the OB options.

Handle dipsticks (LG options) will be offered in various lengths. See GCE for option details Customized dipstick designs for specific vehicles may also be fitted by the OEM. All dipsticks must be a locking type.

1.11 Powertrain, torsional analysis and inertia limits

The maximum allowable inertia directly coupled to either the front end of the crankshaft or the flywheel end is detailed in Figure 12-13 which shows combinations of rigidly coupled crank nose and flywheel (driveline) inertia, the latter includes the flywheel itself. If the combination falls into a green area it is an acceptable combination to Cummins. If it falls within the red area a full Torsional Analysis will have to be conducted to review acceptance. This may demonstrate an unacceptable combination where the OEM will have to redesign the driveline to reduce the inertia on the crankshaft. Please contact your Customer Engineer to review next steps for cases that do not meet limits. A mass elastic model is available through your Cummins Application Engineer

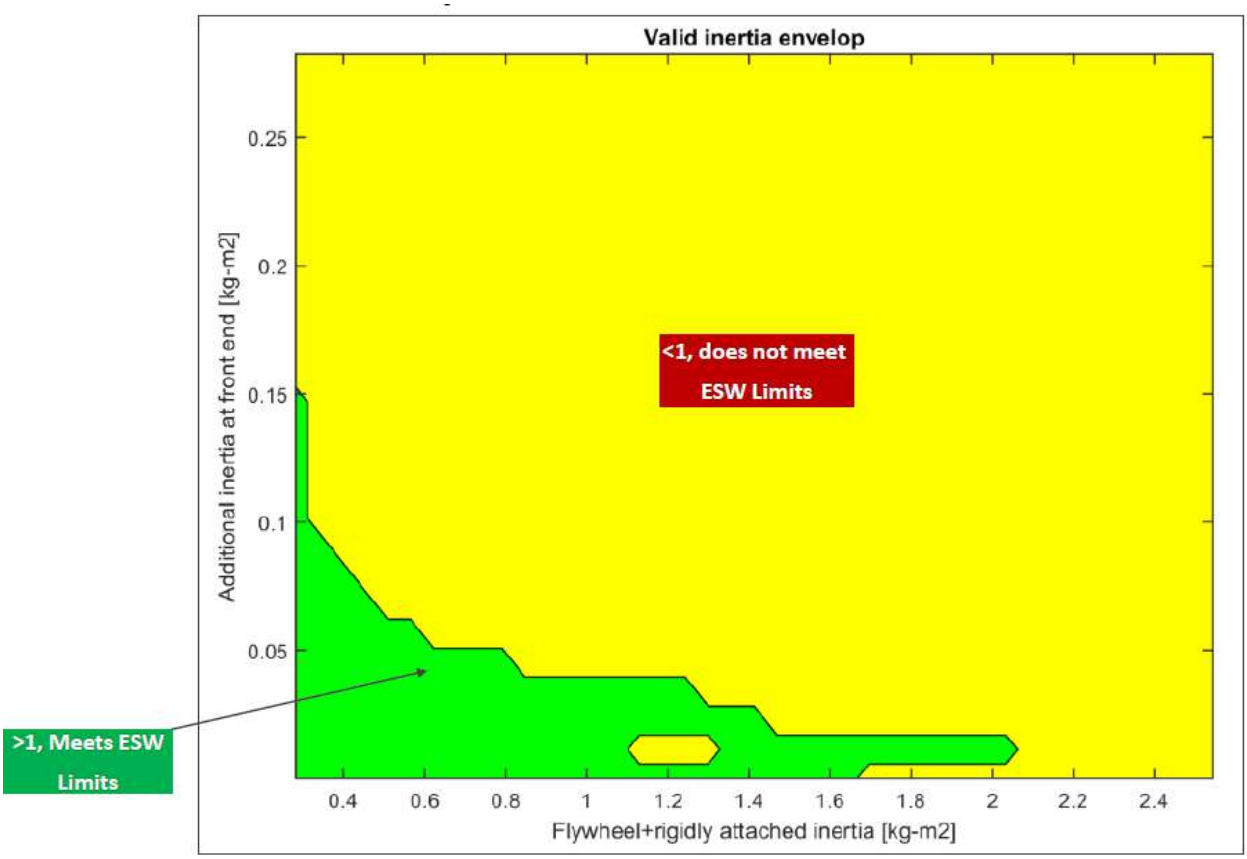


Figure 22: rigidly coupled inertia limits for B/D4.0NSVI

1.12 OEM Packaging

An installation model and the engine photos are available on the GCE B/D4.0NSVI Standard Engine Topics site. Overlay views of the B/D4.0NSVI to the installation model are attached in the back of this CEB. To see the individual option model or option graphic, check the “Option Database” or “Installation/Option Drawings and Models” link on the GCE for the B/D4.0NSVI Standard Engine site. Models and graphics are available on the GCE website.

1.13 Stop/Start Capability:

As part of ongoing product improvements stop/start capable engines will be available in this engine. Changes to the platform include and are not limited to ring gear, starter motor, engine position sensor and etc.

There are new DO and SB options which pull in the correct Stop/Start specific engine hardware and software components. Please consult GCE for this information and ensure these are correct to ensure a Stop/Start engine is configured.

1.14 Turbocharger System:

A turbocharger with diffuser and exhaust throttle supplied by Cummins. The turbo location currently being developed for the B/D4.0NSVI are Low Mount Front Out (LMFO). An exhaust outlet connection elbow (XS option) is available. See GCE for option details. Different air transfer connection (IT option) are available. If OEM need Additional exhaust brakes, please confirm with AE.

1.15 Open Crankcase Ventilation (OCV) System

The B/D4.0NSVI engine is fitted with an open crankcase breather system (OCV) see Figure 24, Integrated Valve Cover see Figure 25, which will be structured within a BR option. And This is mounted on the front intake side of the engine and breather. The breather system contains an impactor separator to remove oil from the gas and return it to the oil pan, the cleaned gas is then vented to atmosphere via a vent tube.
There is no service requirement of this system.

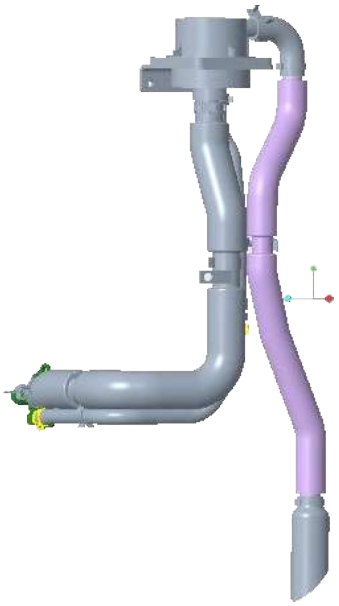


Figure 24: OCV System on engine

Figure 24: Integrated Valve Cover system on engine

1.16 Compressed Air System and Accessory Drives

Knorr-Bremse single cylinder compressors will be mounted on the rear gear housing on the fuel pump side of the engine in the high-mount location. See the detail for drive ratio in option notes. The drive ratio is 1:1. The single cylinder options are a 225cc compressor fitted with an SAE A flange and a DIN (cruciform).

1.17 Service Accessibility

Check QuickServe Online (https://quickserve.cummins.com/) for maintenance and inspection requirements and intervals. The clearance guidelines in the table below can be used to assess service accessibility for engine components during the installation review.

1.18 Programming Tools

The B/D4.0NSVI engine will be compatible with Cummins INSITE and VEPS programming tools for OEM to trim the programmable features through the J1939 data link only.

1.19 PEMs

Please find below information for PEMS vehicle boundary condition.

Justification: We have completed a lot of PEMS testing under various ambient conditions, and based on the test results, we are currently confident of passing the PEMS with the below minimum PEMS test weight. This is to help with PEMS compliance.

- B/D4.0NSVI: PEMS minimum test weight needs to be greater than 3.8 ton

PEMS minimum test weight is defined as: vehicle curb (unladen) weight + 10% payload.
Whether the PEMS passes or not is subject to the OEM test results.

Change Log

Revision	Date	Author	Description	Page(s)
00	18May2020	Kerry Liu	Initial Release	All

Fault code	Cummins	MIL Class	J1939 SPN	J1939 FMI	OBD Type	Lamp	OBD Lamp	DWS
111	Engine Control Module Critical Internal Failure - Bad Intelligent Device or Component	Class C	629	12	OBD	Stop (Solid)	Solid	N
122	Intake Manifold 1 Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class A	102	3	OBD	Warning (Solid)	Solid	Y
123	Intake Manifold 1 Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class A	102	4	OBD	Warning (Solid)	Solid	Y
125	Intake Manifold 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class B1	102	18	OBD	Warning (Solid)	Solid	N
131	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source	None	91	3	Non-OBD	Stop (Solid)	None	N
132	Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source	None	91	4	Non-OBD	Stop (Solid)	None	N
135	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage Above Normal or Shorted to High Source	None	100	3	Non-OBD	Warning (Solid)	None	N
141	Engine Oil Rifle Pressure 1 Sensor Circuit - Voltage Below Normal or Shorted to Low Source	None	100	4	Non-OBD	Warning (Solid)	None	N
143	Engine Oil Rifle Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	None	100	18	Non-OBD	Warning (Solid)	None	N
144	Engine Coolant Temperature 1 Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	110	3	OBD	Warning (Solid)	Solid	N
145	Engine Coolant Temperature 1 Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	110	4	OBD	Warning (Solid)	Solid	N
146	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	None	110	16	Non-OBD	Warning (Solid)	None	N
151	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Most Severe Level	None	110	0	Non-OBD	Stop (Solid)	None	N
153	Intake Manifold 1 Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class A	105	3	OBD	Warning (Solid)	Solid	Y
154	Intake Manifold 1 Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class A	105	4	OBD	Warning (Solid)	Solid	Y
155	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Most Severe Level	None	105	0	Non-OBD	Stop (Solid)	None	N
187	Sensor Supply 2 Circuit - Voltage Below Normal or Shorted to Low Source	Class A	3510	4	OBD	Warning (Solid)	Solid	N
195	Coolant Level Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source	None	111	3	Non-OBD	Warning (Solid)	None	N
196	Coolant Level Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source	None	111	4	Non-OBD	Warning (Solid)	None	N
197	Coolant Level - Data Valid But Below Normal Operating Range - Moderately Severe Level	None	111	18	Non-OBD	Warning (Solid)	None	N
227	Sensor Supply 2 Circuit - Voltage Above Normal or Shorted to High Source	Class A	3510	3	OBD	Warning (Solid)	Solid	N
234	Engine Crankshaft Speed/Position - Data Valid But Above Normal Operating Range - Most Severe Level	None	190	0	Non-OBD	Stop (Solid)	None	N
235	Coolant Level - Data Valid But Below Normal Operating Range - Most Severe Level	None	111	1	Non-OBD	Stop (Solid)	None	N
238	Sensor Supply 3 Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3511	4	OBD	Warning (Solid)	Solid	N
239	Sensor Supply 3 Circuit - Voltage Above Normal or Shorted to High Source	Class B1	3511	3	OBD	Warning (Solid)	Solid	N
245	Fan Control Circuit - Voltage Below Normal or Shorted to Low Source	None	647	4	Non-OBD	Warning (Solid)	None	N
249	Ambient Air Temperature Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source	Class B1	171	3	OBD	Warning (Solid)	Solid	Y
256	Ambient Air Temperature Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	171	4	OBD	Warning (Solid)	Solid	Y

269	Antitheft Password Valid Indicator - Data Erratic, Intermittent, or Incorrect	None	1195	2	Non-OBD	Stop (Solid)	None	N
271	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage Below Normal or Shorted to Low Source	Class A	1347	4	OBD	Warning (Solid)	Solid	N
272	Engine Fuel Pump Pressurizing Assembly 1 Circuit - Voltage Above Normal or Shorted to High Source	Class A	1347	3	OBD	Warning (Solid)	Solid	N
285	SAE J1939 Multiplexing PGN Timeout Error - Abnormal Update Rate	None	639	9	Non-OBD	Warning (Solid)	None	N
286	SAE J1939 Multiplexing Configuration Error - Out of Calibration	None	639	13	Non-OBD	Warning (Solid)	None	N
288	SAE J1939 Multiplexing Remote Accelerator Pedal or Lever Position Sensor System - Received Network Data in Error	None	974	19	Non-OBD	Stop (Solid)	None	N
291	Proprietary Datalink Error (OEM/Vehicle Datalink) - Abnormal Update Rate	None	625	9	Non-OBD	Stop (Solid)	None	N
319	Real Time Clock - Data Erratic, Intermittent, or Incorrect	Class B2	251	2	OBD	Warning (Blinking)	Solid	N
322	Injector Solenoid Driver Cylinder 1 Circuit - Current Below Normal or Open Circuit	Class A	651	5	OBD	Warning (Solid)	Solid	N
324	Injector Solenoid Driver Cylinder 3 Circuit - Current Below Normal or Open Circuit	Class A	653	5	OBD	Warning (Solid)	Solid	N
331	Injector Solenoid Driver Cylinder 2 Circuit - Current Below Normal or Open Circuit	Class A	652	5	OBD	Warning (Solid)	Solid	N
332	Injector Solenoid Driver Cylinder 4 Circuit - Current Below Normal or Open Circuit	Class A	654	5	OBD	Warning (Solid)	Solid	N
334	Engine Coolant Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	110	2	OBD	Warning (Solid)	Solid	N
343	Engine Control Module Warning Internal Hardware Failure - Bad Intelligent Device or Component	Class C	629	12	OBD	Warning (Solid)	Solid	N
346	Engine Control Module Calibration Memory Software - Bad Intelligent Device or Component	None	630	12	Non-OBD	Warning (Solid)	None	N
351	Injector Power Supply - Bad Intelligent Device or Component	Class B1	3597	12	OBD	Warning (Solid)	Solid	N
352	Sensor Supply 1 Circuit - Voltage Below Normal or Shorted to Low Source	Class A	3509	4	OBD	Warning (Solid)	Solid	N
383	Engine Intake Air Heater 1 Circuit - Current Below Normal or Open Circuit	None	729	5	Non-OBD	Warning (Solid)	None	N
386	Sensor Supply 1 Circuit - Voltage Above Normal or Shorted to High Source	Class A	3509	3	OBD	Warning (Solid)	Solid	N
415	Engine Oil Rifle Pressure - Data Valid But Below Normal Operating Range - Most Severe Level	None	100	1	Non-OBD	Stop (Solid)	None	N
418	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Least Severe Level	None	97	15	Non-OBD	Warning (Blinking)	None	N
435	Engine Oil Rifle Pressure - Data Erratic, Intermittent, or Incorrect	None	100	2	Non-OBD	Warning (Solid)	None	N
436	Intake Manifold 1 Temperature - Data Erratic, Intermittent, or Incorrect	Class A	105	2	OBD	Warning (Solid)	Solid	Y
441	Battery 1 Voltage - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class B1	168	18	OBD	Warning (Solid)	Solid	N
442	Battery 1 Voltage - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class B1	168	16	OBD	Warning (Solid)	Solid	N
451	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class A	157	3	OBD	Warning (Solid)	Solid	N
452	Injector Metering Rail 1 Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class A	157	4	OBD	Warning (Solid)	Solid	N
515	Sensor Supply 6 Circuit - Voltage Above Normal or Shorted to High Source	Class B1	3514	3	OBD	Warning (Solid)	Solid	N
516	Sensor Supply 6 Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3514	4	OBD	Warning (Solid)	Solid	N
553	Injector Metering Rail 1 Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class A	157	16	OBD	Warning (Solid)	Solid	N

559	Injector Metering Rail 1 Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class A	157	18	OBD	Warning (Solid)	Solid	N
584	Engine Starter Motor Relay Circuit - Voltage Above Normal or Shorted to High Source	None	677	3	Non-OBD	Warning (Solid)	None	N
585	Engine Starter Motor Relay Circuit - Voltage Below Normal or Shorted to Low Source	None	677	4	Non-OBD	Warning (Solid)	None	N
596	Electrical Charging System Voltage - Data Valid But Above Normal Operating Range - Moderately Severe Level	None	167	16	Non-OBD	Warning (Solid)	None	N
597	Electrical Charging System Voltage - Data Valid But Below Normal Operating Range - Moderately Severe Level	None	167	18	Non-OBD	Warning (Solid)	None	N
649	Engine Oil Change Interval - Condition Exists	None	1378	31	Non-OBD	Warning (Blinking)	None	N
689	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect	Class B1	190	2	OBD	Warning (Solid)	Solid	N
691	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage Above Normal or Shorted to High Source	Class B1	1172	3	OBD	Warning (Solid)	Solid	N
692	Turbocharger 1 Compressor Intake Temperature Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	1172	4	OBD	Warning (Solid)	Solid	N
693	Turbocharger 1 Compressor Intake Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	1172	2	OBD	Warning (Solid)	Solid	N
731	Engine Speed/Position Camshaft and Crankshaft Misalignment - Mechanical System Not Responding or Out of Adjustment	Class B1	723	7	OBD	Warning (Solid)	Solid	N
741	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage Above Normal or Shorted to High Source	Class B1	1176	3	OBD	Warning (Solid)	Solid	Y
742	Turbocharger 1 Compressor Intake Pressure Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	1176	4	OBD	Warning (Solid)	Solid	Y
743	Turbocharger 1 Compressor Intake Pressure - Data Erratic, Intermittent, or Incorrect	Class B1	1176	2	OBD	Warning (Solid)	Solid	Y
778	Engine Camshaft Speed/Position Sensor - Data Erratic, Intermittent, or Incorrect	Class C	723	2	OBD	Warning (Solid)	Solid	N
784	Adaptive Cruise Control Mode - Data Erratic, Intermittent, or Incorrect	None	1590	2	Non-OBD	None	None	N
1117	Power Supply Lost With Ignition On - Data Erratic, Intermittent, or Incorrect	Class C	3597	2	OBD	None	Solid	N
1139	Injector Solenoid Driver Cylinder 1 - Mechanical System Not Responding or Out of Adjustment	Class A	651	7	OBD	Warning (Solid)	Solid	N
1141	Injector Solenoid Driver Cylinder 2 - Mechanical System Not Responding or Out of Adjustment	Class A	652	7	OBD	Warning (Solid)	Solid	N
1142	Injector Solenoid Driver Cylinder 3 - Mechanical System Not Responding or Out of Adjustment	Class A	653	7	OBD	Warning (Solid)	Solid	N
1143	Injector Solenoid Driver Cylinder 4 - Mechanical System Not Responding or Out of Adjustment	Class A	654	7	OBD	Warning (Solid)	Solid	N
1239	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Above Normal or Shorted to High Source	None	2623	3	Non-OBD	Warning (Solid)	None	N
1241	Accelerator Pedal or Lever Position Sensor 2 Circuit - Voltage Below Normal or Shorted to Low Source	None	2623	4	Non-OBD	Warning (Solid)	None	N
1242	Accelerator Pedal or Lever Position Sensor 1 - Data Erratic, Intermittent, or Incorrect	None	91	2	Non-OBD	Stop (Solid)	None	N
1361	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source	None	974	4	Non-OBD	Warning (Solid)	None	N
1595	Remote Accelerator Pedal or Lever Position Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source	None	974	3	Non-OBD	Warning (Solid)	None	N
1668	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	1761	4	OBD	Warning (Solid)	Solid	Y
1669	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	1761	3	OBD	Warning (Solid)	Solid	Y
1673	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Most Severe Level	Class B1	1761	1	OBD	Warning (Solid)	Solid	N

1677	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage Below Normal or Shorted to Low Source	Class B1	3031	4	OBD	Warning (Solid)	Solid	Y
1678	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature Sensor - Voltage Above Normal or Shorted to High Source	Class B1	3031	3	OBD	Warning (Solid)	Solid	Y
1679	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	3031	2	OBD	Warning (Solid)	Solid	Y
1682	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Input Lines - Condition Exists	Class A	3362	31	OBD	Warning (Solid)	Solid	Y
1683	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage Above Normal or Shorted to High Source	Class A	3363	3	OBD	Warning (Solid)	Solid	N
1684	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Voltage Below Normal or Shorted to Low Source	Class A	3363	4	OBD	Warning (Solid)	Solid	N
1685	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3364	4	OBD	Warning (Solid)	Solid	Y
1686	Aftertreatment Diesel Exhaust Fluid Quality Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	3364	3	OBD	Warning (Solid)	Solid	Y
1691	Aftertreatment 1 Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class B1	5298	18	OBD	Warning (Solid)	Solid	N
1695	Sensor Supply 5 Circuit - Voltage Above Normal or Shorted to High Source	Class B1	3513	3	OBD	Warning (Solid)	Solid	N
1696	Sensor Supply 5 Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3513	4	OBD	Warning (Solid)	Solid	N
1712	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class A	3363	18	OBD	Warning (Solid)	Solid	Y
1713	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class A	3363	16	OBD	Warning (Solid)	Solid	N
1715	Aftertreatment Diesel Exhaust Fluid Quality - Root Cause Not Known	Class B1	3364	11	OBD	Warning (Solid)	Solid	Y
1845	Water in Fuel Indicator Sensor Circuit - Voltage Above Normal or Shorted to High Source	None	97	3	Non-OBD	Warning (Blinking)	None	N
1848	Intake Manifold 1 Temperature - Abnormal Rate of Change	Class A	105	10	OBD	Warning (Solid)	Solid	Y
1852	Water in Fuel Indicator - Data Valid But Above Normal Operating Range - Moderately Severe Level	None	97	16	Non-OBD	Warning (Solid)	None	N
1879	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	3251	3	OBD	Warning (Solid)	Solid	Y
1881	Aftertreatment Diesel Particulate Filter Differential Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3251	4	OBD	Warning (Solid)	Solid	Y
1883	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Erratic, Intermittent, or Incorrect	Class B1	3251	2	OBD	Warning (Solid)	Solid	Y
1885	Aftertreatment 1 Intake NOx Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3216	4	OBD	Warning (Solid)	Solid	Y
1887	Aftertreatment 1 Outlet NOx Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3226	4	OBD	Warning (Solid)	Solid	Y
1921	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	None	3251	16	Non-OBD	Warning (Solid)	None	N
1922	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range - Most Severe Level	Class A	3251	0	OBD	Stop (Solid)	Solid	N
1946	Generator Alternator Bearing 1 Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	None	1122	16	Non-OBD	Warning (Solid)	None	N
2182	Engine Brake Actuator Driver 1 Circuit - Voltage Above Normal or Shorted to High Source	None	1072	3	Non-OBD	Warning (Solid)	None	N

2183	Engine Brake Actuator Driver 1 Circuit - Voltage Below Normal or Shorted to Low Source	None	1072	4	Non-OBD	Warning (Solid)	None	N
2185	Sensor Supply 4 Circuit - Voltage Above Normal or Shorted to High Source	None	3512	3	Non-OBD	Warning (Solid)	None	N
2186	Sensor Supply 4 Circuit - Voltage Below Normal or Shorted to Low Source	None	3512	4	Non-OBD	Warning (Solid)	None	N
2321	Engine Crankshaft Speed/Position - Data Erratic, Intermittent, or Incorrect	Class B1	190	2	OBD	None	Solid	N
2322	Engine Camshaft Speed/Position Sensor - Data Erratic, Intermittent, or Incorrect	Class C	723	2	OBD	None	Solid	N
2373	Exhaust Gas Bank 1 Pressure Sensor 1 Circuit - Voltage Above Normal or Shorted to High Source	Class A	1209	3	OBD	Warning (Solid)	Solid	Y
2374	Exhaust Gas Bank 1 Pressure Sensor 1 Circuit - Voltage Below Normal or Shorted to Low Source	Class A	1209	4	OBD	Warning (Solid)	Solid	Y
2377	Fan Control Circuit - Voltage Above Normal or Shorted to High Source	None	647	3	Non-OBD	Warning (Solid)	None	N
2398	Ambient Air Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	171	2	OBD	Warning (Solid)	Solid	Y
2442	Injector Solenoid Driver Cylinder 1 - Out of Calibration	None	651	13	Non-OBD	Warning (Solid)	None	N
2443	Injector Solenoid Driver Cylinder 2 - Out of Calibration	None	652	13	Non-OBD	Warning (Solid)	None	N
2444	Injector Solenoid Driver Cylinder 3 - Out of Calibration	None	653	13	Non-OBD	Warning (Solid)	None	N
2445	Injector Solenoid Driver Cylinder 4 - Out of Calibration	None	654	13	Non-OBD	Warning (Solid)	None	N
2448	Coolant Level - Data Valid But Below Normal Operating Range - Least Severe Level	None	111	17	Non-OBD	Warning (Blinking)	None	N
2554	Exhaust Gas Pressure 1 - Data Erratic, Intermittent, or Incorrect	Class A	1209	2	OBD	Warning (Solid)	Solid	Y
2555	Engine Intake Air Heater 1 Circuit - Voltage Above Normal or Shorted to High Source	None	729	3	Non-OBD	Warning (Solid)	None	N
2556	Engine Intake Air Heater 1 Circuit - Voltage Below Normal or Shorted to Low Source	None	729	4	Non-OBD	Warning (Solid)	None	N
2638	Aftertreatment Diesel Oxidation Catalyst Conversion Efficiency - Data Valid But Below Normal Operating Range - Least Severe Level	Class B2	5298	17	OBD	None	Solid	N
2639	Aftertreatment Diesel Particulate Filter Differential Pressure - Data Valid But Above Normal Operating Range - Least Severe Level	None	3251	15	Non-OBD	None	None	N
2764	Exhaust Gas Pressure 1 - Data Valid But Above Normal Operating Range - Moderately Severe Level	None	1209	16	Non-OBD	Warning (Solid)	None	N
2765	Engine Injector Bank 1 Barcodes - Out of Calibration	None	2797	13	Non-OBD	None	None	N
2771	Aftertreatment 1 Outlet NOx Sensor - Abnormal Update Rate	Class B1	3226	9	OBD	Warning (Solid)	Solid	Y
2777	Aftertreatment Regeneration Inhibited Due to Inhibit Switch - Condition Exists	None	3703	31	Non-OBD	Warning (Blinking)	None	N
2963	Engine Coolant Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	None	110	15	Non-OBD	None	None	N
2964	Intake Manifold 1 Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	None	105	15	Non-OBD	None	None	N
2973	Intake Manifold 1 Pressure - Data Erratic, Intermittent, or Incorrect	Class A	102	2	OBD	Warning (Solid)	Solid	Y
2976	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Temperature - Data Erratic, Intermittent, or Incorrect	Class A	3361	2	OBD	Warning (Solid)	Solid	Y
3133	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	3610	3	OBD	Warning (Solid)	Solid	Y

3134	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3610	4	OBD	Warning (Solid)	Solid	Y
3135	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Data Erratic, Intermittent, or Incorrect	Class B1	3610	2	OBD	Warning (Solid)	Solid	Y
3146	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class A	4363	3	OBD	Warning (Solid)	Solid	Y
3147	Aftertreatment 1 SCR Outlet Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class A	4363	4	OBD	Warning (Solid)	Solid	Y
3148	Aftertreatment 1 SCR Outlet Temperature Sensor - Data Erratic, Intermittent, or Incorrect	Class A	4363	2	OBD	Warning (Solid)	Solid	Y
3151	Aftertreatment 1 SCR Catalyst System Missing - Condition Exists	Class A	4794	31	OBD	Warning (Solid)	Solid	Y
3165	Aftertreatment 1 SCR Outlet Temperature - Data Valid But Above Normal Operating Range - Most Severe Level	Class A	4363	0	OBD	Stop (Solid)	Solid	Y
3168	Aftertreatment 1 Diesel Particulate Filter System - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class A	3936	16	OBD	Warning (Solid)	Solid	Y
3186	Tachograph Output Shaft Speed - Abnormal Update Rate	Class B1	1623	9	OBD	Warning (Solid)	Solid	N
3213	Tachograph Output Shaft Speed - Received Network Data in Error	Class B1	1623	19	OBD	Warning (Solid)	Solid	N
3232	Aftertreatment 1 Intake NOx Sensor - Abnormal Update Rate	Class B1	3216	9	OBD	Warning (Solid)	Solid	Y
3235	Aftertreatment 1 SCR Outlet Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class A	4363	16	OBD	Stop (Solid)	Solid	Y
3236	Aftertreatment 1 SCR Outlet Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	None	4363	15	Non-OBD	Warning (Solid)	None	N
3237	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage Above Normal or Shorted to High Source	Class B2	4340	3	OBD	Warning (Solid)	Solid	N
3238	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 1 Circuit - Voltage Below Normal or Shorted to Low Source	Class B2	4340	4	OBD	Warning (Solid)	Solid	N
3239	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage Above Normal or Shorted to High Source	Class B2	4342	3	OBD	Warning (Solid)	Solid	N
3241	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 2 Circuit - Voltage Below Normal or Shorted to Low Source	Class B2	4342	4	OBD	Warning (Solid)	Solid	N
3242	Aftertreatment 1 Diesel Exhaust Fluid Tank Heater - Mechanical System Not Responding or Out of Adjustment	Class B1	3363	7	OBD	Warning (Solid)	Solid	Y
3243	Engine Cooling System Monitor - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class B2	3060	18	OBD	Warning (Solid)	Solid	N
3251	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class B1	4765	16	OBD	Stop (Solid)	Solid	N
3252	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	None	4765	15	Non-OBD	Warning (Solid)	None	N
3253	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class B1	3242	16	OBD	Stop (Solid)	Solid	N
3254	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	Class B1	3242	15	OBD	Warning (Solid)	Solid	N
3255	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class B1	3246	16	OBD	Stop (Solid)	Solid	N
3256	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range - Least Severe Level	Class B1	3246	15	OBD	Warning (Solid)	Solid	N
3298	Anti-theft Encryption Seed - Out of Calibration	None	1194	13	Non-OBD	Stop (Solid)	None	N

3311	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Valid But Above Normal Operating Range - Most Severe Level	Class B1	3242	0	OBD	Stop (Solid)	Solid	N
3312	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Valid But Above Normal Operating Range - Most Severe Level	Class B1	3246	0	OBD	Stop (Solid)	Solid	N
3313	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	4765	4	OBD	Warning (Solid)	Solid	N
3314	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	4765	3	OBD	Warning (Solid)	Solid	N
3315	Aftertreatment 1 Diesel Oxidation Catalyst Intake Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	4765	2	OBD	Warning (Solid)	Solid	N
3316	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3242	4	OBD	Warning (Solid)	Solid	Y
3317	Aftertreatment 1 Diesel Particulate Filter Intake Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	3242	3	OBD	Warning (Solid)	Solid	Y
3318	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	3242	2	OBD	Warning (Solid)	Solid	Y
3319	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	3246	3	OBD	Warning (Solid)	Solid	Y
3321	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	3246	4	OBD	Warning (Solid)	Solid	Y
3322	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	3246	2	OBD	Warning (Solid)	Solid	Y
3328	Transmission Output Shaft Speed - Abnormal Update Rate	Class B1	191	9	OBD	Warning (Solid)	Solid	N
3332	Engine Fuel Pump Pressurizing Assembly 1 - Data Erratic, Intermittent, or Incorrect	Class A	1347	2	OBD	Warning (Solid)	Solid	N
3343	Engine Charge Air Cooler Efficiency - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class A	5285	18	OBD	Warning (Solid)	Solid	N
3357	Clutch Switch - Data Erratic, Intermittent, or Incorrect	None	598	2	Non-OBD	Warning (Solid)	None	N
3374	Roll Over Protection Brake Control Active - Condition Exists	None	1818	31	Non-OBD	None	None	N
3375	Aftertreatment Diesel Particulate Filter Regeneration too Frequent - Condition Exists	None	5397	31	Non-OBD	Warning (Solid)	None	N
3376	Aftertreatment Diesel Particulate Filter Incomplete Regeneration - Condition Exists	Class C	5319	31	OBD	Warning (Solid)	Solid	N
3418	Transmission Output Shaft Speed - Received Network Data in Error	Class B1	191	19	OBD	Warning (Solid)	Solid	N
3422	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage Above Normal or Shorted to High Source	Class B2	4344	3	OBD	Warning (Solid)	Solid	N
3423	Aftertreatment 1 Diesel Exhaust Fluid Line Heater 3 Circuit - Voltage Below Normal or Shorted to Low Source	Class B2	4344	4	OBD	Warning (Solid)	Solid	N
3488	Anti-Lock Braking (ABS) Controller - Abnormal Update Rate	None	563	9	Non-OBD	Warning (Solid)	None	N
3492	Real Time Clock - Abnormal Rate of Change	Class B1	251	10	OBD	Warning (Solid)	Solid	N
3497	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Least Severe Level	Class C	1761	17	OBD	Warning (Blinking)	Solid	N
3498	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class C	1761	18	OBD	Warning (Blinking)	Solid	N

3528	Accelerator Pedal or Lever Idle Validation Switch - Abnormal Update Rate	None	558	9	Non-OBD	Stop (Solid)	None	N
3531	Ambient Air Temperature - Abnormal Update Rate	Class B1	171	9	OBD	Warning (Solid)	Solid	Y
3532	Ambient Air Temperature - Received Network Data in Error	Class B1	171	19	OBD	Warning (Solid)	Solid	Y
3539	Engine Intake Throttle Actuator Position Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B2	51	3	OBD	Warning (Solid)	Solid	N
3541	Engine Intake Throttle Actuator Position Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B2	51	4	OBD	Warning (Solid)	Solid	N
3542	Engine Intake Throttle Actuator Position Sensor - Data Erratic, Intermittent, or Incorrect	Class A	51	2	OBD	Warning (Solid)	Solid	N
3545	Aftertreatment 1 Outlet NOx Sensor - Abnormal Rate of Change	Class B1	3226	10	OBD	Warning (Solid)	Solid	Y
3547	Aftertreatment Diesel Exhaust Fluid Tank Empty - Condition Exists	Class A	4096	31	OBD	Warning (Solid)	Solid	N
3551	Transmission Neutral Switch - Data Erratic, Intermittent, or Incorrect	None	604	2	Non-OBD	Warning (Solid)	None	N
3558	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage Above Normal or Shorted to High Source	Class A	3361	3	OBD	Warning (Solid)	Solid	Y
3559	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit - Voltage Below Normal or Shorted to Low Source	Class A	3361	4	OBD	Warning (Solid)	Solid	Y
3562	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage Above Normal or Shorted to High Source	Class A	5491	3	OBD	Warning (Solid)	Solid	N
3563	Aftertreatment Diesel Exhaust Fluid Line Heater Relay - Voltage Below Normal or Shorted to Low Source	Class B2	5491	4	OBD	Warning (Solid)	Solid	N
3565	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Circuit - Voltage Above Normal or Shorted to High Source	None	5394	3	Non-OBD	Warning (Solid)	None	N
3567	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 Circuit - Current Below Normal or Open Circuit	Class A	5394	5	OBD	Warning (Solid)	Solid	Y
3568	Aftertreatment 1 Diesel Exhaust Fluid Dosing Valve 1 - Mechanical System Not Responding or Out of Adjustment	Class A	5394	7	OBD	Warning (Solid)	Solid	Y
3571	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class A	4334	3	OBD	Warning (Solid)	Solid	Y
3572	Aftertreatment 1 Diesel Exhaust Fluid Pressure Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class A	4334	4	OBD	Warning (Solid)	Solid	Y
3574	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class A	4334	18	OBD	Warning (Solid)	Solid	Y
3575	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class A	4334	16	OBD	Warning (Solid)	Solid	Y
3577	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage Above Normal or Shorted to High Source	Class A	4376	3	OBD	Warning (Solid)	Solid	Y
3578	Aftertreatment Diesel Exhaust Fluid Return Valve - Voltage Below Normal or Shorted to Low Source	Class B1	4376	4	OBD	Warning (Solid)	Solid	N
3583	Aftertreatment 1 Outlet NOx Sensor Heater - Abnormal Rate of Change	Class B1	5031	10	OBD	Warning (Solid)	Solid	Y
3596	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Data Erratic, Intermittent, or Incorrect	Class A	4334	2	OBD	Warning (Solid)	Solid	Y
3613	Coolant Level Sensor - Abnormal Update Rate	None	111	9	Non-OBD	Warning (Solid)	None	N
3649	Aftertreatment 1 Intake NOx Sensor Heater - Abnormal Rate of Change	Class B1	5024	10	OBD	Warning (Solid)	Solid	Y
3681	Aftertreatment 1 Outlet NOx Sensor Power Supply - Data Erratic, Intermittent, or Incorrect	Class B1	3228	2	OBD	Warning (Solid)	Solid	Y
3682	Aftertreatment 1 Intake NOx Sensor Power Supply - Data Erratic, Intermittent, or Incorrect	Class B1	3218	2	OBD	Warning (Solid)	Solid	Y
3697	Engine Control Module Calibration Memory - Bad Intelligent Device or Component	Class C	630	12	OBD	Stop (Solid)	Solid	N

3712	Aftertreatment SCR Operator Inducement - Data Valid But Above Normal Operating Range - Most Severe Level	None	5246	0	Non-OBD	Stop (Solid)	None	N
3714	Engine Protection Torque Derate - Condition Exists	None	1569	31	Non-OBD	Warning (Solid)	None	N
3717	Aftertreatment 1 Outlet NOx Sensor - Out of Calibration	Class B1	3226	13	OBD	Warning (Solid)	Solid	Y
3718	Aftertreatment 1 Intake NOx - Out of Calibration	Class B1	3216	13	OBD	Warning (Solid)	Solid	Y
3719	Engine Remote Start - Voltage Above Normal or Shorted to High Source	None	4002	3	Non-OBD	Warning (Solid)	None	N
3721	Engine Remote Start - Voltage Below Normal or Shorted to Low Source	None	4002	4	Non-OBD	Warning (Solid)	None	N
3725	Aftertreatment 1 Intake NOx Sensor - Abnormal Rate of Change	Class B1	3216	10	OBD	Warning (Solid)	Solid	Y
3727	High Pressure Common Rail Fuel Pressure Relief Valve - Mechanical System Not Responding or Out of Adjustment	None	5571	7	Non-OBD	None	None	N
3737	Engine Starter Mode Overcrank Protection - Condition Exists	None	1675	31	Non-OBD	None	None	N
3741	High Pressure Common Rail Fuel Pressure Relief Valve - Data Valid But Above Normal Operating Range - Most Severe Level	Class A	5571	0	OBD	Warning (Solid)	Solid	N
3748	Aftertreatment 1 Intake NOx Sensor - Data Not Rational - Drifted High	Class B1	3216	20	OBD	Warning (Solid)	Solid	Y
3753	Diesel Particulate Filter Active Regeneration Inhibited Due to System Timeout - Condition Exists	None	3713	31	Non-OBD	None	None	N
3843	Cruise Control Disable Command - Abnormal Update Rate	None	5603	9	Non-OBD	None	None	N
3844	Cruise Control Pause Command - Condition Exists	None	5605	31	Non-OBD	None	None	N
3845	Cruise Control Disable Command - Condition Exists	None	5603	31	Non-OBD	None	None	N
3867	Aftertreatment Diesel Exhaust Fluid Quality - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class B1	3364	18	OBD	Warning (Solid)	Solid	Y
3868	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal Update Rate	Class B1	3364	9	OBD	Warning (Solid)	Solid	Y
3916	Wheel-Based Vehicle Speed - Condition Exists	Class B1	84	31	OBD	Warning (Solid)	Solid	N
4138	Security Device - Abnormal Update Rate	None	1746	9	Non-OBD	Warning (Solid)	None	N
4139	Security Device - Data Erratic, Intermittent, or Incorrect	None	1746	2	Non-OBD	Warning (Solid)	None	N
4151	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Abnormal Update Rate	Class A	5742	9	OBD	Warning (Solid)	Solid	Y
4155	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay Circuit - Voltage Above Normal or Shorted to High Source	Class B1	5746	3	OBD	Warning (Solid)	Solid	N
4156	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Relay Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	5746	4	OBD	Warning (Solid)	Solid	N
4157	Aftertreatment Diesel Exhaust Fluid Return Valve - Mechanical System Not Responding or Out of Adjustment	Class A	4376	7	OBD	Warning (Solid)	Solid	N
4158	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Bad Intelligent Device or Component	Class A	5742	12	OBD	Warning (Solid)	Solid	Y
4161	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage Above Normal or Shorted to High Source	Class A	5742	3	OBD	Warning (Solid)	Solid	Y
4162	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Voltage Below Normal or Shorted to Low Source	Class A	5742	4	OBD	Warning (Solid)	Solid	Y
4163	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class A	5742	16	OBD	Warning (Solid)	Solid	Y

4168	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit 1 Heater Circuit - Voltage Above Normal or Shorted to High Source	Class B1	5745	3	OBD	Warning (Solid)	Solid	N
4169	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit 1 Heater Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	5745	4	OBD	Warning (Solid)	Solid	N
4171	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit 1 Heater - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class A	5745	18	OBD	Warning (Solid)	Solid	Y
4213	Aftertreatment Regeneration Inhibit Switch - Data Erratic, Intermittent, or Incorrect	Class B2	3695	2	OBD	Warning (Solid)	Solid	N
4215	Anti-Lock Braking (ABS) Active - Condition Exists	None	563	31	Non-OBD	None	None	N
4244	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	4337	2	OBD	Warning (Solid)	Solid	N
4245	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Data Erratic, Intermittent, or Incorrect	Class B1	5798	2	OBD	Warning (Solid)	Solid	N
4249	Aftertreatment 1 Diesel Exhaust Fluid Dosing Temperature - Abnormal Rate of Change	Class B1	4337	10	OBD	Warning (Solid)	Solid	N
4251	Aftertreatment 1 Diesel Exhaust Fluid Dosing Unit Heater Temperature - Abnormal Rate of Change	Class B1	5798	10	OBD	Warning (Solid)	Solid	N
4259	Aftertreatment Diesel Particulate Filter Temperature Sensor Module - Root Cause Not Known	Class A	5742	11	OBD	Warning (Solid)	Solid	Y
4277	Aftertreatment Diesel Exhaust Fluid Quality - Abnormal Rate of Change	Class B1	3364	10	OBD	Warning (Solid)	Solid	Y
4517	Vehicle Identification Number - Out of Calibration	None	237	13	Non-OBD	Warning (Solid)	None	N
4521	Aftertreatment 1 SCR Intermediate Gas Temperature Sensor - Data Erratic, Intermittent, or Incorrect	Class A	5862	2	OBD	Warning (Solid)	Solid	Y
4526	Brake Pedal Position - Data Erratic, Intermittent, or Incorrect	None	521	2	Non-OBD	Warning (Solid)	None	N
4572	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Abnormal Update Rate	Class B1	3031	9	OBD	Warning (Solid)	Solid	Y
4573	Aftertreatment 1 Diesel Exhaust Fluid Average Consumption - Data Valid But Below Normal Operating Range - Moderately Severe Level	Class A	3826	18	OBD	Warning (Solid)	Solid	Y
4677	Aftertreatment 1 Diesel Exhaust Fluid Tank Level - Abnormal Update Rate	Class B1	1761	9	OBD	Warning (Solid)	Solid	Y
4737	Aftertreatment 1 Diesel Exhaust Fluid Tank Temperature - Root Cause Not Known	Class B1	3031	11	OBD	Warning (Solid)	Solid	Y
4739	Aftertreatment 1 Diesel Exhaust Fluid Tank Level Sensor - Root Cause Not Known	Class B1	1761	11	OBD	Warning (Solid)	Solid	Y
4747	Aftertreatment Intake Oxygen Sensor - Data Not Rational - Drifted High	Class B1	3217	20	OBD	Warning (Solid)	Solid	Y
4748	Aftertreatment Intake Oxygen Sensor - Data Not Rational - Drifted Low	Class B1	3217	21	OBD	Warning (Solid)	Solid	Y
4749	Aftertreatment Outlet Oxygen - Data Not Rational - Drifted High	Class B1	3227	20	OBD	Warning (Solid)	Solid	Y
4751	Aftertreatment Outlet Oxygen - Data Not Rational - Drifted Low	Class B1	3227	21	OBD	Warning (Solid)	Solid	Y
4768	Aftertreatment 1 Diesel Exhaust Fluid Property - Root Cause Not Known	Class A	3521	11	OBD	Warning (Solid)	Solid	Y
4948	Performance Bias Selection Switch - Voltage Above Normal or Shorted to High Source	None	6874	3	Non-OBD	Warning (Solid)	None	N
4949	Performance Bias Selection Switch - Voltage Below Normal or Shorted to Low Source	None	6874	4	Non-OBD	Warning (Solid)	None	N
4994	Electrical Charging System Voltage - Voltage Above Normal or Shorted to High Source	None	167	3	Non-OBD	Warning (Solid)	None	N
4995	Electrical Charging System Voltage - Voltage Below Normal or Shorted to Low Source	None	167	4	Non-OBD	Warning (Solid)	None	N
5248	Tachograph Output Shaft Speed - Out of Calibration	Class B1	1623	13	OBD	Warning (Solid)	Solid	N

5271	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Above Normal or Shorted to High Source	Class B1	649	3	OBD	Warning (Solid)	Solid	N
5272	Engine Exhaust Back Pressure Regulator Control Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	649	4	OBD	Warning (Solid)	Solid	N
5273	Engine Exhaust Back Pressure Regulator Control Circuit - Current Below Normal or Open Circuit	Class B1	649	5	OBD	Warning (Solid)	Solid	N
5274	Engine Exhaust Back Pressure Regulator Position - Data Erratic, Intermittent, or Incorrect	Class B1	5625	2	OBD	Warning (Solid)	Solid	N
5275	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Above Normal or Shorted to High Source	Class B1	5625	3	OBD	Warning (Solid)	Solid	N
5276	Engine Exhaust Back Pressure Regulator Position Sensor Circuit - Voltage Below Normal or Shorted to Low Source	Class B1	5625	4	OBD	Warning (Solid)	Solid	N
5277	Engine Exhaust Back Pressure Regulator - Out of Calibration	Class B1	5626	13	OBD	Warning (Solid)	Solid	N
5278	Aftertreatment 1 Diesel Exhaust Fluid Dosing System Frozen - Condition Exists	Class A	6802	31	OBD	Warning (Solid)	Solid	Y
5383	Aftertreatment 1 Diesel Particulate Filter Ash Load Percent - Data Valid But Above Normal Operating Range - Least Severe Level	None	3720	15	Non-OBD	Warning (Blinking)	None	N
5626	Aftertreatment 1 Diesel Exhaust Fluid Pump 1 Motor Speed Circuit - Current Below Normal or Open Circuit	None	4374	5	Non-OBD	Warning (Solid)	None	N
5652	Exhaust Pressure 1 - Data Valid But Above Normal Operating Range - Least Severe Level	None	1209	15	Non-OBD	Warning (Solid)	None	N
5655	Aftertreatment 1 SCR Conversion Efficiency - Condition Exists	Class A	4364	31	OBD	Warning (Solid)	Solid	Y
5715	Aftertreatment 1 Diesel Particulate Filter Differential Pressure - Abnormal Rate of Change	Class A	3251	10	OBD	Warning (Solid)	Solid	Y
5716	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure - Abnormal Rate of Change	Class B1	3610	10	OBD	Warning (Solid)	Solid	Y
5865	Aftertreatment 1 Diesel Exhaust Fluid Pump Command Circuit - Voltage Below Normal or Shorted to Low Source	Class A	4375	4	OBD	Warning (Solid)	Solid	Y
5864	Aftertreatment 1 Diesel Exhaust Fluid Pump Command Circuit - Voltage Above Normal or Shorted to High Source	Class A	4375	3	OBD	Warning (Solid)	Solid	Y
5879	Electronic Throttle Control Actuator Driver Circuit - Voltage Above Normal or Shorted to High Source	Class B2	3464	3	OBD	Warning (Solid)	Solid	N
5881	Electronic Throttle Control Actuator Driver Circuit - Voltage Below Normal or Shorted to Low Source	Class B2	3464	4	OBD	Warning (Solid)	Solid	N
5882	Electronic Throttle Control Actuator - Mechanical System Not Responding or Out of Adjustment	None	3464	7	Non-OBD	Warning (Solid)	None	N
5935	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Mechanical System Not Responding or Out of Adjustment	Class B2	4334	7	OBD	Warning (Solid)	Solid	N
5936	Aftertreatment 1 Diesel Exhaust Fluid Pressure - Data Valid But Above Normal Operating Range - Least Severe Level	Class B2	4334	15	OBD	Warning (Solid)	Solid	N
5986	Engine Coolant Temperature - Abnormal Rate of Change	Class B1	110	10	OBD	Warning (Solid)	Solid	N
5989	Intake Manifold 1 Pressure - Data Not Rational - Drifted High	Class A	102	20	OBD	Warning (Solid)	Solid	Y
5991	Intake Manifold 1 Pressure - Data Not Rational - Drifted Low	Class A	102	21	OBD	Warning (Solid)	Solid	Y
6266	Aftertreatment 1 SCR Intermediate Gas Temperature - Special Instructions	Class A	5862	14	OBD	Warning (Solid)	Solid	Y
6462	Aftertreatment 1 Outlet NOx Sensor - Data Not Rational - Drifted High	Class B1	3226	20	OBD	None	Solid	Y
6578	Alternator 1 Status - Abnormal Update Rate	None	3353	9	Non-OBD	Warning (Solid)	None	N
6595	Engine Speed - Root Cause Not Known	Class C	190	11	OBD	None	Solid	N
6599	Engine Cranks Slowly - Condition Exists	None	521002	31	Non-OBD	None	None	N

6611	Engine Starter Motor Relay Control Circuit - Voltage Above Normal or Shorted to High Source	None	6385	3	Non-OBD	Warning (Solid)	None	N
6612	Engine Starter Motor Relay Control Circuit - Voltage Below Normal or Shorted to Low Source	None	6385	4	Non-OBD	Warning (Solid)	None	N
6618	Parking Brake Switch - Data Erratic, Intermittent, or Incorrect	None	70	2	Non-OBD	None	None	N
6712	Engine Position Sensor - Abnormal Frequency or Pulse Width or Period	Class B1	636	8	OBD	Warning (Solid)	Solid	N
6713	Engine Position Sensor - Condition Exists	Class B1	636	31	OBD	Warning (Solid)	Solid	N
6758	Net Battery Current - Data Erratic, Intermittent, or Incorrect	None	2579	2	Non-OBD	Warning (Solid)	None	N
6765	Aftertreatment 1 Diesel Exhaust Fluid Property - Data Valid But Above Normal Operating Range - Moderately Severe Level	Class B1	3521	16	OBD	None	Solid	Y
6786	Aftertreatment 1 Diesel Particulate Filter Outlet Pressure Sensor - Data Not Rational - Drifted High	Class B1	3610	20	OBD	None	Solid	Y
7196	Real Time Clock - Abnormal Update Rate	Class B2	251	9	OBD	None	Solid	N
7325	Aftertreatment 1 Diesel Exhaust Fluid Pump Motor Speed - Condition Exists	None	4374	31	Non-OBD	None	None	N
7385	Engine Start Abort Request - Out of Calibration	None	7747	13	Non-OBD	Warning (Solid)	None	N
7425	Adaptive Cruise Control Mode - Abnormal Update Rate	None	1590	9	Non-OBD	None	None	N
7426	Adaptive Cruise Control Mode - Received Network Data in Error	None	1590	19	Non-OBD	None	None	N
7861	Turbocharger 1 Compressor Intake Temperature Sensor - Abnormal Rate of Change	Class B1	1172	10	OBD	Warning (Solid)	Solid	N
7862	Engine Turbocharger 1 Compressor Intake Pressure - Abnormal Rate of Change	Class B1	1176	10	OBD	Warning (Solid)	Solid	Y
7862	Engine Turbocharger 1 Compressor Intake Pressure - Abnormal Rate of Change	Class B1	1176	10	OBD	Warning (Solid)	Solid	Y
7863	Ambient Air Temperature - Abnormal Rate of Change	Class B1	171	10	OBD	Warning (Solid)	Solid	Y
7865	Engine Oil Pressure - Abnormal Rate of Change	None	100	10	Non-OBD	Warning (Solid)	None	N
7868	Aftertreatment 1 Diesel Particulate Filter Intake Temperature - Abnormal Rate of Change	None	3242	10	Non-OBD	Warning (Solid)	None	N
7894	Aftertreatment 1 Diesel Particulate Filter Outlet Temperature - Abnormal Rate of Change	None	3246	10	Non-OBD	Warning (Solid)	None	N
7897	Engine Starter Mode - Special Instructions	None	1675	14	Non-OBD	None	None	N
8242	Intelligent Battery Sensor Abnormal Calibration 12V - Special Instructions	None	521226	14	Non-OBD	Warning (Solid)	None	N
8243	Intelligent Battery Sensor Abnormal Calibration 12V - Abnormal Update Rate	None	521226	9	Non-OBD	Warning (Solid)	None	N
8244	Intelligent Battery Sensor Abnormal Calibration 24V - Special Instructions	None	521227	14	Non-OBD	Warning (Solid)	None	N
8245	Intelligent Battery Sensor Abnormal Calibration 24V - Abnormal Update Rate	None	521227	9	Non-OBD	Warning (Solid)	None	N
8246	Alternator Control Circuit - Voltage Above Normal or Shorted to High Source	None	521228	3	Non-OBD	Warning (Solid)	None	N
8247	Alternator Control Circuit - Voltage Below Normal or Shorted to Low Source	None	521228	4	Non-OBD	Warning (Solid)	None	N
8248	Alternator Voltage - Data Erratic, Intermittent, or Incorrect	None	521229	2	Non-OBD	Warning (Solid)	None	N
8249	Cab Interior Temperature - Voltage Above Normal or Shorted to High Source	None	170	3	Non-OBD	Warning (Solid)	None	N

8251	Cab Interior Temperature - Voltage Below Normal or Shorted to Low Source	None	170	4	Non-OBD	Warning (Solid)	None	N
8252	Service Brake Circuit 1 Air Pressure - Voltage Above Normal or Shorted to High Source	None	1087	3	Non-OBD	Warning (Solid)	None	N
8253	Service Brake Circuit 1 Air Pressure - Voltage Below Normal or Shorted to Low Source	None	1087	4	Non-OBD	Warning (Solid)	None	N
8254	Intelligent Battery Sensor Abnormal Communication - Special Instructions	None	521230	14	Non-OBD	Warning (Solid)	None	N
8255	Intelligent Battery Sensor Voltage - Data Erratic, Intermittent, or Incorrect	None	521231	2	Non-OBD	Warning (Solid)	None	N
8256	Intelligent Battery Sensor Hardware Error - Special Instructions	None	521232	14	Non-OBD	Warning (Solid)	None	N
8257	Transmission Reverse Direction Switch - Data Erratic, Intermittent, or Incorrect	None	767	2	Non-OBD	Warning (Solid)	None	N
8258	Steering Wheel Angle - Abnormal Update Rate	None	1807	9	Non-OBD	Warning (Solid)	None	N
8259	Service Brake Circuit 1 Air Pressure - Abnormal Update Rate	None	1087	9	Non-OBD	Warning (Solid)	None	N
8261	First Instrument Cluster Message - Abnormal Update Rate	None	521233	9	Non-OBD	Warning (Solid)	None	N
8348	Aftertreatment 1 Diesel Exhaust Fluid Dosing System Frozen - Special Instructions	Class A	6802	14	OBD	Warning (Solid)	Solid	Y
8363	High Sulphur Content In Fuel - Condition Exists	None	521240	31	Non-OBD	None	None	N
8523	High Sulphur Content In Fuel - Condition Exists	None	521240	31	Non-OBD	None	None	N
8538	Position of doors - Abnormal Update Rate	None	1821	9	Non-OBD	Warning (Solid)	None	N
8539	Vehicle Hood Tilt Switch - Abnormal Update Rate	None	5575	9	Non-OBD	Warning (Solid)	None	N
8614	Position of doors - Out of Calibration	None	1821	13	Non-OBD	Warning (Solid)	None	N
8615	Vehicle Hood Tilt Switch - Out of Calibration	None	5575	13	Non-OBD	Warning (Solid)	None	N
11173	Network Transceiver Status 1 - Condition Exists	None	3368	31	Non-OBD	Warning (Solid)	None	Y
11186	Fan Speed - Abnormal Update Rate	None	1639	9	Non-OBD	Warning (Solid)	None	N
11187	Fan Speed - Out of Calibration	None	1639	13	Non-OBD	Warning (Solid)	None	N
12215	Transmission Reverse Direction Switch - Abnormal Update Rate	None	767	9	Non-OBD	Warning (Solid)	None	N
12218	Aftertreatment Diesel Particulate Filter System - Data Valid But Above Normal Operating Range - Least Severe Level	Class A	3936	0	OBD	Stop (Solid)	Solid	N
14278	Engine Start Request - Data Erratic, Intermittent, or Incorrect	None	7745	2	Non-OBD	None	None	N

EU TYPE-APPROVAL CERTIFICATE

COMMUNICATION CONCERNING THE ~~TYPE-APPROVAL~~ [1]/ EXTENSION OF TYPE-APPROVAL [1]/ ~~REFUSAL OF TYPE-APPROVAL~~ ~~[1]~~/ ~~WITHDRAWAL OF TYPE-APPROVAL~~ [1]/ OF A TYPE OF COMPONENT/SEPARATE TECHNICAL UNIT [1] WITH REGARD TO REGULATION (EU) NO 595/2009, AS IMPLEMENTED BY 582/2011 AS LAST AMENDED BY REGULATION (EU) NO 2019/1939.

EC type-approval No: e5*595/2009*2019/1939E*0033*03

Reason(s) for Extension: To cove

1) Update emissions level from stage D to stage E
2) Update EVIE model name as some parts, as well as the additions listed in the attachment in WC374
3) M3 Coach PEMS tests according to stage E requirements
4) Cancel M3 bus and N3 PEMS test results of stage D

SECTION I

0.1. Make (trade name of manufacturer): Cummins Ltd.

0.2. Type: B4.5EVID / F4.5EVID / D4.5EVID/ B4.5EVIE / F4.5EVIE / D4.5EVIE

0.3. Means of identification of type, if marked on the separate technical unit [1] [a]:
B4.5EVID / F4.5EVID / D4.5EVID/ B4.5EVIE / F4.5EVIE / D4.5EVIE

0.3.1. Location of that marking: Mylar data plate stuck on engine

0.4. Name and address of manufacturer:

Cummins Ltd.
Yarm Road, Darlington
County Durham, DL1 4PW
United Kingdom

0.5. In the case of components and separate technical units, location and method of affixing of the EC approval mark: Mylar data plate stuck on engine

0.6. Name(s) and address(es) of assembly plant(s):

Beijing Foton Cummins Engine Co.,Ltd
NO.15-1 Shayang Road, Shahe Town
Changping District
Beijing, 102206
People's Republic of China

Dongfeng Cummins Engine Company Ltd.
High and New Technology Industrial Development Zone
Xiangyang
Hubei Province, 441004
People's Republic of China

Anhui Cummins Power Ltd.
No.1218, Yungu Road
Hefei Economic and Technology Development Zone, 230601, Hefei City
Anhui Province
People's Republic of China

0.7. Name and address of the manufacturer's representative (if any):

Cummins Emissions Solutions
Cummins Deutschland GmbH
Am Schlossfeld 1, 97828 Marktheidenfeld
Germany

SECTION II

1. Additional information (where applicable): See Addendum

2. Technical service responsible for carrying out the tests: VCA Europe S.r.l

3. Date of test report: As before and 02 November 2021

4. Number of test report: As before and XLY002026/CSY544517

5. Remarks (if any): See Addendum

6. Place: Borlänge

7. Date: 16 November 2021

8. Signature: Ayham Abuhajaj
Type Approval Certification Officer

Attachments: Information package

Test report

(1) Delete where not applicable (there are cases where nothing needs to be deleted when more than one entry is applicable).

(a) If the means of identification of type contains characters not relevant to describe the vehicle, component or separate technical unit types covered by this information document, such characters shall be represented in the documentation by the symbol '?' (e.g. ABC?123??).

ADDENDUM

to EC type-approval certificate No: e5*595/2009*2019/1939E*0033*03

1	ADDITIONAL INFORMATION
1.1.	Particulars to be completed in relation to the type-approval of a vehicle with an engine installed: Not applicable
1.1.1.	Make of engine (name of undertaking): Not applicable
1.1.2.	Type and commercial description (mention any variants): Not applicable
1.1.3.	Manufacturer's code as marked on the engine: Not applicable
1.1.4.	Category of vehicle (if applicable) (b): Not applicable
1.1.5.	Category of engine: Diesel/Petrol/LPG/NG-H/NG-L/NG-HL/Ethanol (ED95)/Ethanol (E85)/LNG/LNG_{20} (1): Not applicable
1.1.5.1.	Type of dual-fuel engine: Type1A/Type 1B/Type 2A/Type 2B/Type 3B (1) (d1) Not applicable
1.1.6.	Name and address of manufacturer: Not applicable
1.1.7.	Name and address of manufacturer's authorised representative (if any): Not applicable
1.2.	If the engine referred to in 1.1 has been type approved as a separate technical unit: Not applicable
1.2.1.	Type-approval number of the ENGINE/ENGINE FAMILY (1): Not applicable
1.2.2.	Engine Control Unit (ECU) software calibration number: Not applicable
1.3.	Particulars to be completed in relation to the type-approval of an ~~ENGINE~~/ENGINE FAMILY (1) as a separate technical unit (conditions to be respected in the installation of the engine on a vehicle):
1.3.1.	Maximum and/or minimum intake depression: Max:3.7kPa
1.3.2.	Maximum allowable back pressure: 40 kPa
1.3.3.	Exhaust system volume: 92628 cm^3
1.3.4.	Restrictions of use (if any): Not applicable
1.4.	Emission levels of the ~~ENGINE~~/PARENT ENGINE(1)

TR24030002

UTGÅDA

SWEDISH APPROVAL AUTHORITY TRANSPORT STYRELSEN SVENSK GODKÄNNANDEMYNDIGHET

Deterioration Factor (DF): ~~CALCULATED~~/FIXED(1)

Specify the DF values and the emissions on the WHSC (if applicable) and WHTC tests in the table below

1.4.1. WHSC test

Table 4 - WHSC test

WHSC test (if applicable) (10) (d5)							
DF Mult/~~add~~ (1)	CO	THC	NMHC (d4)	NO_x	PM Mass	NH_3	PM Number
	1.3	1.3	NA	1.15	1.05	1.0	1.0
Emissions	CO (mg/kWh)	THC (mg/kWh)	NMHC (d4) (mg/kWh)	NO_x (mg/kWh)	PM Mass (mg/kWh)	NH_3 (ppm)	PM Number (#/kWh)
Test result	4.58	0.62	NA	131.90	2.80	0.35	5.84E+11
Calculated with DF	5.96	0.81	NA	151.69	2.94	0.35	5.84E+11
CO_2 mass emission: 650.48 g/kWh							
Fuel consumption: 209.65 g/kWh							

1.4.2. WHTC test

Table 5 - WHTC test

WHTC test (10) (d5)								
DF	CO	THC	NMHC (d4)	CH_4 (d4)	NO_x	PM Mass	NH_3	PM Number
Mult/~~add~~ (1)	1.3	1.3	NA	NA	1.15	1.05	1.0	1.0
Emissions	CO (mg/kWh)	THC (mg/kWh)	NMHC (d4) (mg/kWh)	CH4 (d4) (mg/kWh)	NOx (mg/kWh)	PM Mass (mg/kWh)	NH3 (ppm)	PM Number (#/kWh)
Cold start	53.29	16.90	NA	NA	256.25	2.06	0.14	1.85E+11
Hot start w/o regeneration	16.84	5.01	NA	NA	32.03	2.27	0.26	1.98E+11
Hot start with regeneration (1)	NA	NA	NA	NA	NA	NA	NA	NA
$k_{r,u}$ (mult/add) (1)	NA	NA	NA	NA	NA	NA	NA	NA
$k_{r,d}$ (mult/add) (1)								
Weighted test result	21.95	6.56	N/A	N/A	63.42	2.24	0.24	1.96E+11
Final test result with DF	28.53	8.53	N/A	N/A	72.93	2.36	0.24	1.96E+11
CO_2 mass emission: 641.61 g/kWh								
Fuel consumption: 228.09g/kWh								

1.4.3. Idle test: Not applicable

Table 6 - Idle test

Test	CO value(% vol.)	Lambda (1)	Engine speed (min $^{-1}$)	Engine oil temperature (°C)
Low idle test		N/A		
High idle test				

1.4.4 PEMS demonstration test

Table 6A - PEMS demonstration test

Vehicle type (e.g. M_3 , N_3 and application e.g. rigid or articulated truck, city bus)	N2 Truck, M3 Class III &B Coach					
Vehicle description (e.g. vehicle model, prototype)	Dongfeng Motor Vehicle VIN: LDT17D7F2MG000320 Engine model: D4.5NS6B220/D4.5EVIE220B					
Pass-fail results (7)	CO	THC	NMHC	CH_4	NO_x	PM number
Work window conformity factor(11)	0.00	0.80	NA	NA	0.12	0.24
CO2 mass window conformity factor(11)	0.00	0.80	NA	NA	0.05	0.23
Trip information	Urban		Rural		Motorway	
Shares of time of the trip characterised by urban, rural and motorway operation as described in point 4.5 of Annex II to Regulation (EU) No 582/2011	44.2%		26.9%		28.9%	
Shares of time of the trip characterised by accelerating, decelerating, cruising and stop as described in point 4.5.5 of Annex II to Regulation (EU) No 582/2011	Accelerating: 13.4% decelerating: 12.3% cruising : 65.8% stop:8.5%					
	Minimum		Maximum			
Work window average power (%)	14.4%		41.8%			
CO_2 mass window duration (s)	794s		2122s			
Work window: percentage of valid windows	100%					
CO_2 mass window: percentage of valid windows	100%					
Fuel consumption consistency ratio	0.98					

1.5 Power measurement

1.5.1. Engine power measured on test bench

Table 7 - Engine power measured on test bench
Parent _B4.5EVID220/B4.5EVIE220/F4.5EVID220/F4.5EVIE220/D4.5EVID220/D4.5EVIE220

Measured engine speed (rpm)	700	800	900	1000	1200	1300	1400	1500	1600	1800	2000	2200	2300	24000	2530
Measured fuel flow (g/h)	7681.0	8319.1	9483.0	13857.8	19750.8	22701.8	24570.7	26313.7	27575.3	29844.4	31935.	34008.5	34804.	29743.6	26276.9
Measured torque (Nm)	416.8	448.2	472.4	621.5	766.2	826.4	818.4	794.4	765.1	723.6	686.5	664.2	664.2	542.9	445.6
Measured power (kW)		37.6	44.5	65.1	96.3	112.5	121.5	128.6	133.1	144.2	151.6	158.2	160.0	136.4	118.1
Barometric pressure (kPa)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Water vapour pressure (kPa)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intake air temperature (K)	298.8	298.6	298.1	298.5	299.1	297.6	298.4	297.7	299.0	298.1	297.8	299.3	298.8	297.8	298.3
Power correction factor	0.9993	0.9992	0.9984	0.9989	1.0000	0.9990	0.9980	0.9998	0.9998	0.9985	0.9979	1.0004	0.9996	0.9981	0.9987
Corrected power (kW)	30.5	37.5	44.5	65.0	96.3	112.4	121.2	128.5	133.1	144.0	151.2	158.2	159.9	136.2	117.9
Auxiliary power (kW)(1)	-.193	-1.97	-2.03	-2.07	-2.20	-2.28	-2.38	-2.47	-2.56	-3.04	-3.65	-4.09	-4.30	-4.54	-.490
Net power (kW)	28.6	35.5	42.4	62.9	94.1	110.1	118.9	126.1	130.5	141.0	147.6	154.1	155.6	131.6	113.0
Net torque (Nm)	390.2	424.3	450.1	601.1	748.7	808.8	810.7	802.6	779.0	747.8	704.7	669.0	646.1	523.8	426.
Corrected specific fuel consumption (g/kWh)	268.54	234.10	223,53	220.16	109.93	2061.7	206.73	208.72	211.27	211.71	216.38	220.64	223.67	225.94	232.

1.5.2. Additional data, e.g. the power correction factor for each fuel declared (if applicable): Not applicable

(1) Delete where not applicable (there are cases where nothing needs to be deleted when more than one entry is applicable).

(b) Classified according to definitions listed in Section A of Annex II to Directive 2007/46/EC.

(d1) In case of a dual-fuel engine or vehicle.

(7) Delete as appropriate.

(10) In the case of engines included in points 1.1.3. and 1.1.6. of Annex I to this Regulation, repeat the information for all fuels tested, where applicable.

(d5) In the case of dual-fuel engines of Type 1B, Type 2B, and Type 3B, repeat the information in both dual- fuel and diesel mode.

(d4) In the cases laid down in Table 1 of Annex 15 to UNECE Regulation No 49 for dual-fuel, and in Annex I to Regulation (EC) No 595/2009 for positive ignition engines.

(11) CF_{final} needs to be stated, if applicable.

APPLICATION FOR APPROVAL		
Manufacturer	:	Cummins Ltd.
Engine Type	:	B4.5EVID / F4.5EVID / D4.5EVID/ B4.5EVIE / F4.5EVIE / D4.5EVIE
Applicable ECE Regulation	:	595/2009
Existing approval number	:	e5*595/2009*2018/932D*0033*02

APPROVAL HISTORY

EXTENSION No.	REASON FOR EXTENSION	JOB NUMBER	APPLICATION DATE
00(Original approval)	Not applicable	ESU455975	20 March 2020
01	Addition of B4.0 Engine ratings and additional changes as detailed in WC271	ESV464073	5 August 2020
02	Update 4.5EVID Engine Capacity to 4460cm3 and 4.0EVID Engine Capacity to 3956cm3(3.2.1.3) Update ECM Make to "Cummins"(3.3.4.2.9.3.1) Add Nominal Output Value28/70(3.2.5.2.2) Add Particulate filter, SCR system, SCR Amox Catalyst(3.2.12.2.1.13) Add(F4) to Common Rail type(3.2.4.2.5.3) Change Frequency of reagent refill from Maintenance to Continuous(3.2.12.2.1.11.10)	ESW509842	10 June 2021
03	1. Update emissions level from stage D to stage E 2. Update EVIE model name as some parts, as well as the additions listed in the attachment in WC374 3. M3 Coach PEMS tests according to stage E requirements 4. Cancel M3 bus and N3 PEMS test results of stage D	CSY544517	10 October 2021

Cummins Ltd

Darlington Technical Operations

Darlington, UK

Diesel Engine Test

Regulation (EU) No. 582/2011 last amended by
Regulation (EU) No. 2018/932

B4.5EVID / F4.5EVID / D4.5EVID/
B4.5EVIE / F4.5EVIE / D4.5EVIE

Cummins Darlington Test Cell 1 & 2
2019/6/20

For further information please contact PC&C Europe / Middle East

Contents

Revisions

Extension	Revision	Job Number	Worst Case Number	Description of Work	Date Submitted
2		CSY544517	WC374	Update EVIE model name as some parts, as well as the additions listed in the attachment in WC374	2-Oct-21

General Engine Information

0	General		
0.1	Make	Cummins Ltd.	
0.2	Type	B4.5EVID / F4.5EVID / D4.5EVID/ B4.5EVIE / F4.5EVIE / D4.5EVIE	
0.2.0.3	Engine type as separate technical unit with regard to emissions and access to vehicle repair and maintenance information	Parent	B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220
		Family Members	B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B
			B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210
			B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B
			B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190
			B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B
			D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195
			D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B
			D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L
			D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB
			D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185
			D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B
			D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170
			D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B
			D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160
			D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B
			D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150
			D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B

0.2.1	Commercial Name	See 0.2
0.3	Means of ID	See 0.2.0.3
0.5	Name and Address of Manufacturer	Cummins Ltd., Yarm Road, Darlington, County Durham, DL1 4PW, United Kingdom
0.7	Method of affixing EC	Mylar dataplate stuck on engine
0.8	Name and Address of Assembly Plant(s)	Beijing Foton Cummins Engine Company Ltd, No. 15-1 Shayang Road, Shahe Town, Changping District, Beijing 102206, China Dongfeng Cummins Engine Company Ltd., High and New Technology Industrial Development Zone, Xiangyang, Hubei Province, 441004, China Anhui Cummins Power Ltd., No.1218, Yungu Road, Hefei Economic and Technology Development Zone, 230601, Hefei City, Anhui Province, P.R. China
0.9	Name and Address of Representative, if any	Cummins Emissions Solutions, Cummins Deutschland GmbH, Am Schlossfeld 1, 97828 Marktheidenfeld, Germany

Part 1 - Parent Engine and Family Members

3.2 - Internal Combustion Engine

3.2.1

Specific Engine Information

	3.2.1.1		3.2.1.2		3.2.1.2.1	3.2.1.2.2	3.2.1.2.3	3.2.1.3	3.2.1.4	3.2.1.5	3.2.1.6	3.2.1.6.1	3.2.1.8
	Working Principle	Cycle	Number of Cylinders	Arrangement	Bore	Stroke	Firing Order	Engine Capacity	Compression Ratio	Drawing of Combustion Chamber & Piston Crown	Idle Speed Range	High Idle	Max. Net Power
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Compression Ignition	Four Stroke	Four	In-Line	107 mm	124 mm	1-3-4-2	4460 cm^3	17.2 : 1	See Attachment 1	700 - 800 min^{-1}	2850 min^{-1}	158 kW @ 2300 min^{-1}
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B	Compression Ignition	Four Stroke	Four	In-Line	107 mm	124 mm	1-3-4-2	4460 cm^3	17.2 : 1	See Attachment 1	700 - 800 min^{-1}	2850 min^{-1}	158 kW @ 2300 min^{-1}
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210	Compression Ignition	Four Stroke	Four	In-Line	107 mm	124 mm	1-3-4-2	4460 cm^3	17.2 : 1	See Attachment 1	700 - 800 min^{-1}	2850 min^{-1}	150 kW @ 2300 min^{-1}
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B	Compression Ignition	Four Stroke	Four	In-Line	107 mm	124 mm	1-3-4-2	4460 cm^3	17.2 : 1	See Attachment 1	700 - 800 min^{-1}	2850 min^{-1}	150 kW @ 2300 min^{-1}
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190	Compression Ignition	Four Stroke	Four	In-Line	107 mm	124 mm	1-3-4-2	4460 cm^3	17.2 : 1	See Attachment 1	700 - 800 min^{-1}	2850 min^{-1}	136 kW @ 2300 min^{-1}
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B	Compression Ignition	Four Stroke	Four	In-Line	107 mm	124 mm	1-3-4-2	4460 cm^3	17.2 : 1	See Attachment 1	700 - 800 min^{-1}	2850 min^{-1}	136 kW @ 2300 min^{-1}

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Compression Ignition	Four Stroke	Four	In-Line	107 mm	110 mm	1-3-4-2	3956 cm3	17.3:1	See Attachment 1	650 - 850 min^{-1}	2900 min^{-1}	138 kW @ 2400 min^{-1}
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B											650 - 850 min^{-1}	2900 min^{-1}	138 kW @ 2400 min^{-1}
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L											650 - 850 min^{-1}	2900 min^{-1}	138 kW @ 2400 min^{-1}
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB											650 - 850 min^{-1}	2900 min^{-1}	138 kW @ 2400 min^{-1}
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185											650 - 850 min^{-1}	2900 min^{-1}	131 kW @ 2400 min^{-1}
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B											650 - 850 min^{-1}	2900 min^{-1}	131 kW @ 2400 min^{-1}
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170											650 - 850 min^{-1}	2900 min^{-1}	120 kW @ 2400 min^{-1}
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B											650 - 850 min^{-1}	2900 min^{-1}	120 kW @ 2400 min^{-1}
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160											650 - 850 min^{-1}	2900 min^{-1}	113 kW @ 2400 min^{-1}
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B											650 - 850 min^{-1}	2900 min^{-1}	113 kW @ 2400 min^{-1}
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150											650 - 850 min^{-1}	2900 min^{-1}	105 kW @ 2400 min^{-1}
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B											650 - 850 min^{-1}	2900 min^{-1}	105 kW @ 2400 min^{-1}

				3.2.2 Fuel		3.2.4 Fuel Feed		
	3.2.1.9	3.2.1.10	3.2.1.11	3.2.2.2	3.2.2.2.1	3.2.4.2	3.2.4.2.1	3.2.4.2.2
	Max. Engine Speed	Max. Net Torque	References for Documentation Required by Articles 5, 7 & 9 in Regulation (EU) No 528/2011	Type	Compatible Fuels	Fuel Injection	System Description	Working Principle
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	2530 min^{-1}	805 Nm @ 1400 min^{-1}	Referenced in Cummins CTR 37430	Diesel	B7 - Diesel		Common Rail	Direct Injection
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B	2530 min^{-1}	805 Nm @ 1400 min^{-1}						
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210	2530 min^{-1}	747 Nm @ 1700 min^{-1}						
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B	2530 min^{-1}	747 Nm @ 1700 min^{-1}						
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190	2530 min^{-1}	686 Nm @ 1100 min^{-1}						
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B	2530 min^{-1}	686 Nm @ 1100 min^{-1}						

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	2400 min^{-1}	715 Nm @ 1300-1600 min^{-1}	Referenced in Cummins CTR 37430	Diesel	B7 - Diesel		Common Rail	Direct Injection
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B	2400 min^{-1}	715 Nm @ 1300-1600 min^{-1}						
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L	2400 min^{-1}	585 Nm @ 1100-2200 min^{-1}						
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB	2400 min^{-1}	585 Nm @ 1100-2200 min^{-1}						
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185	2400 min^{-1}	685 Nm @ 1300-1800 min^{-1}						
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B	2400 min^{-1}	685 Nm @ 1300-1800 min^{-1}						
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170	2400 min^{-1}	585 Nm @ 1100-1800 min^{-1}						
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B	2400 min^{-1}	585 Nm @ 1100-1800 min^{-1}						
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160	2400 min^{-1}	535 Nm @ 1100-1800 min^{-1}						
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B	2400 min^{-1}	535 Nm @ 1100-1800 min^{-1}						
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150	2400 min^{-1}	505 Nm @ 1000-1800 min^{-1}						
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B	2400 min^{-1}	505 Nm @ 1000-1800 min^{-1}						

	3.2.4.2.3	3.2.4.2.3.1	3.2.4.2.3.2	3.2.4.2.3.3	3.2.4.2.3.4	3.2.4.2.3.5	3.2.4.2.3.6	3.2.4.2.4	3.2.4.2.4.1	3.2.4.2.4.2	3.2.4.2.4.2.1	3.2.4.2.4.2.2	3.2.4.2
	Injection Pump	Make	Type(s)	Max. Fuel Delivery at Rated Speed	Static Injection Timing	Injection Advance Curve	Calibration Procedure	Governor	Type	Cut-Off Points	Cut-Off Speed under Full Load	Max. No-Load Speed	Idle Sp
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220		Denso	(HP) 5318651	124 mm^3 @ 2300 min^{-1}	n/a, Electronic	Electronic	On Engine	Electronic	n/a		2530 min^{-1}	2850 min^{-1}	700
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B				124 mm^3 @ 2300 min^{-1}							2530 min^{-1}	2850 min^{-1}	700
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210				121 mm^3 @ 2300 min^{-1}							2530 min^{-1}	2850 min^{-1}	700
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B			(HP) 5318651	121 mm^3 @ 2300 min^{-1}							2530 min^{-1}	2850 min^{-1}	700
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190				110 mm^3 @ 2300 min^{-1}							2530 min^{-1}	2850 min^{-1}	700
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B				110 mm^3 @ 2300 min^{-1}							2530 min^{-1}	2850 min^{-1}	700

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195		Denso	(HP) 5584725, 5583056	130	mm^3 @ 2400 min^{-1}	n/a, Electronic	Electronic	On Engine	Electronic	n/a		2630	min^{-1}	2900	min^{-1}	750
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B				130	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L				126	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB				126	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185				121	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B				121	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170				113	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B				113	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160				107	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B				107	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150				99	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B				99	mm^3 @ 2400 min^{-1}							2630	min^{-1}	2900	min^{-1}	750

	4.2.3	3.2.4.2.5	3.2.4.2.5.1		3.2.4.2.5.2		3.2.4.2.5.3			3.2.4.2.6	3.2.4.2.6.1	3.2.4.2.6.2	3.2.4.2.6.3	3.2.4.2.7	3.2.4.2.7.1
	eed	Injection Piping	Pump - Rail Length	Rail - Injector Length	Pump - Rail Internal Diameter	Rail - Injector Internal Diameter	Common Rail	Make	Type(s)	Injectors	Make	Type(s)	Opening Pressure	Cold Start System	Make
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	min^{-1}		1000 mm	215 mm	3 mm	3 mm		Denso	(F4) 5311209		Denso	(G3) 5561480	n/a - Common Rail System		Dixie/Kebo da
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B	min^{-1}														
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210	min^{-1}														
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B	min^{-1}								(F4) 5311209			(G3) 5561480			
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190	min^{-1}														
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B	min^{-1}														

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	min^{-1}		1000 mm	215 mm	3 mm	3 mm		Denso	(F4) 5584726,5 583057		Denso	(G3) 5527306, 5583058	n/a - Common Rail System		Dixie/Kebo da	
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B	min^{-1}															
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L	min^{-1}															
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB	min^{-1}															
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185	min^{-1}															
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B	min^{-1}															
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170	min^{-1}															
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B	min^{-1}															
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160	min^{-1}															
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B	min^{-1}															
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150	min^{-1}															
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B	min^{-1}															

	3.2.4.2.7.2	3.2.4.2.8	3.2.4.2.8.1	3.2.4.2.8.2	3.2.4.2.8.3	3.2.4.2.9	3.2.4.2.9.1	3.2.4.2.9.2	3.2.4.2.9.3	3.2.4.2.9.3.1			3.2.4.2.9.3.2	
	Type(s)	Auxiliary Starting Aid	Make	Type(s)	System Description	Electronically Controlled Injection	Make	Type(s)	Description	Electronic Control Unit	Make	Type(s)	Fuel Regulator	Make
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	5405054	No	n/a	n/a	n/a	Yes	Denso	(HP) 5318651	Common Rail		Cummins	CM2620	Yes	Denso
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B														
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210														
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B								(HP) 5318651				CM2620		
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190														
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B														

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	5405054	No	n/a	n/a	n/a	Yes	Denso	(HP) 5584725, 5583056	Common Rail		Cummins	CM2620	Yes	Denso
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B														
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L														
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB														
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185														
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B														
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170														
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B														
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160														
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B														
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150														
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B														

		3.2.4.2.9.3.3			3.2.4.2.9.3.4			3.2.4.2.9.3.5			3.2.4.2.9.3.6			3.2.4.2.9.3.7	
	Type(s)	Air-Flow Sensor	Make	Type(s)	Fuel Distributor	Make	Type(s)	Throttle Housing	Make	Type(s)	Water Temperature Sensor	Make	Type(s)	Air Temperature Sensor	Make
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	5318651	No	N/A	N/A	Yes	Denso	5318651	No	n/a	n/a	Yes	Stoneridge	4954905	Yes	Continental
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B															
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210															
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B															
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190															
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B															

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	5318651	No	N/A	N/A	Yes	Denso	5318651	No	n/a	n/a	Yes	Stoneridge	4954905	Yes	Continental
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B															
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L															
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB															
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185															
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B															
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170															
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B															
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160															
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B															
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150															
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B															

		3.2.4.2.9.3.8			3.2.4.2.9.3.9	3.2.4.3	3.2.4.4	3.2.4.4.1	3.2.5.1	3.2.5.2
	Type(s)	Air Pressure Sensor	Make	Type(s)	Software Calibration Numbers	By Fuel Injection	Feed Pump	Pressure	Rated Voltage	Generator
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	2897333	Yes	Continental	2897333	SC94091/SC80927, SC94073/SC80933, SC94952/SC80941	n/a - Compression Ignition Engine		180000 kPa	24 V	Yes
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B					SC94083/SC80930, SC94039/SC80936, SC94955/SC81003					
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210					SC94212/SC80929, SC94208/SC80935, SC94951/SC80940					
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B					SC94222/SC80932, SC94218/SC80938, SC94954/SC81002					
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190					SC94081/SC80928, SC94077/SC80934, SC94950/SC80939					
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B					SC94093/SC80931, SC94089/SC80937, SC94953/SC81001					

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	2897333	Yes	Continental	2897333	SC96141, SC96151, SC96495, SC80921, SC80921	n/a - Compression Ignition Engine		180000 kPa	24 V	Yes
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B					SC96142, SC96152, SC96496, SC80922, SC80912					
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L					SC96923,SC80923					
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB					SC96140, SC96150, SC96498					
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185					SC96137, SC96147, SC96499					
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B					SC96138, SC96148, SC96500					
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170					SC96135, SC96145, SC96501					
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B					SC96136, SC96146, SC96502					
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160					SC96133, SC96143, SC96503					
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B					SC96134, SC96144, SC96504					
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150					SC96133, SC96143, SC96503					
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B					SC96134, SC96144, SC96504					

	3.2.7 Cooling System									3.2.8 Intake System	
	3.2.5.2.1	3.2.5.2.2	3.2.7.2	3.2.7.2.1	3.2.7.2.2	3.2.7.2.3.1	3.2.7.2.3.2	3.2.7.2.4	3.2.7.3	3.2.8.1	3.2.8.1.1
	Type(s)	Nominal Output	Liquid	Nature of Liquid	Circulating Pump	Make	Type(s)	Drive Ratio	Air	Pressure Charger	Make
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	DCEC-FDJ, JFZ270-112-WX 5332605, 5318117, 5319205, 5294095, 5320720, 5343909, 5626078, 5589198, OEM supplied	28 / 120, 28 / 90, 28 / 110, 28 / 70 V / A	Yes	Water / Ethylene Glycol	Yes	Cummins	5333035	1.97 : 1	No	Yes	Wuxi Cummins Turbo Technologies Co.,Ltd
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B											
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210											
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B											
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190											
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B											

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	DCEC-FDJ, JFZ270-112-WX 5332605, 5318117, 5319205, 5294095, 5320720, 5343909, 5626078, 5589198, OEM supplied	28 / 120, 28 / 90, 28 / 110, 28 / 70	V / A	Yes	Water / Ethylene Glycol	Yes	Cummins	5333035	1.97 : 1	No	Yes	Wuxi Cummins Turbo Technologies Co.,Ltd
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B												
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L												
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB												
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185												
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B												
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170												
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B												
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160												
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B												
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150												
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B												

	3.2.8.1.2 Type(s)	3.2.8.1.3 Description	3.2.8.2 Intercooler	3.2.8.2.1 Type of Action	3.2.8.3 Intake Depression at Rated Speed & 100% Load	3.2.8.3.1 Min. Allowable	3.2.8.3.2 Max. Allowable	3.2.8.4 Description & Drawings of Inlet Pipes & Accessories	3.2.8.4.1 Description of Intake Manifold	3.2.9.1 Description of Exhaust Manifold
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	(HE200WG) 5549623, 5549621, 5551845, 5551846, 5608145, 5608165, 5555649, 5555651, 5604333, 5638997, 5638999, 5639001, 5639003	WGT	Yes	Air-Air		n/a kPa	3.7 kPa	See Attachment 13	See Attachment 14	See Attachment
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B	(HE200WG) 5549623, 5549621, 5551845, 5551846, 5608145, 5608165, 5555649, 5555651, 5604333, 5638997, 5638999, 5639001, 5639003									
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210										
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B										
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190										
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B										

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	(HE200WG) 5503044, 5550542, 5605386, 5605388, 5605392, 5605390, 5606767	WGT	Yes	Air-Air		n/a kPa	3.7 kPa	See Attachment 13	See Attachment 14	See Attachment
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B										
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L										
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB										
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185										
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B										
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170										
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B										
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160										
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B										
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150										
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B										

Any volume adjustment outside those referenced within this document must comply with Cummins Application Guidelines

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		3.2.9.2	3.2.9.2.1	3.2.9.3		3.2.9.7.1
		Description of Exhaust System	Description of Elements of Exhaust System which are part of the Engine System	Max. Allowable Exhaust Back Pressure at Rated Speed & 100% Load - After Regeneration	Max. Allowable Exhaust Back Pressure at Rated Speed & 100% Load - Max Allowable	Acceptable Exhaust System Volume - Downpipe, System and Tailpipe
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	11	See Attachment 10	Exhaust Valve, Crosshead, Rocker Lever, Pushrod, Camshaft, Manifold, Turbocharger	30 kPa	40 kPa	Min of 52250 cm^3, Max of 84040 cm^3
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B						
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210						
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B						
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190						
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B						

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	11	See Attachment	10	Exhaust Valve, Crosshead, Rocker Lever, Pushrod, Camshaft, Manifold, Turbocharger	30	kPa	40	kPa	Min of 52250 cm^3, Max of 84040 cm^3
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B								
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L								
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB								
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185								
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B								
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170								
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B								
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160								
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B								
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150								
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B								

	3.2.9.7.2	3.2.10 Min. Cross-Sectional Area of Inlet & Outlet Ports		3.2.11.1	3.2.11 Valve Timing	
	Volume of Exhaust System which is part of the Engine System	Inlet	Outlet	Maximum lift of valves, angles of opening and closing, or timing details of alternative distribution systems, in relation to dead centres	Intake / Inlet	Exhaust / Outlet
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	92628 cm^3	11.0 cm^2	10.9 cm^2		8.8 mm lift; Open 10 ° BTDC; Closed 37 ° ABDC	10.6 mm lift; Open 43
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B						
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210						
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B						
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190						
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B						

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195												
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B												
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L												
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB	92628	cm^3	11	cm^2	10.9	cm^2		8.8	mm lift; Open	10	° BTDC; Closed	37 ° ABDC	10.6	mm lift; Open	43
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185												
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B												
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170												
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B												
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160												
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B												
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150												
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B												

3.2.12
Measures Taken Against Air Pollution

		3.2.11.2			3.2.12.1.1	3.2.12.2	3.2.12.2.1	3.2.12.2.1.1
		Reference / Setting Range	Tappet Setting: Intake / Inlet	Tappet Setting: Exhaust / Outlet	Device for Recycling Crankcase Gasses	Additional Pollution Control Devices	Catalytic Converter	Number of Catalytic Converters & Elements
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	° BBDC; Closed 35 ° ATDC		0.33 mm	0.58 mm	Open Crankcase Ventilation	No	Yes	Four
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B								
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210								
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B								
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190								
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B								

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	° BBDC; Closed 35 ° ATDC		0.33 mm	0.58 mm	Open Crankcase Ventilation	No	Yes	Four
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B								
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L								
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB								
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185								
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B								
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170								
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B								
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160								
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B								
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150								
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B								

	3.2.12.2.1.2			3.2.12.2.1.3	3.2.12.2.1.4	3.2.12.2.1.5	3.2.12.2.1.
	Dimensions	Shape	Volume	Type of Catalytic Action	Total Charge of Precious Metals	Relative Concentration	Substrate
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	88.9 / 127.0 / 127.0 / 127.0 x 228.6 / 228.6 / 228.6 / 228.6 mm	Cylindrical	3.6 / 5.2 / 5.2 / 5.2 L	DOC / DPF / SCR / SCR & AMOX	Refer Precious metals document provided to VCA	Refer Precious metals document provided to VCA	
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B							
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210							
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B							
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190							
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B							

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	88.9 / 127.0 / 127.0 / 127.0 x 228.6 / 228.6 / 228.6 / 228.6 mm	Cylindrical	3.6 / 5.2 / 5.2 / 5.2 L	DOC / DPF / SCR / SCR & AMOX	Refer Precious metals document provided to VCA	Refer Precious metals document provided to VCA	
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B							
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L							
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB							
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185							
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B							
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170							
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B							
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160							
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B							
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150							
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B							

	6		3.2.12.2.1.7	3.2.12.2.1.8	3.2.12.2.1.9	3.2.12.2.1.10	3.2.12.2.1.11	3.2.12.2.1.11.5
	Structure	Material	Cell Density	Type of Casing	Location & Distance in Exhaust Line	Heat Shield	Regeneration Systems	Normal Operating Temperature Range
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Honeycomb	Cordierite	DOC = 400, DPF = 300, SCR & AMOX = 600 cpsi	Stuff & Size	To comply with Cummins AEB 21.167	Yes	In cylinder, post injection only	463-873 K
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B								
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210								
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B								
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190								
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B								

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Honeycomb	Cordierite	DOC = 400, DPF = 300, SCR & AMOX = 600	cpsi	Stuff & Size	To comply with Cummins AEB 21.167	Yes	In cylinder, post injection only	463-873	K
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B										
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L										
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB										
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185										
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B										
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170										
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B										
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160										
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B										
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150										
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B										

	3.2.12.2.1.11.6	3.2.12.2.1.11.7	3.2.12.2.1.11.8	3.2.12.2.1.11.9	3.2.12.2.1.11.10	3.2.12.2.1.12	3.2.12.2.1.13	
	Consumable Reagents	Type & Concentration of Reagent needed for Catalytic Action	Normal Operational Temperature Range of Reagent	International Standard	Frequency of Reagent Refill	Make of Catalytic Converter	ID Part Number	Particulate Filter
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Yes	Urea concentration 32.5% in water	263 - 323 K	AUS 32 / DIN 70070	Continuous	CUMMINS	DOCP016 5507581 5507798 5507747 5507796 5507115 5507966 5507968 5507927 5508337 5509189 5508966 5511161 5510388 5509187 5509604	DPFP0162 5507582 5507748 5507582 5507587 5507116 5507392 5508056 5508409 5510389 5510969
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B							DOCP016 5507581 5507798 5507747 5507796 5507115 5507966 5507968 5507927 5508337 5509189 5508966 5511161 5510388 5509187 5509604	DPFP0162 5507582 5507748 5507582 5507587 5507116 5507392 5508056 5508409 5510389 5510969
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210								
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B								
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190								
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B								

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Yes	Urea concentration 32.5% in water	263 - 323	K	AUS 32 / DIN 70070	Continuous	CUMMINS	DOCP016 5507581 5507798 5507747 5507796 5507115 5507966 5507968 5507927 5508337 5509189 5508966 5511161 5510388 5509187 5509604	DPFP0162 5507582 5507748 5507582 5507587 5507116 5507392 5508056 5508409 5510389 5510969
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B									
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L									
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB									
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185									
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B									
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170									
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B									
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160									
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B									
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150									
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B									

			3.2.12.2.2	3.2.12.2.3	3.2.12.2.6	3.2.12.2.6.1			3.2.12.2.6.2
	SCR System	SCR Amox Catalyst	Oxygen Sensor	Air Injection	Particulate Trap	Dimensions	Shape	Capacity	Design
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	SCRV026 5507583 5507117 5507749 5507913 5507795 5507799 5508118 5508338 5507969 5507965 5507967 5507989 5509188 5508967 5509789 5509583 5511166 5510391 5509186 5509584 5510813 5511213 5511214 5510829 5511244 5511247 5511248 5511249 5511250 5511212 5511036 5510948 5511245 5511246	SCRV026 5507583 5507117 5507749 5507913 5507795 5507799 5508118 5508338 5507969 5507965 5507967 5507989 5509188 5508967 5509789 5509583 5511166 5510391 5509186 5509584 5510813 5511213 5511214 5510829 5511244 5511247 5511248 5511249 5511250 5511212 5511036 5510948 5511245 5511246	No	No	Yes	127.0 x 228.6 mm	Cylindrical	5.2 L	Wall Flow Particulate Filter
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B	SCRV026 5507583 5507117 5507749 5507913 5507795 5507799 5508118 5508338 5507969 5507965 5507967 5507989 5509188 5508967 5509789 5509583 5511166 5510391 5509186 5509584 5510813 5511213 5511214 5510829 5511244 5511247 5511248 5511249 5511250 5511212 5511036 5510948	SCRV026 5507583 5507117 5507749 5507913 5507795 5507799 5508118 5508338 5507969 5507965 5507967 5507989 5509188 5508967 5509789 5509583 5511166 5510391 5509186 5509584 5510813 5511213 5511214 5510829 5511244 5511247 5511248 5511249 5511250 5511212 5511036 5510948							
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210									
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B									
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190									
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B									

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	SCRV026 5507583 5507117 5507749 5507913 5507795 5507799 5508118 5508338 5507969 5507965 5507967 5507989 5509188 5508967 5509789 5509583 5511166 5510391 5509186 5509584 5510813 5511213 5511214 5510829 5511244 5511247 5511248 5511249 5511250 5511212 5511036 5510948 5511245 5511246	SCRV026 5507583 5507117 5507749 5507913 5507795 5507799 5508118 5508338 5507969 5507965 5507967 5507989 5509188 5508967 5509789 5509583 5511166 5510391 5509186 5509584 5510813 5511213 5511214 5510829 5511244 5511247 5511248 5511249 5511250 5511212 5511036 5510948 5511245 5511246	No	No	Yes	127 x 228.6 mm	Cylindrical	5.2 L	Wall Flow Particulate Filter
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B										
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L										
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB										
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185										
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B										
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170										
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B										
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160										
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B										
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150										
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B										

	3.2.12.2.6.3	3.2.12.2.6.4	3.2.12.2.6.5	3.2.12.2.6.6	3.2.12.2.6.7		3.2.12.2.6.8
	Location & Distance in Exhaust Line	Method / System of Regeneration	Make	ID Part Number	Normal Operation Temperature	Pressure Range	In the case of Periodic Regeneration
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Recorded as 1.6m during witness test. Distances are temperature drop dependent, please refer to Cummins AEB 24.76 for more information.	Continuous / Passive	CUMMINS	DPFP0162 5507582 5507748 5507582 5507587 5507116 5507392 5508056 5508409 5510389 5510969	548 - 873 K	0 - 34 kPa	
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B							
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210				DPFP0162 5507582 5507748 5507582 5507587 5507116 5507392 5508056 5508409 5510389 5510969			
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B							
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190							
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B							

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Recorded as 1.6m during witness test. Distances are temperature drop dependent, please refer to Cummins AEB 24.76 for more information.	Continuous / Passive	CUMMINS	DPFP0162 5507582 5507748 5507582 5507587 5507116 5507392 5508056 5508409 5510389 5510969	548 - 873	K	0 - 34	kPa
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B								
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L								
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB								
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185								
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B								
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170								
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B								
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160								
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B								
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150								
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B								

	3.2.12.2.6.8.1.1 Number of WHTC Test Cycles without Regeneration (n)	3.2.12.2.6.8.2.1 Number of WHTC Test Cycles with Regeneration (nR)	3.2.12.2.6.9 Other Systems	3.2.12.2.7 OBD System	3.2.12.2.7.0.1 Number of OBD Engine Families within the Engine Family	3.2.12.2.7.0.2 List of OBD Engine Families	3.2.12.2.7.0.3 Number of OBD Families Parent / Member belongs to	3.2.12.2.7.0.4 OBD Reference for Purpose of Approving OBD System
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	N/A	N/A	No		One	Z14 OBD document / CSU453430	One	Referenced in Z14EVID OBD Formal and extended document
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B								
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210								
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B								
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190								
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B								

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	N/A	N/A	No		One	Z14 OBD document / CSU453430	One	Referenced in Z14EVID OBD Formal and extended document
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B								
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L								
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB								
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185								
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B								
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170								
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B								
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160								
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B								
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150								
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B								

	3.2.12.2.7.0.5 Reference for Installing OBD Equipped Engine System in Vehicle	3.2.12.2.7.0.6 Reference for Installing OBD on Vehicle or OBD system of an Approved Engine	3.2.12.2.7.0.7 Written Description / Drawing of the MI	3.2.12.2.7.0.8 Written description and/or drawing of the OBD off-board communication interface	3.2.12.2.7.3.1.3. Oxygen Sensor Monitoring	3.2.12.2.7.3.1.4. Other Components Monitored by OBD System	3.2.12.2.7.3.2 Compression Ignition Engines
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Referenced in Cummins CEB 00426	Referenced in Cummins CEB 00426	n/a	Referenced in Z14EVID OBD Formal document	n/a	n/a	
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B							
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210							
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B							
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190							
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B							

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Referenced in Cummins CEB 00426	Referenced in Cummins CEB 00426	n/a	Referenced in Z14EVID OBD Formal document	n/a	n/a	
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B							
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L							
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB							
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185							
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B							
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170							
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B							
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160							
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B							
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150							
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B							

	3.2.12.2.7.3.2.1 Catalyst Monitoring	3.2.12.2.7.3.2.2 Particulate Trap Monitoring	3.2.12.2.7.3.2.3 Electronic Fuelling System Monitoring	3.2.12.2.7.3.2.4 DeNOx System Monitoring	3.2.12.2.7.3.2.5 Other Components Monitored by OBD System	3.2.12.2.7.4 Criteria for MI activation	3.2.12.2.7.5 List of all OBD output codes & formats used	3.2.12.2.7.6.5 OBD Communication Protocol Standard
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD Formal document	Referenced in Z14EVID OBD Formal document	Referenced in SAE J1939
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B								
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210								
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B								
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190								
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B								

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD extended document	Referenced in Z14EVID OBD Formal document	Referenced in Z14EVID OBD Formal document	Referenced in SAE J1939
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B								
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L								
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB								
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185								
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B								
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170								
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B								
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160								
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B								
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150								
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B								

	3.2.12.2.7.7 OBD Reference for RMI Compliance	3.2.12.2.7.7.1 As Alternative, Reference Attachment	3.3.12.2.7.8.0 Alternative Approval	3.2.12.2.8 Other Systems	3.2.12.2.8.1 Systems to Ensure the Correct Operation of NOx Control Measures	3.2.12.2.8.2 Driver Inducement System	3.2.12.2.8.2.1 Engine with Permanent Deactivation of the Driver Inducement, for use by the Rescue Services or in vehicles specified in point (b) of Article 2(3) of this Directive
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Referenced in Z14EVID OBD Formal document	n/a	n/a	No	Referenced in Z14EVID OBD extended document	Yes	Controlled and restricted by Cummins DO option
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B							
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210							
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B							
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190							
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B							

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Referenced in Z14EVID OBD Formal document	n/a	n/a	No	Referenced in Z14EVID OBD extended document	Yes	Controlled and restricted by Cummins DO option
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B							
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L							
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB							
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185							
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B							
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170							
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B							
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160							
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B							
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150							
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B							

	3.2.12.2.8.2.2 Activation of the Creep Mode	3.2.12.2.8.3 Number of OBD Engine Families within the Engine Family considered when ensuring the correct operation of NOx Control Measures	3.2.12.2.8.3.1 List of the OBD Engine Families within the Engine Family considered when ensuring the correct operation of NOx Control Measures	3.2.12.2.8.3.2 Number of OBD Engine Families the Parent / Member belongs to	3.2.12.2.8.5 Number of the OBD Engine Families within the Engine Family considered when ensuring the correct operation of NOx Control Measures the Parent / Member belongs to
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Disable After Restart	One	One	One	One
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B					
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210					
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B					
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190					
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B					

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Disable After Restart	One	One	One	One
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B					
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L					
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB					
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185					
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B					
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170					
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B					
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160					
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B					
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150					
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B					

	3.2.12.2.8.6 Lowest Concentration of the Active Ingredient Present in the Reagent that doesn't Activate the Warning System	3.2.12.2.8.7 Reference for Installing in a Vehicle the systems to ensure the correct operation of NOx Control Measures	3.2.12.2.8.8 Components on-board the vehicle of the systems ensuring the correct operation of NOx Control Measures	3.2.12.2.8.8.1 List of components on-board the vehicle of the systems ensuring the correct operation of NOx Control Measures
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	23 CD_{min}	Referenced in Cummins CEB 00426	n/a	n/a
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B				
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210				
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B				
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190				
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B				

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	23	CD_{min}	Referenced in Cummins CEB 00426	n/a	n/a
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B					
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L					
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB					
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185					
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B					
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170					
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B					
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160					
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B					
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150					
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B					

					3.5.4 CO_2 Emissions
	3.2.12.2.8.8.2	3.2.12.2.8.8.3	3.2.12.2.8.8.4	3.2.12.2.8.8.5	3.5.4.1
	Manufacturer reference of the documentation package related to the installation on the vehicle of the system ensuring the correct operation of NOx Control Measures of an Approved Engine	Written Description / Drawing of the Warning Signal	Alternative Approval provided for in point 2.1 of Annex XIII to Regulation (EU) No 582/2011	Heated / Non-Heated Reagent Tank and Dosing System (see paragraph 2.4 of Annex 11 to UNECE Regulation No 49)	CO_2 Mass Emissio WHSC test Parent Engine On
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Referenced in Cummins CEB 00426	Referenced in Cummins Z14EVID Nox Control document and Cummins CEB 00426	No	Heated	666
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B					
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210					
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B					
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190					
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B					

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Referenced in Cummins CEB 00426	Referenced in Cummins Z14EVID Nox Control document and Cummins CEB 00426	No	Heated	666
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B					
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L					
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB					
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185					
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B					
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170					
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B					
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160					
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B					
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150					
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B					

3.6 - Temperatures

		3.5.5 Fuel Consumption				3.6.1 Cooling System		3.6.2 Max. outlet temperature of the inlet intercooler	
		3.5.4.4		3.5.5.1		3.5.5.4		3.6.1.1	3.6.1.2	
	ns ly	CO_2 Mass Emissions WHTC test Parent Engine Only		Fuel Consumption WHSC test Parent Engine Only		Fuel Consumption WHTC test Parent Engine Only		Liquid Cooling Max. Temperature at Outlet	Air Cooling	
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	g/kWh	712	g/kWh	209	g/kWh	225	g/kWh	383 K	No	328 K
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B										
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210										
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B										
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190										
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B										

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	g/kWh	712	g/kWh	209	g/kWh	225	g/kWh	383	K	No	328	K
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B												
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L												
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB												
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185												
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B												
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170												
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B												
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160												
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B												
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150												
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B												

3.8 - Lubrication System

	3.6.3 Max. exhaust temperature at the point in the exhaust pipe adjacent to the outer flange of the exhaust manifold/turbocharger		3.6.4 Fuel Temperature			3.6.5 Lubricant Temperature			3.8.1 Description		3.8.2 Lubricating Pump	
									3.8.1.1	3.8.1.2	3.8.2.1	3.8.2.2
			Min		Max	Min		Max	Position of Reservoir	Feed System	Make	Type(s)
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	760	K	233	K	343 K	233	K	409 K	On Engine	Pressure Feed	Hunan Pumps, China	5525374;5566103
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B												
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210												
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B												
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190												
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B												

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	760	K	233	K	343	K	233	K	409	K	On Engine	Pressure Feed	Hunan Pumps, China	525374;556610
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B														
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L														
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB														
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185														
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B														
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170														
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B														
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160														
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B														
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150														
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B														

	3.8.3 Mixture with Fuel	3.8.4 Oil Cooler			
	3.8.3.1		3.8.4.1	3.8.4.1.1	3.8.4.1.2
	Percentage		Drawing	Make	Type(s)
B4.5EVID220 / F4.5EVID220 / D4.5EVID220 B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220	Max 5% fuel dilution of oil		See Attachment 12	Hunan Pumps, China	5395822
B4.5EVID220B / F4.5EVID220B / D4.5EVID220B B4.5EVIE220B / F4.5EVIE220B / D4.5EVIE220B					
B4.5EVID210 / F4.5EVID210 / D4.5EVID210 B4.5EVIE210 / F4.5EVIE210 / D4.5EVIE210					
B4.5EVID210B / F4.5EVID210B / D4.5EVID210B B4.5EVIE210B / F4.5EVIE210B / D4.5EVIE210B					
B4.5EVID190 / F4.5EVID190 / D4.5EVID190 B4.5EVIE190 / F4.5EVIE190 / D4.5EVIE190					
B4.5EVID190B / F4.5EVID190B / D4.5EVID190B B4.5EVIE190B / F4.5EVIE190B / D4.5EVIE190B					

D4.0EVID195 / B4.0EVID195 / F4.0EVID195 D4.0EVIE195 / B4.0EVIE195 / F4.0EVIE195	Max 5% fuel dilution of oil		See Attachment	12	Hunan Pumps, China	5395822
D4.0EVID195B / B4.0EVID195B / F4.0EVID195B D4.0EVIE195B / B4.0EVIE195B / F4.0EVIE195B						
D4.0EVID195L / B4.0EVID195L / F4.0EVID195L D4.0EVIE195L / B4.0EVIE195L / F4.0EVIE195L						
D4.0EVID195LB / B4.0EVID195LB / F4.0EVID195LB D4.0EVIE195LB / B4.0EVIE195LB / F4.0EVIE195LB						
D4.0EVID185 / B4.0EVID185 / F4.0EVID185 D4.0EVIE185 / B4.0EVIE185 / F4.0EVIE185						
D4.0EVID185B / B4.0EVID185B / F4.0EVID185B D4.0EVIE185B / B4.0EVIE185B / F4.0EVIE185B						
D4.0EVID170 / B4.0EVID170 / F4.0EVID170 D4.0EVIE170 / B4.0EVIE170 / F4.0EVIE170						
D4.0EVID170B / B4.0EVID170B / F4.0EVID170B D4.0EVIE170B / B4.0EVIE170B / F4.0EVIE170B						
D4.0EVID160 / B4.0EVID160 / F4.0EVID160 D4.0EVIE160 / B4.0EVIE160 / F4.0EVIE160						
D4.0EVID160B / B4.0EVID160B / F4.0EVID160B D4.0EVIE160B / B4.0EVIE160B / F4.0EVIE160B						
D4.0EVID150 / B4.0EVID150 / F4.0EVID150 D4.0EVIE150 / B4.0EVIE150 / F4.0EVIE150						
D4.0EVID150B / B4.0EVID150B / F4.0EVID150B D4.0EVIE150B / B4.0EVIE150B / F4.0EVIE150B						

Part 3 - Vehicle Repair and Maintenance Information

16	Access to Vehicle Repair and Maintenance Information	
16.1	Website Address for Vehicle Repair and Maintenance Information	https://quickserve.cummins.com/info/index.html
16.1.1	Date of Availability	2019/8/30
16.2	Terms and Conditions of website access	https://quickserve.cummins.com/info/qsol/terms.html
16.3	Format of information	Standardised format, developed from a network / forum of manufacturers based in the USA. At the time SAE J2008 was considered and referenced.

Test Conditions

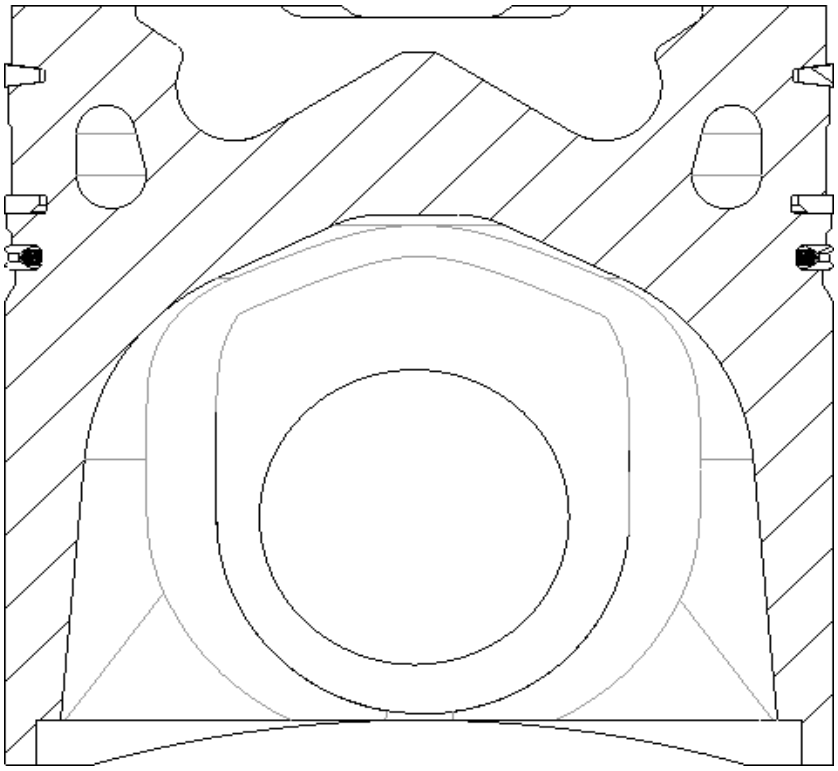
1	Spark plugs	n/a
2	Ignition coil	n/a
3	Lubricant used	
3.1	Make	Valvoline
3.2	Type(s)	Premium Blue 10W30
4	Engine-driven equipment	
4.1	Power absorbed by auxiliaries	n/a for Euro VI Emissions
4.2	Enumeration and identifying details	n/a for Euro VI Emissions
4.3	Power absorbed at engine speeds specific to engine test	

Table 1 - Power absorbed at engine speeds specific to engine test

Equipment	Idle	Low Speed	High Speed	Preferred Speed	n95h
Pa - Auxiliaries / equipment required according to UNECE R49, annex 4, appendix 6	n/a	n/a	n/a	n/a	n/a
Pb - Auxiliaries / equipment not required according to UNECE R49, annex 4, appendix 6	n/a	n/a	n/a	n/a	n/a

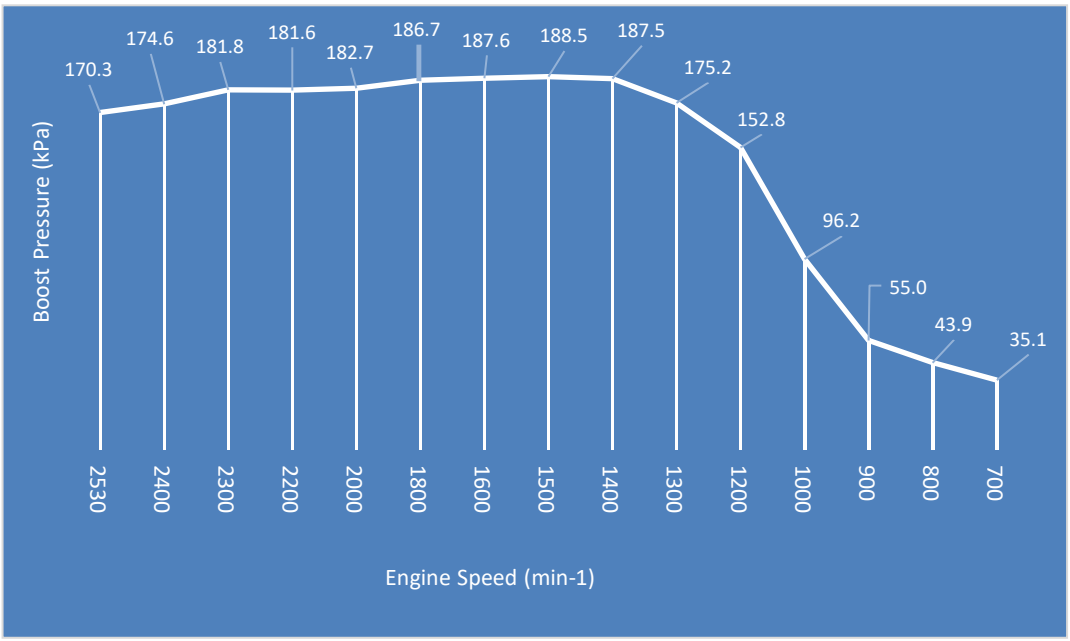
5	Engine performance	
5.1	Engine test speeds for emissions test according to Annex III to EU 582/2011	
	Low speed (n_{lo})	1160 min^{-1}
	High speed (n_{hi})	2550 min^{-1}
	Idle speed	700 min^{-1}
	Preferred speed	1578 min^{-1}
	n95h	2338 min^{-1}
5.2	Declared values for power test according to Annex XIV to EU 582/2011	
5.2.1	Idle speed	700 min^{-1}
5.2.2	Speed at maximum power	2300 min^{-1}
5.2.3	Maximum power	158.0 kW
5.2.4	Speed at maximum torque	1400 min^{-1}
5.2.5	Maximum torque	805 Nm
6	Dynamometer load setting information	n/a
7	Test conditions for OBD testing	
7.1	Test cycle used for the verification of the OBD system	WHTC
7.2	Number of preconditioning cycles used before OBD verification tests	Three

Attachment 1: Combustion Chamber and Piston Crown



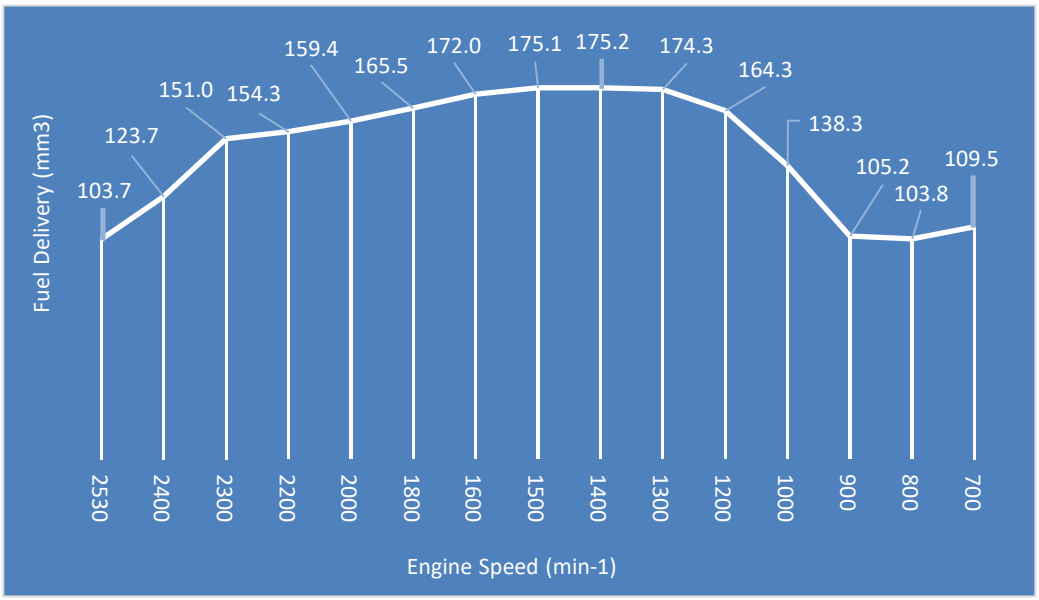
Attachment 2: Boost Control

B4.5EVID220 / F4.5EVID220 / D4.5EVID220
B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220



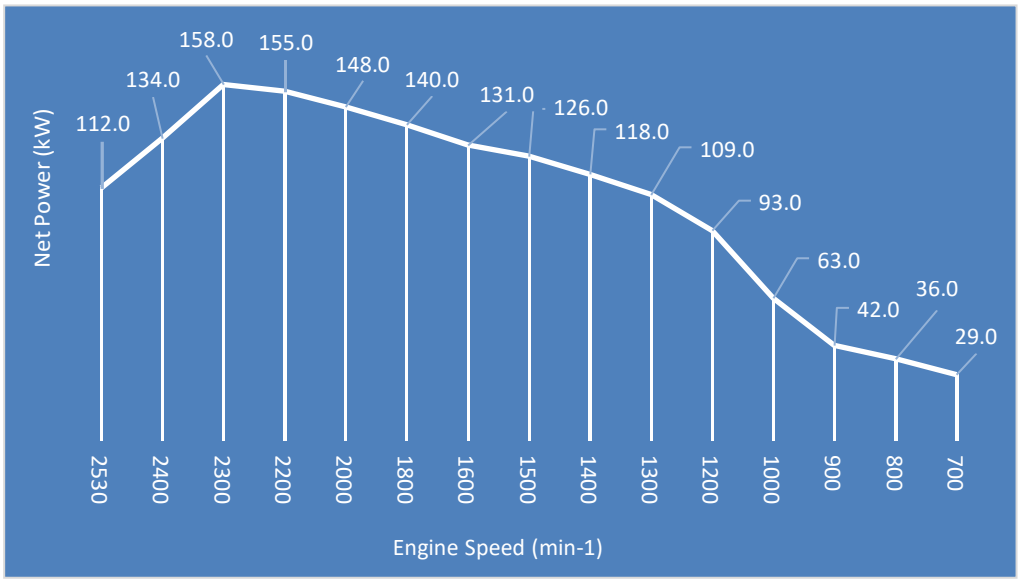
Attachment 3: Fuel Delivery

B4.5EVID220 / F4.5EVID220 / D4.5EVID220
B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220



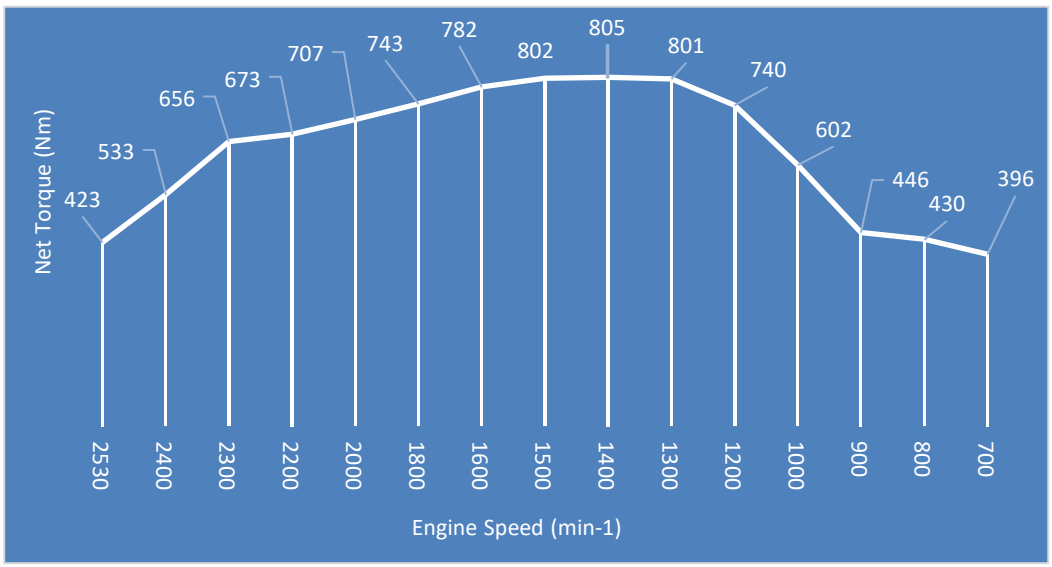
Attachment 4: Engine Power

B4.5EVID220 / F4.5EVID220 / D4.5EVID220
B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220

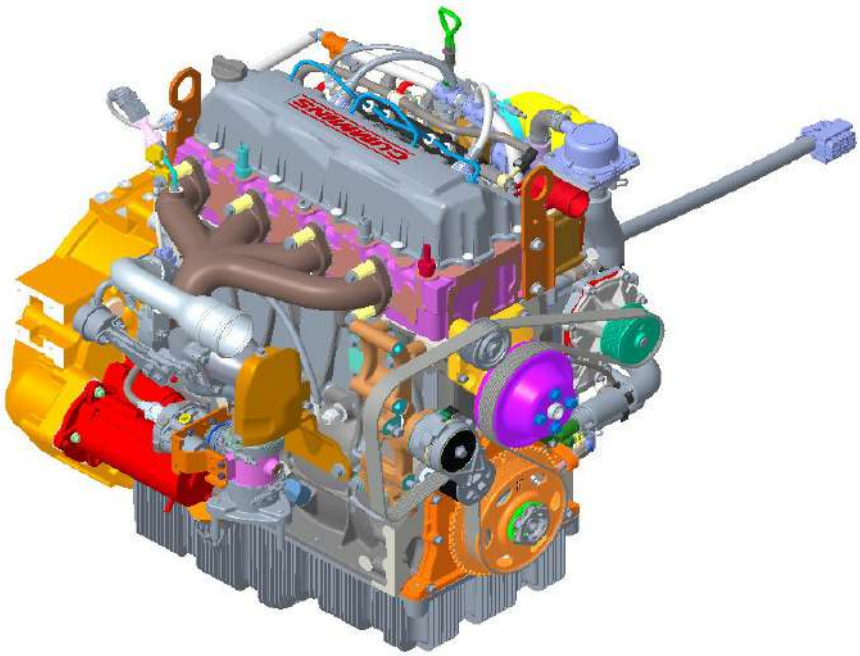


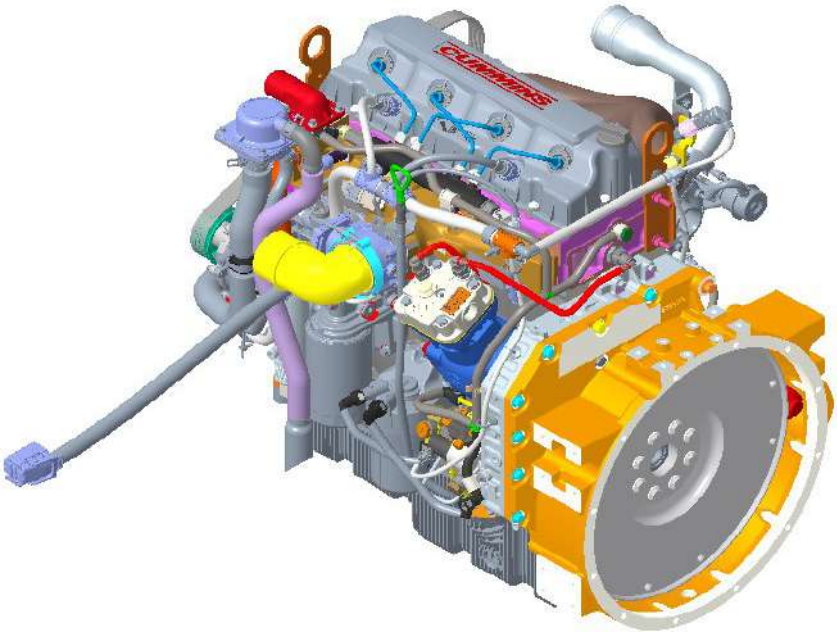
Attachment 5: Engine Torque

B4.5EVID220 / F4.5EVID220 / D4.5EVID220
B4.5EVIE220 / F4.5EVIE220 / D4.5EVIE220

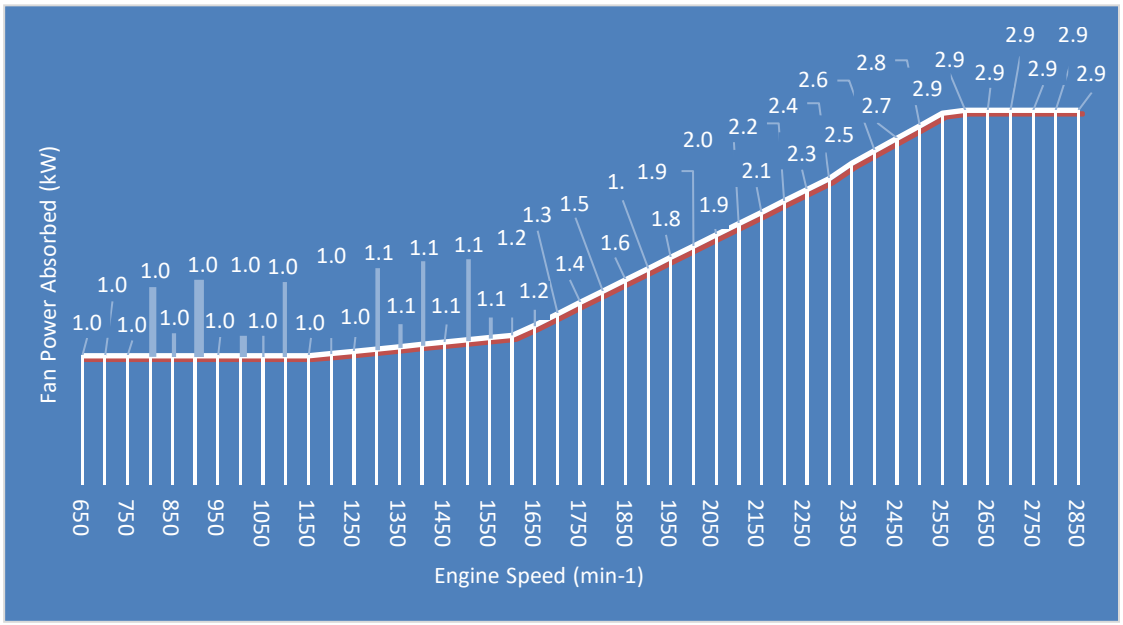


Attachment 6: Engine Model

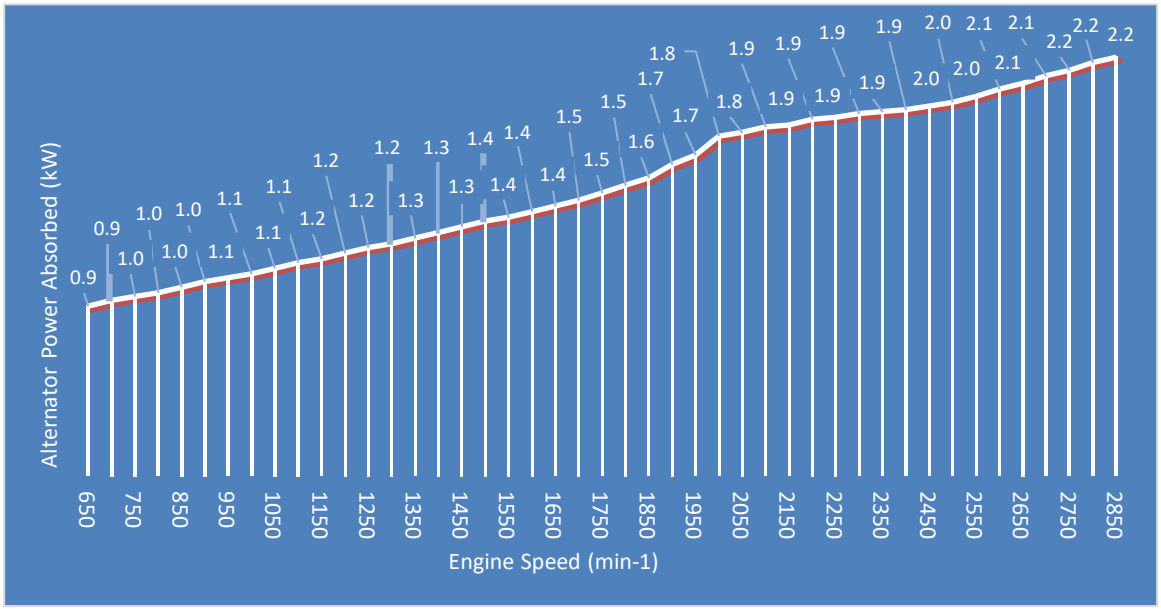




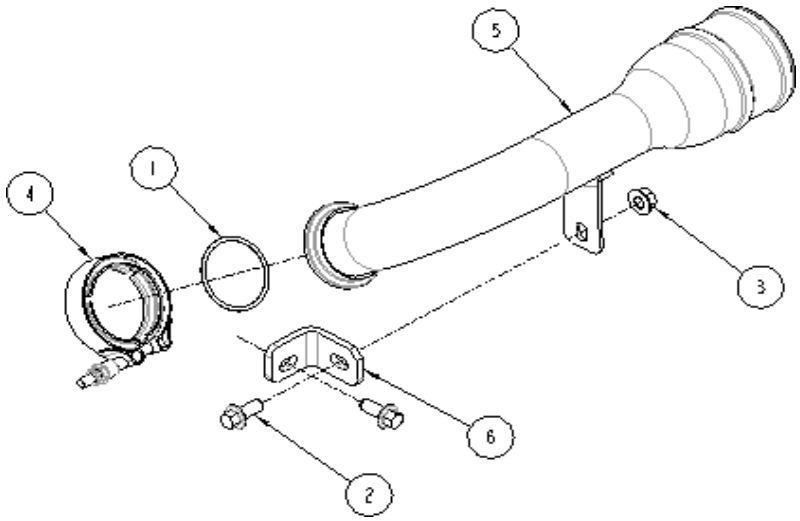
Attachment 7: Fan Power Absorption



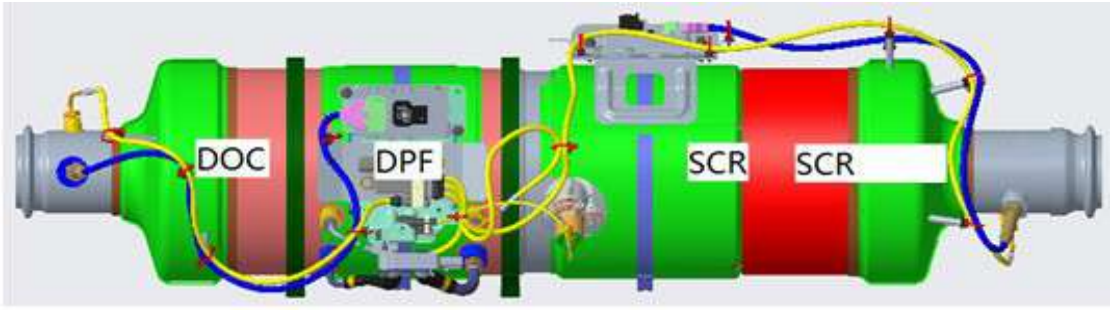
Attachment 8: Alternator Power Absorption

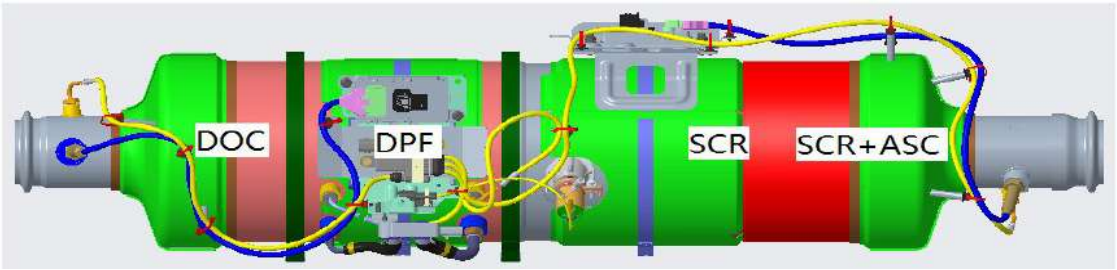


Attachment 9: Air Intake Connection

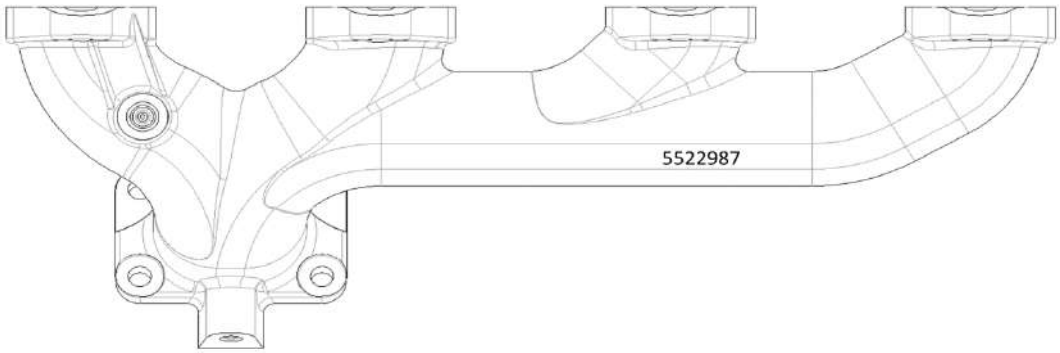


Attachment 10: Exhaust System

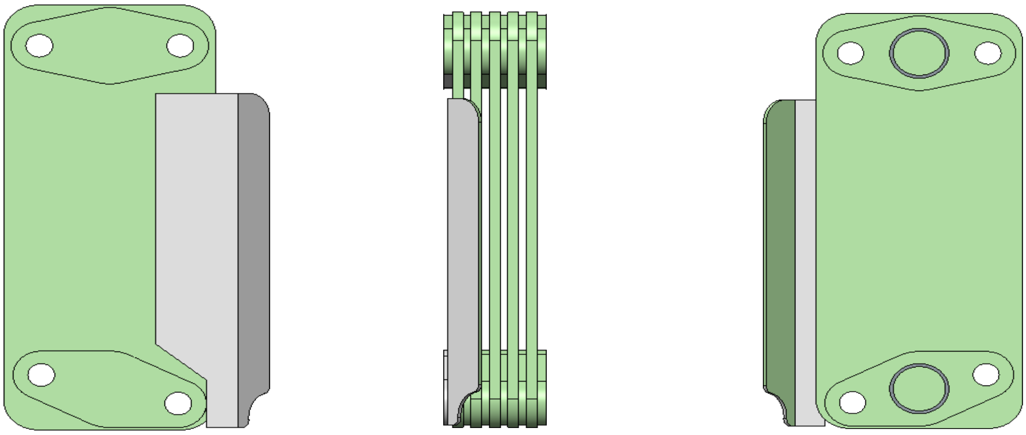




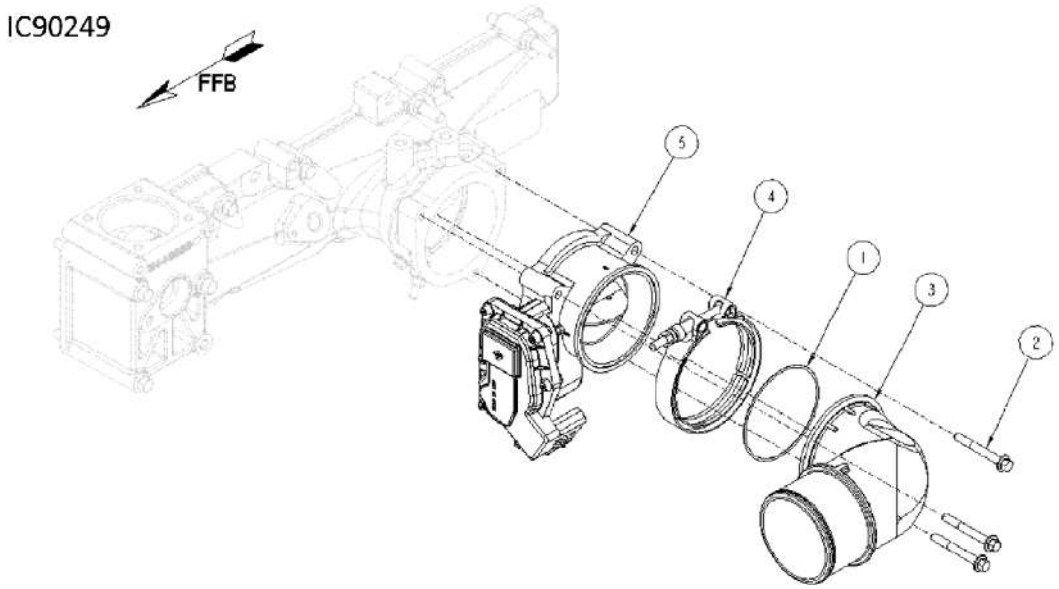
Attachment 11: Exhaust Manifold Drawing



Attachment 12: Oil Cooler Drawing



Attachment 13: Inlet Pipes & Accessories



Attachment 14: Intake Manifold Drawing