



# C13ENTZW69.00

## BARE TIER 4



Brochure main description		@1500rpm	@1800rpm
Application & simbol		Power Generation	
Engine identification main		C13	
Engine identification rating	kW	-	424
Engine features		PG Bare	
Emission feature		Tier 4B	
Main characteristics		@1500rpm	@1800rpm
Emission certification		Tier 4B	
Commercial code (for order)		C13ENTZW69.00	
Other Commercial code		F3HFE615A	
Technical code (original plant engine code, on engine block)		F3HFE615A*B001	
Technical homologation code		F3HFE615A*B	
Stand-by power (gross) [mech]	kW	-	424
Specific power	kW/l	-	32,9
Electric commercial power (estimation alternator power output)	kWe [kVA]	-	N/A
BMEP	bar	-	21,9
Oil consumption on mission (average)	% fuel consumption	0,25	
Cycle		diesel - 4 stroke	
Air charging system pattern		Turbocharged aftercooled	
Number of cylinder		6	
Configuration (cylinder arrangement)		in line	
Bore	mm	135	
Stroke	mm	150	
Stroke / Bore		1,11	
Displacement	l	12,9	
Unit Displacement	l	2,14	
Bore pitch	mm	164	
Valves per cylinder		4	
Cooling system type		liquid	
Direction of rotation (looking flywheel)		anti-clockwise	
Compression ratio		16,5 : 1	
Firing order		1 - 4 - 2 - 6 - 3 - 5	
Injection type		direct - electronic common rail	
Engine brake configuration		-	
Be10		8000 h	
Cylinder Head		N/A	
Single / Multiple		single	
Material		cast iron w/o Ni	
Head air circulation		crossflow	
Intake valve dia.	mm	47	
Exhaust valve dia.	mm	46	
Camshaft		N/A	
Layout		SOHC	
Cam carrier		camshaft on cylinder head	
Material and Heat treatment		16MnCr5 nit or C53 - 50CrMo4 ind.	
Valve train		valve train with over head camshaft	



# C13ENTZW69.00

## BARE TIER 4



Main characteristics		@1500rpm	@1800rpm
Drivetrain (timing system)			rear gears
Valve actuation			roller rocker arms
Variable valve actuation system			no
Cylinder block (crankcase)			No Structural
Material of cylinder block			cast iron
Type of liners			wet
Liners replaceable; (slip fit or interference fit)			yes
Bearing caps			machined cast iron
Crankcase Ventilation			yes
Oil separator			centrifugal coalescent
<b>Crankshaft &amp; counterweights</b>			N/A
Material			forged Steel
Acceptable Inertia (clutch)	kgm <sup>2</sup>		1,25
Balancing			no
<b>Turbocharger &amp; EGR system</b>			N/A
Turbocharger type			fixed geometry with wastegate valve
Turbocharger supplier			HTT
Turbocharger control			electro pneumatic control
Pressure after turbocharger compressor	mbar		1800 (max 2500)
Max turbine inlet temperature	°C		700
Temperature after turbocharger compressor	°C		N/A
Method of cooling the turbocharger			oil lubricated
Turbo protection devices			(WG - Software strategy open loop)
EGR type			-
EGR control strategy			-
EGR recirculation rate			-
Valve			-
Cooler			-
Control			-
Air mass measurement			-
<b>Exhaust flap</b>			N/A
Exhaust flap supplier			Klubert Schmidt
Actuation type			electronic actuator
Exhaust flap cooling			yes
<b>Switchability (1500-1800 rpm)</b>			N/A
Emission level 1500 rpm			-
Emission level 1800 rpm			Tier 4B
<b>Front power take off</b>			N/A
PTO type			-
Max torque available from front of crankshaft (no side load)	Nm		800
<b>Power take off on gear train</b>			N/A
SAE A 9 teeth	Nm		-
SAE A 11 teeth	Nm		-
SAE B 13 teeth	Nm		-
SAE B (DIN 5482)	Nm		-
SAE 2B 15 teeth( ANSI B92,1)	Nm		-
<b>References values</b>			N/A
Engine dimension LxWxH (indicative values)	mm		1359 x 951 x 1212



# C13ENTZW69.00

BARE TIER 4



Main characteristics		@1500rpm	@1800rpm
G-Drive Dimension LxWxH (indicative values)	mm	-	
Max permissible engine inclination	deg	19 or 30 all direction	
Engine Weight - Dry (no fluids, value purely indicative)	kg	1320	
Engine Weight - Wet (with fluids, value purely indicative)	kg	1350	
G-Drive Weight - Dry (no fluids, value purely indicative)	kg	-	
G-Drive Weight - Wet (with fluids, value purely indicative)	kg	-	
Center of gravity (FFOB or RFOB according to picture, standard engine layout)	mm	x:68.5 ; y:5.4 , z:-212	
Principal moment of inertia (reference on center of gravity ,standard engine layout)	kgm <sup>2</sup>	I1:10,57 ; I2:22,93 ; I3:27,32	
Principal moment of inertia (reference matrix based on center of gravity,standard engine layout)	kgm <sup>2</sup>	-	
Center of gravity (FFOB or RFOB according to picture, standard IPU/G-Drive layout)	mm	-	
Principal moment of inertia (reference on center of gravity ,standard IPU/G-Drive layout)	kgm <sup>2</sup>	-	
Principal moment of inertia (reference matrix based on center of gravity,standard IPU/G-Drive layout)	kgm <sup>2</sup>	-	
Mass moment of inertia - rotating components (excluding flywheel)	kgm <sup>2</sup>	1,07	
Mass moment of inertia - standard flywheel	kgm <sup>2</sup>	2,17 - 2,29	
Bending moment on the flywheel housing	Nm	within safety factors with lumped masses summary 806kg @ max X:-91mm, Y:-33mm, z:-202mm	
Flywheel housing SAE sizing		N/A	
Flywheel SAE sizing		N/A	
Bending moment on PTO	Nm	N/A	
Max static mounting surface load	N	within safety factors, see guideline	
Crankshaft thrust bearing pressure limit		N/A	
Intermittent load:	MPa	-	
Continuous load:	MPa	15	
Rear main bearing load	MPa	-	
Max bending moment available from front of the crankshaft:		N/A	
0 deg	Nm	100	
90 deg	Nm	270	
180 deg	Nm	270	
Environmental operating conditions		N/A	
Max altitude for declared performances	m	1000	
Max ambient temperature for declared performances	°C	40	
Min guaranteed temperature for cold start w/o any aid (stand alone engine)	°C	- 10	
Min guaranteed temperature for cold start with Air Heater (stand alone engine)	°C	- 15 (with grid heater and fuel heater)	
Min guaranteed temperature for cold start with grid heater and block heater (stand alone engine)	°C	- 30 (with grid heater, fuel heater and block heater)	
Time preheating for manifold heater	s	- 5°C = 3 ; - 30°C = 12	
Time post heating for manifold heater	s	- 5°C = 110 ; - 30°C = 1200	
Low idle continuous operation time (reccomended)	h	3	
Engine performance [*]		N/A	
Continuous power (gross) [mech]	kW	-	309
Prime power (gross) [mech]	kW	-	386
Stand-by power (gross) [mech]	kW	-	424



# C13ENTZW69.00

BARE TIER 4



Main characteristics		@1500rpm	@1800rpm
Fan consumption [mech]	kW	-	-
Continuous power (net) [mech]	kW	-	-
Prime power (net) [mech]	kW	-	-
Stand-by power (net) [mech]	kW	-	-
Typical generator output		-	0,94
Generator available power @ Prime power	kW	-	-
Generator available power @ Stand by	kW	-	-
Power limitation according to ambient conditions		N/A	
Ambient temperature above xx°C	%/5°C (xx°C)	2	
Altitude > 1000 < 3000m above sea level	%/500m	3	
Altitude > 3000m above sea level	%/500m	6	
Power limitation due to safety protections		N/A	
Pre-Warning: first advice of high coolant temperature[**]. Switch-on of the amber lamp	°C	104	
Warning: second advice of high coolant temperature[**]. Switch-on of the red lamp	°C	106	
Start of derating	°C	110	
Altitude level: gradual reduction of transient response by smoke map correction from	m	2000	
Fuel temperature	°C	70 at 1900 rpm	
Intake manifold air temperature	°C	60	
ATS Max gas inlet temperature	°C	590 at DOC (Umicore) ; 600 at SCR (Ferric-Zeolith)	
Max allowed exhaust temperature	°C	740	
Turbine overheating protection	°C	-	
Turbine overspeed protection	rpm	-	
Oil temperature protection	°C	125	
Oil pressure protection (min engine rpm)	bar	1	
Fuel System			
Fuel density	kg/l	0,835	
Injection system type		electronic common rail	
Injection pump manufacturer		Bosch	
Injection model type		Bosch CRSN3-22	
Injection model pump		Bosch CPN5 22/2	
Injection pressure	bar	1800	
Injector		Bosch CRIN3-22	
Injector installation (sleeve, sealing flat or conical)		vertical, no sleeve, conical seat 120°	
Injector nozzle		8 x 800	
Engine fuel compatibility		see dedicated GOLD Book document on fluids	
Feed pump on engine		on engine	
Max fuel flow supply line	l/h	750	
Nominal feed pressure	bar	0,52 - 0,85 abs inl eng	
Fuel filter		cartridge with element filter replaceable	
Fuel filter clogging sensor		no	
Max continuous allowable fuel temperature (without derating)	°C	70	
Max relative pressure at gear pump inlet	bar	0,15	
Min relative pressure at gear pump inlet	bar	0,6	
Max back flow relative pressure	bar	0,8	
Max back flow restriction	bar	1,8	
Max heat rejection to return fuel	kW	0.96	





# C13ENTZW69.00

## BARE TIER 4



### Fuel System

Max fuel flow return line	kg/h	622
Min fuel tank venting requirement	m <sup>3</sup> /h	0,77
Prefilter / Water separator micron size	µm	30

### Air Intake System

@1500rpm

@1800rpm

Aftercooling system type		air to air
Interstage cooling type		-
RoA (Temperature raise between ambient and inlet to engine)	°C	≤ 20
Filter air intake temperature (warm air ricirculatuion)	°C	≤ 5
Max intake manifold temperature	°C	50
Compressor inlet pressure (with new air filter)	hPa	≥ - 35
Compressor inlet pressure (with dirty air filter)	hPa	≥ - 65
Air filter type		-
Loads on turbocharger on compressor intake	kg	0
Loads on turbocharger on compressor outlet	kg	0
Charge air flow (max)	kg/h	-   2070

### Exhaust System

@1500rpm

@1800rpm

Max back pressure (after exhaust flap) @ rated power with clean system	hPa	200
Max mechanical load on turbine flange	kg	negligible loads from misalignment, vibration, shock, thermal expansion
Max ambient temperature for exhaust flap actuator	°C	120
Max exhaust temperature After Treatment System	°C	500
Max exhaust flow rate	kg/h	2250
Energy to exhaust	kW	-   372

### After Treatment System

After Treatment System	DOC + SCR + CUC
POC	-
DPF	-
DOC	yes
SCR	yes
Urea Dosing System	Bosch DNOx-2.5
AdBlue mixer	yes
ATS sensors	pressure, temperature, NH3, NOx
DPF regeneration strategy	-

### Lubrication System

Oil sump capacity, max level	l	28
Oil sump capacity, min level	l	20
Oil system capacity including filter	l	32
Oil pump type		gear pump
Oil pump drive arrangement		driven by gear
Min oil pump flow	l/min	70
Max oil pump flow (@rated speed)	l/min	160
Min oil pressure @ low idle	kPa (bar)	60 (0,6)
Min oil pressure @ rated speed (engine oil temp at 120°C)	kPa (bar)	250 (2,5)
Max oil pressure @ rated speed	kPa (bar)	600



# C13ENTZW69.00

BARE TIER 4



## Lubrication System

Max oil temperature @ full load (in main gallery)	°C	120
Max oil pressure peak on cold engine	bar	18 - 22
Oil cooler type		water cooled
Transducer for indicating oil temperature and pressure		signal from ECU
Max engine angularity - longitudinal / transversal (std oil pan)	deg	19 or 30 all direction (depends on the oil pan)
Allowed engine gradability during installation on vehicle	deg	± 4
Oil servicing intervals	h	see dedicated GOLD Book document on fluids
Oil filter type		cartridge with element filter replaceable
Oil filter capacity	l	2
Max oil content admitted in blow by gas (after filter)	g/h	1,2
Oil for cold condition mission (T° ambient < -25°C)		see dedicated GOLD Book document on fluids

## Cooling system

@1500rpm

@1800rpm

Type (water to water or air to water)		liquid
Recommended coolant		see dedicated GOLD Book document on fluids
Min radiator cap pressure	kPa	-
Warnnig setting first threshold	°C	-
Max additional restriction (cooling system)	Pa	-
Air to boil (prime power, open genset configuration). For further information see GB document	°C	-
Air flow (prime power, open genset configuration)	m³/s	N/A
Air to boil (stand by, open genset configuration). For further information see GB document	°C	-
Air flow (stand by, open genset configuration)	m³/s	N/A
EGR Cooler water flow (for ΔT=6°C)	l/s	-
LP-CAC water flow (for ΔT=6°C)	l/s	-
<b>Fan</b>		N/A
Diameter	mm	-
Number of blades		-
Drive ratio		-
Speed		-
Air flow		-
Power consumption		-
<b>Radiator</b>		N/A
Core dimensions LxWxh	mm	-
Dry weight	kg	-
Radiator coolant capacity	l	-
Optimum coolant temperature range @engine out (50% glycol)	°C	80 ÷ 90
Engine Water pump Type		centrifugal pump
Engine water pump drive		driven by belt
Coolant capacity (engine only)	l	19,5
Coolant capacity (radiator & hoses)	l	-
Thermostat type		wax type
Thermostat position		on cylinder head (left front side)
Thermostat opening / fully open temperature	°C	80 ÷ 90
Recommended coolant circuit pressurization range (relative)	hPa	1 ÷ 1,4
Coolant engine pressure outlet – inlet (delta pressure, open thermostat, high idle conditions)	hPa	< 0,2



# C13ENTZW69.00

BARE TIER 4



Cooling system		@1500rpm	@1800rpm
Coolant engine pressure outlet – inlet (only with remote thermostat, ex. retarder)	hPa	-	
Min coolant pressure (no pressure cap and thermostat closed)	hPa	1	
Coolant water pump inlet pressure (water temperature 60-100°C)	hPa	0,5	
Coolant flow to radiator @rated speed	l/h	N/A	
Min coolant expansion space (% total cooling system capacity)	%	10	
Max coolant flow to accessories @ rated speed from cab heater	l/min	N/A	
Engine out coolant to ambient @rated speed	delta °C	-	
Engine out coolant to ambient @torque speed	delta °C	-	
Charge air cooler outlet to ambient @max rpm - CAC dT	delta °C	25	
Pump water flow	l/min	-	486

## Electrical, Electronic and Control Systems

System voltage	V	24
Engine control unit		Bosch EDC17 CV41
ECU software		P662
ECU Vehicle connection		with CAN line
ECU operating range	°C	- 30 / + 95 °C
Temperature of ECU case for <5' after power up	°C	+ 85
ECU rated continuous temperature	°C	+ 80
ECU communication protocol		SAEJ1939
Min power supply for ECU operation	V	7
Max power supply for ECU operation	V	32
Battery wire connection resistance value @20°C (from battery to ECU)	mΩ	45 (battery ECU)
Diagnostic connector type		N/A
Min cranking speed TDC @-30°C	rpm	75
Average cranking speed	rpm	130
N° tooth pinion/crown gear		/ 155
Min battery voltage	V	16,2
Mean battery voltage	V	18,4
Min battery capacity	Ah	180 (24v)
Mean battery current	Ah	800 (24V)
Max starting circuit resistance ( to starter)	mΩ	< 70

## Cold starting

Without air preheating	°C	- 10
With air preheating (if available)	°C	- 25

## Emission gaseus and particules

NOx (Oxides of nitrogen) [NRSC]	g/kWh	see homologation certificate
HC (Hydrocarbons) [NRSC]	g/kWh	see homologation certificate
NOX+HC [NRSC]	g/kWh	see homologation certificate
CO (Carbon monoxide) [NRSC]	g/kWh	see homologation certificate
PM (Particlutes) [NRSC]	g/kWh	see homologation certificate
CO2 (Carbon Dioxide) [NRSC]	g/kWh	see homologation certificate
NOx (Oxides of nitrogen) [NRTC]	g/kWh	see homologation certificate



# C13ENTZW69.00

## BARE TIER 4



### Emission gaseus and particulales

HC (Hydrocarbons) [NRTC]	g/kWh	see homologation certificate
NOX+HC [NRTC]	g/kWh	see homologation certificate
CO (Carbon monoxide) [NRTC]	g/kWh	see homologation certificate
PM (Particlutes) [NRTC]	g/kWh	see homologation certificate
CO2 (Carbon Dioxide) [NRTC]	g/kWh	see homologation certificate

### Maintenance

Oil drain interval	see dedicated GOLD Book document on fluids
Oil filter change	see dedicated GOLD Book document on fluids
Oil refilling time	daily check to evaluate oil refill necessity
Approved engine oil specifications	N/A
CCV filter change	1800 h or 1 year
Fuel filter change	see dedicated GOLD Book document on fluids
Fuel pre-filter change	see dedicated GOLD Book document on fluids
Belt replacement	1200 h
Valve lash check /adjustment	2400 h
AdBlue filter Change	1200 h
DPF filter service	-
Coolant change	see dedicated GOLD Book document on fluids

### Engine Noise

		@1500rpm	@1800rpm
Overall sound pressure (engine only)	dBA		99
Overall sound pressure (with accessories only)	dBA		N/A
Exahust noise (w/o Muffler)	dBA		N/A
Noise spectrum (octave analysis performed at the position of maximum noise) - diagram	Table dB-Hz		N/A
A-weight sound power level LW function of power (value calculated respecting standard ISO 3744 and 3746. For further information see GB document)			N/A
0% (no load)	dBA	N/A	
75% (partial load)	dBA	N/A	
100% (full load)	dBA	N/A	
110% (overload)	dBA	N/A	

### Step Load (for further information see GB document)

		@1500rpm	@1800rpm
G1 (% of PrP)	%	-	79
G2 (% of PrP)	%	-	70
G3 (% of PrP)	%	-	59
G1 (% of PrP) [open flap]	%	-	N/A
G2 (% of PrP)[open flap]	%	-	N/A
G3 (% of PrP)[open flap]	%	-	N/A
G1 (% of PrP) [ closed flap]	%	-	N/A
G2 (% of PrP) [closed flap ]	%	-	N/A
G3 (% of PrP) [closed flap]	%	-	N/A
Removal load (G1)	%	-	100
Removal load (G2)	%	-	100
Removal load (G3)	%	-	100
Emergency (xxx)	%	-	-
Emergency (xxx)	%	-	-
Emergency (xxx)	%	-	-



# C13ENTZW69.00

BARE TIER 4



Maximum Rating Performance Data		@1500rpm	@1800rpm
Torque	Nm	-	2350
Ambient Temperature	°C	-	22
EGR Rate	%	-	-
Fuel Flow	g/s	-	23,5
Fuel consumption (BSFC) (prime power)	(kg/h) [g/kWh]	-	(78.7) [204]
Fuel consumption (BSFC) (stand by)	(kg/h) [g/kWh]	-	(86.5) [203]
Fuel consumption (BSFC) (80% prime power)	(kg/h) [g/kWh]	-	(63.3) [205]
Fuel consumption (BSFC) (50% prime power)	(kg/h) [g/kWh]	-	(44.2) [229]
Fuel consumption (BSFC) (25% prime power)	(kg/h) [g/kWh]	-	(24.6) [255]
AdBlue consumption (prime power)	% of fuel cons	-	10,4
AdBlue consumption (stand by)	% of fuel cons	-	10,7
AdBlue consumption (80% prime power)	% of fuel cons	-	9,9
AdBlue consumption (50% prime power)	% of fuel cons	-	9,1
AdBlue consumption (25% prime power)	% of fuel cons	-	6,7
Exhaust Gas Flow	kg/h	-	2155

Design air handling system data		@1500rpm	@1800rpm
EGR flow	kg/h	-	-
EGR pressure	kPa	-	-
Boost pressure (compressor outlet)	kPa	-	190
Pressure drop on charge air cooling system	kPa	-	10
Max temperature after HP-Compressor	°C	-	-
Boost temperature (includes EGR effect)	°C	-	180
ATS back pressure	kPa	-	219
Exhaust Gas Temp between HP-TC	°C	-	-
Max Exhaust Gas Temp (after TC)	°C	-	550
Max admitted back pressure after SCR	kPa	-	-
Max admitted back pressure after TC	kPa	-	-
Power engine coolant without EGR & CAC (prime power)	kW [kcal/kWh]	-	-
Power engine coolant without EGR & CAC (stand by)	kW [kcal/kWh]	-	-
Power high Temperature EGR Cooler (engine water) (prime power)	kW [kcal/kWh]	-	-
Power high Temperature EGR Cooler (engine water) (stand by)	kW [kcal/kWh]	-	-
Power to coolant due to EGR LP-Circuit (prime power)	kW [kcal/kWh]	-	-
Power to coolant due to EGR LP-Circuit (stand by)	kW [kcal/kWh]	-	-
Total Power to coolant (prime power)	kW [kcal/kWh]	-	155
Total Power to coolant (stand by)	kW [kcal/kWh]	-	155
Total pump water flow	l/s	-	8,1
Radiator Coolant Flow (5% less if continuous deaerating system, coolant according to FPT norms)	l/min	-	-
EGR Cooler water flow (for ΔT=6°C)	l/s	-	-
LP-CAC water flow (for ΔT=6°C)	l/s	-	-
Power in CAC (air to air) (prime power)	kW [kcal/kWh]	-	90
Power in CAC (air to air) (stand by power)	kW [kcal/kWh]	-	90
Power Radiated	kW	-	55
Charge Air Flow	g/s	N/A	
[**] according to temperature sensor tolerance			N/A

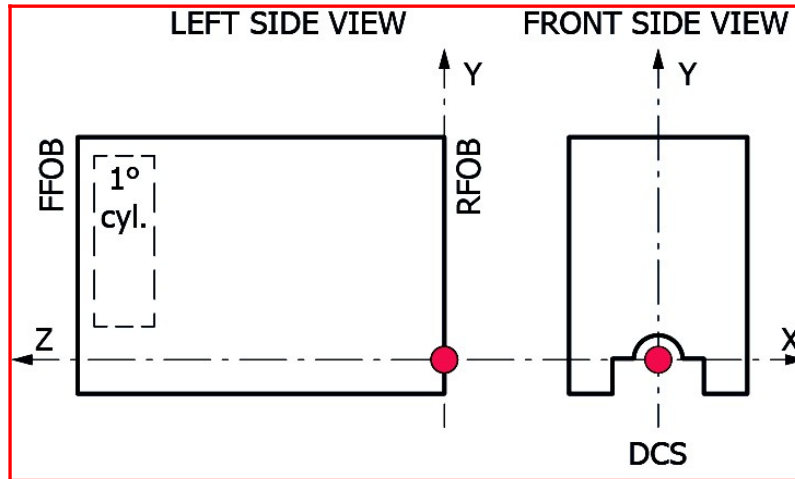


# C13ENTZW69.00

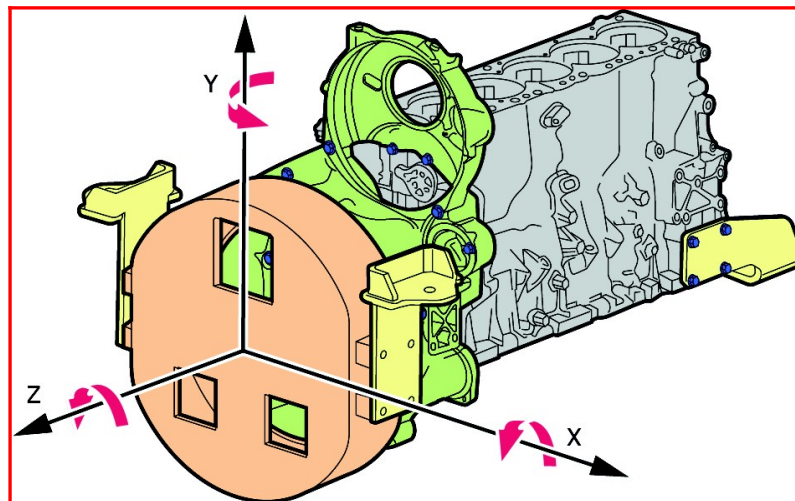
BARE TIER 4



## Images



Principal Moment of Inertia

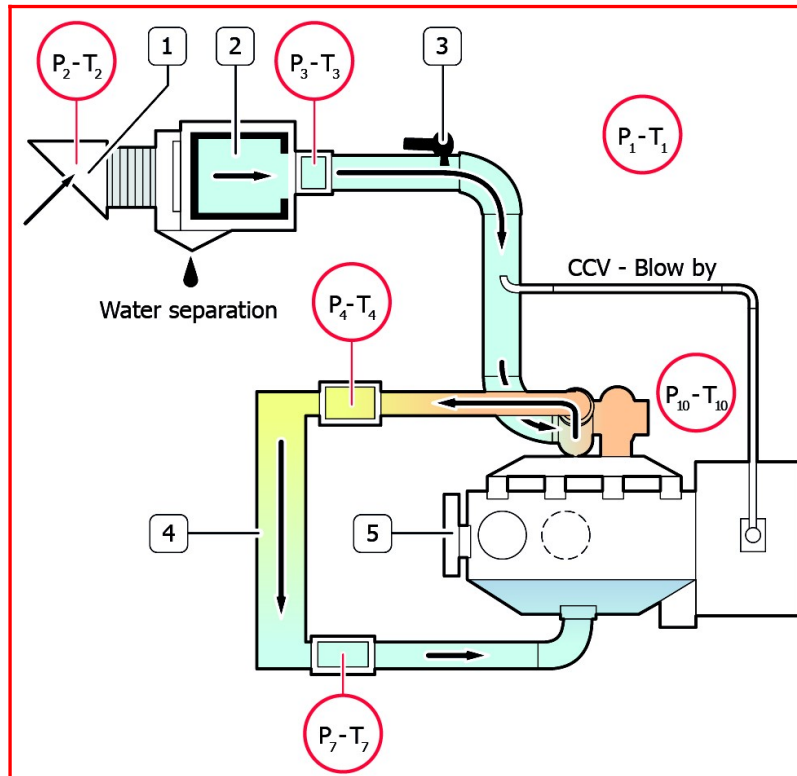


Components

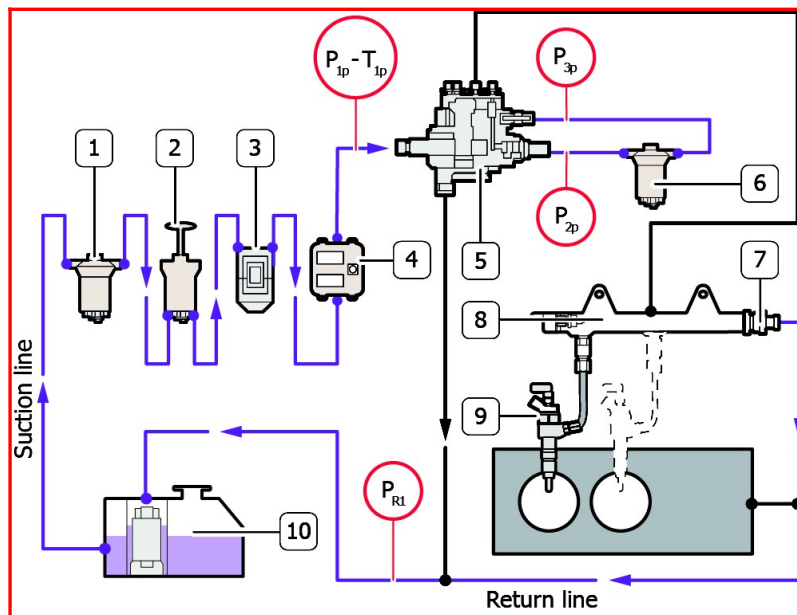


## C13ENTZW69.00

BARE TIER 4



1.Snorkel 2.Air Filter 3.Humidity sensor 4.Intercooler

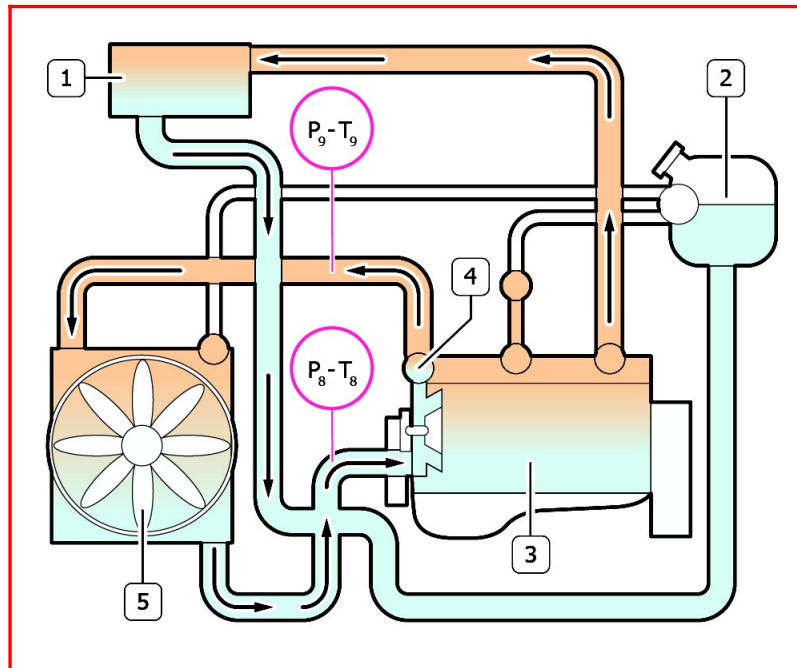


1.Inspection glass with strainer 2.Prime pump 3.Pre-filter with water separator 4.ECU 5.High Pressure pump 6.Fuel Filter 7.Overpressure valve 8.Common Rail 9.Injectors 10.Fuel tank



# C13ENTZW69.00

BARE TIER 4



1.Heating element 2.Expansion tank 3.Engine 4.Thermostat 5.Radiator





# C13ENTZW69.00

BARE TIER 4



## Acronym LIST

Acronym	Description
-	Not Needed
2stTC	Two Stage Turbo (sequential)
Ag	Agricultural
ASC	Ammonia Slip Catalyst (same as CUC)
ATS	After Treatment System
BSFC	Brake Specific Fuel Consumption
CAC	Charge Air Cooler
CCDPF	Close Coupled DPF
CCV	Crankcase Ventilation
CE	Construction Equipment
CI	Cast Iron
CRS	Common Rail System
CRSN	Common Rail System NKW (Commercial vehicles)
CUC	Clean Up Catalyst for ammonia (same as ASC)
DAVNT	Dual Axis Variable Nozzle Turbine
DCS	Drawing Coordinate System
DI	Direct Injection
DOC	Diesel Oxidation Catalyst
DOHC	Double Over Head Camshaft
DPF	Diesel Particulate Filter
ECEGR	External Cooled EGR
ECU	Engine Control Unit
EEGR	External EGR
EGR	Exhaust Gas Recirculation
epWG	Electro pneumatic WG
eVGT	Electrical VGT
eWG	Electrical WG
FFOB	Front Face of Block
FGT	Fixed Geometry Turbocharger (no WG)
FIE	Fuel Injection System
HD	Heavy Duty
HLA	Hydraulic Lash Adjusters
IDI	Indirect Injection

Acronym	Description
IEGR	Internal EGR
IPU	Industrial Power Unit
ISC	Interstage Cooling
LD	Light Duty
LDCV	Light Duty Commercial Vehicles
LH	Left Hand Side
LWR	Laser Welded Rail
MD	Medium Duty
n/a	Not Available
NA	Natural Aspirated
NS	Non Structural
OHV	Over Head Valves
OPT	Option
PCP	Peak Cylinder Pressure
PTO	Power Take Off
RFOB	Rear Face of Block
RH	Right Hand Side
S	Structural
SAPS	Sulphated Ash, Phosphorus, Sulphur
SCR	Selective Catalytic Reduction catalyst
SCRoF	SCR on filter
SOHC	Single Over Head Camshaft
STD	Standard
TC	Turbocharged
TCA	Turbocharged, Charge Air Cooled
THM	Thermal Management
UFDPF	Under Floor DPF
UQS	Urea Quality Sensor
VE	Bosch Distributor Mechanical Pump
VFT	Variable Flow Turbine
VGT	Variable Geometry Turbocharger
WG	Waste Gate Turbocharger
XPI	Extra high Pressure Injection (Scania, Cummins)

**Unit of misure according to international system of unit. Engine accessories and Options available on Option List. All data is subject to change without notice.**

## UPDATING

Revision	Description	Date
Feb 2024		February/2024
Revision 2.0_Oct 2021		October/2021
Revision 3.0_Feb 2023		February/2023
Revision 3.1_May 2023		May/2023