

Cummins

Technical Operations



ENGINE MODEL: 6LTAA8.9-C325
CURVE & DATASHEET: FR93083

REV 00 25Jun2009



Industrial Engine Performance Data

Basic Engine Model:
6LTAA8.9-C325

325 BHP (239kW) @ 2200 RPM
1350 N.m @ 1400 RPM

FR93083

Configuration
D563013CX03

CPL Code
3158

Revision
2009-6-25

Compression Ratio: **16.6:1**

Aspiration: **Turbocharged and Charge Air Cooled**

Bore: **114 mm**

Displacement: **8.9 L**

Stroke: **145 mm**

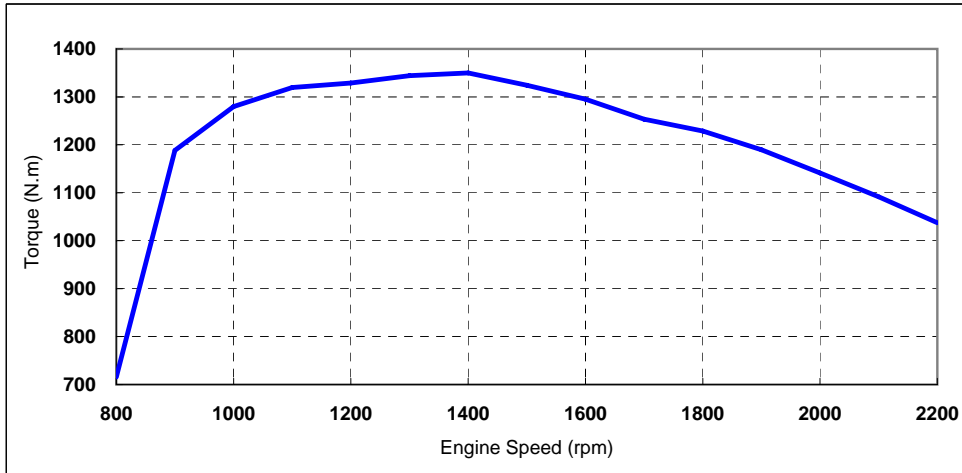
No. of Cylinders: **6**

Emission Certification: **MEP STAGE II**

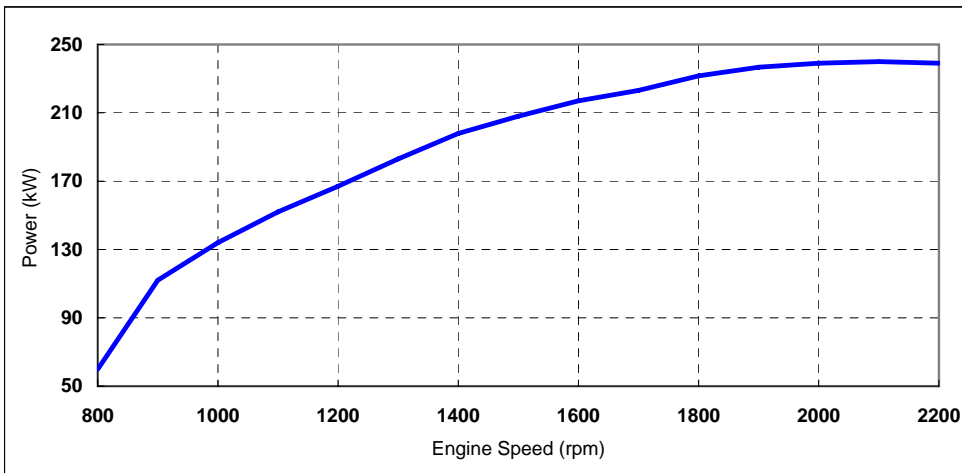
Fuel System: **WEIFU PW2000/RSV**

All data is based on the engine operating with fuel system, water pump, and 10 in H₂O (2.488 kPa) inlet air restriction with 5.98 in (152 mm) inner diameter, and with 2.01 in Hg (7 kPa) exhaust restriction with 4.02 in (102 mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolants as 50% ethylene glycol/50% water. All data is subject to change without notice.

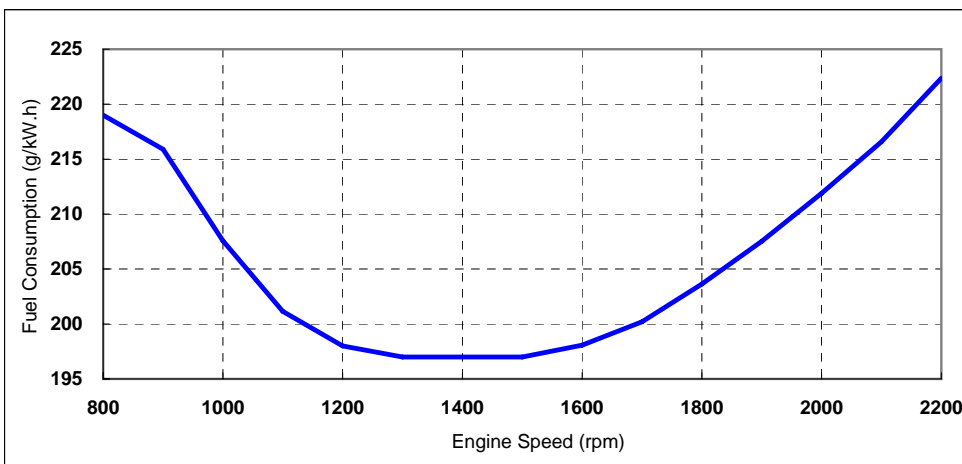
Performance curve



Torque Output	
rpm	N.m
2200	1037
2000	1141
1800	1229
1700	1254
1600	1295
1400	1350
1200	1329
1000	1280
800	716



Power Output	
rpm	kW
2200	239
2000	239
1800	232
1700	223
1600	217
1400	198
1200	167
1000	134
800	60



Fuel Consumption	
rpm	g/kW.h
2200	222
2000	212
1800	204
1700	200
1600	198
1400	197
1200	198
1000	208
800	219

Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with GB/T18297 conditions of 100kPa (29.61 in. Hg) barometric pressure [80 m (263 ft.) altitude], 25°C (77°F) inlet air temperature, and 1 kPa (0.30 in. Hg) water vapor pressure with 0# diesel fuel. The engine may be operated without changing the fuel setting up to 2200 m (7,218 ft.) altitude. For sustained operation at high altitudes, the fuel rate of the engine will be adjusted to limit performance by 4% per 305 m (1,000 ft.) above 2255 m (7,400 ft.) altitude and 2% per 11°C above 38°C (1% per 10°F above 100°F).

GENERAL ENGINE DATA

Approximate Engine Weight (wet).....	-kg	650
Maximum overspeed capability.....	-rpm	3150
Mass Moment of Inertia of Rotating Components (No Flywheel).....	-kg·m ²	0.72
Center of Gravity from Front Face of Block.....	-mm	427
Center of Gravity above Crankshaft Centerline.....	-mm	163

ENGINE MOUNTING

Maximum (Static) Bending Moment at Front Support Mounting Surface.....	-N.m	495
Maximum (Static) Bending Moment at Side Pad Mounting Surface.....	-N.m	250
Maximum (Static) Bending Moment at Rear Face of Block.....	-N.m	1356
Moment of Inertia of Complete Engine		
— Roll Axis.....	-kg·m ²	29.8
— Pitch Axis.....	-kg·m ²	76.8
— Yaw Axis.....	-kg·m ²	66.9
Crankshaft Thrust Bearing Load Limit		
—Maximum Intermittent.....	-N	5338
—Maximum Continuous.....	-N	2670

EXHAUST SYSTEM

Maximum Back Pressure.....	-kPa	10.1
Exhaust Pipe Size Normally Acceptable.....	-mm	100
Maximum Static Supported Weight at the Turbocharger Outlet Flange.....	-N.m	14
Exhaust Manifold Insulation Acceptable.....	-Yes/No	No
Turbocharger Insulation Acceptable.....	-Yes/No	No

AIR INTAKE SYSTEM

Maximum Intake Air Restriction with Heavy Duty Air Cleaner		
— Dirty Element.....	-kPa	6
— Clean Element.....	-kPa	4
Minimum Dirt Holding Capacity with Heavy Duty Air Cleaner.....	-g/cfm	53
Maximum intake manifold temperature at 25 deg C (77 F) ambient.....	-°C	60
Maximum Temperature Rise from Ambient to the Inlet of the Turbocharger. °C		17
Recommended intake piping size (inner diameter).....	-mm	125

Charge Air Cooling System

Maximum allowable pressure drop across charge air cooler and OEM CAC piping(IMPD):.....	-kPa	14
Maximum Intake Manifold Temperature Differential (Ambient to IMT) (IMTD) °C		35
Intake manifold air temperature derate/alarm temperature.....	-°C	96
Intake manifold temperature for Fan-ON.....	-°C	60

LUBRICATION SYSTEM

Normal Operating Oil Pressure Range		
— minimum low idle.....	-kPa	69
—maximum rated speed.....	-kPa	426
Maximum oil pressure spike on cold engine.....	-kPa	690
Maximum Lube Oil Flow for Engine Accessories.....	-litre/min.	7.6
Maximum Sump Oil Temperature.....	-°C	138
Minimum Required Lube System Capacity - Sump plus Filters.....	-litre	27.6
By-pass Filtration Required.....	-Yes/No	Yes
Angularity of Standard Oil Pan: (Values stated are for intermittent operation only):		
— Front Down.....	- °	45
— Front Up.....	- °	45
— Side to Side.....	- °	45



Cooling System

Minimum operating block coolant temperature.....	-°C	71
Minimum fill rate.....	-litre/min.	19
Maximum initial fill time.....	-min.	5
Minimum water pump inlet pressure with non-deaerating or partially deaerating cooling system.....	-kPa	0
Maximum static head of coolant above crankshaft centerline.....	-m	1
Minimum pressure cap rating at sea level.....	-kPa	34
Maximum pressure cap rating at sea level.....	-kPa	103
Minimum coolant expansion space (% of system capacity).....	- %	6
Maximum deaeration time.....	-min.	25
Minimum drawdown (% total cooling system capacity).....	- %	11
Full ON Fan engine coolant outlet temperature.....	-°C	93.3
Shutter opening temperature - coolant.....	-°C	85
Shutter opening temperature - intake manifold air (CAC).....	-°C	60
Coolant capacity - engine only.....	-litre	11.1
Maximum coolant operating temperature at engine outlet (max. top tank temp):.....	-°C	100
Standard (modulating) Thermostat Range.....	-°C	82-93
Maximum coolant temperature for engine protection controls.....	-°C	104
Maximum recommended external coolant flow restriction in engine circuit:.....	-kPa	34

CRANKING SYSTEM

Minimum Battery Capacity - Cold Soak at 0°F (-18°C) or Above		12V	24V
— Engine Only - Cold Cranking Amperes.....	-CCA	1500	750
— Engine Only - Reserve Capacity.....	-min.	360	180
Maximum Starting Circuit Voltage Drop.....	-Volts	TBD	
Minimum Ambient Temperature for Unaided Cold Start.....	-°C(°F)	-12	(10)
Minimum Cranking Speed Required for Unaided Cold Start.....	-rpm	150	
Maximum starting circuit resistance.....	-Ohm	0.00075	0.002

Fuel System

Maximum Fuel Flow on the Supply Side of the Fuel Pump.....	-kg/hr	315
Maximum fuel supply restriction at fuel pump inlet		
— with clean fuel filter element(s) at maximum fuel flow.....	-kPa	20
— with dirty fuel filter element(s) at maximum fuel flow	-kPa	34
Maximum fuel drain restriction (total head)		
— after (or with) check valve.....	-kPa	TBD
— before (or without) check valve.....	-kPa	69
Maximum fuel inlet temperature.....	-°C	60
Minimum fuel tank venting rate.....	-L/s	0.055



EMISSIONS

Estimated Free Field Sound Pressure Level At 15 m (50 ft.) and Full-Load Governed Speed
(Excludes Noise from Intake, Exhaust, Cooling System and Driven Components)

—Right Side.....	-dBa	TBD
—Left Side.....	-dBa	TBD
—Front.....	-dBa	TBD
—Rear.....	-dBa	TBD

Gaseous Emissions per GB 20891-2007

—Weight-Specific NOx.....	-g/kW.h	6.0
—Weight-Specific HC.....	-g/kW.h	1.0
—Weight-Specific CO.....	-g/kW.h	3.5
—Weight-Specific Particulates.....	-g/kW.h	0.2

Performance Data

Minimum low idle speed:.....	-rpm	900
Maximum Governed Speed (10% of Rated Torque)	-rpm	2460
Maximum altitude limit restriction		
—Continuous.....	-m	2200
Maximum torque available at closed throttle low idle speed.....	-N.m	650
Nominal governor regulation:.....	-%	≤8
Throttle Angle		
—High Idle.....	Deg.	103±10°
—Low Idle.....	Deg.	70±10°
—Delta.....	Deg.	33±5°
Throttle Angle at Engine Shutdown		
—Engine Work.....	Deg.	14±5°
—Engine Shutdown.....	Deg.	318±5°

Fuel Rating Option used for these Data: **FR93083**

Engine Speed.....	-rpm
Output Power.....	-kW
Torque.....	-N.m
Friction Horsepower.....	-kW
Intake Manifold Pressure.....	-kPa
Turbo Comp. Outlet Pressure.....	-kPa
Turbo Comp. Outlet Temperature.....	-°C
Inlet Air Flow	-kg/min
Exhaust Gas Flow	-l/s
Exhaust Gas Temperature.....	-°C
Heat Rejection to Ambient.....	-kW
Heat Rejection to Coolant.....	-kW
Steady State Smoke.....	-FSN

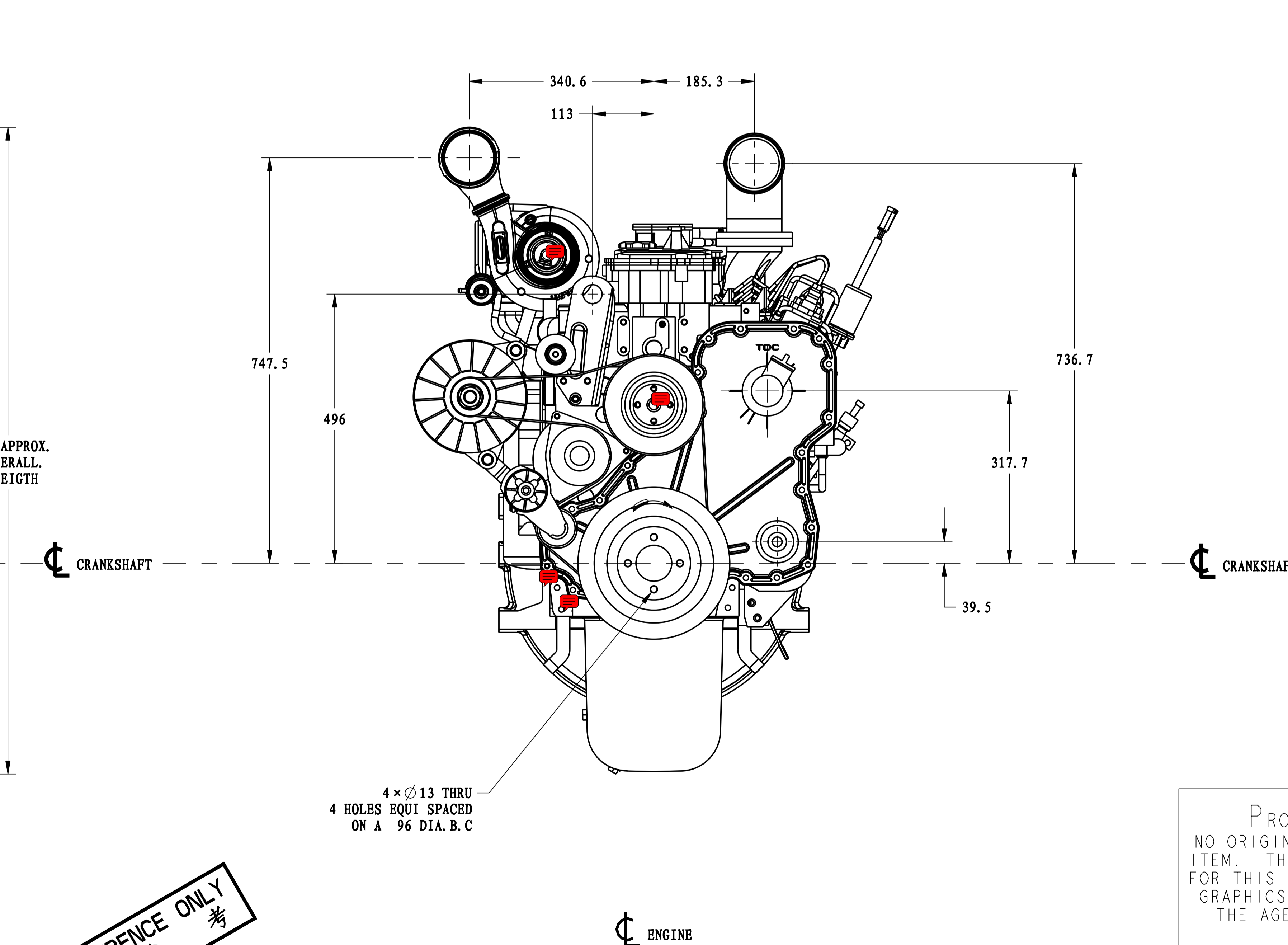
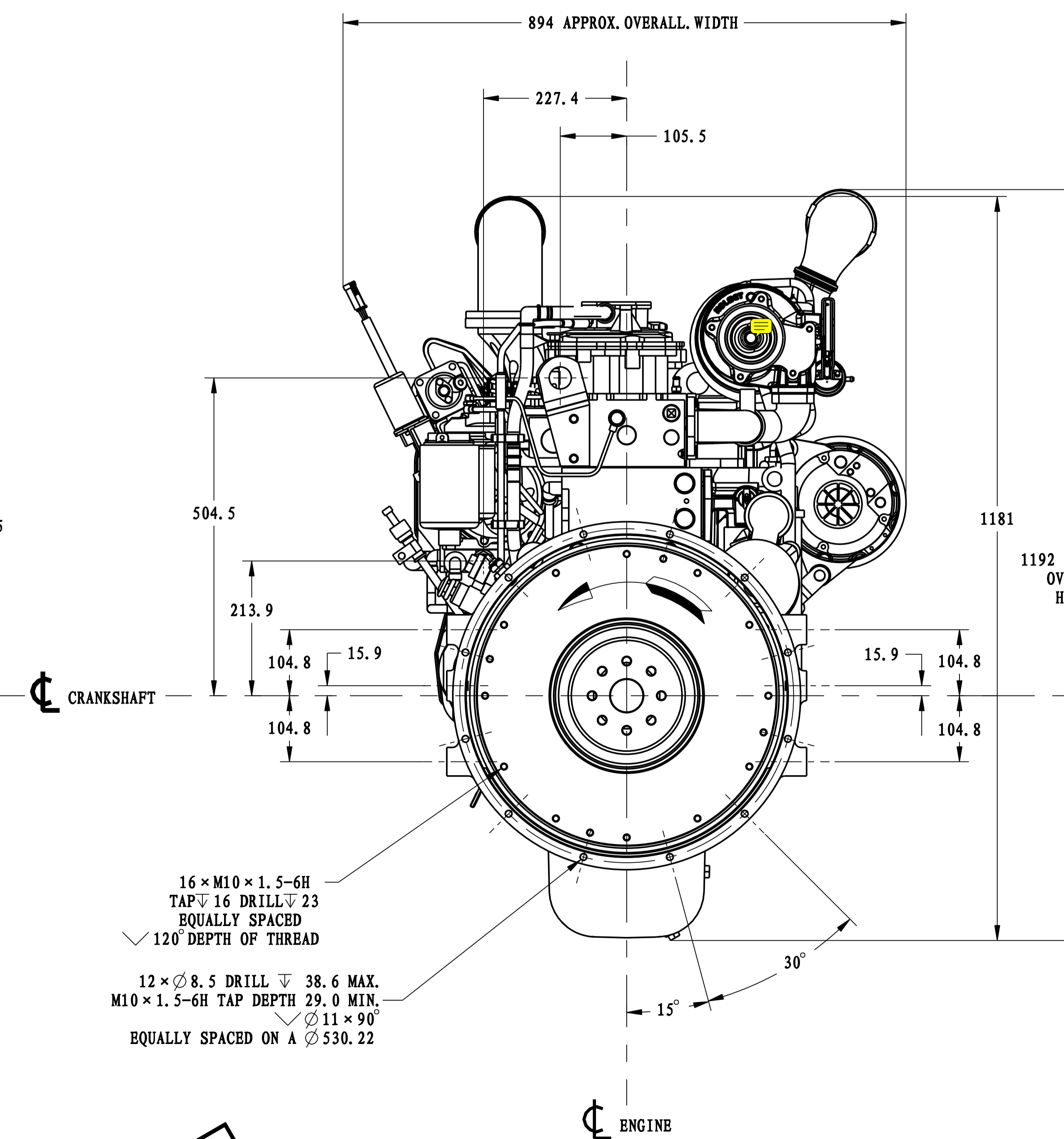
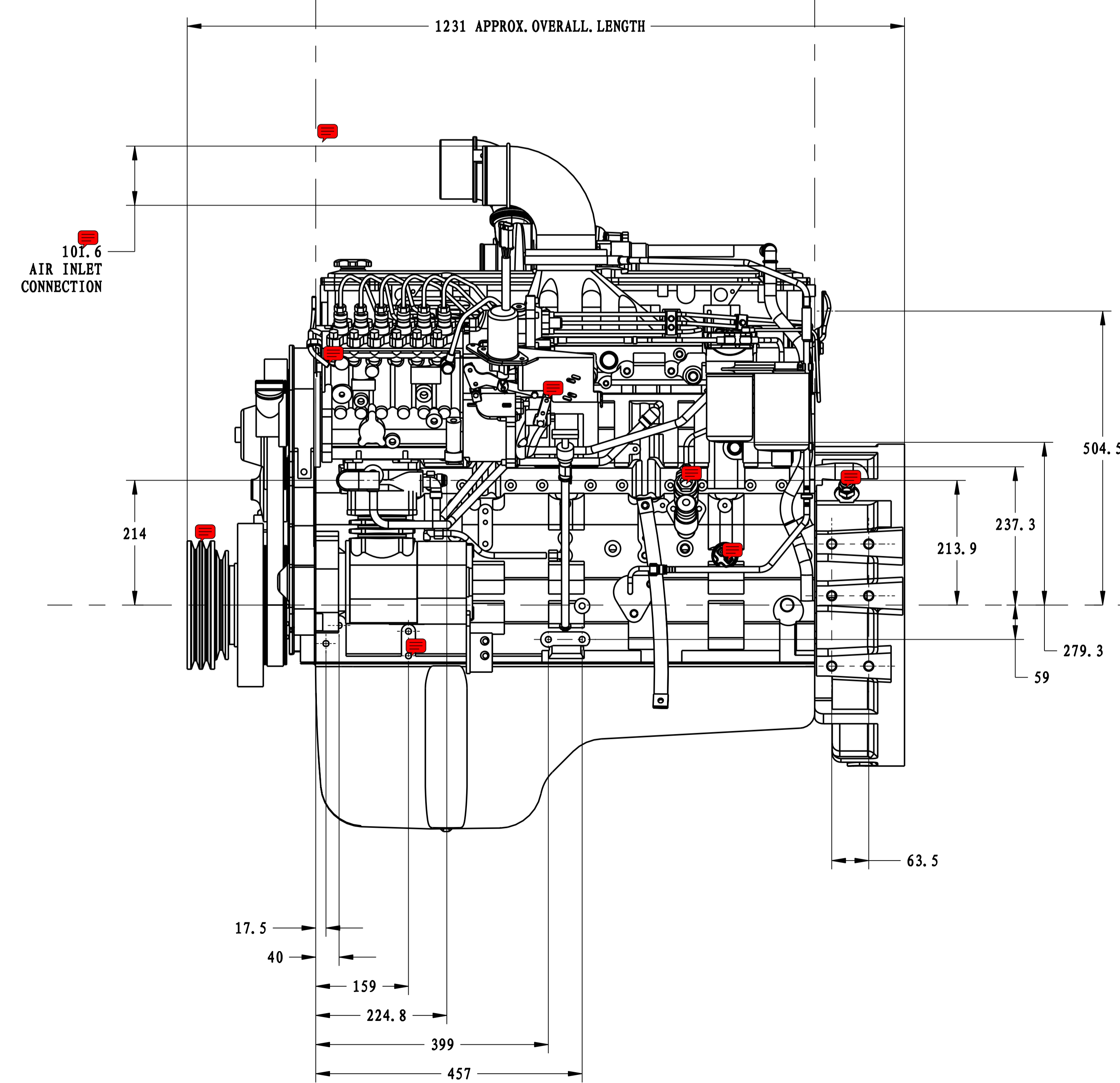
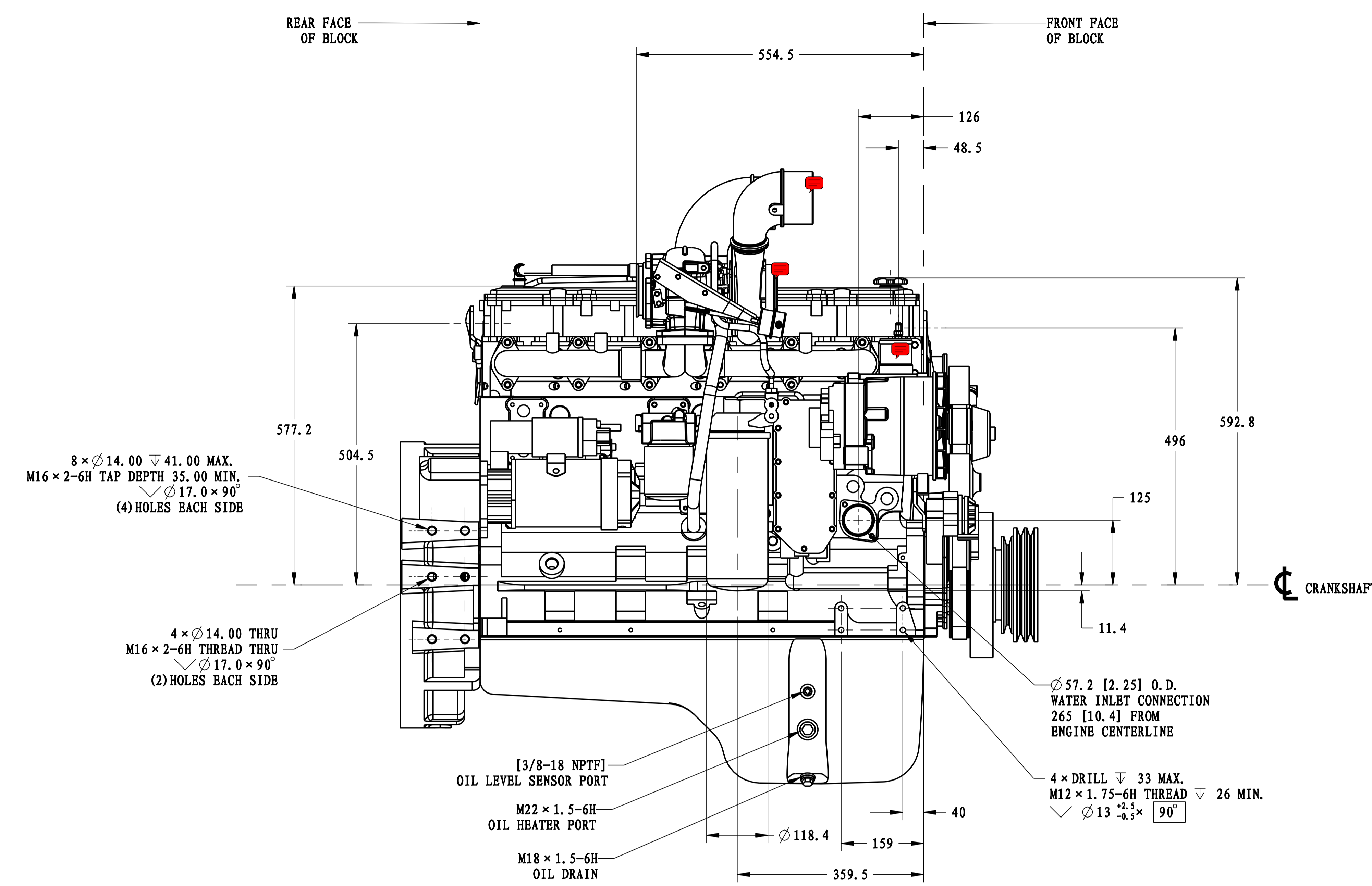
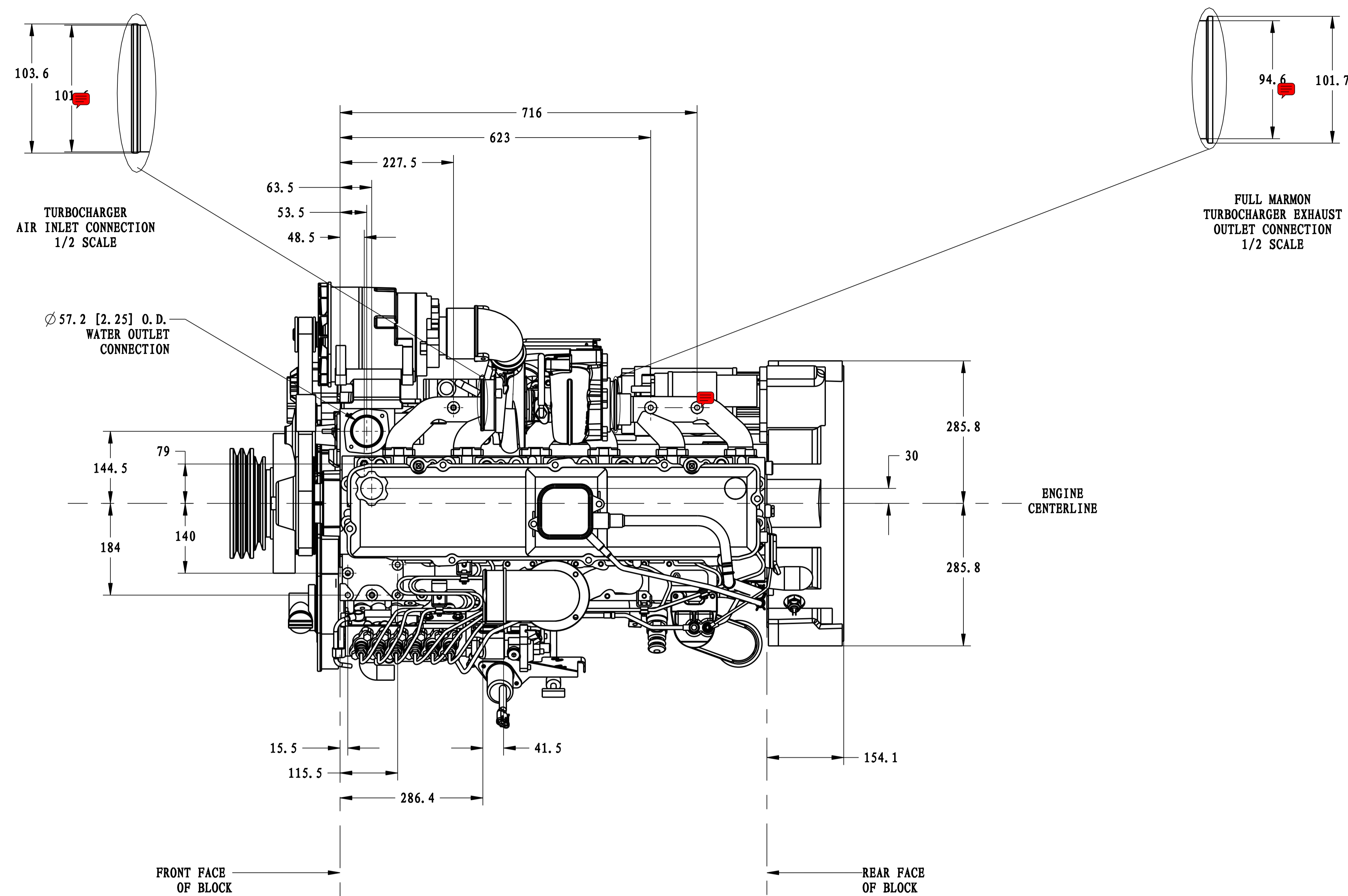
Rated Power	Maximum Power	Torque Peak
2200		1400
239		198
1037		1350
TBD		TBD
168		172
182		177
175		162
334		226
877		549
510		450
TBD		TBD
TBD		TBD
1.2		2.0

ALL DATA CERTIFIED WITHIN 5%

TBD = To Be Decided N/A = Not Applicable N.A. = Not Available

All data is subject to change without notice, sorry for inform.

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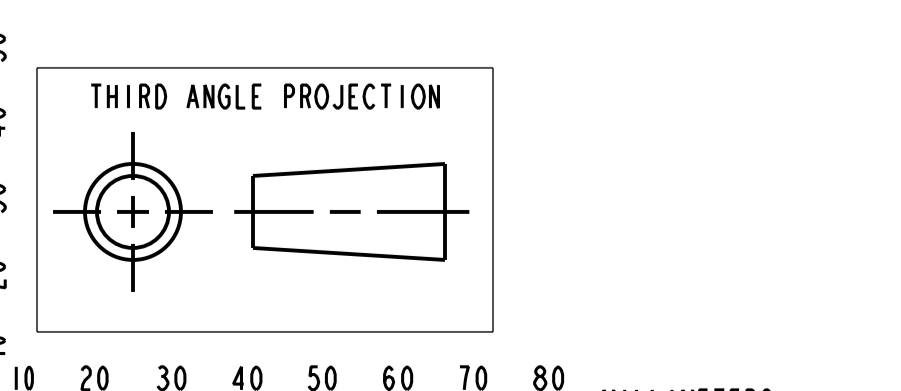
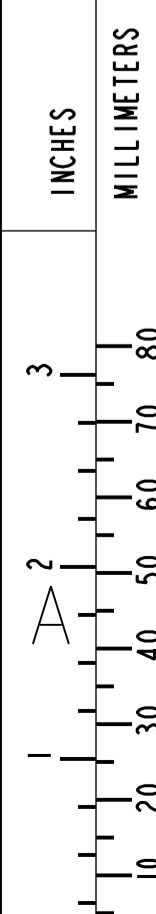
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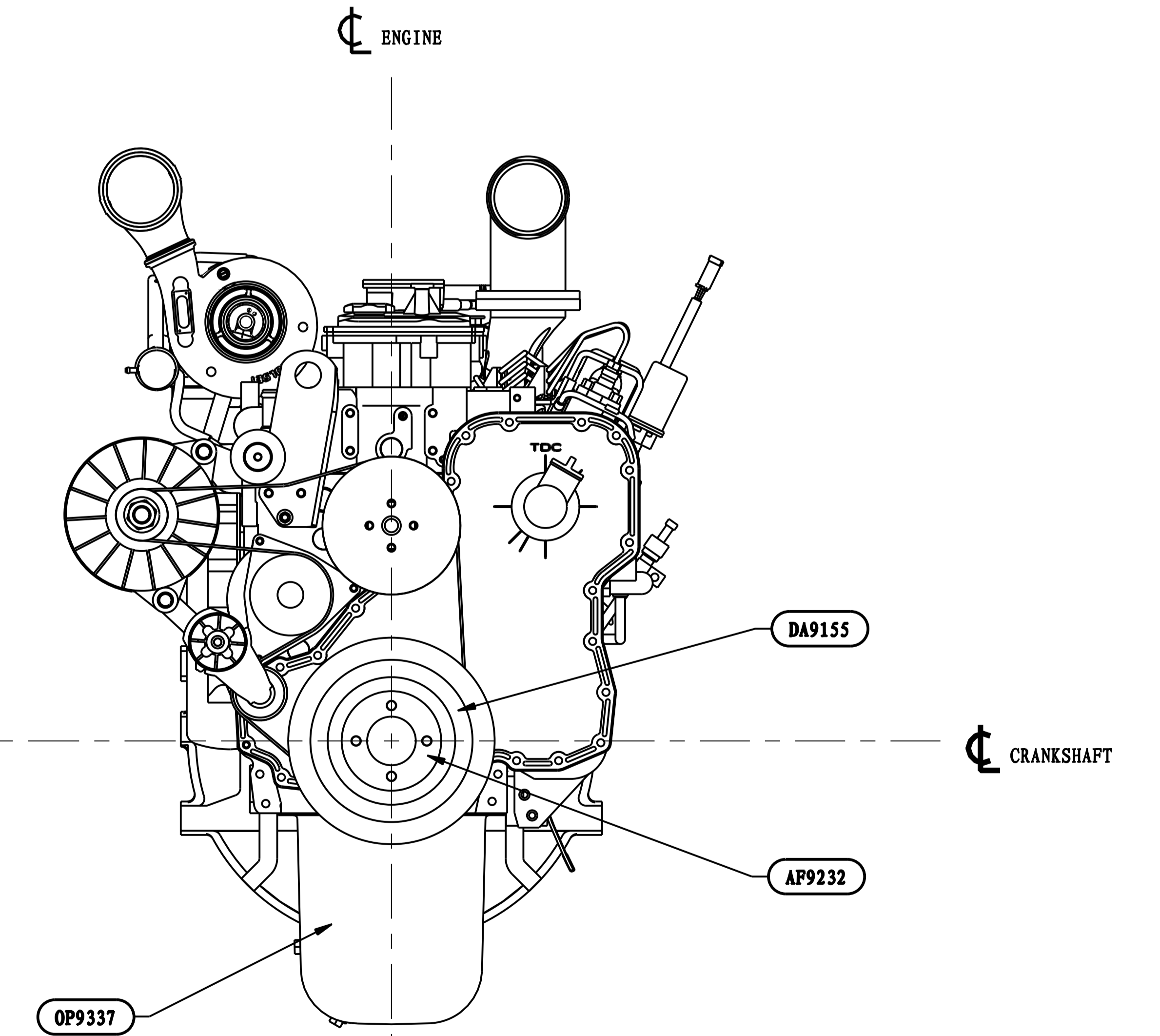
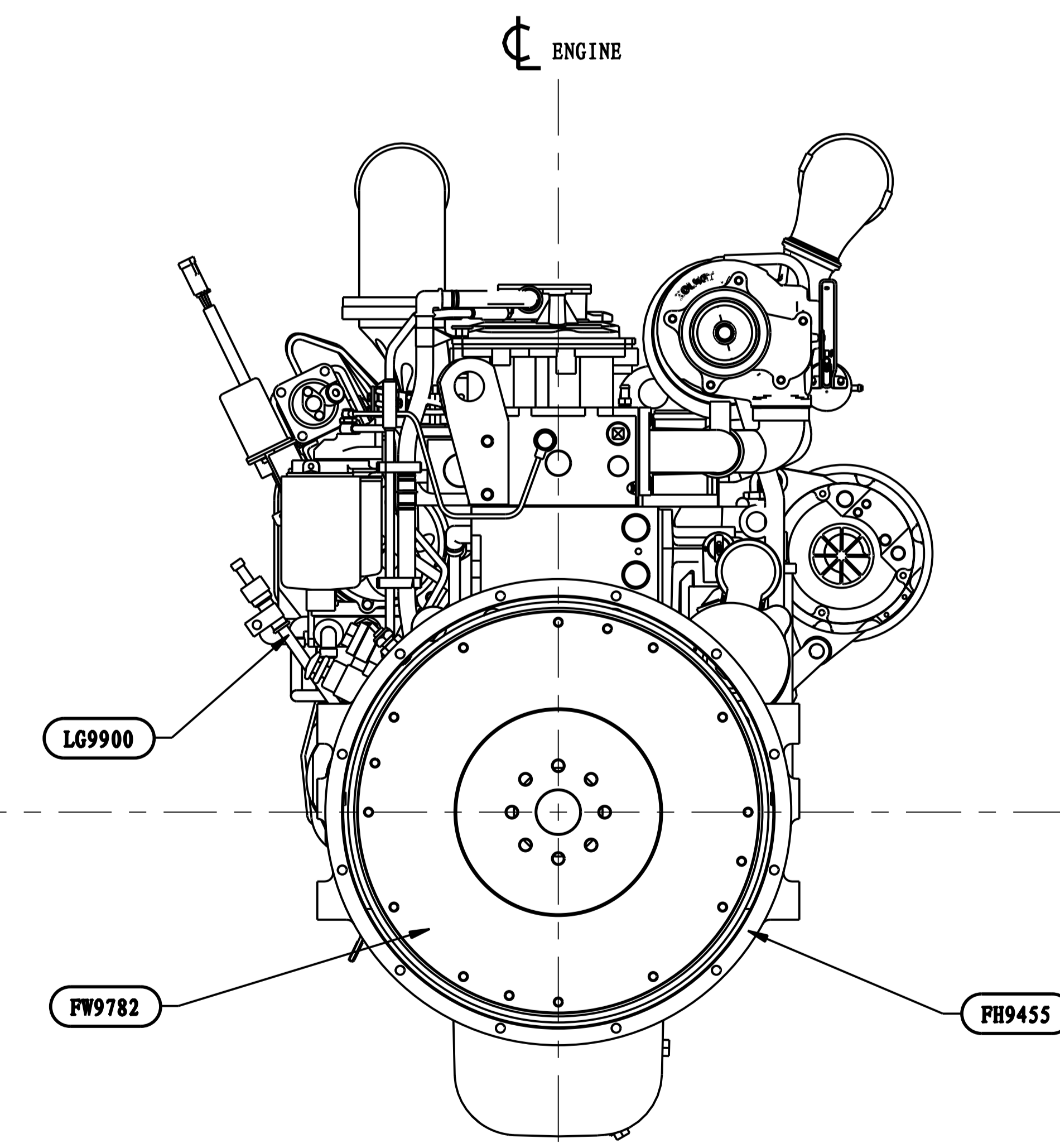
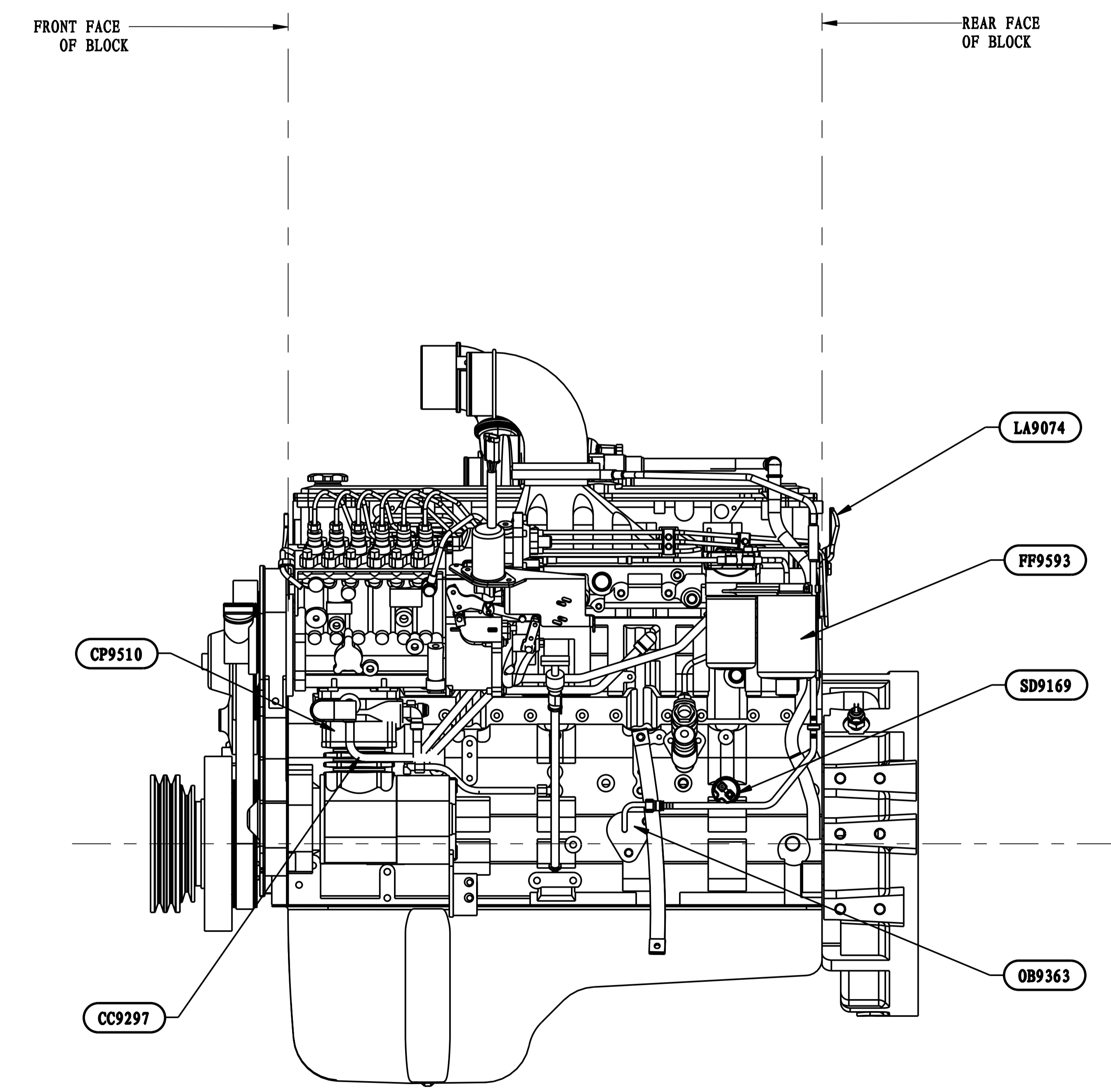
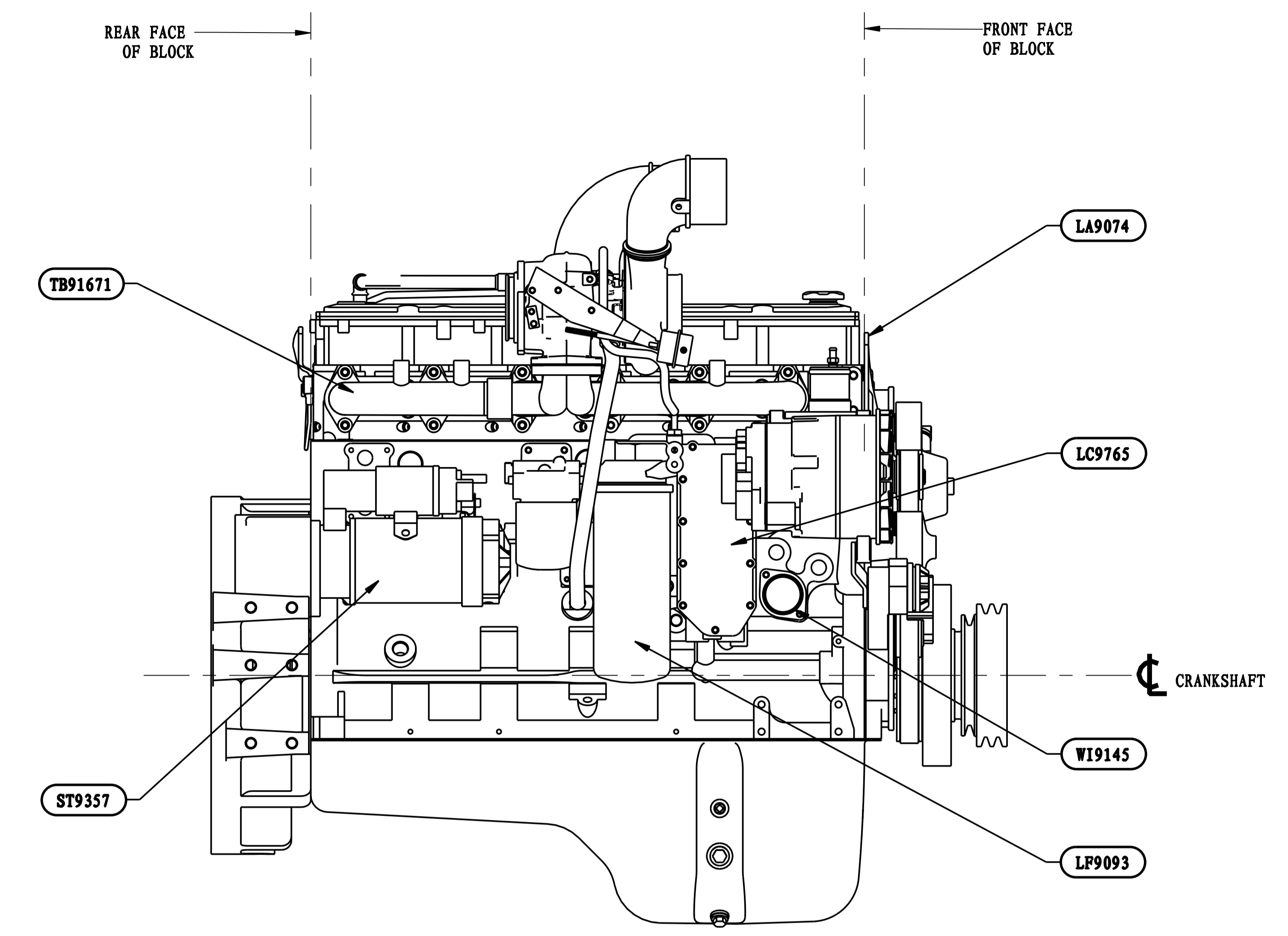
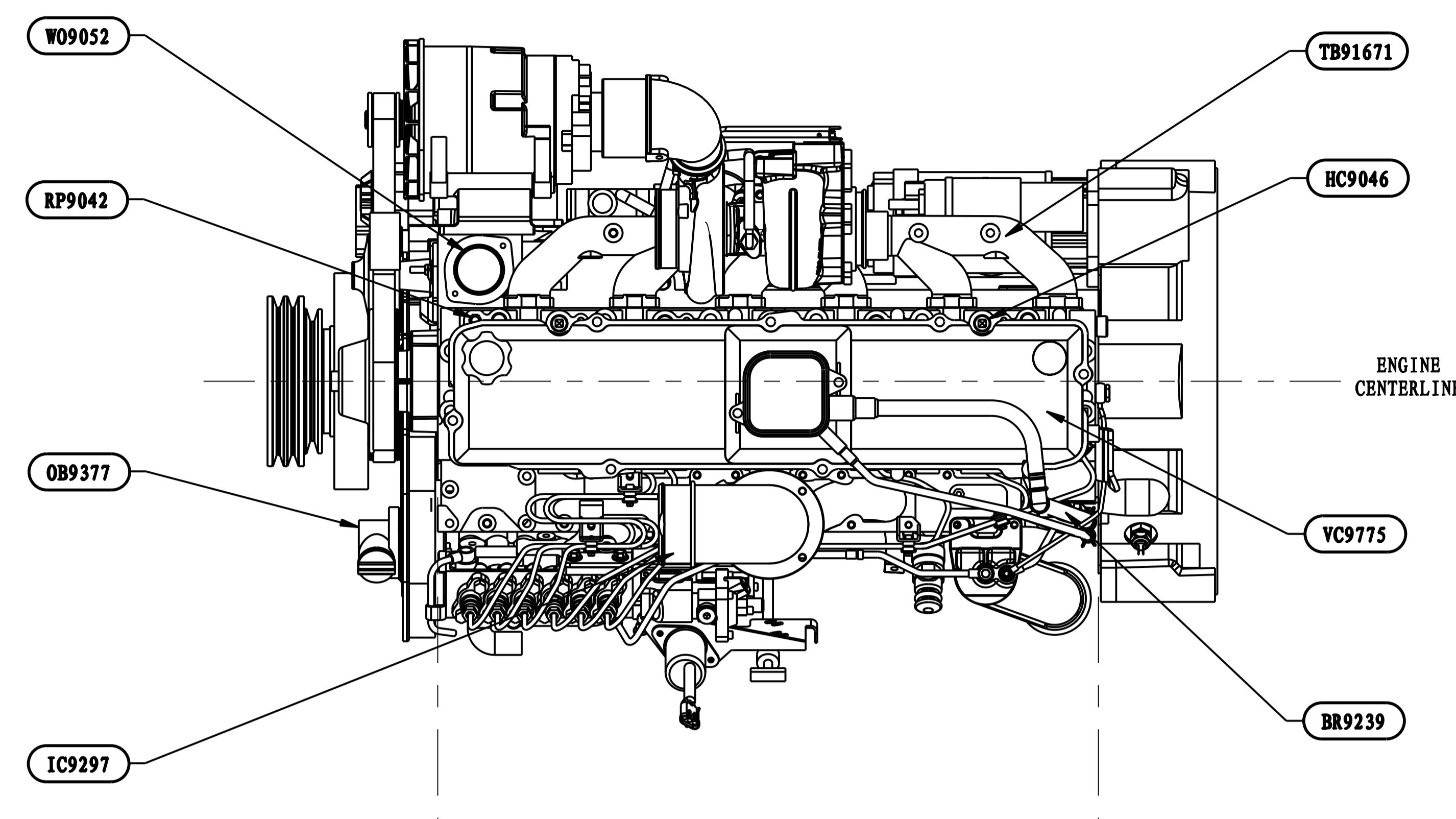
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APPD				

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REVISIONS			
ZONE	REV	DESCRIPTION	APP'D

REF. NO.	ITEM NO.	QTY.	ITEM NAME
1	AF9232	1	PULLEY, CRANKSHAFT
2	AH9168	1	AID, AIR HEATER STARTING
3	BR9239	1	BREATHER, CRANKCASE
4	CC9297	1	PLUMBING, CPR COOLANT
5	CH9066	1	AID, COO HEATER STARTING
6	CH9087	1	PLUMBING, COO HTR STG AID
7	C19124	1	ARRANGEMENT, CPR AIR INLET
8	CP9510	1	COMPRESSOR, AIR
9	DP9098	1	DRIVE, FRO GER TRA ACC
10	DL9117	1	LOCATION, DRAIN
11	EB9219	1	ALTERNATOR
12	EB97626	1	MOUNTING, ALTERNATOR
13	EO9104	1	DEVICE, SIGNAL, GENERATING
14	FA9310	1	DRIVE, FAN
15	FP9593	1	FILTER, FUEL
16	FH9455	1	HOUSING, FLYWHEEL
17	FS9849	1	PUMP, FUEL TRANSFER
18	FW9782	1	HOUSING, FLYWHEEL
19	HC9046	1	PLUMBING, CABIN HEATER
20	IC9227	1	CONNECTION, AIR INTAKE
21	IT9043	1	CONNECTION, AIR TRANSFER
22	LA9074	1	ARRANGEMENT, LIFTING
23	LF9093	1	FILTER, LUBRICATING OIL
24	LG9000	1	GAUGE, OIL LEVEL
25	OB9377	1	ARRANGEMENT, OIL FILL
26	OP9337	1	PAN, OIL
27	RP9042	1	CONNECTION, RAD PLUMBING
28	SD9113	1	SENSOR, TEMPERATURE
29	SD9169	1	SWITCH, OIL PRESSURE
30	ST9357	1	MOTOR, STARTING
31	TB91671	1	ARRANGEMENT, EXHAUST
32	TK9022	1	COOLER, TOR CONVERTER OIL
33	TP97236	1	PLUMBING, EXHAUST
34	VC9775	1	COVER, VALVE
35	WF9098	1	LOCATION, CRN RESISTOR
36	WI9145	1	CONNECTION, WATER INLET
37	WO9052	1	CONNECTION, WATER OUTLET
38	WP9101	1	PUMP, WATER
39	WP9452	1	TENSIONER BELT
40	WP9453	1	PULLEY, WATER PUMP



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DWN	UNCHECKED	SIZE	ITEM NUMBER S030116
APPD		SCALE:	ITEM CONTROL: MCS
APPD			SHEET 3 OF 2

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