

Performance Number: EM3867

Change Level: 00

SALES MODEL:	C7.1	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	2,300
MACHINE SALES MODEL:		PEAK TORQUE SPEED (RPM):	1,800
ENGINE POWER (BKW):	209.1	TORQUE RISE (%):	27
PEAK TORQUE (NM):	1,098.0	ASPIRATION:	TA
COMPRESSION RATIO:	15.8	AFTERCOOLER TYPE:	SWAC
RATING LEVEL:	B-RATING	AFTERCOOLER CIRCUIT TYPE:	JW+OC, AC
PUMP QUANTITY:	1	AFTERCOOLER TEMP (C):	27
FUEL TYPE:	DIESEL	JACKET WATER TEMP (C):	89
MANIFOLD TYPE:	WATER COOLED	TURBO CONFIGURATION:	SINGLE
GOVERNOR TYPE:	ELEC	TURBO QUANTITY:	1
ELECTRONICS TYPE:	ADEM5	TURBOCHARGER MODEL:	GTB5733BLN-48T-0.97
CAMSHAFT TYPE:	STANDARD	CERTIFICATION YEAR:	2017
IGNITION TYPE:	CI	CRANKCASE BLOWBY RATE (M3/HR):	9.6
INJECTOR TYPE:	CR	PISTON SPD @ RATED ENG SPD (M/SEC):	10.3
REF EXH STACK DIAMETER (MM):	152		
MAX OPERATING ALTITUDE (M):	1,000		

INDUSTRY	SUBINDUSTRY	APPLICATION
MARINE	DREDGE	MARINE PROPULSION
MARINE	FERRY	MARINE PROPULSION
MARINE	PLEASURE CRAFT	MARINE PROPULSION
MARINE	OFFSHORE	MARINE PROPULSION
MARINE	TUG & SALVAGE	MARINE PROPULSION
MARINE	GOVERNMENT	MARINE PROPULSION
MARINE	FISHING	MARINE PROPULSION
MARINE	INLAND WATERWAY	MARINE PROPULSION

## General Performance Data

### MAXIMUM LIMIT

ENGINE SPEED	ENGINE POWER	ENGINE TORQUE	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)
RPM	BKW	NM	KPA	G/BKW-HR	G/BKW-HR	L/HR	L/HR
2,300	209	868	1,555	225.9	215.1	55.6	52.9
2,200	209	907	1,625	222.0	211.4	54.6	52.0
2,000	209	998	1,788	217.8	207.4	53.6	51.0
1,800	207	1,098	1,968	218.3	207.9	53.2	50.6
1,600	178	1,062	1,903	213.2	203.0	44.6	42.5
1,400	136	928	1,662	223.4	212.7	35.7	34.0
1,200	94.0	748	1,340	233.2	222.1	25.8	24.6
1,000	65.0	621	1,112	231.7	220.6	17.7	16.9
800	45.0	537	962	225.6	214.9	11.9	11.4
600	34.0	541	970	237.4	226.0	9.5	9.0

### MAXIMUM LIMIT

ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
RPM	BKW	KPA	DEG C	DEG C	KPA	DEG C	KPA	DEG C
2,300	209	168.7	36.2	549.9	165.7	372.7	179	161.3
2,200	209	164.3	35.4	561.7	153.1	383.6	174	158.6
2,000	209	158.4	34.1	593.5	133.4	414.1	166	154.0
1,800	207	149.2	33.1	643.2	113.4	461.9	155	149.8
1,600	178	109.4	30.6	667.5	74.1	501.6	112	123.9
1,400	136	68.7	29.0	687.8	45.7	534.8	71	93.7
1,200	94.0	36.4	28.0	646.1	24.8	510.9	38	64.7
1,000	65.0	21.2	27.8	551.2	16.3	434.7	22	49.1
800	45.0	13.2	27.8	455.8	10.8	360.3	14	40.7
600	34.0	6.3	27.5	442.3	6.5	332.1	8	33.2

## General Performance Data (Continued)

### MAXIMUM LIMIT

ENGINE SPEED	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	ENGINE OUTLET WET EXH VOL FLOW RATE (0 DEG C AND 101 KPA)	ENGINE OUTLET DRY EXH VOL FLOW RATE (0 DEG C AND 101 KPA)
RPM	BKW	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
2,300	209	19.9	38.0	1,373.1	1,420.3	16.1	15.2
2,200	209	18.7	37.0	1,294.5	1,340.9	15.4	14.5
2,000	209	16.6	35.2	1,150.1	1,195.6	14.0	13.2
1,800	207	14.5	33.5	1,003.7	1,048.9	12.4	11.7
1,600	178	10.9	27.7	750.6	788.5	9.8	9.2
1,400	136	7.8	21.0	535.4	565.6	7.1	6.7
1,200	94.0	5.4	14.2	370.5	392.4	5.0	4.6
1,000	65.0	4.0	9.6	275.6	290.7	3.7	3.4
800	45.0	3.0	6.4	205.6	215.8	2.8	2.6
600	34.0	2.1	4.2	142.0	150.1	1.9	1.8

PROP DEMAND CURVE P

ENGINE SPEED	ENGINE POWER	ENGINE TORQUE	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)
RPM	BKW	NM	KPA	G/BKW-HR	G/BKW-HR	L/HR	L/HR
2,300	209	868	1,555	225.9	215.1	55.6	52.9
2,200	183	794	1,423	226.9	216.1	48.8	46.5
2,000	137	656	1,176	230.7	219.8	37.3	35.5
1,800	100	532	953	232.0	221.0	27.4	26.1
1,600	70.4	420	753	228.6	217.8	18.9	18.0
1,400	47.2	322	576	228.5	217.6	12.7	12.1
1,200	29.7	236	423	232.9	221.8	8.1	7.8
1,000	17.2	164	294	251.1	239.1	5.1	4.8
800	8.8	105	188	288.6	274.9	3.0	2.8
600	3.7	59	106	384.9	366.5	1.7	1.6

General Performance Data (Continued)

PROP DEMAND CURVE P

ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
RPM	BKW	KPA	DEG C	DEG C	KPA	DEG C	KPA	DEG C
2,300	209	168.7	36.2	549.9	165.7	372.7	179	161.3
2,200	183	147.9	34.1	541.4	139.3	372.4	158	148.5
2,000	137	109.0	31.0	528.4	92.9	379.3	114	120.8
1,800	100	63.9	28.7	497.8	53.3	378.6	68	86.9
1,600	70.4	31.5	27.7	440.9	29.3	344.5	34	58.5
1,400	47.2	16.4	27.3	359.4	17.5	290.9	18	43.3
1,200	29.7	8.7	27.4	277.5	11.3	232.1	10	35.2
1,000	17.2	4.1	27.4	218.0	7.1	184.3	5	30.5
800	8.8	2.7	27.6	166.7	4.9	144.1	4	28.5
600	3.7	2.0	27.9	127.5	3.1	115.8	2	27.3

PROP DEMAND CURVE P

ENGINE SPEED	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	ENGINE OUTLET WET EXH VOL FLOW RATE (0 DEG C AND 101 KPA)	ENGINE OUTLET DRY EXH VOL FLOW RATE (0 DEG C AND 101 KPA)
RPM	BKW	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
2,300	209	19.9	38.0	1,373.1	1,420.3	16.1	15.2
2,200	183	17.8	34.9	1,227.2	1,268.7	14.8	13.9
2,000	137	13.7	28.2	943.2	975.0	11.8	11.1
1,800	100	9.7	20.7	670.4	693.7	8.7	8.2
1,600	70.4	6.9	14.1	478.7	494.8	6.3	5.9
1,400	47.2	5.4	10.0	370.2	380.9	4.8	4.5
1,200	29.7	4.3	7.2	297.6	304.5	3.9	3.6
1,000	17.2	3.5	5.2	238.2	242.6	3.1	2.9
800	8.8	2.7	3.7	186.8	189.4	2.4	2.2
600	3.7	2.0	2.5	137.7	139.2	1.8	1.6

General Performance Data (Continued)

MAXIMUM POWER CURVE M

ENGINE SPEED	ENGINE POWER	ENGINE TORQUE	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)
RPM	BKW	NM	KPA	G/BKW-HR	G/BKW-HR	L/HR	L/HR
2,300	209	868	1,555	225.9	215.1	55.6	52.9
2,200	209	907	1,625	222.0	211.4	54.6	52.0
2,000	209	998	1,788	217.8	207.4	53.6	51.0
1,800	207	1,098	1,968	218.3	207.9	53.2	50.6
1,600	178	1,062	1,903	213.2	203.0	44.6	42.5
1,400	136	928	1,662	223.4	212.7	35.7	34.0
1,200	94.0	748	1,340	233.2	222.1	25.8	24.6
1,000	65.0	621	1,112	231.7	220.6	17.7	16.9
800	45.0	537	962	225.6	214.9	11.9	11.4
600	34.0	541	970	237.4	226.0	9.5	9.0

MAXIMUM POWER CURVE M

ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
RPM	BKW	KPA	DEG C	DEG C	KPA	DEG C	KPA	DEG C
2,300	209	168.7	36.2	549.9	165.7	372.7	179	161.3
2,200	209	164.3	35.4	561.7	153.1	383.6	174	158.6
2,000	209	158.4	34.1	593.5	133.4	414.1	166	154.0
1,800	207	149.2	33.1	643.2	113.4	461.9	155	149.8
1,600	178	109.4	30.6	667.5	74.1	501.6	112	123.9
1,400	136	68.7	29.0	687.8	45.7	534.8	71	93.7
1,200	94.0	36.4	28.0	646.1	24.8	510.9	38	64.7
1,000	65.0	21.2	27.8	551.2	16.3	434.7	22	49.1
800	45.0	13.2	27.8	455.8	10.8	360.3	14	40.7
600	34.0	6.3	27.5	442.3	6.5	332.1	8	33.2

General Performance Data (Continued)

MAXIMUM POWER CURVE M

ENGINE SPEED	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	ENGINE OUTLET WET EXH VOL FLOW RATE (0 DEG C AND 101 KPA)	ENGINE OUTLET DRY EXH VOL FLOW RATE (0 DEG C AND 101 KPA)
RPM	BKW	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
2,300	209	19.9	38.0	1,373.1	1,420.3	16.1	15.2
2,200	209	18.7	37.0	1,294.5	1,340.9	15.4	14.5
2,000	209	16.6	35.2	1,150.1	1,195.6	14.0	13.2
1,800	207	14.5	33.5	1,003.7	1,048.9	12.4	11.7
1,600	178	10.9	27.7	750.6	788.5	9.8	9.2
1,400	136	7.8	21.0	535.4	565.6	7.1	6.7
1,200	94.0	5.4	14.2	370.5	392.4	5.0	4.6
1,000	65.0	4.0	9.6	275.6	290.7	3.7	3.4
800	45.0	3.0	6.4	205.6	215.8	2.8	2.6
600	34.0	2.1	4.2	142.0	150.1	1.9	1.8

Heat Rejection Data

MAXIMUM LIMIT

ENGINE SPEED	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXH RECOVERY TO 177C	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
RPM	BKW	KW	KW	KW	KW	KW	KW	KW	KW	KW
2,300	209	148	9.2	147	162	38.4	48.8	209	561	598
2,200	209	148	9.1	141	162	38.4	45.3	209	551	587
2,000	209	147	9.1	137	166	38.2	39.2	209	541	576
1,800	207	153	9.2	135	176	39.7	33.3	207	537	572
1,600	178	138	9.2	106	151	35.8	19.8	178	451	480
1,400	136	121	9.2	84.7	120	31.4	9.7	136	361	385

# PERFORMANCE DATA[EM3867]

September 26, 2023

1,200	94.0	97.0	9.0	56.5	77.2	25.2	3.9	94.0	261	278
1,000	65.0	69.8	8.9	33.4	43.7	18.2	1.6	65.0	179	191
800	45.0	47.9	8.8	18.2	22.8	12.5	0.7	45.0	121	129
600	34.0	39.4	8.8	13.1	13.3	10.2	0.2	34.0	95.9	102

## Emissions Data

DIESEL

RATED SPEED NOMINAL DATA: 2300 RPM

<b>ENGINE POWER</b>	<b>BKW</b>	<b>209</b>	<b>157</b>	<b>105</b>	<b>52.3</b>	<b>20.9</b>
<b>PERCENT LOAD</b>	<b>%</b>	<b>100</b>	<b>75</b>	<b>50</b>	<b>25</b>	<b>10</b>
TOTAL NOX (AS NO2)	G/HR	942	556	331	216	181
TOTAL CO	G/HR	128	87	87	134	205
TOTAL HC	G/HR	10	11	10	10	14
TOTAL NOX (AS NO2)	G/HP-HR	3.32	2.61	2.33	3.05	6.36
TOTAL CO	G/HP-HR	0.45	0.41	0.62	1.90	7.21
TOTAL HC	G/HP-HR	0.03	0.05	0.07	0.14	0.49
TOTAL NOX (AS NO2)	LB/HR	2.08	1.23	0.73	0.48	0.40
TOTAL CO	LB/HR	0.28	0.19	0.19	0.30	0.45
TOTAL HC	LB/HR	0.02	0.02	0.02	0.02	0.03
DRY SMOKE OPACITY	%	0.5	0.6	0.7	1.8	1.4
BOSCH SMOKE NUMBER		0.22	0.26	0.43	1.21	0.94

## Regulatory Information

<b>CCNR STAGE II</b>	<b>2006 - ----</b>
GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN CHAPTER 8A OF RHINE VESSEL INSPECTION REGULATION (RVIR) AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE MARINE REGULATIONS.	

<b>EPA TIER 3</b>	<b>2013 - ----</b>			
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1042 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THIS ENGINE CONFORMS TO US EPA MARINE COMMERCIAL COMPRESSION-IGNITION EMISSION REGULATIONS. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE MARINE REGULATIONS.				
<b>Locality</b>	<b>Agency</b>	<b>Regulation</b>	<b>Tier/Stage</b>	<b>Max Limits - G/BKW - HR</b>
U.S. (INCL CALIF)	EPA	MARINE COMMERCIAL	TIER 3	CO: 5.0 NOx + HC: 5.4 PM: 0.12

<b>EU ----</b>	<b>2007 - ----</b>			
GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 97/68/EC (AS AMENDED BY EU 2004/26/EC) AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE MARINE REGULATIONS.				
<b>Locality</b>	<b>Agency</b>	<b>Regulation</b>	<b>Tier/Stage</b>	<b>Max Limits - G/BKW - HR</b>
EUROPE	EU	MARINE COMMERCIAL	----	CO: 5.0 NOx + HC: 7.2 PM: 0.30

<b>EU STAGE II</b>	<b>2016 - ----</b>			
GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 94/25/EC (REPEALED BY EU 2013/53/EU) AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE MARINE RECREATIONAL CRAFT DIRECTIVE.				
<b>Locality</b>	<b>Agency</b>	<b>Regulation</b>	<b>Tier/Stage</b>	<b>Max Limits - G/BKW - HR</b>
EUROPE	EU	MARINE RECREATIONAL CRAFT DIRECTIVE	STAGE II	CO: 5.0 NOx + HC: 5.8 PM: 0.14

<b>IMO II</b>	<b>2011 - ----</b>
GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN REGULATION 13 OF REVISED ANNEX VI OF MARPOL 73/78 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THIS ENGINE CONFORMS TO INTERNATIONAL MARINE ORGANIZATION'S (IMO) MARINE COMPRESSION-IGNITION EMISSION REGULATIONS.	

## Cross Reference

<b>Test Spec</b>	<b>Setting</b>	<b>Engine Arrangement</b>	<b>Engineering Model</b>	<b>Engineering Model Version</b>	<b>Start Effective Serial Number</b>	<b>End Effective Serial Number</b>
4581945	PP7823	5408697	EE526	AT	GJN0001	
4581955	PP7245	5408698	EE526	AT	GJN0001	

4581945	PP7823	5418226	EE526	AT	GJN0001
4581955	PP7245	5418227	EE526	AT	GJN0001

Supplementary Data

Type	Classification	Performance Number
CHART	BSFC CONTOUR PLOT	EM4116

Performance Parameter Reference

<b>Parameters Reference:DM9600-14</b> PERFORMANCE DEFINITIONS
--

PERFORMANCE DEFINITIONS DM9600

APPLICATION:

Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.

PERFORMANCE PARAMETER TOLERANCE FACTORS:

- Power +/- 3%
- Torque +/- 3%
- Exhaust stack temperature +/- 8%
- Inlet airflow +/- 5%
- Intake manifold pressure-gage +/- 10%
- Exhaust flow +/- 6%
- Specific fuel consumption +/- 3%
- Fuel rate +/- 5%
- Specific DEF consumption +/- 3%
- DEF rate +/- 5%
- Heat rejection +/- 5%
- Heat rejection exhaust only +/- 10%
- Heat rejection CEM only +/- 10%

Heat Rejection values based on using treated water.

Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.

On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.

On 3500 and C175 engines, at speeds below Peak Torque these values are provided for reference only, and may not meet the tolerance listed.

These values do not apply to C280/3600. For these models, see the tolerances listed below.

C280/3600 HEAT REJECTION TOLERANCE FACTORS:

- Heat rejection +/- 10%
- Heat rejection to Atmosphere +/- 50%
- Heat rejection to Lube Oil +/- 20%
- Heat rejection to Aftercooler +/- 5%

TEST CELL TRANSDUCER TOLERANCE FACTORS:

- Torque +/- 0.5%
- Speed +/- 0.2%
- Fuel flow +/- 1.0%
- Temperature +/- 2.0 C degrees
- Intake manifold pressure +/- 0.1 kPa

OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.

REFERENCE ATMOSPHERIC INLET AIR

FOR 3500 ENGINES AND SMALLER

SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.

FOR 3600 ENGINES

Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated

# PERFORMANCE DATA[EM3867]

September 26, 2023

aftercooler water temperature.

MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE

Location for air temperature measurement air cleaner inlet at stabilized operating conditions.

REFERENCE EXHAUST STACK DIAMETER

The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.

REFERENCE FUEL

DIESEL

Reference fuel is #2 distillate diesel with a 35API gravity;

A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 15 deg C (59 deg F), where the density is

850 G/Liter (7.0936 Lbs/Gal).

GAS

Reference natural gas fuel has a lower heating value of 33.74 KJ/L

(905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500

BTU/CU FT) lower heating value gas. Propane ratings are based on

87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS

EXTERNAL AUXILIARY LOAD

Engine corrected gross output includes the power required to drive

standard equipment; lube oil, scavenge lube oil, fuel transfer,

common rail fuel, separate circuit aftercooler and jacket water

pumps. Engine net power available for the external (flywheel)

load is calculated by subtracting the sum of auxiliary load from

the corrected gross flywheel out put power. Typical auxiliary

loads are radiator cooling fans, hydraulic pumps, air compressors

and battery charging alternators. For Tier 4 ratings additional

Parasitic losses would also include Intake, and Exhaust

Restrictions.

ALTITUDE CAPABILITY

Altitude capability is the maximum altitude above sea level at

standard temperature and standard pressure at which the engine

could develop full rated output power on the current performance

data set.

Standard temperature values versus altitude could be seen on

TM2001.

When viewing the altitude capability chart the ambient temperature

is the inlet air temp at the compressor inlet.

Engines with ADEM MEUI and HEUI fuel systems operating at

conditions above the defined altitude capability derate for

atmospheric pressure and temperature conditions outside the values

defined, see TM2001.

Mechanical governor controlled unit injector engines require a

setting change for operation at conditions above the altitude

defined on the engine performance sheet. See your Caterpillar

technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE

TMI Emissions information is presented at 'nominal' and 'Potential

Site Variation' values for standard ratings. No tolerances are

applied to the emissions data. These values are subject to change

at any time. The controlling federal and local emission

requirements need to be verified by your Caterpillar technical

representative.

Customer's may have special emission site requirements that need

to be verified by the Caterpillar Product Group engineer.

EMISSION CYCLE LIMITS:

Cycle emissions Max Limits apply to cycle-weighted averages only.

Emissions at individual load points may exceed the cycle-weighted

limit.

WET & DRY EXHAUST/EMISSIONS DESCRIPTION:

Wet - Total exhaust flow or concentration of total exhaust flow

Dry - Total exhaust flow minus water vapor or concentration of exhaust

flow with water vapor excluded

EMISSIONS DEFINITIONS:

Emissions : DM1176

EMISSION CYCLE DEFINITIONS

1. For constant-speed marine engines for ship main propulsion,

including,diesel-electric drive, test cycle E2 shall be applied,

for controllable-pitch propeller sets

test cycle E2 shall be applied.

2. For propeller-law-operated main and propeller-law-operated

auxiliary engines the test cycle E3 shall be applied.

3. For constant-speed auxiliary engines test cycle D2 shall be

applied.

4. For variable-speed, variable-load auxiliary engines, not

included above, test cycle C1 shall be applied.

HEAT REJECTION DEFINITIONS:

Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS:

3500: EM1500

RATING DEFINITIONS:

Agriculture : TM6008

## PERFORMANCE DATA[EM3867]

September 26, 2023

Fire Pump : TM6009  
Generator Set : TM6035  
Generator (Gas) : TM6041  
Industrial Diesel : TM6010  
Industrial (Gas) : TM6040  
Irrigation : TM5749  
Locomotive : TM6037  
Marine Auxiliary : TM6036  
Marine Prop (Except 3600) : TM5747  
Marine Prop (3600 only) : TM5748  
MSHA : TM6042  
Oil Field (Petroleum) : TM6011  
Off-Highway Truck : TM6039  
On-Highway Truck : TM6038  
SOUND DEFINITIONS:  
Sound Power : DM8702  
Sound Pressure : TM7080  
Date Released : 10/27/21