PERFORMANCE DATA [N5F01527]

(N5F01527)-ENGINE (CDE155645A)-CEM

AUGUST 14, 2023

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Perf No: EM0287 **Change Level:** 02

General Heat Rejection Sound Emissions Regulatory Altitude Derate Cross Reference Supplementary Data Perf Param Ref

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SALES MODEL:	C15	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	2,100
MACHINE SALES MODEL:		**PEAK TORQUE SPEED (RPM):**	1,400
ENGINE POWER (BHP):	540	**TORQUE RISE (%):**	35
PEAK TORQUE (FT-LB):	1,823.3	**ASPIRATION:**	TA
COMPRESSION RATIO:	17	**AFTERCOOLER TYPE:**	ATAAC
RATING LEVEL:	INDUSTRIAL C - INTERMITTENT	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
PUMP QUANTITY:	1	**INLET MANIFOLD AIR TEMP (F):**	122
FUEL TYPE:	DIESEL	**JACKET WATER TEMP (F):**	192.2
MANIFOLD TYPE:	DRY	**TURBO CONFIGURATION:**	SINGLE
GOVERNOR TYPE:	ELEC	**TURBO QUANTITY:**	1
ELECTRONICS TYPE:	ADEM4	**TURBOCHARGER MODEL:**	GT4502 1.06 A/R
CAMSHAFT TYPE:	STANDARD	**CERTIFICATION YEAR:**	2013
IGNITION TYPE:	CI		
INJECTOR TYPE:	EUI		
REF EXH STACK DIAMETER (IN):	6		
MAX OPERATING ALTITUDE (FT):	7,500		

INDUSTRY	SUB INDUSTRY	APPLICATION
INDUSTRIAL	GENERAL INDUSTRIAL	INDUSTRIAL
INDUSTRIAL	MATERIAL HANDLING	INDUSTRIAL
INDUSTRIAL	CONSTRUCTION	INDUSTRIAL
OIL AND GAS	LAND DRILLING	INDUSTRIAL
INDUSTRIAL	AGRICULTURE	INDUSTRIAL
OIL AND GAS	WELL SERVICING	INDUSTRIAL
OIL AND GAS	LAND PRODUCTION	INDUSTRIAL
INDUSTRIAL	FORESTRY	INDUSTRIAL

General Performance Data Top

Note(s)
INLET MANIFOLD AIR TEMPERATURE ("INLET MFLD TEMP") FOR THIS CONFIGURATION IS MEASURED AT THE OUTLET OF THE AFTERCOOLER.

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	BHP	LB-FT	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR
2,100	540	1,352	220	0.362	0.358	27.8	27.5
2,000	540	1,419	231	0.358	0.355	27.4	27.2
1,900	540	1,494	243	0.348	0.345	26.6	26.4
1,800	539	1,573	256	0.336	0.333	25.8	25.5
1,700	534	1,649	268	0.333	0.330	25.2	25.0
1,600	523	1,717	279	0.331	0.328	24.5	24.3
1,500	507	1,775	289	0.334	0.331	23.9	23.7
1,400	485	1,821	296	0.333	0.330	23.0	22.8
1,300	440	1,777	289	0.330	0.327	20.6	20.4
1,200	392	1,714	279	0.335	0.331	18.6	18.4
1,100	339	1,620	263	0.346	0.343	16.7	16.5

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)
1,000	283	1,486	242	0.347	0.344	14.0	13.8
900	232	1,354	220	0.336	0.332	11.0	10.9
800	185	1,215	198	0.348	0.344	9.1	9.0
700	135	1,016	165	0.350	0.346	6.7	6.6
600	92.5	810	132	0.360	0.357	4.7	4.7

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	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
2,100	540	61.7	122.0	1,111.1	84.9	819.3	65	365.4
2,000	540	62.9	122.0	1,119.6	81.5	836.1	66	364.3
1,900	540	62.3	122.0	1,109.2	75.5	836.2	65	356.4
1,800	539	59.9	122.0	1,109.4	68.1	846.0	62	348.0
1,700	534	58.5	122.0	1,117.4	63.8	859.2	61	343.3
1,600	523	58.2	122.0	1,133.4	61.8	877.4	60	342.3
1,500	507	57.8	122.0	1,158.6	59.6	901.2	60	343.3
1,400	485	56.5	122.0	1,183.7	56.8	926.2	58	342.7
1,300	440	48.9	122.0	1,196.7	46.2	958.4	50	321.7
1,200	392	43.8	122.0	1,229.6	39.4	1,005.2	45	307.5
1,100	339	38.7	122.0	1,263.8	33.3	1,050.7	40	292.9
1,000	283	33.0	122.0	1,213.3	29.2	1,021.6	34	269.3
900	232	20.2	122.0	1,145.5	17.6	995.6	21	209.8
800	185	13.3	122.0	1,104.3	11.6	982.8	14	172.7
700	135	7.8	122.0	1,030.0	7.3	929.2	8	141.0
600	92.5	4.1	122.0	883.4	4.4	808.5	4	115.4

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	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
RPM	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
2,100	540	1,109.8	1,993.0	4,809.6	5,006.5	766.1	696.0
2,000	540	1,082.0	1,975.9	4,678.1	4,872.7	749.8	680.3
1,900	540	1,035.2	1,917.5	4,458.3	4,647.3	727.5	659.4
1,800	539	970.0	1,850.5	4,156.6	4,339.5	696.8	629.6
1,700	534	928.7	1,816.4	3,968.7	4,147.5	677.1	610.3
1,600	523	902.9	1,802.1	3,850.5	4,024.6	662.7	597.3
1,500	507	859.9	1,773.1	3,660.0	3,829.9	640.6	576.0
1,400	485	819.5	1,734.1	3,483.1	3,646.2	615.2	553.0
1,300	440	708.5	1,586.8	2,998.1	3,144.4	550.2	492.7
1,200	392	625.6	1,478.6	2,638.5	2,770.7	496.3	443.1
1,100	339	550.9	1,364.9	2,319.3	2,437.8	444.3	395.7
1,000	283	501.0	1,230.8	2,107.1	2,206.0	408.5	367.3
900	232	361.7	916.3	1,516.3	1,594.2	309.6	275.8
800	185	276.0	712.1	1,157.6	1,222.1	242.7	214.4
700	135	209.5	527.0	877.2	924.8	186.6	165.2
600	92.5	162.9	376.0	681.4	714.7	145.8	130.5

Heat Rejection Data Top

ENGINE SPEED	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
RPM	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
2,100	540	13,885	3,343	19,607	9,952	2,764	4,821	22,918	60,347	64,285
2,000	540	13,343	3,240	19,697	10,049	2,732	4,702	22,918	59,647	63,539
1,900	540	12,899	3,148	18,639	9,596	2,654	4,320	22,918	57,939	61,720
1,800	539	12,544	3,046	17,561	9,161	2,628	3,942	22,861	56,074	59,733

ENGINE SPEED	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
1,700	534	11,915	2,862	17,405	9,007	2,570	3,738	22,634	54,827	58,405
1,600	523	11,135	2,670	17,442	9,063	2,443	3,579	22,179	53,333	56,813
1,500	507	10,650	2,552	17,418	9,041	2,385	3,495	21,496	52,072	55,470
1,400	485	10,119	2,450	16,937	9,017	2,290	3,249	20,587	49,997	53,260
1,300	440	9,173	2,246	15,337	8,244	2,150	2,484	18,653	44,851	47,778
1,200	392	8,362	2,026	14,224	7,858	2,026	2,026	16,606	40,463	43,103
1,100	339	7,545	1,819	13,349	7,425	1,896	1,664	14,388	36,323	38,693
1,000	283	6,337	1,519	11,606	6,401	1,649	1,164	11,999	30,349	32,330
900	232	5,215	1,272	8,928	4,458	1,450	585	9,838	23,879	25,437
800	185	4,741	1,138	7,017	3,361	1,412	253	7,848	19,781	21,072
700	135	3,825	933	5,053	2,316	1,150	62	5,744	14,595	15,547
600	92.5	2,632	631	3,590	1,398	783	-22	3,924	10,211	10,878

Sound Data Top

Note(s)
SOUND DATA REPRESENTATIVE OF NOISE PRODUCED BY THE ENGINE AND AFTERTREATMENT.

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

ENGINE SPEED	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,100	540	98.3	70.1	70.0	74.1	77.8	81.5	85.7	88.2	89.2	88.6	88.6
2,000	540	98.1	71.5	69.5	74.8	77.8	81.2	85.6	88.0	89.0	88.4	88.5
1,900	540	97.0	74.7	69.4	73.3	77.7	80.4	84.7	87.0	87.7	87.1	87.2
1,800	539	94.8	71.6	72.0	72.1	76.2	79.2	83.8	84.9	85.0	84.6	84.7
1,700	534	94.2	68.3	73.0	72.5	75.1	79.0	83.3	84.5	84.6	84.3	84.2
1,600	523	93.8	65.1	71.9	72.9	74.3	78.7	83.1	84.1	84.1	84.0	83.8
1,500	507	92.7	66.0	69.8	72.3	73.7	78.3	82.3	82.8	83.1	82.7	82.7
1,400	485	91.4	66.8	69.0	71.8	72.9	77.6	81.3	81.4	81.6	81.2	81.2
1,300	440	88.8	66.9	70.0	69.5	71.1	75.6	78.9	78.4	78.9	78.4	78.7
1,200	392	86.2	67.1	71.7	67.0	69.6	74.1	76.3	75.5	76.3	75.9	76.3
1,100	339	83.6	66.7	69.6	64.7	68.0	72.5	73.1	72.5	73.3	73.0	73.9
1,000	283	80.1	64.4	61.3	64.5	65.2	68.4	69.5	68.3	69.3	69.2	70.3
900	232	76.0	61.9	50.2	62.3	61.6	63.3	65.3	64.1	64.9	65.1	65.7

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

ENGINE SPEED	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,100	540	87.7	87.2	85.6	84.8	87.4	86.4	81.9	79.8	78.6	76.4	73.5
2,000	540	87.6	87.0	85.3	84.6	87.5	86.7	81.6	79.3	78.1	75.8	73.0
1,900	540	86.4	85.8	84.1	83.4	86.5	84.8	80.2	78.0	76.9	74.6	71.7
1,800	539	83.9	83.2	81.3	81.0	85.9	82.5	77.6	75.5	74.3	71.8	68.7
1,700	534	83.5	82.7	80.9	80.7	84.4	81.5	76.9	74.9	73.7	71.3	68.2
1,600	523	83.2	82.4	80.8	80.4	83.5	80.6	76.5	74.5	73.3	70.9	67.8
1,500	507	82.0	81.3	79.7	79.9	82.5	79.4	75.4	73.3	72.1	69.5	66.3
1,400	485	80.6	79.8	78.1	78.9	80.9	77.7	73.8	71.9	70.5	67.9	64.6
1,300	440	77.9	77.0	75.6	76.0	77.0	74.4	71.2	69.0	67.5	64.8	61.1
1,200	392	75.3	74.4	73.2	73.1	73.2	71.3	68.9	66.1	64.7	61.7	57.7
1,100	339	72.8	72.1	70.9	70.9	70.0	68.4	66.7	62.9	61.6	58.3	53.9
1,000	283	69.6	69.2	67.5	68.4	66.9	64.5	63.7	58.4	56.9	53.1	48.8
900	232	66.5	65.7	63.6	65.7	63.9	59.8	60.6	53.1	52.2	47.7	43.7

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

ENGINE SPEED	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,100	540	115.1	74.9	77.8	88.4	90.8	97.0	93.9	100.5	102.2	104.3	105.5
2,000	540	114.4	73.3	78.8	86.1	90.7	94.0	91.1	102.1	101.3	101.5	104.1
1,900	540	115.0	77.3	78.2	86.5	88.7	91.2	89.9	101.2	102.9	102.7	105.8
1,800	539	113.5	72.0	77.8	82.7	86.7	90.0	89.6	100.8	101.4	100.9	104.0
1,700	534	113.0	71.0	77.5	83.8	86.0	89.2	89.2	99.5	100.9	100.6	103.4
1,600	523	112.7	71.7	77.3	85.4	84.5	87.9	88.1	97.3	100.3	100.3	102.9
1,500	507	111.6	70.3	77.8	82.2	82.4	86.1	87.0	97.1	98.9	99.3	101.7
1,400	485	110.7	69.0	77.7	78.5	80.0	83.8	86.5	97.6	98.1	98.3	100.6
1,300	440	110.1	67.2	75.9	75.6	78.1	83.4	86.6	96.4	97.1	97.5	100.0
1,200	392	109.6	65.7	73.9	73.4	76.9	83.4	87.1	95.0	96.2	97.0	99.5
1,100	339	109.0	67.4	70.7	71.9	77.2	83.8	87.0	93.8	95.6	96.1	99.2
1,000	283	108.0	70.8	65.1	71.1	78.3	84.4	85.8	93.2	95.4	94.9	98.3
900	232	106.9	75.0	58.5	69.7	79.6	84.2	84.9	93.2	94.8	94.0	96.3

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

ENGINE SPEED	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
RPM	BHP	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
2,100	540	105.2	104.7	105.7	106.3	105.0	102.8	101.4	98.8	95.4	93.3	91.6
2,000	540	105.0	104.2	104.6	106.6	104.3	102.2	100.8	97.8	94.8	92.7	91.2
1,900	540	105.0	104.5	104.7	107.4	105.0	102.8	101.1	98.2	95.3	92.4	90.9
1,800	539	104.0	102.7	103.3	105.2	103.4	101.6	100.1	97.2	94.7	92.5	90.7
1,700	534	103.1	102.8	103.1	104.8	102.9	101.3	99.3	96.7	94.3	91.9	90.0
1,600	523	102.3	103.2	103.2	105.0	102.8	101.1	98.6	96.3	93.5	91.2	89.5
1,500	507	100.9	101.4	102.2	103.9	102.0	100.4	97.9	95.5	92.6	90.8	89.4
1,400	485	99.4	100.1	101.0	102.9	101.4	100.0	97.1	94.8	92.0	90.5	89.2
1,300	440	99.5	99.8	100.4	101.9	100.8	99.4	96.4	94.0	91.3	89.7	88.5
1,200	392	100.1	100.0	99.9	100.9	100.2	98.6	95.6	92.9	90.4	88.7	87.7
1,100	339	99.8	99.4	99.1	100.0	99.7	97.9	95.4	91.9	89.8	88.2	87.1
1,000	283	98.5	98.0	97.7	99.0	99.1	97.1	95.2	90.7	88.5	87.4	86.6
900	232	97.5	96.3	96.3	98.0	98.2	96.0	94.4	88.8	86.8	86.7	86.9

Emissions Data Top

Units Filter All Units ▼

DIESEL

RATED SPEED NOMINAL DATA: 2100 RPM

ENGINE POWER		BHP	540	405	270	135	54.0
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	56	13	9	19	113
TOTAL CO		G/HR	2	1	1	1	1
TOTAL HC		G/HR	7	5	4	3	3
TOTAL CO2		KG/HR	284	214	168	98	63
PART MATTER		G/HR	0.2	0.2	0.1	0.2	0.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	46.0	14.0	11.6	40.8	413.3
TOTAL CO	(CORR 5% O2)	MG/NM3	1.7	1.2	1.5	2.6	3.6
TOTAL HC	(CORR 5% O2)	MG/NM3	5.0	4.3	5.2	5.1	9.1
PART MATTER	(CORR 5% O2)	MG/NM3	0.1	0.2	0.1	0.4	0.3
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	22	7	6	20	201
TOTAL CO	(CORR 5% O2)	PPM	1	1	1	2	3
TOTAL HC	(CORR 5% O2)	PPM	9	8	10	9	17
TOTAL NOX (AS NO2)		G/HP-HR	0.10	0.03	0.03	0.14	2.10
TOTAL CO		G/HP-HR	0.00	0.00	0.00	0.01	0.02
TOTAL HC		G/HP-HR	0.01	0.01	0.02	0.02	0.05
PART MATTER		G/HP-HR	0.00	0.00	0.00	0.00	0.00
TOTAL NOX (AS NO2)		LB/HR	0.12	0.03	0.02	0.04	0.25
TOTAL CO		LB/HR	0.00	0.00	0.00	0.00	0.00
TOTAL HC		LB/HR	0.02	0.01	0.01	0.01	0.01
TOTAL CO2		LB/HR	625	472	371	215	140
PART MATTER		LB/HR	0.00	0.00	0.00	0.00	0.00
OXYGEN IN EXH		%	8.4	9.9	12.3	14.4	16.4

SECONDARY SPEED NOMINAL DATA: 1800 RPM

ENGINE POWER		BHP	539	404	270	135	53.9
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	37	11	4	2	98
TOTAL CO		G/HR	2	1	1	1	1
TOTAL HC		G/HR	7	5	4	2	3
TOTAL CO2		KG/HR	264	200	151	83	50
PART MATTER		G/HR	0.1	0.2	0.1	0.1	0.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	32.3	13.5	3.8	2.7	460.8
TOTAL CO	(CORR 5% O2)	MG/NM3	1.5	1.5	1.5	2.9	4.2
TOTAL HC	(CORR 5% O2)	MG/NM3	5.2	4.5	4.7	4.3	10.1
PART MATTER	(CORR 5% O2)	MG/NM3	0.1	0.2	0.2	0.2	0.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	16	7	2	1	224
TOTAL CO	(CORR 5% O2)	PPM	1	1	1	2	3
TOTAL HC	(CORR 5% O2)	PPM	10	8	9	8	19
TOTAL NOX (AS NO2)		G/HP-HR	0.07	0.03	0.01	0.02	1.84
TOTAL CO		G/HP-HR	0.00	0.00	0.00	0.01	0.02
TOTAL HC		G/HP-HR	0.01	0.01	0.01	0.01	0.05
PART MATTER		G/HP-HR	0.00	0.00	0.00	0.00	0.00
TOTAL NOX (AS NO2)		LB/HR	0.08	0.02	0.01	0.01	0.22
TOTAL CO		LB/HR	0.00	0.00	0.00	0.00	0.00
TOTAL HC		LB/HR	0.02	0.01	0.01	0.00	0.01
TOTAL CO2		LB/HR	583	442	333	182	111
PART MATTER		LB/HR	0.00	0.00	0.00	0.00	0.00
OXYGEN IN EXH		%	7.7	8.9	11.0	12.9	16.3

Regulatory Information Top

EPA TIER 4 FINAL — **2014 - ----**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1039 SUBPART F AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 4 FINAL	CO: 3.5 NOx: 0.4 HC: 0.19 PM: 0.02

EU STAGE IV — **2014 - ----**

GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 2010/26/EU, ECE REGULATION NO. 96 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSION VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
EUROPE	EU	NON-ROAD	STAGE IV	CO: 3.5 NOx: 0.4 HC: 0.19 PM: 0.025

EU STAGE V — **2019 - ----**

GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 2016/1628, ECE REGULATION NO. 96 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSION VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
EUROPE	EU	NON-ROAD	STAGE V	CO: 3.5 NOx: 0.4 HC: 0.19 PM: 0.015

Altitude Derate Data Top

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)											
0	540	540	540	540	538	535	531	528	524	521	540
1,000	540	540	540	537	533	530	526	523	519	516	538

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	140	NORMAL
2,000	540	537	535	532	529	525	522	518	515	511	534
3,000	535	532	530	527	524	521	517	514	510	502	530
4,000	530	528	525	523	519	516	513	509	497	480	527
5,000	526	523	521	518	515	511	505	491	475	457	523
6,000	520	518	516	513	510	503	487	469	450	433	519
7,000	514	512	510	505	499	485	463	442	424	408	514
8,000	509	501	496	488	476	459	438	419	401	385	506
9,000	491	485	479	471	458	440	416	390	369	352	495
10,000	471	466	461	453	439	416	380	349	332	317	476
11,000	450	446	442	434	420	392	341	320	307	295	454
12,000	436	430	424	416	402	382	331	310	297	284	447
13,000	407	400	394	384	368	331	309	296	283	269	428
14,000	362	354	350	340	314	302	290	276	261	245	377
15,000	325	316	313	308	296	283	269	253	244	243	342

Cross Reference Top

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
3717459	PP6975	3857723	EE126	-	N5F00001	
3717459	PP6975	3857724	EE126	-	N5F00001	
3717459	PP6975	4240053	EE126	-	N5F00001	
3717459	PP6975	4240054	EE126	-	N5F00001	
4486240	PP7719	5099219	EE512	-	PP500001	
4486240	PP7719	5157536	EE512	-	PP500001	
5643937	PP7609	5996454	EE618	-	R5H00001	
5643937	PP7609	5996468	EE618	-	R5H00001	
5643933	PP7604	5996469	EE616	-	N5H00001	
5643933	PP7604	5996470	EE616	-	N5H00001	

Supplementary Data Top

Type	Classification	Performance Number
AMBIENT TEMP	50C (122F)	EM0694

This performance data is supplementary data for:
EM0694

Performance Parameter Reference Top

Parameters Reference: DM9600 - 14

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 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
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