

Perf No: EM0784

Change Level: 02

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SALES MODEL:	C9.3	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,500
MACHINE SALES MODEL:		HERTZ:	50
ENGINE POWER (BKW):	270.0	ASPIRATION:	TA
COMPRESSION RATIO:	17	AFTERCOOLER TYPE:	SWAC
RATING LEVEL:	PRIME	AFTERCOOLER CIRCUIT TYPE:	JW+OC, AC
PUMP QUANTITY:	2	AFTERCOOLER TEMP (C):	47
FUEL TYPE:	DIESEL	JACKET WATER TEMP (C):	99
MANIFOLD TYPE:	WATER COOLED	TURBO CONFIGURATION:	SINGLE
GOVERNOR TYPE:	ELEC	TURBO QUANTITY:	1
ELECTRONICS TYPE:	ADEM4	TURBOCHARGER MODEL:	S330W 0.75 A/R
CAMSHAFT TYPE:	STANDARD	CERTIFICATION YEAR:	2016
IGNITION TYPE:	CI	PISTON SPD @ RATED ENG SPD (M/SEC):	7.5
INJECTOR TYPE:	CR		
REF EXH STACK DIAMETER (MM):	152		
MAX OPERATING ALTITUDE (M):	300		

INDUSTRY	SUB INDUSTRY	APPLICATION
MARINE	FERRY	MARINE AUXILIARY ENGINE
MARINE	PLEASURE CRAFT	MARINE AUXILIARY ENGINE
MARINE	TUG & SALVAGE	MARINE AUXILIARY ENGINE
MARINE	FISHING	MARINE AUXILIARY ENGINE
MARINE	GENERAL CARGO	MARINE AUXILIARY ENGINE
MARINE	INLAND WATERWAY	MARINE AUXILIARY ENGINE
MARINE	OFFSHORE	MARINE AUXILIARY ENGINE
MARINE	CRUISE	MARINE AUXILIARY ENGINE
MARINE	GOVERNMENT	MARINE AUXILIARY ENGINE
MARINE	DREDGE	MARINE AUXILIARY ENGINE

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PERCENT LOAD	ENGINE POWER	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)
%	BKW	KPA	G/BKW-HR	G/BKW-HR	L/HR	L/HR
110	297	2,559	203.8	200.0	71.2	69.9
100	270	2,326	202.2	198.3	64.2	63.0
90	243	2,094	205.2	201.2	58.6	57.5
80	216	1,861	209.5	205.5	53.2	52.2
75	202	1,745	210.5	206.5	50.1	49.2
70	189	1,628	211.4	207.3	47.0	46.1
60	162	1,396	212.9	208.8	40.6	39.8
50	135	1,163	216.0	211.9	34.3	33.7
40	108	930	222.1	217.8	28.2	27.7
30	81.0	698	231.6	227.2	22.1	21.6
25	67.5	582	238.5	233.9	18.9	18.6
20	54.0	465	248.1	243.4	15.8	15.5
10	27.0	233	293.5	287.9	9.3	9.1

PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
%	BKW	KPA	DEG C	DEG C	KPA	DEG C	KPA	DEG C
110	297	227.4	50.6	628.9	209.5	405.7	231	193.3
100	270	205.7	49.5	607.1	187.5	395.2	209	179.9
90	243	188.7	48.6	588.4	170.0	385.1	192	169.7
80	216	169.7	47.6	569.6	151.7	377.0	173	157.5
75	202	157.3	47.1	558.8	140.4	374.4	160	149.3
70	189	144.2	46.6	547.2	128.8	371.8	147	141.2
60	162	117.0	45.7	521.0	105.2	364.8	119	124.9
50	135	91.8	44.9	490.4	84.4	352.7	93	108.5
40	108	69.5	44.2	450.2	66.6	331.7	70	92.2
30	81.0	48.9	43.5	399.2	50.7	301.2	49	75.8
25	67.5	39.4	42.9	364.2	43.5	278.0	39	67.9
20	54.0	30.4	42.3	319.4	36.7	246.7	30	60.2
10	27.0	13.9	40.9	212.1	24.4	169.5	13	45.3

PERCENT LOAD	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)
%	BKW	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
110	297	19.8	42.4	1,369.1	1,429.7	17.0	15.3
100	270	18.6	39.2	1,286.6	1,341.2	16.0	14.5
90	243	17.8	37.2	1,223.2	1,273.0	15.4	14.0
80	216	16.8	34.8	1,148.5	1,193.8	14.6	13.3
75	202	16.1	33.1	1,096.6	1,139.2	14.0	12.7
70	189	15.3	31.4	1,040.9	1,080.8	13.3	12.1
60	162	13.6	28.0	923.8	958.3	12.0	10.9
50	135	12.1	24.6	815.9	845.1	10.7	9.8
40	108	10.7	21.2	721.4	745.4	9.6	8.8
30	81.0	9.4	17.7	634.3	653.0	8.4	7.8
25	67.5	8.8	16.0	593.9	610.0	7.9	7.4
20	54.0	8.3	14.1	555.8	569.2	7.4	7.0
10	27.0	7.2	10.4	485.7	493.6	6.4	6.1

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PERCENT LOAD	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
%	BKW	KW	KW	KW	KW	KW	KW	KW	KW	KW
110	297	170	8.6	247	96.7	38.7	55.1	297	726	773
100	270	156	8.4	223	86.3	35.1	47.6	270	659	702
90	243	143	7.7	208	77.9	32.1	42.1	243	603	642
80	216	127	7.4	190	70.1	28.6	34.2	216	538	573
75	202	121	7.0	178	65.9	26.8	29.9	202	504	537
70	189	114	6.5	167	61.7	25.1	26.0	189	471	502
60	162	101	6.1	148	52.6	21.8	19.5	162	409	436
50	135	87.7	5.9	125	43.3	18.3	13.5	135	344	367
40	108	74.3	5.4	105	33.4	15.0	8.7	108	282	301
30	81.0	60.7	4.8	85.5	23.4	11.8	4.4	81.0	222	236
25	67.5	53.9	4.6	76.0	17.6	10.2	2.3	67.5	191	204
20	54.0	47.1	4.3	66.4	11.3	8.6	0.2	54.0	161	171
10	27.0	33.5	3.7	47.3	-1.0	5.3	-4.1	27.0	100	107

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EXHAUST:SOUND POWER(1/3 Octave Frequencies)

PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
%	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
110	297	125.7	95.1	101.8	113.0	108.3	116.2	115.8	115.3	118.0	117.7	115.7
100	270	125.3	94.8	101.7	113.9	109.3	115.7	116.1	114.7	116.2	117.1	115.6
90	243	125.0	95.1	101.9	114.7	109.0	115.3	115.8	114.6	115.3	116.8	115.3
80	216	124.6	94.6	101.8	116.0	108.8	114.8	115.8	114.1	114.3	115.6	114.5
75	202	124.3	94.1	101.4	116.1	108.8	114.6	115.8	113.7	113.8	114.9	113.9
70	189	123.9	93.5	100.8	115.9	108.7	114.4	115.7	113.4	113.3	114.2	113.4
60	162	122.9	92.3	99.8	115.4	109.0	114.1	114.3	112.7	113.0	113.6	111.7
50	135	120.9	91.7	98.7	113.9	108.3	113.1	110.9	111.5	111.5	111.0	108.9
40	108	117.6	92.2	98.0	109.5	106.3	109.5	106.7	108.5	108.4	107.3	106.3
30	81.0	114.8	93.1	98.2	104.7	103.2	106.6	103.3	106.1	105.9	105.6	103.8
25	67.5	114.1	93.5	98.5	103.4	101.3	106.6	102.0	106.0	105.4	105.0	101.9
20	54.0	112.8	93.9	99.0	101.7	99.8	104.9	100.9	105.0	103.9	103.9	99.7
10	27.0	110.0	96.2	101.1	96.9	98.8	99.2	99.3	100.5	99.2	100.4	95.7

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
%	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
110	297	113.6	113.0	110.6	108.5	105.9	103.6	99.9	95.0	88.8	82.6	73.3
100	270	113.9	112.9	110.0	108.1	105.5	102.9	99.1	94.3	88.3	82.0	72.6
90	243	114.1	112.9	109.9	108.1	105.4	102.6	98.8	94.0	88.0	81.5	71.9
80	216	113.5	111.9	108.9	107.5	104.5	101.7	98.1	93.2	87.3	80.7	71.1
75	202	112.9	111.1	108.3	107.1	103.9	101.1	97.5	92.7	86.9	80.2	70.6
70	189	112.3	110.2	107.6	106.4	103.1	100.4	96.9	92.0	86.3	79.6	69.8
60	162	109.1	107.2	105.7	104.0	100.8	98.7	95.3	90.4	84.6	77.8	67.5
50	135	105.4	103.9	102.5	101.1	98.5	96.8	93.2	88.5	82.1	74.7	64.2
40	108	102.7	100.9	99.5	99.3	97.2	95.2	91.1	86.4	78.7	71.0	61.0
30	81.0	100.0	98.0	97.0	98.1	97.2	93.8	88.9	83.1	74.8	68.0	58.5
25	67.5	98.3	96.5	95.4	97.5	97.7	93.2	87.4	81.1	72.9	67.6	57.3
20	54.0	96.0	95.0	93.8	97.4	98.1	91.9	85.7	79.0	71.9	66.3	56.2
10	27.0	91.4	91.8	90.8	97.2	97.4	88.1	81.9	75.1	71.8	62.2	54.6

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
%	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
110	297	112.2	71.4	81.5	84.9	84.7	85.8	87.6	90.4	94.8	98.3	100.8
100	270	111.6	71.2	80.4	85.0	84.4	85.0	87.5	89.6	94.0	97.6	100.3
90	243	111.8	70.9	79.4	85.0	84.1	85.3	88.3	89.4	93.6	97.6	100.4
80	216	112.3	70.4	78.4	84.7	83.1	84.7	88.3	89.5	93.2	97.3	100.3
75	202	112.3	70.1	77.8	84.9	82.7	84.3	88.0	89.4	93.0	97.2	100.1
70	189	112.1	69.8	77.2	85.2	82.6	84.1	87.5	89.3	92.7	97.2	99.9
60	162	112.0	68.9	75.9	85.0	82.1	84.2	87.2	89.0	92.0	96.6	99.5
50	135	111.8	68.6	75.1	84.8	81.7	84.5	87.0	89.4	91.4	96.1	98.8
40	108	111.4	68.4	74.4	85.3	81.3	83.9	86.2	90.0	91.2	96.2	98.2
30	81.0	111.9	67.6	74.0	86.1	81.0	83.0	85.5	90.0	91.5	97.3	99.2
25	67.5	112.6	67.0	74.1	86.4	81.2	83.1	85.5	90.2	91.9	98.3	100.2
20	54.0	113.0	66.5	74.4	86.8	81.4	83.5	85.6	90.2	91.9	99.0	100.7
10	27.0	112.0	66.3	75.6	87.5	82.1	84.1	85.8	89.4	91.2	98.4	100.0

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
%	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
110	297	103.9	102.0	101.3	102.4	103.1	102.6	99.8	98.2	97.5	95.4	94.3
100	270	103.1	101.6	102.4	101.3	102.7	102.1	98.4	97.0	96.5	94.7	94.2
90	243	103.1	102.7	102.7	101.2	103.0	102.5	98.4	96.5	96.1	94.3	95.4
80	216	103.4	103.6	103.8	101.0	103.1	102.4	98.2	96.1	95.6	93.7	101.3
75	202	103.3	103.8	103.8	101.0	103.0	102.2	98.1	95.9	95.3	93.5	102.8
70	189	102.9	103.9	103.2	101.0	102.9	101.9	98.2	95.8	95.0	93.3	102.3
60	162	103.3	103.6	102.2	100.5	102.3	101.3	98.2	95.3	94.3	96.5	104.0
50	135	103.9	104.2	101.7	99.9	102.0	100.7	98.4	94.7	93.6	98.2	96.0
40	108	104.1	104.9	101.7	99.6	101.9	100.4	99.1	94.0	93.9	96.1	86.4

PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
30	81.0	104.9	105.6	102.3	99.9	102.1	100.6	100.1	93.7	94.8	93.0	85.6
25	67.5	105.8	106.6	102.9	100.2	102.4	100.8	100.7	94.1	94.0	91.3	85.5
20	54.0	106.2	107.2	103.3	100.4	102.7	100.9	100.9	94.4	93.4	90.5	85.5
10	27.0	104.6	105.8	102.4	99.9	102.6	100.8	99.2	94.3	92.4	89.8	85.3

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Units Filter All Units ▼

DIESEL

RATED SPEED NOMINAL DATA: 1500 RPM

ENGINE POWER		BKW	297	270	202	135	67.5	27.0
PERCENT LOAD		%	110	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	1,844	1,593	1,065	659	289	241
TOTAL CO		G/HR	234	211	162	110	151	162
TOTAL HC		G/HR	15	15	15	17	27	44
TOTAL CO2		KG/HR	191	173	135	91	50	25
PART MATTER		G/HR	15.2	12.3	13.9	12.6	12.6	2.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,222.6	2,119.8	1,808.6	1,571.6	1,395.6	2,211.0
TOTAL CO	(CORR 5% O2)	MG/NM3	281.8	280.3	266.7	271.2	728.5	1,494.7
TOTAL HC	(CORR 5% O2)	MG/NM3	15.9	16.7	21.7	36.8	119.0	344.7
PART MATTER	(CORR 5% O2)	MG/NM3	14.7	13.3	19.0	29.6	48.4	25.4
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,083	1,033	881	766	680	1,077
TOTAL CO	(CORR 5% O2)	PPM	225	224	213	217	583	1,196
TOTAL HC	(CORR 5% O2)	PPM	30	31	40	69	222	643
TOTAL NOX (AS NO2)		G/HP-HR	4.69	4.45	3.94	3.65	3.20	6.68
TOTAL CO		G/HP-HR	0.60	0.59	0.60	0.61	1.67	4.49
TOTAL HC		G/HP-HR	0.04	0.04	0.05	0.09	0.30	1.21
PART MATTER		G/HP-HR	0.04	0.03	0.05	0.07	0.14	0.07
TOTAL NOX (AS NO2)		LB/HR	4.07	3.51	2.35	1.45	0.64	0.53
TOTAL CO		LB/HR	0.52	0.47	0.36	0.24	0.33	0.36
TOTAL HC		LB/HR	0.03	0.03	0.03	0.04	0.06	0.10
TOTAL CO2		LB/HR	421	381	297	201	110	54
PART MATTER		LB/HR	0.03	0.03	0.03	0.03	0.03	0.01
OXYGEN IN EXH		%	7.7	8.1	9.3	10.5	13.2	16.4

RATED SPEED POTENTIAL SITE VARIATION: 1500 RPM

ENGINE POWER		BKW	297	270	202	135	67.5	27.0
PERCENT LOAD		%	110	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	1,992	1,721	1,150	712	312	261
TOTAL CO		G/HR	438	395	304	207	282	303
TOTAL HC		G/HR	29	28	28	32	51	83
PART MATTER		G/HR	29.6	24.0	27.2	24.6	24.6	5.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,400.4	2,289.4	1,953.2	1,697.4	1,507.2	2,387.9
TOTAL CO	(CORR 5% O2)	MG/NM3	526.9	524.2	498.7	507.2	1,362.3	2,795.0
TOTAL HC	(CORR 5% O2)	MG/NM3	30.1	31.6	40.9	69.6	224.8	651.4
PART MATTER	(CORR 5% O2)	MG/NM3	28.6	25.9	37.1	57.8	94.4	49.4
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,169	1,115	951	827	734	1,163
TOTAL CO	(CORR 5% O2)	PPM	422	419	399	406	1,090	2,236
TOTAL HC	(CORR 5% O2)	PPM	56	59	76	130	420	1,216
TOTAL NOX (AS NO2)		G/HP-HR	5.06	4.80	4.26	3.94	3.45	7.22
TOTAL CO		G/HP-HR	1.11	1.10	1.12	1.14	3.12	8.39
TOTAL HC		G/HP-HR	0.07	0.08	0.10	0.18	0.56	2.29
PART MATTER		G/HP-HR	0.08	0.07	0.10	0.14	0.27	0.14
TOTAL NOX (AS NO2)		LB/HR	4.39	3.79	2.54	1.57	0.69	0.57
TOTAL CO		LB/HR	0.96	0.87	0.67	0.46	0.62	0.67
TOTAL HC		LB/HR	0.06	0.06	0.06	0.07	0.11	0.18
PART MATTER		LB/HR	0.07	0.05	0.06	0.05	0.05	0.01

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CCNR STAGE II

2006 - ----

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.

IMO II

2011 - ----

CYCLE : E2,D2

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.

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Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
4150858	PP7072	4447196	EE291	-	CA900001	
6351578	PP7511	4447196	EE291	AT	WNY00001	
4150858	PP7072	4447197	EE291	-	CA900001	
6351578	PP7511	4447197	EE291	AT	WNY00001	
4150858	PP7072	4621884	EE291	-	CA900001	
6351578	PP7511	4621884	EE291	AT	WNY00001	
4150858	PP7072	4621885	EE291	-	CA900001	
6351578	PP7511	4621885	EE291	AT	WNY00001	

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Type	Classification	Performance Number
CHART	AMBIENT CAPABILITY CHART	EM1505

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Parameters Reference: DM9600 - 15

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% Specific fuel consumption (C7-C18) +/- 4% 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 : 03/12/24

Caterpillar Confidential: **Green**

Content Owner: Commercial Processes Division

Web Master(s): [PSG Web Based Systems Support](#)

Current Date: 3-6-2025, 11:25:36

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