Performance Number: DM6097 Change Level: 02

SALES MODEL:	3406C	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
MACHINE SALES MODEL:		**ASPIRATION:**	TA
ENGINE POWER (BHP):	400	**AFTERCOOLER TYPE:**	JWAC
COMPRESSION RATIO:	14.5	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC+AC
RATING LEVEL:	B-RATING (HEAVY DUTY)	**AFTERCOOLER TEMP (F):**	126
PUMP QUANTITY:	1	**JACKET WATER TEMP (F):**	210.2
FUEL TYPE:	DIESEL	**TURBO CONFIGURATION:**	SINGLE
MANIFOLD TYPE:	WATER COOLED	**TURBO QUANTITY:**	1
GOVERNOR TYPE:	HYDRA	**TURBOCHARGER MODEL:**	S4DW034-0.94
CAMSHAFT TYPE:	STANDARD	**CERTIFICATION YEAR:**	2000
IGNITION TYPE:	CI	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	1,950.0
INJECTOR TYPE:	MUI		
REF EXH STACK DIAMETER (IN):	5		
MAX OPERATING ALTITUDE (FT):	1,640		

INDUSTRY	SubIndustry	APPLICATION
MARINE	GENERAL CARGO	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	BHP	LB-FT	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR
1,800	400	1,166	197	0.342	0.335	19.3	18.9
1,700	350	1,082	183	0.345	0.338	17.0	16.7
1,600	297	975	165	0.350	0.343	14.7	14.4
1,500	252	883	149	0.355	0.348	12.6	12.4
1,400	222	832	140	0.357	0.350	11.2	10.9
1,300	196	792	134	0.358	0.352	9.9	9.7
1,200	175	764	129	0.360	0.353	8.9	8.7
1,100	156	744	126	0.363	0.356	8.0	7.8
1,000	139	730	123	0.367	0.360	7.2	7.1
900	123	720	122	0.375	0.368	6.5	6.4

800	72.4	475	80	0.386	0.378	3.9	3.9
700	53.6	402	68	0.402	0.394	3.0	3.0

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	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
1,800	400	39.9	187.8	1,027.6	35.2	711.2	41	288.2
1,700	350	32.5	182.4	1,033.9	27.5	731.1	33	255.9
1,600	297	24.9	179.0	1,036.7	20.7	749.1	26	221.7
1,500	252	18.8	177.0	1,034.3	15.6	758.5	19	193.5
1,400	222	14.9	175.8	1,031.6	12.3	764.7	15	175.0
1,300	196	11.9	174.5	1,028.8	9.8	765.2	12	159.5
1,200	175	9.6	173.4	1,024.4	7.8	762.0	10	147.0
1,100	156	7.6	172.7	1,017.3	6.3	753.4	8	136.1
1,000	139	5.9	172.4	1,013.0	5.0	744.5	6	126.9
900	123	4.5	172.2	1,017.2	3.9	740.4	5	119.6
800	72.4	1.4	171.8	771.3	2.0	566.2	2	100.1
700	53.6	0.3	172.0	697.0	1.2	512.0	0	94.4

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	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
1,800	400	883.1	1,985.6	3,824.6	3,961.2	833.8	760.0
1,700	350	758.2	1,737.8	3,283.7	3,404.4	717.6	652.2
1,600	297	634.1	1,474.1	2,746.2	2,850.1	599.6	543.3
1,500	252	531.5	1,246.3	2,302.0	2,391.4	503.0	454.6
1,400	222	457.6	1,080.3	1,981.7	2,060.7	433.8	391.4
1,300	196	396.4	937.9	1,716.9	1,787.1	376.5	339.1
1,200	175	345.6	815.8	1,496.7	1,559.5	328.3	295.1
1,100	156	301.5	708.4	1,305.8	1,362.3	287.1	257.2
1,000	139	262.4	612.4	1,136.2	1,187.2	250.1	223.1
900	123	226.8	528.2	981.8	1,028.0	216.4	192.1
800	72.4	178.6	354.2	775.1	803.0	169.8	154.1
700	53.6	148.5	276.8	643.0	664.4	140.1	127.9

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	BHP	LB-FT	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR
1,800	400	1,166	197	0.342	0.335	19.3	18.9
1,700	337	1,040	176	0.346	0.339	16.4	16.1
1,600	281	921	156	0.352	0.345	13.9	13.7
1,500	231	810	137	0.357	0.351	11.6	11.4
1,400	188	705	119	0.362	0.355	9.6	9.4
1,300	151	608	103	0.366	0.359	7.8	7.6
1,200	118	518	87	0.370	0.363	6.2	6.1
1,100	91.2	435	74	0.380	0.373	4.9	4.8
1,000	68.5	360	61	0.395	0.388	3.8	3.7
900	50.0	292	49	0.412	0.404	2.9	2.8
800	35.1	230	39	0.433	0.425	2.1	2.1
700	23.5	176	30	0.466	0.457	1.5	1.5

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	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
1,800	400	39.9	187.8	1,027.6	35.2	711.2	41	288.2
1,700	337	30.7	181.7	1,022.2	26.2	726.3	32	247.9
1,600	281	22.8	178.5	1,019.2	19.3	740.3	23	212.3
1,500	231	16.5	176.5	1,001.7	14.1	738.3	17	182.0
1,400	188	11.6	174.7	962.7	10.3	716.6	12	156.9
1,300	151	8.1	173.1	905.7	7.5	677.6	8	137.0
1,200	118	5.4	172.4	833.9	5.5	626.2	6	122.6
1,100	91.2	3.4	172.4	754.8	4.0	569.7	4	111.2
1,000	68.5	1.9	172.4	671.6	2.8	512.0	2	102.4
900	50.0	0.8	172.4	588.4	1.9	452.4	1	96.2
800	35.1	0.2	172.4	512.2	1.3	395.2	0	92.0
700	23.5	-0.0	172.4	444.4	0.8	344.2	-0	89.5

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	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
1,800	400	883.1	1,985.6	3,824.6	3,961.2	833.8	760.0

1,700	337	737.2	1,681.4	3,192.7	3,309.0	697.1	634.0
1,600	281	610.6	1,407.2	2,644.5	2,743.1	576.5	522.8
1,500	231	505.3	1,164.3	2,188.5	2,271.2	477.8	432.8
1,400	188	421.4	953.5	1,825.2	1,893.1	398.6	361.5
1,300	151	355.7	777.3	1,540.8	1,595.8	336.1	305.8
1,200	118	304.7	633.8	1,319.6	1,363.4	287.0	262.4
1,100	91.2	262.8	518.0	1,140.1	1,174.8	247.4	227.3
1,000	68.5	227.4	422.7	988.0	1,015.1	213.9	197.5
900	50.0	196.3	341.3	851.9	872.5	184.0	170.9
800	35.1	168.6	273.1	730.9	746.1	157.1	146.9
700	23.5	144.1	218.4	623.9	634.9	133.6	125.9

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	BHP	LB-FT	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR
1,800	399	1,165	197	0.342	0.335	19.2	18.9
1,700	382	1,182	199	0.344	0.337	18.5	18.2
1,600	363	1,192	201	0.346	0.340	17.7	17.4
1,500	341	1,195	202	0.348	0.342	16.8	16.4
1,400	316	1,187	200	0.351	0.344	15.7	15.4
1,300	288	1,162	196	0.352	0.345	14.3	14.0
1,200	256	1,122	189	0.357	0.350	12.9	12.6
1,100	224	1,067	180	0.366	0.359	11.5	11.3
1,000	191	1,003	169	0.377	0.370	10.2	10.0
900	161	939	159	0.389	0.381	8.8	8.7
800	133	872	147	0.402	0.394	7.5	7.4
700	96.6	724	122	0.406	0.398	5.5	5.4

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	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
1,800	399	39.9	187.8	1,027.4	35.2	711.1	41	288.0
1,700	382	37.0	184.3	1,060.6	30.9	742.3	38	274.7
1,600	363	33.6	181.4	1,098.7	26.6	778.1	35	260.8
1,500	341	30.0	179.3	1,142.1	22.5	818.7	31	246.3
1,400	316	25.9	179.1	1,189.4	18.6	866.1	27	231.2

1,300	288	21.4	178.9	1,231.3	15.0	907.8	22	214.2
1,200	256	16.9	177.8	1,262.9	11.8	936.7	17	195.8
1,100	224	13.4	174.5	1,275.6	9.2	942.9	14	175.9
1,000	191	10.2	172.4	1,269.3	6.9	932.6	11	156.7
900	161	7.5	172.5	1,257.1	5.1	915.0	8	140.3
800	133	5.1	173.2	1,227.9	3.6	883.4	5	126.1
700	96.6	2.4	172.0	1,065.3	2.1	755.5	3	109.9

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	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
1,800	399	882.7	1,984.4	3,822.7	3,959.2	833.4	759.6
1,700	382	808.6	1,874.5	3,502.0	3,633.4	766.8	696.1
1,600	363	732.9	1,752.0	3,174.1	3,299.5	696.0	628.8
1,500	341	655.8	1,617.1	2,840.2	2,958.8	621.9	558.8
1,400	316	575.7	1,462.4	2,493.4	2,604.1	542.3	484.5
1,300	288	495.7	1,294.0	2,146.9	2,248.4	465.2	413.0
1,200	256	420.0	1,123.6	1,819.0	1,910.5	395.6	349.1
1,100	224	355.3	958.6	1,540.2	1,622.1	336.1	294.5
1,000	191	298.4	802.6	1,294.4	1,366.4	283.4	246.9
900	161	249.5	665.5	1,082.0	1,144.5	238.0	206.5
800	133	207.2	542.4	897.7	951.0	198.6	171.9
700	96.6	165.3	393.0	715.8	755.0	159.0	139.2

Heat Rejection Data

MAXIMUM LIMIT

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
1,800	400	9,984	1,259	14,988	5,984	2,231	1,592	16,947	41,887	44,620
1,700	350	9,103	1,170	13,410	5,438	1,972	988	14,854	37,030	39,447
1,600	297	8,276	1,088	11,578	4,780	1,698	493	12,596	31,885	33,965
1,500	252	7,509	1,022	9,918	4,113	1,461	168	10,691	27,435	29,225
1,400	222	6,874	978	8,670	3,604	1,292	0	9,400	24,255	25,838
1,300	196	6,323	938	7,559	3,132	1,147	-103	8,314	21,541	22,946
1,200	175	5,870	903	6,595	2,714	1,026	-160	7,404	19,269	20,527
1,100	156	5,531	869	5,757	2,323	924	-192	6,608	17,343	18,474

1,000	139	5,249	839	4,994	1,982	833	-207	5,892	15,648	16,669
900	123	5,022	814	4,339	1,701	755	-212	5,232	14,172	15,097
800	72.4	3,343	653	2,315	719	456	-231	3,071	8,564	9,123
700	53.6	2,774	579	1,627	443	352	-204	2,275	6,609	7,040

Sound Data

Note(s)
SOUND PRESSURE DATA FOR THIS RATING CAN BE FOUND IN SUPPLEMENTARY DATA, PERFORMANCE NUMBER EM0554

Emissions Data

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

ENGINE POWER		**BHP**	**400**	**300**	**200**	**99.9**	**40.0**
PERCENT LOAD		**%**	**100**	**75**	**50**	**25**	**10**
TOTAL NOX (AS NO2)		G/HR	3,003	2,342	1,532	702	356
TOTAL CO		G/HR	181	120	115	162	205
TOTAL HC		G/HR	24	20	21	23	30
TOTAL CO2		KG/HR	191	146	103	61	37
PART MATTER		G/HR	43.9	33.5	31.2	41.4	45.8
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	3,390.9	3,465.1	3,221.7	2,500.9	2,130.1
TOTAL CO	(CORR 5% O2)	MG/NM3	218.1	188.5	257.4	631.5	1,624.9
TOTAL HC	(CORR 5% O2)	MG/NM3	25.2	26.7	41.6	78.3	213.8
PART MATTER	(CORR 5% O2)	MG/NM3	44.0	44.3	59.4	141.5	314.6
TOTAL NOX (AS NO2)	(CORR 15% O2)	MG/NM3	1,258.2	1,285.8	1,195.5	928.0	790.4
TOTAL CO	(CORR 15% O2)	MG/NM3	80.9	70.0	95.5	234.3	603.0
TOTAL HC	(CORR 15% O2)	MG/NM3	9.4	9.9	15.4	29.0	79.3
PART MATTER	(CORR 15% O2)	MG/NM3	16.3	16.4	22.1	52.5	116.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,652	1,688	1,569	1,218	1,038
TOTAL CO	(CORR 5% O2)	PPM	174	151	206	505	1,300
TOTAL HC	(CORR 5% O2)	PPM	47	50	78	146	399
TOTAL NOX (AS NO2)	(CORR 15% O2)	PPM	613	626	582	452	385
TOTAL CO	(CORR 15% O2)	PPM	65	56	76	187	482
TOTAL HC	(CORR 15% O2)	PPM	17	18	29	54	148
TOTAL NOX (AS NO2)		G/HP-HR	7.57	7.87	7.73	7.08	8.97
TOTAL CO		G/HP-HR	0.46	0.40	0.58	1.63	5.17
TOTAL HC		G/HP-HR	0.06	0.07	0.11	0.23	0.76

PART MATTER		G/HP-HR	0.11	0.11	0.16	0.42	1.15
TOTAL NOX (AS NO2)		G/KW-HR	10.15	10.56	10.36	9.49	12.03
TOTAL CO		G/KW-HR	0.61	0.54	0.78	2.19	6.94
TOTAL HC		G/KW-HR	0.08	0.09	0.14	0.31	1.02
PART MATTER		G/KW-HR	0.15	0.15	0.21	0.56	1.55
TOTAL NOX (AS NO2)		LB/HR	6.62	5.16	3.38	1.55	0.78
TOTAL CO		LB/HR	0.40	0.26	0.25	0.36	0.45
TOTAL HC		LB/HR	0.05	0.04	0.05	0.05	0.07
TOTAL CO2		LB/HR	420	321	228	135	81
PART MATTER		LB/HR	0.10	0.07	0.07	0.09	0.10
OXYGEN IN EXH		%	10.6	11.4	12.7	15.1	17.1
DRY SMOKE OPACITY		%	1.2	1.0	1.4	2.7	3.5
BOSCH SMOKE NUMBER			0.00	0.00	0.00	0.00	0.00

Regulatory Information

IMO	**2000 - 2010**
GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN REGULATION 13 OF 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.	

Altitude Derate Data

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**	**130**	**140**	**NORMAL**
ALTITUDE (FT)													
0	400	400	400	400	400	400	400	400	400	394	387	381	400
1,000	400	400	400	400	400	400	400	393	386	379	373	367	400
2,000	400	400	400	400	400	392	385	378	372	365	359	353	393
3,000	400	400	400	392	385	378	371	364	358	352	346	340	380
4,000	400	392	385	377	370	363	357	350	344	338	332	327	368
5,000	385	377	370	363	356	349	343	337	331	325	320	314	357
6,000	370	363	356	349	342	336	330	324	318	313	307	302	345
7,000	356	349	342	335	329	323	317	311	306	301	295	291	334
8,000	342	335	328	322	316	310	305	299	294	289	284	279	323
9,000	328	322	315	309	303	298	292	287	282	277	273	268	312
10,000	315	309	303	297	291	286	281	276	271	266	262	257	302

11,000	302	296	291	285	280	274	269	265	260	255	251	247	292
12,000	290	284	279	273	268	263	258	254	249	245	241	237	282
13,000	278	273	267	262	257	252	248	243	239	235	231	227	272
14,000	267	261	256	251	246	242	237	233	229	225	221	218	263
15,000	255	250	245	241	236	232	228	223	220	216	212	209	254

Cross Reference

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K1698	NAP	1778869	E323	-	4TB00001	
0K1698	NAP	1778870	E323	-	4TB00001	
4150563	PP4499	4480057	E323	-	4T700001	

Supplementary Data

This performance data is supplementary data for:
EM0554

Performance Parameter Reference

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

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