

Perf No: EM0269						Change Level: 07
General	Heat Rejection	Sound	Emissions	Regulatory	Cross Reference	Supplementary Data
Perf Param Ref						
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SALES MODEL:	C18	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
MACHINE SALES MODEL:		ASPIRATION:	TA
ENGINE POWER (BHP):	469	AFTERCOOLER TYPE:	SCAC
COMPRESSION RATIO:	16.5	AFTERCOOLER CIRCUIT TYPE:	JW+OC, AC
RATING LEVEL:	A RATING (UNRESTRICTED CONTINUOUS)	AFTERCOOLER TEMP (F):	126
PUMP QUANTITY:	1	JACKET WATER TEMP (F):	185.0
FUEL TYPE:	DIESEL	TURBO CONFIGURATION:	SINGLE
MANIFOLD TYPE:	WATER COOLED	TURBO QUANTITY:	1
GOVERNOR TYPE:	ELEC	TURBOCHARGER MODEL:	S510W IIONJ2 120H/67AA1.04 VOW
CAMSHAFT TYPE:	STANDARD	CERTIFICATION YEAR:	2013
IGNITION TYPE:	CI	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,161.4
INJECTOR TYPE:	EUI		
FUEL INJECTOR:	3561370		
REF EXH STACK DIAMETER (IN):	6		

INDUSTRY	SubIndustry	APPLICATION
MARINE	FISHING	MARINE PROPULSION
MARINE	INLAND WATERWAY	MARINE PROPULSION
MARINE	DREDGE	MARINE PROPULSION
MARINE	FERRY	MARINE PROPULSION
MARINE	TUG & SALVAGE	MARINE PROPULSION
MARINE	OFFSHORE	MARINE PROPULSION
MARINE	GENERAL CARGO	MARINE PROPULSION

General Performance Data [Top](#)

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	469	1,370	187	0.356	0.349	23.5	23.1
1,700	469	1,450	198	0.346	0.339	22.9	22.5
1,600	464	1,523	208	0.339	0.333	22.2	21.8
1,500	439	1,535	209	0.327	0.321	20.2	19.8
1,400	400	1,499	204	0.327	0.321	18.4	18.1
1,300	343	1,387	189	0.329	0.323	15.9	15.6
1,200	283	1,238	169	0.330	0.324	13.2	12.9
1,100	223	1,063	145	0.333	0.326	10.4	10.2
1,000	197	1,035	141	0.332	0.326	9.2	9.1
900	166	970	132	0.331	0.325	7.8	7.6
800	139	916	125	0.332	0.325	6.5	6.4
700	113	845	115	0.339	0.332	5.4	5.3
600	84.5	740	101	0.346	0.339	4.1	4.0
MAXIMUM LIMIT							
ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES
RPM	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG
							DEG F

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
1,800	469	44.9	132.2	979.0	46.8	629.5	48	326.1
1,700	469	43.1	130.9	988.8	42.2	635.6	46	305.3
1,600	464	40.9	129.9	1,008.8	37.5	656.7	43	295.2
1,500	439	33.2	128.1	1,023.6	28.4	674.0	35	263.3
1,400	400	26.9	126.9	1,056.3	22.0	698.4	29	234.4
1,300	343	20.8	126.0	1,064.6	17.0	698.3	22	205.9
1,200	283	14.7	125.6	1,031.0	11.9	677.9	16	173.5
1,100	223	9.6	118.2	954.5	7.8	615.0	10	142.7
1,000	197	7.7	118.3	939.0	6.4	600.9	8	130.6
900	166	5.6	108.5	883.4	4.5	549.1	6	120.3
800	139	3.8	101.2	831.1	3.3	515.6	4	107.8
700	113	2.0	99.8	783.3	2.1	462.1	2	99.0
600	84.5	1.8	94.7	660.5	2.6	398.0	2	96.1

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	469	1,156.7	2,474.1	5,139.5	5,306.5	1,116.8	1,032.2
1,700	469	1,094.3	2,322.8	4,791.8	4,954.1	1,042.7	961.0
1,600	464	1,018.3	2,184.3	4,413.1	4,570.5	962.0	883.4
1,500	439	858.0	1,867.6	3,704.9	3,848.4	810.0	739.5
1,400	400	729.1	1,616.7	3,130.4	3,261.1	686.4	623.3
1,300	343	603.2	1,343.3	2,596.9	2,709.9	570.4	516.1
1,200	283	502.3	1,085.1	2,134.9	2,228.4	469.0	424.3
1,100	223	419.0	846.5	1,765.8	1,839.8	387.3	351.5
1,000	197	366.1	727.7	1,537.1	1,602.7	337.3	305.7
900	166	313.0	593.5	1,319.2	1,374.3	289.2	262.5
800	139	267.3	487.3	1,121.0	1,167.3	245.7	223.3
700	113	220.2	380.8	927.0	965.1	203.1	184.6
600	84.5	194.4	309.7	814.4	843.6	177.6	163.0

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	469	1,370	187	0.356	0.349	23.5	23.1
1,700	395	1,222	166	0.358	0.351	19.9	19.5
1,600	330	1,082	147	0.364	0.357	16.9	16.6
1,500	272	951	130	0.358	0.351	13.7	13.4
1,400	221	828	113	0.351	0.344	10.9	10.7
1,300	177	714	97	0.354	0.347	8.8	8.7
1,200	139	609	83	0.363	0.356	7.1	7.0
1,100	107	511	70	0.370	0.363	5.6	5.5
1,000	80.5	423	58	0.370	0.363	4.2	4.1
900	58.7	342	47	0.379	0.372	3.1	3.1
800	41.2	271	37	0.394	0.387	2.3	2.2
700	27.6	207	28	0.431	0.423	1.7	1.6
600	17.4	152	21	0.485	0.476	1.2	1.2

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	469	44.9	132.2	979.0	46.8	629.5	48	326.1
1,700	395	37.7	129.5	948.1	36.8	615.2	40	282.0
1,600	330	30.7	127.9	936.1	28.8	621.4	33	250.6
1,500	272	20.9	126.4	911.6	19.1	613.6	22	205.6
1,400	221	13.1	125.4	856.2	12.4	577.8	14	164.3
1,300	177	8.5	120.4	818.4	8.9	536.2	9	139.1
1,200	139	6.1	120.2	749.3	6.8	500.4	7	124.5
1,100	107	4.1	110.0	661.4	4.7	429.2	5	109.9
1,000	80.5	2.5	104.3	550.3	3.7	379.2	3	100.0
900	58.7	1.4	108.1	466.4	2.4	318.8	2	94.3
800	41.2	0.7	94.9	386.0	2.5	278.8	1	89.5
700	27.6	0.2	103.4	336.0	1.5	246.7	0	88.0
600	17.4	-0.1	91.0	280.7	1.7	213.8	0	85.5

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	469	1,156.7	2,474.1	5,139.5	5,306.5	1,116.8	1,032.2
1,700	395	1,020.1	2,120.3	4,468.5	4,609.9	969.8	897.4
1,600	330	887.1	1,824.2	3,821.1	3,941.2	829.6	768.3
1,500	272	700.9	1,429.0	3,009.8	3,106.9	654.6	605.5
1,400	221	558.1	1,092.2	2,376.5	2,454.0	517.6	478.6
1,300	177	460.9	868.6	1,974.5	2,037.1	428.8	396.9
1,200	139	410.7	736.1	1,741.1	1,791.6	377.0	350.6
1,100	107	364.6	598.7	1,533.3	1,573.0	331.2	309.9
1,000	80.5	319.2	490.9	1,338.7	1,368.6	287.8	271.2
900	58.7	274.2	390.8	1,152.5	1,174.7	246.8	233.9
800	41.2	244.2	328.1	1,022.4	1,038.3	218.4	208.3
700	27.6	206.8	266.5	869.6	881.5	185.5	177.7
600	17.4	180.0	219.8	754.2	762.7	160.5	154.5

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	469	1,370	187	0.356	0.349	23.5	23.1
1,700	469	1,450	198	0.346	0.339	22.9	22.5
1,600	464	1,523	208	0.339	0.333	22.2	21.8
1,500	439	1,535	209	0.327	0.321	20.2	19.8
1,400	400	1,499	204	0.327	0.321	18.4	18.1
1,300	343	1,387	189	0.329	0.323	15.9	15.6
1,200	283	1,238	169	0.330	0.324	13.2	12.9
1,100	223	1,063	145	0.333	0.326	10.4	10.2
1,000	197	1,035	141	0.332	0.326	9.2	9.1
900	166	970	132	0.331	0.325	7.8	7.6
800	139	916	125	0.332	0.325	6.5	6.4
700	113	845	115	0.339	0.332	5.4	5.3
600	84.5	740	101	0.346	0.339	4.1	4.0

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	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
1,800	469	44.9	132.2	979.0	46.8	629.5	48	326.1
1,700	469	43.1	130.9	988.8	42.2	635.6	46	305.3
1,600	464	40.9	129.9	1,008.8	37.5	656.7	43	295.2
1,500	439	33.2	128.1	1,023.6	28.4	674.0	35	263.3
1,400	400	26.9	126.9	1,056.3	22.0	698.4	29	234.4
1,300	343	20.8	126.0	1,064.6	17.0	698.3	22	205.9
1,200	283	14.7	125.6	1,031.0	11.9	677.9	16	173.5
1,100	223	9.6	118.2	954.5	7.8	615.0	10	142.7
1,000	197	7.7	118.3	939.0	6.4	600.9	8	130.6
900	166	5.6	108.5	883.4	4.5	549.1	6	120.3
800	139	3.8	101.2	831.1	3.3	515.6	4	107.8
700	113	2.0	99.8	783.3	2.1	462.1	2	99.0
600	84.5	1.8	94.7	660.5	2.6	398.0	2	96.1

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	469	1,156.7	2,474.1	5,139.5	5,306.5	1,116.8	1,032.2
1,700	469	1,094.3	2,322.8	4,791.8	4,954.1	1,042.7	961.0
1,600	464	1,018.3	2,184.3	4,413.1	4,570.5	962.0	883.4
1,500	439	858.0	1,867.6	3,704.9	3,848.4	810.0	739.5
1,400	400	729.1	1,616.7	3,130.4	3,261.1	686.4	623.3
1,300	343	603.2	1,343.3	2,596.9	2,709.9	570.4	516.1
1,200	283	502.3	1,085.1	2,134.9	2,228.4	469.0	424.3
1,100	223	419.0	846.5	1,765.8	1,839.8	387.3	351.5
1,000	197	366.1	727.7	1,537.1	1,602.7	337.3	305.7
900	166	313.0	593.5	1,319.2	1,374.3	289.2	262.5
800	139	267.3	487.3	1,121.0	1,167.3	245.7	223.3
700	113	220.2	380.8	927.0	965.1	203.1	184.6
600	84.5	194.4	309.7	814.4	843.6	177.6	163.0

Heat Rejection Data [Top](#)

MAXIMUM LIMIT

ENGINE SPEED	ENGINE POWER	REJECTION TO WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE	HIGH HEAT VALUE
RPM	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
1,800	469	12,117	1,204	17,408	6,147	3,659	4,068	19,904	51,182	54,521
1,700	469	11,938	1,213	17,290	5,875	3,585	3,695	19,904	50,570	53,870
1,600	464	11,436	1,174	16,253	5,840	3,435	2,991	19,677	48,253	51,402
1,500	439	10,724	1,119	14,495	5,216	3,233	2,069	18,596	43,994	46,865
1,400	400	10,265	1,054	13,215	4,776	3,073	1,382	16,947	40,086	42,702
1,300	343	9,324	996	11,525	3,974	2,770	838	14,558	34,742	37,009
1,200	283	7,952	902	9,337	3,073	2,386	422	11,999	28,659	30,529
1,100	223	6,442	810	7,510	2,038	1,919	153	9,440	22,682	24,162
1,000	197	6,332	773	5,904	1,680	1,899	73	8,360	20,092	21,403
900	166	5,441	736	5,029	1,138	1,646	37	7,052	17,267	18,394
800	139	3,929	692	4,553	801	1,183	31	5,914	14,178	15,103
700	113	2,954	647	3,680	447	883	24	4,777	11,325	12,064
600	84.5	3,130	618	2,213	166	940	2	3,583	8,958	9,543

Sound Data [Top](#)

EXHAUST:SOUND POWER(1/3 Octave Frequencies) MAXIMUM POWER CURVE M

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)
1,800	469	122.6	103.8	106.5	100.8	107.1	109.9	107.3	108.5	108.1	109.2	110.6
1,700	469	123.8	99.3	103.7	108.7	108.7	111.8	112.9	112.2	112.4	112.1	111.5
1,600	464	121.8	89.4	101.6	105.8	105.6	105.8	103.6	108.4	108.1	109.2	110.5
1,500	439	121.8	101.7	105.6	104.1	109.6	106.7	108.6	109.1	109.0	109.7	110.4
1,400	400	120.4	94.8	102.2	104.5	103.7	104.7	102.4	105.0	107.4	109.8	110.4
1,300	343	121.6	90.3	107.8	106.0	109.4	111.7	111.6	109.9	109.2	110.1	110.9
1,200	283	117.7	98.1	97.3	103.6	101.5	102.2	100.7	103.4	106.2	107.4	108.2
1,100	223	116.0	97.3	98.2	98.4	96.6	96.2	98.6	102.2	105.5	106.7	107.2
1,000	197	115.5	94.6	85.8	86.7	89.4	94.2	97.5	99.8	105.3	105.8	106.7
900	166	114.3	96.7	92.2	103.4	92.9	91.5	93.7	100.5	103.1	105.0	104.9
800	139	113.7	91.8	65.9	91.2	105.7	90.0	93.6	104.8	105.0	104.4	104.8
700	113	113.8	94.3	75.1	89.8	102.9	90.5	91.0	103.3	104.2	105.9	107.6
600	84.5	113.1	95.1	97.3	88.5	96.3	90.5	92.6	101.8	104.4	103.6	105.9

EXHAUST:SOUND POWER(1/3 Octave Frequencies) MAXIMUM POWER CURVE M

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)
1,800	469	111.7	113.0	114.8	113.5	112.4	110.1	105.6	100.1	91.7	81.0	74.8
1,700	469	112.5	113.3	113.7	113.7	113.1	111.2	106.5	101.1	93.6	84.4	75.8
1,600	464	111.3	112.8	114.5	112.6	111.4	109.0	104.7	98.6	90.5	79.7	71.4
1,500	439	111.2	111.9	112.9	112.1	110.6	108.6	104.1	97.8	89.7	78.7	70.0
1,400	400	110.2	111.0	111.9	111.2	109.2	108.3	103.5	96.9	88.2	76.1	68.3
1,300	343	110.2	110.1	110.0	109.5	108.6	106.9	103.8	98.5	90.1	80.3	71.0
1,200	283	108.8	108.3	107.6	105.9	105.3	105.0	99.5	92.2	84.4	73.5	63.8
1,100	223	107.7	106.1	105.5	104.5	103.3	103.7	96.9	90.1	82.3	68.1	60.3
1,000	197	108.0	105.0	104.6	103.9	101.1	103.6	94.2	95.8	81.1	68.1	61.6
900	166	107.2	102.6	104.9	103.2	102.2	97.6	103.0	89.2	80.4	66.2	59.6
800	139	104.5	103.2	102.2	99.1	94.2	107.1	101.6	82.5	76.6	60.4	54.3
700	113	110.4	103.9	88.8	100.7	109.3	106.8	94.4	84.9	80.4	63.4	58.4
600	84.5	108.4	99.3	93.7	106.7	110.5	105.8	96.9	86.5	75.0	70.7	64.2

MECHANICAL:SOUND POWER(1/3 Octave Frequencies) MAXIMUM POWER CURVE M

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)
1,800	469	118.9	70.2	84.1	88.3	92.2	93.1	94.7	100.0	104.0	104.6	105.9
1,700	469	119.4	73.2	83.6	88.2	90.9	91.7	93.2	99.2	101.5	103.6	105.4
1,600	464	119.0	69.4	82.3	89.5	87.2	88.0	93.0	99.7	102.6	102.6	104.6
1,500	439	116.7	71.4	80.3	92.5	85.5	88.3	92.4	97.4	101.2	100.9	103.5
1,400	400	116.0	70.8	81.1	83.3	84.8	86.3	92.7	100.5	100.9	100.6	103.4
1,300	343	114.6	67.8	80.1	80.0	86.1	85.4	90.4	97.8	100.2	99.9	101.7
1,200	283	112.8	69.8	79.2	77.8	83.5	83.8	89.1	95.9	99.1	99.9	100.8
1,100	223	110.7	69.9	72.5	76.8	80.4	83.5	87.7	92.2	96.1	98.2	99.5
1,000	197	110.2	66.2	70.3	77.2	81.5	80.3	87.2	90.8	95.1	99.7	100.3

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
900	166	107.3	62.9	69.0	69.2	80.5	77.2	85.7	87.6	88.6	93.4	93.7
800	139	107.1	60.4	69.7	80.8	78.9	79.4	85.0	87.7	90.7	94.6	91.8
700	113	103.7	60.3	74.2	75.0	77.2	73.5	82.3	82.7	89.8	94.6	87.2
600	84.5	101.3	57.5	61.6	68.3	69.5	74.6	79.5	88.3	91.4	91.6	90.1

MECHANICAL:SOUND POWER(1/3 Octave Frequencies) MAXIMUM POWER CURVE M

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)
1,800	469	107.2	105.8	107.1	107.4	107.5	106.1	104.6	104.4	104.6	113.3	107.9
1,700	469	105.9	106.1	105.9	107.2	107.0	104.9	104.0	104.1	104.1	116.4	104.3
1,600	464	105.8	105.8	105.4	106.2	106.1	103.9	103.2	103.6	104.0	116.1	101.9
1,500	439	104.6	105.5	105.8	106.4	105.8	103.2	103.0	103.1	105.7	110.7	99.1
1,400	400	104.3	105.1	105.9	105.4	105.0	102.6	102.2	103.0	109.9	102.4	97.0
1,300	343	104.0	104.1	104.2	104.4	103.5	101.3	101.4	104.7	106.9	96.9	94.2
1,200	283	102.3	103.1	102.4	102.8	100.7	99.5	100.8	105.7	96.6	93.8	91.9
1,100	223	100.3	101.3	100.9	101.4	99.0	98.2	103.4	96.1	93.4	92.0	87.6
1,000	197	101.2	98.5	100.2	100.9	96.6	103.1	102.3	92.0	92.3	89.7	85.3
900	166	102.2	96.8	98.4	100.7	95.3	95.5	98.6	92.4	91.8	87.7	83.5
800	139	101.4	99.3	100.5	100.7	93.9	92.6	96.2	88.8	90.2	84.7	80.8
700	113	95.3	95.7	96.2	97.1	92.2	87.1	92.9	82.4	85.3	81.4	76.0
600	84.5	91.5	86.6	90.3	95.7	90.9	92.5	96.2	81.5	82.8	77.1	72.9

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Units Filter All Units ▼

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

ENGINE POWER		BHP	469	352	235	117	46.9
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	1,911	1,357	867	376	216
TOTAL CO		G/HR	91	109	145	138	215
TOTAL HC		G/HR	36	35	31	34	43
TOTAL CO2		KG/HR	236	181	129	78	48
PART MATTER		G/HR	8.0	12.7	25.1	23.7	27.9
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,818.4	1,671.3	1,501.7	1,079.9	982.8
TOTAL CO	(CORR 5% O2)	MG/NM3	86.4	134.4	252.2	396.6	972.3
TOTAL HC	(CORR 5% O2)	MG/NM3	30.1	37.0	47.1	84.3	168.8
PART MATTER	(CORR 5% O2)	MG/NM3	6.4	13.6	38.3	61.0	116.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	886	814	731	526	479
TOTAL CO	(CORR 5% O2)	PPM	69	107	202	317	778
TOTAL HC	(CORR 5% O2)	PPM	56	69	88	157	315
TOTAL NOX (AS NO2)		G/HP-HR	4.11	3.88	3.71	3.22	4.63
TOTAL CO		G/HP-HR	0.20	0.31	0.62	1.18	4.60
TOTAL HC		G/HP-HR	0.08	0.10	0.13	0.29	0.92
PART MATTER		G/HP-HR	0.02	0.04	0.11	0.20	0.60
TOTAL NOX (AS NO2)		LB/HR	4.21	2.99	1.91	0.83	0.48
TOTAL CO		LB/HR	0.20	0.24	0.32	0.30	0.47
TOTAL HC		LB/HR	0.08	0.08	0.07	0.07	0.09
TOTAL CO2		LB/HR	521	399	284	171	107
PART MATTER		LB/HR	0.02	0.03	0.06	0.05	0.06
OXYGEN IN EXH		%	11.3	12.3	13.4	15.3	17.0

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

ENGINE POWER		BHP	469	352	235	117	46.9
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	2,064	1,465	936	406	234
TOTAL CO		G/HR	170	203	271	258	402
TOTAL HC		G/HR	69	65	59	64	81
PART MATTER		G/HR	15.6	24.7	48.9	46.1	54.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,963.8	1,805.0	1,621.8	1,166.3	1,061.4
TOTAL CO	(CORR 5% O2)	MG/NM3	161.6	251.3	471.6	741.6	1,818.1
TOTAL HC	(CORR 5% O2)	MG/NM3	56.9	69.9	89.1	159.3	319.1
PART MATTER	(CORR 5% O2)	MG/NM3	12.5	26.4	74.7	119.0	226.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	957	879	790	568	517
TOTAL CO	(CORR 5% O2)	PPM	129	201	377	593	1,454
TOTAL HC	(CORR 5% O2)	PPM	106	130	166	297	596
TOTAL NOX (AS NO2)		G/HP-HR	4.44	4.19	4.01	3.47	5.00
TOTAL CO		G/HP-HR	0.37	0.58	1.16	2.21	8.59
TOTAL HC		G/HP-HR	0.15	0.19	0.25	0.55	1.74

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CYCLE : E3

CYCLE : E3

CYCLE : E3

CYCLE : E3

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Type	Classification	Performance Number
CHART	AMBIENT CAPABILITY CHART	EM0458
SOUND	SOUND POWER	EM0764
CHART	BSFC CONTOUR PLOT	EM0995

This performance data is supplementary data for:

[EM0458](#)

Performance Parameter Reference [Top](#)

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.

Parameters Reference: DM9600 - 15

PERFORMANCE DEFINITIONS

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 output 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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