PERFORMANCE DATA [F1X00101]

JANUARY 25, 2023

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Perf No: DM8711 **Change Level:** 01

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

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SALES MODEL:	3508C	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
MACHINE SALES MODEL:		**PEAK TORQUE SPEED (RPM):**	1,400
ENGINE POWER (BHP):	1,341	**ASPIRATION:**	TA
PEAK TORQUE (FT-LB):	4,718.9	**AFTERCOOLER TYPE:**	SCAC
COMPRESSION RATIO:	14.7	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC+1AC, 2AC
RATING LEVEL:	RAIL LINE HAUL	**AFTERCOOLER TEMP (F):**	113
PUMP QUANTITY:	2	**JACKET WATER TEMP (F):**	210.2
FUEL TYPE:	DIESEL	**TURBO CONFIGURATION:**	PARALLEL
MANIFOLD TYPE:	DRY	**TURBO QUANTITY:**	2
GOVERNOR TYPE:	ADEM3	**TURBOCHARGER MODEL:**	GTB5518BLN-52T-1.00
ELECTRONICS TYPE:	ADEM3	**CERTIFICATION YEAR:**	2009
CAMSHAFT TYPE:	STANDARD	**CRANKCASE BLOWBY RATE (FT3/HR):**	1,341.8
IGNITION TYPE:	CI	**FUEL RATE (RATED RPM) NO LOAD (GAL/HR):**	6.8
INJECTOR TYPE:	EUI	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	2,244.1
FUEL INJECTOR:	2501305		
REF EXH STACK DIAMETER (IN):	8		
MAX OPERATING ALTITUDE (FT):	3,675		

INDUSTRY	SUB INDUSTRY	APPLICATION
RAILWAY POWER	GENERAL RAILWAY	LOCOMOTIVE

General Performance Data Top

ZONE 1

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	1,207	3,522	252	0.347	0.341	59.1	57.9
1,700	1,204	3,720	266	0.340	0.334	57.8	56.7
1,600	1,202	3,944	283	0.338	0.331	57.2	56.1
1,500	1,148	4,019	288	0.343	0.336	55.4	54.4
1,400	1,159	4,347	311	0.333	0.327	54.4	53.4
1,300	1,062	4,291	307	0.328	0.322	49.2	48.2
1,200	626	2,741	196	0.338	0.331	29.8	29.2
1,100	479	2,286	164	0.348	0.341	23.5	23.0
1,000	398	2,092	150	0.352	0.346	19.8	19.4
900	338	1,972	141	0.358	0.352	17.1	16.7
800	252	1,655	119	0.360	0.353	12.8	12.5
700	204	1,529	110	0.364	0.357	10.5	10.3
600	169	1,479	106	0.371	0.364	8.8	8.7

ZONE 1

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	1,207	71.2	131.0	1,092.8	64.5	755.0	73	412.0
1,700	1,204	71.2	130.5	1,092.8	61.7	762.5	73	397.2
1,600	1,202	71.9	130.2	1,113.8	59.1	780.8	73	395.0
1,500	1,148	71.5	130.5	1,148.0	55.7	798.8	73	396.9
1,400	1,159	72.8	130.3	1,150.8	53.1	798.5	74	388.3

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
1,300	1,062	64.9	128.2	1,156.1	44.4	815.9	66	367.8
1,200	626	29.6	125.1	1,155.3	20.8	828.4	30	242.4
1,100	479	17.7	126.2	1,153.4	9.1	838.3	18	184.3
1,000	398	11.2	127.9	1,150.9	5.3	846.2	12	153.2
900	338	8.0	129.3	1,148.8	17.3	851.8	8	136.2
800	252	4.4	128.3	1,024.4	72.0	767.0	5	114.9
700	204	2.8	128.5	964.4	84.1	711.1	3	107.3
600	169	2.0	129.3	934.8	78.3	671.4	2	105.5

ZONE 1

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	1,207	2,961.6	7,091.7	13,084.7	13,502.1	2,870.5	2,635.7
1,700	1,204	2,869.4	6,816.8	12,618.9	13,028.8	2,742.3	2,512.0
1,600	1,202	2,773.0	6,648.2	12,116.7	12,522.8	2,635.1	2,416.1
1,500	1,148	2,602.2	6,394.4	11,475.3	11,868.6	2,498.3	2,278.5
1,400	1,159	2,543.9	6,134.8	11,001.9	11,387.9	2,397.4	2,204.0
1,300	1,062	2,203.9	5,383.9	9,512.8	9,861.4	2,075.2	1,901.2
1,200	626	1,283.8	3,134.2	5,475.1	5,686.7	1,196.4	1,095.2
1,100	479	915.5	2,268.3	3,894.0	4,060.0	859.2	781.2
1,000	398	717.7	1,789.9	3,048.1	3,187.9	673.9	608.8
900	338	591.5	1,478.4	2,512.3	2,633.4	554.3	498.2
800	252	471.9	1,098.2	2,001.0	2,091.6	440.2	397.8
700	204	388.2	866.4	1,651.6	1,725.8	363.8	329.0
600	169	319.6	695.1	1,371.5	1,434.3	302.1	272.4

ZONE 1-2

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	1,314	3,835	275	0.348	0.341	64.5	63.3
1,700	1,313	4,056	291	0.342	0.336	63.3	62.1
1,600	1,287	4,226	303	0.336	0.330	61.1	59.9
1,500	1,231	4,310	309	0.340	0.333	58.9	57.8
1,400	1,246	4,674	335	0.331	0.324	58.1	57.0
1,300	1,097	4,432	317	0.326	0.319	50.3	49.4
1,200	708	3,099	222	0.335	0.328	33.4	32.8
1,100	502	2,395	172	0.349	0.342	24.6	24.2
1,000	398	2,092	150	0.352	0.346	19.8	19.4
900	338	1,972	141	0.358	0.352	17.1	16.7
800	252	1,655	119	0.360	0.353	12.8	12.5
700	204	1,529	110	0.364	0.357	10.5	10.3
600	169	1,479	106	0.371	0.364	8.8	8.7

ZONE 1-2

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	1,314	73.8	131.9	1,161.5	66.8	818.0	76	422.0
1,700	1,313	74.1	131.8	1,162.7	63.7	823.4	76	410.1
1,600	1,287	73.6	130.9	1,157.5	60.1	820.9	75	402.1
1,500	1,231	73.2	131.0	1,187.6	56.6	834.5	74	403.0
1,400	1,246	74.4	130.8	1,194.5	53.9	838.4	76	394.4
1,300	1,097	66.1	128.5	1,162.6	45.0	820.4	67	371.5
1,200	708	35.1	125.6	1,198.0	23.6	843.6	36	266.5
1,100	502	19.3	126.4	1,182.4	10.5	850.0	20	192.6
1,000	398	11.2	127.9	1,150.9	5.3	846.2	12	153.2
900	338	8.0	129.3	1,148.8	17.3	851.8	8	136.2
800	252	4.4	128.3	1,024.4	72.0	767.0	5	114.9
700	204	2.8	128.5	964.4	84.1	711.1	3	107.3

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
600	169	2.0	129.3	934.8	78.3	671.4	2	105.5

ZONE 1-2

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	1,314	3,040.0	7,597.1	13,432.5	13,890.1	2,923.4	2,673.1
1,700	1,313	2,935.3	7,356.6	12,942.3	13,391.5	2,819.0	2,570.9
1,600	1,287	2,809.1	6,976.1	12,288.9	12,722.2	2,678.4	2,447.5
1,500	1,231	2,634.7	6,674.5	11,627.4	12,045.5	2,535.7	2,304.9
1,400	1,246	2,573.9	6,421.7	11,143.7	11,555.6	2,432.4	2,228.0
1,300	1,097	2,224.6	5,459.6	9,607.8	9,964.8	2,096.9	1,919.1
1,200	708	1,404.9	3,472.9	5,998.3	6,235.5	1,310.2	1,197.1
1,100	502	944.7	2,363.1	4,020.5	4,194.9	887.1	805.6
1,000	398	717.7	1,789.9	3,048.1	3,187.9	673.9	608.8
900	338	591.5	1,478.4	2,512.3	2,633.4	554.3	498.2
800	252	471.9	1,098.2	2,001.0	2,091.6	440.2	397.8
700	204	388.2	866.4	1,651.6	1,725.8	363.8	329.0
600	169	319.6	695.1	1,371.5	1,434.3	302.1	272.4

ZONE 2-3

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	1,341	3,913	280	0.349	0.342	66.0	64.7
1,700	1,341	4,143	297	0.343	0.336	64.8	63.6
1,600	1,341	4,402	315	0.336	0.330	63.6	62.4
1,500	1,274	4,461	319	0.338	0.332	60.8	59.6
1,400	1,258	4,719	338	0.330	0.324	58.6	57.5
1,300	1,125	4,546	326	0.323	0.317	51.3	50.3
1,200	708	3,099	222	0.335	0.328	33.4	32.8
1,100	502	2,395	172	0.349	0.342	24.6	24.2
1,000	398	2,092	150	0.352	0.346	19.8	19.4
900	338	1,972	141	0.358	0.352	17.1	16.7
800	252	1,655	119	0.360	0.353	12.8	12.5
700	204	1,529	110	0.364	0.357	10.5	10.3
600	169	1,479	106	0.371	0.364	8.8	8.7

ZONE 2-3

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	1,341	74.6	132.1	1,178.7	67.6	834.6	77	423.9
1,700	1,341	74.8	132.1	1,180.7	64.3	839.1	77	413.5
1,600	1,341	74.7	131.5	1,187.6	60.8	847.2	76	407.5
1,500	1,274	74.0	131.3	1,208.0	57.1	852.9	75	406.3
1,400	1,258	74.6	130.9	1,201.0	54.0	844.4	76	395.1
1,300	1,125	66.9	128.7	1,168.0	45.5	824.1	68	374.3
1,200	708	35.1	125.6	1,198.0	23.6	843.6	36	266.5
1,100	502	19.3	126.4	1,182.4	10.5	850.0	20	192.6
1,000	398	11.2	127.9	1,150.9	5.3	846.2	12	153.2
900	338	8.0	129.3	1,148.8	17.3	851.8	8	136.2
800	252	4.4	128.3	1,024.4	72.0	767.0	5	114.9
700	204	2.8	128.5	964.4	84.1	711.1	3	107.3
600	169	2.0	129.3	934.8	78.3	671.4	2	105.5

ZONE 2-3

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

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)
1,800	1,341	3,070.3	7,769.4	13,559.1	14,027.5	2,951.4	2,695.9
1,700	1,341	2,951.9	7,496.8	13,023.1	13,482.7	2,838.0	2,585.3
1,600	1,341	2,836.2	7,202.2	12,416.7	12,868.0	2,709.6	2,470.6
1,500	1,274	2,651.9	6,822.1	11,707.8	12,139.0	2,555.4	2,318.9
1,400	1,258	2,577.3	6,462.6	11,159.8	11,575.4	2,436.5	2,230.6
1,300	1,125	2,239.7	5,517.2	9,677.4	10,041.1	2,113.1	1,932.3
1,200	708	1,404.9	3,472.9	5,998.3	6,235.5	1,310.2	1,197.1
1,100	502	944.7	2,363.1	4,020.5	4,194.9	887.1	805.6
1,000	398	717.7	1,789.9	3,048.1	3,187.9	673.9	608.8
900	338	591.5	1,478.4	2,512.3	2,633.4	554.3	498.2
800	252	471.9	1,098.2	2,001.0	2,091.6	440.2	397.8
700	204	388.2	866.4	1,651.6	1,725.8	363.8	329.0
600	169	319.6	695.1	1,371.5	1,434.3	302.1	272.4

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	1,341	3,913	280	0.349	0.342	66.0	64.7
1,700	1,341	4,143	297	0.343	0.336	64.8	63.6
1,600	1,341	4,402	315	0.336	0.330	63.6	62.4
1,500	1,274	4,461	319	0.338	0.332	60.8	59.6
1,400	1,258	4,719	338	0.330	0.324	58.6	57.5
1,300	1,140	4,605	330	0.322	0.316	51.8	50.8
1,200	1,073	4,695	336	0.322	0.316	48.7	47.8
1,100	589	2,811	201	0.351	0.344	29.1	28.6
1,000	468	2,458	176	0.360	0.353	23.8	23.3
900	386	2,254	161	0.367	0.360	20.0	19.6
800	271	1,778	127	0.363	0.356	13.9	13.6
700	217	1,630	117	0.368	0.361	11.3	11.1
600	177	1,550	111	0.377	0.370	9.4	9.2

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	1,341	74.6	132.1	1,178.7	67.6	834.6	77	423.9
1,700	1,341	74.8	132.1	1,180.7	64.3	839.1	77	413.5
1,600	1,341	74.7	131.5	1,187.6	60.8	847.2	76	407.5
1,500	1,274	74.0	131.3	1,208.0	57.1	852.9	75	406.3
1,400	1,258	74.6	130.9	1,201.0	54.0	844.4	76	395.1
1,300	1,140	67.3	128.8	1,170.9	45.7	826.0	68	375.6
1,200	1,073	58.3	127.5	1,253.6	36.2	887.1	59	349.9
1,100	589	25.1	127.0	1,287.7	17.8	893.6	26	225.4
1,000	468	15.9	128.8	1,283.2	10.6	909.1	16	178.7
900	386	10.3	130.7	1,274.7	9.0	923.1	11	151.9
800	271	5.0	129.4	1,088.5	54.8	813.3	5	119.3
700	217	3.1	129.4	1,023.1	79.2	757.7	3	110.1
600	177	2.1	130.0	979.7	78.3	710.3	2	107.1

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	1,341	3,070.3	7,769.4	13,559.1	14,027.5	2,951.4	2,695.9
1,700	1,341	2,951.9	7,496.8	13,023.1	13,482.7	2,838.0	2,585.3
1,600	1,341	2,836.2	7,202.2	12,416.7	12,868.0	2,709.6	2,470.6
1,500	1,274	2,651.9	6,822.1	11,707.8	12,139.0	2,555.4	2,318.9
1,400	1,258	2,577.3	6,462.6	11,159.8	11,575.4	2,436.5	2,230.6
1,300	1,140	2,247.0	5,546.2	9,711.3	10,078.5	2,121.0	1,938.7
1,200	1,073	1,895.9	4,882.7	8,126.7	8,472.3	1,782.6	1,619.5

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)
1,100	589	1,055.5	2,723.6	4,501.4	4,707.8	989.6	894.2
1,000	468	784.9	2,064.8	3,342.6	3,510.9	741.7	664.8
900	386	623.0	1,654.8	2,653.6	2,795.4	588.4	523.6
800	271	477.1	1,156.6	2,025.9	2,124.2	446.7	401.2
700	217	390.2	908.1	1,661.9	1,741.9	366.8	329.5
600	177	320.5	723.4	1,376.3	1,443.0	304.0	272.7

CUBIC DEMAND

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	1,341	3,913	280	0.349	0.342	66.0	64.7
1,700	1,130	3,490	250	0.342	0.335	54.5	53.4
1,600	942	3,092	221	0.350	0.343	46.4	45.5
1,500	776	2,717	195	0.362	0.355	39.6	38.9
1,400	631	2,367	170	0.368	0.361	32.7	32.1
1,300	505	2,041	146	0.383	0.375	27.2	26.7
1,200	397	1,739	125	0.349	0.342	19.5	19.2
1,100	306	1,461	105	0.354	0.348	15.3	15.0
1,000	230	1,208	86	0.359	0.352	11.6	11.4
900	168	978	70	0.366	0.359	8.6	8.5
800	118	773	55	0.378	0.371	6.3	6.2
700	78.9	592	42	0.401	0.393	4.5	4.4
600	49.7	435	31	0.443	0.435	3.1	3.0

CUBIC DEMAND

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	1,341	74.6	132.1	1,178.7	67.6	834.6	77	423.9
1,700	1,130	70.2	130.0	1,055.8	61.1	723.6	72	392.5
1,600	942	66.9	128.3	993.3	56.2	667.6	68	376.3
1,500	776	59.1	127.0	989.4	47.8	665.4	60	354.9
1,400	631	44.5	124.3	1,005.0	33.9	721.2	45	292.1
1,300	505	32.8	123.8	1,049.6	25.2	782.2	34	251.9
1,200	397	14.5	123.6	975.1	13.3	765.4	15	168.6
1,100	306	8.7	124.0	911.9	25.4	708.2	9	135.0
1,000	230	5.1	124.1	801.3	58.9	637.9	6	113.7
900	168	3.1	123.6	701.1	75.4	556.0	3	101.5
800	118	1.7	123.3	593.2	76.0	454.2	2	94.3
700	78.9	0.9	123.3	502.1	76.1	352.9	1	91.7
600	49.7	0.5	123.6	430.9	78.5	255.9	1	92.5

CUBIC DEMAND

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	1,341	3,070.3	7,769.4	13,559.1	14,027.5	2,951.4	2,695.9
1,700	1,130	2,848.6	6,530.0	12,515.0	12,901.4	2,713.4	2,492.9
1,600	942	2,667.0	5,757.6	11,610.2	11,939.5	2,511.3	2,326.0
1,500	776	2,315.5	5,028.8	10,157.6	10,438.7	2,197.7	2,032.4
1,400	631	1,877.8	4,171.7	8,018.3	8,250.1	1,737.0	1,616.5
1,300	505	1,471.2	3,443.4	6,274.2	6,467.9	1,363.2	1,263.9
1,200	397	942.8	2,177.8	4,005.4	4,144.0	874.1	806.6
1,100	306	748.4	1,657.2	3,168.1	3,276.0	697.7	644.9
1,000	230	616.6	1,273.2	2,603.0	2,685.4	570.3	529.7
900	168	522.3	985.3	2,203.4	2,264.9	477.0	446.0
800	118	444.3	753.0	1,876.1	1,920.7	405.1	381.6
700	78.9	378.7	569.9	1,605.1	1,636.7	344.8	327.2
600	49.7	319.7	424.2	1,366.4	1,388.4	291.5	278.3

Heat Rejection Data Top

MAXIMUM LIMIT

ENGINE SPEED	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM 2ND STAGE 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	1,341	30,100	6,530	53,786	28,642	7,645	5,551	56,869	143,532	152,898
1,700	1,341	29,206	6,582	52,271	27,814	7,506	5,279	56,869	140,920	150,115
1,600	1,341	28,266	6,618	50,588	27,029	7,367	4,914	56,869	138,313	147,338
1,500	1,274	27,126	6,825	48,188	25,816	7,039	4,640	54,026	132,161	140,785
1,400	1,258	25,732	6,827	45,557	24,190	6,788	4,343	53,343	127,439	135,755
1,300	1,140	22,552	6,433	39,030	20,264	5,997	3,656	48,339	112,599	119,946
1,200	1,073	21,190	7,417	35,896	19,393	5,643	2,932	45,495	105,938	112,851
1,100	589	12,406	7,565	20,588	10,952	3,374	1,103	24,965	63,342	67,475
1,000	468	10,419	7,702	16,087	8,429	2,753	507	19,847	51,692	55,065
900	386	9,068	7,653	12,962	6,918	2,315	188	16,378	43,459	46,294
800	271	6,594	5,616	8,570	4,197	1,607	-97	11,488	30,162	32,131
700	217	5,409	5,091	6,595	3,016	1,307	-153	9,213	24,537	26,138
600	177	4,441	4,785	5,177	2,202	1,090	-112	7,507	20,461	21,796

Emissions Data Top

Units Filter All Units

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

ENGINE POWER		BHP	1,341	1,006	671	335	134
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	5,337	4,030	2,711	1,680	1,341
TOTAL CO		G/HR	1,666	885	560	656	501
TOTAL HC		G/HR	105	131	135	118	130
TOTAL CO2		KG/HR	656	486	336	189	106
PART MATTER		G/HR	88.0	74.3	86.0	101.3	35.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	1,673.7	1,676.3	1,648.0	1,698.7	2,336.5
TOTAL CO	(CORR 5% O2)	MG/NM3	559.3	394.1	359.3	747.1	973.3
TOTAL HC	(CORR 5% O2)	MG/NM3	30.4	50.5	75.8	114.3	212.5
PART MATTER	(CORR 5% O2)	MG/NM3	24.6	28.4	48.3	115.6	68.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	815	817	803	827	1,138
TOTAL CO	(CORR 5% O2)	PPM	447	315	287	598	779
TOTAL HC	(CORR 5% O2)	PPM	57	94	141	213	397
TOTAL NOX (AS NO2)		G/HP-HR	4.02	4.04	4.07	5.04	10.07
TOTAL CO		G/HP-HR	1.25	0.89	0.84	1.97	3.76
TOTAL HC		G/HP-HR	0.08	0.13	0.20	0.35	0.98
PART MATTER		G/HP-HR	0.07	0.07	0.13	0.30	0.27
TOTAL NOX (AS NO2)		LB/HR	11.77	8.88	5.98	3.70	2.96
TOTAL CO		LB/HR	3.67	1.95	1.23	1.45	1.11
TOTAL HC		LB/HR	0.23	0.29	0.30	0.26	0.29
TOTAL CO2		LB/HR	1,446	1,071	740	416	234
PART MATTER		LB/HR	0.19	0.16	0.19	0.22	0.08
OXYGEN IN EXH		%	10.4	12.5	13.6	14.5	16.1
DRY SMOKE OPACITY		%	2.1	2.0	2.8	5.6	2.2
BOSCH SMOKE NUMBER			0.93	0.91	1.22	2.02	0.97

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

ENGINE POWER		BHP	1,341	1,006	671	335	134
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	6,405	4,835	3,253	2,016	1,610
TOTAL CO		G/HR	2,999	1,594	1,008	1,180	902
TOTAL HC		G/HR	139	174	180	156	173
PART MATTER		G/HR	123.3	104.1	120.4	141.8	50.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,008.4	2,011.6	1,977.6	2,038.5	2,803.8
TOTAL CO	(CORR 5% O2)	MG/NM3	1,006.7	709.3	646.7	1,344.8	1,752.0
TOTAL HC	(CORR 5% O2)	MG/NM3	40.4	67.1	100.8	152.0	282.6
PART MATTER	(CORR 5% O2)	MG/NM3	34.5	39.8	67.7	161.9	95.9
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	978	980	963	993	1,366
TOTAL CO	(CORR 5% O2)	PPM	805	567	517	1,076	1,402
TOTAL HC	(CORR 5% O2)	PPM	75	125	188	284	527
TOTAL NOX (AS NO2)		G/HP-HR	4.82	4.85	4.89	6.05	12.08
TOTAL CO		G/HP-HR	2.26	1.60	1.51	3.54	6.77

ENGINE POWER	BHP	1,341	1,006	671	335	134
PERCENT LOAD	%	100	75	50	25	10
TOTAL HC	G/HP-HR	0.10	0.17	0.27	0.47	1.30
PART MATTER	G/HP-HR	0.09	0.10	0.18	0.43	0.38
TOTAL NOX (AS NO2)	LB/HR	14.12	10.66	7.17	4.44	3.55
TOTAL CO	LB/HR	6.61	3.51	2.22	2.60	1.99
TOTAL HC	LB/HR	0.31	0.38	0.40	0.34	0.38
PART MATTER	LB/HR	0.27	0.23	0.27	0.31	0.11

Regulatory Information Top

EU STAGE IIIA **2009 - 2011**

GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 97/68/EC, 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	LOCOMOTIVE	STAGE IIIA	CO: 3.5 NOx: 6.0 HC: 0.5 PM: 0.20

Altitude Derate Data Top

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	NORMAL
ALTITUDE (FT)										
0	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341
1,000	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,341
2,000	1,341	1,341	1,341	1,341	1,341	1,341	1,341	1,317	1,295	1,341
3,000	1,341	1,341	1,341	1,341	1,341	1,317	1,294	1,272	1,250	1,341
4,000	1,341	1,341	1,341	1,318	1,294	1,271	1,249	1,227	1,206	1,341
5,000	1,341	1,321	1,296	1,272	1,249	1,226	1,205	1,184	1,164	1,319
6,000	1,299	1,274	1,250	1,227	1,205	1,183	1,162	1,142	1,123	1,281
7,000	1,253	1,229	1,206	1,183	1,162	1,141	1,121	1,102	1,083	1,244
8,000	1,208	1,185	1,163	1,141	1,120	1,100	1,081	1,062	1,044	1,208
9,000	1,165	1,142	1,121	1,100	1,080	1,061	1,042	1,024	1,007	1,173
10,000	1,123	1,101	1,080	1,060	1,041	1,022	1,004	987	970	1,139
11,000	1,082	1,061	1,041	1,022	1,003	985	968	951	935	1,105
12,000	1,043	1,022	1,003	985	967	949	933	917	901	1,072
13,000	1,004	985	966	948	931	915	898	883	868	1,041
14,000	967	949	931	913	897	881	865	850	836	1,009
15,000	931	913	896	880	864	848	833	819	805	979

Cross Reference Top

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K9253	LL6077	3211160	EE022	-	F1X00001	
4486306	LL2020	3878224	EE225	-	RR400001	
0K9253	LL6077	4434112	NAP	NAP		
4486306	LL2020	5168953	EE225	-	RR400001	

General Notes Top

DM8711 - 01

SOUND PRESSURE DATA FOR THIS RATING CAN BE FOUND IN PERFORMANCE NUMBER - DM8779

Supplementary Data Top

Type	Classification	Performance Number
SOUND	SOUND PRESSURE	DM8779
CHART	BSFC CONTOUR PLOT	EM4110

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