

PERFORMANCE DATA [C18DE6D]

NOVEMBER 10, 2021

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Perf No: DM8517

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SALES MODEL:	C18	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
ENGINE POWER (BHP):	839	HERTZ:	60
GEN POWER W/O FAN (EKW):	571.0	FAN POWER (HP):	25.5
GEN POWER WITH FAN (EKW):	550.0	ASPIRATION:	TA
COMPRESSION RATIO:	14.5	AFTERCOOLER TYPE:	ATAAC
RATING LEVEL:	STANDBY	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
PUMP QUANTITY:	1	INLET MANIFOLD AIR TEMP (F):	120
FUEL TYPE:	DIESEL	JACKET WATER TEMP (F):	192.2
MANIFOLD TYPE:	DRY	TURBO CONFIGURATION:	PARALLEL
GOVERNOR TYPE:	ELEC	TURBO QUANTITY:	2
CAMSHAFT TYPE:	STANDARD	TURBOCHARGER MODEL:	S310S089 1.10A/R
IGNITION TYPE:	CI	CERTIFICATION YEAR:	2006
INJECTOR TYPE:	EUI	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,161.4
REF EXH STACK DIAMETER (IN):	6		
MAX OPERATING ALTITUDE (FT):	5,577		

INDUSTRY	SUB INDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET
OIL AND GAS	LAND PRODUCTION	PACKAGED GENSET

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GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR
550.0	100	839	334	0.333	39.4
495.0	90	748	298	0.337	35.5
440.0	80	662	263	0.347	32.4
412.5	75	620	246	0.353	30.8
385.0	70	579	230	0.358	29.2
330.0	60	498	198	0.369	26.0
275.0	50	420	167	0.379	22.4
220.0	40	344	137	0.374	18.1
165.0	30	267	106	0.361	13.6
137.5	25	229	91	0.357	11.5
110.0	20	190	75	0.354	9.5
55.0	10	109	43	0.407	6.3

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
EKW	%	BHP	IN-HG	DEG F	DEG F	DEG F	IN-HG	DEG F
550.0	100	839	66.2	121.3	1,258.5	969.1	72	398.5
495.0	90	748	62.0	118.8	1,202.2	928.6	67	380.3
440.0	80	662	58.5	113.0	1,160.8	901.2	64	366.3
412.5	75	620	56.6	111.6	1,140.6	889.5	62	358.9
385.0	70	579	54.6	110.5	1,120.6	878.0	60	351.0
330.0	60	498	49.5	108.7	1,080.3	855.9	54	330.8
275.0	50	420	42.5	106.9	1,033.6	831.7	47	302.3

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
220.0	40	344	31.2	103.4	941.8	783.6	35	252.3
165.0	30	267	18.9	99.5	829.8	716.4	22	196.6
137.5	25	229	13.7	97.4	769.2	676.9	16	172.6
110.0	20	190	8.9	95.2	704.9	632.1	11	150.4
55.0	10	109	4.7	90.7	565.9	523.5	7	126.8

GENSET POWER WITH FAN	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	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)
EKW	%	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
550.0	100	839	1,634.9	4,551.5	7,185.3	7,464.7	1,566.3	1,408.6
495.0	90	748	1,571.3	4,247.9	6,517.3	6,769.4	1,504.5	1,353.0
440.0	80	662	1,529.0	4,043.1	6,086.3	6,315.9	1,460.7	1,313.6
412.5	75	620	1,503.1	3,932.8	5,870.3	6,088.8	1,433.3	1,288.9
385.0	70	579	1,472.5	3,813.5	5,648.4	5,855.7	1,401.7	1,260.5
330.0	60	498	1,387.7	3,531.1	5,148.1	5,332.3	1,319.7	1,186.8
275.0	50	420	1,267.5	3,160.0	4,525.1	4,684.3	1,203.1	1,082.0
220.0	40	344	1,069.3	2,579.6	3,561.3	3,690.0	1,020.1	917.4
165.0	30	267	852.8	1,947.5	2,532.6	2,629.2	814.2	732.2
137.5	25	229	760.2	1,672.2	2,099.7	2,181.4	723.4	650.5
110.0	20	190	675.6	1,416.0	1,707.3	1,774.5	637.7	573.5
55.0	10	109	600.5	1,124.7	1,224.6	1,269.0	562.4	505.8

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GENSET POWER WITH FAN	PERCENT LOAD	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
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
550.0	100	839	10,236	4,379	33,837	23,714	4,601	8,019	35,600	86,378	92,014
495.0	90	748	9,270	3,879	30,767	21,099	4,143	7,279	31,728	77,785	82,861
440.0	80	662	8,473	3,452	28,605	19,335	3,770	6,824	28,059	70,789	75,408
412.5	75	620	8,072	3,260	27,549	18,491	3,587	6,559	26,285	67,352	71,746
385.0	70	579	7,677	3,088	26,501	17,629	3,404	6,256	24,539	63,902	68,072
330.0	60	498	6,938	2,849	24,056	15,753	3,023	5,460	21,139	56,750	60,453
275.0	50	420	6,255	2,678	21,096	13,590	2,610	4,378	17,826	49,002	52,199
220.0	40	344	5,538	2,458	16,665	10,320	2,107	2,883	14,581	39,563	42,145
165.0	30	267	4,769	2,102	11,962	6,968	1,582	1,469	11,339	29,704	31,643
137.5	25	229	4,346	1,629	9,974	5,532	1,338	990	9,703	25,116	26,755
110.0	20	190	3,930	1,177	8,157	4,226	1,101	630	8,042	20,669	22,018
55.0	10	109	3,192	691	5,650	2,237	726	397	4,628	13,626	14,515

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Units Filter

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN	EKW	550.0	412.5	275.0	137.5	55.0
ENGINE POWER	BHP	839	620	420	229	109
PERCENT LOAD	%	100	75	50	25	10
TOTAL NOX (AS NO2)	G/HR	4,607	2,082	1,147	1,652	1,058
TOTAL CO	G/HR	277	144	128	127	252
TOTAL HC	G/HR	9	18	28	18	24
TOTAL CO2	KG/HR	393	309	224	115	64
PART MATTER	G/HR	27.2	23.4	26.9	9.2	6.6
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	2,703.5	1,539.3	1,238.6	3,412.2	3,743.0
TOTAL CO	(CORR 5% O2) MG/NM3	161.0	107.6	134.1	262.8	1,002.3

GENSET POWER WITH FAN		EKW	550.0	412.5	275.0	137.5	55.0
ENGINE POWER		BHP	839	620	420	229	109
PERCENT LOAD		%	100	75	50	25	10
TOTAL HC	(CORR 5% O2)	MG/NM3	4.6	12.1	25.6	33.3	83.2
PART MATTER	(CORR 5% O2)	MG/NM3	13.2	15.2	23.6	15.7	23.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,317	750	603	1,662	1,823
TOTAL CO	(CORR 5% O2)	PPM	129	86	107	210	802
TOTAL HC	(CORR 5% O2)	PPM	9	23	48	62	155
TOTAL NOX (AS NO2)		G/HP-HR	5.53	3.38	2.74	7.24	9.71
TOTAL CO		G/HP-HR	0.33	0.23	0.31	0.56	2.31
TOTAL HC		G/HP-HR	0.01	0.03	0.07	0.08	0.22
PART MATTER		G/HP-HR	0.03	0.04	0.06	0.04	0.06
TOTAL NOX (AS NO2)		LB/HR	10.16	4.59	2.53	3.64	2.33
TOTAL CO		LB/HR	0.61	0.32	0.28	0.28	0.56
TOTAL HC		LB/HR	0.02	0.04	0.06	0.04	0.05
TOTAL CO2		LB/HR	867	680	495	255	142
PART MATTER		LB/HR	0.06	0.05	0.06	0.02	0.01
OXYGEN IN EXH		%	9.5	11.3	12.7	13.9	16.2
DRY SMOKE OPACITY		%	0.7	0.8	0.9	0.6	0.5
BOSCH SMOKE NUMBER			0.37	0.49	0.60	0.33	0.17

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN		EKW	550.0	412.5	275.0	137.5	55.0
ENGINE POWER		BHP	839	620	420	229	109
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	4,976	2,248	1,238	1,784	1,143
TOTAL CO		G/HR	518	270	239	238	471
TOTAL HC		G/HR	18	34	53	34	46
PART MATTER		G/HR	52.9	45.7	52.4	17.9	12.8
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,919.8	1,662.5	1,337.6	3,685.1	4,042.4
TOTAL CO	(CORR 5% O2)	MG/NM3	301.0	201.2	250.8	491.5	1,874.3
TOTAL HC	(CORR 5% O2)	MG/NM3	8.8	22.8	48.3	63.0	157.2
PART MATTER	(CORR 5% O2)	MG/NM3	25.6	29.6	46.0	30.6	45.8
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,422	810	652	1,795	1,969
TOTAL CO	(CORR 5% O2)	PPM	241	161	201	393	1,499
TOTAL HC	(CORR 5% O2)	PPM	16	43	90	118	294
TOTAL NOX (AS NO2)		G/HP-HR	5.97	3.65	2.96	7.82	10.49
TOTAL CO		G/HP-HR	0.62	0.44	0.57	1.04	4.32
TOTAL HC		G/HP-HR	0.02	0.06	0.13	0.15	0.42
PART MATTER		G/HP-HR	0.06	0.07	0.13	0.08	0.12
TOTAL NOX (AS NO2)		LB/HR	10.97	4.96	2.73	3.93	2.52
TOTAL CO		LB/HR	1.14	0.59	0.53	0.53	1.04
TOTAL HC		LB/HR	0.04	0.08	0.12	0.08	0.10
PART MATTER		LB/HR	0.12	0.10	0.12	0.04	0.03

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EPA TIER 2		2006 - 2010	
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.			
Locality	Agency	Regulation	Tier/Stage
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2
		Max Limits - G/BKW - HR	
		CO: 3.5 NOx + HC: 6.4 PM: 0.20	
EPA EMERGENCY STATIONARY		2011 - ----	
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.			
Locality	Agency	Regulation	Tier/Stage
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY
		Max Limits - G/BKW - HR	
		CO: 3.5 NOx + HC: 6.4 PM: 0.20	

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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	839	839	839	839	839	839	839	839	839	839	839	839	839
1,000	839	839	839	839	839	839	839	839	839	839	839	839	839
2,000	839	839	839	839	839	839	839	839	839	839	839	839	839
3,000	839	839	839	839	839	839	839	839	839	839	839	830	839
4,000	839	839	839	839	839	839	839	839	839	826	812	799	839
5,000	839	839	839	839	839	839	838	823	809	795	781	768	839
6,000	839	839	839	839	836	821	806	791	777	764	751	738	839
7,000	839	839	835	819	803	789	774	760	747	734	722	710	829
8,000	835	818	802	787	772	758	744	731	718	705	693	682	802
9,000	802	786	770	756	741	728	714	702	689	677	666	655	776
10,000	770	754	740	725	712	699	686	674	662	650	639	629	750
11,000	739	724	710	696	683	670	658	646	635	624	613	603	725
12,000	709	694	681	668	655	643	631	620	609	599	588	579	700
13,000	679	666	653	640	628	617	605	594	584	574	564	555	676
14,000	651	638	626	614	602	591	580	570	560	550	541	532	653
15,000	624	611	599	588	577	566	556	546	536	527	518	509	630

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Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
OK7256	PP5701	2726915	GS338	-	EST00001	
NAP	NAP	4206877	GS338	-	FST00001	

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