

PERFORMANCE DATA [512DRC7]**APRIL 29, 2020**For Help Desk Phone Numbers [Click here](#)

Perf No: EM1787

Change Level: 02

[General](#)
[Heat Rejection](#)
[Sound Emissions](#)
[Regulatory](#)
[Altitude Derate](#)
[Cross Reference](#)
[Supplementary Data](#)
[Perf Param Ref](#)

View PDF

SALES MODEL:	3512C	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
ENGINE POWER (BHP):	2,584	HERTZ:	60
GEN POWER WITH FAN (EKW):	1,750.0	FAN POWER (HP):	114.0
COMPRESSION RATIO:	14.7	ASPIRATION:	TA
RATING LEVEL:	STANDBY	AFTERCOOLER TYPE:	ATAAC
PUMP QUANTITY:	1	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
FUEL TYPE:	DIESEL	INLET MANIFOLD AIR TEMP (F):	122
MANIFOLD TYPE:	DRY	JACKET WATER TEMP (F):	210.2
GOVERNOR TYPE:	ADEM3	TURBO CONFIGURATION:	PARALLEL
ELECTRONICS TYPE:	ADEM3	TURBO QUANTITY:	4
CAMSHAFT TYPE:	STANDARD	TURBOCHARGER MODEL:	GTB5518BN-52T-1.12
IGNITION TYPE:	CI	CERTIFICATION YEAR:	2016
INJECTOR TYPE:	EUI	CRANKCASE BLOWBY RATE (FT3/HR):	2,581.2
FUEL INJECTOR:	3920221	FUEL RATE (RATED RPM) NO LOAD (GAL/HR):	8.4
UNIT INJECTOR TIMING (IN):	64.34	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,539.4
REF EXH STACK DIAMETER (IN):	10		
MAX OPERATING ALTITUDE (FT):	2,789		

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

General Performance Data [Top](#)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
1,750.0	100	2,584	318	0.334	123.4	77.0	121.0	1,175.8	59.3	848.4
1,575.0	90	2,337	288	0.328	109.6	67.5	113.7	1,114.3	50.7	818.1
1,400.0	80	2,090	257	0.333	99.4	60.7	111.4	1,092.4	45.4	811.3
1,312.5	75	1,967	242	0.336	94.3	56.7	111.7	1,087.7	42.4	814.6
1,225.0	70	1,843	227	0.338	89.1	52.4	111.7	1,083.0	39.2	818.8
1,050.0	60	1,596	197	0.345	78.8	44.3	105.9	1,058.2	33.5	815.5
875.0	50	1,349	166	0.359	69.1	37.8	103.9	1,037.6	29.0	814.7
700.0	40	1,102	136	0.375	59.1	30.6	102.2	1,007.7	24.0	809.4
525.0	30	855	105	0.395	48.3	22.5	101.6	962.4	18.6	795.4
437.5	25	732	90	0.405	42.4	18.1	100.5	923.2	15.8	773.8
350.0	20	608	75	0.415	36.1	13.6	98.0	856.7	13.1	725.1
175.0	10	361	44	0.459	23.7	6.6	93.3	657.2	8.5	584.4

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	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	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
1,750.0	100	2,584	82	431.5	5,708.8	14,299.5	24,664.1	25,528.8	5,374.9	4,942.5
1,575.0	90	2,337	72	384.4	5,329.7	12,802.2	22,634.3	23,401.8	4,926.0	4,539.5
1,400.0	80	2,090	65	361.8	4,977.4	11,856.5	21,095.6	21,791.5	4,586.7	4,233.1
1,312.5	75	1,967	61	351.5	4,730.4	11,327.5	20,108.8	20,768.8	4,370.6	4,036.2
1,225.0	70	1,843	56	340.5	4,469.4	10,773.6	19,062.1	19,685.8	4,143.3	3,828.6
1,050.0	60	1,596	48	310.4	4,060.6	9,715.3	17,236.6	17,787.8	3,745.9	3,466.7
875.0	50	1,349	41	283.9	3,718.9	8,836.9	15,714.6	16,198.6	3,409.3	3,162.4
700.0	40	1,102	33	249.4	3,342.6	7,825.5	13,990.0	14,403.8	3,031.8	2,816.9
525.0	30	855	25	214.0	2,863.7	6,632.4	11,981.6	12,320.2	2,598.2	2,420.4
437.5	25	732	20	195.1	2,608.7	5,926.7	10,940.9	11,237.8	2,362.4	2,205.2
350.0	20	608	16	174.0	2,352.0	5,124.7	9,892.8	10,146.1	2,126.8	1,990.7
175.0	10	361	8	133.4	1,967.8	3,754.6	8,233.2	8,398.3	1,768.1	1,674.1

Heat Rejection Data [Top](#)

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
1,750.0	100	2,584	33,968	7,341	99,777	53,677	14,107	31,457	109,593	264,853	282,135
1,575.0	90	2,337	32,065	6,764	87,199	46,069	12,528	25,317	99,116	235,211	250,559
1,400.0	80	2,090	29,540	6,560	80,772	42,211	11,365	21,679	88,641	213,375	227,298
1,312.5	75	1,967	27,801	6,507	77,997	40,524	10,776	19,782	83,403	202,321	215,522
1,225.0	70	1,843	26,083	6,453	75,105	38,764	10,186	17,898	78,165	191,236	203,714
1,050.0	60	1,596	24,224	6,210	67,344	34,747	9,003	14,438	67,689	169,032	180,061
875.0	50	1,349	21,892	6,017	61,151	31,548	7,899	11,636	57,213	148,309	157,986
700.0	40	1,102	21,273	5,838	52,785	27,688	6,755	8,361	46,737	126,831	135,106
525.0	30	855	18,808	5,483	44,114	22,905	5,518	5,392	36,261	103,591	110,350
437.5	25	732	17,424	5,180	39,077	19,830	4,843	4,140	31,024	90,930	96,864
350.0	20	608	16,617	4,814	32,185	15,766	4,122	3,017	25,786	77,386	82,436
175.0	10	361	14,061	3,965	19,447	8,030	2,707	1,311	15,310	50,815	54,131

Sound Data [Top](#)

Note(s)

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

Emissions Data [Top](#)

Units Filter ▾

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN	EKW	1,750.0	1,312.5	875.0	437.5	175.0
ENGINE POWER	BHP	2,584	1,967	1,349	732	361
PERCENT LOAD	%	100	75	50	25	10
TOTAL NOX (AS NO2)	G/HR	15,917	10,494	5,434	2,339	2,030
TOTAL CO	G/HR	2,411	2,668	1,954	1,483	1,675
TOTAL HC	G/HR	406	334	309	319	386
PART MATTER	G/HR	187.3	188.7	209.2	123.5	105.3

GENSET POWER WITH FAN		EKW	1,750.0	1,312.5	875.0	437.5	175.0
ENGINE POWER		BHP	2,584	1,967	1,349	732	361
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,869.0	2,484.4	1,737.4	1,263.3	2,116.8
TOTAL CO	(CORR 5% O2)	MG/NM3	435.9	631.7	628.8	808.2	1,734.4
TOTAL HC	(CORR 5% O2)	MG/NM3	63.4	68.3	87.1	148.5	344.6
PART MATTER	(CORR 5% O2)	MG/NM3	28.4	37.8	58.3	53.3	96.5
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,398	1,210	846	615	1,031
TOTAL CO	(CORR 5% O2)	PPM	349	505	503	647	1,388
TOTAL HC	(CORR 5% O2)	PPM	118	128	162	277	643
TOTAL NOX (AS NO2)		G/HP-HR	6.18	5.34	4.03	3.20	5.62
TOTAL CO		G/HP-HR	0.94	1.36	1.45	2.03	4.64
TOTAL HC		G/HP-HR	0.16	0.17	0.23	0.44	1.07
PART MATTER		G/HP-HR	0.07	0.10	0.16	0.17	0.29
TOTAL NOX (AS NO2)		LB/HR	35.09	23.14	11.98	5.16	4.47
TOTAL CO		LB/HR	5.31	5.88	4.31	3.27	3.69
TOTAL HC		LB/HR	0.89	0.74	0.68	0.70	0.85
PART MATTER		LB/HR	0.41	0.42	0.46	0.27	0.23

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN		EKW	1,750.0	1,312.5	875.0	437.5	175.0
ENGINE POWER		BHP	2,584	1,967	1,349	732	361
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	13,264	8,745	4,528	1,949	1,691
TOTAL CO		G/HR	1,339	1,482	1,086	824	931
TOTAL HC		G/HR	305	251	233	240	290
TOTAL CO2		KG/HR	1,284	980	714	432	245
PART MATTER		G/HR	133.8	134.8	149.4	88.2	75.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,390.9	2,070.4	1,447.9	1,052.8	1,764.0
TOTAL CO	(CORR 5% O2)	MG/NM3	242.2	350.9	349.3	449.0	963.6
TOTAL HC	(CORR 5% O2)	MG/NM3	47.7	51.4	65.5	111.7	259.1
PART MATTER	(CORR 5% O2)	MG/NM3	20.3	27.0	41.6	38.0	68.9
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,165	1,008	705	513	859
TOTAL CO	(CORR 5% O2)	PPM	194	281	279	359	771
TOTAL HC	(CORR 5% O2)	PPM	89	96	122	208	484
TOTAL NOX (AS NO2)		G/HP-HR	5.15	4.45	3.36	2.67	4.68
TOTAL CO		G/HP-HR	0.52	0.75	0.81	1.13	2.58
TOTAL HC		G/HP-HR	0.12	0.13	0.17	0.33	0.80
PART MATTER		G/HP-HR	0.05	0.07	0.11	0.12	0.21
TOTAL NOX (AS NO2)		LB/HR	29.24	19.28	9.98	4.30	3.73
TOTAL CO		LB/HR	2.95	3.27	2.39	1.82	2.05
TOTAL HC		LB/HR	0.67	0.55	0.51	0.53	0.64
TOTAL CO2		LB/HR	2,830	2,161	1,575	953	540
PART MATTER		LB/HR	0.30	0.30	0.33	0.19	0.17
OXYGEN IN EXH		%	10.0	10.7	11.5	12.7	15.0
DRY SMOKE OPACITY		%	2.1	2.8	3.6	2.9	3.0
BOSCH SMOKE NUMBER			0.73	1.02	1.31	1.05	1.10

Regulatory Information [Top](#)

EPA EMERGENCY STATIONARY	2011 - ----			
<p>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.</p>				
Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 6.4 PM: 0.20

Altitude Derate Data [Top](#)

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	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,532	2,584
1,000	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,554	2,510	2,469	2,584
2,000	2,584	2,584	2,584	2,584	2,584	2,584	2,584	2,550	2,505	2,462	2,420	2,380	2,584

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
3,000	2,565	2,565	2,565	2,565	2,565	2,549	2,503	2,458	2,415	2,373	2,333	2,294	2,565
4,000	2,477	2,477	2,477	2,477	2,477	2,456	2,412	2,368	2,327	2,287	2,248	2,211	2,477
5,000	2,392	2,392	2,392	2,392	2,392	2,366	2,323	2,282	2,242	2,203	2,166	2,130	2,392
6,000	2,310	2,310	2,310	2,310	2,310	2,279	2,238	2,198	2,159	2,122	2,086	2,051	2,310
7,000	2,231	2,231	2,231	2,231	2,231	2,194	2,154	2,116	2,079	2,043	1,938	1,680	2,231
8,000	2,156	2,156	2,156	2,156	2,152	2,112	2,074	2,037	2,001	1,783	1,576	1,370	2,156
9,000	2,083	2,083	2,083	2,083	2,071	2,033	1,996	1,960	1,680	1,499	1,292	1,137	2,083
10,000	2,013	2,013	2,013	2,013	1,992	1,956	1,809	1,602	1,395	1,214	1,085	982	2,013
11,000	1,945	1,945	1,945	1,945	1,916	1,705	1,525	1,292	1,163	1,034	930	853	1,945
12,000	1,880	1,880	1,880	1,835	1,628	1,421	1,214	1,085	982	904	827	749	1,880
13,000	1,818	1,818	1,731	1,525	1,318	1,163	1,034	930	853	775	724	698	1,818
14,000	1,758	1,628	1,421	1,240	1,111	1,008	904	827	749	724	672	646	1,705
15,000	1,550	1,344	1,163	1,059	956	853	801	749	698	672			1,473

Cross Reference [Top](#)

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
4577181	LL1863	4994641	PG041	LS	RRL00001	
4577181	LL1863	5157730	PG041	-	LYP00001	

Supplementary Data [Top](#)

Type	Classification	Performance Number
SOUND	SOUND PRESSURE	DM8779

Performance Parameter Reference [Top](#)

Parameters Reference: DM9600 - 11

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.

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 29 deg C (84.2 deg F), where the density is 838.9 G/Liter (7.001 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, scavange 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.

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

