Perf No: EM2324 **Change Level:** 10

General | Heat Rejection | Emissions | Regulatory | Altitude Derate | Cross Reference | Supplementary Data | Perf Param Ref
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SALES MODEL:	C32	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
ENGINE POWER (BHP):	1,829	**HERTZ:**	60
GEN POWER WITH FAN (EKW):	1,250.0	**FAN POWER (HP):**	60.3
COMPRESSION RATIO:	14	**ASPIRATION:**	TA
RATING LEVEL:	STANDBY	**AFTERCOOLER TYPE:**	ATAAC
PUMP QUANTITY:	1	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, AC
FUEL TYPE:	DIESEL	**INLET MANIFOLD AIR TEMP (F):**	120
MANIFOLD TYPE:	DRY	**JACKET WATER TEMP (F):**	210.2
GOVERNOR TYPE:	ADEM4	**TURBO CONFIGURATION:**	PARALLEL
ELECTRONICS TYPE:	ADEM4	**TURBO QUANTITY:**	2
IGNITION TYPE:	CI	**TURBOCHARGER MODEL:**	GT5733-1.6A/R
INJECTOR TYPE:	EUI	**CERTIFICATION YEAR:**	2017
REF EXH STACK DIAMETER (IN):	6	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	1,913.4
MAX OPERATING ALTITUDE (FT):	5,400		

INDUSTRY	SUB INDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data Top

Note(s)
THIS STANDBY RATING IS FOR A STANDBY ONLY ENGINE ARRANGEMENT. RERATING THE ENGINE TO A PRIME OR CONTINUOUS RATING IS NOT PERMITTED.

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
1,250.0	100	1,821	409	0.336	86.3
1,125.0	90	1,642	369	0.343	79.3
1,000.0	80	1,465	329	0.354	73.2
937.5	75	1,377	309	0.361	70.1
875.0	70	1,289	290	0.357	65.0
750.0	60	1,115	250	0.350	55.0
625.0	50	942	212	0.356	47.2
500.0	40	770	173	0.365	39.7
375.0	30	598	134	0.367	30.9
312.5	25	511	115	0.369	26.6
250.0	20	424	95	0.375	22.4
125.0	10	244	55	0.402	13.9

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
1,250.0	100	1,821	94.3	117.9	1,177.6	806.6	99	487.0
1,125.0	90	1,642	89.7	113.2	1,139.6	786.2	94	466.3
1,000.0	80	1,465	84.9	111.1	1,125.0	770.7	90	450.3
937.5	75	1,377	83.4	113.3	1,112.5	764.3	88	441.2
875.0	70	1,289	77.5	111.6	1,076.1	751.3	82	418.8
750.0	60	1,115	62.8	104.2	1,010.2	733.5	67	368.5
625.0	50	942	52.2	99.0	967.0	720.3	56	332.0
500.0	40	770	41.7	94.0	952.9	706.8	45	294.3
375.0	30	598	27.5	90.1	869.6	687.0	30	235.3
312.5	25	511	21.0	89.1	832.1	670.5	23	206.5
250.0	20	424	15.2	89.5	806.0	642.6	17	180.7
125.0	10	244	5.0	91.2	642.7	547.9	6	132.9

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)
EKW	%	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN
1,250.0	100	1,821	4,168.3	10,005.8	17,027.4	17,639.4	3,885.1
1,125.0	90	1,642	4,026.2	9,500.0	16,497.7	17,060.1	3,748.9
1,000.0	80	1,465	3,901.7	9,086.5	16,028.5	16,547.5	3,631.0
937.5	75	1,377	3,822.3	8,855.0	15,727.9	16,225.2	3,557.0
875.0	70	1,289	3,617.6	8,314.2	14,951.9	15,412.1	3,375.6
750.0	60	1,115	3,114.3	7,116.6	12,999.2	13,389.1	2,932.5
625.0	50	942	2,754.6	6,254.1	11,575.6	11,909.7	2,606.0
500.0	40	770	2,386.6	5,377.5	10,085.0	10,366.5	2,266.6
375.0	30	598	1,867.9	4,168.1	7,949.2	8,168.3	1,787.2
312.5	25	511	1,629.3	3,589.3	6,955.0	7,143.7	1,561.5
250.0	20	424	1,418.1	3,048.3	6,064.8	6,223.7	1,359.7
125.0	10	244	1,057.1	2,065.4	4,535.6	4,633.9	1,007.9

Heat Rejection Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	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
1,250.0	100	1,821	22,908	12,620	62,361	10,016	25,715	77,230	188,054	200,325
1,125.0	90	1,642	22,092	11,784	59,539	9,352	24,453	69,619	175,588	187,045
1,000.0	80	1,465	20,830	10,798	55,674	8,570	22,354	62,110	160,898	171,397
937.5	75	1,377	20,024	10,247	53,309	8,132	20,980	58,386	152,684	162,647
875.0	70	1,289	18,945	9,616	50,167	7,632	19,168	54,664	143,288	152,638
750.0	60	1,115	16,636	8,289	43,954	6,579	15,186	47,276	123,514	131,573
625.0	50	942	14,368	6,933	37,808	5,502	11,074	39,933	103,307	110,048
500.0	40	770	12,970	5,717	31,758	4,538	7,552	32,669	85,193	90,752
375.0	30	598	11,780	4,539	25,709	3,603	4,519	25,372	67,640	72,054
312.5	25	511	11,137	3,948	22,667	3,133	3,166	21,689	58,828	62,666
250.0	20	424	10,373	3,345	19,417	2,655	2,018	17,965	49,845	53,097
125.0	10	244	8,452	2,099	11,801	1,666	605	10,367	31,274	33,315

Emissions Data Top

Units Filter All Units

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER		EKW BHP	1,250.0 1,821	937.5 1,377	625.0 942	312.5 511	125.0 244
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	9,406	5,063	3,280	1,901	1,371
TOTAL CO		G/HR	172	192	146	403	510
TOTAL HC		G/HR	93	96	80	71	86
TOTAL CO2		KG/HR	874	707	480	273	145
PART MATTER		G/HR	24.0	31.9	23.0	55.3	31.8
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,662.7	1,758.6	1,677.1	1,726.0	2,438.7
TOTAL CO	(CORR 5% O2)	MG/NM3	44.5	61.4	70.9	332.9	844.3
TOTAL HC	(CORR 5% O2)	MG/NM3	20.8	26.6	32.6	51.9	127.5
PART MATTER	(CORR 5% O2)	MG/NM3	5.3	8.9	9.8	42.3	39.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,297	857	817	841	1,188
TOTAL CO	(CORR 5% O2)	PPM	36	49	57	266	675
TOTAL HC	(CORR 5% O2)	PPM	39	50	61	97	238
TOTAL NOX (AS NO2)		G/HP-HR	5.20	3.70	3.50	3.72	5.61
TOTAL CO		G/HP-HR	0.09	0.14	0.16	0.79	2.09
TOTAL HC		G/HP-HR	0.05	0.07	0.09	0.14	0.35
PART MATTER		G/HP-HR	0.01	0.02	0.02	0.11	0.13
TOTAL NOX (AS NO2)		LB/HR	20.74	11.16	7.23	4.19	3.02
TOTAL CO		LB/HR	0.38	0.42	0.32	0.89	1.12
TOTAL HC		LB/HR	0.21	0.21	0.18	0.16	0.19
TOTAL CO2		LB/HR	1,927	1,558	1,057	601	319
PART MATTER		LB/HR	0.05	0.07	0.05	0.12	0.07
OXYGEN IN EXH		%	10.3	11.7	12.6	12.9	14.6
DRY SMOKE OPACITY		%	0.5	0.6	0.6	1.5	0.9
BOSCH SMOKE NUMBER			0.17	0.32	0.29	1.02	0.60

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER		EKW BHP	1,250.0 1,821	937.5 1,377	625.0 942	312.5 511	125.0 244
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	11,381	6,127	3,968	2,300	1,659
TOTAL CO		G/HR	321	359	272	754	953
TOTAL HC		G/HR	176	182	151	134	163
PART MATTER		G/HR	46.8	62.2	44.9	107.8	62.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	3,221.8	2,127.9	2,029.3	2,088.5	2,950.8
TOTAL CO	(CORR 5% O2)	MG/NM3	83.2	114.7	132.6	622.6	1,578.9
TOTAL HC	(CORR 5% O2)	MG/NM3	39.4	50.3	61.7	98.2	241.0
PART MATTER	(CORR 5% O2)	MG/NM3	10.4	17.3	19.1	82.5	77.4
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,569	1,036	988	1,017	1,437
TOTAL CO	(CORR 5% O2)	PPM	67	92	106	498	1,263
TOTAL HC	(CORR 5% O2)	PPM	73	94	115	183	450
TOTAL NOX (AS NO2)		G/HP-HR	6.29	4.48	4.23	4.51	6.79
TOTAL CO		G/HP-HR	0.18	0.26	0.29	1.48	3.90
TOTAL HC		G/HP-HR	0.10	0.13	0.16	0.26	0.67
PART MATTER		G/HP-HR	0.03	0.05	0.05	0.21	0.25
TOTAL NOX (AS NO2)		LB/HR	25.09	13.51	8.75	5.07	3.66
TOTAL CO		LB/HR	0.71	0.79	0.60	1.66	2.10
TOTAL HC		LB/HR	0.39	0.40	0.33	0.29	0.36
PART MATTER		LB/HR	0.10	0.14	0.10	0.24	0.14

Regulatory Information Top

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	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 2	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	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

Note(s)

THE FOLLOWING ALTITUDE DERATE TABLE INCLUDES SOFTWARE DERATES THAT PROTECT THE ENGINE AT HIGH AMBIENT TEMPERATURES AND ALTITUDES. ACTUAL OBSERVED POWER CAN CHANGE DUE TO AMBIENT CONDITITIOI

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	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,770	1,622	1,829
1,000	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,704	1,570	1,829
2,000	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,721	1,581	1,478	1,829
3,000	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,759	1,586	1,483	1,397	1,829
4,000	1,829	1,829	1,829	1,829	1,829	1,829	1,829	1,809	1,633	1,491	1,395	1,324	1,829
5,000	1,829	1,829	1,829	1,829	1,829	1,829	1,771	1,671	1,513	1,403	1,318	1,266	1,829
6,000	1,829	1,829	1,786	1,755	1,708	1,673	1,630	1,551	1,436	1,356	1,284	1,236	1,765
7,000	1,754	1,692	1,641	1,604	1,574	1,543	1,516	1,465	1,390	1,327	1,270	1,223	1,627
8,000	1,614	1,556	1,509	1,488	1,481	1,472	1,454	1,405	1,358	1,303	1,260	1,223	1,509
9,000	1,459	1,412	1,386	1,386	1,393	1,395	1,386	1,359	1,314	1,273	1,233	1,184	1,394
10,000	1,355	1,331	1,311	1,317	1,338	1,347	1,338	1,312	1,279	1,242	1,196	1,144	1,325
11,000	1,283	1,268	1,254	1,260	1,289	1,302	1,295	1,276	1,247	1,207	1,155	1,105	1,269
12,000	1,239	1,227	1,212	1,204	1,252	1,270	1,264	1,246	1,212	1,167	1,118	989	1,232
13,000	1,196	1,183	1,169	1,151	1,209	1,241	1,232	1,212	1,175	1,131	1,061	934	1,193
14,000	1,159	1,148	1,134	1,105	1,157	1,202	1,190	1,174	1,141	1,096	971	930	1,161
15,000	1,118	1,105	1,093	1,067	1,100	1,160	1,153	1,139	1,078	1,019	946	936	1,125

Cross Reference Top

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
4486191	GG3605	4969941	PG289	-	JP500001	
4486191	GG3605	5612773	PG289	DK	JP500001	
4486191	GG3605	6034726	PG456	-	JP500001	

Supplementary Data Top

Type	Classification	Performance Number
ALTITUDE DATA	WITH NATURAL DERATE	EM2581

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