

Performance Number: DM0635

Change Level: 04

SALES MODEL:	3412C	COMBUSTION:	DI
ENGINE POWER (BHP):	1,109	ENGINE SPEED (RPM):	1,800
GEN POWER WITH FAN (EKW):	750.0	HERTZ:	60
COMPRESSION RATIO:	13	FAN POWER (HP):	51.0
RATING LEVEL:	STANDBY	ASPIRATION:	TA
PUMP QUANTITY:	1	AFTERCOOLER TYPE:	JWAC
FUEL TYPE:	DIESEL	AFTERCOOLER CIRCUIT TYPE:	JW+OC+AC
MANIFOLD TYPE:	DRY	AFTERCOOLER TEMP (F):	196
GOVERNOR TYPE:	PEEC	JACKET WATER TEMP (F):	210.2
IGNITION TYPE:	CI	TURBO CONFIGURATION:	SERIES
REF EXH STACK DIAMETER (IN):	8	TURBO QUANTITY:	4
MAX OPERATING ALTITUDE (FT):	7,546	TURBOCHARGER MODEL:	TV9215-48T-2.00
		COMBUSTION STRATEGY:	LOW BSFC
		PISTON SPD @ RATED ENG SPD (FT/MIN):	1,800.0

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

General Performance Data

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	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	DEG F
750.0	100	1,109	296	0.344	54.5	71.0	207.0	1,258.9	957.0
675.0	90	1,001	267	0.342	49.0	60.1	200.5	1,225.6	946.2
600.0	80	895	239	0.342	43.8	50.3	194.7	1,193.2	935.4
562.5	75	842	225	0.342	41.2	45.7	192.4	1,176.5	929.0
525.0	70	790	211	0.343	38.6	41.4	190.2	1,159.2	921.6
450.0	60	685	183	0.344	33.7	33.3	186.1	1,121.7	902.8
375.0	50	581	155	0.350	29.0	26.1	182.5	1,078.9	878.2
300.0	40	478	128	0.359	24.5	19.7	179.1	1,024.9	842.7
225.0	30	375	100	0.372	19.9	14.0	176.0	952.6	790.3
187.5	25	323	86	0.379	17.5	11.3	174.5	904.4	753.7
150.0	20	270	72	0.390	15.1	8.8	173.0	847.8	709.4
75.0	10	162	43	0.446	10.3	4.6	171.9	701.7	591.0

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
750.0	100	1,109	73	397.6	2,302.4	6,423.4	10,223.2	10,604.8	2,229.3	1,998.4
675.0	90	1,001	61	368.6	2,076.4	5,741.9	9,064.5	9,407.4	2,008.1	1,800.1
600.0	80	895	51	337.1	1,853.9	5,095.6	7,978.0	8,284.4	1,795.8	1,609.8
562.5	75	842	46	321.6	1,752.6	4,794.9	7,471.2	7,759.7	1,697.7	1,521.9
525.0	70	790	42	306.2	1,656.1	4,505.8	6,982.2	7,252.8	1,603.9	1,437.8
450.0	60	685	34	275.6	1,476.1	3,962.1	6,055.5	6,291.1	1,429.7	1,281.6
375.0	50	581	27	246.0	1,313.5	3,453.1	5,180.4	5,383.6	1,269.1	1,137.6
300.0	40	478	21	217.1	1,158.0	2,965.9	4,327.0	4,498.5	1,119.7	1,003.7
225.0	30	375	15	187.9	1,009.1	2,479.6	3,472.8	3,612.2	975.3	874.3
187.5	25	323	12	173.0	937.6	2,234.4	3,039.9	3,162.5	905.4	811.7
150.0	20	270	9	157.8	869.3	1,986.7	2,601.4	2,706.8	835.5	749.0
75.0	10	162	4	132.4	759.8	1,549.1	1,824.6	1,896.9	724.9	649.8

Heat Rejection Data

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAUST 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
750.0	100	1,109	26,957	6,483	45,157	26,106	3,361	7,394	47,010	117,881	125,573
675.0	90	1,001	24,285	5,858	40,209	23,034	3,162	5,915	42,461	105,924	112,836
600.0	80	895	21,782	5,516	35,545	20,246	2,952	4,437	37,962	94,658	100,835
562.5	75	842	20,529	5,299	33,354	18,899	2,850	3,814	35,727	89,089	94,902
525.0	70	790	19,280	5,062	31,223	17,630	2,747	3,242	33,492	83,553	89,004
450.0	60	685	16,834	4,550	27,128	15,128	2,531	2,218	29,050	72,822	77,574
375.0	50	581	14,557	4,379	23,314	12,794	2,309	1,421	24,633	62,775	66,871
300.0	40	478	12,359	4,272	19,557	10,484	2,086	768	20,276	53,007	56,465
225.0	30	375	10,109	4,092	15,787	8,119	1,852	225	15,899	43,078	45,889
187.5	25	323	8,903	3,896	13,801	6,865	1,701	-16	13,688	37,856	40,326
150.0	20	270	7,688	3,698	11,846	5,585	1,543	-226	11,451	32,613	34,741
75.0	10	162	5,303	3,414	8,210	3,199	1,213	-511	6,875	22,324	23,781

Emissions Data

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN	EKW	750.0	562.5	375.0	187.5	75.0
PERCENT LOAD	%	100	75	50	25	10
ENGINE POWER	BHP	1,109	842	581	323	162
TOTAL NOX (AS NO2)	G/HR	7,989	6,093	3,973	1,969	1,137
TOTAL CO	G/HR	1,462	993	724	759	828
TOTAL HC	G/HR	272	153	134	176	396
PART MATTER	G/HR	235.0	184.1	168.5	130.8	81.0
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	3,421.1	3,451.8	3,136.2	2,621.7	2,451.9
TOTAL CO	(CORR 5% O2) MG/NM3	625.0	559.7	570.6	1,022.9	2,545.3
TOTAL HC	(CORR 5% O2) MG/NM3	106.8	78.6	98.9	223.2	1,434.0
PART MATTER	(CORR 5% O2) MG/NM3	82.7	86.4	112.9	148.8	130.6
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	1,571	1,578	1,429	1,175	1,159
TOTAL CO	(CORR 5% O2) PPM	496	441	469	810	1,487
TOTAL HC	(CORR 5% O2) PPM	187	138	174	382	1,455
TOTAL NOX (AS NO2)	G/HP-HR	7.21	7.23	6.84	6.10	7.01
TOTAL CO	G/HP-HR	1.32	1.18	1.25	2.35	5.11
TOTAL HC	G/HP-HR	0.25	0.18	0.23	0.54	2.44
PART MATTER	G/HP-HR	0.21	0.22	0.29	0.41	0.50
TOTAL NOX (AS NO2)	LB/HR	17.61	13.43	8.76	4.34	2.51
TOTAL CO	LB/HR	3.22	2.19	1.60	1.67	1.83
TOTAL HC	LB/HR	0.60	0.34	0.30	0.39	0.87
PART MATTER	LB/HR	0.52	0.41	0.37	0.29	0.18

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN	EKW	750.0	562.5	375.0	187.5	75.0
PERCENT LOAD	%	100	75	50	25	10
ENGINE POWER	BHP	1,109	842	581	323	162
TOTAL NOX (AS NO2)	G/HR	6,602	5,035	3,284	1,627	939
TOTAL CO	G/HR	782	531	387	406	443
TOTAL HC	G/HR	144	81	71	93	209
TOTAL CO2	KG/HR	550	411	290	173	102
PART MATTER	G/HR	120.5	94.4	86.4	67.1	41.5
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	2,827.4	2,852.7	2,591.9	2,166.7	2,026.4
TOTAL CO	(CORR 5% O2) MG/NM3	334.2	299.3	305.1	547.0	1,361.1
TOTAL HC	(CORR 5% O2) MG/NM3	56.5	41.6	52.3	118.1	758.7
PART MATTER	(CORR 5% O2) MG/NM3	42.4	44.3	57.9	76.3	67.0
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	1,298	1,304	1,181	971	958
TOTAL CO	(CORR 5% O2) PPM	265	236	251	433	795
TOTAL HC	(CORR 5% O2) PPM	99	73	92	202	770
TOTAL NOX (AS NO2)	G/HP-HR	5.96	5.98	5.65	5.04	5.79
TOTAL CO	G/HP-HR	0.71	0.63	0.67	1.26	2.73
TOTAL HC	G/HP-HR	0.13	0.10	0.12	0.29	1.29
PART MATTER	G/HP-HR	0.11	0.11	0.15	0.21	0.26
TOTAL NOX (AS NO2)	LB/HR	14.56	11.10	7.24	3.59	2.07
TOTAL CO	LB/HR	1.72	1.17	0.85	0.90	0.98
TOTAL HC	LB/HR	0.32	0.18	0.16	0.21	0.46
TOTAL CO2	LB/HR	1,212	906	639	382	224
PART MATTER	LB/HR	0.27	0.21	0.19	0.15	0.09
OXYGEN IN EXH	%	9.8	9.9	10.6	12.3	14.7

Regulatory Information

NON-CERTIFIED	1970 - 2100
THIS ENGINE RATING IS NOT EMISSIONS CERTIFIED BY ANY DOMESTIC OR FOREIGN AGENCY.	

Altitude Derate Data

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	NORMAL
ALTITUDE (FT)												
0	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109
1,000	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109
2,000	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109
3,000	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,087	1,109
4,000	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,009	1,109
5,000	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,094	920	1,109
6,000	1,109	1,109	1,109	1,109	1,109	1,109	1,109	1,092	1,073	1,054	832	1,109
7,000	1,109	1,109	1,109	1,109	1,109	1,090	1,070	1,051	1,033	1,015	754	1,109
8,000	1,109	1,109	1,109	1,090	1,069	1,049	1,030	1,012	994	977	688	1,093
9,000	1,109	1,091	1,069	1,049	1,029	1,010	991	974	957	940	621	1,059
10,000	1,071	1,049	1,029	1,009	990	971	954	937	920	904	566	1,026
11,000	1,030	1,009	989	970	952	934	917	901	885	870	510	994
12,000	990	970	951	933	915	898	882	866	851	836	466	963
13,000	952	933	914	897	880	863	848	833	818	804	421	932
14,000	914	896	879	862	845	830	815	800	786	772	388	902
15,000	878	861	844	828	812	797	783	769	755	742	355	873

Cross Reference

Arrangement Number	Effective Serial Number	Engine Arrangement	
		Engineering Model	Engineering Model Version
1483596	1EZ00001	GS014	-
1668587	1EZ00001	GS014	-

Test Spec	Setting	Effective Serial Number	Test Specification Data			
			Engine Arrangement	Governor Type	Default Low Idle Speed	Default High Idle Speed
2T9786	PP4109	1EZ00001	1483596	ELEC		
2T9786	PP4109	1EZ00001	1668587	ELEC		

Performance Parameter Reference

Parameters Reference:DM9600-06

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 (84.2), 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, 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. Log on to the Technology and Solutions Divisions (T&SD) web page (https://pdgt.cat.com/cda/layout) for information including federal regulation applicability and time lines for implementation. Information for labeling and tagging requirements is also provided.

NOTES:

Regulation watch covers regulations in effect and future regulation changes for world, federal, state and local. This page includes

PERFORMANCE DATA[DM0635]

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items on the watch list where a regulation change or product change might be pending and may need attention of the engine product group. For additional emissions information log on to the TMI web page.

Additional product information for specific market application is available.

Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

HEAT REJECTION DEFINITIONS:

Diesel Circuit Type and HHV Balance : DM9500

EMISSIONS DEFINITIONS:

Emissions : DM1176

SOUND DEFINITIONS:

Sound Power : DM8702

Sound Pressure : TM7080

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

Date Released : 5/12/14