

GEN SET PERFORMANCE DATA [CTM00484]

MARCH 23, 2016

(CTM00484)-ENGINE (7DN00848)-GENERATOR (CRN00329)-GENSET

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Performance Number: DM1956

Change Level: 01 ▼

Sales Model: 3512 SITA	Combustion: SI	Aspr: TA
Engine Power: 725 W/O F EKW 758.0 KW	Speed: 1,500 RPM	After Cooler: SCAC
Manifold Type: DRY	Governor Type:	After Cooler Temp(C): 54
Turbo Quantity:	Engine App: GS	Turbo Arrangement:
Hertz: 50	Application Type: EPG-CONT	Engine Rating: GS Strategy:
Rating Type: CONT-LP GAS	Certification:	
Fuel: NAT GAS	Fuel Press (KPA): 10	NOx Level: TA LUFT
IGN: EIS	JW Temp (C): 99	ELEK A/F CONT: YES
Cam Type: STD	Piston:	
CARB: DELTEC	C/R: 12.0:1	

General Performance Data

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BKW	ENGINE BMEP KPA	FUEL RATE MJ-BKW/HR	FUEL RATE M3/HR	INTAKE MFLD TEMP DEG C	INTAKE MFLD P KPA	INTAKE AIR FLOW M3/MIN	EXH MFLD TEMP DEG C	EXH STACK TEMP DEG C	EXH GAS FLOW M3/MIN
725.0	100	758.0	1,172	9.490	217.8	63.5	215.7	57.9	646.0	517.0	166.7
543.8	75	568.3	878	9.950	169.9	64.2	167.2	44.6	633.1	522.0	129.3
362.5	50	378.8	586	10.780	122.3	64.6	119.6	31.2	614.7	523.0	90.7

General Performance Data 2

ENGINE SPEED RPM	PERCENT LOAD	ENGINE POWER BKW	COMPRESS OUT PRESS KPA	COMPRESS OUT TEMP DEG C
1500	207	758.0	123	133.9
1500	207	568.3	88	108.7
1500	207	378.8	48	77.8

Engine Heat Rejection Data

GEN PWR EKW	PERCENT LOAD	REJ TO JW KW	REJ TO ATMOS KW	REJ TO EXHAUST KW	EXH RCOV TO KW	FROM AFT CLR KW	WORK ENERGY KW	LHV ENERGY KW	HHV ENERGY KW
725.0	100	375.0	80.0	693.0	532	93.0	758.0	1,998.0	2,222.0
543.8	75	343.0	67.0	544.0	416	49.0	568.0	1,571.0	1,747.0
362.5	50	302.0	53.0	385.0	292	15.0	379.0	1,134.0	1,261.0

EXHAUST Sound Data: 1.5 METERS

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
725.0	100	113	102	106	108	105	106	106	106	103

EXHAUST Sound Data: 7.0 METERS

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
725.0	100	113	102	106	108	105	106	106	106	103

725.0	100	99	87	95	93	91	93	92	93	88
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EXHAUST Sound Data: 15.0 METERS

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
725.0	100	93	80	88	86	84	87	86	86	82

MECHANICAL Sound Data: 1.0 METERS

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
725.0	100	97	93	94	91	89	92	92	88	82

MECHANICAL Sound Data: 7.0 METERS

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCJ 8000HZ DB
725.0	100	87	83	84	81	79	82	82	78	72

MECHANICAL Sound Data: 15.0 METERS

GEN PWR EKW	PERCENT LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
725.0	100	81	77	79	75	73	76	76	72	67

EMISSIONS DATA**Certification:**

EMISSIONS DATA MEASUREMENT IS CONSISTENT WITH THOSE DESCRIBED IN EPA CFR 40 PART 89 SUBPART D & E AND ISO 8178-1 FOR MEASURING HC, CO, CO2 AND NOX. THESE PROCEDURES ARE VERY SIMILAR TO THE METHODS DESCRIBED IN EPA CFR 40 PART 60 APPENDIX A METHOD 25A FOR HYDROCARBONS, METHOD 10 FOR CO, METHOD 7E FOR NOX. DATA SHOWN IS BASED ON STEADY STATE ENGINE OPERATING CONDITIONS OF 25 DEG C, 96 KPA AND FUEL HAVING A LHV OF 35.64 MJ PER NORMAL CUBIC METER AT 0 DEG C AND 101.3 KPA. FUEL RATE IS BASED ON A NORMAL CUBIC METER AT 0 DEG C AND 101.3 KPA.

To properly apply this data you must refer to performance parameter DM1176 for additional information...

REFERENCE EXHAUST STACK DIAMETER	--
WET EXHAUST MASS	4,268.0 KG/HR
WET EXHAUST FLOW (517.00 C STACK TEMP)	166.70 M3/MIN
WET EXHAUST FLOW RATE (0 DEG C AND 101.2 KPA)	56.90 M3/MIN
DRY EXHAUST FLOW RATE (0 DEG C AND 101.2 KPA)	49.50 M3/MIN
FUEL FLOW RATE	3 M3/MIN

RATED SPEED "Potential site variation"

EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) G/HR	TOTAL CO G/HR	TOTAL HC G/HR	NON-METH HC KG/HR	OXYGEN IN EXHAUST PERCENT	LAMBDA
725.0	100	758.0	1,100.00	1,770.00	3,400.00	510.00	9.1000	1.63
543.8	75	568.3	850.00	1,368.00	2,925.00	439.00	9.0000	1.61
362.5	50	378.8	605.00	949.00	2,306.00	346.00	8.8000	1.57

RATED SPEED "Potential site variation"

EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) mg/norm cu M @ %5 O2	TOTAL CO mg/norm cu M @ %5 O2	TOTAL HC mg/norm cu M @ %5 O2	NON-METH HC mg/norm cu M @ %5 O2	OXYGEN IN EXHAUST PERCENT	LAMBDA
725.0	100	758.0	500	967.0	1,849.0	278.00	9.1000	1.63
543.8	75	568.3	500	967.0	2,066.0	310.00	9.0000	1.61
362.5	50	378.8	500	939.0	2,280.0	342.00	8.8000	1.57

RATED SPEED "Potential site variation"

EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) PPM @ %5 O2	TOTAL CO PPM @ %5 O2	TOTAL HC PPM @ %5 O2	OXYGEN IN EXHAUST PERCENT	LAMBDA
725.0	100	758.0	91	287	971	9.1000	1.63
543.8	75	568.3	91	287	1,085	9.0000	1.61
362.5	50	378.8	91	279	1,196	8.8000	1.57

RATED SPEED "Potential site variation"

EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) G/HP-HR	TOTAL CO G/HP-HR	TOTAL HC G/HP-HR	NON-METH HC G/HP-HR	OXYGEN IN EXHAUST PERCENT	LAMBDA
725.0	100	758.0	1.10	2.10	4.10	0.62	9.1000	1.63
543.8	75	568.3	1.20	2.20	4.70	0.71	9.0000	1.61
362.5	50	378.8	1.20	2.30	5.50	0.83	8.8000	1.57

RATED SPEED "Potential site variation"

EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) G/HP-HR	TOTAL HC G/HP-HR	TOTAL HC G/HP-HR	NON-METH HC KG/HR	OXYGEN IN EXHAUST PERCENT	LAMBDA
725.0	100	758.0	96.00	185.00	355.00	54.00	9.1000	1.63
543.8	75	568.3	104.00	200.00	427.00	65.00	9.0000	1.61
362.5	50	378.8	120.00	225.00	547.00	83.00	8.8000	1.57

Altitude Capability Data(Corrected Power Altitude Capability)

Ambient Operating Temp.	10 C	20 C	30 C	40 C	50 C	NORMAL
Altitude						
0 M	758 kw	758 kw	758 kw	752 kw	729 kw	729 kw
250 M	758 kw	758 kw	754 kw	730 kw	708 kw	708 kw
500 M	758 kw	757 kw	732 kw	709 kw	687 kw	687 kw
750 M	758 kw	735 kw	711 kw	688 kw	667 kw	667 kw
1,000 M	738 kw	713 kw	689 kw	667 kw	647 kw	647 kw
1,250 M	716 kw	691 kw	669 kw	647 kw	627 kw	627 kw
1,500 M	694 kw	671 kw	649 kw	628 kw	608 kw	608 kw
1,750 M	673 kw	650 kw	629 kw	609 kw	590 kw	590 kw

The powers listed above and all the Powers displayed are Corrected Powers

Identification Reference and Notes

Engine Arrangement:		Lube Oil Press @ Rated Spd(KPA):	--
Effective Serial No:	7NJ00001	Piston Speed @ Rated Eng SPD(M/Sec):	--
Primary Engine Test Spec:		Max Operating Altitude(M):	350.0
Performance Parm Ref:	TM0001	PEEC Elect Control Module Ref	
Performance Data Ref:	DM1956	PEEC Personality Cont Mod Ref	
Aux Coolant Pump Perf Ref:			
Cooling System Perf Ref:		Turbocharger Model	TL9214-1.25
Certification Ref:		Fuel Injector	
Certification Year:		Timing-Static (DEG):	--
Compression Ratio:	12.0	Timing-Static Advance (DEG):	--
Combustion System:	SI	Timing-Static (MM):	--
Aftercooler Temperature (C):	54	Unit Injector Timing (MM):	--
Crankcase Blowby Rate(M3/H):	--	Torque Rise (percent)	--
Fuel Rate (Rated RPM) No Load(L/HR):	--	Peak Torque Speed RPM	--
Lube Oil Press @ Low Idle Spd(KPA):	--	Peak Torque (NM):	--

Reference
Number: DM1956

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Parameters
Reference: TM0001

GAS ENGINE PERFORMANCE

TOLERANCES:

AMBIENT AIR CONDITIONS AND FUEL USED WILL AFFECT THESE VALUES.
EACH OF THE VALUES MAY VARY IN ACCORDANCE WITH THE FOLLOWING
TOLERANCES:

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POWER	+/- 3%
EXHAUST STACK TEMPERATURE	+/- 8%
INLET AIR FLOW	+/- 5%
INTAKE MANIFOLD ABSOLUTE PRESSURE - NA	+/- 5%
INTAKE MANIFOLD ABSOLUTE PRESSURE - TA	+/- 5%
INTAKE MANIFOLD TEMPERATURE	+/- 5 DEG C
EXHAUST GAS FLOW	+/- 6%
SPECIFIC FUEL CONSUMPTION	+/- 5%
FUEL RATE	+/- 5%

CONDITIONS:

POWER FOR GAS ENGINES IS BASED ON FUEL HAVING A LHV OF 33.74 KJ/L (905 BTU/CU FT) AT 101 KPA (29.91 IN HG) AND 15 DEG C (59 DEG F).
FUEL RATE IS BASED ON A CUBIC METER AT 100 KPA (29.61 IN HG) AND 15.6 DEG C (60.1 DEG F). AIR FLOW IS BASED ON A CUBIC FOOT AT 100 KPA (29.61 IN HG) AND 25 DEG C (77 DEG F). EXHAUST FLOW IS BASED ON A CUBIC FOOT AT 100 KPA (29.61 IN HG) AND STACK TEMPERATURE.

ENGINE PERFORMANCE IS OBTAINED IN ACCORDANCE WITH SAE J1995, ISO 3046/1, BS5514/1 AND DIN 6271/1 STANDARDS.

TRANSIENT RESPONSE DATA IS ACQUIRED FROM AN ENGINE/GENERATOR COMBINATION AT NORMAL OPERATING TEMPERATURE AND IN ACCORDANCE WITH ISO 3046/1 STANDARD AMBIENT CONDITIONS. ALSO IN ACCORDANCE WITH SAE J1995, BS5514/1 AND DIN 6271/1 STANDARD REFERENCE CONDITIONS.

ENGINES ARE EQUIPPED WITH STANDARD ACCESSORIES; LUBE OIL PUMP, JACKET WATER PUMP, SEPARATE CIRCUIT AFTERCOOLER WATER PUMP AND MAGNETO (EXCEPT EIS). POWER REQUIRED TO DRIVE AUXILIARIES MUST BE DEDUCTED FROM THE GROSS OUTPUT TO ARRIVE AT THE NET POWER AVAILABLE FOR THE EXTERNAL (FLYWHEEL OR GENERATOR) LOAD. TYPICAL AUXILIARIES INCLUDE COOLING FANS, AIR COMPRESSORS AND CHARGING ALTERNATORS. RATINGS MUST BE REDUCED TO COMPENSATE FOR ALTITUDE AND/OR AMBIENT TEMPERATURE CONDITIONS ACCORDING TO THE APPLICABLE DATA SHOWN ON THE PERFORMANCE DATA SET.

DEFINITIONS:

INDUSTRIAL CONTINUOUS - THE POWER AND SPEED CAPABILITY OF THE ENGINE WHICH CAN BE USED WITHOUT INTERRUPTION OR LOAD CYCLING.

GENERATOR SET CONTINUOUS - OUTPUT WHICH MAY BE UTILIZED CONTINUOUSLY WITHOUT LOAD CYCLING.

ALTITUDE:

ALTITUDE CAPABILITY - THE RECOMMENDED POWER VALUES FOR SUSTAINED

ENGINE OPERATION AT SPECIFIC LEVELS AND AMBIENT TEMPERATURES.

COLUMN "N" DATA - THE FLYWHEEL POWER OUTPUT AT NORMAL AMBIENT TEMPERATURE.

AMBIENT TEMPERATURE - TO BE MEASURED AT THE AIR CLEANER AIR INLET DURING NORMAL ENGINE OPERATION.

NORMAL TEMPERATURE - THE NORMAL TEMPERATURE AT VARIOUS SPECIFIC ALTITUDE LEVELS FOUND ON TM2001.

HEAT REJECTION

TOLERANCES:

LHV OR HHV ENERGY	+/- 5%
WORK ENERGY	+/- 3%
REJECTION TO COOLANT	+/- 10%
REJECTION TO EXHAUST	+/- 10%
EXHAUST RECOVERY	+/- 10%
FROM OIL COOLER	+/- 20%
FROM AFTERCOOLER	+/- 5%
REJECTION TO ATMOSPHERE	+/- 50%

THE FOLLOWING FORMULAS APPLY WHEN DOING AN ENERGY BALANCE:

STANDARD TEMPERATURE SYSTEM

HHV ENERGY = REJ TO COOLANT + REJ TO ATMOS + REJ TO EXH + FROM AFTCLR + WORK ENERGY

COGENERATION (HIGH TEMPERATURE) SYSTEM AND G3600

HHV ENERGY = REJ TO COOLANT + REJ TO ATMOS + REJ TO EXH + FROM OIL CLR + FROM AFTCLR + WORK ENERGY

DEFINITIONS:

REJ TO COOLANT (JACKET WATER) - TOTAL AMOUNT OF HEAT PICKED UP BY THE ENGINE COOLING SYSTEM. FOR STANDARD TEMPERATURE SYSTEMS THE OIL COOLER HEAT REJECTION IS INCLUDED. FOR COGENERATION SYSTEM AND G3600 THE OIL COOLER IS SEPARATE FROM THE JACKET WATER. THEREFORE, THE OIL COOLER HEAT REJECTION IS NOT INCLUDED IN THE REJ TO COOLANT.

REJECTION TO EXHAUST - IS BASED ON COOLING EXHAUST STACK FLOW TO 25 DEG C (77 DEG F) AND IS USED IN THE ENERGY BALANCE.

EXHAUST RECOVERY - IS THE ENERGY AVAILABLE IF THE EXHAUST STACK FLOW IS COOLED TO 177 DEG C (350.6 DEG F).

SOUND DEFINITIONS:

Sound Power : [DM8702](#)

Sound Pressure : [TM7080](#)

Date Released : 10/04/1'

Caterpillar Confidential: **Green**

Content Owner: Commercial Processes Division

Web Master(s): [PSG Web Based Systems Support](#)

Current Date: mercoledì 23 marzo 2016 17:05:12

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