

**GEN SET PERFORMANCE DATA [GPN00160]**

(GPN00160)-ENGINE (5NJ01453)-GENERATOR (MGS00713)-GENSET

**MARCH 18, 2021**

For Help Desk Phone Numbers [Click here](#)

Performance Number: DM8111

Change Level: 00

<b>Sales Model:</b> C18 DITA	<b>Combustion:</b> DI	<b>Aspr:</b> TA
<b>Engine Power:</b> 450 W/O F EKW 492.0 KW	<b>Speed:</b> 1,500 RPM	<b>After Cooler:</b> SCAC
<b>Manifold Type:</b> W/C	<b>Governor Type:</b> ELEC	<b>After Cooler Temp(C):</b> 52
<b>Turbo Quantity:</b> 1	<b>Engine App:</b> GS	<b>Turbo Arrangement:</b>
<b>Hertz:</b> 50	<b>Application Type:</b> MAR AUX ENG	<b>Engine Rating:</b> MA
<b>Rating Type:</b> PRIME	<b>Certification:</b> EPA MAR-T1 2004 - 2010 IMO - 2000 - 2006	<b>Strategy:</b>

**General Performance Data**

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BKW	ENGINE BMEP KPA	FUEL BSFC G/BKW-HR	FUEL RATE LPH	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
450.0	100	492.0	2,171	204.100	119.7	58.8	222.7	36.9	580.3	386.6	85.2
405.0	90	433.4	1,912	197.100	101.8	57.5	193.7	33.8	529.2	353.4	74.2
360.0	80	379.9	1,676	194.100	87.9	56.4	167.7	30.9	491.3	333.5	65.5
337.5	75	354.6	1,565	195.100	82.5	55.9	155.7	29.6	477.8	327.7	62.1
315.0	70	330.5	1,458	196.300	77.3	55.4	144.3	28.3	464.9	322.1	58.9
270.0	60	283.4	1,250	199.100	67.3	54.6	122.0	25.8	439.7	311.4	52.6
225.0	50	237.3	1,047	202.200	57.2	53.9	100.3	23.3	410.7	298.2	46.2
180.0	40	191.8	846	206.500	47.2	53.4	78.8	20.8	375.6	280.5	39.9
135.0	30	145.4	641	213.500	37.0	53.0	56.9	18.2	334.0	258.1	33.5
112.5	25	121.8	537	220.000	31.9	52.7	47.0	17.1	309.3	242.7	30.4
90.0	20	97.9	432	230.900	27.0	52.5	38.4	16.0	280.9	223.3	27.5
45.0	10	49.5	218	289.100	17.1	52.1	23.1	14.2	216.2	176.4	21.9

**General Performance Data 2**

ENGINE SPEED RPM	PERCENT LOAD	ENGINE POWER BKW	COMPRESS OUT PRESS KPA	COMPRESS OUT TEMP DEG C
1500	333	492.0	231	202.5
1500	333	433.4	201	179.5
1500	333	379.9	175	160.2
1500	333	354.6	162	151.8
1500	333	330.5	151	143.9
1500	333	283.4	128	128.4
1500	333	237.3	106	112.4
1500	333	191.8	84	96.4
1500	333	145.4	61	80.0
1500	333	121.8	51	72.3
1500	333	97.9	42	65.1
1500	333	49.5	26	51.6

**Engine Heat Rejection Data**

GEN PWR EKW	PERCENT LOAD	ENGINE POWER BKW	REJ TO JW KW	REJ TO ATMOS KW	REJ TO EXHAUST KW	EXH RCOV TO 177C KW	FROM OIL CLR KW	FROM AFT CLR KW	WORK ENERGY KW	LHV ENERGY KW	HHV ENERGY KW
450.0	100	492.0	271.0	40.0	365.0	169.0	63.0	100.0	492.0	1,191.0	1,268.0
405.0	90	433.4	231.0	38.0	299.0	127.0	54.0	78.0	433.0	1,013.0	1,080.0
360.0	80	379.9	201.0	37.0	253.0	101.0	47.0	60.0	380.0	875.0	932.0
337.5	75	354.6	189.0	37.0	240.0	95.0	44.0	54.0	355.0	821.0	875.0
315.0	70	330.5	178.0	37.0	228.0	88.0	41.0	47.0	330.0	770.0	820.0
270.0	60	283.4	158.0	34.0	201.0	75.0	36.0	36.0	283.0	669.0	713.0
225.0	50	237.3	139.0	31.0	174.0	62.0	30.0	26.0	237.0	570.0	607.0
180.0	40	191.8	118.0	26.0	148.0	49.0	25.0	17.0	192.0	470.0	501.0
135.0	30	145.4	95.0	21.0	122.0	35.0	20.0	9.0	145.0	368.0	392.0
112.5	25	121.8	83.0	20.0	108.0	27.0	17.0	6.0	122.0	318.0	339.0
90.0	20	97.9	72.0	18.0	94.0	18.0	14.0	4.0	98.0	268.0	286.0

**EMISSIONS DATA**

EPA MAR-T1 2004 - 2010 \*\*\*\*\* L1

Gaseous emissions data measurements are consistent with those described in EPA 40 CFR PART 94.103 and ISO 8178 for measuring HC, CO, PM, and NOx.

This engine conforms to US EPA marine compression-ignition emission regulations.

LOCALITY \_\_\_\_\_ AGENCY/LEVEL \_\_\_\_\_

U. S. (incl Calif) EPA/TIER-1

IMO - 2000 - 2006 \*\*\*\*\* M1

Gaseous emissions data measurements are consistent with those described in REGULATION 13 of ANNEX VI of MARPOL 73/78 and ISO 8178 for measuring HC, CO, PM, and NOx.

This engine's exhaust emissions are in compliance with the INTERNATIONAL MARINE ORGANIZATION'S YIMO' regulations.

REFERENCE EXHAUST STACK DIAMETER	--
WET EXHAUST MASS	2,699.0 KG/HR
WET EXHAUST FLOW (386.00 C STACK TEMP )	85.23 M3/MIN
WET EXHAUST FLOW RATE ( 0 DEG C AND 101.2 KPA)	35.27 M3/MIN
DRY EXHAUST FLOW RATE ( 0 DEG C AND 101.2 KPA)	32.18 M3/MIN
FUEL FLOW RATE	118 L/HR

**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	PART MATTER G/HR	OXYGEN IN EXHAUST PERCENT
450.0	100	492.0	4,440.00	222.00	23.00	30.20	9.7000
337.5	75	354.6	3,929.00	163.00	25.00	20.00	11.4000
225.0	50	237.3	2,635.00	150.00	31.00	19.70	12.5000
112.5	25	121.8	1,660.00	139.00	34.00	18.20	14.5000
45.0	10	49.5	1,047.00	156.00	30.00	7.30	16.9000

**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	PART MATTER mg/norm cu M @ %5 O2	OXYGEN IN EXHAUST PERCENT
450.0	100	492.0	3,271.7	163.7	15.4	18.800	9.7000
337.5	75	354.6	4,165.6	168.3	23.9	17.500	11.4000
225.0	50	237.3	4,014.7	230.6	45.4	28.600	12.5000
112.5	25	121.8	4,591.7	398.2	90.8	44.100	14.5000
45.0	10	49.5	5,351.2	782.5	145.7	36.300	16.9000

**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
450.0	100	492.0	1,752	130	27	9.7000
337.5	75	354.6	2,226	137	42	11.4000
225.0	50	237.3	2,136	184	79	12.5000
112.5	25	121.8	2,420	306	151	14.5000
45.0	10	49.5	2,855	636	246	16.9000

**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	PART MATTER G/HP-HR	OXYGEN IN EXHAUST PERCENT
450.0	100	492.0	6.73	0.34	0.03	0.046	9.7000
337.5	75	354.6	8.26	0.34	0.05	0.042	11.4000
225.0	50	237.3	8.28	0.47	0.10	0.062	12.5000
112.5	25	121.8	10.17	0.85	0.21	0.112	14.5000
45.0	10	49.5	15.77	2.35	0.45	0.111	16.9000

**RATED SPEED "Potential site variation"**

EKW	PERCENT LOAD	ENGINE POWER BKW	OXYGEN IN EXHAUST PERCENT
450.0	100	492.0	9.7000
337.5	75	354.6	11.4000
225.0	50	237.3	12.5000
112.5	25	121.8	14.5000
45.0	10	49.5	16.9000

**RATED SPEED "Nominal Data"**

EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) G/HR	TOTAL CO G/HR	TOTAL HC G/HR	TOTAL CO2 KG/HR	PART MATTER G/HR	OXYGEN IN EXHAUST PERCENT
450.0	100	492.0	3,669.00	119.00	12.00	327.4	15.50	9.7000
337.5	75	354.6	3,247.00	87.00	13.00	225.6	10.20	11.4000
225.0	50	237.3	2,178.00	80.00	17.00	153.6	10.10	12.5000
112.5	25	121.8	1,372.00	74.00	18.00	85.7	9.30	14.5000
45.0	10	49.5	865.00	83.00	16.00	45.9	3.80	16.9000

**RATED SPEED "Nominal Data"**

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	PART MATTER mg/norm cu M @ %5 O2	OXYGEN IN EXHAUST PERCENT
450.0	100	492.0	2,703.9	87.5	8.2	9.6	9.7000
337.5	75	354.6	3,442.6	90.0	12.7	9.0	11.4000
225.0	50	237.3	3,317.9	123.3	24.0	14.7	12.5000
112.5	25	121.8	3,794.8	212.9	48.0	22.6	14.5000
45.0	10	49.5	4,422.5	418.5	77.1	18.6	16.9000

**RATED SPEED "Nominal Data"**

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
450.0	100	492.0	1,448	70	14	9.7000
337.5	75	354.6	1,840	73	22	11.4000
225.0	50	237.3	1,765	98	42	12.5000
112.5	25	121.8	2,000	164	80	14.5000
45.0	10	49.5	2,360	340	130	16.9000

**RATED SPEED "Nominal Data"**

EKW	PERCENT LOAD	ENGINE POWER BKW	TOTAL NOX (AS NO2) G/HP-HR	TOTAL CO G/HP-HR	TOTAL HC G/HP-HR	PART MATTER G/HP-HR	OXYGEN IN EXHAUST PERCENT
450.0	100	492.0	5.56	0.18	0.02	0.02	9.7000
337.5	75	354.6	6.83	0.18	0.03	0.02	11.4000
225.0	50	237.3	6.84	0.25	0.05	0.03	12.5000
112.5	25	121.8	8.40	0.46	0.11	0.06	14.5000
45.0	10	49.5	13.03	1.25	0.24	0.06	16.9000

**Altitude Capability Data(Corrected Power Altitude Capability)**

Ambient Operating Temp. Altitude	10 C	20 C	30 C	40 C	50 C	NORMAL
0 M	492 kw	492 kw	492 kw	492 kw	492 kw	492 kw
300 M	492 kw	492 kw	492 kw	492 kw	480 kw	492 kw
500 M	492 kw	492 kw	492 kw	484 kw	469 kw	492 kw
1,000 M	492 kw	486 kw	470 kw	455 kw	441 kw	480 kw
1,500 M	474 kw	458 kw	442 kw	428 kw	415 kw	457 kw
2,000 M	445 kw	430 kw	416 kw	403 kw	390 kw	434 kw
2,500 M	418 kw	404 kw	391 kw	378 kw	367 kw	412 kw
3,000 M	393 kw	379 kw	367 kw	355 kw	344 kw	392 kw
3,500 M	369 kw	356 kw	344 kw	333 kw	323 kw	372 kw
4,000 M	345 kw	334 kw	323 kw	312 kw	303 kw	352 kw
4,500 M	324 kw	312 kw	302 kw	293 kw	283 kw	334 kw

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

**Identification Reference and Notes**

Engine Arrangement:	2617712	Lube Oil Press @ Rated Spd(KPA):	--
Effective Serial No:	CYG00100	Piston Speed @ Rated Eng SPD(M/Sec):	9.2
Primary Engine Test Spec:	0K6661	Max Operating Altitude(M):	750.0
Performance Parm Ref:	TM5738	PEEC Elect Control Module Ref	
Performance Data Ref:	DM8111	PEEC Personality Cont Mod Ref	
Aux Coolant Pump Perf Ref:			
Cooling System Perf Ref:		Turbocharger Model	S410W021-1.04 VOW
Certification Ref:	IMO EPA MAR T1	Fuel Injector	
Certification Year:	2005	Timing-Static (DEG):	--
Compression Ratio:	16.5	Timing-Static Advance (DEG):	--
Combustion System:	DI	Timing-Static (MM):	--
Aftercooler Temperature (C):	52	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: DM8111**

THIS PERFORMANCE DATA IS ALSO APPLICABLE TO  
ENGINE ARRANGEMENT 2617713 AND TEST SPEC 0K6662 (LH).  
EPA MAR-T1 20042010L1IMO - 20002006M1

**Parameters  
Reference: TM5738**

## **GEN SET - DIESEL**

### **TOLERANCES:**

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

Power	+/- 3%
Exhaust Stack Temperature	+/- 8%
Generator Power	+/- 5%
Inlet Airflow	+/- 5%
Intake Manifold Pressure-gage	+/- 10%
Exhaust Flow	+/- 6%
Specific Fuel Consumption	+/- 3%
Fuel Rate	+/- 5%
Heat Rejection	+/- 5%
Heat Rejection - Exhaust Only	+/- 10%

### **T4i Tolerance Exceptions**

C15: Power Tolerance	+4% , -0%
C27: Power Tolerance	+0% , -4%

### **CONDITIONS:**

ENGINE PERFORMANCE IS CORRECTED TO INLET AIR STANDARD CONDITIONS  
OF 99 KPA (29.31 IN HG) AND 25 DEG C (77 DEG F).

THESE VALUES CORRESPOND TO THE STANDARD ATMOSPHERIC PRESSURE AND  
TEMPERATURE IN ACCORDANCE WITH SAE J1995. ALSO INCLUDED IS A  
CORRECTION TO STANDARD FUEL GRAVITY OF 35 DEGREES API HAVING A  
LOWER HEATING VALUE OF 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/L  
(7.002 LB/GAL).

THE CORRECTED PERFORMANCE VALUES SHOWN FOR CATERPILLAR ENGINES WILL  
APPROXIMATE THE VALUES OBTAINED WHEN THE OBSERVED PERFORMANCE  
DATA IS CORRECTED TO SAE J1995, ISO 3046-2 & 8665 & 2288 & 9249 &  
1585, EEC 80/1269 AND DIN70020 STANDARD REFERENCE CONDITIONS.

ENGINES ARE EQUIPPED WITH STANDARD ACCESSORIES; LUBE OIL, FUEL  
PUMP AND JACKET WATER PUMP. THE POWER REQUIRED TO DRIVE  
AUXILIARIES MUST BE DEDUCTED FROM THE GROSS OUTPUT TO ARRIVE AT THE  
NET POWER AVAILABLE FOR THE EXTERNAL (FLYWHEEL) 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.

### **ALTITUDE:**

*ALTITUDE CAPABILITY* - THE RECOMMENDED REDUCED POWER VALUES FOR  
SUSTAINED ENGINE OPERATION AT SPECIFIC ALTITUDE 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 IS FOUND ON TM2001.

THE GENERATOR POWER CURVE TABULAR DATA REPRESENTS THE NET  
ELECTRICAL POWER OUTPUT OF THE GENERATOR.

### **GENERATOR SET RATINGS**

#### *EMERGENCY STANDBY POWER (ESP)*

OUTPUT AVAILABLE WITH VARYING LOAD FOR THE DURATION OF AN EMERGENCY  
OUTAGE. AVERAGE POWER OUTPUT IS 70% OF THE ESP RATING. TYPICAL  
OPERATION IS 50 HOURS PER YEAR, WITH MAXIMUM EXPECTED USAGE OF 200  
HOURS PER YEAR.

*STANDBY POWER RATING*

OUTPUT AVAILABLE WITH VARYING LOAD FOR THE DURATION OF AN EMERGENCY OUTAGE. AVERAGE POWER OUTPUT IS 70% OF THE STANDBY POWER RATING. TYPICAL OPERATION IS 200 HOURS PER YEAR, WITH MAXIMUM EXPECTED USAGE OF 500 HOURS PER YEAR.

*PRIME POWER RATING*

OUTPUT AVAILABLE WITH VARYING LOAD FOR AN UNLIMITED TIME. AVERAGE POWER OUTPUT IS 70% OF THE PRIME POWER RATING. TYPICAL PEAK DEMAND IS 100% OF PRIME RATED EKW WITH 10% OVERLOAD CAPABILITY FOR EMERGENCY USE FOR A MAXIMUM OF 1 HOUR IN 12. OVERLOAD OPERATION CANNOT EXCEED 25 HOURS PER YEAR.

*CONTINUOUS POWER RATING*

OUTPUT AVAILABLE WITH NON-VARYING LOAD FOR AN UNLIMITED TIME. AVERAGE POWER OUTPUT IS 70-100% OF THE CONTINUOUS POWER RATING. TYPICAL PEAK DEMAND IS 100% OF CONTINUOUS RATED EKW FOR 100% OF OPERATING HOURS.

**SOUND DEFINITIONS:**

Sound Power : [DM8702](#)  
Sound Pressure : [TM7080](#)

Date Released : 03/14/12