



INFORME DE SERVICIO REPARACIÓN DE GRUPO ELECTROGENO DMT230CL2

José Gilberto Pantoja Silva

GELECTROGENOS SAS www.gelectrogenos.com

Santiago de Cali 15 de Septiembre de 2017.

Señores:

CONJUNTO RESIDENCIAL TORRES DE CIUDAD JARDIN

Ingeniero Antonio Jose Tafur.

Referencia:

Informe de servicio

En cumplimiento con lo pactado en la reunión para la toma de decisión sobre la reparación del motor de accionamiento a diésel del grupo electrógeno perteneciente al conjunto, se redacta el presente informe con la finalidad de dar por finalizado el servicio.

Características del equipo:

GELECTROGENOS SAS <i>Grupos Eléctricos</i>	DATOS TÉCNICOS DEL GRUPO ELECTRÓGENO	
	DMT230CL2	
	TORRES DE CUIDAD JARDIN	
	Carrera 17F # 33D10 Movil 3122895440 Oficina 3763315 gelectrogenos@hotmail.com www.gelectrogenos.com Cali Valle Colombia gelectrogenos@hotmail.com	
	SIMAV SERVICIO, MONTAJES, ASesoría Y VENTAS	
	MODELO DEL EQUIPO	DMT 230CL2
	SERIE DEL EQUIPO	93457E-2
	AÑO DE ENSAMBLE	
	MARCA DE MOTOR	CUMMINS
	MODELO DE MOTOR	LTA10G2
	SERIE DE MOTOR	34697456
	DISPOSICIÓN DE CILINDROS	6 EN LINEA
	ALTERNADOR MARCA	LIMA Modelo
ALTERNADOR SERIE	-----	
POTENCIA NOMINAL	230 kVA 288 kW	
HORAS DE TRABAJO	0001 (arranca con 0 horas después de la reparación)	
TIPO DE REFRIGERACIÓN	HUMEDO	
APLICACIÓN DEL EQUIPO	EMERGENCIA	

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CAT Cummins Power Generation

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El procedimiento de reparación del grupo electrógeno se reemplaza los siguientes componentes del motor diésel de accionamiento:

- 1 Bomba de refrigerante
- 2 Rodamientos de biela (casquetes)
- 3 Regulador de temperatura
- 4 Juego de camisas
- 5 Juego de pistones
- 6 Empaquetadura superior
- 7 Empaquetadura inferior
- 8 Sensor de temperatura
- 9 Sensor de presión de aceite
- 10 Controlador digital con puerto CAM
- 11 Reemplazo de bandas y mangueras del circuito de refrigeración y de combustible
- 12 Aceite de motor, refrigerante y elementos filtrantes

A continuación se adjunta información para conocimiento del rendimiento del motor Cummins LTA10:

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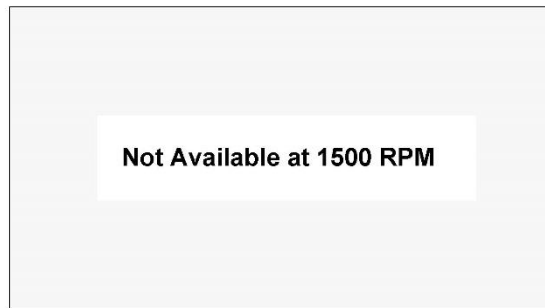
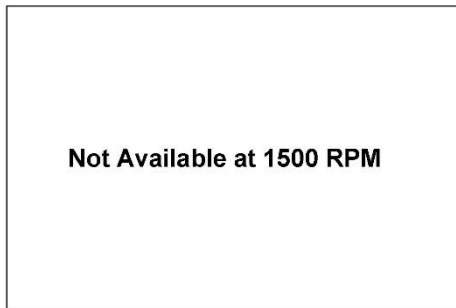


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	CUMMINS ENGINE COMPANY, INC Columbus, Indiana 47201 ENGINE PERFORMANCE CURVE		Basic Engine Model: LTA10-G1	Curve Number: FR-2237	Page No.
			Engine Critical Parts List: CPL: 1429	Date: 29Sep98	
	Displacement : 10.0 litre (610 in³)		Bore : 125 mm (4.92 in.) Stroke : 136 mm (5.35 in.)		
No. of Cylinders : 6		Aspiration : Turbocharged and Aftercooled			

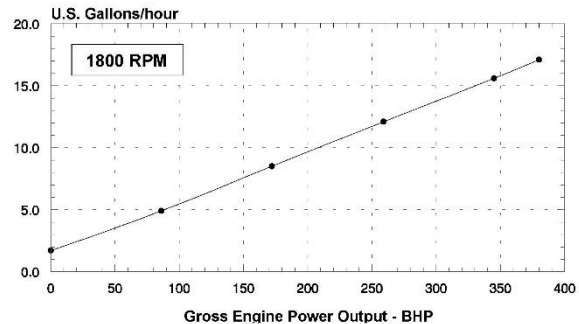
Engine Speed RPM	Standby Power		Prime Power		Continuous Power	
	kWm	BHP	kWm	BHP	kWm	BHP
1500	----	----	----	----	----	----
1800	283	380	257	345	228	305

Engine Performance Data @ 1500 RPM



Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm-h	lb/ BHP-h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	283	380	0.194	0.320	64.7	17.1
PRIME POWER						
100	257	345	0.195	0.321	59.0	15.6
75	193	259	0.202	0.332	45.8	12.1
50	128	172	0.214	0.351	32.2	8.5
25	64	86	0.246	0.405	18.5	4.9
CONTINUOUS POWER						
100	228	305	0.197	0.326	52.9	14.0



CONVERSIONS: (Litres = U.S. Gal x 3.785) (Engine kWm = BHP x 0.746) (U.S. Gal = Litres x 0.2642) (Engine BHP = Engine kWm x 1.34)

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. See reverse side for application rating guidelines.
The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/U.S. gal).
Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

TECHNICAL DATA DEPT.

CERTIFIED WITHIN 5%

CHIEF ENGINEER

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POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

STANDBY POWER RATING is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating.

This rating should be applied where reliable utility power is available. A standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

CONTINUOUS POWER RATING is applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

PRIME POWER RATING is applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

UNLIMITED TIME RUNNING PRIME POWER

Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours.

The total operating time at 100% Prime Power shall not exceed 500 hours per year.

A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

LIMITED TIME RUNNING PRIME POWER

Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

Operation At Elevated Temperature And Altitude:

The engine may be operated at:

1800 RPM up to 5,000 ft (1525 m) and 104° F (40° C) without power deration.

For sustained operation above these conditions, derate by 4% per 1,000 ft (300 m), and 1% per 10° F (2% per 11° C).

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Cummins Engine Company, Inc.

Engine Data Sheet

ENGINE MODEL : **LTA10-G1**

CONFIGURATION NUMBER : D343123GX02

DATA SHEET : DS-4750-A

DATE : 29Sep98

PERFORMANCE CURVE : FR-2237

INSTALLATION DIAGRAM

• Fan to Flywheel : 3626318

CPL NUMBER

• Engine Critical Parts List : 1429

GENERAL ENGINE DATA

Type	4-Cycle, In-line, 6-Cylinder Diesel
Aspiration	Turbocharged and Aftercooled
Bore x Stroke	4.92 x 5.35 (125 x 136)
Displacement	610 (10.0)
Compression Ratio	16.0 : 1

Dry Weight

Fan to Flywheel Engine	— lb (kg)	1995	(906)
Heat Exchanger Cooled Engine	— lb (kg)	N. A.	

Wet Weight

Fan to Flywheel Engine	— lb (kg)	2092	(950)
Heat Exchanger Cooled Engine	— lb (kg)	N. A.	

Moment of Inertia of Rotating Components

• with FW 2102 Flywheel	— lb _m • ft ² (kg • m ²)	61.5	(2.59)
• with FW — Flywheel	— lb _m • ft ² (kg • m ²)		
Center of Gravity from Rear Face of Flywheel Housing (FH 2147)	— in (mm)	25.4	(645)
Center of Gravity Above Crankshaft Centerline	— in (mm)	7.5	(190)
Maximum Static Loading at Rear Main Bearing	— lb (kg)	2000	(908)

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block	— lb • ft (N • m)	1000	(1356)
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EXHAUST SYSTEM

Maximum Back Pressure	— in Hg (mm Hg)	3	(76)
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AIR INDUCTION SYSTEM

Maximum Intake Air Restriction			
• with Dirty Filter Element	— in H ₂ O (mm H ₂ O)	25	(635)
• with Normal Duty Air Cleaner and Clean Filter Element	— in H ₂ O (mm H ₂ O)	10	(254)
• with Heavy Duty Air Cleaner and Clean Filter Element	— in H ₂ O (mm H ₂ O)	15	(381)

COOLING SYSTEM

Coolant Capacity — Engine Only	— US gal (liter)	3.38	(12.8)
— with — Heat Exchanger	— US gal (liter)	N. A.	

Maximum Coolant Friction Head External to Engine — 1800 rpm	— psi (kPa)	7	(48)
— 1500 rpm	— psi (kPa)	N. A.	N. A.

Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	60	(18.3)
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Standard Thermostat (Modulating) Range	— °F (°C)	180 - 200	(82 - 93)
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Minimum Pressure Cap	— psi (kPa)	10	(69)
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Maximum Top Tank Temperature for Standby Power	— °F (°C)	220 / 212	(104 / 100)
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Minimum Raw Water Flow @ 90°F to — Heat Exchanger	— US gpm (liter / min)	N. A.	N. A.
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Maximum Raw Water Inlet Pressure at — Heat Exchanger	— psi (kPa)	N. A.	N. A.
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LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	— psi (kPa)	15	(103)
@ Governed Speed	— psi (kPa)	30 - 50	(207 - 345)

Maximum Oil Temperature	— °F (°C)	250	(121)
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Oil Capacity with OP 2056 Oil Pan : High - Low	— US gal (liter)	9 - 8	(34.1 - 30.3)
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Total System Capacity (with Combo Filter)	— US gal (liter)	9.6	(36)
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Angularity of OP 2056 Oil Pan — Front Down		27°	
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— Front Up		45°	
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— Side to Side		42°	
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FUEL SYSTEM

Type Injection System.....	Direct Injection Cummins PT
Maximum Restriction at PT Fuel Injection Pump — with Clean Fuel Filter.....	— in Hg (mm Hg) 4.0 (102)
— with Dirty Fuel Filter.....	— in Hg (mm Hg) 8.0 (203)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head).....	— in Hg (mm Hg) 6.5 (165)
Maximum Fuel Flow to Injection Pump.....	— US gph (liter / hr) 64 (242)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement).....	— volt 24
Battery Charging System, Negative Ground.....	— ampere 35
Maximum Allowable Resistance of Cranking Circuit.....	— ohm 0.002
Minimum Recommended Battery Capacity	
• Cold Soak @ 50 °F (10 °C) and Above.....	— 0°F CCA 600
• Cold Soak @ 32 °F to 50 °F (0 °C to 10 °C).....	— 0°F CCA 640
• Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C).....	— 0°F CCA 900

COLD START CAPABILITY

Minimum Ambient Temperature for Aided (with Coolant Heater) Cold Start within 10 seconds.....	— °F (°C) 50 (10)
Minimum Ambient Temperature for Unaided Cold Start.....	— °F (°C) 30 (-1)

PERFORMANCE DATA

- All data is based on:
- Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer; not included are battery charging alternator, fan, and optional driven components.
 - Engine operating with fuel corresponding to grade No. 2-D per ASTM D975.
 - ISO 3046, Part 1, Standard Reference Conditions of:

Barometric Pressure : 100 kPa (29.53 in Hg)	Air Temperature : 25 °C (77 °F)
Altitude : 110 m (361 ft)	Relative Humidity : 30%

Steady State Stability Band at any Constant Load	— % +/- 0.25
Estimated Free Field Sound Pressure Level of a Typical Generator Set:	
Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); 1800 rpm / 1500 rpm.....	— dBA N.A.
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45°	— dBA N.A.

	STANDBY POWER		PRIME POWER	
	60 hz	50 hz	60 hz	50 hz
Governed Engine Speed.....	1800		1800	
Engine Idle Speed.....	675 - 750		675 - 750	
Gross Engine Power Output.....	380 (283)		345 (257)	
Brake Mean Effective Pressure.....	274 (1889)		249 (1717)	
Piston Speed.....	1605 (8.2)		1605 (8.2)	
Friction Horsepower.....	35 (26)		35 (26)	
Engine Water Flow at Stated Friction Head External to Engine :				
• 2 psi Friction Head.....	97 (6.1)		97 (6.1)	
• Maximum Friction Head.....	85 (5.4)		85 (5.4)	
		Not Available at 1500 RPM (50hz)		Not Available at 1500 RPM (50hz)
Engine Data with Dry Type Exhaust Manifold				
Intake Air Flow.....	665 (314)		610 (288)	
Exhaust Gas Temperature.....	965 (518)		940 (504)	
Exhaust Gas Flow.....	1825 (861)		1645 (776)	
Air to Fuel Ratio.....	24.2 : 1		24.3 : 1	
Radiated Heat to Ambient.....	2220 (39)		2025 (36)	
Heat Rejection to Coolant.....	8360 (147)		7590 (133)	
Heat Rejection to Exhaust.....	10325 (181)		9525 (167)	

N.A. - Data is not available
 N/A - Not Applicable to this engine
 TBD - To be determined

CUMMINS ENGINE COMPANY, INC.

Columbus, Indiana 47202-3005

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 DATA SHEET : DS-4750-A
 DATE : 29Sep98
 CURVE NO. : FR-2237

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Reparación al sistema de combustible:

SISTEMA CUMMINS PT

El concepto PT se debe a las variables primarias que afectan la cantidad de combustible dosificado e inyectado por cada ciclo del pistón, estas variables son la presión y el tiempo; es decir la presión de combustible entregado a los inyectores y el periodo de tiempo mediante el cual el combustible entra a estos. La entrada de combustible a los inyectores se controla mediante la bomba de inyección, mientras que el tiempo se controla mediante la velocidad de rotación del árbol de levas con el funcionamiento del motor. El sistema de inyección Cummins PT utiliza inyectores sencillos que se accionan mecánicamente. Cada inyector tiene un orificio de dosificación el cual lleva el combustible a la cámara de presión, el embolo del inyector se acciona desde el árbol de levas a través de una varilla de empuje y un balancín. El combustible fluye a través del orificio de dosificación hacia la cámara de presión únicamente durante la parte final de la carrera del pistón del motor. El combustible es suministrado a través de una bomba de alimentación (de engranes) la cual eleva la presión a un nivel intermedio y lo suministra a la galería en la culata donde están: la zona del acelerador, el regulador, el sistema de paro y el mecanismo de Control de Aire Combustible (CAC) que modifica la presión para adecuarla a las necesidades de la velocidad del motor. Aproximadamente el 70% del combustible circula a través de los inyectores sin ser utilizado hacia la galería de retorno; permitiendo la refrigeración evitando así la precipitación y la aparición de parafina y acumulación de aire en el sistema.

El sistema de inyección fue reparado en su totalidad, se repara la bomba e inyectores.

Aplicación de torque al motor de accionamiento:

Cabeza del motor:	280 L/pie
Bielas:	155 L/pie
Bancada:	280 L/pie
Calibración de válvulas	14 admisión 27 escape

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Certificación de servicio

El servicio de reparación del grupo electrógeno se certifica una garantía por tiempo limitado de 1 año o 500 horas de trabajo, lo que primero suceda

Certificamos que durante el resto del año 2017, se garantiza el servicio de mantenimiento mensual por los meses septiembre, octubre, noviembre y diciembre de 2017. Este servicio no cubre repuestos que se requieran y no estén cubiertos por la garantía.

Recomendamos que el primer cambio de aceite y elementos filtrantes se realice en un espacio de 3 meses.

Cordialmente:

Gilberto Pantoja

Gerente de servicio

Luz Elena Obando

Gerente comercial

