This document gives a complete list of technical data with some detailed explanations of the main systems, subsystems and performance of our generators, in order to support local sales documentation, tenders or even technical doubts.

While every effort has been made to ensure that the information in this manual is correct Chicago pneumatic does not assume responsibility for possible errors. Chicago pneumatic reserves the right to make changes without prior notice.

Standard Model Scope

Applying insights gained from industrial customers, rental companies, public utilities and other end users CPDG generators are designed to withstand the most demanding on-site conditions and environments.

Considering their impressive performance at full capacity, the CPDG line of generators includes excellent features for noise reduction and environmental protection.

CPDG generators are purpose built for quick, easy and safe transport and on-site handling. Built to last, a CPDG generator will provide years of dependable service for your electrical power generation needs.
All members of the widely appreciated CPDG family are intelligent multi-task units managing to power a wide range of electrical equipment in different applications.

Their superior component configuration offers a wide range of control modules, electrical settings and mechanical options, in order to guarantee superior quality at efficient operating costs.

Conceived for 100% prime power operation in the most severe outdoor conditions, ready to work in sensitive areas, CPDG generators are designed and configured for safe operation with minimal downtime under any circumstance.

Features

- Carefully selected components, accurately developed and tested configuration
- Superior standard configuration and extensive option list
- 500 hours service interval and superior accessibility to all service points
- Compact and safe concept and sturdy design
- Designed and built to last

Benefits

- Accurate and stable power regardless of the conditions
- Ability to power a wide range of applications
- Service efficiency: increased up-time
- Increased transport efficiency
- Superior resale value / longer life time

Manufacturing and Environmental Standards

The CPDG range is manufactured following stringent ISO 9001 regulations, and by a fully implemented Environmental Management System fulfilling ISO 14001 requirements.

Attention has been given to ensure minimum negative impact to the environment. The CPDG range complies with the latest noise emission directives.

Declaration of Conformity

Our CPDG is in conformity with **ISO 8528:** CPDG generators are design to comply with ISO 8528 regulation and relevant Essential Health and Safety Requirements for low emission markets.

1. Performance Data

Generator			CPDG500	CPDG500
Rated speed		rpm	1500	1800
Rated power factor (lagging)			0.8	0.8
Rated Prime Power, PRP	kVA	220V & 440V / (400V - 50Hz)	500	505,6
		380V	-	505,6
	kW	220V & 440V / (400V - 50Hz)	400	404,5
		380V	-	404,5
Limited Time Power, ESP (Stand-by)	kVA	220V & 440V / (400V - 50Hz)	531	555,2
		380V	-	555,2
	kW	220V & 440V / (400V - 50Hz)	424,8	444,2
		380V	-	444,2
Continuous Operation Power, COP (Continuous)	kVA	220V & 440V / (400V - 50Hz)	400	404,5
		380V	-	404,5
	kW	220V & 440V / (400V - 50Hz)	320	323,6
		380V	-	323,6
Rated voltage (3ph. line to line)		V	400	221 & 440 / 380
Rated voltage (1ph. line to neutral)		V	231	128 & 254 / 219
Rated current 3ph. (ESP) - (440)		A	766,4	728,5
Rated current 3ph. (ESP) - (380)		A	-	843,5
Rated current 3ph. (ESP) - (220)		A	-	1457
Maximum sound power level (LWA) complies with 2000/14/EC		dB(A)	104,7	106,7
Maximum sound pressure level (LPA) at 7 m		dB(A)	78	80
Coupling engine/alternator			Direct	Direct
Capacity fuel tank (total)		L	820	820
Fuel tank specifications			Polyethlene-linear medium density, Black	
Fuel Autonomy at full load (Considering full capacity)		H	8,2	7,1
Single step load acceptance (within G2, acc. ISO 8528-5:1993)		%	54	70
Frequency drop (lower than % isochronous)		%	<10	<10
Maximum oil consumption 100% load		l/h	0,289	0,332

Derating Table (%)

Derating Factor %	*temperature (°C)*										
	0	5	10	15	20	25	30	35	40	45	50
0	100	100	100	100	100	100	100	100	100	100	100
500	100	100	100	100	100	100	100	100	100	100	100
1000	100	100	100	100	100	100	100	100	100	100	100
1500	100	100	100	100	100	100	100	100	100	100	100
2000	100	100	99	99	99	98	98	97	97	97	96
2500	94	94	93	93	93	92	92	92	91	91	90
3000	88	88	87	87	87	86	86	86	85	85	85
3500	80	80	79	79	79	79	78	78	78	77	77
4000	72	72	72	71	71	71	70	70	70	70	69

(at 50Hz, for 60Hz check in AIB)

Limitations			
Maximum ambient temperature	ºC	50	50
Altitude capability	m	5000	5000
Relative air humidity maximum	%	85	85
Minimum running temperature	ºC	0	0
Application Data			

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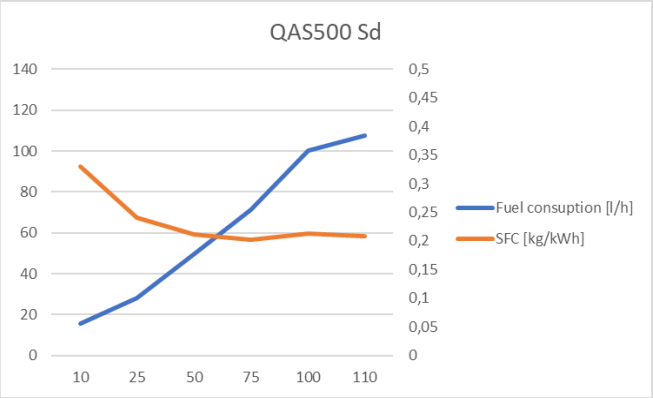
Mode of operation		PRP	PRP
Max. Inclination		+/- 25º	+/- 25º
Operation		Single	Single
Start-up and control mode		manual / auto	manual / auto
Climatic exposure		open air	open air

		CPDG500	CPDG 500
Speed	rpm	1500	1800
Fuel Consumption at*:			
0% Load	l/h	6,98	13,26
50% Load	l/h	49,53	54,31
75% Load	l/h	71,35	76,93
100% Load	l/h	100,05	114,79
110% Load	l/h	107,72	115,3
Specific Fuel Consumption at:			
100% Load	kg/kWh	0,213	0,245



(Reference conditions at 25ºC Air Inlet Temperature, 60% Relative Humidity, 1bar Absolute inlet pressure, for different conditions or limitations contact Chicago pneumatic technical support).

2. Box

		CPDG500	CPDG500
	Rpm	1500	1800
Dimensions (L x W x H)	M	4,8 x 1,2 x 2,6	4,8 x 1,2 x 2,6
Weight			
Net mass	Kg	4505	4505
Wet mass	Kg	4789	4789
Capacity of spillage free frame	L	994,4	994,4
Foam silencer			
Thickness	Mm	30	
Temperature	ºC	Min -30 Max 120	

Our canopies are made from galvanized steel and painted with powder coating paint. To improve the protection in the most exposed parts as frame and lifting beam, it is also primed with a special paint before coating.

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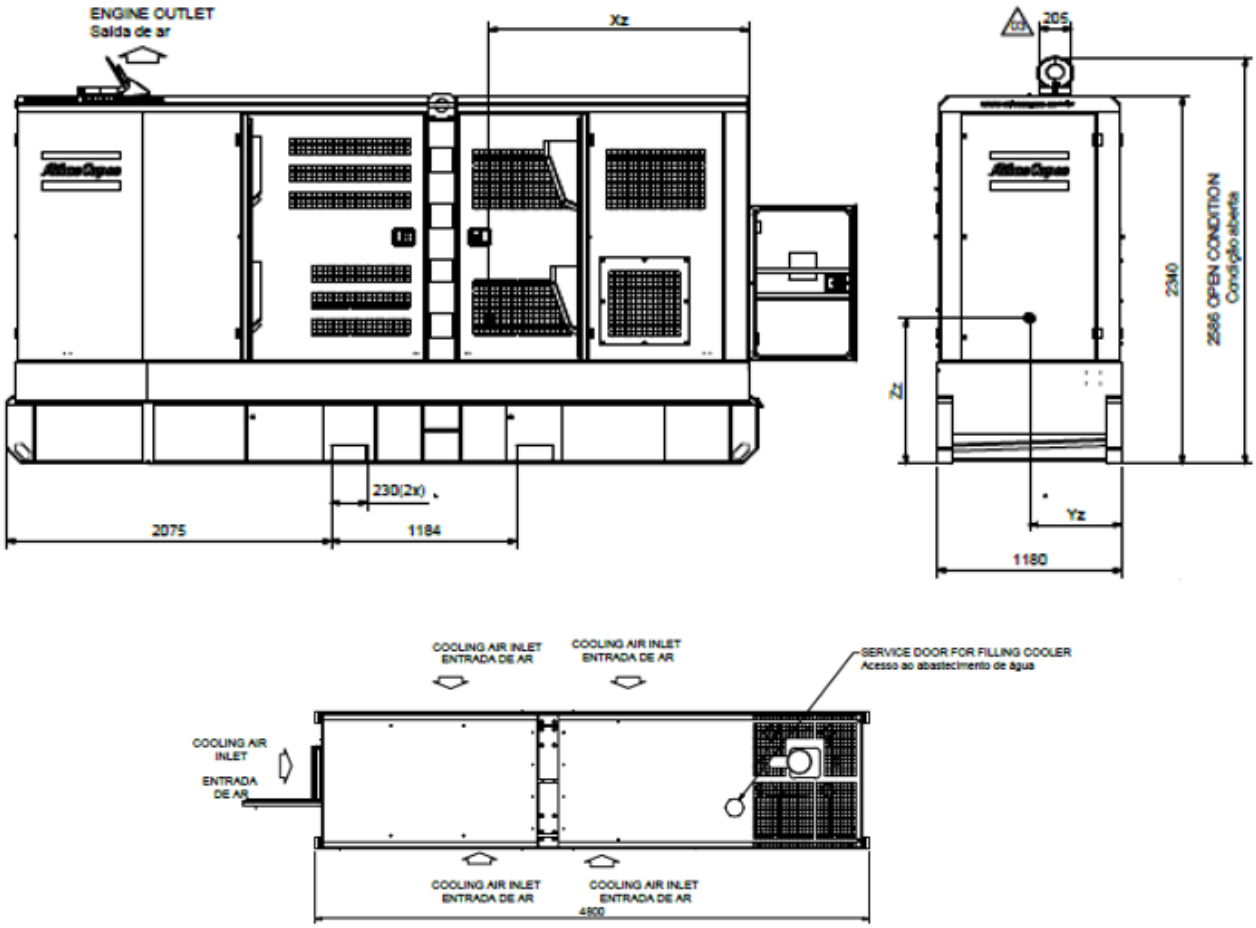

3. Engine

		CPDG500	CPDG500
	rpm	1500	1800
General			
Manufacturer		Scania	Scania
Model		DC13 072A	DC13 072A
Standard		ISO 3046 / ISO 8528-2	ISO 3046 / ISO 8528-2
Number of cylinders	u.	6	6
Power Rated Speed	kW	428	428
Configuration		6 vertical in line	6 vertical in line
Aspiration		Turbocharged	Turbocharged
Speed governor		Electronic	Electronic
Bore	mm	130	130
Stroke	mm	154	154
Electrical system (DC)	V	24	24
Compression ratio		16,7:1	16,7:1
Displacement (swept volume)	l	12,7	12,7
Piston speed	m/s	7,7	9,24
Combustion system		Direct injection	Direct injection
Charged air cooling system		Intercooled	Intercooled
Maximum permissible load factor of PRP during 24h	%	70	70
Lubrication system			
Type		PAROIL E (Mineral)	PAROIL E (Mineral)
Capacity of oil system (including filters + sump)	l	39	39

Oil pressure at rated speed	Bar	3 – 6	3 - 6
Maximum Lubrication oil temperature	ºC	110	110
Air intake system			
Air filter cleaning efficiency	%	99.9%	99.9%
Cooling system			
Coolant		Parcool	Parcool
Capacity of engine	l	12,7	12,7
Total capacity (radiator, hoses...)	l	84	84

4. Alternator

		CPDG500	CPDG500
	rpm	1500	1800
General			
Manufacturer			
Model		AG10-280MI40AI	AG10-280MI40AI
Standard		IEC 34-1 / ISO 8528-3	IEC 34-1 / ISO 8528-3
Rated net power (ESP: 50Hz 27ºC / 60 Hz 40ºC)	kVA	500	500
Number of bearings		1	1
Number of wires		12	12
Voltage regulator accuracy		+/- 0.5%	+/- 0.5%
Degree of protection / Insulation class		IP 23/H	IP 23/H
Environment Protection		IEC 60721-3-3/ =<95% Possible condesation ONSHORE	IEC 60721-3-3/ =<95% Possible condesation ONSHORE
Number of poles		4	4
Number phases		3	3
Over speed	rpm	2250	2250
Air flow	m³/s	2,52	2,52
Total Harmonic Distortion THD		no load < 5%	no load < 5%
		Three-phase	Three-phase
Xd Direct axis synchro reactance unsaturated	%	150	279 199
X'd Direct axis transient reactance saturated	%	11,6	18,2 13,8
X"d Direct axis subtransient reactance saturated	%	8,4	13,4 10
Excitation system		Brushless with auxiliary coil	Brushless with auxiliary coil
Sustained short-circuit current (Icc)		1804	2183
Time sustained short-circuit current	s	-	-
AVR			
Model		Avr Analog	Avr Analog
Accuracy (stability)		+/- 0,5%	+/- 0,5%
Rated current	A	5	5
Pick current	A	7	7
Droop / TC		Yes	Yes
Dynamical recovery	ms	8 to 400	8 to 400
U/F		Yes	Yes
Internal voltage ajustment		+/- 15%	+/- 15%
External voltage ajustment		+/- 10%	+/- 10%
Transient recovery time for ΔU=20%	ms	500	500

The WEG alternators are designed for heavy duty continuous applications:

- INDUSTRIAL – GRADE 1 protection (relative humidity >95%) for tropical environment (except coastal areas). Salinity salt concentration =< 1 g/m³. Degree of protection: IP21 or IP23. Plate packeges: unpainted, with painting paln: 207. Clamping elements: ZTAM. Impregnation: VPI;
- ONSHORE (OFFSHORE application is optional);
- 4 pole brushless design with single bearing, Class H insulation and IP23 rating;
- Voltage regulation +/- 0.5%;
- AREP is a standard feature. PMG is optional;

5. Generator

		CPDG500	CPDG500
	rpm	1500	1800
Energy Balance			
Engine			
Heat rejection to exhaust (PRP)	kW	309	320
Heat rejection to coolant (PRP)	kW	134	142
Heat rejection to radiation from engine (PRP)	kW	35	36
Alternator			
Efficiency at full load	%	94.0%	94,4% (at 380V) / 94,7 (at 220V / 440V)
Exhaust System			
Flow (PRP)	m³/min	34	36
Flow (ESP)	m³/min	36	38
Exhaust gas temperature "after turbine" (PRP)	ºC	536	521
Exhaust gas temperature "after turbine" (ESP)	ºC	563	557
Output pipe diameter	mm	203	203
Battery			
Quantity		2	2
Voltage	V	12	12
Capacity	Ah	100	100
Connection		2x serie	2x serie
Dimensions (L x W x H)	mm	329,5 x 171,5 x 241	329,5 x 171,5 x 241
Generator Voltage	V	400	220 & 440 / 380
Mains Voltage		STD	STD
Generator Current transformer		STD	STD
Transformer Maintenance Changeover feedback		STD	STD
Reply: Mains CB opened/closed		STD	STD
Reply: Generator CB opened/closed		STD	STD
Air Inlet Pressure Switch		STD	STD
Low Coolant Level Shutdown/Warning		STD	STD

6. Power Output

			CPDG500	CPDG500
		rpm	1500	1800
Circuit Breaker				
Brand			WEG	WEG
Model		440V / 400V (50Hz)	DWA1600	ABWC08
		380V	-	ABWC16
		220V	-	ABWC16
Poles			3	3
Rated current (In)	A	440V / 400V (50Hz)	1250	800
		380V	-	1000
		220V	-	1600
Thermal release, regulated (It)	A	440V / 400V (50Hz)	0,8~1,0 In	0,8~1,0 In
		380V	-	0,8~1,0 In
		220V	-	0,8~1,0 In
Overload protection (Ir)			2,5 – 5,0 In	2,5 – 5,0 In
Fault current protection, residual current release (Idn)	A		0,030-30	0,030-30
Manual			Manual	Manual
Life operating cycles without maintenance (mechanical/electrical)			3000 / 500	12500 / 6000
Terminal Board				
Bolts diameter	mm		12	12
Terminal type			Busbar	Busbar
Sockets Available*			via "Special Requests"	via "Special Requests"

STD – Standard; OP – Option; NA – Not Available

7. Options

		CPDG500	CPDG500
	rpm	1500	1800
Mechanical Options			
Special Equipment			
Spark arrestor		OP	OP
Inlet shutdown valve		OP	OP
Design pressure	bar	13.8	13.8
Max/Min Temperature	ºC	93	93

Spark arrestor is a device that is designed to trap any exhaust particles or combustible materials, such as sparks or other flaming debris, from escaping into hazardous areas where they might cause fires. Exhaust particles are centrifuged in the spark arrestor, then collected and stored in a reservoir until emptied by an operator. An air shut-off valve serves to stop the engine by closing the air intake once the controller detects an over speed in the engine.

Fuel System			
External fuel tank connection		STD	STD
Material		Brass	Brass
Test pressure	bar	1	1
Overpressure	bar	2	2
Open pressure	bar	1±0,1	1±0,1
Max/Min Temperature	ºC	-30 to +80	-30 to +80

The EFT enable the generator to run for long periods of time on an external fuel supply without having to refuel. We can also provide quick couplings to enable easy and fast connection to the fuel tank

Electrical Options		CPDG500	CPDG500
Coolant Heater			
Electric driven coolant heater		STD	STD
Voltage	V	220	220
Power	kW	2	2
Current	A	8,3	8,3
Thermostat Range	ºC	38 / 49	38 / 49
Fuel driven coolant heater		NA	NA
Electrical power	W	-	-
Rated voltage	V	-	-
Operating pressure	bar	-	-
Flow rate at 0,1 bar	l/h	-	-

Its main mission is heat the coolant so that the temperature of the engine is always high enough to start straight away, even in temperatures as low as minus 25 degrees Celsius. Not for all models but a fuel powered version is available, which is ideal for remote areas without mains supply.

Frequency and Voltage configuration			
Dual frequency switch 50Hz-60Hz		YES	YES
Battery			
Battery charger*		STD	STD
Temperature	ºC	-18	-18
Input frequency	Hz	48……64	48……64
Output voltage	V	24 - 27,5	24 - 27,5
Output current	A	5	5
Output power	W	137	137
Dimensions (L x W x H)	mm	140 x 140 x 63	140 x 140 x 63
Battery cut off switch		STD	STD

Battery charger is necessary for stand-by applications because the controller is always on, ready to start at any time. Battery cut off switch allows the battery to be disconnected when storing the unit, thus preventing the battery from becoming drained.

Controllers			
Qc2103		STD	STD
Qc4003		OP	OP

Qc2103: has in addition the possibility of detect a mains failure
Qc4003: is the high spec controller prepared to work synchronized with several units (IPP) and/or the mains

CONTROLLERS KEY FEATURES QC 1103 & 2103 CONTROLLERS

Auto start or automatic mains failure applications

Monitoring of electronic or non-electronic engines
J1939 as standard

Gen-set and busbar control & protection

Improved inputs/outputs
Up to 11 digital inputs, 5 analogue inputs and 8 relay outputs

Modbus communication rs485

Configurable for other applications
PARUS configurable

Graphical display
Multi-language

CONTROLLERS KEY FEATURES QC 4003 CONTROLLER

Controllers key features Qc 4003

Paralleling between generators and mains power supply

Full engine monitoring
CAN communication J1939

Gen-set and busbar control & protection

Multiple configurable inputs/outputs

Modbus communication RTU/RS485

Easy software with m-logic programation
PARUS 3

PARALLELING APPLICATIONS
Load Take Over, Mains Export/Import, AMF, Peak Shaving, Transformer Maintenance, Fix power and PMS (CAN

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