

# Extended Data Sheet



## C16 G-DRIVE ENGINE

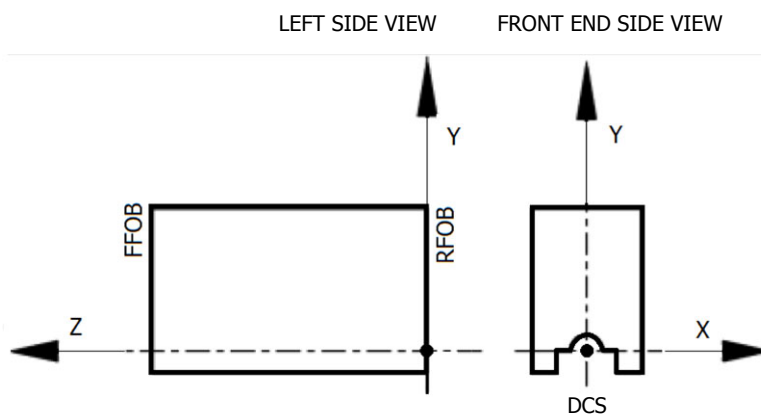
## Industrial Market

1<sup>st</sup> Release - Rev. 3.0  
Date: 29/07/2016

Number cylinders:	6	Bore:	141mm
Displacement:	15.9l	Stroke:	170mm
Aspiration:	Turbo intercooler		

General		@1500rpm	@1800rpm
Engine model	CR16TE1W		
Basic engine type	F3JFA615A*D001 - 5802085824 XZ		
Number of cylinders	6		
Firing order (1 <sup>st</sup> from fan)	1-4-2-6-3-5		
Cylinder arrangement	in line		
Valeves for cylinder	4		
Cycle	diesel 4 stroke		
Injection system	direct, electronic common rail		
Induction system	turbo intercooler		
Bore	mm	141	
Stroke	mm	170	
Displacement	l	15.9	
Mean piston speed	m/s	8.5	10.2
Compression ratio	16.5:1		
Flywheel rotation	anti clockwise viewed from flywheel		
Flywheel housing	SAE1		
Flywheel	in	14	
Moment of inertia			
Without flywheel	kgm <sup>2</sup>	UR	
With flywheel	kgm <sup>2</sup>	2.17	
BMEP gross			
Prime power	bar/kPa	25.6	22.7
Stand by power	bar/kPa	28.6	25
Energy to coolant	kcal/kWh	332	336
Energy to air	kcal/kWh	158	165
Assembled engine			
Dry weight	kg	1450	
Dimensions LxWxh	mm	2353x1114x1605	
Centre of gravity * (Ref. to DCS)	mm	-8,11, 213, 483 [X, Y, Z]	

\* Values of base engine version; to be finalized with FPT for different engine dressing



240282

Figure 1

<b>Performances</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Continuous power (gross)	kWm	415	437
Prime power (gross)	kWm	518	546
Stand-by power (gross)	kWm	570	601
Fan consumption	kWm	13.3	22.9
Continuous power (net)	kWm	401	414
Prime power (net)	kWm	505	523
Stand-by power (net)	kWm	557	578
Performance conditions			
Temperature	°C	-10 / +45	
Altitude a.s.l.	m	1000	
Derating			
Temperature >40°C		4%/5°C	
Altitude > 1000 < 3000m		3%/500m	
Altitude > 3000m		6%/500m	

<b>Cooling system</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Type		liquid	
Recommended coolant		see dedicated table	
Coolant capacity			
Radiator & hoses	l	25.5	
Coolant engine flow	l/min	409	488
Cap pressure	kPa (bar)	100 (1)	
Shutdown switch setting	°C	103	
Maximum additional restriction	kPa	30	
Air to boil	°C	53	54
Fan		pusher / ACS - TitanX	
Diameter	mm	920	
Number of blades		9	
Drive ratio		1:1	
Speed	rpm	1500	1800
Air flow	m <sup>3</sup> /s	10.53	13.05
Power consumption	kWm	13.3	22.9

<b>Lubrication system</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Oil sump capacity			
Max	l	32	
Min	l	24	
Oil system capacity including filter	l	38	
Oil pressure at rated speed	kPa	250-500	
Max. oil temperature	°C	125	
Engine angularity			
Longitudinal	deg	10	
Transversal	deg	10	
Servicing intervals	h	depending on lube oil	
Oil specifications		see dedicated table	
Oil consumption	% fuel	0.2 max	

<b>Intake system</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Air consumption at 100% load	m <sup>3</sup> /h (kg/h)	2630 (2250)	2995 (2560)
Air intake restriction, clean filter	kPa (mbar)	3.5 (35)	
Air intake restriction, dirty filter	kPa (mbar)	6.5 (65)	
Air filter type		dry	
<b>Exhaust system</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Gas flow at stand-by power	kg/h	2548	2853
Max temperature at PRP	°C	557	554
Max allowable back pressure	kPa (mbar)	7 (70)	
Energy to exhaust	kcal/kWh	628	596
<b>Fuel system</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Fuel consumption			
Stand-by	g/kWh (kg/h)	194 (110.6)	200 (119.6)
Full load	g/kWh (kg/h)	191 (99)	198 (107.4)
80%	g/kWh (kg/h)	191 (79.1)	198 (86.1)
50%	g/kWh (kg/h)	194 (50.3)	203.5 (55.4)
Fuel specifications		see dedicated table	
Feed pump max suction head	bar	0.35	
Injection pump			
Type		common rail system CRSN 3.3	
Model		Bosch CPN5.22.2	
<b>Electric system</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Voltage (negative to ground)	V	24	
Starter motor			
Maker		Denso	
Power	kW	5.5	
Pill current	A	12	
Hold current	A	12	
Break away current (+20°C)	A	1260	
Cranking current (+20°C)	A	1100	
Number of teeth of the starter motor		10	
Number of teeth of the flywheel		155	
Starting battery			
Recommended capacity	Ah	185	
Discharge current	A	1200	
Stop solenoid		-	
Alternator		Mitsubishi 90A-24V	
Voltage	V	28	
Charge	A	90	
<b>Cold starting</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Without air preheating	°C	-5	
With air preheating	°C	-15	

<b>Emission gaseus and particles</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
NOx oxides of nitrogen	g/kWh	-	-
HC hydrocarbons	g/kWh	-	-
NOx+HC	g/kWh	-	-
CO carbon monoxide	g/kWh	-	-
PT particles	g/kWh	-	-

<b>Sound level</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
Overall sound pressure (with accessories only)	dB(A)		UR

<b>Step load</b>		<b>@1500rpm</b>	<b>@1800rpm</b>
G2		57	62
G3		45	50

\* Power at flywheel according dir. 97/68 EC (w/o fan), after 50 hours of run-in, tolerance  $\pm 3\%$ , fuel EN 590; Test according ISO 3046/1, turbo air inlet temperature 25°C, atmospheric pressure 100kPa, humidity 30% - According also to DIN 6271, BS 5514, SAE J1349. All data is based on the engine operating with fuel system, water pump, lubricating oil pump with inlet and exhaust restriction at or below Datasheet limits.

**Acronyms list**

ACRONYMS	DESCRIPTION	ACRONYMS	DESCRIPTION
CI	Cast Iron	ECEGR	External Cooled EGR
S	Structural	OHV	Ovef-head Valves
NS	Non Structural	SOHC	Single Over-head Camshaft
PCP	Peak Cylinder Pressure	DOHC	Double Over-head Camshaft
FGT	Fixed Geometry Turbocharger (no WG)	BSFC	Brake Specific Fuel Consumption
WG	Waste Gate Turbocharger	Ag	Agricultural
eWG	Electrical WG	CE	Construction Equipment
epWG	Electro-pneumatic WG	VE	Bosch Distributor Mechanical Pump
VGT	Variable Geometry Turbocharger	XPI	Extra high pressure injection (Scania, Cummins)
eVGT	Electrical VGT	CCV	Crankcase Ventilation
TST	Two Stage Turbo (serial sequential)	DI	Direct Injection
2stTC	Two Stage Turbo (sequential)	IDI	Indirect Injection
DAVNT	Dual Axis Variable Nozzle Turbine	FIE	Fuel Injection System
VFT	Variable Flow Turbine	CRS	Common Rail System
NA	Natural Aspirated	CRSN	Common Rail System NKW (Commercial vehicles)
TC	Turbocharged	LWR	Laser Welded Rail
TCA	Turbocharged, Charge Air Cooled	LDCV	Light Duty Commercial Vehicles
ISC	Interstage Cooling	LD	Light Duty
CAC	Charge Air Cooler	MD	Medium Duty
DOC	Diesel Oxidation Catalyst	HD	Heavy Duty
DPF	Diesel Particulate Filter	DOHC	Double (or Dual) Overhead Camshaft
CCDPF	Close-Coupled DPF	SOHC	Single Overhead Camshaft
UFDPF	Under-Floor DPF	HLA	Hydraulic Lash Adjusters
SCR	Selective Catalytic Reduction catalyst	PTO	Power Take-off
CUC	Clean Up Catalyst for ammonia (same as ASC)	THM	Thermal Management
ASC	Ammonia Slip Catalyst (same as CUC)	SAPS	Sulphated Ash, Phosphorus, Sulphur
EGR	Exhaust Gas Recirculation	LH	Left Hand Side
iEGR	Internal EGR	RH	Right Hand Side
EEGR	External EGR	UR	Under Release

**Engine accessories and Options available on Option List.  
All data is subject to change without notice.**

Revision	Description	Date
1.0	First document release	29/04/2016
2.0	General document update	31/05/2016
3.0	Added the CoG reference picture	29/07/2016