

MMU Birley Fields

Technical submittal REV A (for approval)

Generator



Executive Summary

This technical submittal is for the Generator

This Technical Submittal includes

- Technical Data
- Drawing referances

Technical Data



Birley Residence Phase 2

Technical Submission

DIESELEC THISTLE
GENERATORS

DIESELEC THISTLE GENERATORS

Tech Sub Reference	
Project Reference Number	E11816
Project Sales Engineer	Reuben Elliott

Amendment History		
Date	Details	Issue Number
27/05/20	First Issue	Q1
27/05/20	Base tank filling	Q2

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Company Registration: SC269766

DIESELEC THISTLE GENERATORS

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DIESELEC THISTLE GENERATORS

Technical Offer

Generator Set Summary

Model:	FG Wilson P250-5
Engine Type:	Perkins® 1506A- E88TAG2, 6 Cylinders
Alternator Type:	FG Wilson MJB250LB4
Approximate Dimensions:	CALG - 3988mmL x 1208mmW x 1779mmH
Fuel Consumption:	47.8 Litres Per Hour at 100% Load
Tank Capacity:	521 Litres
Prime/Continuous:	230 kVA / 184 kW
Emergency/Standby:	250 kVA / 200 kW
Rating:	3 Phase, 400/230 Volts, 50 Hz, 1500 RPM at 0.8 Power Factor
Noise Levels:	76 dBA at 1 Metre in Free field conditions

Summary of Included Items

As part of our offer for the standby generator set, we have also included for the following key supporting items:

- Set mounted automatic mains fail control panel
- Acoustic canopy
- Bunded base tank (canopy base)

Generator Breaker

We have included for a generator protection breaker. This breaker is a manually operated breaker and is installed for the generator sets protection only. The breaker will be installed and mounted on the generators base frame next to the control panel. Please note that cabling from the generator alternator to the breaker has been included within our offer. Cabling from the breaker to the changeover/switchboard is not included and is assumed to be part of the electrical contractor's scope of supply. The breaker type and manufacturer will be as per our standard. The rating of the breaker will be suited to the rating of the generator set.

Engine Heater

The generator set will be fitted with engine water heaters; these are appropriate when the generator set is to be sited in a low ambient environment. The heater maintains the engine coolant at a temperature (typically 100°F) which facilitates rapid starting and load acceptance. The heater itself is powered by a 240-volt AC auxiliary supply protected by a fuse inside the main control panel. A thermostatic controller is included to regulate the output temperature to within safe limits. When the generator set is not running the heater is automatically connected to the AC supply through a power relay mounted in the control panel.

Battery Charger

The generator control panel will come complete with a battery trickle charger. The 5-amp battery chargers have been designed to be permanently connected to a battery, keeping it charged to maximum capacity.

The charger will be mounted via DIN rail internal to the control panel. The chargers stylish design includes an LED indicator on the front that shows when the charger is in a normal or overload condition.

The chargers do not include any moving parts to give added durability and reliability. They will also continue to operate during cranking and running. All chargers can accept multiple AC voltage connections.



Starting System

The generator set will be started by DC lead acid batteries. The system voltage will be 24 volts and will comprise of:

- Axial starter motor
- Engine mounted charge alternator
- Panel mounted trickle charger
- Heavy duty industrial grade lead acid starter batteries
- Heavy duty battery cables
- Battery tray with fixing down screws

Generator Paint Colour

The generator and enclosure will be painted to our standard manufacturers colour.

Signage

The generating set will be marked with all appropriate warning signs to relevant European and British Standards including: Voltage, Noise and Automatic machinery warning signs.

Guards

All guards necessary to afford protection from electrical apparatus, moving and hot parts of machinery will be provided to prevent risk of injury to personnel. These guards will comply, where applicable, with BS5304 and the Machinery Directive.

Documentation

The following is supplied with each generating set:

- 1 set of operation and maintenance manuals.
- 1 set of wiring and cable interface diagrams.
- 1 set of test certificates & warranty registration forms.

Acoustic Canopy

The generator set shall be housed within an acoustic canopy; this canopy will be fitted with ventilation grilles and acoustic attenuation. This attenuation shall reduce the external noise to a level which complies with the stage 2 levels of the European Community Directive 2000/14/EC. The canopy features the following:

- Galvanised steel construction
- Sealed roof preventing water leaks into canopy
- Stainless steel locks and hinges (black finish or bare)
- Zinc plated/stainless steel fasteners
- Control panel viewing window
- External emergency stops push buttons (security covers can be fitted at additional costs)
- Lockable access doors
- Enclosed silencer system
- Large hinged access doors on each side of canopy proving optimal access for maintenance
- Lifting, drag and jacking points on base frame for transportation
- Bunded base tank. Secondary containment on site is not necessary.



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Filling the base tank

Base tank is filled from a suitable fill point within the enclosure. Should DT Gen carry out the fill as part of an ongoing maintenance contract the engineer will arrive to site with suitable method statements and risk assessments to safely carry out the fill. DT Gen vehicles carry suitably approved diesel spill kits in the unlikely event of a fuel spillage during fill.

Set Mounted AMF Control Panel

The generator will be fitted with a set mounted automatic mains failure control panel (AMF) with the following features supplied as a minimum.

Safety Devices

- Oil Pressure Fault
- Water Temperature Fault
- Failed to Start Fault
- Overspeed Fault

Instrumentation

- Phase Current in Amps with Phase Selection
- Line Volts in Voltage with Phase Selection
- Engine Speed in RPM
- Frequency in Hz
- Water Temperature
- Oil Pressure
- Hours Elapsed
- Battery Condition

Controls

- Battery Charger and Circuitry
- Water Heater Circuitry
- Stop/Manual/Auto/Test
- LED Test/Fault Reset
- Emergency Stop

Control Panel Construction & Finish

Components are installed in a heavy-duty sheet steel enclosure. The steel enclosure has phosphate chemical pre-coating which provides corrosion resistant surface. Polyester composite powder topcoat forms high gloss and extremely durable finish. Mounted to generator set baseframe on robust vibration isolated steel stand.

Control Philosophy (AMF)

The AMF control panel is designed to operate by receiving a two wire start signal from a remote changeover panel. When the panel is in automatic mode and a start signal is received, it will start the set and produce power. Power will then be feed to the changeover panel via the load cables and the changeover to generator set controlled by the remote changeover panel. When the mains supply returns, the changeover panel must then control the changeover from generator to mains. The changeover panel should remove the start signal and the generator will then run in cool down mode for a programmable period of time and shut down. Please note the following key points:



DIESELEC THISTLE GENERATORS

Technical Offer

- Changeover panel is assumed by others
- Power and control cabling is assumed by others
- There will be two breaks in supply unless a UPS is installed on site
- At no point will the supplies be in parallel





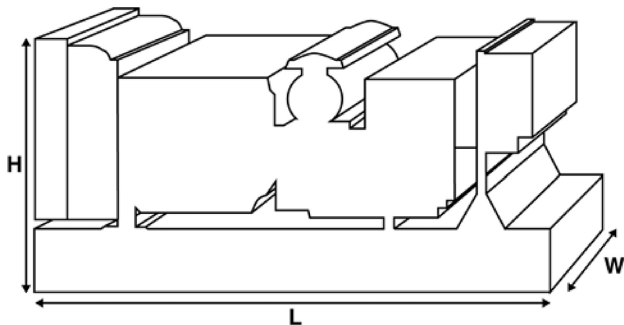
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Output Ratings

Voltage, Frequency		Prime	Standby
400/230V, 50 Hz	kVA	230	250
	kW	184	200
480/277V, 60 Hz	kVA		
	kW		

Ratings at 0.8 power factor.

Please refer to the output ratings technical data section for specific generator set outputs per voltage.



Dimensions and Weights

Length	mm	2662 (104.8)
Width	mm	1071 (42.2)
Height	mm	1818 (71.6)
Weight (Dry)	kg	2063 (4548)
Weight (Wet)	kg	2096 (4621)

Ratings in accordance with ISO 8528, ISO 3046, IEC 60034, BS5000 and NEMA MG-1.22.
Generator set pictured may include optional accessories.

Prime Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and this model can supply 10% overload power for 1 hour in 12 hours.

Standby Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The alternator on this model is peak continuous rated (as defined in ISO 8528-3).

Standard Reference Conditions

Note: Standard reference conditions 25°C (77°F) Air Inlet Temp, 100m (328 ft) A.S.L. 30% relative humidity.

Fuel consumption data at full load with diesel fuel with specific gravity of 0.85 and conforming to BS2869: 1998, Class A2.

FG Wilson offer a range of optional features to allow you to tailor our generator sets to meet your power needs.

Options available include:

- Upgrade to CE Certification
- A wide range of Sound Attenuated Enclosures
- A variety of generator set control and synchronising panels
- Additional alarms and shutdowns
- A selection of exhaust silencer noise levels

For further information on all of the standard and optional features accompanying this product please contact your local Dealer or visit:

www.fgwilson.com

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Ratings and Performance Data

Engine Make		Perkins	
Engine Model:		1506A-E88TAG2	
Alternator Make		Marelli	
Alternator Model:		MJB250LB4	
Control Panel:		Power Wizard 1.1+	
Base Frame:		Heavy Duty Fabricated Steel	
Circuit Breaker Type:		3 Pole MCCB	
Frequency:		50 HZ	60 HZ
Engine Speed: RPM	rpm	1500	
Fuel Tank Capacity:	litres (US gal)	528 (139.48)	
Fuel Consumption Prime	litres (US gal)	46.9 (12.4)	
Fuel Consumption Standby	litres (US gal)	50.3 (13.3)	

Engine Technical Data

No. of Cylinders	6	
Alignment		IN LINE
Cycle	4 STROKE	
Bore	mm (in)	112 (4.4)
Stroke	mm (in)	149 (5.9)
Induction		TURBOCHARGED AIR TO AIR CHARGE COOLED
Cooling Method	WATER	
Governing Type		ELECTRONIC
Governing Class	ISO 8528 G2	
Compression Ratio		16.1:1
Displacement	L (cu. in)	8.8 (537)
Moment of Inertia:	kg m ² (lb/in ²)	2.4031 (8212)
Voltage	24	
Ground		Negative
Battery Charger Amps	45	
Engine Weight Dry	kg (lb)	778 (1715)
Engine Weight Wet	kg (lb)	800 (1764)

Engine Performance Data

		50 Hz	60 Hz
Engine Speed	rpm	1500	
Gross Engine Power Prime	kW (hp)	213 (286)	
Gross Engine Power Standby	kW (hp)	236 (316)	
BMEP Prime	kPa (psi)	1935 (280.6)	
BMEP Standby	kPa (psi)	2144 (310.9)	

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Fuel System

Fuel Filter Type:		Replaceable Element			
Recommended Fuel:		Class A2 Diesel			
Fuel Consumption at		110 % Load	100 % Load	75 % Load	50 % Load
50 Hz Prime:	l/hr (US gal/hr)	50.3 (13.3)	46.9 (12.4)	36.3 (9.6)	24.5 (6.5)
50 Hz Standby	l/hr (US gal/hr)	-	50.3 (13.3)	39.2 (10.4)	26.6 (7)
60 Hz Prime	l/hr (US gal/hr)				
60 Hz Standby	l/hr (US gal/hr)	-			

(Based on diesel fuel with a specific gravity of 0.85 and conforming to BS2869, class A2)

Air System

		50 Hz	60 Hz
Air Filter Type:		Paper Element	
Combustion Air Flow Prime	m ³ /min (cfm)	14.4 (509)	
Combustion Air Flow Standby	m ³ /min (cfm)	15 (530)	
Max. Combustion Air Intake Restriction	kPa	6.2 (24.9)	

Cooling System

		50 Hz	60 Hz
Cooling System Capacity	l (US gal)	30.7 (8.1)	
Water Pump Type:		Centrifugal	
Heat Rejected to Water & Lube Oil: Prime	kW (Btu/min)	93 (5289)	
Heat Rejected to Water & Lube Oil: Standby	kW (Btu/min)	99 (5630)	
Heat Radiation to Room*: Prime	kW (Btu/min)	27 (1535)	
Heat Radiation to Room*: Standby	kW (Btu/min)	28.1 (1598)	
Radiator Fan Load:	kW (hp)	7.7 (10.3)	
Radiator Cooling Airflow:	m ³ /min (cfm)	329.1 (11624)	
External Restriction to Cooling Airflow:	Pa (in H ₂ O)	125 (0.5)	

*: Heat radiated from engine and alternator
 Designed to operate in ambient conditions up to 50°C (122°F).
 Contact your local FG Wilson Dealer for power ratings at specific site conditions.

Lubrication System

Oil Filter Type:		Spin-on, Full flow
Total Oil Capacity:	l (US gal)	39 (10.3)
Oil Pan Capacity:	l (US gal)	36 (9.5)
Oil Type:		API CI-4 0W-30
Oil Cooling Method:		WATER

Exhaust System

		50 Hz	60 Hz
Maximum Allowable Back Pressure:	kPa (in Hg)	10 (3)	
Exhaust Gas Flow: Prime	m ³ /min (cfm)	34.4 (1215)	
Exhaust Gas Flow: Standby	m ³ /min (cfm)	35.7 (1261)	
Exhaust Gas Temperature: Prime	°C (°F)	467 (873)	
Exhaust Gas Temperature: Standby	°C (°F)	475 (887)	

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Alternator Physical Data

No. of Bearings:	1
Insulation Class:	H
Winding Pitch:	2/3
Winding Code	M0
Wires:	12
Ingress Protection Rating:	IP23
Excitation System:	SHUNT
AVR Model:	Mark V

Alternator Operating Data

Overspeed: rpm		2250
Voltage Regulation: (Steady state)		+/- 0.5
Wave Form NEMA = TIF:		50
Wave Form IEC = THF:		2
Total Harmonic content LL/LN:		2
Radio Interference:		EN 55011
Radiant Heat: 50 Hz	kW (Btu/min)	14.1 (802)
Radiant Heat: 60 Hz	kW (Btu/min)	

Alternator Performance Data 50 Hz:

		415/240 V	400/230 V	380/220 V	
Voltage Code			230/115 V		
			230 V		
Motor Starting Capability*	kVA	403	374	337	
Short Circuit Capacity**	%	300	300	300	300
Reactances	Xd	2.594	2.797	3.095	
	X'd	0.214	0.231	0.256	
	X''d	0.088	0.088	0.098	

Alternator Performance Data 60 Hz

Voltage Code						
Motor Starting Capability*	kVA					
Short Circuit Capacity**	%	300	300	300	300	300
Reactances	Xd					
	X'd					
	X''d					

Reactances shown are applicable to prime ratings.

*Based on 30% voltage dip at 0.6 power factor.

** With optional independant excitation system (PMG / AUX winding)

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Output Ratings 50 Hz

Prime			Standby	
Voltage Code	kVA	kW	kVA	kW
415/240V	230	184	250	200
400/230V	230	184	250	200
380/220V	230	184	250	200
230/115V	230	184	250	200
220/127V				
220/110V				
200/115V				
240V				
230V				
220V				

Output Ratings 60 Hz

Prime			Standby	
Voltage Code	kVA	kW	kVA	kW
480/277V				
440/254V				
416/240V				
400/230V				
380/220V				
240/139V				
240/120V				
230/115V				
220/127V				
220/110V				
208/120V				
240/120				
220/110				



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Dealer Contact Details

Documentation

Operation and maintenance manual including circuit wiring diagrams.

Generator Set Standards

The equipment meets the following standards: BS5000, ISO 8528, ISO 3046, IEC 60034, NEMA MG-1.22.

Warranty

6.8 – 750 kVA electric power generation products in prime applications the warranty period is 12 months from date of start-up, unlimited hours (8760). For standby applications the warranty period is 24 months from date of start-up, limited to 500 hours per year.

730 – 2500 kVA electric power generation products in prime applications the warranty period is 12 months from date of start-up, unlimited hours (8760 hours) or 24 months from date of start-up, limited to 6000 hours. For standby applications the warranty period is 36 months from date of start-up, limited to 500 hours per year.

FG Wilson manufactures product in the following locations:

Northern Ireland • Brazil • China • India

With headquarters in Northern Ireland, FG Wilson operates through a Global Dealer Network.

To contact your local Sales Office please visit the FG Wilson website at www.fgwilson.com.

FG Wilson is a trading name of Caterpillar (NI) Limited.

In line with our policy of continuous product development, we reserve the right to change specification without notice.

2018-05-17

PRODUCT SPECIFICATIONS FOR 1506A-E88TAG

TOTAL POWER RANGE

Gross Mechanical Output	192-358 kWm
Typical Electrical Output	207-389 kVA (166-312 kWe)
Rated Speed	1500/1800 rpm

50 HZ TYPICAL ELECTRICAL OUTPUT

Prime	207-308 kVA
Standby	228-337 kVA

60 HZ TYPICAL ELECTRICAL OUTPUT

Prime	198-282 kWe
Standby	218-312 kWe

EMISSION STANDARDS

Emissions	Fuel Optimised
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GENERAL

Number of Cylinders	6 vertical inline
Bore	112 mm
Stroke	149 mm
Displacement	8.8 l

Compression Ratio	16.1:1
Aspiration	Turbocharged aftercooled
Combustion System	Direct injection
Rotation from Flywheel End	Anti-clockwise
Cooling System	Liquid
Aftertreatment	-
Typical Alternator Efficiency	92%
Switchable	Yes

ELECTROPAK DIMENSIONS

Length	1941 mm
Width	1013 mm
Height	1366 mm
Dry Weight	1156 kg

DISCLAIMER

Note 1	*Final dimensions dependent on selected options
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DEFINITIONS

Prime Power	Variable load. Unlimited hours usage with an average load of 70% of the published prime power rating. A 10% overload is available for 1 hour in every 12 hours of operation.
Standby Power	Variable load. Limited to 500 hours annual usage up to 300 hours of which may be continuous running. No overload is permitted.

1506A-E88TAG STANDARD EQUIPMENT

AIR INLET SYSTEM

Mounted air filter and turbocharger

COOLING SYSTEM

Air-to-air charge cooler incorporated in radiator

Mounted belt driven pusher fan

Radiator supplied loose with all guards and pipes

Thermostatically controlled with belt driven, circulating pump and belt-drive fan

ELECTRICAL EQUIPMENT

24 volt starter motor and 24 volt 45 amp alternator with DC output

ECM mounted on engine with wiring looms and sensors

FLYWHEELS AND FLYWHEEL HOUSING

Aluminium SAE 1 flywheel housing

High inertia flywheel to SAE 1 J620 Size 355.6 mm (14 in)

FUEL SYSTEM

Electronic governing to ISO 8528-5 with stand-alone isochronous and load-sharing capabilities

Fuel filter, fuel transfer pump, fuel priming pump

HEUI fuel system with full authority electronic control

Spin on primary, secondary and water filter separator

MOUNTINGS

Front engine mounting bracket

OIL SYSTEM

Full flow spin-on filters

Oil pump gear driven

Wet full aluminium sump with filler and dipstick

CONTINUOUS DUTY
4 poles
50 Hz - 1500 rpm / 60 Hz - 1800 rpm

AMBIENT TEMPERATURE TEMPERATURE RISE INSULATION CLASS POWER FACTOR			40°C H H 0,8	WINDING DATA								Winding code Number of leads Winding pitch	M0 12 2/3
FREQUENCY			Hz	50 Hz				60 Hz					
VOLTAGE			Connections Star series Star parallel	V	380	400	415	440	380	416	440	460	480
					190	200	208	220	190	208	220	230	240
RATING POWER			kVA	240	250	235	220	250	260	275	290	300	
			kW	192	200	188	176	200	208	220	232	240	
EFFICIENCY [%] @ 0,8 p.f.			4/4	93,0	93,4	93,3	93,3	93,1	93,6	93,7	93,8	93,9	
			3/4	93,4	93,7	93,6	93,5	94,0	94,3	94,4	94,5	94,5	
			2/4	93,6	93,7	93,6	93,5	94,3	94,5	94,5	94,5	94,5	
EFFICIENCY [%] @ 1 p.f.			4/4	94,4	94,8	94,7	94,7	94,5	94,9	95,0	95,1	95,2	
			3/4	94,8	95,0	94,9	94,9	95,2	95,5	95,6	95,6	95,6	
			2/4	94,9	95,0	94,9	94,9	95,5	95,7	95,6	95,7	95,6	
SHORT CIRCUIT RATIO			SCR	0,39	0,42	0,48	0,58	0,32	0,36	0,38	0,40	0,42	
REACTANCES [%]													
Direct axis synchronous			Xd	323	304	265	221	304	351	332	320	304	
Quadrature axis synchronous			Xq	180	169	148	123	225	195	184	178	169	
Direct axis transient			X'd	26,7	25,1	21,9	18,3	33,4	29,0	27,4	26,4	25,1	
Direct axis subtransient			X''d	10,2	9,6	8,4	7,0	12,8	11,1	10,5	10,1	9,6	
Quadrature axis subtransient			X''q	12,3	11,6	10,1	8,4	15,4	13,4	12,7	12,2	11,6	
Negative sequence			X ₂	11,3	10,6	9,3	7,7	14,1	12,2	11,6	11,2	10,6	
Zero sequence			X ₀	2,4	2,3	2,0	1,7	3,0	2,6	2,5	2,4	2,3	
TIME CONSTANTS [s]													
Open circuit			T'do	1,25									
Transient			T'd	0,1									
Subtransient			T''d	0,007									
Armature			T _a	0,009									

MECHANICAL CHARACTERISTICS

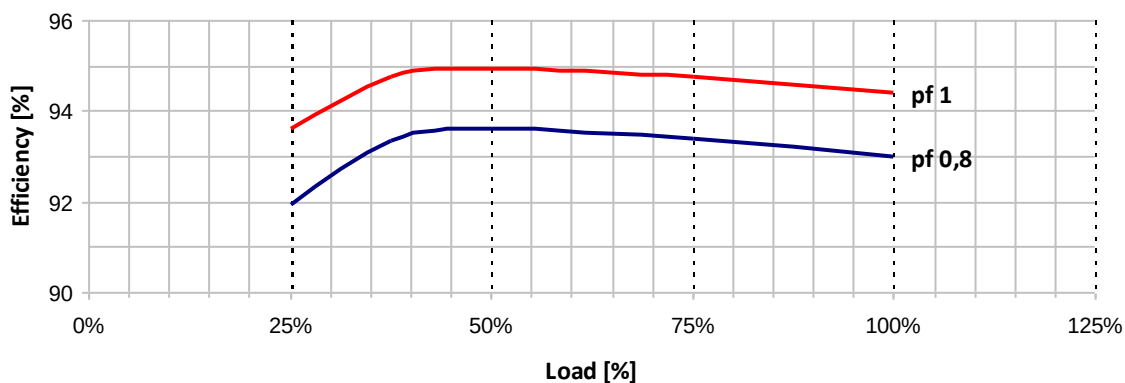
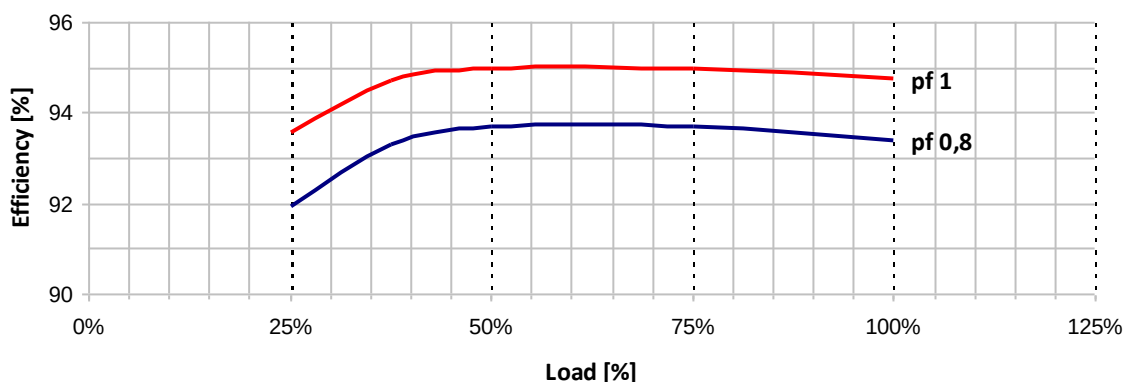
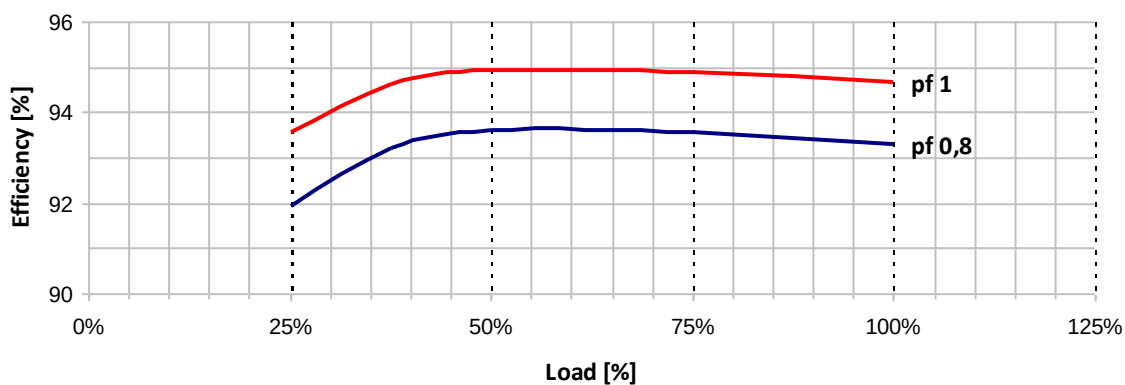
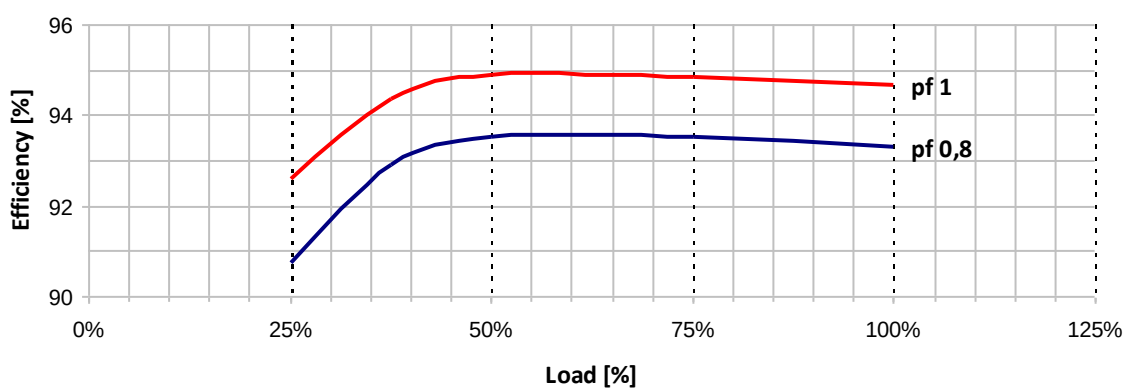
D-end bearing/Lubrication	6218 2RS C3 / Prelubricated
N-end bearing/Lubrication	6313 2Z C3 / Prelubricated
Overspeed [r.p.m.]	2250
Inertia (J) [kgm ²]	Refer to B34 construction 2,06
Weight [kg]	Refer to B34 construction 710
Method of cooling	IC01
Cooling air required [m ³ /s] @ 50/60 Hz	0,42 / 0,52
Degree of protection	IP23
Types of construction available	B2 (SAE) - IM B34
Direction of rotation (Standard)	CW

OTHER DATA

Phase resistance [Ω] @ 20 °C - Star series	0,016
Overloads	10% for 1 hour every 12 hours
3-phase short circuit sustained current	-
Voltage regulation accuracy	± 0,5 % In steady state condition
Radio interference	EN 55011 - Class B Group 1
Wave form THF	< 2%
Total harmonic content	< 2% - At no load

STANDARDS

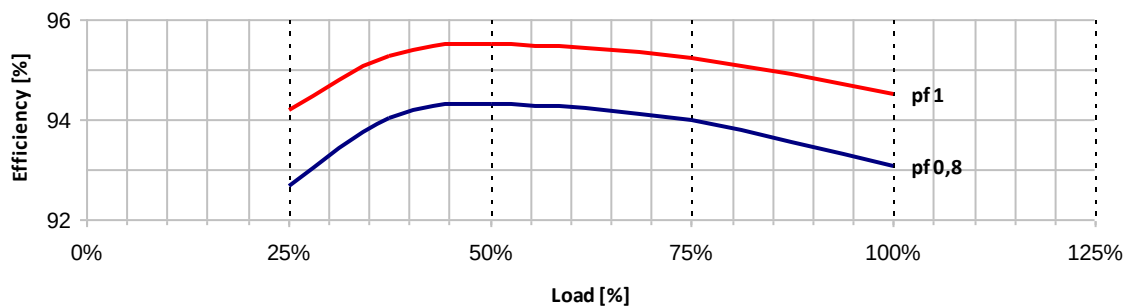
IEC 60034-1; CEI 2-3; BS 4999-5000; VDE 0530; NF 51-100,111; OVE M-10, NEMA MG 1.22.

Typical efficiency curves
50 Hz - 1500 rpm
380 V

400 V

415 V

440 V


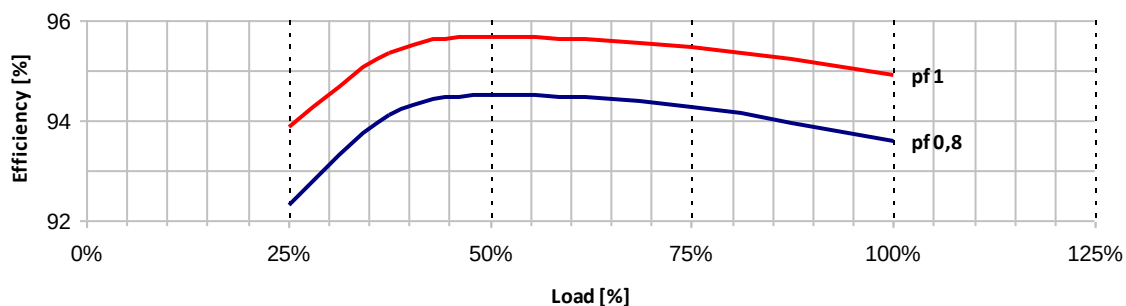
Typical efficiency curves

60 Hz - 1800 rpm

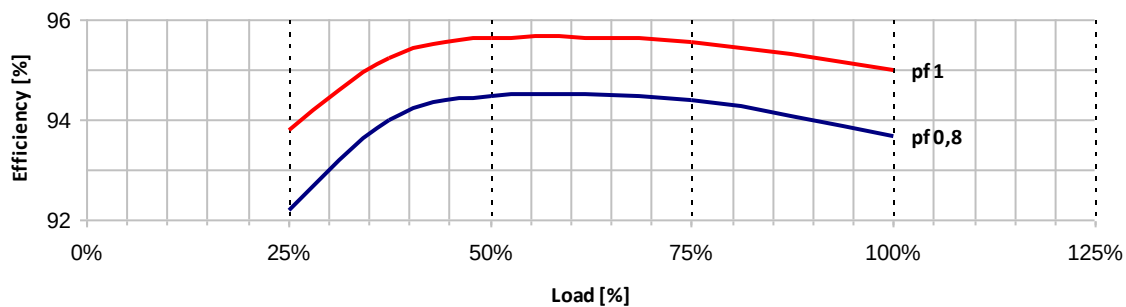
380 V



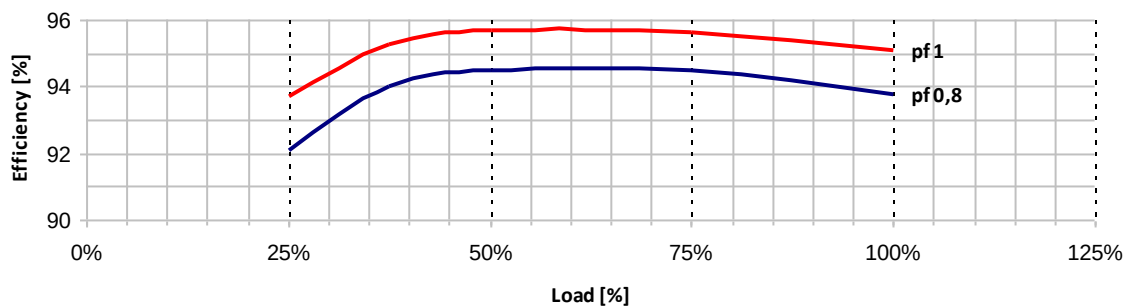
416 V



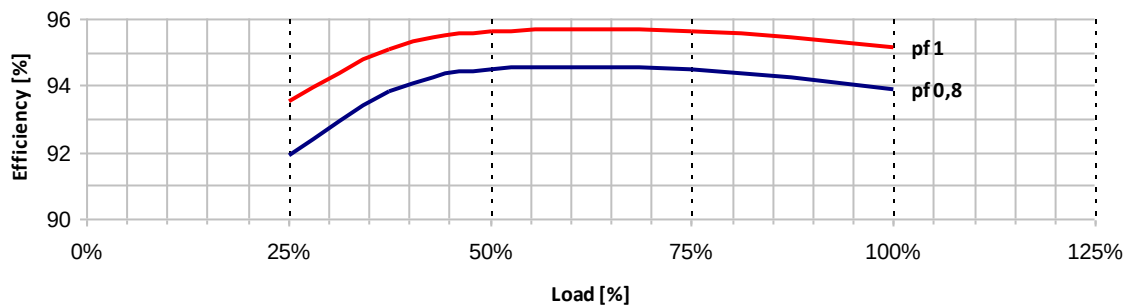
440 V



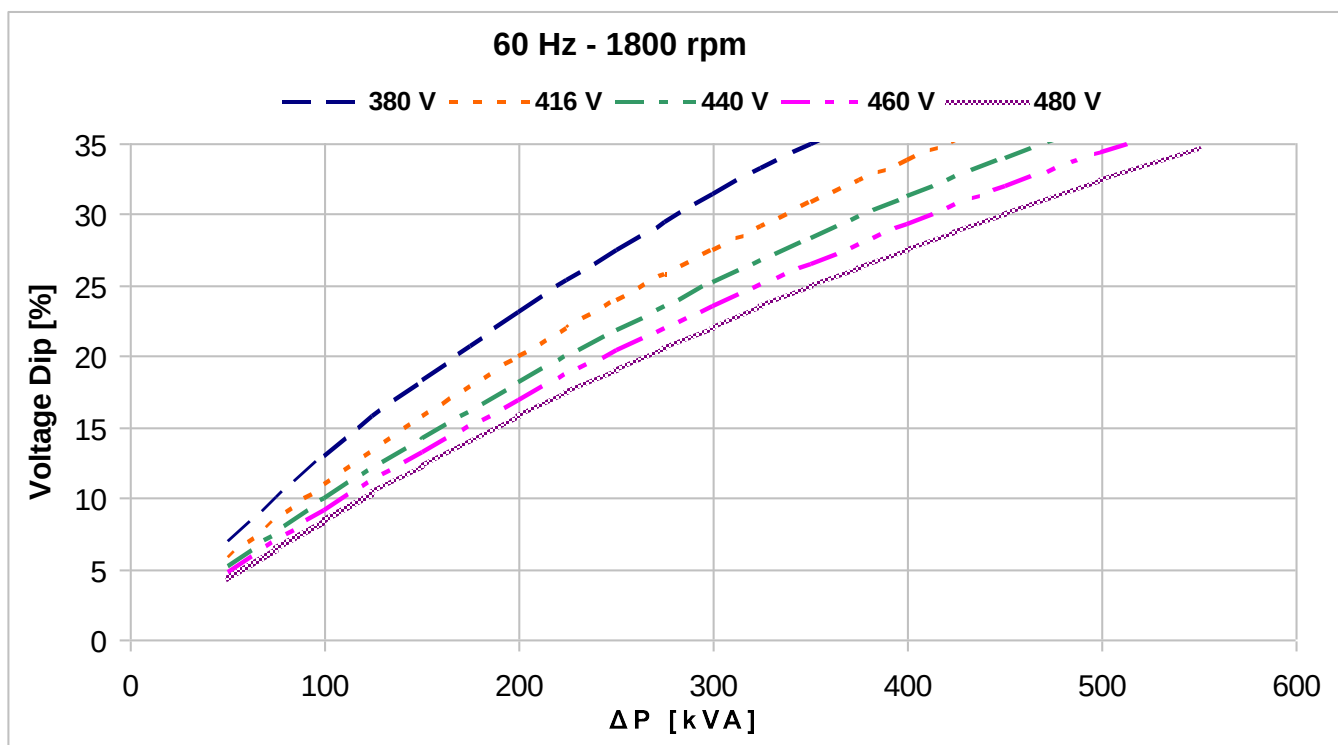
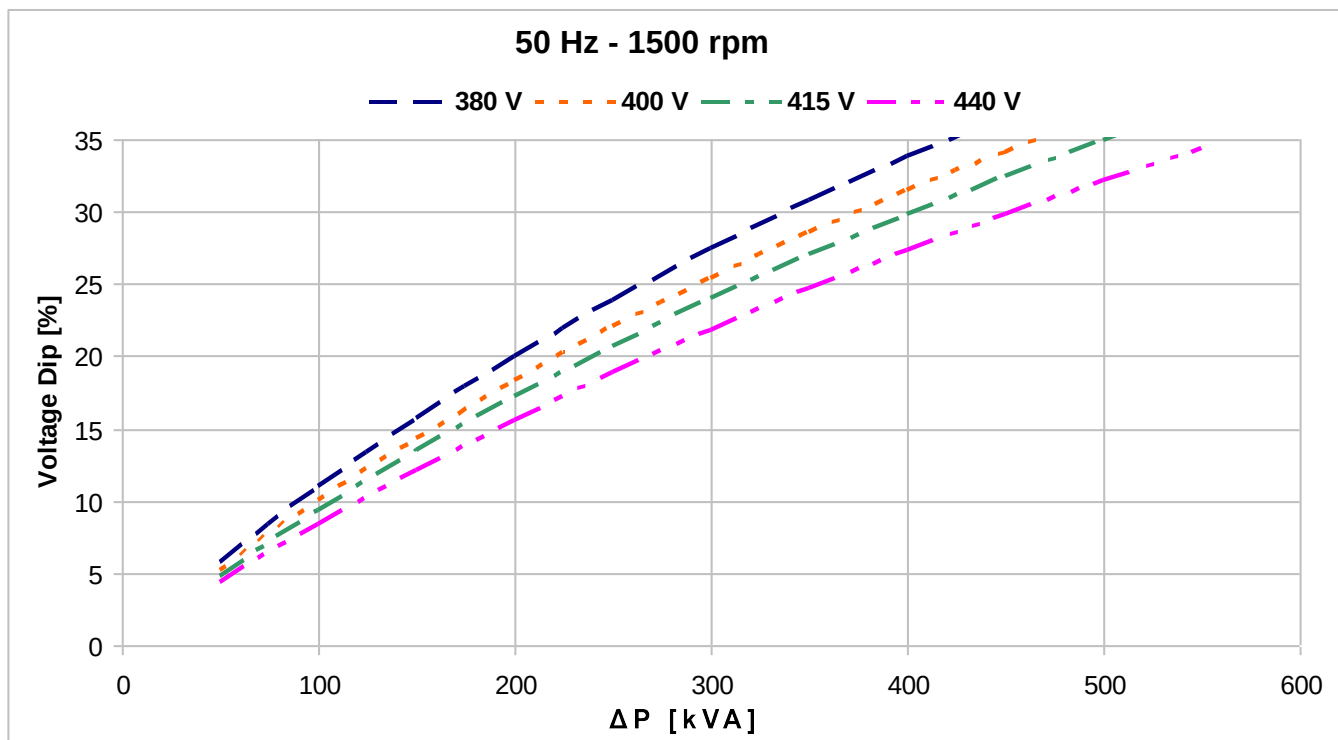
460 V



480 V



Locked rotor motor starting curves (*)



$$\Delta P = P_n \times \frac{I_s/I_n}{\cos \varphi_n \times \eta_n}$$

(*): A coefficient of 0,85 must be applied to the voltage dip if the load has a power factor equal or greater than 0,8.

AMBIENT TEMPERATURE	27°C	WINDING DATA	
TEMPERATURE RISE	163K	Winding code	M0
INSULATION CLASS	H	Number of leads	12
POWER FACTOR	0,8	Winding pitch	2/3

FREQUENCY	Hz	50				60				
VOLTAGE	Star series Star parallel	V	380	400	415	440	380	416	440	460 480
			190	200	208	220	190	208	220	230 240
RATING		kVA	265	275	260	240	275	285	305	320 330
		kW	212	220	208	192	220	228	244	256 264
EFFICIENCY (%) @ 0,8 p.f.	4/4		92,8	93,2	93,1	93,1	92,7	93,2	93,3	93,4 93,5
EFFICIENCY (%) @ 1,0 p.f.	4/4		94,3	94,6	94,5	94,5	94,2	94,6	94,7	94,8 94,8
SHORT CIRCUIT RATIO			0,36	0,38	0,43	0,53	0,29	0,33	0,35	0,36 0,38
REACTANCES (%)										
Direct axis synchronous	x _d		355	335	295	240	445	385	370	355 335
Quadrature axis synchronous	x _q		200	185	165	135	245	215	205	195 185
Direct axis transient	x' _d		29,5	27,6	24,3	19,9	36,7	31,7	30,4	29,2 27,6
Direct axis subtransient	x'' _d		11,3	10,6	9,3	7,6	14,0	12,1	11,6	11,1 10,6
Quadrature axis subtransient	x'' _q		13,6	12,8	11,2	9,2	17,0	14,7	14,0	13,5 12,8
Negative sequence	x ₂		12,4	11,7	10,2	8,4	15,5	13,4	12,8	12,3 11,7
Zero sequence	x ₀		2,7	2,5	2,2	1,8	3,4	2,9	2,8	2,7 2,5

TIME CONSTANTS [s]

Open circuit (T' _{do})	1,25	Subtransient (T'' _d)	0,007
Transient (T' _d)	0,1	Armature (T _a)	0,009

MECHANICAL CHARACTERISTICS

D-end bearing/Lubrication	6218 2RS C3 / Prelubricated
N-end bearing/Lubrication	6313 2Z C3 / Prelubricated
Weight (IM B34) [kg]	710
Inertia (J) (IM B34) [kgm ²]	2,06
Overspeed [min ⁻¹]	2250
Method of cooling	IC 01
Cooling air required [m ³ /s] @ 50/60 Hz	0,42 / 0,52
Degree of protection	IP23
Type of construction available	B2 - SAE / IM B34
Direction of rotation	CW

OTHER DATA

Phase resistance [Ω] @ 20 °C - Star series	0,016
Overloads	-
3-phase short circuit current	-
Voltage regulation accuracy	+/- 0,5 % (in steady state condition)
Radio interference	EN 55011 Class B Group 1
Wave form THF	< 2%
Total harmonic content	< 2% (at no load)

STANDARDS

IEC 60034-1; CEI 2-3; BS 4999-5000; VDE 0530; NF 51-100,111; OVE M-10, NEMA MG 1.22.
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Modular Acoustic Enclosures

225 – 375 kVA Range

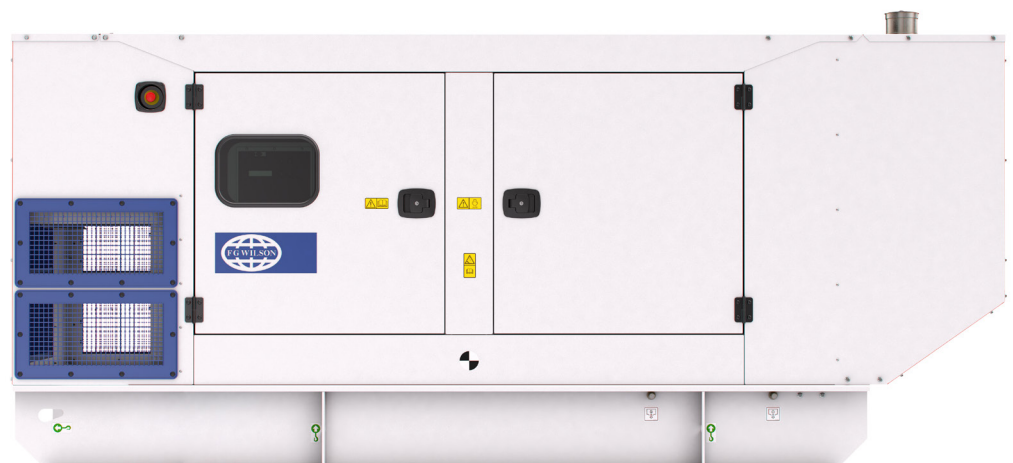


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The innovative and functional design of the 225 – 375 kVA range enclosures ensures performance in the harshest of environments. Extremely durable and robust, these enclosures are designed to resist corrosion and handling damage with the ability to withstand rough handling common on many construction sites.

The Level 1 / Level 1 High Ambient enclosures are designed for operation in regions where compliance with EU noise legislation does not apply or a high ambient capability is required. Alternatively, the Level 2 enclosure reduces sound levels to comply with the stage 2 levels of the European Community Directive 2000/14/EC.

All enclosures incorporate internally mounted exhaust silencers and are designed on modular principles with many interchangeable components permitting on site repair.



Excellent Access for Maintenance

- » Large side hinged doors on both sides of enclosure providing optimal access
- » Radiator fill access plate
- » Lube oil drain valves / Coolant drain valves
- » Retaining bars securing door positions during servicing
- » Removable ducts providing maintenance access with enclosure in place

Robust/Highly Corrosion Resistant Construction

- » Galvanised steel construction further protected by polyester powder coat paint
- » Stainless steel locks and hinges
- » Body made from steel components treated with polyester powder coating
- » Corner posts manufactured from high grade composite material



Transportability

- » Optional tested and certified lifting arch
- » Lifting points on baseframe
- » Oil field type skid with dragging points and fork lift truck pockets – optional

Security and Safety

- » Control panel viewing window in a lockable access door
- » Emergency stop push button (red) mounted on enclosure exterior
- » Cooling fan and battery charging alternator fully guarded
- » Fuel fill and battery can only be reached via lockable access doors
- » Exhaust silencing system totally enclosed for operator safety

Sound Pressure Levels for Level 1 Enclosure

Generator Set Model		50 Hz							60 Hz								
		15 m		7 m		1 m			Ambient Capability °C	15 m		7 m		1 m			Ambient Capability
		75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load		100% Load	75% Load	100% Load	75% Load	100% Load			
P249-5	Prime/standby								72.3	72.6	78.3	78.6	88.0	88.3	52		
P250-5	Prime/standby	66.9	67.6	72.9	73.6	83.1	83.6	47									
P275-5	Prime/standby	67.1	67.9	73.1	73.9	83.3	83.8	44									
P313-5	Prime/standby								72.5	73.2	78.5	79.2	88.2	88.8	45		



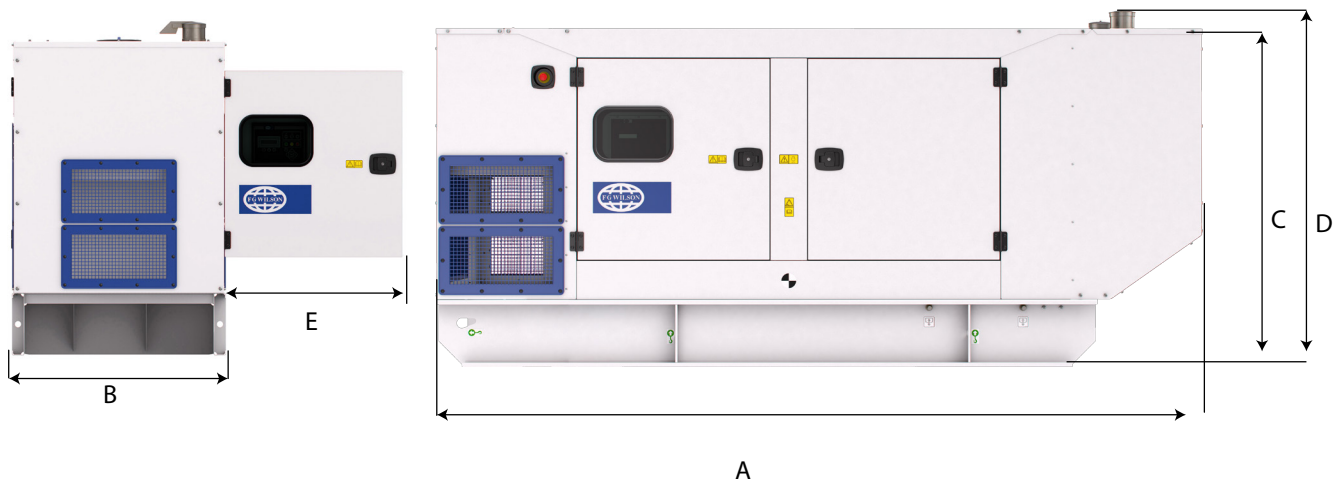
Dimensions and Weights for Level 1 Enclosure

Generator Set Model	A: mm	B: mm	C: mm	D: mm	E*: mm	Weight: kg	Fuel Capacity: l
P249-5	3960	1200	1763	1867	994	2423	473
P250-5	3960	1200	1763	1867	994	2463	473
P275-5	3960	1200	1763	1867	994	2463	473
P313-5	3960	1200	1763	1867	994	2463	473

*Clearance required both sides; Weight with lube oil, no coolant, no fuel.

Sound Pressure Levels (dBA) for Level 1 High Ambient Enclosure

Generator Set Model		50 Hz							60 Hz						
		15 m (50 ft)		7 m (23 ft)		1 m (3 ft)		Ambient Capability °C	15 m (50 ft)		7 m (23 ft)		1 m (3 ft)		Ambient Capability °C
		75% Load	100% Load	75% Load	100% Load	75% Load	100% Load		75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	
P249-5	Prime/standby								62.8	64.1	68.8	70.1	77.8	78.8	66
P250-5	Prime/standby	61.3	62.5	67.3	68.5	75.2	76.0	61							
P275-2	Prime/standby	61.6	63.3	67.6	69.3	75.0	76.6	60							
P275-5	Prime/standby	61.7	62.9	67.7	68.9	75.5	76.3	59							
P300-4	Prime/standby	62.1	64.0	68.1	70.0	75.4	77.2	57							
P300-5	Prime/standby	62.0	63.3	68.0	69.3	75.7	76.6	57							
P313-5	Prime/standby								63.8	65.7	69.8	71.7	78.5	79.8	59
P330-5	Prime/standby	62.4	63.7	68.4	69.7	76.0	76.9	54							
P344-5	Prime/standby								64.3	66.6	70.3	72.6	78.9	80.3	56
P375-4	Prime/standby								66.0	68.2	72.0	74.2	79.7	81.3	51
P375-5	Prime/standby								64.9	67.6	70.9	73.6	79.3	80.9	52

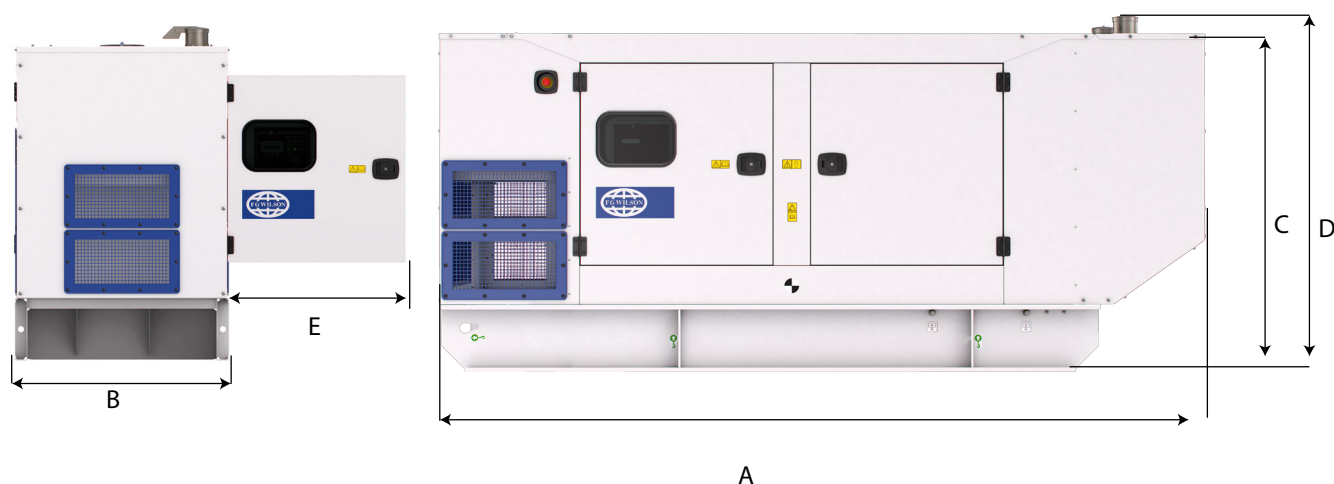


Dimensions and Weights for Level 1 High Ambient Enclosure

Generator Set Model	A: mm	B: mm	C: mm	D: mm	E*: mm	Weight: kg	Fuel Capacity: l
P249-5	3975	1400	1950	2032	994	2770	542
P250-5	3975	1400	1950	2032	994	2810	542
P275-2	3975	1400	1950	2032	994	2810	542
P275-5	3975	1400	1950	2032	994	2810	542
P300-4	3975	1400	1950	2032	994	2854	542
P300-5	3975	1400	1950	2032	994	2854	542
P313-5	3975	1400	1950	2032	994	2810	542
P330-5	3975	1400	1950	2032	994	2854	542
P344-5	3975	1400	1950	2032	994	2854	542
P375-4	3975	1400	1950	2032	994	2854	542
P375-5	3975	1400	1950	2032	994	2854	542

Sound Pressure Levels (dBA) for Level 2 Enclosure

Generator Set Model		50 Hz							60 Hz						
		15 m (50 ft)		7 m (23 ft)		1 m (3 ft)		Ambient Capability °C	15 m (50 ft)		7 m (23 ft)		1 m (3 ft)		Ambient Capability °C
		75% Load	100% Load	75% Load	100% Load	75% Load	100% Load		75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	
P249-5	Prime/standby								62.8	64.1	68.8	70.1	77.8	78.8	57
P250-5	Prime/standby	61.3	62.5	67.3	68.5	75.2	76.0	49							
P275-2	Prime/standby	61.6	63.3	67.6	69.3	75.0	76.6	49							
P275-5	Prime/standby	61.7	62.9	67.7	68.9	75.5	76.3	47							
P300-4	Prime/standby	62.1	64.0	68.1	70.0	75.4	77.2	46							
P300-5	Prime/standby	62.0	63.3	68.0	69.3	75.7	76.6	44							
P313-5	Prime/standby								63.8	65.7	69.8	71.7	78.5	79.8	50
P330-5	Prime/standby	62.4	63.7	68.4	69.7	76.0	76.9	40							
P344-5	Prime/standby								64.3	66.6	70.3	72.6	78.9	80.3	46
P375-4	Prime/standby								66.0	68.2	72.0	74.2	79.7	81.3	44
P375-5	Prime/standby								64.9	67.6	70.9	73.6	79.3	80.9	43



Dimensions and Weights for Level 2 Enclosure

Generator Set Model	A: mm	B: mm	C: mm	D: mm	E*: mm	Weight: kg	Fuel Capacity: l
P249-5	3975	1400	1950	2032	994	2770	542
P250-5	3975	1400	1950	2032	994	2810	542
P275-2	3975	1400	1950	2032	994	2810	542
P275-5	3975	1400	1950	2032	994	2810	542
P300-4	3975	1400	1950	2032	994	2854	542
P300-5	3975	1400	1950	2032	994	2854	542
P313-5	3975	1400	1950	2032	994	2810	542
P330-5	3975	1400	1950	2032	994	2854	542
P344-5	3975	1400	1950	2032	994	2854	542
P375-4	3975	1400	1950	2032	994	2854	542
P375-5	3975	1400	1950	2032	994	2854	542

*Clearance required both sides; Weight with lube oil, no coolant, no fuel.

FG Wilson manufactures product in the following locations:

Northern Ireland • Brazil • China • India • USA

With headquarters in Northern Ireland, FG Wilson operates through a Global Dealer Network.
To contact your local Sales Office please visit the FG Wilson website at www.FGWilson.com.

FG Wilson is a trading name of Caterpillar (NI) Limited.

In line with our policy of continuous product development, we reserve the right to change specification without notice.

225-375kVAEnclosure/0118/GB



ROTATED 90° CW

MEBIA	542 1222
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F	REMOTE SUPPLY	1" BSPP
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DUAL VALL	530	501
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DESIGN PRESSURE HEAD 150MM

THIRD ANGLE

ONE 1 1

ALL DIMENSIONS ARE REFERENCE

543-1322	DK	01	E
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Drawings

This is part of a variation all drawings are updated to include the generator