Diesel Generator set 400 series Engine P22-1

20 KVA – 22 kVA 50 Hz



Description

This FG Wilson commercial generator set is a fully integrated power generation system, providing optimum performance, reliability, and versatility for stationary Standby, Prime Power, and Continuous duty applications.

Features

FG Wilson engine - Rugged 4- cycle industrial diesel delivers reliable power, fuel optimized and fast response to load changes.

Permanent Magnet Generator (PMG) - Offers enhanced motor starting and fault clearing short circuit capability.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Cooling system – Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

Control system - Standard DSE4520 electronic control provides total system integration including remote start/stop, precise frequency and voltage regulation, alarm and status message display, protection, output metering, auto-shutdown.

Enclosures - Optional weather-protective and sound-attenuated enclosures are available.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

circuit breaker - Optional 3 or 4 pole motorized circuit breaker available.

ISO 8528-5 – Refer to factory for site and configuration specific transient performance classification

Generator set specifications

Output Ratings

	Prime	Standby
400/230V, 50Hz	20 KVA	22 KVA
	16 KW	17.6 KW

Performance class	Genset models have been tested in accordance with ISO 8528-5.
Voltage regulation, no load to full load	± 1.0%
Electromagnetic Compatibility Performance	Fuel optimized

Engine specifications

Ratings and Performance Data

Engine Make		Perkins
Engine Model		404A-22G1
Alternator Make		FG Wilson
Alternator Model		FGL10060
Control Panel		DSE4520
Base Frame		Heavy Duty Fabricated Steel
Circuit Breaker Type		32A, 3P
Frequency		50 Hz
Engine Speed: RPM	rpm	1500
Fuel Tank Capacity:	liters (US gal)	-

Engine Technical Data

No. of Cylinders		4
Alignment		IN LINE
Cycle		4
Bore	mm (in)	84 (3.3)
Stroke	mm (in)	100 (3.9)
Induction		NATURALLY ASPIRATED
Cooling Method		WATER
Governing Type		MECHANICAL
Governing Class		ISO 8528
Compression Ratio		23.3:1
Displacement	L (cu. in)	2.2 (135.2)
Moment of Inertia:	kg m² (lb/in²)	2.99 (10217)
Voltage		12
Ground		Negative
Battery Charger		65
Engine Weight Dry	kg (lb)	242 (534)
Engine Weight Wet	kg (lb)	251 (554)

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Engine Performance Data

Engine Speed	rpm	1500
Gross Engine Power Prime	kW (hp)	18.7 (25)
Gross Engine Power Standby	kW (hp)	20.6 (28)
BMEP Prime	kPa (psi)	675 (97.9)
BMEP Standby	kPa (psi)	743 (107.8)

		50 Hz
Cooling System Capacity	L (US gal)	7 (1.8)
Water Pump Type:		Centrifugal
Heat Rejected to Water & Lube Oil: Prime	kW (Btu/min)	17 (967)
Heat Rejected to Water & Lube Oil: Standby	kW (Btu/min)	19.6 (1115)
Heat Radiation to Room*: Prime	kW (Btu/min)	5.7 (324)
Heat Radiation to Room*: Standby	kW (Btu/min)	7.1 (404)
Radiator Fan Load:	kW (hp)	0.2 (0.3)
Radiator Cooling Airflow:	m^3/min (cfm)	33 (1165)
External Restriction to Cooling Air flow	Pa (in H2O)	125 (0.5)

*: Heat radiated from engine and Alternator

Air System (at 50 Hz)

Air Filter Type		Replaceable Element
Combustion Air flow Prime	m^3/min	1.5
Combustion Air Flow Standby	m^3/min	1.5
Max. Combustion Air Intake Restriction	kPa	6.4

Lubricating System

Oil Filter Type:		Spin-On, Full Flow
Total Oil Capacity:	l (US gal)	10.6 (2.8)
Oil Pan Capacity:	l (US gal)	8.9 (2.4)
Oil Type:		API CH4 15W-40
Oil Cooling Method:		WATER

Exhaust system		
Maximum Allowable Back Pressure:	kPa (in Hg)	10.2 (3)
Exhaust Gas Flow: Prime	m^3/min (cfm)	3.6 (129)
Exhaust Gas Flow: Standby	m^3/min (cfm)	2.9 (139)
Exhaust Gas Temperature: Prime	°C (°F)	445 (833)
Exhaust Gas Temperature: Standby	°C (°F)	505 (941)

Alternator Physical Data

No. Of bearings	1
Insulation Class	H
Winding Pitch	2/3
Winding Code	6P/6S
Wiers	4
IP	IP23
Excitation System	SHUNT
AVR Model	R120

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Alternator Operating Data

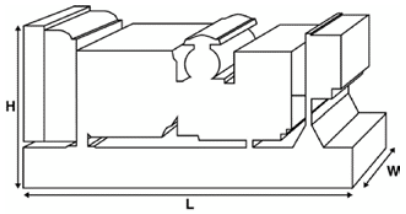
Overseed	rpm	2250
Voltage Regulation (steady State)	%	±0.5
Wave Form NEMA= TIF	%	50
Wave form=THF	%	2
Total Harmonic content LL/LN	%	3.5
Radio Interference		EN61000-6
Radiant Heat	KW	2.7

Alternator Performance Data

Voltage Code		415/240V	400/230V	380/220V
Motor Starting capability*	KVA	39	37	34
Short Circuit capacity**	%	0	0	0
Reactances	Xd	1.8	1.938	2.147
	X'd	0.144	0.155	0.172
	X''d	0.078	0.078	0.086

*Based on 30% voltage dip at 0.4 power factor
** With optional independent excitation system (PMG / AUX winding)

Dimensions (Open Set)



Length mm	1550
Width mm	620
Height mm	1020

Control Panel Specification Data

DSE 4520



Key Features

- Load unbalanced alarm
- Configurable for use as an auto start and AMF control module
- J1939-75 support and CAN alarm ignore functon
- Alternator frequency & CAN speed sensing in one variant
- Largest back-lit icon display in its class
- Heated display option
- Real time clock provides accurate event logging
- Fully configurable via the fascia or PC using USB communication
- Extremely efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing
- Compatible with 600 V ph to ph nominal systems

Key Benefits

- Automatically transfers between main (utility) and generator
- Hour's counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored simultaneously which are clearly displayed on the large back-lit icon display.
- The module can be configured to suit a wide range of applications
- Uses DSE Configuration
- Suite PC Software for simplified configuration
- Compatible with a wide range of CAN engines including Tier 4

Specifications

- continuous voltage rating 8V to 35V continuous
- Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries
- Maximum operating current260 mA at 12 V, 130 mA at 24
- charge fail 0 V to 35 V
- output A (fuel)10A, 5A at continuous supply voltage
- output B (start)10A, 5 A at continuous supply voltage
- output C, D, E & F 2A at supply stage.

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- Generator/load power monitoring (kW, kVA, kVAr, pf)
- Accumulated power monitoring (kW h, kVA h, kVAr h)
- Generator overload protection (kW)
- Generator/load current monitoring and protection
- Fuel and start outputs (configurable when using CAN)
- 4 configurable DC outputs
- 3 configurable analogue/digital inputs
- 4 configurable digital inputs
- Configurable staged loading outputs
- License-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress

Codes or

standards compliance may not be available with all model configurations – consult factory for availability.

ISO 8528	This generator set has been designed to comply with ISO 8528 standards.
ISO 3046	This generator set performance and test methods comply with ISO 3046
BS 5000	This generator set comply with the British standards used for engine and generators
IEC 60034	This generator performance complies with the international standard for rotating electrical machines