



YOUR PARTNER IN POWER

OUTPUT RATINGS

Generator Set Model	P90 P100E		P100 P110E		P135 P150E		P150P1 P165E1	
	kVA	kW	kVA	kW	kVA	kW	kVA	kW
Ratings at 0.8 PF								
380-415V, 50 Hz/1500 r.p.m.	90	72	100	80	135	108	150	120
	100	80	110	88	150	120	165	132
480V, 60 Hz/1800 r.p.m.	110	88	113	90.4	150	120	na	na
	120	96	125	100	165	132		

Rating Definitions

Continuous Power Model P & P with Suffix P1

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 Power – Model P with Suffix E & E1

These ratings are applicable for supplying continuous electrical power (at variable load) in the event of utility power failure. No overload is permitted on these ratings.

The alternator on this model is peak continuous rated (as defined in ISO8528-3) at 270C.

TECHNICAL DATA

Perkins Engine Model	Perkins 1006TG1A		Perkins 1006TG2A		Perkins 1006TAG		Perkins 1006TAG2	
FG Wilson Alternator Model:	LL3014B		LL3014B		LL3014F		LL3014H	
No. of Cylinders:	6 in line		6 in line		6 in line		6 in line	
Cubic Capacity: litres (cu.in)	6.0 (365.5)		6.0 (365.5)		6.0 (365.5)		6.0 (365.5)	
Bore/Stroke: mm	100/127		100/127		100/127		100/127	
in	3.9/5.00		3.9/5.00		3.9/5.00		3.9/5.00	
Compression Ratio:	16.0:1		16.0:1		17.0:1		17.0:1	
Aspiration:	Turbo charged		Turbo charged		Turbocharged, AA Charge Cooled			
Frequency	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50Hz	60 Hz
Engine Speed: RPM	1500	1800	1500	1800	1500	1800	1500	1800
Gross Engine Power kW	96	113	105	125	145.8	163.5	150.7	na
hp	129	152	141	168	196	219	202	na
BMEP: kPA	1283	1259	1404	1393	1949	1822	2015	na
psi	186.1	182.6	203.6	202	282.7	264.2	292.2	na
Piston Speed: m/sec	6.4	7.6	6.4	7.6	6.4	7.6	6.4	na
ft/sec	20.8	25	20.8	25	20.8	25	20.8	na
Total Oil Capacity Litres	16.1	16.1	16.1	16.1	19.0	19.0	19.0	na
US Gal	4.30	4.30	4.30	4.30	5.00	5.00	5.00	na
Fuel Tank Capacity: Litres	230	230	230	230	290	290	300	na
US Gal	60.8	60.8	60.8	60.8	76.6	76.6	79.3	na
Fuel Consump, Prime: 1/hr	20.7	26.1	22.8	26.4	31.2	38.2	31.2	na
USg/hr	5.5	6.9	6.0	7.0	8.2	10.1	8.2	na
Fuel Consump, Standby: 1/hr	23.1	28.3	25.4	29.2	34.4	41.5	33.5	na
USg/hr	6.1	7.5	6.7	7.7	9.1	11.0	8.8	na
Heat Rejection to Exhaust System: kW	60.3	88.2	69.2	87.0	131.3	172.2	140.3	na
Btu/min	3429	5016	3935	4948	7467	9793	7979	na
Heat Rejection to Cooling System: kW	61.4	76.4	69.8	78.8	72.9	82.5	72.9	na
Btu/min	3492	4345	3969	4481	4146	4692	4146	na
Total Radiated Heat: kW	39.9	39.7	48.3	44.3	39.1	50.9	42.9	na
Btu/min	2269	2258	2747	2519	2224	2895	2440	na
Exhaust Temperature: °C	584	569	585	581	570	522	540	na
°F	1083	1057	1085	1077	1059	971	1004	na
Radiator Cooling Air Flow: m³/min	192	244	192	244	192	244	221.2	na
cfm	6780	8617	6780	8617	6780	8617	7811	na
Combustion Air Flow: m³/min	5.60	7.90	6.00	7.60	9.80	13.20	10.60	na
cfm	198	279	212	268	346	466	374	na
Exhaust Gas Flow: m³/min	16.8	22.5	17.6	21.9	28.2	36.3	29.9	na
cfm	593	795	622	773	996	1282	1056	na

Note: Standard reference conditions 27°C (80°F) Air Inlet. Temp. 152.4m (500ft) A.S.L. All Engine performance data based on the above mentioned maximum continuous ratings.

Fuel Consumption data at full load with diesel fuel with a specific gravity of 0.85 and conforming to BS2869: 1988, Class A2.

DIMENSIONS AND WEIGHTS

Generator Set Model	P90/P100E	P100/P110E	P135/P150E	P150P1/ P165E1
Length: mm(in)	2481(97.7)	2481(97.7)	2675 (105.3)	2675(105.3)
Width: mm(in)	746(29.4)	746(29.4)	900 (35.4)	900(35.4)
Height: mm(in)	1435(56.5)	1435(56.5)	1460 (57.5)	1564(61.6)
Net Weight*: kg(lb)	1240(2734)	1240(2734)	1460 (3219)	1515(3340)

*Weight including Lube Oil Only without coolant.

P90 - P165E1

STANDARD SPECIFICATIONS: P90 - P165E1

1. OUTPUT RATINGS

The generating set is normally supplied connected for 380 or 415 volt, 3 phase, 50 Hz, and alternative voltages / frequencies are available.

2. ENGINE

Perkins four stroke heavy duty industrial diesel engine.

2.1 Governing Type

Governor compliant with Class: ISO8528 G2,G3.

Mechanical for P90 - P110E

Electronic for P135 - P165E1

2.2 Electrical System

12 Volt DC. Energised to run shutdown solenoids, Oil pressure and water temperature switches & gauges.

3. COOLING SYSTEM

Radiator, fan & fan drive designed to cool the engine at ambient temperature up to 50°C(122°F).

Fan & fan drive are fully guarded.

4. ENGINE FILTRATION SYSTEM

Dry replaceable element air filter, cartridge type fuel filter & spin-on,full flow lube oil filter.

5. EXHAUST SYSTEM

Heavy duty industrial capacity exhaust silencer (supplied loose).

6. ELECTRICAL SYSTEM

12 Volt system with battery charging alternator, starter motor. High capacity maintenance free lead acid starting battery. Battery rack incorporated in the generating set baseframe, and heavy duty interconnecting cables with terminations.

7. ALTERNATOR

Screen protected and drip-proof IP23, self exciting, self regulating, single bearing brushless alternator with fully interconnected damper windings, IC06 cooling system and sealed-for life bearing.12 wire reconnectable windings provide a wide range of 3 phase voltages.

7.1 Insulation System

The insulation system is class H. All windings are impregnated in either a triple dip thermosetting, polyester varnish or vacuum pressure impregnated polyester resin.Heavy coat of anti-tracking varnish for additional protection against moisture or condensation.

7.2 Automatic Voltage Regulator

The fully sealed automatic voltage regulator maintain the voltage(steady state) within the limits of +/-0.5% from no load to full load including cold to hot variations at any power factor between 0.8 lagging and unity and inclusive of a speed variation of 1.5%. Normal adjustment is by means of a trimmer incorporated in the AVR.

7.3 Waveform Distortion,THF & TIF Factors

The total distortion of the voltage waveform with open circuit between phases or phase and neutral is in the order of 3.5%. Machines are designed to have a THF(waveform IEC) less than 2% and a TIF(waveform NEMA) less than 50. A 2/3 pitch factor is standard in all stator windings.(Total Harmonic content LL/LN is less than 4%)

7.4 Radio Interference

Suppression is in line with British standards: BSEN50081 & BSEN50082.

7.5 Electrical Characteristics

Electrical design & features in accordance with:BS 4999/5000, IEC34.1, VDE0530, UTE NFC 51.111, NEMA MG 1-22.

8. MOUNTING ARRANGEMENT

8.1 Baseframe:The complete generating set is mounted, as a whole, on a heavy duty fabricated, welded steel baseframe. The baseframe incorporates specially designed lifting points.

8.2 Coupling:The engine and alternator are directly coupled by means of an SAE flange so that there is no possibility of misalignment after prolonged use. The high inertia engine flywheel is flexibly coupled to the alternator rotor and a full torsional analysis has been carried out to guarantee no harmful vibration will occur in the assembly.

8.3 Anti-Vibration Mounting Pads:Anti-vibration pads are affixed between engine/alternator feet and the baseframe thus ensuring complete vibration isolation of the rotating assemblies and enabling the machine to be placed on an uneven surface without any detrimental effects.

8.4 Safety Guards

The fan, fan drive and battery charging alternator drive are fully guarded for personal protection. A stone guard protects the radiator core from accidental damage.

9. FUEL SYSTEM

The baseframe design incorporates an integral fuel tank with a capacity of approx. 8 hours. The tank is supplied complete with contents indicator, fuel fill cap with breather, fuel feed and return lines to engine and drain plug.

10. CONTROL SYSTEM

10.1 1001/PW1.0 Control Panels

1001: Series for P90 - P110E

PowerWizard1.0: Series for P135 - P165E1

Set mounted keystart / auto start panel in a vibration isolated sheet steel enclosure with a hinged lockable door.

The 1001 control panels are equipped as follows: (For PW1.0 Please refer to the separate PW1.0 leaflet)

a. INSTRUMENTATION:	1001
Voltmeter	●
Ammeter	●
Combined frequency & tachometer	●
Hours run counter	●
Coolant temperature gauge	●
Lube oil pressure gauge	●
Battery condition voltmeter	●
b. CONTROLS:	
Keystart off / run / start	●
Run / off / auto switch	-
7 pos. voltmeter phase s. s.	●
4 pos. Ammeter phase s.s.	●
Lamp test push button	●
Emergency stop button (red)	●
3 attempt start timer	-

1001

c. Shutdowns / individual warning lamps:

Fail to start	-
High coolant temperature	●
Low lube oil pressure	●
Over speed	-

d. Remote signals / contacts from panel:

Terminals for remote emerg. stop	-
Common fault alarm signal	-
Additional fault channels	-

e. DC and AC Wiring Looms

DC and AC wiring looms utilizing industrial type multipin connectors, thus permitting fast fault finding and simple retrofitting of alternative or remote control systems.

10.2 Circuit Breaker

3 Pole moulded case circuit breaker mounted on the generator in a vibration isolated sheet steel box with adequate access for incoming and outgoing cables.

11. DOCUMENTATION

A full set of installation, operation and maintenance manuals, circuit wiring diagrams, and commissioning / fault finding instruction leaflets.

12. GENERAL ARRANGEMENT

The generating set is designed and constructed for installation in a weather protected building. Various types of weatherproof and sound attenuated enclosures are available upon request.

13. FACTORY TESTS

The generating set is load tested before despatch. All protective devices, control functions and site load conditions are simulated and the generator and it's systems checked, proved and then passed for despatch. A test certificate can be provided upon request.

14. EQUIPMENT FINISH

All sheet metal components are first treated with a phosphate chemical conversion coating which provides an excellent corrosion resistant surface. These metal components are then "painted" by applying a polyester powder which is subjected to very high temperatures causing the powder to melt and form a continuous high gloss and extremely durable coating.The engine and alternator are thoroughly cleaned and finished in temperature controlled ovens with industrial high gloss paint. All fasteners are electroplated.

Note:Generating set is supplied with unpainted turbo-charger.

15. QUALITY STANDARDS

The equipment meets the followings standards:BS5000, ISO8528, ISO3406, IEC60034, VDE0530, NEMA MG-1.22

16. WARRANTY

One year against manufacturing defects.

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