

Perkins Powered Generating Sets



YOUR PARTNER IN POWER

OUTPUT RATINGS

Generator Set Model	P27P1		P30P1		P40P3		P45P3		P50P1		P60P3		P80P1	
	P30E1	P30E1	P33E1	P33E1	P44E3	P44E3	P50E3	P50E3	P55E1	P55E1	P65E3	P65E3	P88E1	P88E1
Ratings at 0.8 PF	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW	kVA	kW
380-415V, 50 Hz/1500 r.p.m.	27.0	21.6	30.0	24.0	40.0	32.0	45.0	36.0	50.0	40.0	60.0	48.0	80.0	64.0
	30.0	24.0	33.0	26.4	44.0	35.2	50.0	40.0	55.0	44.0	65.0	52.0	88.0	70.4
480V, 60 Hz/1800 r.p.m.	30.0	24.0	33.8	27.0	45.0	36.0	50.0	40.0	56.3	45.0	68.8	55.0	90.0	72.0
	34.0	27.2	37.5	30.0	50.0	40.0	56.3	45.0	62.5	50.0	75.0	60.0	100.0	80.0

Rating Definitions

Continuous Power Model P with Suffix P1 or P3

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 E1 or E3

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 27°C.

TECHNICAL DATA

Perkins Engine Model	Perkins		Perkins		Perkins		Perkins		Perkins		Perkins		Perkins	
	1103A-33G1	1103A-33G1	1103A-33TG1	1103A-33TG1	1103A-33TG2	1103A-33TG2	1103A-33TG2	1103A-33TG2	1104A-44TG2	1104A-44TG2	1104A-44TG2	1104A-44TG2	1104A-44TG2	1104A-44TG2
Leroy-Somer Alternator Model:	LL1014Q		LL1014S		LL2014B		LL2014C		LL2014D		LL2014H		LL2014L	
No. of Cylinders:	3 in line		3 in line		3 in line		3 in line		3 in line		3 in line		4 in line	
Cubic Capacity:	litres (cu.in)		3.3 (201.4)		3.3 (201.4)		3.3 (201.4)		3.3 (201.4)		3.3 (201.4)		4.4 (268.5)	
Bore/Stroke:	mm		105.0/127.0		105.0/127.0		105.0/127.0		105.0/127.0		105.0/127.0		105.0/127.0	
	in		4.1/5.0		4.1/5.0		4.1/5.0		4.1/5.0		4.1/5.0		4.1/5.0	
Compression Ratio:	19.25:1		19.25:1		17.25:1		17.25:1		17.25:1		17.25:1		17.25:1	
Aspiration:	Natural		Natural		Turbocharged		Turbocharged		Turbocharged		Turbocharged		Turbocharged	
Frequency	50 Hz		60 Hz		50 Hz		60 Hz		50 Hz		60 Hz		50 Hz	
Engine Speed:	RPM		1500		1800		1500		1800		1500		1800	
Gross Engine Power	kW		31.0		36.5		46.4		55.6		60.5		69.6	
	hp		42.0		49.0		62.0		75.0		81.0		93.0	
BMEP:	kPA		752.0		738.0		752.0		738.0		1125.0		1124.0	
	psi		109.0		107.0		109.0		107.0		163.2		163.0	
Piston Speed:	m/sec		6.4		7.6		6.4		7.6		6.4		7.6	
	ft/sec		20.8		25.0		20.8		25.0		20.8		25.0	
Total Oil Capacity	Litres		8.3		8.3		8.3		8.3		8.3		8.3	
	US Gal		2.2		2.2		2.2		2.2		2.2		2.1	
Fuel Tank Capacity:	Litres		144.0		144.0		144.0		175.0		175.0		175.0	
	US Gal		38.0		38.0		38.0		46.2		46.2		46.2	
Fuel Consump, Prime:	1/hr		6.2		7.2		6.9		8.0		9.4		10.7	
	USg/hr		1.6		1.9		1.8		2.1		2.5		2.8	
Fuel Consump, Standby:	1/hr		6.9		8.1		7.6		8.9		10.3		11.9	
	USg/hr		1.8		2.1		2.0		2.4		2.7		3.1	
Heat Rejection to Exhaust System:	kW		22.3		30.1		24.6		33.5		29.1		37.0	
	Btu/min		1268.0		1712.0		1399.0		1905.0		1655.0		2104.0	
Heat Rejection to Water & Lube Oil	kW		13.8		19.4		15.2		21.6		25.3		29.5	
	Btu/min		785.0		1103.0		864.0		1228.0		1439.0		1678.0	
Total Radiated Heat:	kW		8.6		8.8		9.2		9.7		11.6		13.0	
	Btu/min		489.0		500.0		523.0		552.0		660.0		739.0	
Exhaust Gas Temperature:	°C		472.0		501.0		490.0		510.0		479.0		497.0	
	°F		882.0		934.0		914.0		950.0		894.0		926.0	
Radiator Cooling Air Flow:	m³/min		69.6		90.6		69.6		90.6		86.4		105.6	
	cfm		2458.0		3200.0		2458.0		3200.0		3051.0		3729.0	
Combustion Air Flow:	m³/min		2.5		2.9		2.5		3.0		2.6		3.2	
	cfm		88.0		102.0		88.0		106.0		92.0		113.0	
Exhaust Gas Flow:	m³/min		5.2		6.3		6.2		7.5		6.9		8.6	
	cfm		184.0		222.0		219.0		265.0		242.0		305.0	

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	P27P1/ P30E1	P30P1/ P33E1	P40P3/ P44E3	P45P3/ P50E3	P50P1/ P55E1	P60P3/ P65E3	P80P1/ P88E1
Length:	mm(in)	1770 (69.7)	1770 (69.7)	2150 (84.6)	2150 (84.6)	2150 (84.6)	2149 (84.6)
Width:	mm(in)	714 (28.1)	714 (28.1)	752 (29.6)	752 (29.6)	752 (29.6)	752 (29.6)
Height:	mm(in)	1368 (53.9)	1368 (53.9)	1366 (53.8)	1366 (53.8)	1366 (53.8)	1366 (53.8)
Net Weight*:	kg(lb)	790 (1742)	800 (1764)	874 (1927)	874 (1927)	894 (1971)	1061 (2339)

*Weight including Lube Oil Only without coolant.

P27P1 - P88E1

STANDARD SPECIFICATIONS: P27P1 - P88E1

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

Mechanical Governor compliant with Class: ISO8528 G2,G3.

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 FILTERATION 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 European standard: EN61000-6

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 Series Control Panels (STD)

6000 series & PowerWizard 1.0 & 2.0

are optional. (For Synch. & Auto start).

Set mounted keystore panel in a vibration isolated sheet steel enclosure with a hinged lockable door.

The 1001 series control panel is equipped as follows:

a. INSTRUMENTATION:	1001
Voltmeter	●
Ammeter	●
Combined frequency & tachometer	●
Hours run counter	●
Coolant temperature gauge	●
Lube oil pressure gauge	●
Battery condition voltmeter	●
b. CONTROLS:	
Keyswitch 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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