

SILENT CANOPY THREE-PHASE DIESEL GENERATING SET

PERKINS 450 kVA PRIME / 500 kVA STANDBY

50 Hz · 380–415 V · 0.8 pf  
UK assembled silent set · Model PL450

PRIME (PRP)

450 kVA

360 kWe

STANDBY (ESP)

500 kVA

400 kWe

CURRENT @ 400 V

650 A

per phase, 0.8 pf

ENGINE

2506A-E15TAG1

Perkins 15.2 L · 6 cyl T/CAC



A UK-assembled silent (acoustic canopy) generating set built around the Perkins 2506A-E15TAG1 ElectropaK and a Leroy Somer TAL0473B alternator. Configured as a dual-duty machine: Prime Power for continuous or variable-load site use, and Standby / Emergency Power for automatic mains-failure backup. The canopied set is intended for plant rooms, farms, yards and occupied sites where weather protection and reduced noise are required.

RATINGS & ELECTRICAL OUTPUT — 50 HZ, 3-PHASE, 4-WIRE

| Parameter             | Prime PRP | Standby ESP | 380 V       | 400 V       | 415 V       | Notes             |
|-----------------------|-----------|-------------|-------------|-------------|-------------|-------------------|
| Apparent power        | 450 kVA   | 500 kVA     | —           | —           | —           | ISO 8528          |
| Active power (0.8 pf) | 360 kWe   | 400 kWe     | —           | —           | —           | Net electrical    |
| Line current / phase  | —         | —           | 683.5 A PRP | 649.5 A PRP | 626.0 A PRP | At 0.8 pf         |
| Standby current / ph  | —         | —           | 759.4 A ESP | 721.7 A ESP | 695.5 A ESP | At 0.8 pf         |
| Frequency / speed     | 50 Hz     | 50 Hz       | —           | —           | —           | 1,500 r/min       |
| Voltage regulation    | ±1 %      | ±1 %        | —           | —           | —           | Steady state, AVR |
| Power factor          | 0.8 lag   | 0.8 lag     | —           | —           | —           | Standard 3-phase  |
| Circuit breaker       | 800 A     | 800 A       | —           | —           | —           | 3-pole MCCB + CTs |

RATING DEFINITIONS

|                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>PRIME POWER (PRP) — ISO 8528-1</b></p> <p>Unlimited running hours in a variable-load application in place of a mains supply. Average load factor over 24 hours not to exceed 70% of the PRP rating. A 10% overload is available for 1 hour in any 12 hours of operation.</p> | <p><b>STANDBY / EMERGENCY (ESP) — ISO 8528-1</b></p> <p>Available under variable load in the event of a utility outage. No overload capability is permitted on the ESP rating. Typical annual utilisation is limited; intended for automatic mains-failure duty, not continuous baseload.</p> |
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TYPICAL APPLICATIONS

|                                                                                                                                                          |                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <p>● <b>Industrial &amp; manufacturing</b></p> <p>Process lines, workshops, batch plant, factories needing either prime site power or standby cover.</p> | <p>● <b>Commercial buildings</b></p> <p>Offices, retail, hotels, data rooms and mixed-use sites with automatic mains-failure duty.</p> |
| <p>● <b>Healthcare &amp; care</b></p> <p>Clinics, care homes and support services where a tested standby source is specified.</p>                        | <p>● <b>Construction &amp; hire</b></p> <p>Silent prime power for compounds, towers and temporary works.</p>                           |
| <p>● <b>Agriculture &amp; rural</b></p> <p>Grain stores, dairies, pumping and remote sites with limited grid capacity.</p>                               | <p>● <b>Utilities &amp; infrastructure</b></p> <p>Pumping stations, comms, water treatment and critical plant rooms.</p>               |

PRIME AND STANDBY CONFIGURATION — SUPPLIED AS ONE DUAL-DUTY PACKAGE

This data sheet covers the SILENT (acoustic canopy) generating set in both Prime and Standby duty. The mechanical package is common. Duty is selected at build: Prime sets include engine glow-plug / pre-heat for reliable cold starting on variable-load sites; Standby sets include a mains-powered coolant heater and mains battery charger so the set is always ready for automatic start on utility failure. Both duties use the Deep Sea 6120 Autostart / AMF controller, 800 A three-phase MCCB, tropical radiator and an 8-hour insulated bunded base fuel tank.

ENGINE — PERKINS 2506A-E15TAG1 ELECTROPAK

|                     |                              |                        |                              |
|---------------------|------------------------------|------------------------|------------------------------|
| Manufacturer        | Perkins Engines (UK design)  | Gross power PRP        | 412 kWm / 552 hp             |
| Model               | 2506A-E15TAG1                | Gross power ESP        | 451 kWm / 605 hp             |
| Configuration       | 6 cylinder, vertical in-line | Net power PRP          | 396 kWm                      |
| Cycle / combustion  | 4-stroke, direct injection   | Net power ESP          | 434 kWm                      |
| Aspiration          | Turbocharged, air-to-air CAC | Cooling                | Liquid, tropical radiator    |
| Bore × stroke       | 137 × 171 mm                 | Coolant capacity       | 58 litres (engine package)   |
| Displacement        | 15.2 litres                  | Oil capacity           | 62 litres                    |
| Compression ratio   | 16.3 : 1                     | Electrical system      | 12 V DC negative earth       |
| Rated speed         | 1,500 r/min (50 Hz)          | Starting               | Heavy-duty lead-acid battery |
| Rotation (flywheel) | Anti-clockwise               | Combustion air (PRP)   | approx. 28 m³/min            |
| Governor            | Mechanical                   | Exhaust flow (ESP max) | approx. 28 m³/min            |
| Emissions class     | Fuel-optimised               | Max exhaust temp.      | approx. 450–520 °C           |

FUEL CONSUMPTION — 1,500 R/MIN, PERKINS PUBLISHED DATA

| Load point        | g/kWh | Litres / hour | Approx. 8 h use | Duty reference       |
|-------------------|-------|---------------|-----------------|----------------------|
| Standby (ESP)     | 198   | 104 L/h       | —               | Standby rating       |
| 100 % prime (PRP) | 199   | 95 L/h        | ≈ 760 L         | Full prime load      |
| 75 % prime        | 200   | 72 L/h        | ≈ 576 L         | Typical average load |
| 50 % prime        | 210   | 50 L/h        | ≈ 400 L         | Light / standby test |
| 25 % prime        | —     | ≈ 28 L/h      | ≈ 224 L         | Light load running   |

Fuel figures are engine manufacturer data at 1,500 r/min on distillate diesel to the relevant BS / EN specification, and will vary with site altitude, ambient temperature, fuel quality, load profile and installation. The standard base tank is an insulated bunded 8-hour tank with contents gauge, typically sized around 75 % prime load. Bulk tanks, bunded day tanks and automatic fuel-transfer systems are available.

ALTERNATOR — LEROY SOMER TAL0473B

|               |                                  |                         |                         |
|---------------|----------------------------------|-------------------------|-------------------------|
| Manufacturer  | Leroy Somer (Nidec)              | Continuous rating 40 °C | 450 kVA class (500 ESP) |
| Model         | TAL0473B                         | Frequency / speed       | 50 Hz / 1,500 r/min     |
| Type          | Brushless, 4-pole, self-excited  | Voltage range           | 380 / 400 / 415 V star  |
| Winding       | 2/3 pitch, 6-wire (12-wire opt.) | THD (no-load, typ.)     | < 2.5 – 3.5 %           |
| Bearings      | Single bearing, SAE coupled      | THD (linear load, typ.) | < 5 %                   |
| Insulation    | Class H                          | Waveform THF / TIF      | < 2 % / < 50            |
| Enclosure     | IP23, drip-proof, self-cooled    | Overspeed               | 2,250 r/min             |
| AVR (typical) | R150 shunt (±0.8 to ±1 %)        | Altitude (std derate)   | ≤ 1,000 m asl           |

CONTROL, PROTECTION & ELECTRICAL PACKAGE

|             |                             |                       |                           |
|-------------|-----------------------------|-----------------------|---------------------------|
| Controller  | Deep Sea DSE6120            | Circuit breaker       | 800 A 3-pole MCCB         |
| Function    | Autostart + AMF             | Current transformers  | Fitted as standard        |
| Display     | Back-lit LCD + LED alarms   | Emergency stop        | Set-mounted E-stop        |
| Sensing     | 3-ph generator & 3-ph mains | Engine protection     | HET, over/under speed     |
| Current     | Generator / load CTs        | Electrical protection | V, Hz, I, battery         |
| Modes       | Stop / Manual / Auto / Test | Remote start          | Input available           |
| Event log   | 10 events (configurable)    | Outputs               | Fuel, crank, configurable |
| PC software | DSE Configuration Suite     | Control voltage       | 12 V DC                   |

DSE6120: automatic mains-failure start/return, 3-phase V / Hz / I monitoring, oil pressure, coolant temperature, fuel level, battery volts, hours-run, pre-heat and warning/shutdown protection. Configured by front panel or PC.

## STANDARD SPECIFICATION – SILENT CANOPY SET

- Perkins 2506A-E15TAG1 diesel engine with tropical radiator, fan and matrix guards, radiator drain valve
- Air, fuel and lubricating-oil filters; industrial exhaust silencer and flexible bellows
- Inboard anti-vibration mounts (AVMs) between engine/alternator and fabricated steel baseframe
- Leroy Somer TAL0473B single-bearing alternator, Class H, IP23, AVR regulated
- Deep Sea 6120 Autostart / AMF controller with 3-phase generator and mains sensing
- 800 A three-phase MCCB with current transformers and set-mounted emergency stop
- 12 V DC control system and heavy-duty lead-acid starting battery
- Insulated bunded 8-hour base fuel tank with contents gauge
- High engine-temperature and over / under-speed protection
- Works test to ISO 8528 with test certificate issued with the set
- PRIME BUILD: engine glow plugs / cold-start aid for reliable starting on variable-load prime sites
- STANDBY BUILD: mains-powered engine coolant heater and mains battery charger so the set remains warm and the battery charged while on standby
- Powder-coated acoustic canopy with lockable access doors, residential-grade silencer and weather protection
- Powder-coated / industrial finish baseframe designed for forklift / sling handling points as built
- Operation and maintenance documentation pack
- UK assembly and pre-delivery inspection before despatch
- Free mainland UK delivery on the PL450 silent set (offloading by others unless HIAB is specified)

## OPTIONAL EXTRAS &amp; SYSTEM UPGRADES

## ACOUSTIC / SITE

Weather canopy or container conversion; residential silencers; attenuation packs; plant-room acoustic treatment advice.

## FUEL

Bulk bunded tanks; automatic fuel transfer; polishing; water-in-fuel alarms; extended-run base tanks; HVO compatibility advice.

## MONITORING

Remote monitoring & control — fuel, performance, alarms and start/stop from off-site; SMS / cloud options.

## HYBRID / OFF-GRID

Battery storage, UPS and solar-hybrid packages to cut run hours and fuel on prime or remote sites.

## ELECTRICAL

4-pole MCCB; motorised breaker; AMF / ATS panel; synch / load-share (DSE86xx class); earth-fault; dual voltage; socket kits.

## STARTING &amp; HEATING

Additional battery set; battery isolator; jacket water heater upgrade; oil-sump heater; anti-condensation heater on alternator.

## EMISSIONS / FUEL

Guidance on fuel-optimised operation, HVO blends and local planning / environmental constraints.

## INSTALLATION KIT

Flue / extract design, flexible exhaust, wall flashings, drip-trays, cable containment, plinth design.

## INSTALLATION ENVELOPE, ENVIRONMENT &amp; COMPLIANCE

| Set type             | Silent acoustic canopy          | Design ambient    | Tropical radiator (hot climate) |
|----------------------|---------------------------------|-------------------|---------------------------------|
| Typical L × W × H    | Issued on GA drawing            | Standard altitude | ≤ 1,000 m (derate above)        |
| Typical wet weight   | Issued on GA drawing            | Works test        | ISO 8528 load test              |
| Engine dry weight    | approx. 1,200 kg (ElectropaK)   | Genset standard   | ISO 8528                        |
| Engine package L×W×H | 2,657 × 1,120 × 1,718 mm        | Alternator std.   | IEC 60034 / ISO 8528-3          |
| Fuel tank            | 8 h insulated bunded base       | Engine std.       | ISO 3046 / ISO 8528             |
| Noise (canopy)       | Typ. 65–70 dB(A) @ 7 m          | Wiring            | BS 7671 installation practice   |
| Cooling air          | Free inlet & discharge required | Handling          | Fork / lift points as built     |

- The acoustic canopy is weather-protecting for outdoor siting but still needs free cooling-air inlet and discharge, a correct exhaust route and a level plinth. Do not enclose the canopy in an unventilated shed.
- Typical canopy noise is around 65–70 dB(A) at 7 m and is confirmed on the general arrangement. Critical or planning-sensitive sites can be quoted with a higher-attenuation enclosure.
- Final dimensions, wet weight, tank litres, exhaust flange size and cable-entry details are confirmed on the general arrangement drawing issued with the quotation / order acknowledgement.
- Ratings are at 25 °C, 100 kPa, 30 % RH unless stated. Site derate applies for altitude, temperature and poorly ventilated rooms — GES Power Ltd will calculate this at survey.
- A 10 % overload on Prime is available for 1 hour in 12. Standby (ESP) has no overload. Do not apply ESP as a continuous rating.

## Why specify GES Power Ltd

Family-run UK specialists in diesel generation. We do not just sell a skid — we size, build, deliver, install, commission and look after the set for its working life.

### REASONS CLIENTS CHOOSE GES POWER LTD

#### 1 One accountable UK partner

Supply, installation, electrical connection, commissioning and aftercare sit in one company. You are not passed between a seller, an electrician and a service agent when the set is on site.

#### 2 Genuine Perkins-powered, UK-assembled sets

British-built Perkins and Caterpillar powered generators from small commercial units through to 2,000 kVA industrial machines. This 450 / 500 kVA silent set is assembled and works-tested in the UK before it leaves.

#### 3 Right-sized, not oversold

We design the package around your actual load, starting kVA, ambient, fuel strategy and budget. That avoids wasted capital, excess fuel burn and hire-set overspend.

#### 4 Prime and standby from one platform

The same silent set can be built for continuous / prime site duty or automatic standby. Glow plugs, coolant heaters, battery chargers, ATS and remote monitoring are selected to match how you will actually run the machine.

#### 5 Turnkey installation nationwide

Site survey, plinth and location advice, HIAB offload and positioning, certified electrical installation to BS 7671, exhaust and extract systems, bulk fuel tanks and fuel-transfer, cable containment and making-good.

#### 6 Commissioning that is more than a start-up

Functional testing of AMF / ATS, protection settings, load proving, customer training and a documented handover so your team know how to run, test and call for help.

#### 7 Planned maintenance, not breakdown roulette

Prime and standby service schedules, genuine filters and parts, annual black-start / blackout tests and load-bank testing to prove the set still carries the building when the grid fails.

#### 8 Repair, fault-finding and 24/7 support

Power cuts and failed starts do not keep office hours. Engineers operate nationwide from Chesterfield with common Perkins and control-system spares. Critical-site response is part of the offer, not an afterthought.

#### 9 Life-extension and compliance support

Controller upgrades, remote monitoring, exhaust and extract redesign, fuel polishing, battery replacement, and help meeting insurer, healthcare and facilities-management test regimes.

#### 10 Wider power systems, not just a diesel

ATS / AMF and synchronising panels, UPS, off-grid battery and solar-hybrid packages, and installation into vehicles or vessels. The generator can sit inside a larger resilience scheme.

#### 11 Plain commercial terms

Clear quotations, free mainland UK delivery on this PL450 silent set, and a family-run team you can actually speak to on 01246 380525. Established 2016 with more than twenty years' combined industry experience.

#### 12 Return on the investment

Reduced downtime, fewer emergency hire invoices, lower fuel through correct sizing, and a maintained asset that holds value. The set is only half the product — the service wrap is the other half.

### FULL SERVICE WRAP AVAILABLE WITH THIS GENERATING SET

Load assessment &amp; kVA sizing

Site survey &amp; plant-room design

Open or canopied build options

HIAB delivery &amp; positioning

Certified electrical installation

AMF / ATS panel supply &amp; wire-in

Exhaust, flue &amp; extract systems

Bulk fuel tanks &amp; transfer

Remote monitoring &amp; telemetry

Training &amp; documented commission

Planned service agreements

Load-bank &amp; black-start testing

24/7 breakdown attendance

Genuine parts &amp; service kits

Controller / ATS upgrades

Hybrid battery &amp; off-grid packages

## Talk to an engineer before you buy

Written for every type of client — facilities managers, contractors, farmers, healthcare estates and industrial engineers. If you are unsure about Prime versus Standby, open versus silent, ATS, exhaust routing or a service contract, call us. We will size the set and quote the installation as well as the machine.

**01246 380525**

GES Power Ltd · Unit 2 Cavendish Business Park, Chesterfield S41 9EY · Nationwide UK · Out-of-hours power-failure support