



# Water-Cooled Generating Set LLD 410

50 Hz: 33 kVA; 60 Hz: 39 kVA

## Standard Features:

- Engine and alternator close coupled.
- Anti-vibration mountings between engine/ alternator and base-plate.
- 12 volt starter battery and leads.
- Control panel containing an output circuit breaker with thermal overload protection and an electronic control module with digital display.
- Emergency stop button (lock down type).
- Operator's Handbook.
- Electrical diagram

## Engine Specification:

- Lister Petter Delta type water-cooled, diesel engine.
- Medium duty air cleaner.
- Lubricating oil and fuel filters.
- Fuel lift pump.
- Engine mounted exhaust silencer (open sets only).
- Residential exhaust silencer (acoustic sets only).
- 12v electric starting system.
- High engine temperature and low oil pressure shut down system.

## Alternator Specification:

- Single bearing, 4 pole brushless alternator.
- Solid state AVR with  $\pm 1.5\%$  voltage regulation as standard.
- Class "H" Insulation on the rotor and stator.

## Open Set: LLD 410



## Optional Items:

- Residential exhaust silencer on open sets (as fitted to acoustic sets).
- Acoustic canopy kit (including residential silencer kit).
- Basic tool kit.

## Lister Petter Engine Types

DWS4 AT 1500 r/min or 1800 r/min

## Acoustic Set: LLDA 410



# Prime and Standby Power Ratings

(all ratings are to ISO 8528-1)

|                     | r/min         |         | 50Hz Three-Phase |      | 60Hz Three-Phase |      |
|---------------------|---------------|---------|------------------|------|------------------|------|
|                     |               |         | kVA              | kW   | kVA              | kW   |
| LLD 410<br>LLD 410A | 1500,<br>1800 | Prime   | 30.0             | 24.0 | 37.0             | 29.6 |
|                     |               | Standby | 33.0             | 26.4 | 40.0             | 32.0 |

|                    |         |         |
|--------------------|---------|---------|
| Voltages available | 380/220 | 220/127 |
|--------------------|---------|---------|

**Voltages:** Other voltages are available; refer to Lister Petter.

**Single-Phase** versions available on request.

## Rating Definitions to ISO 8528-1

### Rating Conditions

A standard generating set is designed to operate in environmental reference conditions of 25°C, 100kPa and 30% humidity.

### Prime Power

This rating is for the supply of continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation on the annual hours of operation and 10% overload power can be supplied for 1 hour in 12 hours.

### Standby Power

This rating is for the supply of continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted.

## Sound Pressure Levels

(acoustic sets)

dB(A) at 75% load, 7 m at 1500 r/min

|          |    |
|----------|----|
| LLD 410A | 70 |
|----------|----|

Noise levels are in accordance with European Noise Directive (200/14/EC)

## Approximate Fuel Consumption

|         | r/min | litres/hour |          |
|---------|-------|-------------|----------|
|         |       | 100% Load   | 75% Load |
| LLD 410 | 1500  | 8.6         | 6.3      |
|         | 1800  | 10.3        | 7.4      |

# Control System Details

## Manual/Automatic Electric Start

This system allows for push-button start and stop on the control module and the possibility of remote start and stop over a two-wire circuit.

The generating set is protected by automatic shutdown on the following faults:

- Low engine oil pressure
- High engine temperature
- Over/under speed
- Failure to start after 3 attempts

## Control Cubicle

The system comprises a control cubicle, mounted on a vibration isolated support, containing the following elements:

- AC Output circuit breaker with over-current protection;
- Emergency stop button (lock-down type);
- DC circuit control switch and overload circuit breaker;
- Solid state control module, providing both local and remote control facilities and digital readouts as listed below.

### The control module gives digital readouts of:

- Generator voltage (Phase to Phase and Phase to Neutral);
- Generator Current (each phase displayed separately);
- Output frequency;
- Engine speed;
- Engine oil pressure;
- Engine coolant temperature;
- Battery voltage;
- Engine hours run.

### The control module has warning indicators for:

- Over/under speed;
- Emergency stop;
- Engine oil pressure;
- Engine temperature;
- Failure to start;
- Battery charger failure.

## Automatic Mains Failure

This system provides for fully automatic operation of the generating set to supply the electrical load in the event of a failure of the mains supply.

All the features shown above for the Manual/Auto Electric Start are included, plus the following:

- A separate wall-mounted cubicle containing:
- Mains monitoring unit to control set operation.
- Load Transfer Contactors, mechanically and electrically interlocked (rated for set output).
- Indicator showing "Mains on Load" or "Plant on Load".
- Switch allowing for manual operation of the Load Transfer Contactor if the set is manually started in the event of failure of the automatic system.
- The timer circuits in the solid state Control Module are set to give delay start, delay transfer back to mains and delay stop to allow for engine cool down period.
- A solid-state automatic battery charger is included in the set control panel arranged to maintain the battery charge when the set is not running.

## Approximate Dimensions and Weight

| Delta Genset             |    | Length | Width | Height | Weight |      |
|--------------------------|----|--------|-------|--------|--------|------|
| LLD 410<br>Open Set      | mm | 1600   | 700   | 1110   | kg     | 592  |
|                          | in | 63     | 27.5  | 44     | lb     | 1305 |
| LLD 410A<br>Acoustic Set | mm | 2000   | 850   | 1300   | kg     | 820  |
|                          | in | 79     | 33.5  | 51     | lb     | 1808 |

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We have made efforts to ensure that the information is accurate, but reserve the right to amend specifications and information without notice and without obligation or liability. The dimensions given in this brochure are for guidance and must not be used for installation purposes.

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