

# LPW ENGINES

## LPW2, LPW3, LPW4, LPWT4\*

Power ranges: 6.8—41.3 kW; 9.1—55.4 bhp  
 Fixed speed; full load speed range: 1500—3600 r/min  
 Variable speed; full load speed range: 1500—3000 r/min

### DURABLE, RELIABLE, EASY TO MAINTAIN LIQUID COOLED DIESEL ENGINES

#### SPECIAL ATTRIBUTES

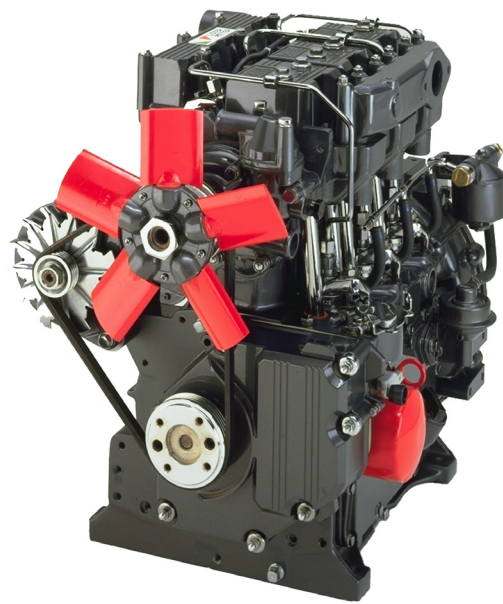
- variable and fixed speed builds available
- 500 hour service intervals
- designed for continuous operation in ambient temperatures up to 52°C (122°F)
- cold start capability down to -32°C (-25.6°F)

#### BASIC ENGINE CHARACTERISTICS

- diesel fuelled
- direct injection
- 2, 3 or 4 cylinders
- liquid cooled
- naturally aspirated or turbocharged (LPWT4)

#### DESIGN FEATURES AND EQUIPMENT

- heavy duty air cleaner
- inlet and exhaust manifolds
- inlet manifold heater plugs
- fuel lift pump
- self-vent fuel system with individual fuel injection pumps
- fuel filter/agglomerator
- gear-driven positive displacement type lubricating oil pump
- spin-on lubricating oil filter
- 12V electric start
- flywheel with ring gear \*\*
- SAE 5 flywheel housing
- operators' handbook
- deep sump (3600r/min only)



**ALPHA SERIES ENGINE**

#### EMISSIONS

- models under 19 kW comply with EU Stage 3A exhaust emissions regulations

#### OPTIONAL ITEMS

- low oil pressure switch
- radiator options with choice of pusher or puller fan and full guarding
- extended warranty

\* Not available at 3600r/min

\*\* LPW2 - If operating at 1500/1800 rpm in a genset application, please, refer to Applications Department for cyclic irregularity implications

**ALPHA SERIES: LPW ENGINES TECHNICAL DATA SHEET**

| <b>VARIABLE SPEED: POWER OUTPUTS TO ISO 3046<sup>1</sup></b> |            |        |      |      |      |      |      |      |
|--|------------|--------|------|------|------|------|------|------|
| Model  | Power      | r/min: | 1500 | 1800 | 2000 | 2500 | 3000 | 3600 |
| LPW2   | Continuous | kW     | 6.8  | 8.5  | 9.6  | 11.8 | 13.4 | N/A  |
|  |            | bhp    | 9.1  | 11.4 | 12.9 | 15.8 | 18.0 |      |
|  | Fuel Stop  | kW     | 7.5  | 9.4  | 10.6 | 13.0 | 14.7 |      |
|  |            | bhp    | 10.0 | 12.6 | 14.2 | 17.4 | 19.7 |      |
| LPW3   | Continuous | kW     | 10.3 | 12.8 | 14.5 | 17.7 | 20.1 |      |
|  |            | bhp    | 13.8 | 17.2 | 19.4 | 23.7 | 27.0 |      |
|  | Fuel Stop  | kW     | 11.3 | 14.1 | 15.9 | 19.5 | 22.1 |      |
|  |            | bhp    | 15.1 | 18.9 | 21.3 | 26.1 | 29.6 |      |
| LPW4   | Continuous | kW     | 13.6 | 17.0 | 19.3 | 23.6 | 26.8 |      |
|  |            | bhp    | 18.2 | 22.7 | 25.9 | 31.6 | 35.9 |      |
|  | Fuel Stop  | kW     | 15.0 | 18.7 | 21.2 | 26.0 | 29.5 |      |
|  |            | bhp    | 20.1 | 25.1 | 28.4 | 34.8 | 39.5 |      |
| LPWT4  | Continuous | kW     | 20.7 | 26.4 | 28.7 | 34.3 | 37.5 |      |
|  |            | bhp    | 27.7 | 35.3 | 38.5 | 46.0 | 50.2 |      |
|  | Fuel Stop  | kW     | 22.3 | 28.5 | 31.0 | 36.7 | 40.2 |      |
|  |            | bhp    | 29.9 | 38.2 | 41.5 | 49.1 | 53.9 |      |

| <b>FIXED SPEED: POWER OUTPUTS TO ISO 3046<sup>1</sup></b> |            |       |      |      |      |      |      |       |      |      |
|---|------------|-------|------|------|------|------|------|-------|------|------|
| Model   | Power      | r/min | 1500 | 1800 | 2000 | 2500 | 3000 | 3600* |      |      |
| LPW2  | Continuous | kW    | 7.5  | 9.3  | N/A  | N/A  | 13.4 | 14.0  |      |      |
|   |            | bhp   | 10.1 | 12.5 |      |      | 18.0 | 18.8  |      |      |
|   | Fuel Stop  | kW    | 8.2  | 10.2 |      |      | 14.7 |       |      |      |
|   |            | bhp   | 11.0 | 13.7 |      |      | 19.7 |       |      |      |
| LPW3  | Continuous | kW    | 11.3 | 13.9 |      |      |      |       | 20.1 | 21.0 |
|   |            | bhp   | 15.2 | 18.6 |      |      |      |       | 26.9 | 28.1 |
|   | Fuel Stop  | kW    | 12.4 | 15.3 |      |      |      |       | 22.1 |      |
|   |            | bhp   | 16.6 | 20.5 |      |      |      |       | 29.6 |      |
| LPW4  | Continuous | kW    | 15.0 | 18.6 |      |      | 26.8 | 28.0  |      |      |
|   |            | bhp   | 20.1 | 24.9 |      |      | 35.9 | 37.5  |      |      |
|   | Fuel Stop  | kW    | 16.5 | 20.3 |      |      | 29.5 |       |      |      |
|   |            | bhp   | 22.1 | 27.2 |      |      | 39.5 |       |      |      |
| LPWT4   | Continuous | kW    | 18.9 | 23.8 |      |      | 37.5 |       |      |      |
|   |            | bhp   | 25.3 | 31.9 |      |      | 50.3 |       |      |      |
|   | Fuel Stop  | kW    | 20.8 | 26.2 |      |      | 41.3 |       |      |      |
|   |            | bhp   | 27.8 | 35.1 |      |      | 55.4 |       |      |      |

1. Power ratings measured at the flywheel and fuel consumptions, apply to a fully run-in, non derated engine without a radiator and fan fitted, and without power absorbing accessories or transmission equipment. For rating definitions see page 4.  
 2. The overload capability applies to a fully run-in engine. This is normally attained after a running period of about 50 hours.

| <b>VARIABLE SPEED: TORQUE</b> |           |        |       |       |       |       |       |      |
|-------------------------------|-----------|--------|-------|-------|-------|-------|-------|------|
| Model                         | Power     | r/min: | 1500  | 1800  | 2000  | 2500  | 3000  | 3600 |
| LPW2                          | Fuel Stop | Nm     | 47.7  | 49.4  | 50.6  | 49.7  | 46.8  | N/A  |
|                               |           | lbf ft | 35.2  | 36.4  | 37.3  | 36.7  | 34.5  |      |
| LPW3                          |           | Nm     | 71.9  | 74.9  | 75.9  | 74.5  | 70.4  |      |
|                               |           | lbf ft | 53.0  | 55.2  | 56.0  | 54.9  | 51.9  |      |
| LPW4                          |           | Nm     | 95.5  | 99.2  | 101.9 | 99.3  | 93.9  |      |
|                               |           | lbf ft | 70.4  | 73.2  | 75.1  | 73.2  | 69.3  |      |
| LPWT4                         |           | Nm     | 142.0 | 151.2 | 148.0 | 140.2 | 128.0 |      |
|                               |           | lbf ft | 104.7 | 111.5 | 109.1 | 103.4 | 94.4  |      |

\* Engines operating at 3600rpm are offered for standby duty only. For further information and approval please contact Lister Petter Applications Department.

**Key to Emissions Compliance**

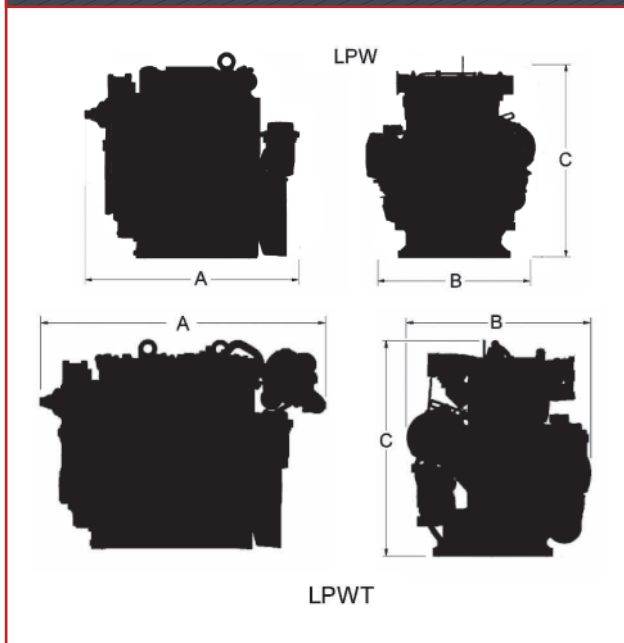
|                  |  |
|------------------|--|
| EU Stage 3A only |  |
|------------------|--|

| TECHNICAL DATA   |                     |                    |                    |                    |                    |
|--|---------------------|--------------------|--------------------|--------------------|--------------------|
|  |                     | LPW2               | LPW3               | LPW4               | LPWT4              |
| Type of fuel injection   |                     | Direct             | Direct             | Direct             | Direct             |
| Number of cylinders  |                     | 2                  | 3                  | 4                  | 4                  |
| Aspiration   |                     | Natural            | Natural            | Natural            | Turbocharged       |
| Direction of rotation (flywheel end)   |                     | Anti clockwise     | Anti clockwise     | Anti clockwise     | Anti clockwise     |
| Nominal cylinder bore  | mm                  | 86.0               | 86.0               | 86.0               | 86.0               |
|  | in                  | 3.39               | 3.39               | 3.39               | 3.39               |
| Stroke   | mm                  | 80.0               | 80.0               | 80.0               | 80.0               |
|  | in                  | 3.15               | 3.15               | 3.15               | 3.15               |
| Total cylinder capacity  | litre               | 0.930              | 1.395              | 1.860              | 1.860              |
| Total cylinder capacity  | in <sup>3</sup>     | 56.75              | 85.13              | 113.50             | 113.50             |
| Compression ratio  |                     | 18.5:1             | 18.5:1             | 18.5:1             | 16.2:1             |
| Firing order (number 1 cylinder is at the gear end)  |                     | 1 – 2              | 1 – 2 – 3          | 1 – 3 – 4 – 2      | 1 – 3 – 4 – 2      |
| Minimum idling speed   |                     | Dependent on build | Dependent on build | Dependent on build | Dependent on build |
| Minimum full load speed  | r/min               | 1500               | 1500               | 1500               | 1500               |
| Number of flywheel ring gear teeth   |                     | 96                 | 96                 | 96                 | 96                 |
| Gear end power take-off <sup>3</sup><br>- maximum inline<br>- maximum side load using a drive belt | kW                  | 12                 | 12                 | 12                 | 12                 |
|  | bhp                 | 16                 | 16                 | 16                 | 16                 |
|  | kW                  | 8.0                | 8.0                | 8.0                | 8.0                |
|  | bhp                 | 10.7               | 10.7               | 10.7               | 10.7               |
| Maximum continuous crankshaft end thrust   | kgf                 | 180                | 180                | 180                | 180                |
|  | lbf                 | 400                | 400                | 400                | 400                |
| Maximum permissible intake restriction at full rated speed and load                                | mbar                | 25                 | 25                 | 25                 | 25                 |
|  | in H <sub>2</sub> O | 10                 | 10                 | 10                 | 10                 |
| Maximum permissible exhaust back pressure  | mbar                | 75                 | 75                 | 75                 | 50                 |
|  | in H <sub>2</sub> O | 30                 | 30                 | 30                 | 20                 |
| Lubricating oil pressure at 3000r/min and with the oil at 110°C (230°F)                            | bar                 | 2.0                | 2.0                | 2.0                | 2.0                |
|  | lbf/in <sup>2</sup> | 29                 | 29                 | 29                 | 29                 |
| Lubricating oil pressure at idle   | bar                 | 1.0                | 1.0                | 1.0                | 1.0                |
|  | lbf/in <sup>2</sup> | 14.5               | 14.5               | 14.5               | 14.5               |

3. Subject to Lister Petter approval

| VARIABLE SPEED: MAXIMUM FUEL CONSUMPTION                             |            |           |      |      |      |      |      |      |
|--|------------|-----------|------|------|------|------|------|------|
| The figures given are for 100% load and are subject to 5% tolerance. |            |           |      |      |      |      |      |      |
| Model  | Power      | r/min     | 1500 | 1800 | 2000 | 2500 | 3000 | 3600 |
| LPW2   | Continuous | litre/hr  | 1.9  | 2.3  | 2.5  | 3.2  | 3.9  | N/A  |
|  |            | US gal/hr | 0.50 | 0.60 | 0.67 | 0.84 | 1.03 |      |
| LPW3   | Continuous | litre/hr  | 2.8  | 3.4  | 3.8  | 4.7  | 5.9  |      |
|  |            | US gal/hr | 0.75 | 0.90 | 1.00 | 1.25 | 1.55 |      |
| LPW4   | Continuous | litre/hr  | 3.8  | 4.6  | 5.0  | 6.3  | 7.8  |      |
|  |            | US gal/hr | 1.0  | 1.2  | 1.33 | 1.67 | 2.07 |      |
| LPWT4  | Continuous | litre/hr  | 4.9  | 6.0  | 7.1  | 8.8  | 10.6 |      |
|  |            | US gal/hr | 1.29 | 1.58 | 1.87 | 2.32 | 2.79 |      |

**APPROXIMATE DIMENSIONS AND WEIGHT**



|            |    | LPW2 | LPW3 | LPW4 | LPWT4 |
|------------|----|------|------|------|-------|
| Dry weight | kg | 112  | 150  | 180  | 186   |
|            | lb | 247  | 330  | 396  | 409   |
| Length (A) | mm | 496  | 596  | 696  | 786   |
|            | in | 19.5 | 23.5 | 27.4 | 30.9  |
| Width (B)  | mm | 470  | 470  | 470  | 480   |
|            | in | 18.5 | 18.5 | 18.5 | 18.9  |
| Height (C) | mm | 574  | 574  | 574  | 574   |
|            | in | 22.6 | 22.6 | 22.6 | 22.6  |

**RATING DEFINITIONS TO ISO 3046**

**ISO Standard Conditions**

|   |         |
|---|---------|
| Barometric pressure                       | 100 kPa |
| Relative humidity                         | 30%     |
| Ambient temperature at air inlet manifold | 25°C    |

**1. Fixed speed power: continuous power (ICN)**

The power in kW which the engine is capable of delivering continuously at the stated crankshaft speed, under ISO standard conditions, measured at the flywheel without power-absorbing accessories, provided that the engine is overhauled and maintained in good operating condition and that fuel to BS EN 590 Class A1 or A2, and lubricating oils to the correct performance specification and viscosity classification as recommended by Lister Petter Limited, are used.

**2. Fixed speed power: overload power (ICXN)**

The maximum power in kW which the engine is capable of delivering intermittently at the stated crankshaft speed for a period not exceeding one hour in any period of twelve hours' continuous running, immediately after working at the continuous power, under ISO standard conditions and with the provisions specified in (1) above.

**3. Variable speed: fuel-stop power, continuous power (IFN)**

The maximum power in kW which an engine is capable of delivering continuously at stated crankshaft speed, under ISO standard conditions and with the provisions specified in (1) above, with the fuel limited so that the fuel stop power cannot be exceeded.

**4. Variable speed: fuel-stop power, intermittent power (IOFN)**

The maximum power in kW which an engine is capable of delivering intermittently at the stated crankshaft speed, for a period not exceeding one hour in any period of twelve hours' continuous running, with the fuel limited so that the fuel stop power cannot be exceeded, immediately after running at the rating in (3) above, under ISO standard conditions and with the provisions specified in (1) above.

**5. Fixed speed: continuous power, standby**

This rating is applicable for supplying emergency power in variable load applications. Overload is not allowed.

**6. De-rating**

For non-standard site conditions, reference should be made to relevant BS, ISO and DIN standards.

**UK**

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