Gear Pump – Lightline Version

GP3L

Displacement up to 71 cm³ (4.30 inch³) • p\text{\textsuperscript{max}} 280 bar (4060 PSI) • Speed from 400 to 3500 RPM

Technical Features

› Operating pressure 250 bar, Peak pressure 280 bar
› Cost effective design for circuits with a lower operating pressure
› High quality aluminum alloys pump with axial play compensation
› Service life for 1800 operation hours
› Volumetric efficiency up to 96%
› International standard flanges acc.to SAE, ISO, DIN, GOST

Technical Data

<table>
<thead>
<tr>
<th>Nominal Size Parameters</th>
<th>Symbol</th>
<th>Unit</th>
<th>Displacement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>cm³</td>
<td>20 22 26 33 39 46 50 52 55 63 71</td>
</tr>
<tr>
<td>Actual displacement</td>
<td>V\textsubscript{g}</td>
<td>in³</td>
<td>1.22 1.34 1.59 2.01 2.38 2.81 3.05 3.17 3.36 3.84 4.33</td>
</tr>
<tr>
<td>Rotation speed</td>
<td></td>
<td>min⁻¹</td>
<td>1500</td>
</tr>
<tr>
<td>nominal</td>
<td>n\textsubscript{n}</td>
<td></td>
<td>600 500 400</td>
</tr>
<tr>
<td>minimum</td>
<td>n\textsubscript{min}</td>
<td></td>
<td>3500 3000 2800 2500</td>
</tr>
<tr>
<td>maximum</td>
<td>n\textsubscript{max}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure at inlet**</td>
<td>p\textsubscript{1\text{\textsuperscript{min}}}</td>
<td>bar</td>
<td>-0.3 (-4.4 PSI)</td>
</tr>
<tr>
<td>maximum</td>
<td>p\textsubscript{1\text{\textsuperscript{max}}}</td>
<td>bar</td>
<td>0.5 (7.3 PSI)</td>
</tr>
<tr>
<td>Pressure at outlet**</td>
<td>p\textsubscript{2\text{\textsuperscript{max}}}</td>
<td>bar</td>
<td>250 230 220 200 180</td>
</tr>
<tr>
<td>maximum</td>
<td>p\textsubscript{2\text{\textsuperscript{max}}}</td>
<td>bar</td>
<td>3626 3336 3191 2901 2611</td>
</tr>
<tr>
<td>peak</td>
<td>p\textsubscript{3}</td>
<td>bar</td>
<td>3844 3626 3481 3336 2901</td>
</tr>
<tr>
<td>Weight</td>
<td>m</td>
<td>kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lbs</td>
<td></td>
</tr>
</tbody>
</table>

1) *Inlet pressure in the reversible design can be up to p\textsubscript{1} = p\textsubscript{2\text{\textsuperscript{max}}} - 70 bar max. External drainage must be used in case of the reversible design.
2) **Outlet pressure in the reversible design is 10% lower than shown in the table (depending on operating conditions).
3) p\textsubscript{2\text{\textsuperscript{max}}} maximum continuous pressure - maximum working pressure, at which the pump can be operated without time limitation.
4) p\textsubscript{max} maximum pressure - maximum pressure permissible for a short time, max. 20 s.
5) p\textsubscript{3} peak pressure - short-time pressure (fractions of a second) arising in case of a sudden change of the operating mode; any excess of this pressure during operation is impermissible.

Gear Pump / Size

| Volumetric efficiency | % | 89 ÷ 96 |
| Mechanical efficiency | % | 85 |
| Fluid temperature range (NBR) | ^\circ C (^\circ F) | -20...80 (-4...176) |
| Fluid temperature range (FPM) | ^\circ C (^\circ F) | -20...120 (-4...248) |
| Viscosity range | mm²/s (SUS) | 20...80 (97...390), 1200 (5849) for cold start |
| Hydraulic fluid | | Hydraulic oils of power classes (HL, HLP) to DIN 51524 |
| Max. degree of fluid contamination for p\textsubscript{2≤}200 bar | | Class 21/18/15 acc. to ISO 4406 |
| Max. degree of fluid contamination for p\textsubscript{2≥}200 bar | | Class 20/17/14 acc. to ISO 4406 |
Direction of rotation, reversible design

Determine direction of rotation by looking at the drive shaft. The pump can be used only in the specified direction of rotation.

The pumps B codes (Bi-directional) have an external drainage with an orifice located in the cover or the flange.

Ordering Code

Gear pump serie 3

Displacement

Direction of rotation
Counter clockwise
Clockwise
Bi-directional

Flange design

Shaft Type

Combination of Flanges and Shafts

<table>
<thead>
<tr>
<th>Flange Design</th>
<th>RL</th>
<th>RN</th>
<th>SC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaft Type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Port orientation

S
R
C
Flange design in millimeters (inches)

RL

SC

Shaft design in millimeters (inches)

CL

CM

DN

DP

VO

VP
Ports design in millimeters (inches)

BSPP pipe thread according to 228-1

<table>
<thead>
<tr>
<th>Displacement (cm³)</th>
<th>Inlet Code</th>
<th>Dimension</th>
<th>Outlet Code</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 22 (1.22 - 1.34) including</td>
<td>GD</td>
<td>G 3/4</td>
<td>16 (0.63)</td>
<td>39 (1.54)</td>
</tr>
<tr>
<td>26 - 39 (1.59 - 2.38) including</td>
<td>GE</td>
<td>G 1</td>
<td>18 (0.71)</td>
<td>45 (1.77)</td>
</tr>
<tr>
<td>46 - 63 (2.81 - 3.84) including</td>
<td>GF</td>
<td>G 1 1/4</td>
<td>57 (2.24)</td>
<td>1 (0.04)</td>
</tr>
<tr>
<td>71 (4.33)</td>
<td>GH</td>
<td>G 1 1/2</td>
<td>60 (3.66)</td>
<td>1 (0.04)</td>
</tr>
</tbody>
</table>

UNF thread according to SAE

<table>
<thead>
<tr>
<th>Displacement (cm³)</th>
<th>Inlet Code</th>
<th>Dimension</th>
<th>Outlet Code</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 33 (1.22 - 2.01) including</td>
<td>UH</td>
<td>1-5/16-12UNF</td>
<td>23 (0.91)</td>
<td>49 (1.93)</td>
</tr>
<tr>
<td>39 - 52 (2.38 - 3.17) including</td>
<td>UI</td>
<td>1-5/8-12UNF 2B</td>
<td>1 (0.04)</td>
<td></td>
</tr>
<tr>
<td>55 - 71 (3.36 - 4.33) including</td>
<td>UI</td>
<td>1-7/8-12UNF</td>
<td>1 (0.04)</td>
<td></td>
</tr>
</tbody>
</table>

Flanged fittings according to DIN 8901/8902

<table>
<thead>
<tr>
<th>Displacement (cm³)</th>
<th>Inlet Code</th>
<th>Dimension</th>
<th>Outlet Code</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 33 (1.22 - 2.01) including</td>
<td>UH</td>
<td>1-5/16-12UNF</td>
<td>23 (0.91)</td>
<td>49 (1.93)</td>
</tr>
<tr>
<td>39 - 52 (2.38 - 3.17) including</td>
<td>UI</td>
<td>1-5/8-12UNF 2B</td>
<td>1 (0.04)</td>
<td></td>
</tr>
<tr>
<td>55 - 71 (3.36 - 4.33) including</td>
<td>UI</td>
<td>1-7/8-12UNF</td>
<td>1 (0.04)</td>
<td></td>
</tr>
</tbody>
</table>

Flanged fittings according to SAE, UNC thread

<table>
<thead>
<tr>
<th>Displacement (cm³)</th>
<th>Inlet Code</th>
<th>Dimension</th>
<th>Outlet Code</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 33 (1.22 - 2.01) including</td>
<td>AC</td>
<td>3/8-16-UNC</td>
<td>52,4 (2.06)</td>
<td>26,2 (1.03)</td>
</tr>
<tr>
<td>39 - 52 (2.38 - 3.17) including</td>
<td>AD</td>
<td>7/16-14-UNC</td>
<td>58,7 (2.31)</td>
<td>30,2 (1.19)</td>
</tr>
<tr>
<td>55 - 71 (3.36 - 4.33) including</td>
<td>AD</td>
<td>7/16-14-UNC</td>
<td>52,4 (2.06)</td>
<td>26,2 (1.03)</td>
</tr>
</tbody>
</table>

GPP Pumps - basic design in millimeters (inches)

<table>
<thead>
<tr>
<th>Displacement (cm³)</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (1.22)</td>
<td>63 (2.48)</td>
<td>128 (5.04)</td>
</tr>
<tr>
<td>22 (1.34)</td>
<td>64 (2.52)</td>
<td>130 (5.12)</td>
</tr>
<tr>
<td>25 (1.59)</td>
<td>65 (2.56)</td>
<td>133 (5.24)</td>
</tr>
<tr>
<td>28 (1.61)</td>
<td>68 (2.68)</td>
<td>139 (5.47)</td>
</tr>
<tr>
<td>32 (1.97)</td>
<td>72 (2.83)</td>
<td>146 (5.75)</td>
</tr>
<tr>
<td>46 (2.81)</td>
<td>75 (2.95)</td>
<td>152 (5.98)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Displacement (cm³)</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 (1.22)</td>
<td>50 (3.05)</td>
<td>77 (3.03)</td>
</tr>
<tr>
<td>22 (1.34)</td>
<td>52 (3.17)</td>
<td>78 (3.07)</td>
</tr>
<tr>
<td>25 (1.59)</td>
<td>55 (3.36)</td>
<td>79 (3.11)</td>
</tr>
<tr>
<td>28 (1.61)</td>
<td>63 (3.84)</td>
<td>83 (3.27)</td>
</tr>
<tr>
<td>32 (1.97)</td>
<td>71 (4.33)</td>
<td>86 (3.39)</td>
</tr>
</tbody>
</table>