Flow volume: 80 - 1200 l/min
Max differential pressure: 16 bar
Applications: Circulation, lubrication and transfer
1. Applications

1.1 Functionality

The Std Line (standard) ACG pumps come in two executions; Lube Line and Fuel Line. The main difference is the shaft seal design, optimized for light duty and heavy duty respectively.

The ACG pumps are used for a number of different fluids: lubrication oil, fuel oil, vegetable oil, hydraulic oil and other hydraulic fluids, polymers, emulsions and any non-aggressive fluid with sufficient lubricating properties.

If requested, the ACG pump may be certified according to any of the following classification societies: DNV, BV, LRS, ABS, RS, GL, RINA, KR, NK, RMR or CCS.

1.2 Applications

Typical applications are:

- Lubrication of diesel engines, gears, gas and steam turbines, hydro turbines and paper machines
- Circulation for cooling and filtration in large machineries, hydraulic systems and transformer oil for insulation in transformers
- As transfer pumps onboard vessels, in power plants, oil factories, refineries, tank farms etc
- For supply and circulation systems

1.3 Installation

The pump is designed to be flange-mounted to its electric motor via a connecting frame and a flexible shaft coupling. By the angle bracket, the pump might be mounted horizontally or vertically.

As standard, the pump is supplied without counter flanges (DIN type) but they can be included if requested.

As standard the pump is delivered with the discharge side to the right when seen from the pump shaft side (see below).

For more information about installation, see Installation and Start-up instruction for low pressure pumps.

Mounting standard picture M93-0.

On request the pump can be delivered in the opposite direction, M39-0.
2. Pump model code

Pump series
ACG, UCG*

Size
Power rotor diameter [mm]
045, 052, 060, 070

Lead
K = Low lead
N = Normal lead
D = High lead

Generation
Design generation 7

Material in pump body
N = Nodular cast iron

Shaft seal design
V = Carbon/Carbide, elastomers in Viton (Lube Line)
T = Silicon Carbide/Silicon Carbide, elastomers in Viton (Fuel Line)

Mounting
B = Flange mounting
F = Foot mounting*

Valve
P = Pressure relief valve with spring for max. 16 bar
E = Without valve

Special design
Code group omitted for standard design (A-number)

* For UCG and foot-mounted models, please contact IMO AB.
3. Technical Data

3.1 Pressure Information

Pressure relief valve

The pump is equipped with an integral pressure relief valve with internal return, limiting the differential pressure across the pump and protecting the pump. Should the discharge line be blocked, the relief valve will open by the pressure.

The valve is adjustable for different opening pressures. The value of the pressure limit can be set at the factory and should be adjusted at installation (see Installation & Start-up instruction for low-pressure pumps).

The maximum pressure accumulation varies with pump size, speed and viscosity, but will normally not exceed 4 bar.

The valve has a maximum set pressure of 16 bar.

Inlet pressure

Minimum inlet pressure (suction capability) is dependent on fluid viscosity and rotation speed. It increases with decreasing viscosity and decreasing speed. Information about minimum inlet pressure for each individual duty case can be obtained from IMO AB or pump selection software WinPump.

Maximum inlet pressure is 12 bar.

Discharge pressure

Maximum discharge pressure is 16 bar.

Differential pressure

Maximum differential pressure is 16 bar but reduced at low viscosities according to table below

<table>
<thead>
<tr>
<th>Viscosity [cSt]</th>
<th>1,4</th>
<th>2</th>
<th>6</th>
<th>10</th>
<th>&gt;12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. diff. pressure [bar]</td>
<td>6,9</td>
<td>8,0</td>
<td>12,4</td>
<td>15</td>
<td>16</td>
</tr>
</tbody>
</table>

Refer to your IMO representative or use the pump selection software WinPump to determine the exact operating limits.

3.2 Driver information

Driver type

The pump is designed primarily for direct drive through a flexible shaft coupling.

Under certain conditions other types of drive can be permitted, e.g. gear or pulley drives, which create radial loads onto the shaft end. Permissible radial force varies with pressure, speed and inlet conditions.

For radial load requirements, contact IMO AB.

Speed

The maximum speed is 3600 rpm. Max. operating speed may be reduced depending on inlet conditions. Contact IMO or use the pump selection software WinPump to find a corresponding speed limit in order to avoid cavitation problems.

Rotation

The pump is designed to operate in one rotational direction only, as standard clockwise when facing the shaft end. Pumps for CCW operation can be delivered on special request.

For shorter periods of time, a few minutes for emptying a discharge line, the pump may be operated in reverse direction, provided the back pressure is limited to 3 bar.
3. Technical Data

3.3 Sound level

Typical pump sound levels refer to free field conditions at a distance of 1 m from the pump. Noise of driver excluded in the quoted figures. The sound levels are measured at a discharge pressure of 5 bar, speed 2900 rpm and viscosity 37 cSt.

Size    045  052  060  070
Sound level dB [A]  59  63  66  68

3.4 Moment of Inertia

Moment of inertia \(10^3 \text{ kgm}^2\)

Size    045  052  060  070
Value    0,26  0,51  1,1  2,2

3.5 Fluid viscosity

Lube Line seal (Seal version code V):
1.4 – 800 cSt for Lube and hydraulic oil

Fuel Line seal (Seal version code T):
1.4 – 3500 cSt for Fuel oil

For higher viscosity, contact IMO AB.

3.6 Fluid temperature

Lube Line (Seal version code V): -20 – +90 °C
Fuel Line (Seal version code T): -20 – +155 °C
4. Design

4.1 Ball bearing

The pump is fitted with an external lubricated ball bearing. When delivered from IMO AB, the ball bearing is filled with grease.

For more information, see Maintenance and Service Instructions.

4.2 Material & design

<table>
<thead>
<tr>
<th>Model</th>
<th>Material pump</th>
<th>Material rotor</th>
<th>Material idler</th>
<th>Material seal</th>
<th>Material Elastomers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACG NVBP</td>
<td>Nodular cast iron</td>
<td>Steel, surface treated</td>
<td>Cast iron, surface treated</td>
<td>Carbon/Silicon Carbide</td>
<td>Viton</td>
</tr>
<tr>
<td>ACG NTBP</td>
<td>Nodular cast iron</td>
<td>Steel, surface treated</td>
<td>Cast iron, surface treated</td>
<td>Silicon Carbide / Silicon Carbide</td>
<td>Viton</td>
</tr>
</tbody>
</table>

For handling of fluids which may be aggressive to above materials, consult IMO AB.
5. Performance Guide

Typical performance values at 5 bar
Flow calculated at 26 cSt, power at 260 cSt.

<table>
<thead>
<tr>
<th>rpm</th>
<th>045L l/min kW</th>
<th>045N l/min kW</th>
<th>052K l/min kW</th>
<th>052N l/min kW</th>
<th>060K l/min kW</th>
<th>060N l/min kW</th>
<th>070K l/min kW</th>
<th>070N l/min kW</th>
<th>070D l/min kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>1470</td>
<td>79</td>
<td>97</td>
<td>126</td>
<td>155</td>
<td>193</td>
<td>242</td>
<td>321</td>
<td>395</td>
<td>442</td>
</tr>
<tr>
<td>1770</td>
<td>99</td>
<td>121</td>
<td>157</td>
<td>193</td>
<td>246</td>
<td>300</td>
<td>396</td>
<td>487</td>
<td>550</td>
</tr>
<tr>
<td>2950</td>
<td>176</td>
<td>218</td>
<td>279</td>
<td>341</td>
<td>396</td>
<td>528</td>
<td>692</td>
<td>849</td>
<td>974</td>
</tr>
<tr>
<td>3550</td>
<td>215</td>
<td>267</td>
<td>341</td>
<td>417</td>
<td>487</td>
<td>583</td>
<td>843</td>
<td>1033</td>
<td>1189</td>
</tr>
</tbody>
</table>

Diagram showing the performance values.
6. Sectional view
### List of Components

<table>
<thead>
<tr>
<th>Pos No</th>
<th>Denomination</th>
<th>Pos No</th>
<th>Denomination</th>
<th>Pos No</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1020</td>
<td>Complete power rotor</td>
<td>453</td>
<td>Screw</td>
<td>537A</td>
<td>Sealing washer</td>
</tr>
<tr>
<td>106</td>
<td>Balancing piston</td>
<td>462</td>
<td>Plug</td>
<td>551</td>
<td>Rear cover</td>
</tr>
<tr>
<td>113</td>
<td>Key</td>
<td>462A</td>
<td>Sealing washer</td>
<td>556</td>
<td>Gasket</td>
</tr>
<tr>
<td>120</td>
<td>Distance sleeve</td>
<td>473</td>
<td>Grease nipple</td>
<td>6000</td>
<td>Complete valve element</td>
</tr>
<tr>
<td>122</td>
<td>Ball bearing</td>
<td>473A</td>
<td>Grease nipple cover</td>
<td>(601)</td>
<td>Valve top cover</td>
</tr>
<tr>
<td>124</td>
<td>Retaining ring</td>
<td>480</td>
<td>Valve housing</td>
<td>(605)</td>
<td>O-ring</td>
</tr>
<tr>
<td>124A</td>
<td>Support ring</td>
<td>5010</td>
<td>Complete front cover</td>
<td>(608)</td>
<td>Valve spindle</td>
</tr>
<tr>
<td>202</td>
<td>Idler rotor</td>
<td>502</td>
<td>Tension pin</td>
<td>(608A)</td>
<td>Retaining ring</td>
</tr>
<tr>
<td>359</td>
<td>Distance washer</td>
<td>502A</td>
<td>Plug</td>
<td>(612)</td>
<td>Regulating nut</td>
</tr>
<tr>
<td>359A</td>
<td>Support ring</td>
<td>506</td>
<td>Gasket</td>
<td>(614)</td>
<td>Valve piston</td>
</tr>
<tr>
<td>401</td>
<td>Pump body</td>
<td>509</td>
<td>Shaft seal</td>
<td>(615)</td>
<td>Valve spring</td>
</tr>
<tr>
<td>440</td>
<td>Return valve</td>
<td>514</td>
<td>Retaining ring</td>
<td>602</td>
<td>Sealing washer</td>
</tr>
<tr>
<td>451</td>
<td>Screw</td>
<td>537</td>
<td>Deaeration plug</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Drawing remarks:
1. Hexagon bolts valid for sizes 060-070
2. Rear cover, Execution code xxxE

### Notes:
- Components with Pos No within parenthesis are parts of subassembly
8. Pump Dimensions
## 8. Pump Dimensions

### Drawing remarks:
1. Drain. ISO G1/4
2. Deaeration
3. Grease nipple
4. Relief valve. Turn clockwise to increase opening pressure
5. Inlet gauge. ISO G3/8
6. Outlet gauge. ISO G3/8

### Notes:
- Dimensions in mm
- Counter flanges according to DIN2635/ND16
- Weight is an approximate value

### Pump Size

<table>
<thead>
<tr>
<th>Size</th>
<th>Main dimensions</th>
<th>Flange dimensions</th>
<th>Outlet</th>
<th>Inlet</th>
<th>Shaft Y1x depth</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>045</td>
<td>A 367 A 319 B 110 C 50 D 129 E 16 F 113</td>
<td>H 15 HG 14.5 J 175 K 120 L 11 LG 165</td>
<td>O 125 N 50 P 4x QL 18</td>
<td>R 165 S 125 T 50</td>
<td>U 4x UL 18</td>
<td>W 20 Y 19 Y1x 21.5 Z 6 Z1 22 Z2 CoG CoG kg kg</td>
</tr>
<tr>
<td>052</td>
<td>A 396 A 350 B 122.5 C 60 D 140 E 127 F 4</td>
<td>H 165 HG 200 J 130 K 14 LG 185</td>
<td>O 145 N 65 P 4x QL 18</td>
<td>R 185 S 145 T 65</td>
<td>U 8x UL 18</td>
<td>W 20 Y 24 Y1x 27 Z 8 Z1 28 Z2 CoG CoG kg kg</td>
</tr>
<tr>
<td>060</td>
<td>A 460 A 397 B 140 C 70 D 178.5 E 153 F 18</td>
<td>H 200 HG 215 J 250 K 180 L 18</td>
<td>O 160 N 80 P 8x QL 18</td>
<td>R 200 S 160 T 80</td>
<td>U 8x UL 18</td>
<td>W 22 Y 28 Y1x 31 Z 36 Z1 285 Z2 CoG CoG kg kg</td>
</tr>
<tr>
<td>070</td>
<td>A 490 A 427 B 150 C 196 D 13 E 173</td>
<td>H 220 HG 215 J 250 K 180 L 18</td>
<td>O 180 N 100 P 8x QL 18</td>
<td>R 220 S 180 T 100</td>
<td>U 8x UL 18</td>
<td>W 22 Y 28 Y1x 31 Z 36 Z1 285 Z2 CoG CoG kg kg</td>
</tr>
</tbody>
</table>

### Execution code
- xxxP
- xxxE
9. Pump Unit dimensions
## 9. Pump Unit dimensions

<table>
<thead>
<tr>
<th>Pump size</th>
<th>IEC No</th>
<th>Frame size</th>
<th>Main dimensions</th>
<th>Foot dimensions</th>
<th>Outlet</th>
<th>Inlet</th>
<th>Dism.</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A</td>
<td>A1</td>
<td>AC</td>
<td>B</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>045</td>
<td>80</td>
<td>F165</td>
<td>679</td>
<td>631</td>
<td>238</td>
<td>160</td>
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<td>665</td>
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<td>060</td>
<td>100</td>
<td>F215</td>
<td>846</td>
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<td>894</td>
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<td></td>
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<td>987</td>
<td>924</td>
<td>371</td>
<td>255</td>
<td>1119</td>
<td>1056</td>
</tr>
</tbody>
</table>

**Execution code**: xxxP, xxxE

**Drawing remarks**:  
(1) Outlet gauge: ISO G3/8  
(2) Inlet gauge: ISO G3/8  
(3) Control for relief valve  
(4) Grease nipple

**Notes**:  
- Dimensions in mm  
- Dimensions A, A1 and AC are valid for Brook Crompton motors type WU-DA  
- Weight is an approximate value  
- Foot VDMA 24 561 PTFL
10. Accessories

A bare shaft pump (Fig. 1) can be ordered with the accessories in fig. 2-7.

Fig. 1 Bare shaft pump
Fig. 2 Set of counter flanges
Fig. 3 Connecting frame
Fig. 4 Electric motor
Fig. 5 Shaft coupling
Fig. 6. Angle bracket
Fig. 7. Gauge panel

11. Maintenance and Service

Spare parts for these pumps are easily available from stock. For detailed information and know-how about service, see the Maintenance & Service Instruction for ACG7 pumps or contact IMO AB.
For latest updates, check:
www.imo.se