HYDRAULIC GEAR PUMPS
FOR TRUCK APPLICATIONS

PATENT PENDING

CASAPPA

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New

SHOP ONLINE at www.airlinehyd.com
800-999-7378
“SFP” the new line of hydraulic gear pumps of Formula series is available in groups 3 and 3.5. The main features of new Formula “SFP” line are the noise level reduction, the availability of different ports position and the modular and compact design for direct mounting on PTOs.

**FEATURES**

- Two pieces cast iron housing
- High performance also at very low speed
- Different ports position availability
- Low noise level
- Shaft seal system no leakage guarantee
- Modular design
- Direct mounting on the PTOs

**DISPLACEMENTS**

From 2.16 in³/rev (35.43 cm³/rev)
To 7.22 in³/rev (118.31 cm³/rev)

**PRESSURE**

- Max. continuous 4060 psi (280 bar)
- Max. intermittent 4350 psi (300 bar)
- Max. peak 4495 psi (310 bar)

**MAX. SPEED**

Max. 2800 min⁻¹
FEATURES

GUARANTEE

CASAPPA provides a two years guarantee for FORMULA pumps on industrial vehicles if used in accordance with the applications and conditions indicated in this technical catalogue.

WARNING!

Failure or improper use of the product can cause damage at the same product or system.

Make sure that this is the last issue.

| Construction | External gear type pumps |
| Mounting     | ISO (ZF), ITALIAN (triangular) and SAE flanges |
| Line connections | Screw |
| Direction of rotation (looking at the drive shaft) | Anti-clock (S) - clockwise (D) |
| Inlet pressure range for pumps | 10 ÷ 44 psi - [0,7 ÷ 3 bar (abs.)] |
| Fluid temperature range | See table (1) |
| Fluid | Mineral oil based hydraulic fluids to ISO/DIN and fire resistant fluids [see table (1)]; For other fluids please consult our technical sales department. |
| Viscosity range | From 60 to 456 SSU [12 to 100 mm2/s (cSt)] recommended Up to 3410 SSU [750 mm2/s (cSt)] permitted |
| Filtering requirement | See table (2) |
| Anti-oxidant protection | Red painting IC105 |

Tab. 1

<table>
<thead>
<tr>
<th>Type</th>
<th>Fluid composition</th>
<th>Max pressure psi (bar)</th>
<th>Max speed min⁻¹</th>
<th>Temperature °F (°C)</th>
<th>Seals (♦)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Min</td>
<td>Max continuous</td>
</tr>
<tr>
<td>HFA</td>
<td>Oil emulsion in water 5 ± 15% of oil</td>
<td>725 (50)</td>
<td>1500</td>
<td>36 (2) 131 (55) _</td>
<td>N</td>
</tr>
<tr>
<td>HFB</td>
<td>Water emulsion in oil 40 % of water</td>
<td>1740 (120)</td>
<td>1500</td>
<td>36 (2) 140 (60) _</td>
<td>N</td>
</tr>
<tr>
<td>HFC</td>
<td>Water - glycol</td>
<td>1450 (100)</td>
<td>1500</td>
<td>-4 (-20) 140 (60) _</td>
<td>N Bz</td>
</tr>
<tr>
<td>HFD</td>
<td>Phosphate ester (♦)</td>
<td>2175 (150)</td>
<td>1500</td>
<td>14 (-10) 176 (80) _</td>
<td>V Bz</td>
</tr>
</tbody>
</table>

(♦) N= Buna N (standard) - V= Viton - N Bz= Buna N and Bronze thrust plates - V Bz= Viton and Bronze thrust plates.

(♦) For skydrol phosphate esters please consult our technical sales department.

Tab. 2

<table>
<thead>
<tr>
<th>Working pressure psi (bar)</th>
<th>∆p &lt; 2030</th>
<th>2030 &lt; ∆p &lt; 3045</th>
<th>∆p &gt; 3045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contamination class NAS 1638</td>
<td>10</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Contamination class ISO 4406:1999</td>
<td>21/19/16</td>
<td>20/18/15</td>
<td>19/17/14</td>
</tr>
<tr>
<td>Achieved with filter Bₘ (c) ≥ 200 according to ISO 16889</td>
<td>-</td>
<td>10 µm</td>
<td>10 µm</td>
</tr>
<tr>
<td>Achieved with filter Bₘ (c) ≥ 200 according to ISO 16889</td>
<td>25 µm</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Casappa recommends to use its own production filters.
“SFP” Formula pumps are available with three ports; one inlet and two outlet. They are supplied in version L with a plug on the rear outlet ports. Version H is obtained just switching the plug from the rear port to the side port. Version with rear ports is available on request. For more information please consult our technical sales department.

### PRESSURE DEFINITION

- $p_1$: Max. continuous pressure
- $p_2$: Max. intermittent pressure
- $p_3$: Max. peak pressure

### GENERAL NOTES

Available with different inlet and outlet ports. Standard pumps are equipped with BUNA N (N) seals for temperature up to 176 °F (80 °C), for particular operating conditions (V) VITON seals and BUNA or VITON seals with bronze thrust plates (N Bz), (V Bz) are available. If you use fire resistant fluids specify the type when ordering. For more information please consult our technical sales department.
GENERAL DATA PUMPS

<table>
<thead>
<tr>
<th>Pump type</th>
<th>Displacement</th>
<th>Max. pressure</th>
<th>Intermittent max. speed</th>
<th>Min. speed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in³/rev (cm³/rev)</td>
<td>psi (bar)</td>
<td>min⁻¹</td>
<td>At p₁ press.</td>
</tr>
<tr>
<td>SFP 30•34</td>
<td>2.16 (35,43)</td>
<td>4060 (280)</td>
<td>4495 (310)</td>
<td>2800</td>
</tr>
<tr>
<td>SFP 30•43</td>
<td>2.75 (45,09)</td>
<td>3915 (270)</td>
<td>4350 (300)</td>
<td>2500</td>
</tr>
<tr>
<td>SFP 30•51</td>
<td>3.24 (53,14)</td>
<td>3625 (250)</td>
<td>4060 (280)</td>
<td>2500</td>
</tr>
<tr>
<td>SFP 30•61</td>
<td>3.83 (62,80)</td>
<td>3335 (230)</td>
<td>3770 (260)</td>
<td>2500</td>
</tr>
<tr>
<td>SFP 30•73</td>
<td>4.62 (75,68)</td>
<td>2973 (205)</td>
<td>3480 (240)</td>
<td>2250</td>
</tr>
<tr>
<td>SFP 30•82</td>
<td>5.11 (83,74)</td>
<td>2828 (195)</td>
<td>3335 (230)</td>
<td>2250</td>
</tr>
<tr>
<td>SFP 35•90</td>
<td>5.86 (95,99)</td>
<td>3335 (230)</td>
<td>3843 (265)</td>
<td>2250</td>
</tr>
<tr>
<td>SFP 35•100</td>
<td>6.40 (104,92)</td>
<td>3190 (220)</td>
<td>3698 (255)</td>
<td>2250</td>
</tr>
<tr>
<td>SFP 35•112</td>
<td>7.22 (118,31)</td>
<td>2973 (205)</td>
<td>3480 (240)</td>
<td>2250</td>
</tr>
</tbody>
</table>

p₁ = Max. continuous pressure  
p₂ = Max. intermittent pressure  
p₃ = Max. peak pressure

For different working conditions please consult our technical sales department.

DESIGN CALCULATIONS FOR PUMPS

| Q | US gpm (l/min) | Flow |
| M | lbf in (Nm) | Torque |
| P | HP (kW) | Power |
| V | in³/rev (cm³/rev) | Displacement |
| n | min⁻¹ | Speed |
| Δp | psi (bar) | Pressure |
| ηᵥ = (V, Δp, n) | (= 0.98) | Volumetric efficiency |
| ηhm = (V, Δp, n) | (= 0.90) | Hydro-mechanical efficiency |
| ηₜ = ηᵥ • ηhm | (= 0.88) | Overall efficiency |

Q = Qₚₘₐₓ. • ηᵥ  
Qₚₘₐₓ. = \frac{V \text{ (cm³/rev)} \cdot n \text{ (min⁻¹)}}{1000}  
[V/\text{min}]

M = \frac{Mₚₘₐₓ.}{\etaₘₜₜ}  
[Nm]

Mₚₘₐₓ. = \frac{\Delta p \text{ (bar)} \cdot V \text{ (cm³/rev)}}{62,83}  

Pₚₘₐₓ. = \frac{P \text{ OUT}}{\etaₜ}  
[kW]

P \text{ OUT} = \frac{\Delta p \text{ (bar)} \cdot Q \text{ (l/min)}}{600}  

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800-999-7378
Two shaft seals on the pump and one on the support guarantee a perfect seals avoiding the oil exchange between the hydraulic circuit and the gear box; catastrophic failures are eliminated.

In case of failure, a safety system between the shaft seals of the pump allows the oil to escape, but doesn't allow the entry of contamination into the pump.

We recommend to mount the pumps with the hole in horizontal position or even better facing down.
SFP 30 MODULAR DESIGN

**Base pump - version 0 - L8 Z0**

Starting from one pump you can have more versions using different kit.

**ISO standard - version 0 - 16 Z0**
For PTOs applications with support

**ISO standard - version 5 - 16 Z0**
For PTOs applications without support

**PTOs with support**

**Coupling kit - version 0**

**PTOs without support**

**Support kit - version 5**

01/07/2008
The new Formula SFP 35, specifically designed to avoid interference with the transmission shaft of truck, can be mounted on direct power take-off.

**MOUNTING ON DIRECT PTOs WITH ISO FLANGE**
**SFP 30 • BASE MODEL HYDRAULIC GEAR PUMPS VERSION 0 • L8 Z0**

<table>
<thead>
<tr>
<th>Pump type</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (GAS STRAIGHT THREAD PORTS)</th>
<th>D (GAS STRAIGHT THREAD PORTS)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>G (mm)</th>
<th>V (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP 30•34</td>
<td>189 (7.441)</td>
<td>130.5 (5.138)</td>
<td>G 3/4</td>
<td>G 3/4</td>
<td>183.5 (7.224)</td>
<td></td>
<td></td>
<td>90 ±9 (717 ÷ 876)</td>
</tr>
<tr>
<td></td>
<td>195 (7.677)</td>
<td>127.5 (5.020)</td>
<td></td>
<td></td>
<td>189.5 (7.461)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>200 (7.874)</td>
<td>132.5 (5.217)</td>
<td></td>
<td></td>
<td>195.5 (7.657)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>206 (8.110)</td>
<td>138.5 (5.453)</td>
<td>G1</td>
<td>G1</td>
<td>200.5 (7.894)</td>
<td></td>
<td></td>
<td>130 ±13 (1036 ÷ 1266)</td>
</tr>
<tr>
<td></td>
<td>214 (8.425)</td>
<td>141.5 (5.571)</td>
<td></td>
<td></td>
<td>208.5 (8.209)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>219 (8.622)</td>
<td>146.5 (5.768)</td>
<td>G 1 1/4</td>
<td></td>
<td>70 (2.756)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Rotation: S=left - D=right

How to order:

**SFP 30•34 S0-L8 Z0-(H)L GE/GE-N-QW**

For more information see page 18
**SFP 30**

### COUPLING KIT VERSION 0

- **Orderin Code:**
  - 62024007  COUPLING KIT FP30-0-16 Z0-L8

- **Ext. Spline W 8x32x36 DIN-ISO 14**
  - Max Torque 330 Nm
  - 2920 lbf in

- **Assembling with**
  - LOCTITE 242

- **Int. Involute Spline ANSI B.92.1**
  - 13 Teeth - 16/32 Pitch - 30 DEG
  - Flat Root - Side fit - Class 6

- **25±5 Nm**
  - 199-243 lbf in

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**SFP 30**

### SUPPORT KIT VERSION 5

- **Orderin Code:**
  - 62024006  SUPPORT KIT FP30-5-16 Z0-L8

- **Ext. Spline W 8x32x36 DIN-ISO 14**
  - Max Torque 330 Nm
  - 2920 lbf in

- **Assembling with**
  - grease POLYMER 400/00 or similar
  - quantity 5 gr

- **Int. Involute Spline SAE J485**
  - 13 Teeth - 16/32 Pitch - 30 DEG.
  - Flat Root Side fit
### SFP 30 • HYDRAULIC GEAR PUMPS ISO STANDARD VERSION 0

#### 16 Z0

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (Gas Straight Thread Ports)</th>
<th>D (Gas Straight Thread Ports)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>G (mm)</th>
<th>V (Nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP 30•34-(H)L GE/GE-N-QW</td>
<td>189 (7.441)</td>
<td>130.5 (5.138)</td>
<td>G 3/4</td>
<td>G 3/4</td>
<td>183.5 (7.224)</td>
<td>90 ±9</td>
<td>(717 ± 876)</td>
<td></td>
</tr>
<tr>
<td>SFP 30•43-(H)L GF/GF-N-QW</td>
<td>195 (7.677)</td>
<td>127.5 (5.020)</td>
<td>G1</td>
<td></td>
<td>194.5 (7.657)</td>
<td>130 ±13</td>
<td>(1036 ÷ 1286)</td>
<td></td>
</tr>
<tr>
<td>SFP 30•51-(H)L GE/GE-N-QW</td>
<td>200 (7.874)</td>
<td>132.5 (5.217)</td>
<td>G1</td>
<td></td>
<td>200.5 (7.894)</td>
<td>130 ±13</td>
<td>(1036 ÷ 1286)</td>
<td></td>
</tr>
<tr>
<td>SFP 30•61-(H)L GF/GF-N-QW</td>
<td>206 (8.110)</td>
<td>138.5 (5.453)</td>
<td>G1</td>
<td></td>
<td>208.5 (8.209)</td>
<td>130 ±13</td>
<td>(1036 ÷ 1286)</td>
<td></td>
</tr>
<tr>
<td>SFP 30•73-(H)L GE/GE-N-QW</td>
<td>214 (8.425)</td>
<td>141.5 (5.571)</td>
<td>G 1 1/4</td>
<td></td>
<td>213.5 (8.406)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFP 30•82-(H)L GF/GF-N-QW</td>
<td>219 (8.622)</td>
<td>146.5 (5.768)</td>
<td>G 1 1/4</td>
<td></td>
<td>213.5 (8.406)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**For PTOs with support**

Rotation: S=left - D=right

How to order:

- GAS STRAIGHT THREAD PORTS
- For more information see page 18
SFP 30
HYDRAULIC GEAR PUMPS ISO STANDARD VERSION 5

For PTOs without support

Rotation: S=left - D=right
How to order:

SFP 30•34 S5-16 Z0-(H)L GE/GE-N-QW

Max. radial load (Fr)
9000 N (2025 lbf)
24 mm (0.9449 in) from mounting face

For more information see page 18
SFP 30
HYDRAULIC GEAR PUMPS ITALIAN STANDARD VERSION 0

For PTOs with support

Rotation: S=left - D=right

How to order:

SFP 30•34 S0-19 T1-(H)L GE/GE-N-QW

For more information see page 18
**SFP 35**

**BASE MODEL HYDRAULIC GEAR PUMPS VERSION 0**

**F9 Z0**

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### Pump Specifications

#### SFP 35•90

- Rotation: S=left - D=right
- How to order:
  - SFP 35•90 S0-F9 Z0-(H)L GF/GF-N-QW
- GAS STRAIGHT THREAD PORTS
- For more information see page 18

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (mm)</th>
<th>D (mm)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>G (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP 35•90</td>
<td>235</td>
<td>155</td>
<td>130 ±13 Nm</td>
<td>1036 - 1266 lbf in</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFP 35•100</td>
<td>239</td>
<td>159</td>
<td>70±7 Nm</td>
<td>558 - 682 lbf in</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFP 35•112</td>
<td>245</td>
<td>165</td>
<td>95±9 Nm</td>
<td>780 - 914 lbf in</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Ext. Involute Spline SAE j498b
- 15 Teeth 6/32 Spline Pitch 30 DEG.
- Flat Roof Side flt Class 1 flt
- Max. Torque 500 Nm
- 4425 lbf in

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**Rotational Analysis**

- Rotation: S=left - D=right

**How to Order:**

- SFP 35•90 S0-F9 Z0-(H)L GF/GF-N-QW

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**SHOP ONLINE at www.airlinehyd.com**

**800-999-7378**
**SFP 35**

**COUPLING KIT VERSION 0**

*Ext. Spline W 8x32x36 DIN-ISO 14*
Max Torque 500 Nm
4425 lbf.in

Assembling with
LOCTITE 242

Int. Involute Spline SAE j498b
15 Teeth - 16/32 Pitch - 30 DEG.
Flat Root - Side fit

Ordering Code:

**62024101** COUPLING KIT FP 35 - 0 - 16 Z0 - F9

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**SFP 35**

**SUPPORT KIT VERSION 5**

*Ext. Spline W 8x32x36 DIN-ISO 14*
Max Torque 500 Nm
4425 lbf.in

Int. Involute Spline SAE j498b
15 Teeth - 16/32 Pitch - 30 DEG.
Flat Root - Side fit

Assembling with
grease POLYMER 400/00 or similar
quantity 5 gr

Ordering Code:

**62024100** SUPPORT KIT FP 35 - 5 - 16 Z0 - F9
## SFP 35

**HYDRAULIC GEAR PUMPS ISO STANDARD VERSION 0**

### 16 Z0

![Diagram of hydraulic gear pumps](image)

#### Pump type specifications

<table>
<thead>
<tr>
<th>Pump type</th>
<th>A (mm)</th>
<th>B (mm)</th>
<th>C (BSPP)</th>
<th>D (BSPP)</th>
<th>E (mm)</th>
<th>F (mm)</th>
<th>G (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFP 35•90</td>
<td>235</td>
<td>155</td>
<td>G1 1/4</td>
<td>G1</td>
<td>70.2</td>
<td>74</td>
<td>233.5</td>
</tr>
<tr>
<td>SFP 35•100</td>
<td>239</td>
<td>159</td>
<td>G1</td>
<td>G1</td>
<td>70.2</td>
<td>74</td>
<td>233.5</td>
</tr>
<tr>
<td>SFP 35•112</td>
<td>245</td>
<td>165</td>
<td>G1</td>
<td>G1</td>
<td>70.2</td>
<td>74</td>
<td>233.5</td>
</tr>
</tbody>
</table>

Rotation: S=left - D=right  
For more information see page 18

**How to order:**
- GAS STRAIGHT THREAD PORTS

**For PTOs with support**

- Ext. Spline: W 8x32x36 DIN-ISO 14
- Max Torque: 500 Nm 4293 lbf in

### Technical Details

- Plug: 130 ±13 Nm 1036 - 1266 lbf in
- Max Torque: 130 ±13 Nm 1036 - 1266 lbf in

### Replaces

- 01/07/2008

**For PTOs with support**

- Ext. Spline: W 8x32x36 DIN-ISO 14
- Max Torque: 500 Nm 4293 lbf in

**SFP 35•90 S0-16 Z0-(H)L GG/GF-N-QW**

### Rotation

- S=left - D=right

**For PTOs with support**

- Ext. Spline: W 8x32x36 DIN-ISO 14
- Max Torque: 500 Nm 4293 lbf in

**SFP 35•90 S0-16 Z0-(H)L GG/GF-N-QW**
**SFP 35**

**HYDRAULIC GEAR PUMPS ISO STANDARD VERSION 5**

<table>
<thead>
<tr>
<th>Pump type</th>
<th>A</th>
<th>B</th>
<th>C (♣)</th>
<th>D (♣)</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm (in)</td>
<td>mm (in)</td>
<td>IN (BSPP)</td>
<td>OUT (BSPP)</td>
<td>mm (in)</td>
<td>mm (in)</td>
<td>mm (in)</td>
<td></td>
</tr>
</tbody>
</table>

- **SFP 35×90**
  - 5-16 Z0-(H)L GG/GF-N-QW

- **SFP 35×100**

- **SFP 35×112**
  - A: 245 (9.646), B: 165 (6.496), C: 9000 N (2025 lbf), D: 245 (9.646), E: 165 (6.496), G: 233,5 (9.193) 

**Rotation:** S=left - D=right

**How to order:**

- **SFP 35×90** S5-16 Z0-(H)L GG/GF-N-QW
- **SFP 35×100** S5-16 Z0-(H)L GG/GF-N-QW
- **SFP 35×112** S5-16 Z0-(H)L GG/GF-N-QW

**GAS STRAIGHT THREAD PORTS**

For more information see page 18
## PORT SIZES

- **Tightening torque for low pressure side port**
- **Tightening torque for high pressure side port (values obtained at 350 bar)**

### GAS STRAIGHT THREAD PORTS  
**BSPP**  
British standard pipe parallel (55°) conforms to UNI - ISO 228

<table>
<thead>
<tr>
<th>CODE</th>
<th>Nominal size</th>
<th>A</th>
<th>Ø B</th>
<th>Ø C</th>
<th>D</th>
<th>E</th>
<th>Tightening torque for low pressure side port</th>
<th>Tightening torque for high pressure side port (values obtained at 350 bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>mm</td>
<td>mm</td>
<td>mm</td>
<td>Nm</td>
<td>Nm (lbf in)</td>
<td></td>
</tr>
<tr>
<td>GE</td>
<td>3/4&quot;</td>
<td>G 3/4</td>
<td>39 (1.5354)</td>
<td>24.5 (0.9646)</td>
<td>18</td>
<td>Max. 1 (0.039)</td>
<td>30 +2,5 (266 ÷ 288)</td>
<td>90 +5 (797 ÷ 841)</td>
</tr>
<tr>
<td>GF</td>
<td>1&quot;</td>
<td>G 1</td>
<td>49 (1.9291)</td>
<td>30.5 (1.2008)</td>
<td>20</td>
<td>Max. 1 (0.039)</td>
<td>50 +2,5 (443 ÷ 465)</td>
<td>130 +10 (1151 ÷ 1239)</td>
</tr>
<tr>
<td>GG</td>
<td>1&quot; 1/4</td>
<td>G 1 1/4</td>
<td>56 (2.2047)</td>
<td>39.3 (1.5472)</td>
<td>20</td>
<td>Max. 1 (0.039)</td>
<td>70 +5 (620 ÷ 664)</td>
<td>170 +15 (1505 ÷ 1637)</td>
</tr>
</tbody>
</table>

(*) For SFP 35
INSTRUCTIONS

INSTALLATION
The direction of rotation of single-rotation pumps must be the same as that of the drive shaft. Check that the coupling flange correctly aligns the transmission shaft and the pump shaft. For pumps version 0 the connection do not generate an axial or radial load on the pump shaft. For pumps version 5 please consult the values indicated in this catalogue.

TANK
Tank capacity must be sufficient for the system’s operating conditions (~3 times the amount of oil in circulation) to avoid overheating of the fluid. A heat exchanger should be installed if necessary. The intake and return lines in the tank must be spaced apart (by inserting a vertical divider) to prevent the return-line oil from being taken up again immediately.

LINES
The lines must have a major diameter which is at least as large as the diameter of pump ports, and must be perfectly sealed. To reduce loss of power, the lines should be as short as possible, reducing the sources of hydraulic resistance (elbow, throttling, gate valves, etc.) to a minimum. A length of flexible tubing is recommended to reduce the transmission of vibrations. All return lines must end below the minimum oil level, to prevent foaming. Before connecting the lines, remove any plugs and make sure that the lines are perfectly clean.

FILTERS
We recommend filtering the entire system flow. Filters on suction and return line must be fitted in according to the contamination class as indicated in the first pages of the catalogue. Casappa recommends to use its own production filters:

HYDRAULIC FLUID
Use hydraulic fluid conforming to the table as specified in the first pages of the catalogue. Avoid using mixtures of different oils which could result in decomposition and reduction of the oil’s lubricating power.

STARTING UP
Check that all circuit connections are tight and that the entire system is completely clean. Insert the oil in the tank, using a filter. Bleed the circuit to assist in filling. Set the pressure relief valves to the lowest possible setting. Turn on the system for a few moments at minimum speed, then bleed the circuit again and check the level of oil in the tank. Then gradually increase the pressure and speed of rotation until the pre-set operating levels as specified in the catalogue are attained.

PERIODICAL CHECKS - MAINTENANCE
Replace filters regularly to keep the fluid clean. The oil level must be checked and oil replaced periodically depending on the system’s operating conditions.