Axial Piston Variable Double Pump
A8VO

Series 61 / 63
Sizes 55...200
Nominal pressure 350 bar
Peak pressure 400 bar
for open circuit

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Features
- Variable double pump with two axial tapered piston rotary groups of bent-axis design for hydrostatic drives in open circuits
- The flow is proportional to the input speed and to the displacement, and is infinitely variable from \( q_{V_{\text{max}}} \) to \( q_{V_{\text{min}}} = 0 \)
- The pump is suitable for direct mounting on the flywheel case in diesel engines
- One common suction port for auxiliary pump and both circuits
- A wide range of control instruments is available for different control and regulating functions
- Individual power controller
- Integrated auxiliary pump with pressure-relief valve, optionally with additional pressure-reduction valve
- Power take-off for mounting axial piston and gear pumps
- Excellent power to weight ratio
- Long service life
# Ordering Code / Standard Program

<table>
<thead>
<tr>
<th>A8V</th>
<th>O</th>
<th>R</th>
<th>1</th>
<th>N</th>
<th>Z</th>
<th>05</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>02</td>
<td>03</td>
<td>04</td>
<td>05</td>
<td>06</td>
<td>07</td>
</tr>
</tbody>
</table>

## Axial piston unit
01 Bent-axis design, variable

## Operation mode
02 Double pump (parallel construction), for open circuits

## Size
03 \( \approx \) Displacement \( V_{\text{g max}} \) in cm\(^3\), per rotary group

<table>
<thead>
<tr>
<th>Size</th>
<th>55</th>
<th>80</th>
<th>107</th>
<th>140</th>
<th>200</th>
</tr>
</thead>
</table>

## Control device

### Individual power controller without power override
- with hydraulic stroke limiter, positive control and external pilot pressure supply
- with load sensing
- with hydraulic power coupling
- and load sensing
- and hydraulic stroke limiter, negative control
- hydraulic stroke limiter, positive control and external pilot pressure supply
- hydraulic stroke limiter, negative control and external pilot pressure supply

<table>
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<th>200</th>
</tr>
</thead>
</table>

### Individual power controller with power override by pilot pressure
- with hydraulic stroke limiter, positive control and external pilot pressure supply
- with load sensing
- with hydraulic power coupling
- and load sensing
- and hydraulic stroke limiter, negative control
- hydraulic stroke limiter, positive control and external pilot pressure supply
- hydraulic stroke limiter, negative control and external pilot pressure supply

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<th>140</th>
<th>200</th>
</tr>
</thead>
</table>

## Series
05 Series 6; Index 1, 3

<table>
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<tr>
<th>Series</th>
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<th>80</th>
<th>107</th>
<th>140</th>
<th>200</th>
</tr>
</thead>
</table>

## Direction of rotation
06 viewed from shaft end: clockwise

## Gear ratio \( n_{\text{input}} / n_{\text{rotary groups}} \)
07 \( i = 1 \)

## Seals
08 NBR (nitrile-caoutchouc), shaft seal ring in FKM (fluor-caoutchouc)

## Shaft end
09 Splined shaft, DIN 5480

## Mounting flange
10 To fit flywheel case (conforming to SAE J617) of internal combustion engine (hole diameter for fixing \( d_1 \) mm)

### Mounting flange

<table>
<thead>
<tr>
<th>Mounting flange</th>
<th>55</th>
<th>80</th>
<th>107</th>
<th>140</th>
<th>200</th>
</tr>
</thead>
</table>

1) Hole diam. 11 mm for new projects only (previous types with short code G and hole diam. 14 mm)
### Ordering Code / Standard Program

<table>
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<tr>
<th>A8V</th>
<th>O</th>
<th>/</th>
<th>R</th>
<th>1</th>
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<th>05</th>
<th>06</th>
<th>07</th>
<th>08</th>
<th>09</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
</tr>
</thead>
</table>

#### Service line port
- SAE flange ports A1 and A2 at side, opposite (metric fixing thread)
- SAE flange port S at rear (metric fixing thread)

#### Auxiliary pump
- without integrated auxiliary pump
  - without power take-off (PTO): ● ● ● ● ● K00
  - with power take-off (PTO): ● ● ● ● ● K...
- with integrated auxiliary pump,
  - without power take-off (PTO): ● ● ● ● ● F00
  - with power take-off (PTO): ● ● ● ● ● F...

#### Power take-off 1) 2)

| 82-2 (A) | 5/8in | 9T | 16/32DP (A) | ○ | ● | ● | ● | ● | ...01 |
| 101-2 (B) | 7/8in | 13T | 16/32DP (B) | ○ | ● | ● | ● | ● | ...02 |
| 127-2 (C) | 1 1/4in | 15T | 16/32DP (B-B) | ○ | ● | ● | ● | ● | ...04 |
| 152-4 (D) | 1 1/4in | 14T | 12/24DP (C) | – | – | – | ○ | ● | ...07 |
| 1 3/4in | 13T | 8/16DP (D) | – | – | – | ● | ● | ...17 |

#### Valves
- Without valves (only for versions without auxiliary pump, K..): ● – 0
- With pressure-relief valve (only for versions with auxiliary pump, F..): – ● 1
- With pressure-relief and pressure-reduction valve, (only for versions with auxiliary pump, F..), U = 24V: – ● 4

#### Connector for solenoids (only for EP)
- DEUTSCH connector molded, 2-pin, without suppressor diode: – – ● ● – P

#### Standard / special version
- Standard version: (without code)
- Special version: combined with attachment part or attachment pump

1) Note installation conditions (see pages 32/33)
2) Other PTOs on request
3) 2 = 2-hole; 4 = 4-hole
4) Hub for splined shaft according to ANSI B92.1a-1976 (splined shafts assigned according to SAE J744, see pages 32/33)

● = available  ○ = on request  – = not available
Technical Data

Hydraulic fluid

Before starting project planning, please refer to our data sheets RE 90220 (mineral oil), RE 90221 (environmentally acceptable hydraulic fluids) and RE 90223 (HF hydraulic fluids) for detailed information regarding the choice of hydraulic fluids and application conditions.

The A8VO variable double pump is not suitable for operation with HFA. If HFB, HFC and HFD or environmentally acceptable hydraulic fluids are being used, the limitations regarding technical data and seals mentioned in RE 90221 and RE 90223 must be observed.

When ordering, please indicate the used hydraulic fluid.

Operating viscosity range

We recommend that a viscosity (at operating temperature) for optimum efficiency and service life purposes of

\[ \nu_{\text{opt}} = \text{optimum operating viscosity 16 to 36 mm}^2/\text{s} \]

be chosen, taken the tank temperature (open circuits) into account.

Limits of viscosity range

The following values apply in extreme cases:

\[ \nu_{\text{min}} = 5 \text{ mm}^2/\text{s} \]

short-term (t < 3 min)

at max. perm. temperature of \( t_{\text{max}} = +115^\circ \text{C} \).

\[ \nu_{\text{max}} = 1600 \text{ mm}^2/\text{s} \]

short-term (t < 3 min)

at cold start (p \leq 30 \text{ bar, } n \leq 1000 \text{ rpm, } t_{\text{min}} = -40^\circ \text{C})

Only for starting up without load. Optimum operating viscosity must be reached within approx. 15 minutes.

Note that the maximum hydraulic fluid temperature of 115°C must not be exceeded locally either (e.g. in the bearing area).

The temperature in the bearing area is – depending on pressure and speed – up to 12 K higher than the average case drain temperature.

Special measures are necessary in the temperature range from -40°C to -25°C (cold start phase); please contact us.

For detailed information about use at low temperatures, see RE 90300-03-B.

Details regarding the choice of hydraulic fluid

The correct choice of hydraulic fluid requires knowledge of the operating temperature in relation to the ambient temperature, in an open circuit the tank temperature.

The hydraulic fluid should be chosen so that the operating viscosity in the operating temperature range is within the optimum range \( \nu_{\text{opt.}} \) - the shaded area of the selection diagram. We recommended that the higher viscosity class be selected in each case.

Example: At an ambient temperature of \( X^\circ \text{C} \), an operating temperature of 60°C is set. In the optimum viscosity range \( \nu_{\text{opt.}} \), the shaded area this corresponds to the viscosity classes VG 46 or VG 68; to be selected: VG 68.

Note:
The case drain temperature, which is affected by pressure and speed, is always higher than the tank temperature. At no point in the system may the temperature be higher than 115°C.

If the above conditions cannot be maintained due to extreme operating parameters, please contact us.

Filtration

The finer the filtration, the higher the cleanliness level of the hydraulic fluid and the longer the service life of the axial piston unit.

To ensure functional reliability of the axial piston unit, the hydraulic fluid must have a cleanliness level of at least

20/18/15 according to ISO 4406.

At very high hydraulic fluid temperatures (90°C to max. 115°C) at least cleanliness level

19/17/14 according to ISO 4406 is required.

If the above classes cannot be observed, please contact us.
Technical Data

Operating pressure range

Input

Pressure on port S

The minimum permissible inlet pressure depends on the input speed. The following limit values must not be exceeded or undercut.

\[ p_{\text{abs min}} = 0.8 \text{ bar} \]

The max. pressure \( p_{\text{abs max}} \) is also dependent on the speed (see following diagram).

Minimum permissible inlet pressure at suction port S with increased speed

In order to avoid damage to the pump (cavitation), a minimum inlet pressure at the suction port must be assured. The minimum inlet pressure is depends on the speed and the displacement of the variable pump.

\[
\begin{align*}
\text{Displacement } V_g / V_{g\text{ max}} & \quad \text{Speed } n / n_{\text{max 1}} \quad \text{Minimum inlet pressure } p_{\text{abs}} \text{ in bar}
\end{align*}
\]

Example:

Given: Size 80, input speed 2560 rpm

Required: Necessary minimum inlet pressure \( p_{\text{abs}} \) at suction port S

Solution: Speed ratio \( \frac{n}{n_{\text{max 1}}} = \frac{2560}{2240} = 1.14 \)

results in a minimum inlet pressure of \( p_{\text{abs}} = 1.3 \) bar at full swivel angle (\( V_{g\text{ max}} \)).

If a free inlet flow can only be achieved at e.g. \( p_{\text{abs}} = 1 \) bar, the displacement must be reduced to \( 0.88 \times V_{g\text{ max}} \).

Note:

- Max. speed \( n_{\text{max}} \) (speed limit, see page 6)
- Min. and max. permissible pressure at port S.
- Permissible values for the shaft seal ring

Output

Pressure on port A₁ or A₂

(pressure data according to DIN 24312)

Nominal pressure \( p_N \) \( \quad \text{350 bar} \)

Peak pressure \( p_{\text{max}} \) \( \quad \text{400 bar} \)

Nominal pressure: Max. design pressure at which fatigue strength is ensured.

Peak pressure: Max. operating pressure which is permissible for short-term (\( t < 1 \) s).

Case drain fluid

The case drain chamber is connected to the suction and gear chambers. A case drain line to the tank is not required. Note the special feature of size 200 for flushing fluid.

External flushing fluid connection

All A8VO variable double pumps in size 200 always require an external flushing fluid connection from the R4 port to the tank, to ensure cooling and lubrication of the bearing sets.

This line should have an internal diameter \( \geq 15 \) mm.

Note:

The tank level must be higher than the position of the R4 port (see page 37).

Temperature range of shaft seal ring

The FKM shaft seal ring is permissible for case drain temperatures of -40°C to +115°C.

Auxiliary pump

Max. permissible pressure \( p_{\text{max}} \) \( 40 \) bar

The pressure-relief valve installed to protect the integrated auxiliary pump has a fixed setting of 30 bar.

Input

Via flexible coupling.
## Technical Data

### Table of values (theoretical values, without efficiencies and tolerances; values rounded)

<table>
<thead>
<tr>
<th>Size</th>
<th>( V_{g \text{ max}} ) cm³</th>
<th>( V_{g \text{ min}} ) cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>2 x 54.8</td>
<td>0</td>
</tr>
<tr>
<td>80</td>
<td>2 x 80</td>
<td>0</td>
</tr>
<tr>
<td>107</td>
<td>2 x 107</td>
<td>0</td>
</tr>
<tr>
<td>140</td>
<td>2 x 140</td>
<td>0</td>
</tr>
<tr>
<td>200</td>
<td>2 x 200</td>
<td>0</td>
</tr>
</tbody>
</table>

### Gear ratio
- \( i = n_{\text{input}}/n_{\text{rotary groups}} \)

### Input speed
- at \( V_{g \text{ max}} \) \(^1\)
  - \( n_{\text{max}} \) rpm
  - \( 2500 \)
  - \( 2240 \)
  - \( 2150 \)
  - \( 2100 \)
  - \( 1950 \)
- at \( V_{g \leq V_{g \text{ max}}} \) \(^2\)
  - \( n_{\text{max}} \) rpm
  - \( 3000 \)
  - \( 2750 \)
  - \( 2450 \)
  - \( 2450 \)
  - \( 2250 \)

### Flow
- at \( n_{\text{max}} \) and \( V_{g \text{ max}} \)
  - \( q_{v \text{ max}} \) L/min
  - \( 2 x 137 \)
  - \( 2 x 179 \)
  - \( 2 x 230 \)
  - \( 2 x 294 \)
  - \( 2 x 390 \)

### Power
- at \( n_{\text{max}}, V_{g \text{ max}} \) and \( D_p = 350 \text{ bar} \)
  - \( P_{\text{max}} \) kW
  - \( 160 \)
  - \( 209 \)
  - \( 268 \)
  - \( 294 \)
  - \( 325 \)

### Input torque
- at \( V_{g \text{ max}} \) and \( D_p = 350 \text{ bar} \)
  - \( T_{\text{max}} \) Nm
  - \( 611 \)
  - \( 891 \)
  - \( 1192 \)
  - \( 1337 \)
  - \( 1592 \)

### Rotary stiffness (single rotary group) \(^5\)
- \( c_{TW} \) Nm/rad
  - \( 11213 \)
  - \( 17985 \)
  - \( 25565 \)
  - \( 41408 \)
  - \( 39505 \)
- \( 0,5 \cdot V_{g \text{ max}} \) to \( 0 \) (interpolated) \( c_{TW} \) Nm/rad
  - \( 41442 \)
  - \( 67666 \)
  - \( 89381 \)
  - \( 146677 \)
  - \( 156876 \)

### Moment of inertia for rotary group with power take-off, without attachment pump
  - \( J_{TW} \) kgm²
  - \( 0.0161 \)
  - \( 0.0209 \)
  - \( 0.0345 \)
  - \( 0.0581 \)
  - \( 0.0849 \)

### Angular acceleration (single rotary group) \(^5\)
  - \( \alpha \) rad/s²
  - \( 25800 \)
  - \( 21800 \)
  - \( 17100 \)
  - \( 7500 \)
  - \( 11000 \)

### Mass approx.
  - \( m \) kg
  - \( 82 \)
  - \( 90 \)
  - \( 116 \)
  - \( 146 \)
  - \( 180 \)

### Variation: with integrated auxiliary pump, F00, F.. \(^4\)

<table>
<thead>
<tr>
<th>Displacement with integrated auxiliary pump ( V_{g \text{ max}} ) cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.6</td>
</tr>
<tr>
<td>8.6</td>
</tr>
<tr>
<td>8.6 (10.7) (^4)</td>
</tr>
<tr>
<td>10.7</td>
</tr>
<tr>
<td>11 (19) (^4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effective displacement ( V_{g \text{ max/eft}} ) cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.7</td>
</tr>
<tr>
<td>9.7</td>
</tr>
<tr>
<td>11 (13.7) (^4)</td>
</tr>
<tr>
<td>12.7</td>
</tr>
<tr>
<td>13.6 (23.6) (^4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gear ratio ( i = n_{\text{input}}/n_{\text{aux. pump}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.887</td>
</tr>
<tr>
<td>0.887</td>
</tr>
<tr>
<td>0.780</td>
</tr>
<tr>
<td>0.843</td>
</tr>
<tr>
<td>0.804</td>
</tr>
</tbody>
</table>

### Variation: with power take-offs, K.., F..

<table>
<thead>
<tr>
<th>Max. torque at PTO ( T_{\text{max}} ) Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>250</td>
</tr>
<tr>
<td>350</td>
</tr>
<tr>
<td>380</td>
</tr>
<tr>
<td>450</td>
</tr>
<tr>
<td>650</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gear ratio ( i = n_{\text{input}}/n_{\text{PTO}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>0.804</td>
</tr>
</tbody>
</table>

---

1) The values shown are valid for absolute pressure (\( p_{\text{abs}} \)) of 1 bar at suction port S and for operation with mineral fluids with a specific mass of 0.88 kg/L.
2) The values shown are valid for \( V_g \leq V_{g \text{ max}} \) or for an increase in the inlet pressure \( p_{\text{abs}} \) at the suction port S (see page 5).
3) Observe max. permissible torque!
4) (...) = Available on request!
5) Caution: Exceeding the permissible limit values may result in a loss of function, a reduction in service life or in the destruction of the axial piston unit. Other permissible limit values with respect to speed variation, reduced angular acceleration as a function of the frequency and the permissible startup angular acceleration (lower than the maximum angular acceleration) can be found in data sheet RE 90261.

---

### Calculation of nominal size

\[
q_v = \frac{V_g \cdot n \cdot \eta_v}{1000} \quad \text{in L/min}
\]

\[
T = \frac{V_g \cdot \Delta p}{20 \cdot \pi \cdot \eta_{\text{inh}}} \quad \text{in Nm}
\]

\[
P = \frac{2\pi \cdot T \cdot n}{60000} = \frac{q_v \cdot \Delta p}{600 \cdot \eta_t} \quad \text{in kW}
\]

\( V_g \) = Displacement per revolution in cm³
\( \Delta p \) = Differential pressure in bar
\( N \) = Speed in rpm
\( \eta_v \) = Volumetric efficiency
\( \eta_{\text{inh}} \) = Mechanical-hydraulic efficiency
\( \eta_t \) = Overall efficiency (\( \eta_t = \eta_v \cdot \eta_{\text{inh}} \))
LA0, LA1 - Individual Power Controller

On the variable double pump with individual power controller LA0/LA1, the two rotary groups are not mechanically coupled, i.e. each rotary group is fitted with a separate power controller.

The power controller controls the displacement of the pump depending on the operating pressure so that a defined input power is not exceeded.

The power setting is adjusted individually for each control and can be different; each pump can be set to 100% input power.

The hyperbolic power characteristic is approximated using two measuring springs. The operating pressure acts on the measuring surfaces of a differential piston against the measuring springs and an externally adjustable spring force, which determines the power setting.

If the sum of the hydraulic forces exceeds the spring forces, control fluid is supplied to the control piston, which swivels the pump back to reduce the flow.

When not under pressure, the pump is swiveled back to its initial position at \( V_{g\ max} \) by a return spring.

The hydraulic output power (characteristic) is influenced by the efficiency of the double pump.

Please state in clear text when ordering:
- Application: e.g. excavator
- Input power \( P \) in kW
- Input speed \( n \) in rpm
- Max. flow \( q_{v\ max} \) in L/min
- Max. operating pressure (primary pressure valve setting)

After clarifying the details, a power diagram can be created by our computer.

LA0

Individual power controller without power override

LA1

Individual power controller with power override by pilot pressure

An external pilot pressure is applied to the third measuring surface of the differential piston (port \( X_3 \)), thus enabling the set power to be reduced (negative power override).

The mechanically set basic power can be varied using different pilot pressures. This means that different power settings are possible.

If the pilot pressure signal is variably controlled by a load-limiting control, the sum of the hydraulic powers is equal to the input power. The pilot pressure for the power override is generated by an external control element or by the mounted pressure-reduction valve (see page 36).

The electric signal for controlling the pressure-reduction valve must be generated by an external electronic controller. The BODAS controllers RC (RE 95 200) in conjunction with the LLC software (see RE 95 310) are available for this purpose (further information on the Internet at www.boschrexroth.com/mobile-electronics):

- BODAS controller RC
  - Series 20 ——— RE 95200
  - Series 21 ——— RE 95201
  - Series 22 ——— RE 95202
  - Series 30 ——— RE 95203

Note:

If there is no power override, port \( X_3 \) to the tank should be depressurized.
LA0, LA1 - Individual Power Controller

LA0H; LA1H
Individual power controller with hydraulic stroke limiter

The hydraulic stroke limiter enables the displacement to be infinitely varied or limited across the entire control range of \( V_{g \, \text{max}} \) to \( V_{g \, \text{min}} \).

The displacement is set by the pilot pressure \( p_{St} \) applied at port \( X_1 \) (max. 40 bar).

The hydraulic stroke limiter is overridden by the power controller, i.e. below the power controller characteristic, the displacement is adjusted depending on the pilot pressure. If the set flow or the operating pressure is such that the power controller characteristic is exceeded, the power controller overrides the stroke limiter and reduces the displacement along the spring characteristic.

Note: The H1/H2/H3 characteristic curve is influenced by the design of the power controller!

LA0H1/3; LA1H1/3
Hydraulic stroke limiter (negative control)

Control range from \( V_{g \, \text{max}} \) to \( V_{g \, \text{min}} \).

With increasing pilot pressure the pump swivels to a smaller displacement.

Start of control (at \( V_{g \, \text{max}} \)) adjustable from 4 – 15 bar

Note: The start of control depends on the power controller setting.

Please specify start of control in clear text when ordering.

Initial position in depressurized state: \( V_{g \, \text{max}} \)

Note for H1:

A pressure \( \geq 30 \) bar is necessary for control. The required control fluid is taken from the high-pressure line. When using negative control directional valves, the control pressure is supplied from the negative control system via the high-pressure line.

Note for H3:

A pressure \( \geq 30 \) bar is necessary for control. The required control pressure is taken from the high-pressure line or the external control pressure applied at port \( Y_3 \) (\( \geq 30 \) bar). When using standard open-center directional valves, this control must be carried out with the external control pressure supply.

LA0H2; LA1H2
Hydraulic stroke limiter and external pilot pressure supply (positive control)

Control range from \( V_{g \, \text{min}} \) to \( V_{g \, \text{max}} \).

With increasing pilot pressure the pump swivels to a larger displacement.

Start of control (at \( V_{g \, \text{min}} \)) adjustable from 0 to 15 bar

Please specify start of control in clear text when ordering.

Initial position in depressurized state: \( V_{g \, \text{max}} \)

To control from \( V_{g \, \text{max}} \) to \( V_{g \, \text{min}} \) a pressure \( \geq 30 \) bar is required. The required fluid is taken from the high-pressure line or the external control pressure applied at port \( Y_3 \) (\( \geq 30 \) bar) (pilot pressure < start of control).

Characteristic: LA0H1/3; LA1H1/3
Pilot pressure increase (\( V_{g \, \text{max}} - V_{g \, \text{min}} \)) \( \Delta p = \text{approx. 25 bar} \)

Note: If port \( Y_3 \) is present (H2 + H3), it must always be connected to an external control pressure. If there is no external control pressure supply, this connection to the tank must be depressurized.
LA0K; LA1K

Individual power controller with hydraulic coupling

The hydraulic coupling of the two individual controller provides the function of a summation power control. However, the two rotary groups are coupled hydraulically, not mechanically.

The operating pressures of the two circuits each act on the differential pistons in the two individual controls, causing both rotary groups to swivel out and back together.

If one pump is working at less than 50% of the total input power, the remaining power can be transferred to the other pump, up to a limit of 100% of the total input power.

With the additional H1/H3 hydraulic stroke limiter function, each rotary group can be independently swiveled back to a smaller $V_g$ than is currently specified by the power control.

Circuit diagram: LA0KH1  Circuit diagram module for LA0KH3
LA0, LA1 - Individual Power Controller

**LA0S; LA1S, LA0KS, LA1KS**

*Individual power controller with load sensing*

The load-sensing controller is a flow control option that operates as a function of the load pressure to regulate the pump displacement to match the consumer flow requirement.

The flow depends here on the cross section of the external measuring orifice (1) fitted between the pump and the consumer. The flow is independent of the load pressure below the power characteristic and within the control range of the pump.

The measuring orifice is usually a separately arranged load sensing directional valve (control block). The position of the directional valve piston determines the opening cross section of the measuring orifice and thus the flow of the pump.

The load-sensing controller compares pressure before and after the measuring orifice and maintains the pressure drop (differential pressure \( \Delta p \)) and thus the flow constant.

If the differential pressure \( \Delta p \) on the measuring orifice increases, the pump is swiveled back towards \( V_{g\ min} \) and, if the \( \Delta p \) decreases, the pump is swiveled out towards \( V_{g\ max} \) until equilibrium in the valve is restored.

\[
\Delta p_{\text{measuring orifice}} = p_{\text{pump}} - p_{\text{consumer}}
\]

Setting range for \( \Delta p \) _________________________ 14 - 25 bar

Standard setting ________________________________ 18 bar

(please state in clear text).

The stand-by pressure in zero stroke operation (measuring orifice plugged) is slightly above the \( \Delta p \) setting.

In an LUDV (flow sharing) system, the pressure cut-off is integrated in the LUDV valve block.

(1) The measuring orifice (control block) is not included in supply.
EP Electric Control with Proportional Solenoids

With the electric control with proportional solenoid, the pump displacement is adjusted proportionally and steplessly to the current by means of the magnetic force.

Control from $V_{g\ min}$ to $V_{g\ max}$

With increasing control current the pump swivels to a larger displacement.

Initial position without control signal (control current): $V_{g\ min}$

The required control pressure is taken either from the operating pressure or from the externally applied control pressure at port $Y_3$.

To ensure the control even at low operating pressure < 30 bar, the port $Y_3$ must be supplied with an external control pressure of approx. 30 bar.

Characteristic: EP2

<table>
<thead>
<tr>
<th>Control current</th>
<th>EP2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start of control at $V_g\ 0$</td>
<td>200 mA</td>
</tr>
<tr>
<td>End of control at $V_g\ max$</td>
<td>600 mA</td>
</tr>
<tr>
<td>Limiting current</td>
<td>0.77 A</td>
</tr>
<tr>
<td>Nominal resistance (at 20°C)</td>
<td>22.7 Ω</td>
</tr>
<tr>
<td>Dither frequency</td>
<td>100 Hz</td>
</tr>
<tr>
<td>Actuated time</td>
<td>100%</td>
</tr>
<tr>
<td>Type of protection according to DIN/EN 60529</td>
<td>IP67 and IP69K</td>
</tr>
</tbody>
</table>

The following electronic controllers and amplifiers are available for controlling the proportional solenoids (information is also available on the Internet at www.boschrexroth.com/mobile-electronics):

- BODAS controller RC
  Series 20 ______________________________ RE 95200
  Series 21 ______________________________ RE 95201
  Series 22 ______________________________ RE 95202
  Series 30 ______________________________ RE 95203
  and application software

- Analog amplifier RA ______________________ RE 95230

Note on load sensing "S" and electric control "EP":
When operated at $V_{g\ min}$ (> 5 min), the hydraulic fluid in the case can become heated to an impermissible temperature. Please contact us.
Unit Dimensions, Size 55

LA0KH1/H3, LA1KH1/H3

Individual power controller with hydraulic coupling and hydraulic stroke limiter (negative control)

Before finalizing your design, please request a binding installation drawing. Dimensions in mm

1) Dimensions according to SAE J617-No. 4, for connection to flywheel case in internal combustion engine.
Unit Dimensions, Size 55

Shaft end

Z

Splined shaft DIN 5480
W40x2x30x18x9g

Ports

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Series</th>
<th>Size</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A₁, A₂</td>
<td>Service line ports (high-pressure series)</td>
<td>SAE J518</td>
<td>3/4in</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>Suction port (standard series)</td>
<td>DIN 13</td>
<td>M10x1.5; 17 deep</td>
<td></td>
</tr>
<tr>
<td>A₃</td>
<td>Service line port (auxiliary pump)</td>
<td>DIN 3852</td>
<td>M18x1.5; 12 deep</td>
<td>140 Nm</td>
</tr>
<tr>
<td>R₁, R₂</td>
<td>Air bleed port</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>R₃</td>
<td>Fluid drain</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>M</td>
<td>Gauge port for control pressure</td>
<td>DIN 3852</td>
<td>M12x1.5; 12 deep</td>
<td>50 Nm</td>
</tr>
<tr>
<td>M₃</td>
<td>Gauge port for power override</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>X₁</td>
<td>Pilot pressure port for hydraulic stroke limiter</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>X₃</td>
<td>Pilot pressure port for power override</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>Y₃</td>
<td>External control pressure port</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
</tbody>
</table>

2) Center bore according to DIN 332 (thread according to DIN 13)
3) On the LA0 version, the port has no function
4) Only for versions LA...H2 and LA...H3
5) Please observe the general notes for the max. tightening torques on page 40.
6) Plugged
7) 1x plugged, 1x open
Unit Dimensions, Size 55

LA0H2, LA1H2
Individual power controller with hydraulic stroke limiter and external pilot pressure supply (positive control)

LA0K, LA1K
Individual power controller with hydraulic power coupling

Before finalizing your design, please request a binding installation drawing. Dimensions in mm
Unit Dimensions, Size 55

LA0KH2, LA1KH2

Individual power controller with hydraulic power coupling, hydraulic stroke limiter and external pilot pressure supply (positive control)
Unit Dimensions, Size 80
LA0KH1/H3, LA1KH1/H3

Individual power controller with hydraulic coupling and hydraulic stroke limiter (negative control)

View X

Detail of A1, A2 (2:1)

Detail of S (2:1)

1) Dimensions according to SAE J617-No. 3, for connection to flywheel case in internal combustion engine.
Unit Dimensions, Size 80

Shaft end

Z  Splined shaft DIN 5480
   W40x2x30x18x9g

Ports

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Thread</th>
<th>Diameter</th>
<th>Depth</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1, A2</td>
<td>Service line ports (high-pressure series)</td>
<td>SAE J518</td>
<td>1in</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fixing thread</td>
<td>DIN 13</td>
<td>M12x1.75</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>Suction port (standard series)</td>
<td>SAE J518</td>
<td>3in</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fixing thread</td>
<td>DIN 13</td>
<td>M16x2</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>Service line port (auxiliary pump)</td>
<td>DIN 3852</td>
<td>M18x1.5</td>
<td>12</td>
<td>140 Nm</td>
</tr>
<tr>
<td>R1, R3</td>
<td>Air bleed port</td>
<td>DIN 3852</td>
<td>M14x1.5</td>
<td>12</td>
<td>80 Nm</td>
</tr>
<tr>
<td>R2</td>
<td>Fluid drain</td>
<td>DIN 3852</td>
<td>M14x1.5</td>
<td>12</td>
<td>80 Nm</td>
</tr>
<tr>
<td>M</td>
<td>Gauge port for control pressure</td>
<td>DIN 3852</td>
<td>M14x1.5</td>
<td>12</td>
<td>50 Nm</td>
</tr>
<tr>
<td>M1, M2</td>
<td>Gauge port for high-pressure</td>
<td>ISO11926</td>
<td>9/16-18UNF-2B</td>
<td>12</td>
<td>80 Nm</td>
</tr>
<tr>
<td>X1</td>
<td>Pilot pressure port for hydraulic stroke limiter</td>
<td>DIN 3852</td>
<td>M14x1.5</td>
<td>12</td>
<td>80 Nm</td>
</tr>
<tr>
<td>X3</td>
<td>Pilot pressure port for power override</td>
<td>DIN 3852</td>
<td>M14x1.5</td>
<td>12</td>
<td>80 Nm</td>
</tr>
<tr>
<td>X4</td>
<td>Pilot pressure port for load sensing</td>
<td>DIN 3852</td>
<td>M14x1.5</td>
<td>12</td>
<td>80 Nm</td>
</tr>
<tr>
<td>Y3</td>
<td>External control pressure port</td>
<td>DIN 3852</td>
<td>M14x1.5</td>
<td>12</td>
<td>80 Nm</td>
</tr>
</tbody>
</table>

2) Center bore according to DIN 332 (thread according to DIN 13)
3) On the LA0 version, the port has no function
4) Only for versions LA...H2 and LA...H3
5) Please observe the general notes for the max. tightening torques on page 40.
6) Plugged
7) 1x plugged, 1x open
Unit Dimensions, Size 80

**LA0H2, LA1H2**
Individual power controller with hydraulic stroke limiter and external pilot pressure supply (positive control)

**LA0K, LA1K**
Individual power controller with hydraulic power coupling

**LA0KH2, LA1KH2**
Individual power controller with hydraulic power coupling, hydraulic stroke limiter and external pilot pressure supply (positive control)

Before finalizing your design, please request a binding installation drawing. Dimensions in mm.
Unit Dimensions, Size 80

**LA0KS, LA1KS**

Individual power controller with hydraulic power coupling and load sensing.
Unit Dimensions, Size 107
LA0KH1/H3, LA1KH1/H3

Individual power controller with hydraulic coupling and hydraulic stroke limiter (negative control)

Before finalizing your design, please request a binding installation drawing. Dimensions in mm

*) Center of gravity
**) with auxiliary pump 10.7 cm³ = 4.7 mm
1) Dimensions according to SAE J617-No. 3, for connection to flywheel case in internal combustion engine.
Unit Dimensions, Size 107

Shaft end

Z  Splined shaft DIN 5480
W45x2x30x21x9g

Ports

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>Thread Series</th>
<th>Size</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1, A2</td>
<td>Service line ports (high-pressure series)</td>
<td>SAE J518</td>
<td>1 in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fixing thread</td>
<td>DIN 13</td>
<td>M12x1.75; 17 deep</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>Suction port (standard series)</td>
<td>SAE J518</td>
<td>3 1/2in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fixing thread</td>
<td>DIN 13</td>
<td>M16x2; 21 deep</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>Service line port (auxiliary pump)</td>
<td>DIN 3852</td>
<td>M18x1.5; 12 deep</td>
<td>140 Nm</td>
</tr>
<tr>
<td>R1, R3</td>
<td>Air bleed port  6)</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>R2</td>
<td>Fluid drain  6)</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>M1, M2</td>
<td>Gauge ports for high-pressure  6)</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>M3</td>
<td>Gauge port for power override  6)</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>Y3</td>
<td>Pilot pressure port for hydraulic stroke limiter</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>Y4</td>
<td>Pilot pressure port for load sensing</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
<tr>
<td>Y5</td>
<td>External control pressure port  7)</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
</tr>
</tbody>
</table>

2) Center bore according to DIN 332 (thread according to DIN 13)
3) On the LA0 version, the port has no function
4) Only for versions LA...H2 and LA...H3
5) Please observe the general notes for the max. tightening torques on page 40.
6) Plugged
7) 1x plugged, 1x open
Unit Dimensions, Size 107

LA0H2, LA1H2
Individual power controller with hydraulic stroke limiter and external pilot pressure supply (positive control)

LA0K, LA1K
Individual power controller with hydraulic power coupling

LA0KH2, LA1KH2
Individual power controller with hydraulic power coupling, hydraulic stroke limiter and external pilot pressure supply (positive control)

Before finalizing your design, please request a binding installation drawing. Dimensions in mm.
Unit Dimensions, Size 107

**LA0S, LA1S**
Individual power controller with load sensing

**LA0KS, LA1KS**
Individual power controller with hydraulic power coupling and load sensing

**EP2**
Electric control with proportional solenoid (positive control)

Before finalizing your design, please request a binding installation drawing. Dimensions in mm.
Unit Dimensions, Size 140

LA0KH1/H3, LA1KH1/H3

Individual power controller with hydraulic coupling and hydraulic stroke limiter (negative control)

Before finalizing your design, please request a binding installation drawing. Dimensions in mm

*) Center of gravity

1) Dimensions according to SAE J617-No. 3, for connection to flywheel case in internal combustion engine.
Unit Dimensions, Size 140

Shaft end

Z  Splined shaft DIN 5480
   W50×2x30×24×9g

Ports

A₁, A₂  Service line ports (high-pressure series)  SAE J518  1in
   Fixing thread  DIN 13  M12×1.75; 17 deep ⁵)
S  Suction port (standard series)  SAE J518  4in
   Fixing thread  DIN 13  M16×2; 21 deep ⁵)
A₃  Service line port (auxiliary pump)  DIN 3852  M18×1.5; 12 deep  140 Nm ⁵)
R₁, R₂  Air bleed port ⁶)
M  Gauge port for control pressure ⁶)
M₁, M₂  Gauge port for high-pressure ⁹)
M₃  Gauge port for power override ³) ⁶)
X₁  Pilot pressure port for hydraulic stroke limiter  DIN 3852  M14×1.5; 12 deep  80 Nm ⁵)
X₃  Pilot pressure port for power override ²)
X₄  Pilot pressure port for load sensing  DIN 3852  M14×1.5; 12 deep  80 Nm ⁵)
Y₃  External control pressure port ⁴) ⁷)

²) Center bore according to DIN 332 (thread according to DIN 13)
³) On the LA0 version, the port has no function
⁴) Only for versions LA...H2 and LA...H3
⁵) Please observe the general notes for the max. tightening torques on page 40.
⁶) Plugged
⁷) 1x plugged, 1x open
Unit Dimensions, Size 140

**LA0H2, LA1H2**
Individual power controller with hydraulic stroke limiter and external pilot pressure supply (positive control)

**LA0K, LA1K**
Individual power controller with hydraulic power coupling

**LA0KH2, LA1KH2**
Individual power controller with hydraulic power coupling, hydraulic stroke limiter and external pilot pressure supply (positive control)

Before finalizing your design, please request a binding installation drawing. Dimensions in mm.
Unit Dimensions, Size 140

**LA0S, LA1S**
Individual power controller with load sensing

![Diagram of LA0S, LA1S](image1)

**LA0KS, LA1KS**
Individual power controller with hydraulic power coupling and load sensing

![Diagram of LA0KS, LA1KS](image2)

**EP2**
Electric control with proportional solenoid (positive control)

![Diagram of EP2](image3)

Before finalizing your design, please request a binding installation drawing. Dimensions in mm.
Unit Dimensions, Size 200

LA0KH1/H3, LA1KH1/H3

Individual power controller with hydraulic coupling and hydraulic stroke limiter (negative control)

- Must be connected to tank to ensure cooling and lubrication of bearing sets.
- Center of gravity
- **) with auxiliary pump 19 cm³ = 48.3
- ) Dimensions according to SAE J617-No. 1, for connection to flywheel case in internal combustion engine, hole diam. 11 mm for new projects only (previous types with short code G and hole diam. 14 mm)
## Unit Dimensions, Size 200

### Shaft end

- **Z** Spline shaft DIN 5480 W50x2×30×24×9g

### Ports

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
<th>SAE J518</th>
<th>Thread</th>
<th>Depth</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1, A2</td>
<td>Service line ports (high-pressure series)</td>
<td>1 1/4in</td>
<td>M12x1.75; 19 deep 5)</td>
<td>140 Nm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fixing thread</td>
<td>DIN 17</td>
<td>M16x2; 23 deep 5)</td>
<td>210 Nm</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>Suction port (standard series)</td>
<td>5in</td>
<td>M16x2; 23 deep 5)</td>
<td>210 Nm</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>Service line port (auxiliary pump)</td>
<td>1 1/4in</td>
<td>M18x1.5; 12 deep 5)</td>
<td>140 Nm</td>
<td></td>
</tr>
<tr>
<td>R1, R3</td>
<td>Air bleed port 6)</td>
<td>5in</td>
<td>M22x1.5; 12 deep 5)</td>
<td>210 Nm</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>Fluid drain 6)</td>
<td>5in</td>
<td>M22x1.5; 12 deep 5)</td>
<td>210 Nm</td>
<td></td>
</tr>
<tr>
<td>R4</td>
<td>Flushing fluid port 6)</td>
<td>5in</td>
<td>M18x1.5; 12 deep 5)</td>
<td>140 Nm</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>Gauge port for control pressure 6)</td>
<td>5in</td>
<td>M12x1.5; 12 deep 5)</td>
<td>50 Nm</td>
<td></td>
</tr>
<tr>
<td>M3</td>
<td>Gauge port for high-pressure 6)</td>
<td>ISO11926</td>
<td>9/16-18UNF-2B; 12 deep</td>
<td>80 Nm</td>
<td></td>
</tr>
<tr>
<td>M5</td>
<td>Gauge port for power override 3) 6)</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
<td></td>
</tr>
<tr>
<td>X1</td>
<td>Pilot pressure port for hydraulic stroke limiter</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
<td></td>
</tr>
<tr>
<td>X2</td>
<td>Pilot pressure port for power override 3)</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
<td></td>
</tr>
<tr>
<td>X3</td>
<td>Pilot pressure port for load sensing</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
<td></td>
</tr>
<tr>
<td>X4</td>
<td>Pilot pressure port for load sensing</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
<td></td>
</tr>
<tr>
<td>Y3</td>
<td>External control pressure port 4) 7)</td>
<td>DIN 3852</td>
<td>M14x1.5; 12 deep</td>
<td>80 Nm</td>
<td></td>
</tr>
</tbody>
</table>

2) Center bore according to DIN 332 (thread according to DIN 13)
3) On the LA0 version, the port has no function
4) Only for versions LA...H2 and LA...H3
5) Please observe the general notes for the max. tightening torques on page 40.
6) Plugged
7) 1x plugged, 1x open
Unit Dimensions, Size 200

LA0H2, LA1H2
Individual power controller with hydraulic stroke limiter and external pilot pressure supply (positive control)

LA0KH2, LA1KH2
Individual power controller with hydraulic power coupling, hydraulic stroke limiter and external pilot pressure supply (positive control)

LA0S, LA1S
Individual power controller with load sensing

Before finalizing your design, please request a binding installation drawing. Dimensions in mm.
Unit Dimensions, Size 200

LA0KS, LA1KS

Individual power controller with hydraulic power coupling and load sensing

Before finalizing your design, please request a binding installation drawing. Dimensions in mm.
Power Take-off Dimensions

**K01/F01** Flange SAE J744 – 82-2 (A)
Hub for splined shaft according to ANSI B92.1a-1976 5/8in 9T 16/32DP ¹) (SAE J744 – 16-4 (A))

<table>
<thead>
<tr>
<th>Size</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
<th>A5 ²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>178</td>
<td>10.1</td>
<td>35.1</td>
<td>10.5</td>
<td>M10x1.5;16 deep</td>
</tr>
<tr>
<td>80</td>
<td>178</td>
<td>10.1</td>
<td>35.1</td>
<td>10.5</td>
<td>M10x1.5;16 deep</td>
</tr>
<tr>
<td>107</td>
<td>190</td>
<td>12.1</td>
<td>37.1</td>
<td>10.5</td>
<td>M10x1.5;16 deep</td>
</tr>
<tr>
<td>140</td>
<td>232</td>
<td>11.1</td>
<td>36.1</td>
<td>10.1</td>
<td>M10x1.5;14 deep</td>
</tr>
<tr>
<td>200</td>
<td>260</td>
<td>12</td>
<td>37</td>
<td>10.2</td>
<td>M10x1.5;16 deep</td>
</tr>
</tbody>
</table>

Note related to the position of the fixing threads:
Standard position is shown. Further positions of the fixing threads available on request.
Please specify in clear text.

**K02/F02** Flange SAE J744 – 101-2 (B)
Hub for splined shaft according to ANSI B92.1a-1976 7/8in 13T 16/32DP ¹) (SAE J744 – 22-4 (B))

**K04/F04** Flange SAE J744 – 101-2 (B)
Hub for splined shaft according to ANSI B92.1a-1976 1in 15T 16/32DP ¹) (SAE J744 – 25-4 (B-B))

<table>
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<tr>
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<th>A1</th>
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<th>A4</th>
<th>A5 ²)</th>
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<td>13.1</td>
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<td>M12x1.75;18 deep</td>
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<tr>
<td>80</td>
<td>185</td>
<td>13.1</td>
<td>10</td>
<td>M12x1.75;18 deep</td>
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<tr>
<td>107</td>
<td>197</td>
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<td>140</td>
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<td>12.1</td>
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<tr>
<td>200</td>
<td>262.5</td>
<td>14.5</td>
<td>10.4</td>
<td>M12x1.75;18 deep</td>
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</tbody>
</table>

Note related to the position of the fixing threads:
Standard position is shown. Further positions of the fixing threads available on request.
Please specify in clear text.

¹) 30° pressure angle, flat root, side fit, tolerance class 5
²) Thread according to DIN13, please observe the general notes for the max. tightening torques on page 40.
Power Take-off Dimensions

Before finalizing your design, please request a binding installation drawing. Dimensions in mm

**K07/F07**  Flange SAE J744 – 127-2 (C)
Hub for splined shaft according to ANSI B92.1a-1976  1 1/4in 14T 12/24DP ¹)  (SAE J744 – 32-4 (C))

<table>
<thead>
<tr>
<th>Size</th>
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<td>13</td>
<td>M16x2</td>
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<td>19.5</td>
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<td>11</td>
<td>M16x2</td>
</tr>
</tbody>
</table>

³) Illustration as for K01

Note related to the position of the fixing threads:
Standard position is shown. Further positions of the fixing threads available on request.
Please specify in clear text.

**K86/F86**  Flange SAE J744 – 152-4 (D)
Hub for splined shaft according to ANSI B92.1a-1976  1 1/4in 14T 12/24DP ¹)  (SAE J744 – 32-4 (C))

**K17/F17**  Flange SAE J744 – 152-4 (D)
Hub for splined shaft according to ANSI B92.1a-1976  1 3/4in 13T 8/16DP ¹)  (SAE J744 – 44-4 (D))

**K86/F86, K17/F17**

<table>
<thead>
<tr>
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<td>77.6</td>
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<td>19.5</td>
<td>76.5</td>
<td>14.5</td>
<td>M20x2.5</td>
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</tbody>
</table>

¹) 30° pressure angle, flat root, side fit, tolerance class 5
²) Thread according to DIN13, please observe the general notes for the max. tightening torques on page 40.
# Overview of Attachments

<table>
<thead>
<tr>
<th>Flange</th>
<th>Hub for splined shaft</th>
<th>Short code K../F...</th>
<th>A4FO Size (Shaft)</th>
<th>A4VG Size (Shaft)</th>
<th>A10VG Size (Shaft)</th>
<th>A10VO/31 Size (Shaft)</th>
<th>A10VO/53 Size (Shaft)</th>
<th>A11VO Size (Shaft)</th>
<th>External gear pump</th>
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<tr>
<td><strong>Power take-off – A8VO55/80</strong></td>
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<tr>
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<td>–</td>
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<td>Size F Sizes 4-22</td>
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<tr>
<td>101-2 (B)</td>
<td>7/8in</td>
<td>02</td>
<td>16, 22, 28 (S)</td>
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<td>18 (S)</td>
<td>28 (S, R)</td>
<td>45 (U, W)</td>
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<td>Size N Sizes 20-32 Size G Sizes 38-45</td>
</tr>
<tr>
<td>1in</td>
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<td>28,45 (S)</td>
<td>–</td>
<td>45 (S, R)</td>
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<td>–</td>
<td>40, 56, (S)</td>
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<td>60 (S)</td>
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<td>Size F Sizes 4-22</td>
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<tr>
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<td>18 (S)</td>
<td>28 (S, R)</td>
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<td>Size N Sizes 20-32 Size G Sizes 38-45</td>
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<tr>
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<td>45 (S, R)</td>
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<td><strong>Power take-off – A8VO140</strong></td>
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<td>Size F Sizes 4-22</td>
</tr>
<tr>
<td>101-2 (B)</td>
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<td>16, 22, 28 (S)</td>
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<td>18 (S)</td>
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<td>Size N Sizes 20-32 Size G Sizes 38-45</td>
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<td>04</td>
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<td>28 (S)</td>
<td>28,45 (S)</td>
<td>45 (S, R)</td>
<td>60 (U, W)</td>
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<tr>
<td>127-2 (C)</td>
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<td>63 (S)</td>
<td>71 (S, R)</td>
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<td>140 (S)</td>
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<td>95 (S)</td>
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<td><strong>Power take-off – A8VO200</strong></td>
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<td>95, 130 (S)</td>
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</tr>
</tbody>
</table>

1) Rexroth recommends special gear pump versions. Please contact us.

2) For mounting the A11VO size 60, side threaded ports for A₁ and A₂ are required. Please contact us.
Power Take-off, Auxiliary Pump and Valves

Variation:
with power take-off, without integrated auxiliary pump, K..0

For technical data, see table of values on page 6.
For mounting on PTO:
Axial piston pumps and gear pumps

Variation:
without power take-off, with integrated auxiliary pump (pilot fluid pump) and pressure-relief valve, F001

The pressure-relief valve installed to protect the integrated auxiliary pump has a fixed setting of 30 bar.
Power Take-off, Auxiliary Pump and Valves

**Variation:**
with power take-off, with integrated auxiliary pump (pilot fluid pump) and pressure-relief valve, F.1

For technical data, see table of values on page 6.
The pressure-relief valve installed to protect the integrated auxiliary pump has a fixed setting of 30 bar.
For mounting on PTO:
Axial piston pumps and gear pumps

**Variation:**
with power take-off, with integrated auxiliary pump (pilot fluid pump), with pressure-relief and pressure-reduction valves, F.4

For technical data, see table of values on page 6.
The pressure-relief valve installed to protect the integrated auxiliary pump has a fixed setting of 30 bar. An electrically controlled pressure-reduction valve can be used to override the power setting (load-limiting control).

Pressure-reduction valve control voltage: F.4 24V DC
Recommended frequency >100Hz
For mounting on PTO:
Axial piston pumps and gear pumps
Connector for Solenoids (only for EP)

DEUTSCH DT04-2P-EP04, 2-pin
Molded, without bi-directional suppressor diode
(standard) P
Type of protection according to DIN/EN 60529: IP67 and IP69K

Mating connector
DEUTSCH DT06-2S-EP04
Rexroth Mat. No. R902601804
consisting of:
- 1 case DT06-2S-EP04
- 1 wedge W2S
- 2 sockets 0462-201-16141

The mating connector is not included in supply.
This can be supplied by Rexroth on request.

Note for round solenoids:
The position of the connector can be changed by turning the solenoid body.
The following procedure is to be observed:
1. Loosen the fixing nut (1)
2. Turn the solenoid body (2) to the desired position
3. Tighten the fixing nut
   Tightening torque of fixing nut: 5*+1 Nm
   (width across flats WAF26, 12-sided DIN 3124)
Installation Notes

General
During commissioning and operation, the axial piston unit must be filled with hydraulic fluid and air bled. This is also to be observed following a relatively long standstill as the system may empty via the hydraulic lines.

The case drain chamber is internally connected to the suction chamber. A case drain line to the tank is not required. Note the special feature of size 200 for flushing fluid. (Port R4)
In all operational states, the suction line must flow into the tank below the minimum fluid level.
The minimum suction pressure at port S must not fall below 0.8 bar absolute.

Installation position
Shaft horizontal.

Below-tank installation
Below-tank installation is when the pump is fitted below the minimum fluid level in the tank.
Notice
General Notes

- The A8VO pump is designed to be used in open circuits.
- Project planning, assembly and commissioning of the pump require the involvement of qualified personnel.
- The service line ports and function ports are only designed for mounting hydraulic lines.
- During and shortly after operation, there is a risk of burns on the pump and especially on the solenoids. Take suitable safety precautions, e.g. wear protective clothing.
- There may be shifts in the characteristic depending on the operating state of the pump (operating pressure, fluid temperature).
- Tightening torques:
  - The tightening torques specified in this data sheet are maximum values and must not be exceeded (maximum values for screw thread).
  - Manufacturer’s instruction for the max. permissible tightening torques of the used armatures must be observed!
  - For DIN 13 fixing screws we recommend checking the tightening torque individually according to VDI 2230 Edition 2003.
- The data and information contained herein must be adhered to.