

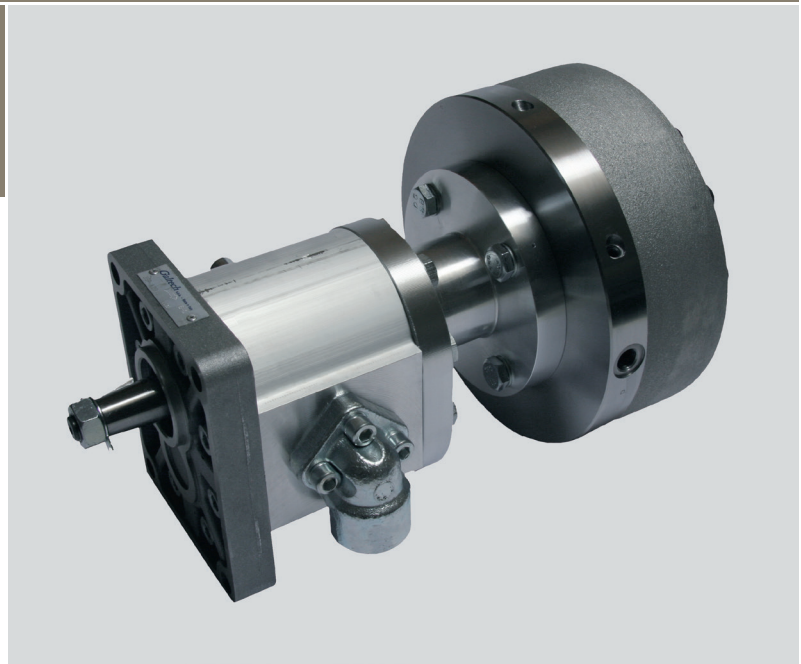
# Combination pumps

## Type BKP

LP: 250 bar / 4,0 to 61,1 cm<sup>3</sup>/rev  
HP: 500, 700 or 1000 bar  
0,24 to 8,14 cm<sup>3</sup>/rev

### Features

- Compact design
- Self-priming and venting (gear pump and BRK)
- Various combinations
- Combination with MRK Multi-outlet radial piston pump as MKP on request



### Design

- Combination pump consists of an external gear pump and a BRK pump from Bieri
- BRK pump is coupled through an intermediate flange and coupling onto the gear pump (primary pump)
- Completely assembled

### Applications

- For two different hydraulics circuits with different pressures and displacements
- Presses
- Lifting and advancing systems
- Hydraulics systems

### Technical Data

|                                               |                                                                 |                          |           |
|-----------------------------------------------|-----------------------------------------------------------------|--------------------------|-----------|
| Hydraulic fluid                               | Mineral oil according to DIN 51524<br>(other fluids on request) |                          |           |
| Fluid temperature range                       | -30 up to 80 °C                                                 |                          |           |
| Ambient temperature range                     | -30 up to 50 °C                                                 |                          |           |
| Viscosity range                               | 12 to 220 mm <sup>2</sup> /s (optimal: 15-35)                   |                          |           |
| Max. operating pressure                       | 500, 700 or 1000 bar                                            |                          |           |
| Suction pressure                              | -0,2 bar up to 0,5 bar absolute                                 |                          |           |
| Filtration                                    | According to NAS 1638 class 6 resp. ISO/DIN 4406 17/15/12       |                          |           |
| Weight                                        | Weight gear pump + weight BRK pump<br>→ see product information |                          |           |
| Radial force / Axial force onto driving shaft | Not allowed                                                     |                          |           |
| Installation position                         | Any                                                             |                          |           |
| Max. speed range                              | 2000 min <sup>-1</sup>                                          |                          |           |
| Suction height                                | Max. 500 mm                                                     |                          |           |
| Material                                      | Gear pump:                                                      | Housing:                 | aluminium |
|                                               |                                                                 | Gear:                    | steel     |
|                                               |                                                                 | Shaft:                   | steel     |
|                                               | Radial piston pump:                                             | see data sheet BRK pumps |           |

## Type BKP

LP: 250 bar / 4,0 to 61,1 cm³/rev

HP: 500, 700 or 1000 bar

0,24 to 8,14 cm³/rev

## Ordering code

|                                                       |                                            |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
|-------------------------------------------------------|--------------------------------------------|------------|---|-------------|---|-------------|---|------------|---|------------|---|----------|---|----------|--|-----------|
| <b>Example</b>                                        | <b>BKP</b>                                 | <b>501</b> | - | <b>0,24</b> | - | <b>1000</b> | - | <b>4,0</b> | - | <b>250</b> | - | <b>P</b> | - | <b>C</b> |  | <b>00</b> |
| <b>Combination pump</b>                               |                                            |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
| <b>Size (BRK pump)</b>                                | 501                                        |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
|                                                       | 502                                        |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
|                                                       | 701                                        |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
|                                                       | 702                                        |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
|                                                       | 11                                         |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
|                                                       | 12                                         |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
| <b>Displacement of the BRK pump [cm³/rev]</b>         | see product inform. of the BRK pumps       |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
| <b>Max. operating pressure of the BRK pump [bar]</b>  | see product inform. of the BRK pumps       |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
| <b>Displacement of the gear pump [cm³/rev]</b>        | see product inform. of the gear pumps      |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
| <b>Max. operating pressure of the gear pump [bar]</b> | see product inform. of the gear pumps      |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |
| <b>Seal material</b>                                  | P [NBR]<br>other seal materials on request |            |   |             |   |             |   |            |   |            |   |          |   |          |  |           |

**Special design**  
01 ... 99  
(00 for Standard)

**Part index**  
Please leave it blank  
(small letters a-z;  
different letters do  
not effect  
interchangeability)

**Design revision**  
see dimension drawings  
(capital letters A-Z; identical  
letters equal same  
connecting dimensions)

## Calculation of torque on BKP

$$M_{\text{Total}} = M_{\text{BRK}} + M_{\text{ZP}}$$

M Torque [Nm]

n Speed [min<sup>-1</sup>]

V<sub>g</sub> Displacement [cm³/rev]

P Driving power [kW]

p Operating pressure [bar]

η<sub>BRK</sub> Efficiency BRK approx. 0,8

η<sub>ZP</sub> Efficiency ZP approx. 0,7

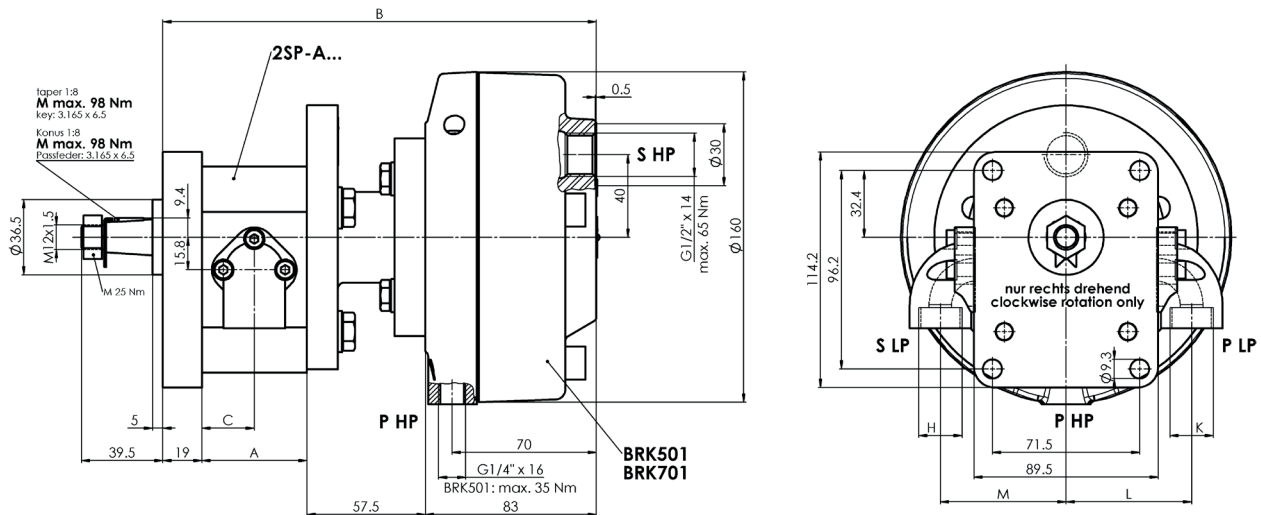
|                                                                                              |                                                                                          |                                                                                                                |                                                                                                            |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| $M_{\text{BRK}} = \frac{p_{\text{BRK}} \cdot V_{\text{gBRK}}}{62,8 \cdot \eta_{\text{BRK}}}$ | $M_{\text{ZP}} = \frac{p_{\text{ZP}} \cdot V_{\text{gZP}}}{62,8 \cdot \eta_{\text{ZP}}}$ | $P_{\text{BRK}} = \frac{p_{\text{BRK}} \cdot V_{\text{gBRK}} \cdot n}{600 \cdot 10^3 \cdot \eta_{\text{BRK}}}$ | $P_{\text{ZP}} = \frac{p_{\text{ZP}} \cdot V_{\text{gZP}} \cdot n}{600 \cdot 10^3 \cdot \eta_{\text{ZP}}}$ |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|

## Type BKP

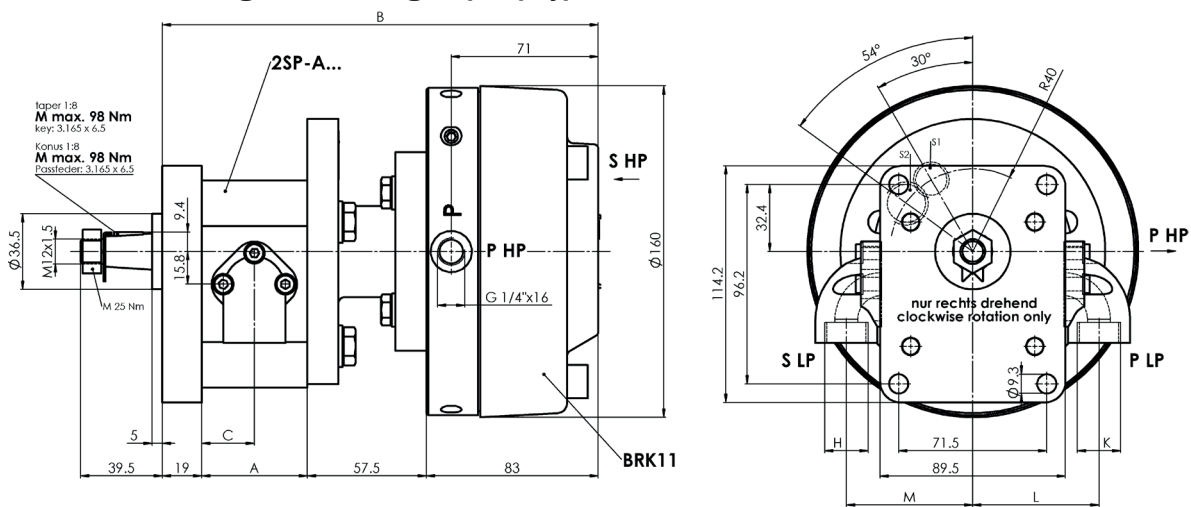
LP: 250 bar / 4,0 to 61,1 cm<sup>3</sup>/rev  
 HP: 500, 700 or 1000 bar  
 0,24 to 8,14 cm<sup>3</sup>/rev

## Product information combination gear pump Type 2SP with: BRK501, BRK701 or BRK11

### Dimensional drawing BRK501/701 with gear pump Type 2SP



### Dimensional drawing BRK11 with gear pump Type 2SP



### Technical data gear pump Type 2SP

| Type | Displacement<br>[cm <sup>3</sup> /rev] | Dim. A<br>[mm] | Dim. B<br>[mm] | Dim. C<br>[mm] | Dim. K<br>[mm] | Dim. L<br>[mm] | Dim. H<br>[mm] | Dim. M<br>[mm] | Operating pres-<br>sure max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------------|--------------------|
| A4   | 4,0                                    | 51,0           | 210,5          | 25,4           | G 1/2"         | 61,0           | G 1/2"         | 61,0           | 250                                | 3,8                |
| A6   | 6,0                                    | 54,3           | 213,8          | 27,0           | G 1/2"         | 61,0           | G 1/2"         | 61,0           | 250                                | 3,9                |
| A8   | 8,5                                    | 58,5           | 218,0          | 29,1           | G 1/2"         | 61,0           | G 1/2"         | 61,0           | 250                                | 4,1                |
| A11  | 11,0                                   | 62,6           | 222,1          | 31,2           | G 1/2"         | 61,0           | G 3/4"         | 65,0           | 250                                | 4,4                |
| A14  | 14,0                                   | 67,6           | 227,1          | 33,7           | G 1/2"         | 61,0           | G 3/4"         | 65,0           | 250                                | 4,5                |
| A16  | 16,5                                   | 71,8           | 231,3          | 35,8           | G 1/2"         | 61,0           | G 3/4"         | 65,0           | 230                                | 4,6                |
| A19  | 19,5                                   | 76,8           | 236,3          | 38,3           | G 1/2"         | 61,0           | G 3/4"         | 65,0           | 210                                | 4,8                |
| A22  | 22,5                                   | 81,8           | 241,3          | 40,8           | G 1/2"         | 61,0           | G 3/4"         | 65,0           | 190                                | 4,9                |
| A26  | 26,0                                   | 87,6           | 247,1          | 43,7           | G 1/2"         | 61,0           | G 3/4"         | 65,0           | 170                                | 5,1                |

**Note** All combinations are possible. However, the working conditions in regard to pressures and displacements for both pumps have to be determined carefully so that the max. permissible torque of 98 Nm on the driving shaft is not exceeded. Observe direction of rotation!

**Type BKP**LP: 250 bar / 4,0 to 61,1 cm<sup>3</sup>/rev

HP: 500, 700 or 1000 bar

0,24 to 8,14 cm<sup>3</sup>/rev**Technical data BRK501**

| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 501  | 0,24                                   | 500                                 | 3,9                |
| 501  | 0,34                                   | 500                                 | 3,9                |
| 501  | 0,47                                   | 500                                 | 3,9                |
| 501  | 0,60                                   | 500                                 | 3,9                |
| 501  | 0,68                                   | 500                                 | 3,9                |
| 501  | 0,76                                   | 500                                 | 3,9                |
| 501  | 0,94                                   | 500                                 | 3,9                |
| 501  | 1,13                                   | 500                                 | 4,4                |
| 501  | 1,21                                   | 500                                 | 3,9                |
| 501  | 1,31                                   | 500                                 | 3,9                |
| 501  | 1,53                                   | 500                                 | 3,9                |
| 501  | 1,88                                   | 500                                 | 3,9                |
| 501  | 2,01                                   | 500                                 | 4,4                |
| 501  | 2,54                                   | 500                                 | 4,4                |
| 501  | 2,71                                   | 500                                 | 3,9                |
| 501  | 3,14                                   | 500                                 | 5,4                |
| 501  | 3,56                                   | 500                                 | 5,7                |
| 501  | 4,52                                   | 400                                 | 5,4                |

**Technical data BRK701**

| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 701  | 0,24                                   | 700                                 | 6,1                |
| 701  | 0,34                                   | 700                                 | 6,1                |
| 701  | 0,47                                   | 700                                 | 6,2                |
| 701  | 0,60                                   | 700                                 | 6,1                |
| 701  | 0,68                                   | 700                                 | 6,2                |
| 701  | 0,76                                   | 700                                 | 6,1                |
| 701  | 0,79                                   | 700                                 | 6,6                |
| 701  | 0,94                                   | 700                                 | 6,1                |
| 701  | 1,03                                   | 700                                 | 6,2                |
| 701  | 1,13                                   | 700                                 | 6,6                |
| 701  | 1,21                                   | 700                                 | 6,2                |
| 701  | 1,31                                   | 700                                 | 7,2                |
| 701  | 1,36                                   | 700                                 | 6,1                |
| 701  | 1,53                                   | 700                                 | 7,2                |
| 701  | 1,58                                   | 700                                 | 7,9                |
| 701  | 1,66                                   | 700                                 | 6,4                |
| 701  | 1,88                                   | 700                                 | 6,4                |
| 701  | 2,01                                   | 700                                 | 6,9                |
| 701  | 2,54                                   | 700                                 | 6,9                |
| 701  | 2,71                                   | 700                                 | 6,5                |
| 701  | 2,81                                   | 700                                 | 7,2                |
| 701  | 3,14                                   | 700                                 | 6,9                |
| 701  | 3,56                                   | 650                                 | 7,2                |
| 701  | 4,40                                   | 500                                 | 7,2                |
| 701  | 4,52                                   | 500                                 | 6,9                |
| 701  | 6,33                                   | 350                                 | 7,2                |

**Technical data BRK11**

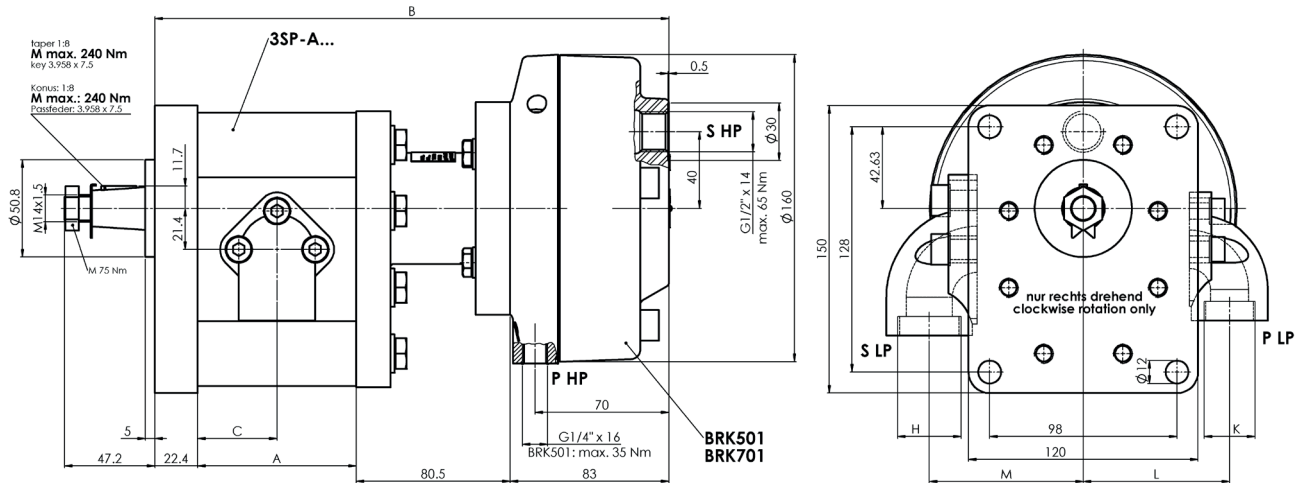
| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 11   | 0,47                                   | 1000                                | 7,0                |
| 11   | 0,68                                   | 1000                                | 7,0                |
| 11   | 0,79                                   | 1000                                | 7,5                |
| 11   | 1,13                                   | 1000                                | 7,5                |
| 11   | 1,21                                   | 1000                                | 7,0                |
| 11   | 1,53                                   | 1000                                | 7,0                |
| 11   | 1,88                                   | 900                                 | 7,0                |
| 11   | 2,01                                   | 1000                                | 7,5                |
| 11   | 2,54                                   | 900                                 | 7,5                |
| 11   | 2,71                                   | 850                                 | 7,5                |

## Type BKP

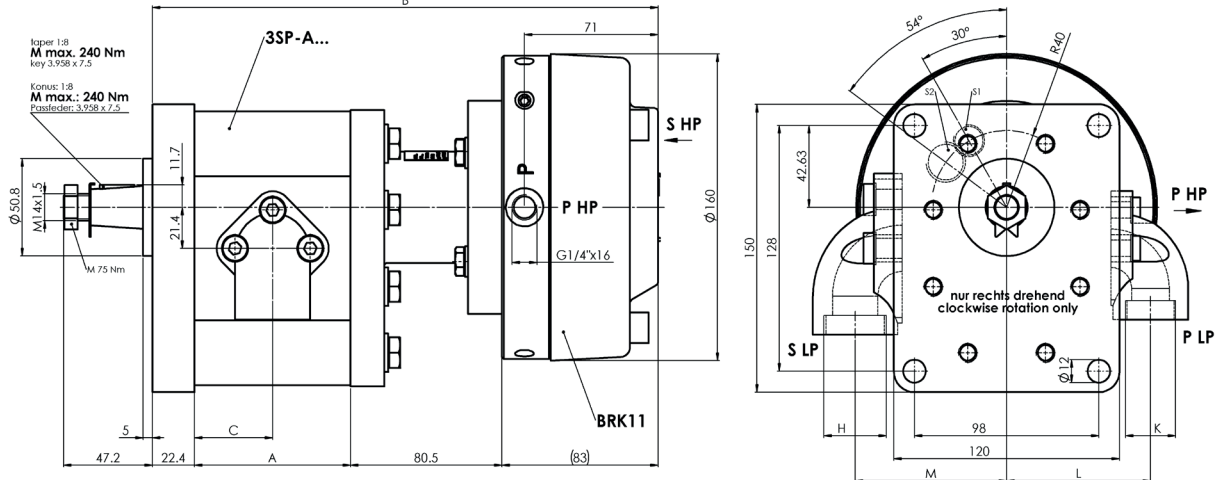
LP: 250 bar / 4,0 to 61,1 cm<sup>3</sup>/rev  
 HP: 500, 700 or 1000 bar  
 0,24 to 8,14 cm<sup>3</sup>/rev

## Product information combination gear pump Type 3SP with: BRK501, BRK701 or BRK11

### Dimensional drawing BRK501/701 with gear pump Type 3SP



### Dimensional drawing BRK11 with gear pump Type 3SP



### Technical data gear pump Type 3SP

| Type | Displacement<br>[cm <sup>3</sup> /rev] | Dim. A<br>[mm] | Dim. B<br>[mm] | Dim. C<br>[mm] | Dim. K<br>[mm] | Dim. L<br>[mm] | Dim. H<br>[mm] | Dim. M<br>[mm] | Operating pres-<br>sure max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------------------------|--------------------|
| A22  | 22,3                                   | 82,9           | 268,8          | 41,5           | G 3/4"         | 75,0           | G 1"           | 80,0           | 240                                | 8,1                |
| A29  | 29,3                                   | 88,9           | 274,8          | 44,5           | G 3/4"         | 75,0           | G 1"           | 80,0           | 220                                | 8,4                |
| A33  | 32,9                                   | 91,9           | 277,8          | 46,0           | G 3/4"         | 75,0           | G 1"           | 80,0           | 220                                | 8,5                |
| A36  | 36,4                                   | 94,9           | 280,8          | 47,5           | G 3/4"         | 75,0           | G 1"           | 80,0           | 210                                | 8,6                |
| A44  | 43,5                                   | 100,9          | 286,8          | 50,5           | G 3/4"         | 75,0           | G 1"           | 80,0           | 200                                | 8,9                |
| A52  | 51,7                                   | 107,9          | 293,8          | 54,0           | G 3/4"         | 75,0           | G 1"           | 80,0           | 200                                | 9,2                |
| A62  | 61,1                                   | 115,9          | 301,8          | 58,0           | G 3/4"         | 75,0           | G 1"           | 80,0           | 180                                | 9,6                |

**Type BKP**LP: 250 bar / 4,0 to 61,1 cm<sup>3</sup>/rev

HP: 500, 700 or 1000 bar

0,24 to 8,14 cm<sup>3</sup>/rev**Technical data BRK501**

| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 501  | 0,24                                   | 500                                 | 3,9                |
| 501  | 0,34                                   | 500                                 | 3,9                |
| 501  | 0,47                                   | 500                                 | 3,9                |
| 501  | 0,60                                   | 500                                 | 3,9                |
| 501  | 0,68                                   | 500                                 | 3,9                |
| 501  | 0,76                                   | 500                                 | 3,9                |
| 501  | 0,94                                   | 500                                 | 3,9                |
| 501  | 1,13                                   | 500                                 | 4,4                |
| 501  | 1,21                                   | 500                                 | 3,9                |
| 501  | 1,31                                   | 500                                 | 3,9                |
| 501  | 1,53                                   | 500                                 | 3,9                |
| 501  | 1,88                                   | 500                                 | 3,9                |
| 501  | 2,01                                   | 500                                 | 4,4                |
| 501  | 2,54                                   | 500                                 | 4,4                |
| 501  | 2,71                                   | 500                                 | 3,9                |
| 501  | 3,14                                   | 500                                 | 5,4                |
| 501  | 3,56                                   | 500                                 | 5,7                |
| 501  | 4,52                                   | 400                                 | 5,4                |

**Technical data BRK701**

| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 701  | 0,24                                   | 700                                 | 6,1                |
| 701  | 0,34                                   | 700                                 | 6,1                |
| 701  | 0,47                                   | 700                                 | 6,2                |
| 701  | 0,60                                   | 700                                 | 6,1                |
| 701  | 0,68                                   | 700                                 | 6,2                |
| 701  | 0,76                                   | 700                                 | 6,1                |
| 701  | 0,79                                   | 700                                 | 6,6                |
| 701  | 0,94                                   | 700                                 | 6,1                |
| 701  | 1,03                                   | 700                                 | 6,2                |
| 701  | 1,13                                   | 700                                 | 6,6                |
| 701  | 1,21                                   | 700                                 | 6,2                |
| 701  | 1,31                                   | 700                                 | 7,2                |
| 701  | 1,36                                   | 700                                 | 6,1                |
| 701  | 1,53                                   | 700                                 | 7,2                |
| 701  | 1,58                                   | 700                                 | 7,9                |
| 701  | 1,66                                   | 700                                 | 6,4                |
| 701  | 1,88                                   | 700                                 | 6,4                |
| 701  | 2,01                                   | 700                                 | 6,9                |
| 701  | 2,54                                   | 700                                 | 6,9                |
| 701  | 2,71                                   | 700                                 | 6,5                |
| 701  | 2,81                                   | 700                                 | 7,2                |
| 701  | 3,14                                   | 700                                 | 6,9                |
| 701  | 3,56                                   | 650                                 | 7,2                |
| 701  | 4,40                                   | 500                                 | 7,2                |
| 701  | 4,52                                   | 500                                 | 6,9                |
| 701  | 6,33                                   | 350                                 | 7,2                |

**Technical data BRK11**

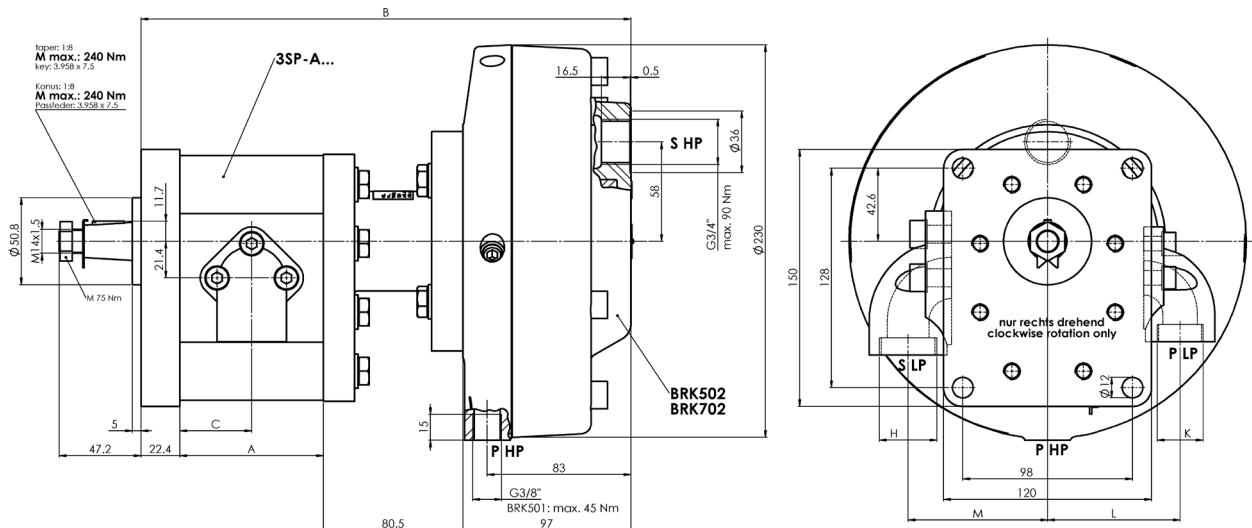
| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 11   | 0,47                                   | 1000                                | 7,0                |
| 11   | 0,68                                   | 1000                                | 7,0                |
| 11   | 0,79                                   | 1000                                | 7,5                |
| 11   | 1,13                                   | 1000                                | 7,5                |
| 11   | 1,21                                   | 1000                                | 7,0                |
| 11   | 1,53                                   | 1000                                | 7,0                |
| 11   | 1,88                                   | 900                                 | 7,0                |
| 11   | 2,01                                   | 1000                                | 7,5                |
| 11   | 2,54                                   | 900                                 | 7,5                |
| 11   | 2,71                                   | 850                                 | 7,5                |

## Type BKP

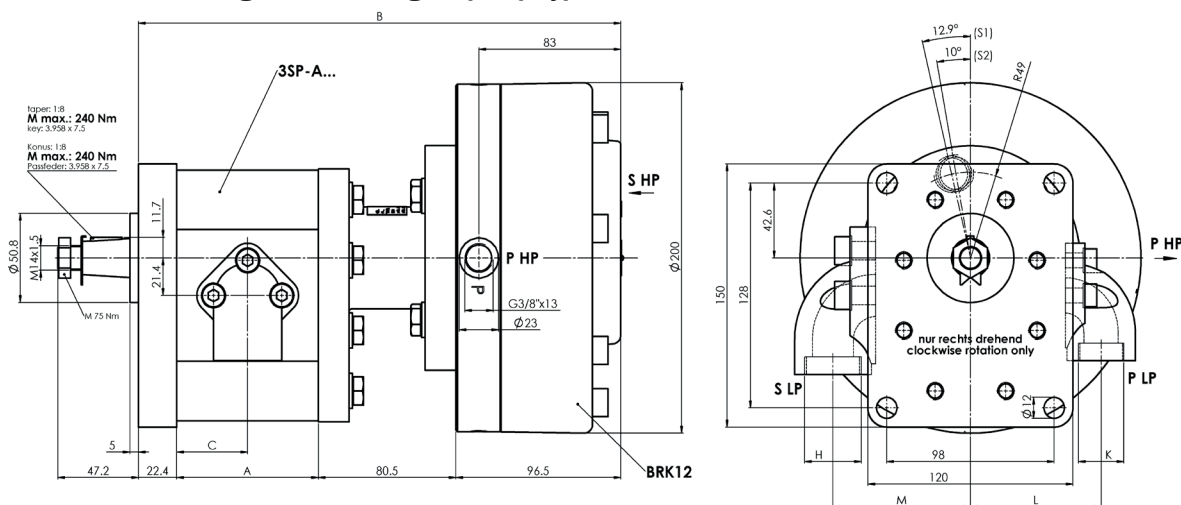
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 HP: 500, 700 or 1000 bar  
 0,24 to 8,14 cm<sup>3</sup>/rev

## Product information combination gear pump Type 3SP with: BRK502, BRK702, BRK12

### Dimensional drawing BRK502/702 with gear pump Type 3SP



### Dimensional drawing BRK12 with gear pump Type 3SP



### Technical data gear pump Type 3SP

| Type | Displacement<br>[cm <sup>3</sup> /rev] | Dim. A<br>[mm] | Dim. B<br>[mm] | Dim. C<br>[mm] | Dim. K<br>[mm] | Dim. L<br>[mm] | Dim. H<br>[mm] | Dim. M<br>[mm] | Operating pressure max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------------------|--------------------|
| A22  | 22,3                                   | 82,9           | 282,8          | 41,5           | G 3/4"         | 75,0           | G 1"           | 80,0           | 240                           | 8,3                |
| A29  | 29,3                                   | 88,9           | 288,8          | 44,5           | G 3/4"         | 75,0           | G 1"           | 80,0           | 220                           | 8,5                |
| A33  | 32,9                                   | 91,9           | 291,8          | 46,0           | G 3/4"         | 75,0           | G 1"           | 80,0           | 220                           | 8,7                |
| A36  | 36,4                                   | 94,9           | 294,8          | 47,5           | G 3/4"         | 75,0           | G 1"           | 80,0           | 210                           | 8,8                |
| A44  | 43,5                                   | 100,9          | 300,8          | 50,5           | G 3/4"         | 75,0           | G 1"           | 80,0           | 200                           | 9,1                |
| A52  | 51,7                                   | 107,9          | 307,8          | 54,0           | G 3/4"         | 75,0           | G 1"           | 80,0           | 200                           | 9,4                |
| A62  | 61,1                                   | 115,9          | 315,8          | 58,0           | G 3/4"         | 75,0           | G 1"           | 80,0           | 180                           | 9,8                |

**Note:** All combinations are possible. However, the working conditions in regard to pressures and displacements for both pumps have to be determined carefully so that the max. permissible torque of 240 Nm on the driving shaft is not exceeded. Observe direction of rotation!

**Type BKP**LP: 250 bar / 4,0 to 61,1 cm<sup>3</sup>/rev

HP: 500, 700 or 1000 bar

0,24 to 8,14 cm<sup>3</sup>/rev**Technical data BRK502**

| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 502  | 4,52                                   | 500                                 | 9,0                |
| 502  | 5,65                                   | 500                                 | 9,8                |
| 502  | 7,31                                   | 500                                 | 9,8                |

**Technical data BRK702**

| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 702  | 4,52                                   | 700                                 | 15,1               |
| 702  | 5,65                                   | 700                                 | 15,7               |
| 702  | 6,33                                   | 650                                 | 15,4               |
| 702  | 7,31                                   | 550                                 | 15,7               |
| 702  | 8,14                                   | 500                                 | 15,7               |

**Technical data BRK12**

| Size | Displacement<br>[cm <sup>3</sup> /rev] | Operating<br>pressure<br>max. [bar] | Weight<br>ca. [kg] |
|------|----------------------------------------|-------------------------------------|--------------------|
| 12   | 1,10                                   | 1000                                | 12,5               |
| 12   | 1,58                                   | 1000                                | 12,5               |
| 12   | 2,81                                   | 1000                                | 12,5               |
| 12   | 3,56                                   | 1000                                | 12,5               |
| 12   | 4,40                                   | 900                                 | 12,5               |
| 12   | 5,65                                   | 700                                 | 12,5               |
| 12   | 6,33                                   | 650                                 | 12,5               |
| 12   | 8,14                                   | 500                                 | 12,5               |

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8/8

The information in this brochure relates to the operating conditions and applications described.

For applications and operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.

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