

# High-Performance external gear pump AZPB



## Features

- ▶ Consistently high quality due to high-volume series production
- ▶ Long service life
- ▶ Slide bearings for high loads
- ▶ Drive shafts conform to ISO or SAE and custom solutions
- ▶ Line connections: Connection flange or screw-in thread
- ▶ Combinations of several pumps possible

- ▶ Platform B
- ▶ Fixed displacement
- ▶ Sizes 1 ... 7.1
- ▶ Continuous pressure up to 220 bar
- ▶ Intermittent pressure up to 250 bar (up to size 6,3)

## Contents

|                                       |    |
|---------------------------------------|----|
| Product description                   | 2  |
| AZPB preferred types product overview | 3  |
| Single-pump type codes                | 4  |
| Multi-pump type codes                 | 5  |
| Technical data                        | 6  |
| Hydraulic fluid                       | 7  |
| Graphs/curves                         | 8  |
| Drive                                 | 13 |
| Max. transmissible drive torques      | 14 |
| Multiple gear pumps                   | 15 |
| Dimensions – drive shaft              | 16 |
| Dimensions – front cover              | 17 |
| Dimensions – line connection          | 18 |
| Dimensions – preferred series         | 19 |
| Accessories                           | 32 |
| Project planning notes                | 33 |
| Order number overview                 | 34 |
| AZ configurator                       | 37 |
| Fit4SILENCE app                       | 37 |

## Product description

### General

The key task of external gear pumps is to convert mechanical energy (torque and rotational speed) into hydraulic energy (flow and pressure). To reduce heat loss, Rexroth external gear units are designed to be extremely efficient. This efficiency is achieved through pressure-based gap sealing and high-precision manufacturing technology.

Rexroth external gear pumps are available in four platforms: B, F, N and G, with different gear widths within a platform for different displacements. The pumps come in Standard, High-Performance, SILENCE and SILENCE PLUS versions. Different flanges, shafts, valve arrangements and multiple pump combinations produce additional variants for each version.

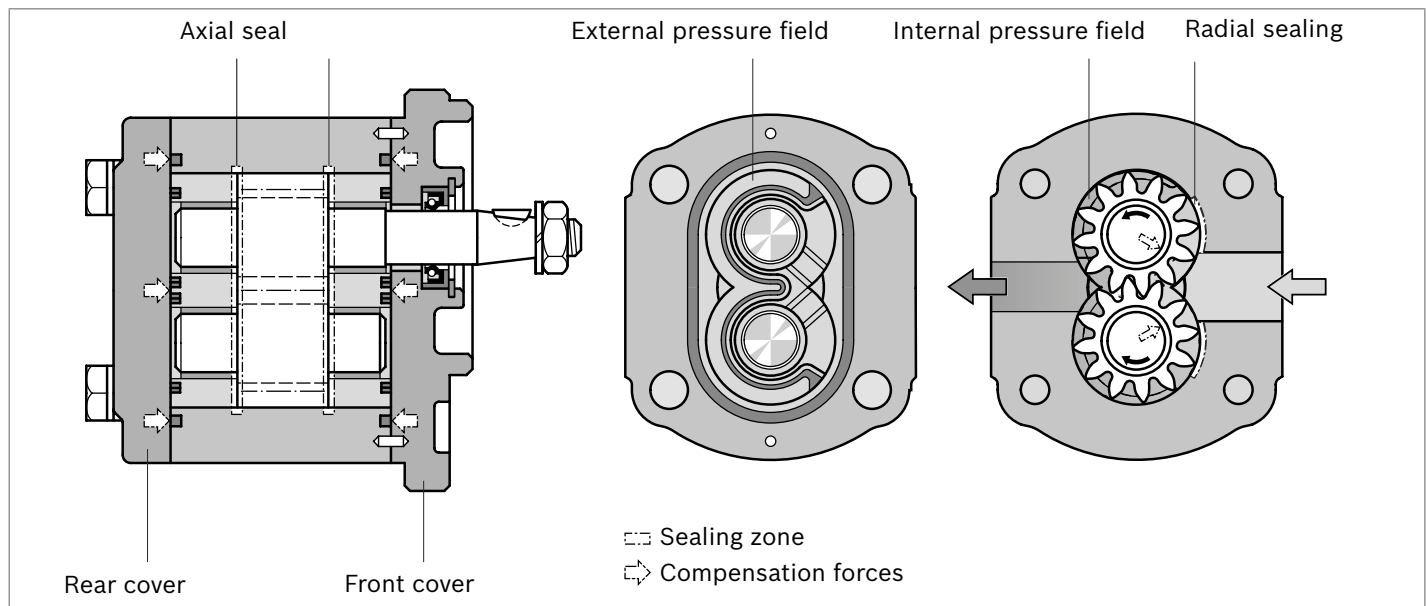
### Construction

The external gear pump consists essentially of a pair of gear wheels supported in bearing bushes and the housing with a front and a rear cover.

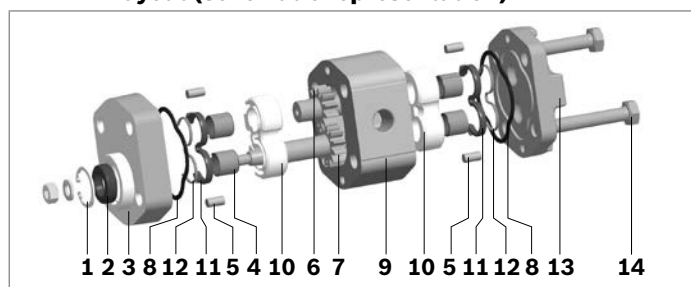
The drive shaft protrudes from the front cover where it is usually sealed by the shaft seal. The bearing forces are absorbed by slide bearings. These were designed for high pressures and have excellent emergency running properties, especially at low rotational speeds.

The gear wheels have 12 teeth. This keeps both flow pulsation and noise emission to a minimum. The internal sealing of the pressure chambers is achieved by delivery pressure-dependent forces. This ensures optimum efficiency. On the rear side, the movable bearing bushes are pressurized with working pressure and pressed as seals against the gear wheels. The pressurized compression springs are limited by special seals. The seal on the area between the gear teeth and the housing is ensured by the smallest of gaps that adjust depending on the pressure between the gear teeth and housing.

### ▼ External gear pump layout

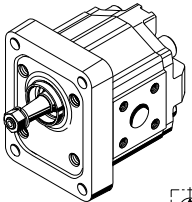
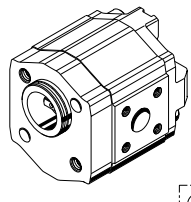
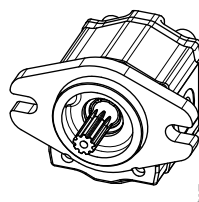
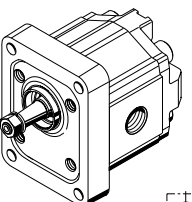
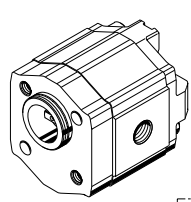
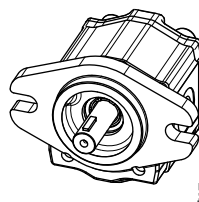
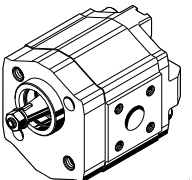
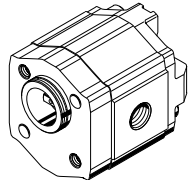
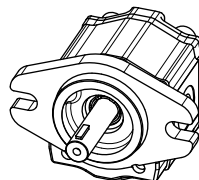
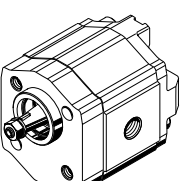
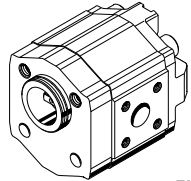
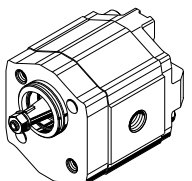
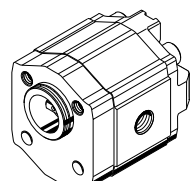


### ▼ AZPB layout (schematic representation)



- |                  |                       |
|------------------|-----------------------|
| 1 Retaining ring | 8 Housing seal ring   |
| 2 Shaft seal     | 9 Pump housing        |
| 3 Front cover    | 10 Bearing bushing    |
| 4 Slide bearings | 11 Axial field seal   |
| 5 Centering pin  | 12 Supporting element |
| 6 Gear wheel     | 13 Rear cover         |
| 7 Drive shaft    | 14 Hex screw          |

## AZPB preferred types product overview

| Version                                                                             | Page | Version                                                                             | Page | Version                                                                               | Page |
|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------|------|
|    | 19   |    | 24   |    | 29   |
|    |      |    |      |    |      |
|    | 20   |    | 25   |    | 30   |
|    |      |    |      |    |      |
|   | 21   |   | 26   |   | 31   |
|  |      |  |      |  |      |
|  | 22   |  | 27   |                                                                                       |      |
|  |      |  |      |                                                                                       |      |
|  | 23   |  | 28   |                                                                                       |      |
|  |      |  |      |                                                                                       |      |

## Single-pump type codes<sup>1)</sup>

|     |    |    |    |    |    |    |    |    |    |    |    |   |  |
|-----|----|----|----|----|----|----|----|----|----|----|----|---|--|
| 01  | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 |   |  |
| AZP | B  | -  | 3  | 2  | -  |    |    |    |    |    |    | - |  |

### External gear unit

|    |                    |            |
|----|--------------------|------------|
| 01 | External gear pump | <b>AZP</b> |
|----|--------------------|------------|

### Series

|    |                                                                                       |          |
|----|---------------------------------------------------------------------------------------|----------|
| 02 | 1 cm <sup>3</sup> /rev ... 7.1 cm <sup>3</sup> /rev, Standard Performance, Platform B | <b>B</b> |
|----|---------------------------------------------------------------------------------------|----------|

### Series

|    |                                                            |          |
|----|------------------------------------------------------------|----------|
| 03 | Bearing journal Ø12 mm, installation identical to Series 1 | <b>3</b> |
|----|------------------------------------------------------------|----------|

### Version

|    |                             |          |
|----|-----------------------------|----------|
| 04 | Corrosion-resistant, pinned | <b>2</b> |
|----|-----------------------------|----------|

### Size

|    |                                                                            |            |            |            |            |            |            |            |            |            |
|----|----------------------------------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 05 | For geometric displacement $V_g$ [cm <sup>3</sup> ], see "Table of values" | <b>1.0</b> | <b>2.0</b> | <b>2.5</b> | <b>3.1</b> | <b>4.0</b> | <b>4.5</b> | <b>5.0</b> | <b>6.3</b> | <b>7.1</b> |
|----|----------------------------------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|

### Direction of rotation

|    |                          |                  |          |
|----|--------------------------|------------------|----------|
| 06 | As viewed on drive shaft | Clockwise        | <b>R</b> |
|    |                          | Counterclockwise | <b>L</b> |

### Drive shaft

|    |                                   |       |   |          |
|----|-----------------------------------|-------|---|----------|
| 07 | Tapered shaft                     | 1 : 5 | P | <b>C</b> |
|    |                                   | 1 : 8 | O | <b>H</b> |
|    | Tang drive                        | M, Y  |   | <b>N</b> |
|    | SAE J744 13-1 cylindrical         | R     |   | <b>Q</b> |
|    | SAE J744 13-4 (A-A) splined shaft | R     |   | <b>R</b> |

### Front cover

|    |                    |                                                |          |
|----|--------------------|------------------------------------------------|----------|
| 08 | 2-hole flange      | Ø32 mm                                         | <b>P</b> |
|    |                    | Ø32 mm with O-Ring                             | <b>M</b> |
|    |                    | Ø32 mm with O-ring, for attachment to Series F | <b>Y</b> |
|    |                    | SAE J744 50-2 (A-A)                            | <b>R</b> |
|    | Rectangular flange | Ø25.38 mm                                      | <b>O</b> |

### Line connection

|    |                                |           |
|----|--------------------------------|-----------|
| 09 | ISO 228/1 pipe thread          | <b>01</b> |
|    | DIN 3852-T1 metric thread      | <b>02</b> |
|    | SAE J1926-1 thread O-ring Boss | <b>12</b> |
|    | Square flange                  | <b>20</b> |

### Sealing material

|    |                                       |          |
|----|---------------------------------------|----------|
| 10 | NBR (nitrile rubber)                  | <b>M</b> |
|    | NBR, FKM (fluoroelastomer) shaft seal | <b>K</b> |
|    | FKM (fluoroelastomer)                 | <b>P</b> |

### Rear cover

|    |                             |          |
|----|-----------------------------|----------|
| 11 | Without valve (standard)    | <b>B</b> |
|    | Axial pressure/suction port | <b>A</b> |

### Special version

|    |                            |              |
|----|----------------------------|--------------|
| 12 | Serial number, e.g., S0001 | <b>SXXXX</b> |
|----|----------------------------|--------------|

<sup>1)</sup> – Some type code combinations are not possible.  
– Please select the desired pump with the help of the selection table (preferred types) or after consultation with Bosch Rexroth.

– Further options are available on request.

## Multi-pump type codes<sup>1)</sup>

| 01         | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 |
|------------|----|----|----|----|----|----|----|----|----|----|
| <b>AZP</b> |    | -  |    |    | -  |    |    |    |    |    |

### External gear unit

|    |                    |            |
|----|--------------------|------------|
| 01 | External gear pump | <b>AZP</b> |
|----|--------------------|------------|

### Series<sup>2)</sup>

|    |                  |                                   |          |
|----|------------------|-----------------------------------|----------|
| 02 | High-Performance | 1.0 ... 7.1 cm <sup>3</sup> /rev  | <b>B</b> |
|    |                  | 4.0 ... 28 cm <sup>3</sup> /rev   | <b>F</b> |
|    |                  | 20.0 ... 36 cm <sup>3</sup> /rev  | <b>N</b> |
|    |                  | 22.5 ... 100 cm <sup>3</sup> /rev | <b>G</b> |
|    | SILENCE          | 4.0 ... 28 cm <sup>3</sup> /rev   | <b>S</b> |
|    |                  | 20.0 ... 36 cm <sup>3</sup> /rev  | <b>T</b> |
|    |                  | 22.5 ... 63 cm <sup>3</sup> /rev  | <b>U</b> |
|    | SILENCE PLUS     | 12.0 ... 28 cm <sup>3</sup> /rev  | <b>J</b> |

### Series (relates to first pump stage)

|    |                        |  |
|----|------------------------|--|
| 03 | Bearing journal Ø12 mm |  |
|----|------------------------|--|

### Version (relates to first pump stage)

|    |                             |  |
|----|-----------------------------|--|
| 04 | Corrosion-resistant, pinned |  |
|----|-----------------------------|--|

### Size<sup>3)</sup>

|    |                                                         |  |
|----|---------------------------------------------------------|--|
| 05 | In accordance with data sheet for the individual series |  |
|----|---------------------------------------------------------|--|

### Direction of rotation

|    |                          |                  |          |
|----|--------------------------|------------------|----------|
| 06 | As viewed on drive shaft | Clockwise        | <b>R</b> |
|    |                          | Counterclockwise | <b>L</b> |

### Drive shaft (relates to first pump stage)

|    |                                                    |  |
|----|----------------------------------------------------|--|
| 07 | In accordance with data sheet for first pump stage |  |
|----|----------------------------------------------------|--|

### Front cover (relates to first pump stage)

|    |                                                    |  |
|----|----------------------------------------------------|--|
| 08 | In accordance with data sheet for first pump stage |  |
|----|----------------------------------------------------|--|

### Line connection (per pump stage)<sup>4)</sup>

|    |                                                           |  |
|----|-----------------------------------------------------------|--|
| 09 | In accordance with data sheet for the individual series 1 |  |
|----|-----------------------------------------------------------|--|

### Sealing material

|    |                                       |          |
|----|---------------------------------------|----------|
| 10 | NBR (nitrile rubber)                  | <b>M</b> |
|    | NBR, FKM (fluoroelastomer) shaft seal | <b>K</b> |
|    | FKM (fluoroelastomer)                 | <b>P</b> |

### Rear cover (relates to last pump stage)

|    |                                                   |          |
|----|---------------------------------------------------|----------|
| 11 | In accordance with data sheet for last pump stage | <b>B</b> |
|----|---------------------------------------------------|----------|

### Special version

|    |                            |              |
|----|----------------------------|--------------|
| 12 | Serial number, e.g., S0001 | <b>SXXXX</b> |
|----|----------------------------|--------------|

### Sample 2-pump combination:

AZPB ... 6.3 ... + AZPB ... 2.0 ...

| 01  | 02 |   | 03 | 04 |   | 05      |  | 06 | 07 | 08 | 09   | 10 | 11 |
|-----|----|---|----|----|---|---------|--|----|----|----|------|----|----|
| AZP | BB | - | 3  | 2  | - | 6.3/2.0 |  | L  | H  | O  | 0101 | M  | B  |

- 1) – Some type code combinations are not possible.  
– Please select the desired pump with the help of the selection table (preferred types) or after consultation with Bosch Rexroth.  
– Further options are available on request.

- 2) Select a letter for each pump stage, e.g., AZPB+AZPB: BB.  
3) Select a numerical value for each pump stage, e.g., 6.3/2.0.  
4) Select a numerical value for each pump stage, e.g., 0101.

## Technical data

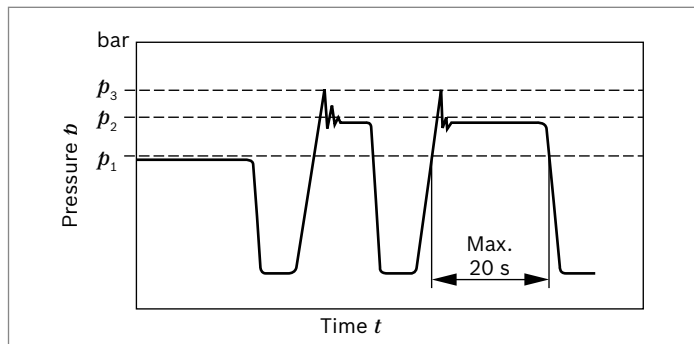
### ▼ Table of values

| Size                                     |           |                 | 1.0       | 2.0       | 2.5  | 3.1  | 4.0  | 4.5  | 5.0  | 6.3  | 7.1  |
|------------------------------------------|-----------|-----------------|-----------|-----------|------|------|------|------|------|------|------|
| Series                                   |           |                 | Series 3x |           |      |      |      |      |      |      |      |
| Geometric displacement per revolution    | $V_g$     | cm <sup>3</sup> | 1.0       | 2.0       | 2.5  | 3.15 | 4.0  | 4.5  | 5.0  | 6.3  | 7.1  |
| Max. continuous pressure                 | $p_1$     | bar             | 220       | 220       | 220  | 220  | 220  | 220  | 220  | 220  | 200  |
| Max. intermittent pressure <sup>1)</sup> | $p_2$     | bar             | 250       | 250       | 250  | 250  | 250  | 250  | 250  | 250  | 230  |
| Max. pressure peak                       | $p_3$     | bar             | 270       | 270       | 270  | 270  | 270  | 270  | 270  | 270  | 250  |
| Pressure in suction port                 | Absolute  | $p_e$           | bar       | 0.7 ... 3 |      |      |      |      |      |      |      |
| Min. rotational speed at $p_2$           | $n_{min}$ | rpm             | 750       | 750       | 750  | 750  | 750  | 750  | 750  | 750  | 750  |
| Max. rotational speed at $p_2$           | $n_{max}$ | rpm             | 6000      | 5000      | 5000 | 4000 | 4000 | 4000 | 4000 | 3500 | 3500 |

### General data

|                                                |                                                                                 |
|------------------------------------------------|---------------------------------------------------------------------------------|
| Installation position                          | No restrictions                                                                 |
| Type of mounting                               | See offer drawing                                                               |
| Line connections                               | See chapter "Dimensions – line connection"                                      |
| Direction of rotation as viewed on drive shaft | Clockwise or counterclockwise; only operate the pump in the direction indicated |

### ▼ Pressure definition



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

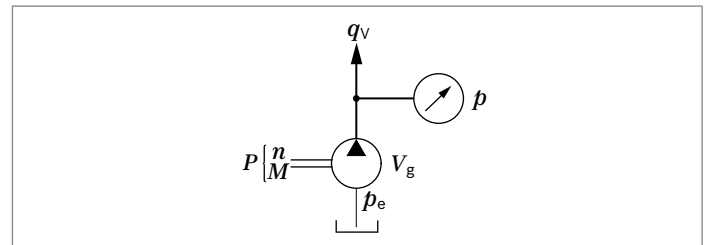
### Determining characteristics

|        |                                                                                             |         |
|--------|---------------------------------------------------------------------------------------------|---------|
| Flow   | $q_v = \frac{V_g \times n \times \eta_v}{1000}$                                             | [L/min] |
| Torque | $M = \frac{V_g \times \Delta p}{20 \times \pi \times \eta_{hm}}$                            | [Nm]    |
| Power  | $P = \frac{2 \pi \times M \times n}{60000} = \frac{q_v \times \Delta p}{600 \times \eta_t}$ | [kW]    |

### Key

- $V_g$  Displacement per revolution [cm<sup>3</sup>]  
 $\Delta p$  Differential pressure [bar] ( $\Delta p = p - p_e$ )  
 $n$  Rotational speed [rpm]  
 $\eta_v$  Volumetric efficiency<sup>1)</sup>  
 $\eta_{hm}$  Hydraulic-mechanical efficiency<sup>2)</sup>  
 $\eta_t$  Total efficiency ( $\eta_t = \eta_v \times \eta_{hm}$ )<sup>2)</sup>

- 1) Up to 280 bar possible with consultation  
2) Parameter as a decimal, e.g., 0.9

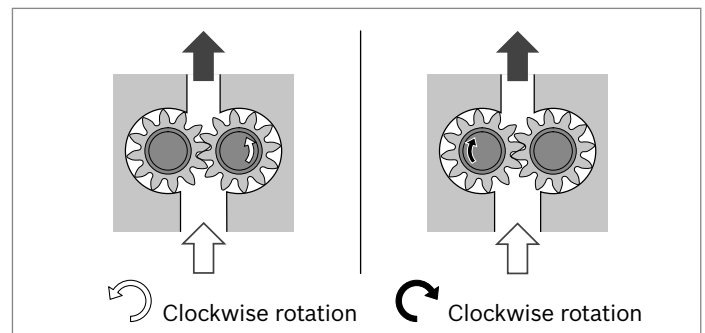


### Notice

- The chapters "Curves" and "Graphs" contain graphs for a rough calculation.
- Observe the safety requirements for the overall system.
- Please contact us regarding applications with frequent load cycles.

### ▼ Direction of rotation as viewed on drive shaft

The dimensional drawings in the chapter "Dimensions" show pumps for clockwise rotation. For counterclockwise rotation, the location of the drive shaft/suction and pressure port is different.



## Hydraulic fluid

The external gear unit is designed for operation with HLP mineral oil complying with DIN 51524 1-3. For higher loads, Bosch Rexroth recommends HLP complying with DIN 51524 Part 2 at minimum.<sup>1)</sup>

See the following data sheets for application instructions and requirements for selecting hydraulic fluid, behavior during operation as well as disposal and environmental protection before you begin planning:

- 90220: Hydraulic fluids based on mineral oils and related hydrocarbons

### Explanation regarding the selection of hydraulic fluid

The hydraulic fluid should be selected so the operating viscosity in the operating temperature range is within the optimal range ( $v_{opt}$ ; see selection diagram).

### Viscosity and temperature of hydraulic fluids

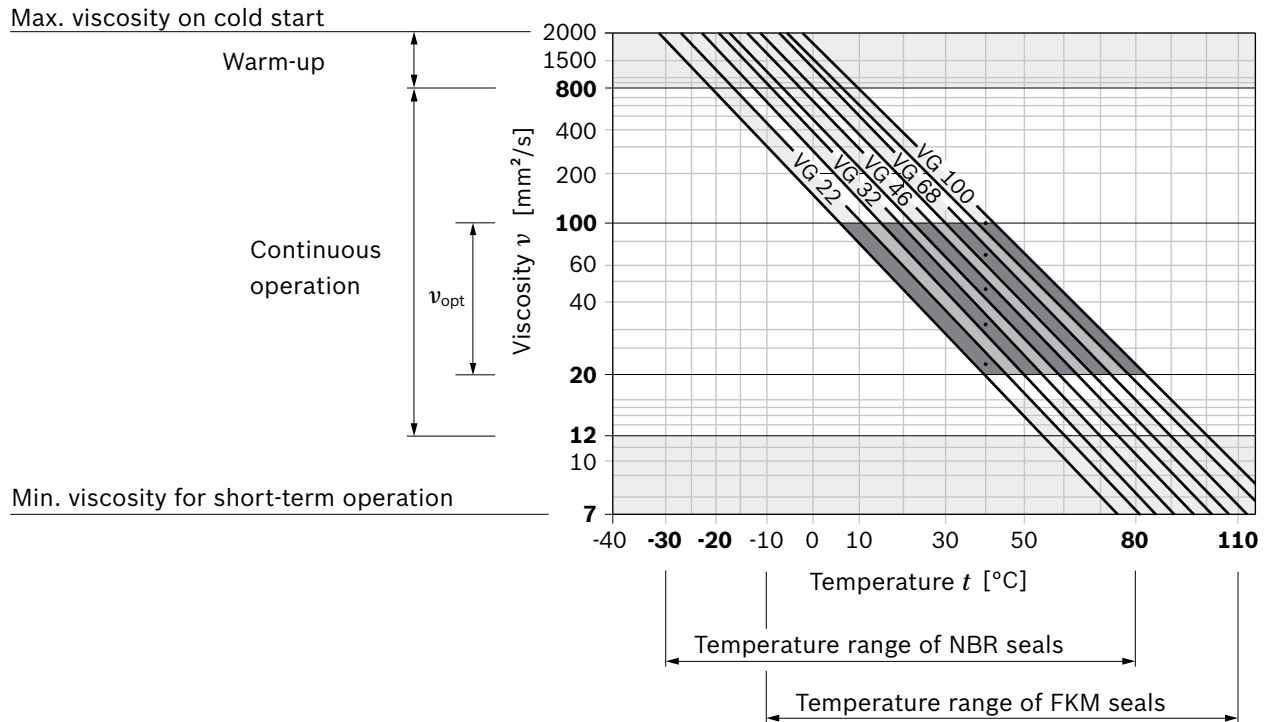
#### Viscosity range

|                                     |                                                |
|-------------------------------------|------------------------------------------------|
| Permissible in continuous operation | $v = 12 \dots 800 \text{ mm}^2/\text{s}$       |
| Recommended in continuous operation | $v_{opt} = 20 \dots 100 \text{ mm}^2/\text{s}$ |
| Permissible for cold start          | $v_{max} \leq 2000 \text{ mm}^2/\text{s}$      |

#### Temperature range

|                                        |                                                                    |
|----------------------------------------|--------------------------------------------------------------------|
| With NBR seals (NBR = nitrile rubber)  | $t = -30 \text{ }^\circ\text{C} \dots +80 \text{ }^\circ\text{C}$  |
| With FKM seals (FKM = fluoroelastomer) | $t = -10 \text{ }^\circ\text{C} \dots +110 \text{ }^\circ\text{C}$ |

#### ▼ Selection diagram

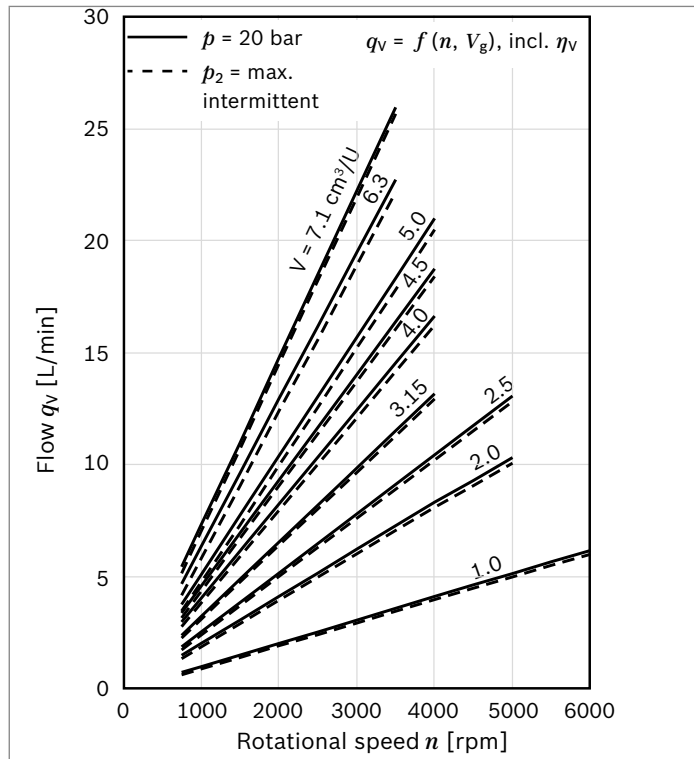


<sup>1)</sup> Other hydraulic fluids on request.

## Graphs/curves

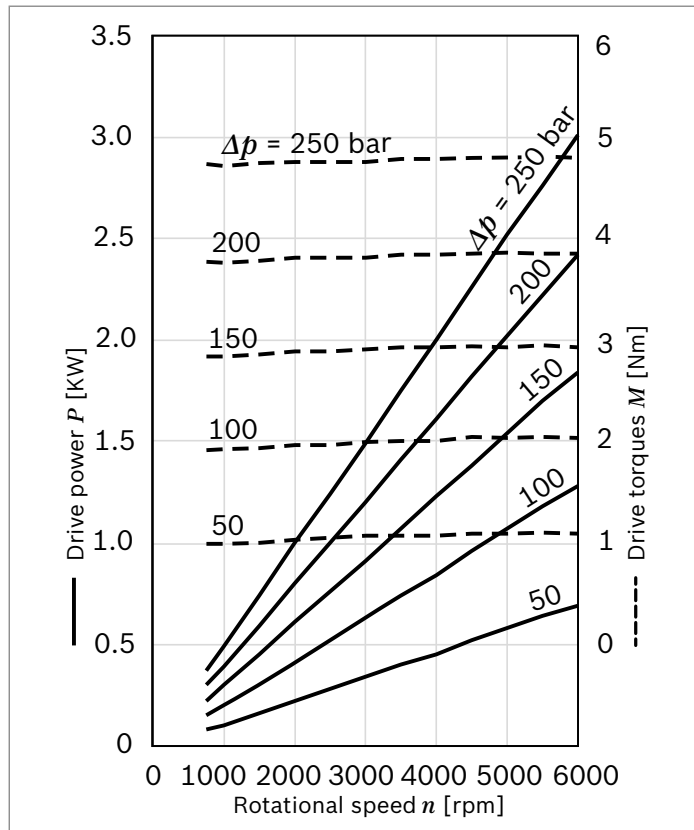
### Flow curves

#### ▼ Flow

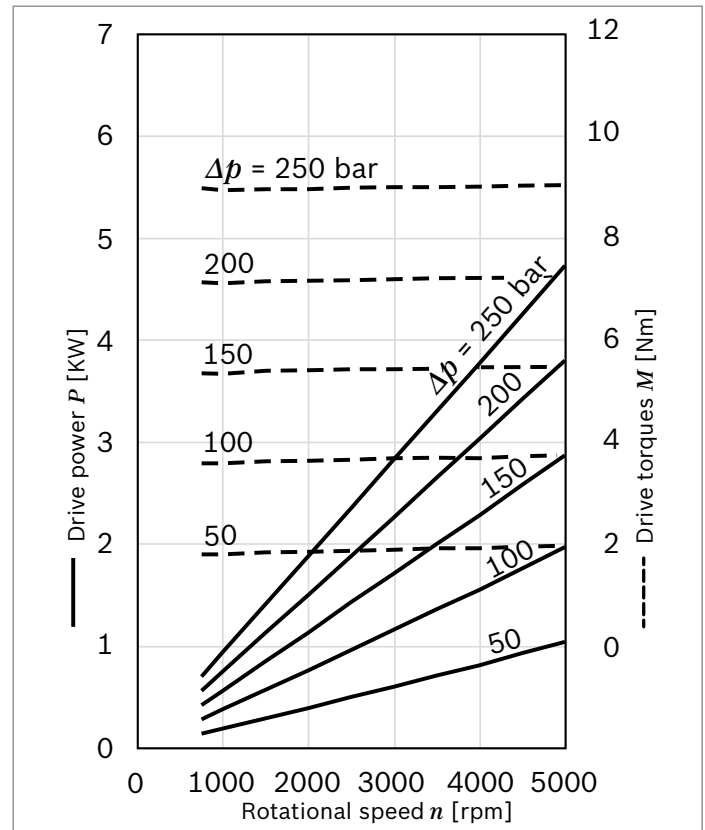


### Performance graphs

#### ▼ Size 1.0

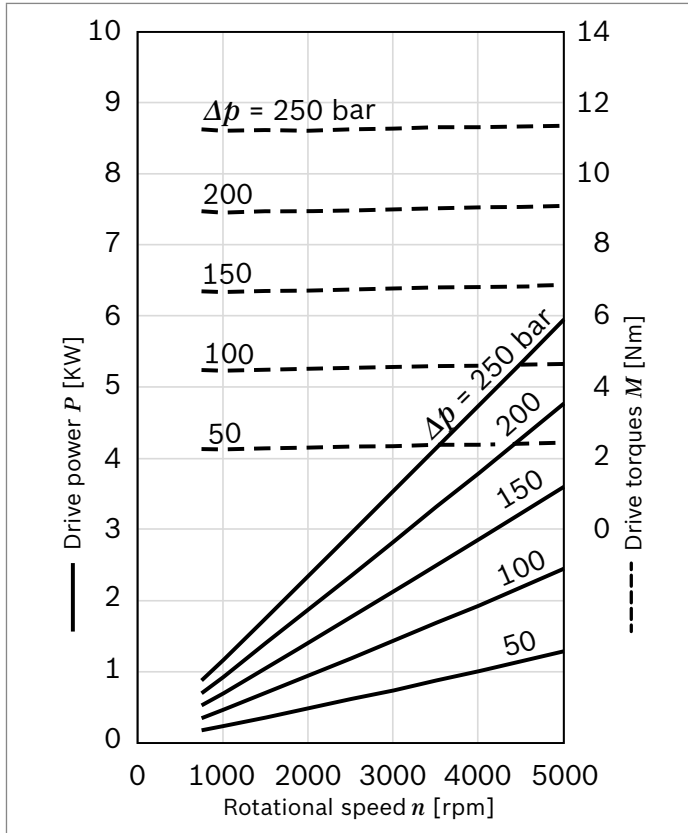


#### ▼ Size 2.0

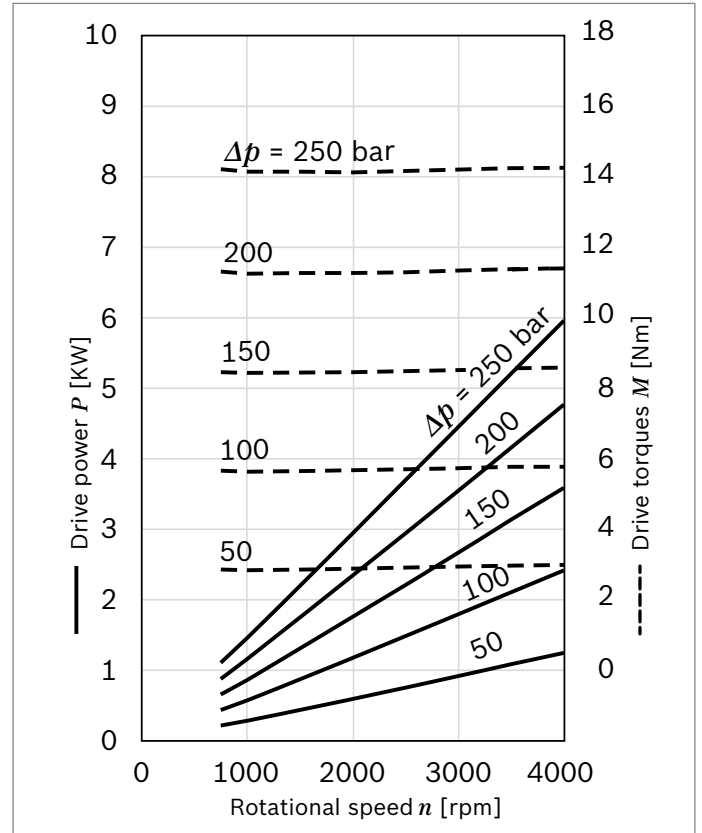




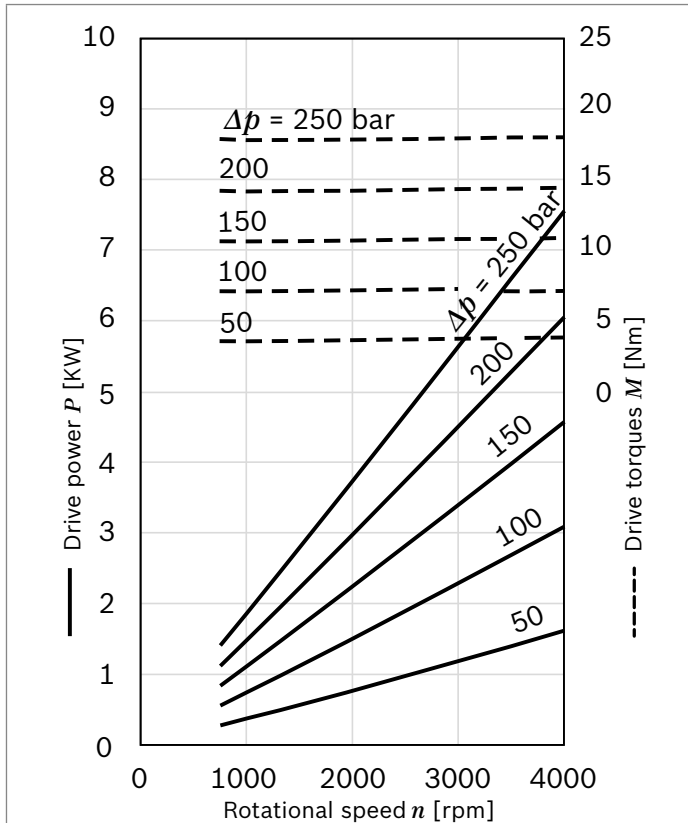
▼ **Size 2.5**



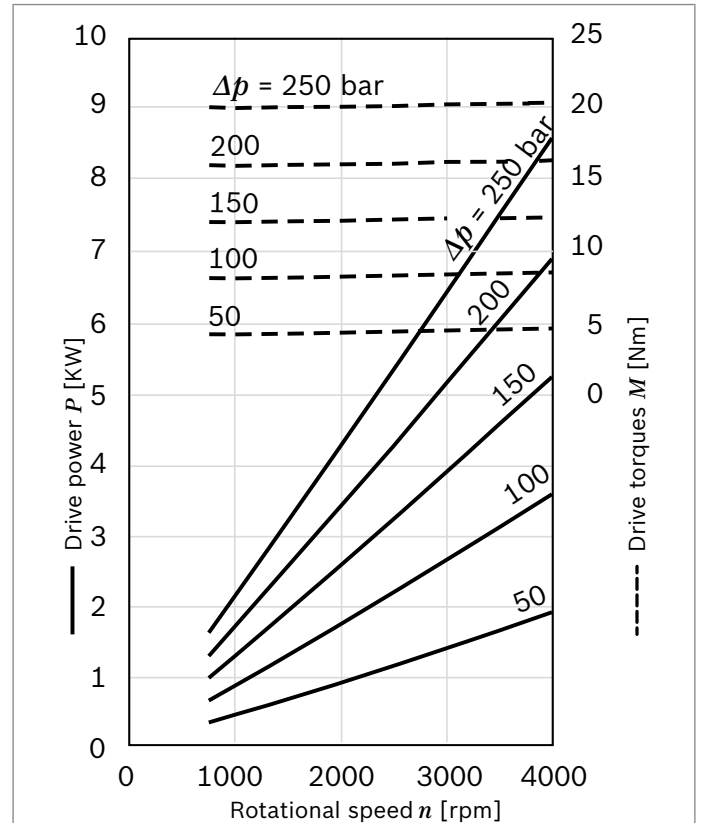
▼ **Size 3.15**



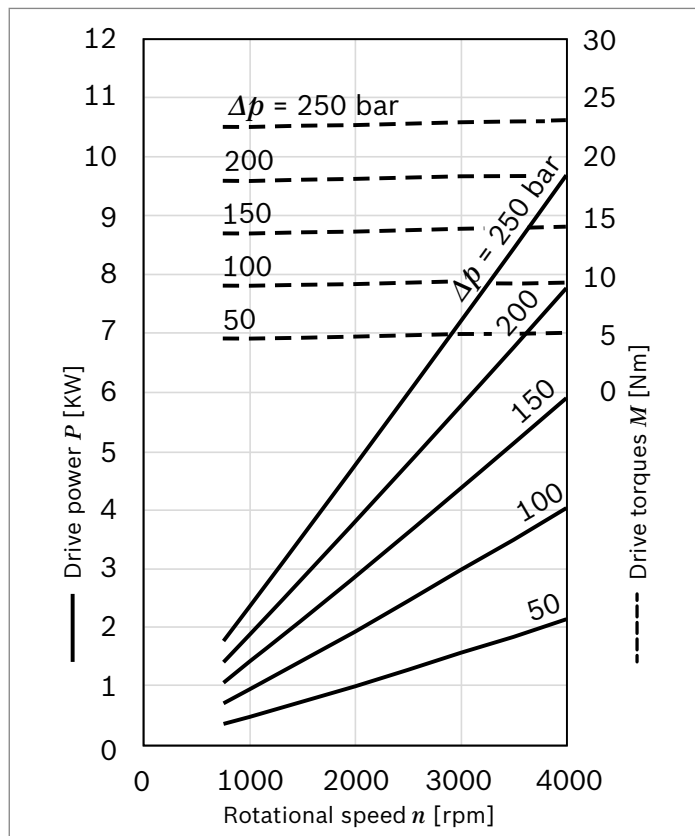
▼ **Size 4.0**



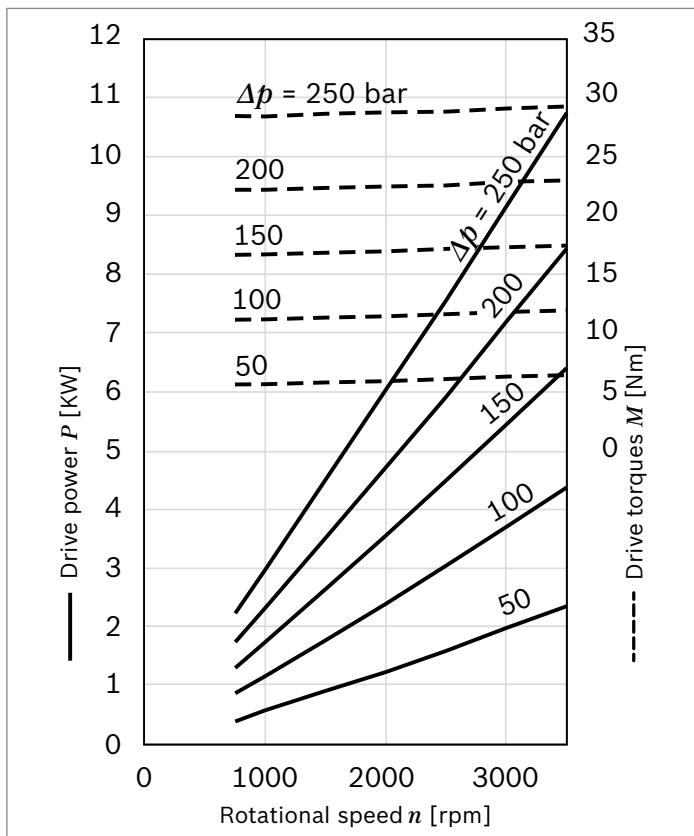
▼ **Size 4.5**



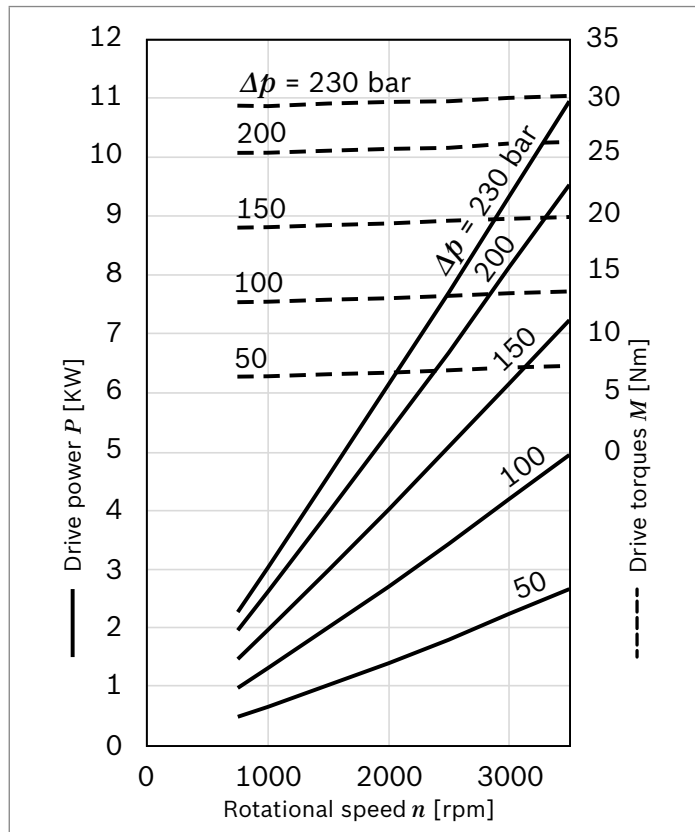
▼ **Size 5.0**



▼ **Size 6.3**



▼ **Size 7.1**



**Notice**

Curves measured at  $v = 32 \text{ mm}^2/\text{s}$ ,  $t = 50 \text{ }^\circ\text{C}$ .

### Noise curves

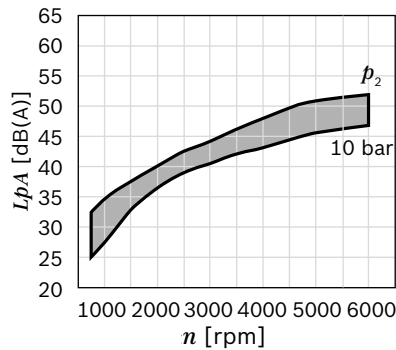
Noise levels based on rotational speed, pressure range between 10 bar and pressure value  $p_2$  (see chapter “Technical data”).

These are typical characteristics for each size. They describe the airborne sound emitted solely by the pump.

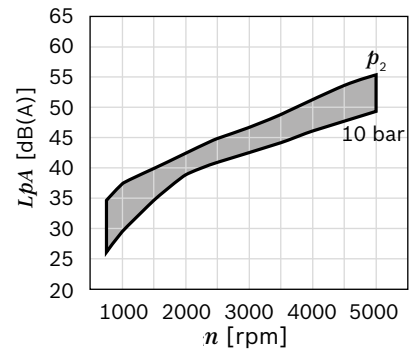
Ambient factors (installation site, piping, other system components) were not included.

The values refer to a single pump.

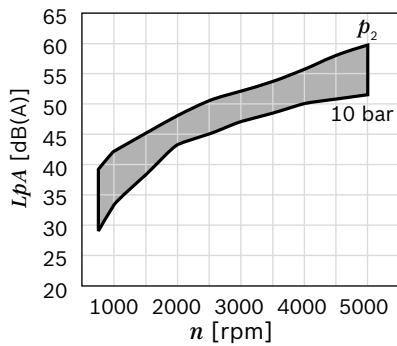
#### ▼ Size 1.0



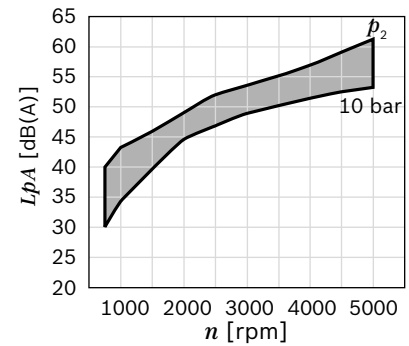
#### ▼ Size 2.0



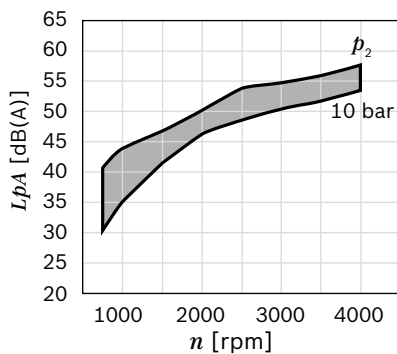
#### ▼ Size 2.5



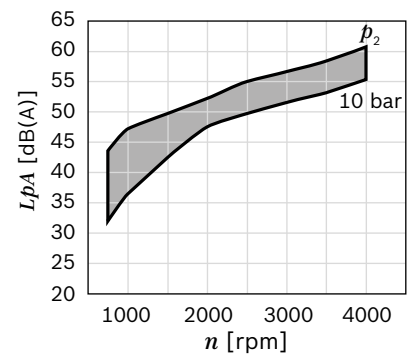
#### ▼ Size 3.15



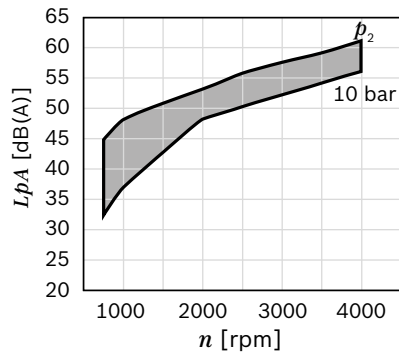
#### ▼ Size 4.0



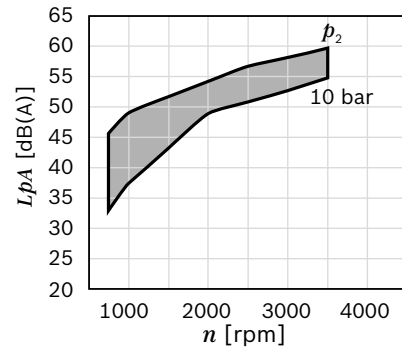
#### ▼ Size 4.5



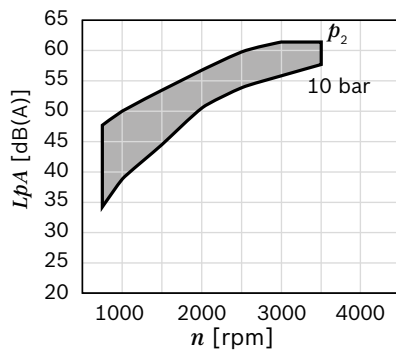
▼ **Size 5.0**



▼ **Size 6.3**



▼ **Size 7.1**



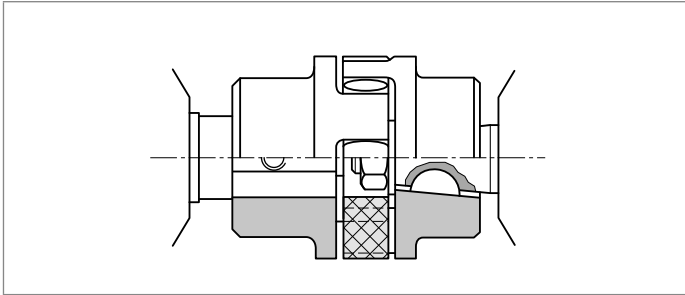
**Notice**

- ▶ Curves measured at  $\nu = 32 \text{ mm}^2/\text{s}$ ,  $t = 50 \text{ }^\circ\text{C}$ .
- ▶ Sound pressure level calculated from noise measurements made in a low-reflection measuring room in accordance with DIN 45635 Part 26.
- ▶ Distance from measuring sensor to pump: 1 m.

## Drive

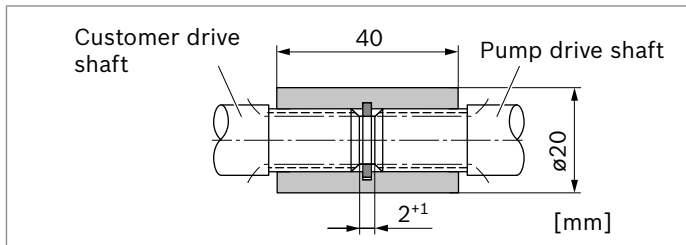
### 1. Elastic clutch

- ▶ The clutch should not transfer any radial or axial forces to the pump.
- ▶ The radial runout deviation from the shaft to the spigot should not exceed 0.2 mm.
- ▶ See the clutch manufacturer's assembly instructions for shaft misalignment tolerances.



### 2. Clutch sleeve

- ▶ To be used on SAE splined shaft profile
- ▶ Attention: Make sure no radial or axial forces act on the pump drive shaft or clutch sleeve. The clutch sleeve should freely move in the axial direction.
- ▶ The distance between the pump drive shaft and customer drive shaft should be  $2^{+1}$  mm.
- ▶ Reserve installation space for the snap ring.
- ▶ Oil-bath or oil-mist lubrication required

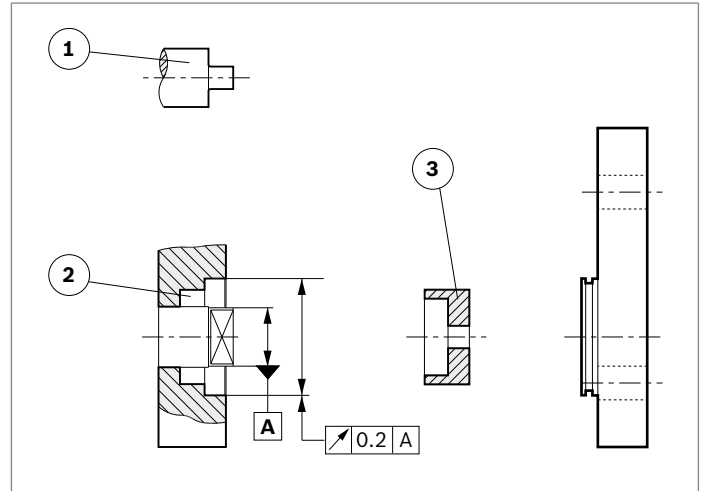


### 3. Tang drive coupling

- ▶ For attaching the pump directly to an electric motor or combustion engine, gearbox, etc.
- ▶ Pump shaft with special tang drive coupling and driver (3)
- ▶ No shaft seal
- ▶ Drive-side installation and sealing according to the following recommendations and dimensions
- ▶ Customer drive shaft (1)
  - DIN 17210 case-hardened steel, e.g., 20 MnCrS 5 case-hardened 1.0 deep; HRA 83  $\pm$  2
  - Seal ring running surface ground without rifling $R_{\max} \leq 4 \mu\text{m}$

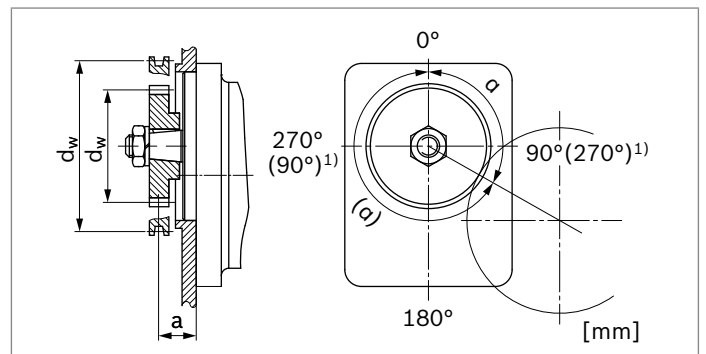
### ▶ Customer radial shaft seal ring (2)

- Provide with rubber cover (see DIN 3760, type AS, or double-lipped ring)
- Provide installation edge with 15° slant or install shaft seal with protection sleeve



### 4. V-belts and straight gear wheels or helical gear drives without outboard bearing

For V-belt or gear wheel drives, please contact us with the application and mounting conditions (dimensions  $a$ ,  $d_m$ ,  $d_w$  and angle  $\alpha$ ). For helical gear drives, helix angle  $\beta$  is also required.



<sup>1)</sup> Values in parentheses refer to counterclockwise rotation.

## Max. transmissible drive torques

### Tapered shaft

| Drive shaft |             | Front cover | $M_{\max}$ | Size    | $p_{\max}$ |
|-------------|-------------|-------------|------------|---------|------------|
| Code        | Designation | Code        | Nm         |         | bar        |
| C           | 1:5         | P           | 26         | 1 ... 5 | 250        |
|             |             |             |            | 6.3     | 190        |
|             |             |             |            | 7.1     | 170        |
| H           | 1:8         | O           | 30         | 1 ... 5 | 250        |
|             |             |             |            | 6.3     | 190        |
|             |             |             |            | 7.1     | 170        |

### Tang drive

| Drive shaft |             | Front cover | $M_{\max}$ | Size    | $p_{\max}$ |
|-------------|-------------|-------------|------------|---------|------------|
| Code        | Designation | Code        | Nm         |         | bar        |
| N           |             | M, Y        | 25         | 1 ... 5 | 250        |
|             |             |             |            | 6.3     | 190        |
|             |             |             |            | 7.1     | 170        |

### Parallel keyed shafts

| Drive shaft |               | Front cover | $M_{\max}$ | Size    | $p_{\max}$ |
|-------------|---------------|-------------|------------|---------|------------|
| Code        | Designation   | Code        | Nm         |         | bar        |
| Q           | SAE J744 13-1 | R           | 35         | 1 ... 5 | 250        |
|             |               |             |            | 6.3     | 190        |
|             |               |             |            | 7.1     | 170        |

### Splined shafts

| Drive shaft |                        | Front cover | $M_{\max}$ | Size    | $p_{\max}$ |
|-------------|------------------------|-------------|------------|---------|------------|
| Code        | Designation            | Code        | Nm         |         | bar        |
| R           | SAE J744 13-4<br>(A-A) | R           | 55         | 1 ... 5 | 250        |
|             |                        |             |            | 6.3     | 190        |
|             |                        |             |            | 7.1     | 170        |

## Multiple gear pumps

Gear pumps are well-suited to multiple arrangements, with the drive shaft of the first pump stage is extended to a second and possibly third pump stage. The shafts for each pump section are typically connected via a driver.

The individual pump stages are usually hydraulically isolated and have separate suction ports. A joint suction port or separate suction ports that are hydraulically connected is available on request.

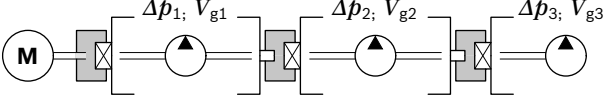
For the configuration of multiple pumps, Bosch Rexroth recommends arranging the pump stage with the largest displacement on the drive side.

### Notice

- Attention: The parameters of each pump generally apply, however certain restrictions need to be observed:
- Max. rotational speed: This is determined by the largest pump stage used.
- Pressures: These are limited by the max. transmissible torques from drive shaft, through drive and driver.

### Compounding of drive torques

With multiple pumps, note that the drive torques of the subsequent stages compound according to the following formula:



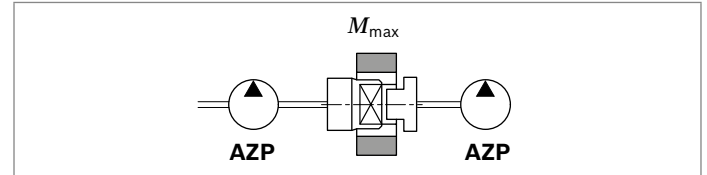
$$\frac{\Delta p_1 \times V_{g1} + \Delta p_2 \times V_{g2} + \Delta p_3 \times V_{g3}}{18 \times \pi} \leq M_{\max}^{1)}$$

$\Delta p$  [bar]  
 $V_g$  [cm<sup>3</sup>]

This may result in pressure limitations in each pump stage.

### Standard through drive (tang drive coupling)

For Platform B pumps, the driver for the next pump stage can support loads up to  $M_{\max} = 25$  Nm. This may result in pressure limitations for subsequent pump stages. Subsequent pumps of a smaller series determine the max. transmissible torque.

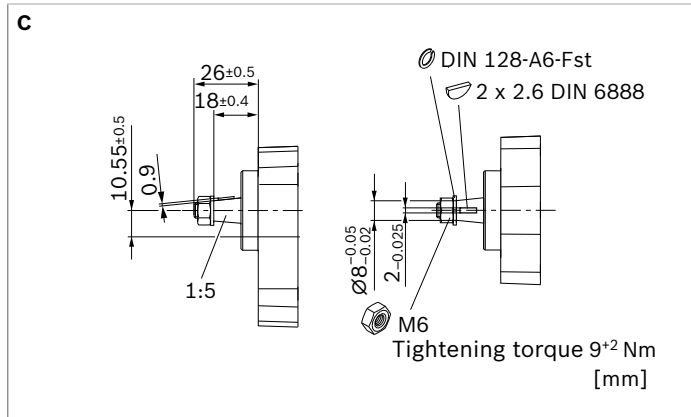


| Subsequent pump |      | $M_{\max}$ [Nm] <sup>1)</sup> |
|-----------------|------|-------------------------------|
| Platform B      | AZPB | 25                            |

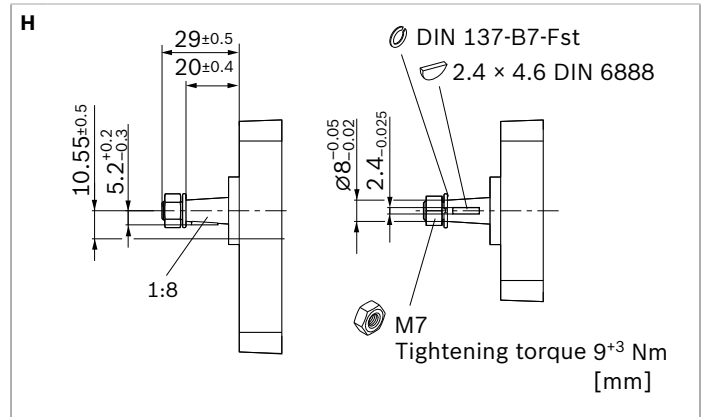
1) For  $M_{\max}$ , see chapter "Max. transmissible drive torques".

## Dimensions – drive shaft<sup>1)</sup>

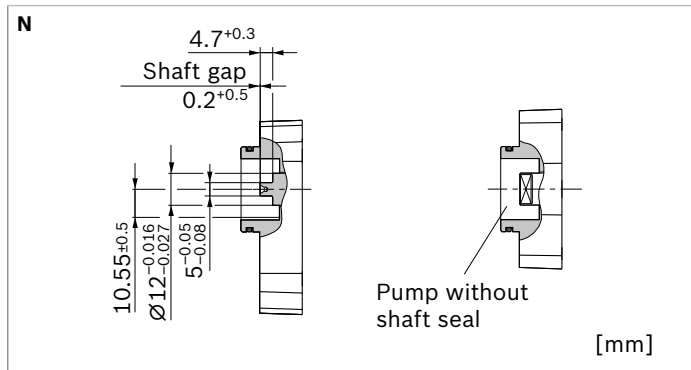
### ▼ 1:5 tapered shaft



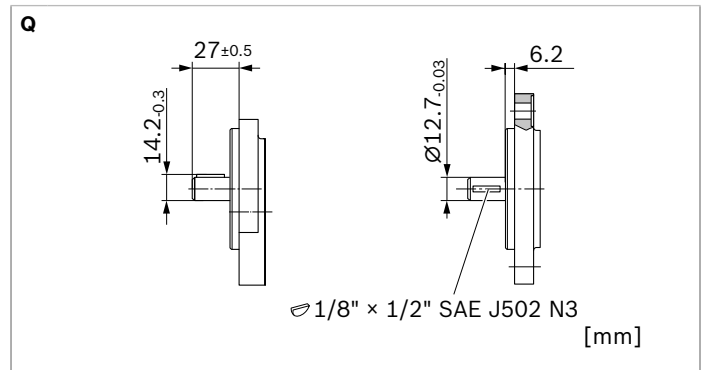
### ▼ 1:8 tapered shaft



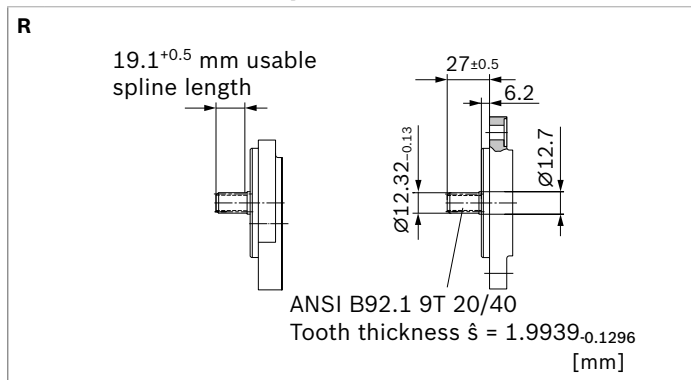
### ▼ Tang drive



### ▼ SAE J744 13-1 cylindrical

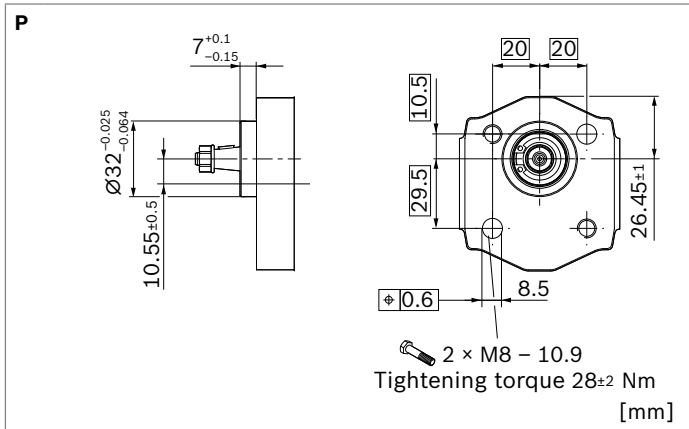
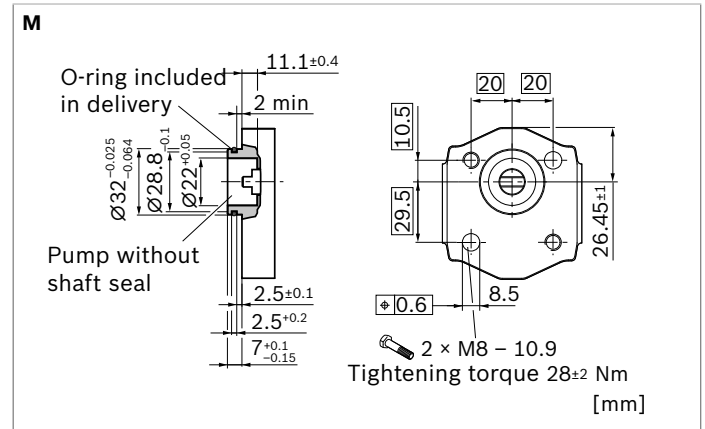
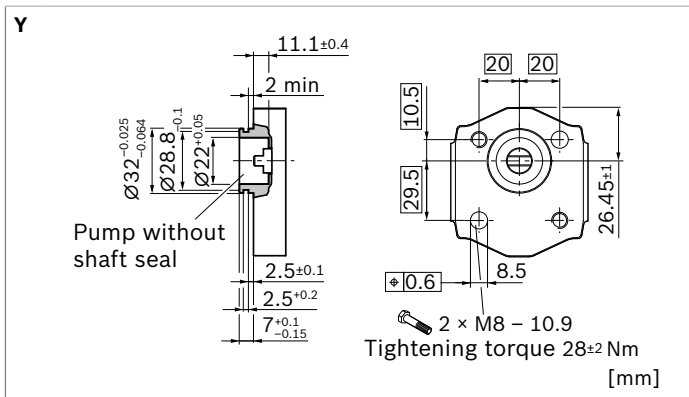
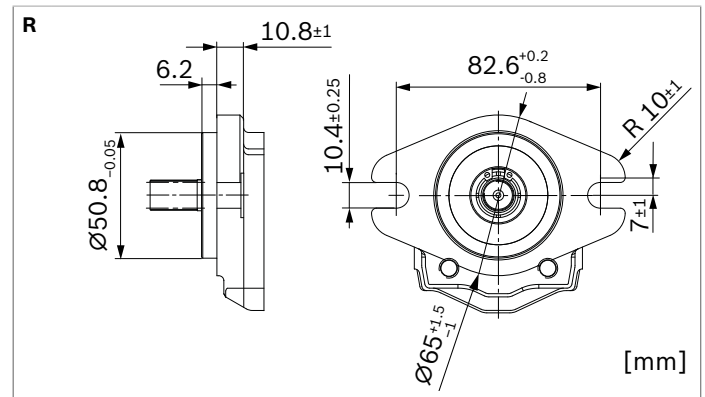
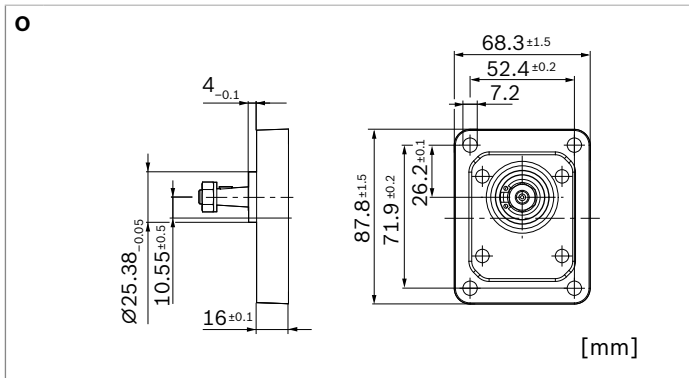


### ▼ SAE J744 13-4 (A-A) splined shaft



<sup>1)</sup> For other version, see offer drawing.

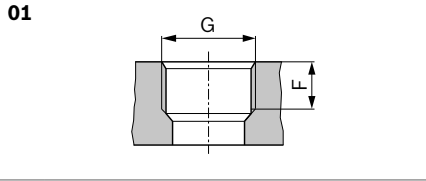


**Dimensions – front cover**<sup>1)</sup>▼ **2-hole mounting Ø32 mm**▼ **2-hole mounting Ø32 mm with O-ring**▼ **2-hole mounting Ø32 mm with O-ring, for attachment to Series F**▼ **SAE J744 50-2 (A-A)**▼ **Rectangular flange Ø25.38 mm**

1) For other version, see offer drawing.

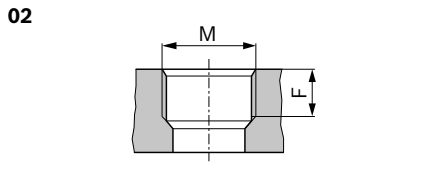
## Dimensions – line connection

### ▼ ISO 228/1 pipe thread



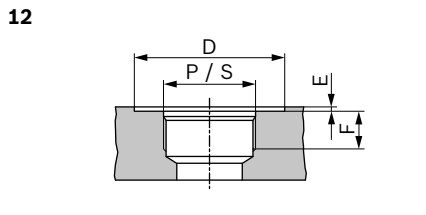
| Size        | Pressure side |         | Suction side |         |
|-------------|---------------|---------|--------------|---------|
|             | P             | F<br>mm | S            | F<br>mm |
| 1.0 ... 3.1 | G3/8          | 13      | G3/8         | 13      |
| 4.0 ... 7.1 |               |         | G1/2         | 14      |

### ▼ DIN 3852-T1 metric thread



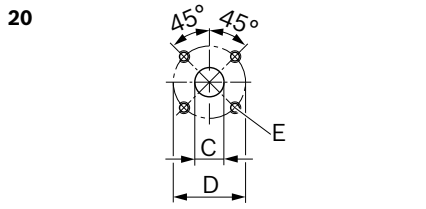
| Size        | Pressure side |         | Suction side |         |
|-------------|---------------|---------|--------------|---------|
|             | P             | F<br>mm | S            | F<br>mm |
| 1.0 ... 3.1 | M14 × 1.5     | 13      | M18 × 1.5    | 13      |
| 4.0 ... 7.1 |               |         | M22 × 1.5    | 14      |

### ▼ SAE J1926-1 thread O-ring Boss

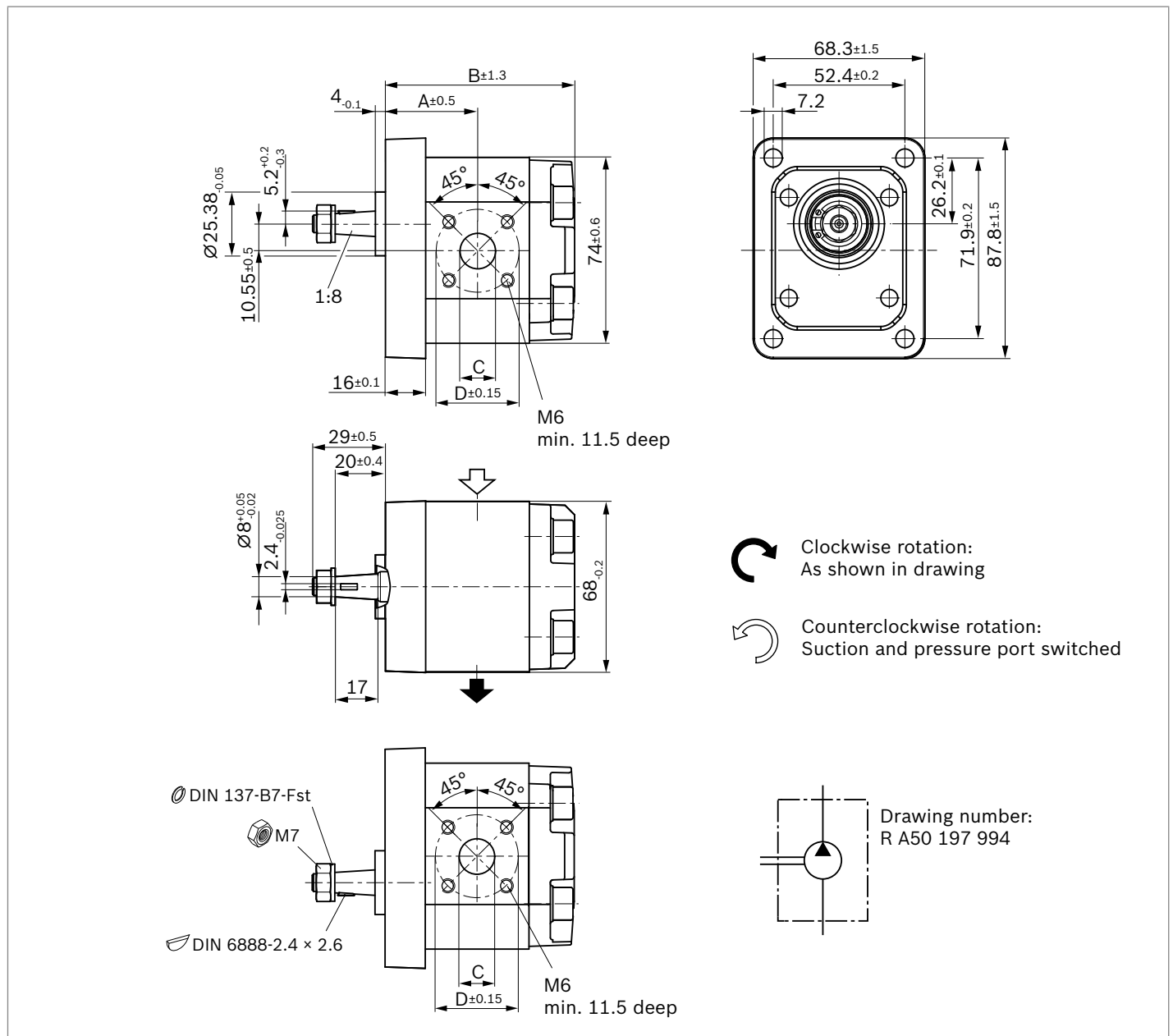


| Size        | Pressure side  |         |         |         | Suction side   |         |         |         |
|-------------|----------------|---------|---------|---------|----------------|---------|---------|---------|
|             | P              | D<br>mm | E<br>mm | F<br>mm | S              | D<br>mm | E<br>mm | F<br>mm |
| 1.0         | 9/16-18 UNF-2B | 25      | 0.5     | 13      | 9/16-18 UNF-2B | 25      | 0.5     | 13      |
| 2.0 ... 5.0 |                |         |         |         | 3/4-16 UNF-2B  | 30      | 0.5     | 15      |
| 6.3 ... 7.1 | 3/4-16 UNF-2B  | 30      | 0.5     | 15      | 7/8-14 UN-2B   | 34      | 0.5     | 17      |

### ▼ Square flange

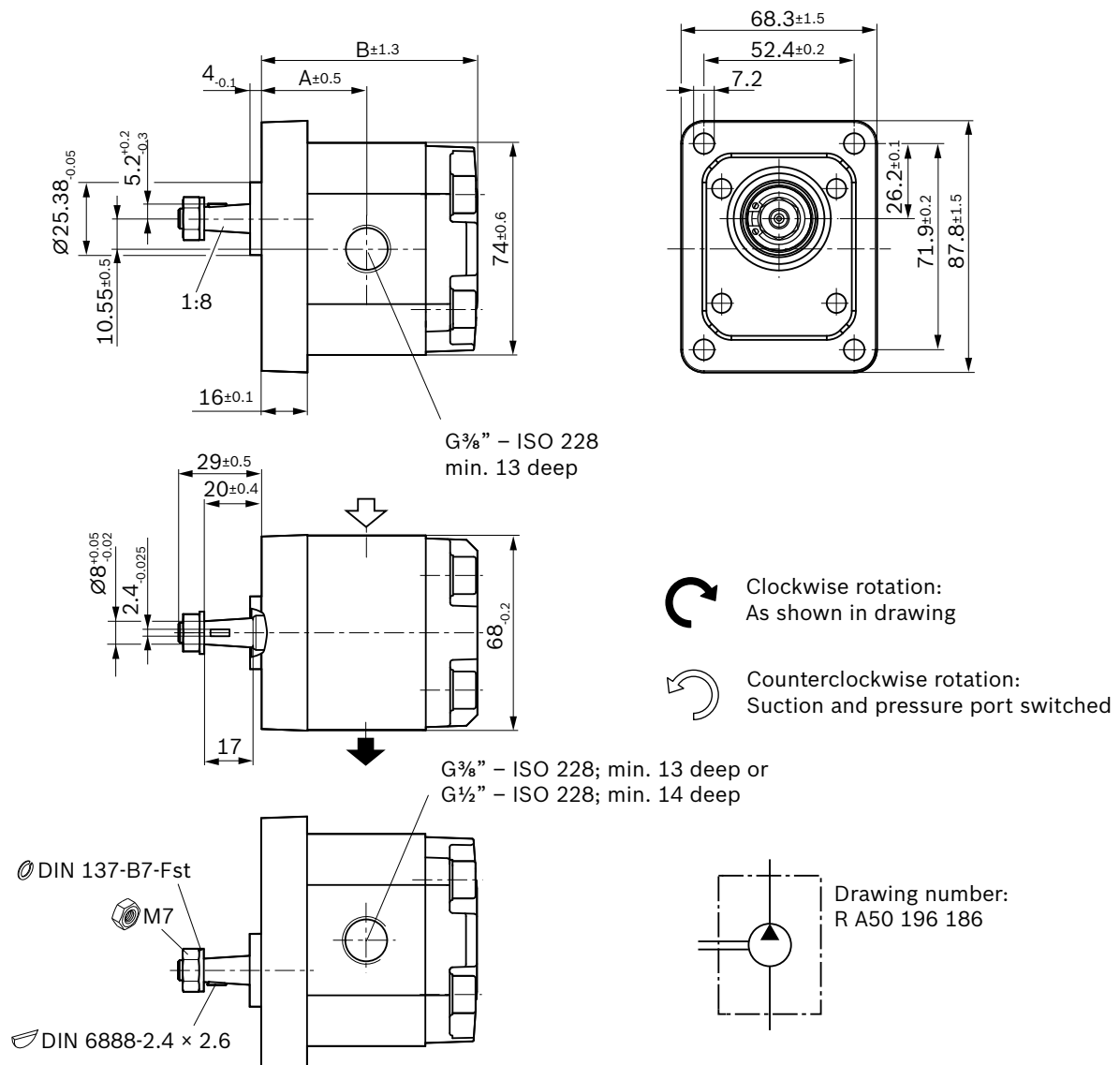


| Size        | Pressure side |         |               | Suction side |         |               |
|-------------|---------------|---------|---------------|--------------|---------|---------------|
|             | C<br>mm       | D<br>mm | E             | C<br>mm      | D<br>mm | E             |
| 2.0 ... 2.5 | 12            | 30      | M6; 11.5 deep | 12           | 30      | M6; 11.5 deep |
| 3.1 ... 7.1 | 15            | 35      |               | 15           | 35      |               |

**Dimensions – preferred series****▼ 1:8 tapered shaft with square flange  
AZPB-32– ... HO20MB**

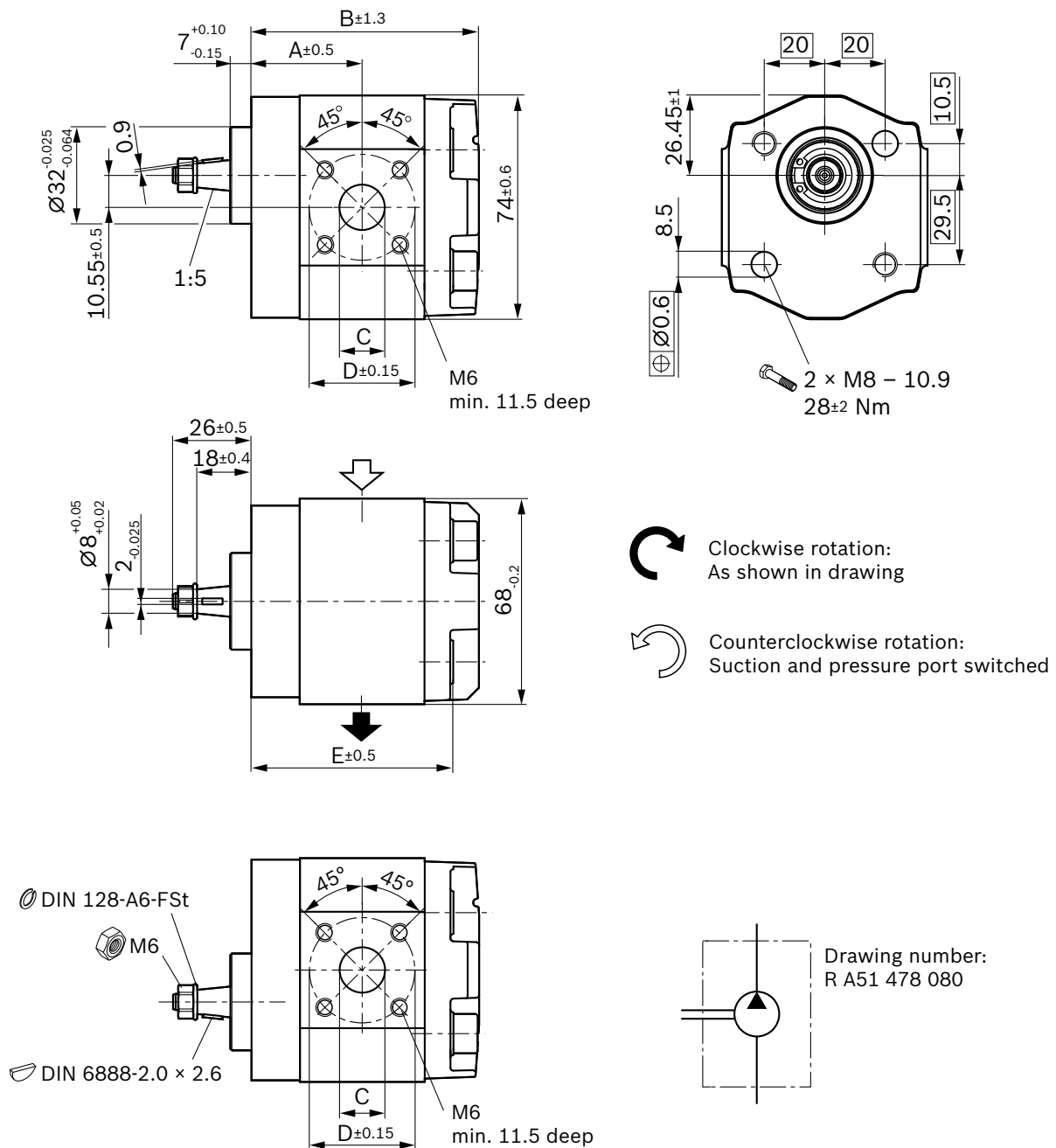
| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |    |    |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|----|----|
|      | Direction of rotation |            |                                        |                             | A          | B    | C  | D  |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |    |    |
| 2.0  | 0510120326            | 0510120028 | 250                                    | 5000                        | 32.8       | 67.9 | 12 | 30 |
| 2.5  | 0510120327            | 0510120029 | 250                                    | 5000                        | 33.8       | 69.8 | 12 | 30 |
| 3.15 | 0510120328            | 0510120030 | 250                                    | 4000                        | 35.0       | 72.3 | 15 | 35 |
| 4.0  | 0510120329            | 0510120031 | 250                                    | 4000                        | 36.6       | 75.5 | 15 | 35 |
| 4.5  | 0510120330            | 0510120032 | 250                                    | 4000                        | 37.6       | 77.4 | 15 | 35 |
| 5.0  | 0510120331            | 0510120033 | 250                                    | 4000                        | 38.6       | 79.5 | 15 | 35 |
| 6.3  | 0510120332            | 0510120034 | 250                                    | 3500                        | 41.0       | 84.2 | 15 | 35 |
| 7.1  | 0510120333            | 0510120035 | 230                                    | 3500                        | 42.5       | 87.3 | 15 | 35 |

▼ **1:8 tapered shaft with rectangular flange**  
**AZPB-32- ... HO01MB**



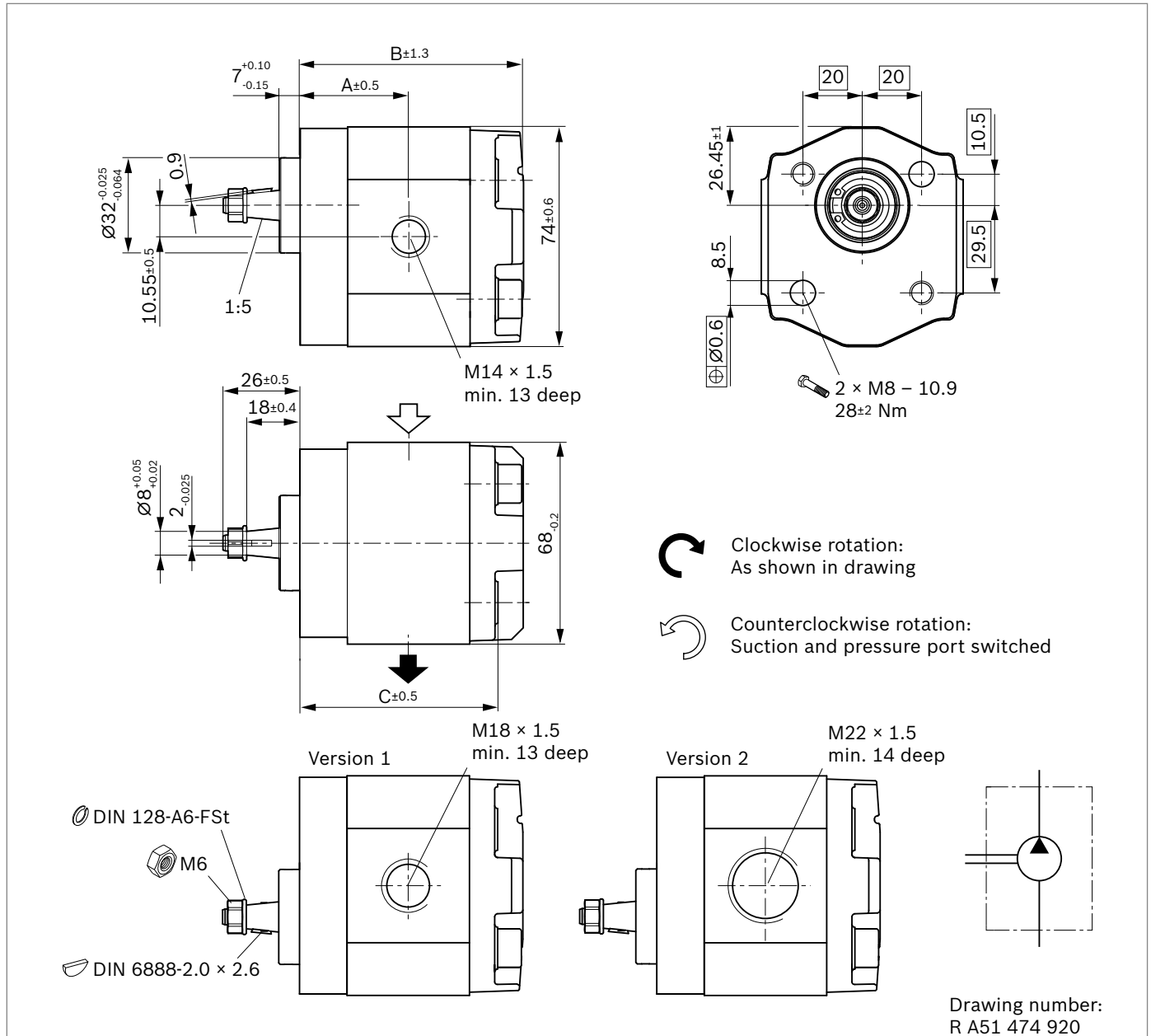
| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      | Version |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|---------|
|      | Direction of rotation |            |                                        |                             | A          | B    |         |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |         |
| 1.0  | 0510020303            | 0510020003 | 250                                    | 6000                        | 30.9       | 64.1 | 3/8     |
| 2.0  | 0510120318            | 0510120020 | 250                                    | 5000                        | 32.8       | 67.9 | 3/8     |
| 2.5  | 0510120319            | 0510120021 | 250                                    | 5000                        | 33.8       | 69.8 | 3/8     |
| 3.15 | 0510120320            | 0510120022 | 250                                    | 4000                        | 35.0       | 72.3 | 3/8     |
| 4.0  | 0510120321            | 0510120023 | 250                                    | 4000                        | 36.6       | 75.5 | 1/2     |
| 4.5  | 0510120322            | 0510120024 | 250                                    | 4000                        | 37.6       | 77.4 | 1/2     |
| 5.0  | 0510120323            | 0510120025 | 250                                    | 4000                        | 38.6       | 79.5 | 1/2     |
| 6.3  | 0510120324            | 0510120026 | 250                                    | 3500                        | 41.0       | 84.2 | 1/2     |
| 7.1  | 0510120325            | 0510120027 | 230                                    | 3500                        | 42.5       | 87.3 | 1/2     |

▼ **1:5 tapered shaft with 2-hole mounting and square flange**  
**AZPB-32- ... CP20MB**



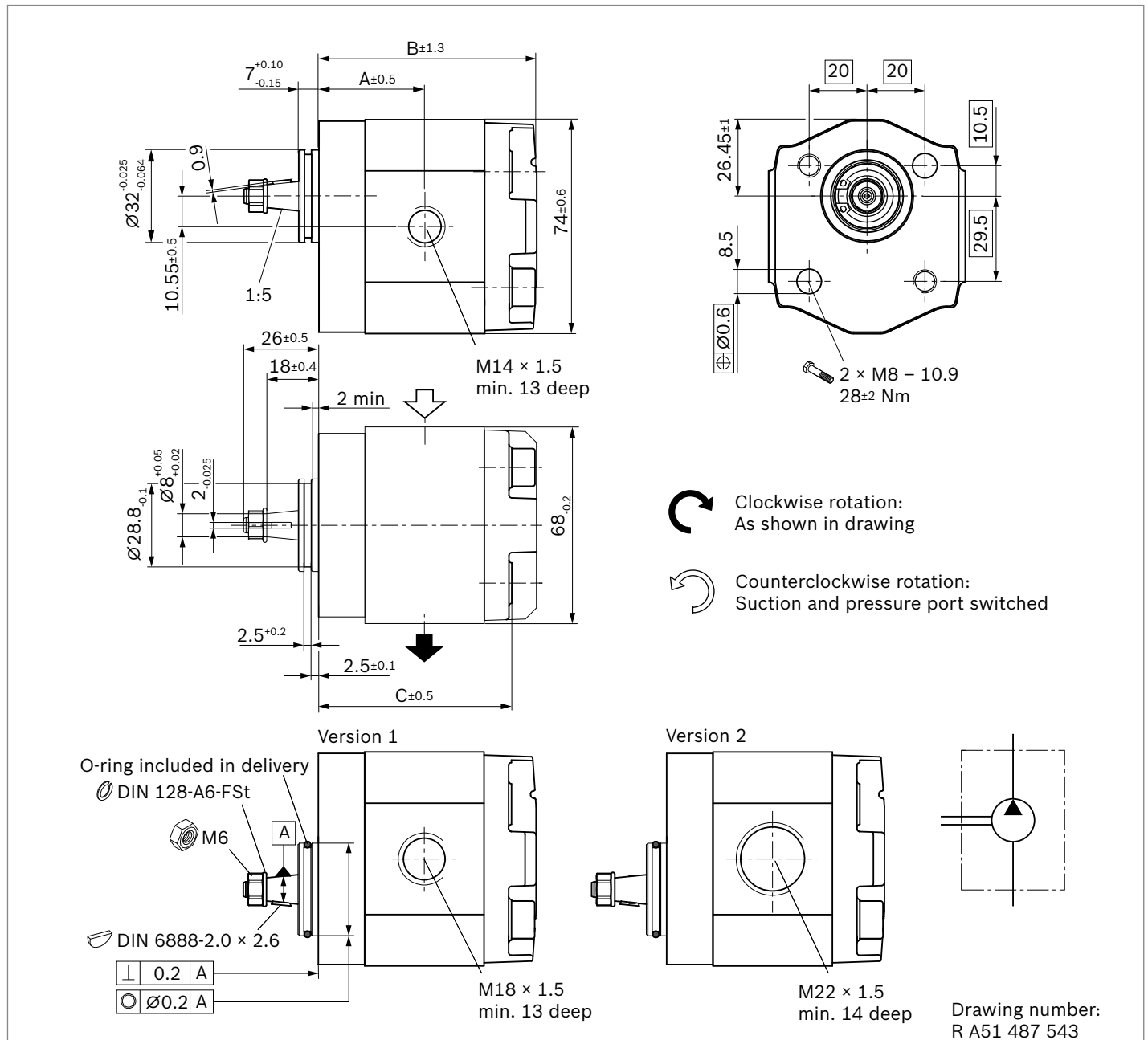
| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |    |    |      |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|----|----|------|
|      | Direction of rotation |            |                                        |                             |            |      |    |    |      |
|      | Counterclockwise      | Clockwise  |                                        |                             | A          | B    | C  | D  | E    |
| 2.0  | 0510110332            | 0510110025 | 250                                    | 5000                        | 32.8       | 67.9 | 12 | 30 | 59.0 |
| 2.5  | 0510110333            | 0510110026 | 250                                    | 5000                        | 33.8       | 69.8 | 12 | 30 | 60.9 |
| 3.15 | 0510112325            | 0510112019 | 250                                    | 4000                        | 35.0       | 72.3 | 15 | 35 | 63.4 |
| 4.0  | 0510114336            | 0510114030 | 250                                    | 4000                        | 36.6       | 75.5 | 15 | 35 | 66.6 |
| 4.5  | 0510114337            | 0510114031 | 250                                    | 4000                        | 37.6       | 77.4 | 15 | 35 | 68.5 |
| 5.0  | 0510114338            | 0510114032 | 250                                    | 4000                        | 38.6       | 79.5 | 15 | 35 | 70.6 |
| 6.3  | 0510122324            | 0510122020 | 250                                    | 3500                        | 41.0       | 84.2 | 15 | 35 | 75.3 |
| 7.1  | 0510122325            | 0510122021 | 230                                    | 3500                        | 42.5       | 87.3 | 15 | 35 | 78.4 |

▼ **1:5 tapered shaft with 2-hole mounting and metric thread**  
**AZPB-32- ... CP02MB/CP02KB<sup>1)</sup>**



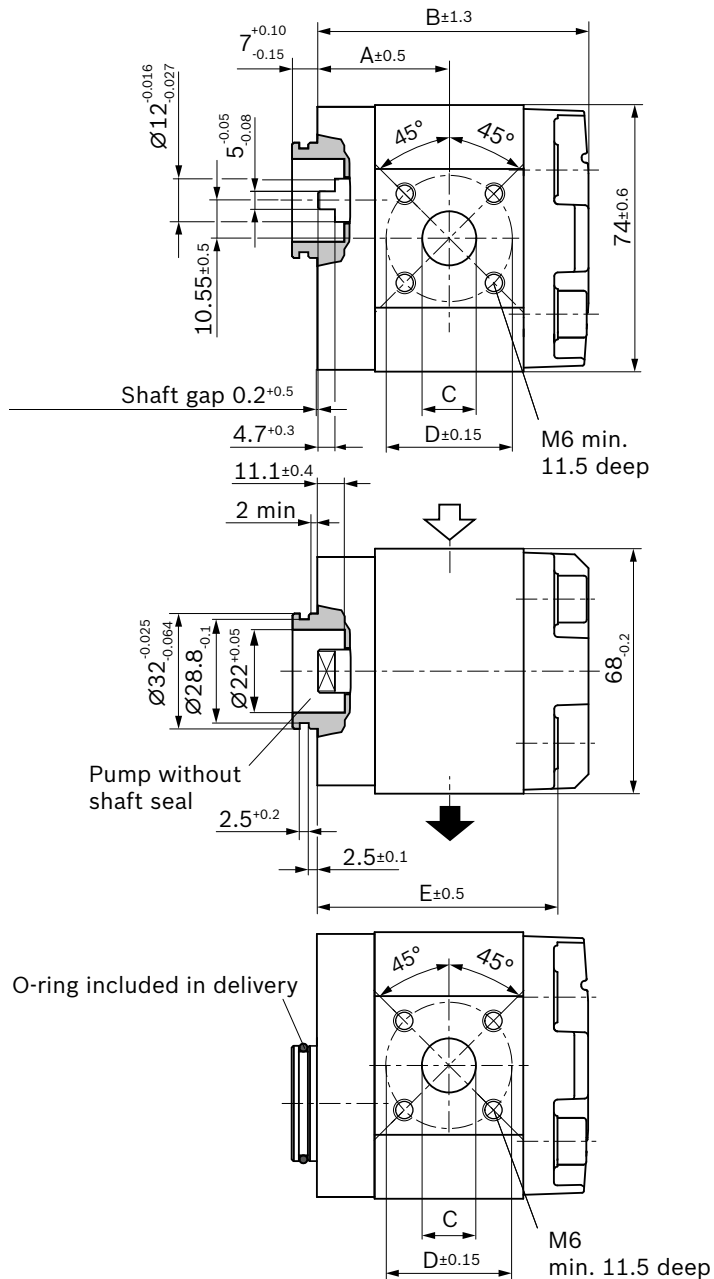
| Size | Order number          |                          | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |      | Version |
|------|-----------------------|--------------------------|----------------------------------------|-----------------------------|------------|------|------|---------|
|      | Direction of rotation |                          |                                        |                             | A          | B    | C    |         |
|      | Counterclockwise      | Clockwise                |                                        |                             |            |      |      |         |
| 1.0  | 0510010313            | 0510010008               | 250                                    | 6000                        | 30.9       | 64.1 | 55.2 | 1       |
| 2.0  | 0510110324            | 0510110017               | 250                                    | 5000                        | 32.8       | 67.9 | 59.0 | 1       |
| 2.5  | 0510110325            | 0510110018               | 250                                    | 5000                        | 33.8       | 69.8 | 60.9 | 1       |
| 3.15 |                       | 0510112015 <sup>1)</sup> | 250                                    | 4000                        | 35.0       | 72.3 | 63.4 | 1       |
| 3.15 | 0510112321            | 0510112014               | 250                                    | 4000                        | 35.0       | 72.3 | 63.4 | 1       |
| 4.0  | 0510114324            | 0510114018               | 250                                    | 4000                        | 36.6       | 75.5 | 66.6 | 2       |
| 4.5  | 0510114325            | 0510114019               | 250                                    | 4000                        | 37.6       | 77.4 | 68.5 | 2       |
| 5.0  | 0510114326            | 0510114020               | 250                                    | 4000                        | 38.6       | 79.5 | 70.6 | 2       |
| 6.3  | 0510122316            | 0510122012               | 250                                    | 3500                        | 41.0       | 84.2 | 75.3 | 2       |
| 7.1  | 0510122317            | 0510122013               | 230                                    | 3500                        | 42.5       | 87.3 | 78.4 | 2       |

<sup>1)</sup> Version with NBR, FKM shaft seal  
Bosch Rexroth AG, RE 10088/01.2019

▼ **1:5 tapered shaft with 2-hole mounting, metric thread and O-ring groove**  
**AZPB-32- ... CP02MB-S0177**

| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |      | Version |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|------|---------|
|      | Direction of rotation |            |                                        |                             | A          | B    | C    |         |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |      |         |
| 1.0  | 0510010315            | 0510010010 | 250                                    | 6000                        | 30.9       | 64.1 | 55.2 | 1       |
| 2.0  | 0510110328            | 0510010022 | 250                                    | 5000                        | 32.8       | 67.9 | 59.0 | 1       |
| 2.5  | 0510110329            | 0510010023 | 250                                    | 5000                        | 33.8       | 69.8 | 60.9 | 1       |
| 3.15 | 0510112323            | 0510112018 | 250                                    | 4000                        | 35.0       | 72.3 | 63.4 | 1       |
| 4.0  | 0510114330            | 0510114025 | 250                                    | 4000                        | 36.6       | 75.5 | 66.6 | 2       |
| 4.5  | 0510114331            | 0510114026 | 250                                    | 4000                        | 37.6       | 77.4 | 68.5 | 2       |
| 5.0  | 0510114332            | 0510114027 | 250                                    | 4000                        | 38.6       | 79.5 | 70.6 | 2       |
| 6.3  | 0510122320            | 0510122016 | 250                                    | 3500                        | 41.0       | 84.2 | 75.3 | 2       |
| 7.1  | 0510122321            | 0510122017 | 230                                    | 3500                        | 42.5       | 87.3 | 78.4 | 2       |

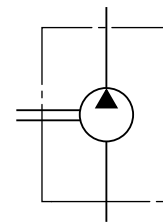
▼ **Tang drive with 2-hole mounting and square flange**  
**AZPB-32- ... NM20MB**



Clockwise rotation:  
As shown in drawing



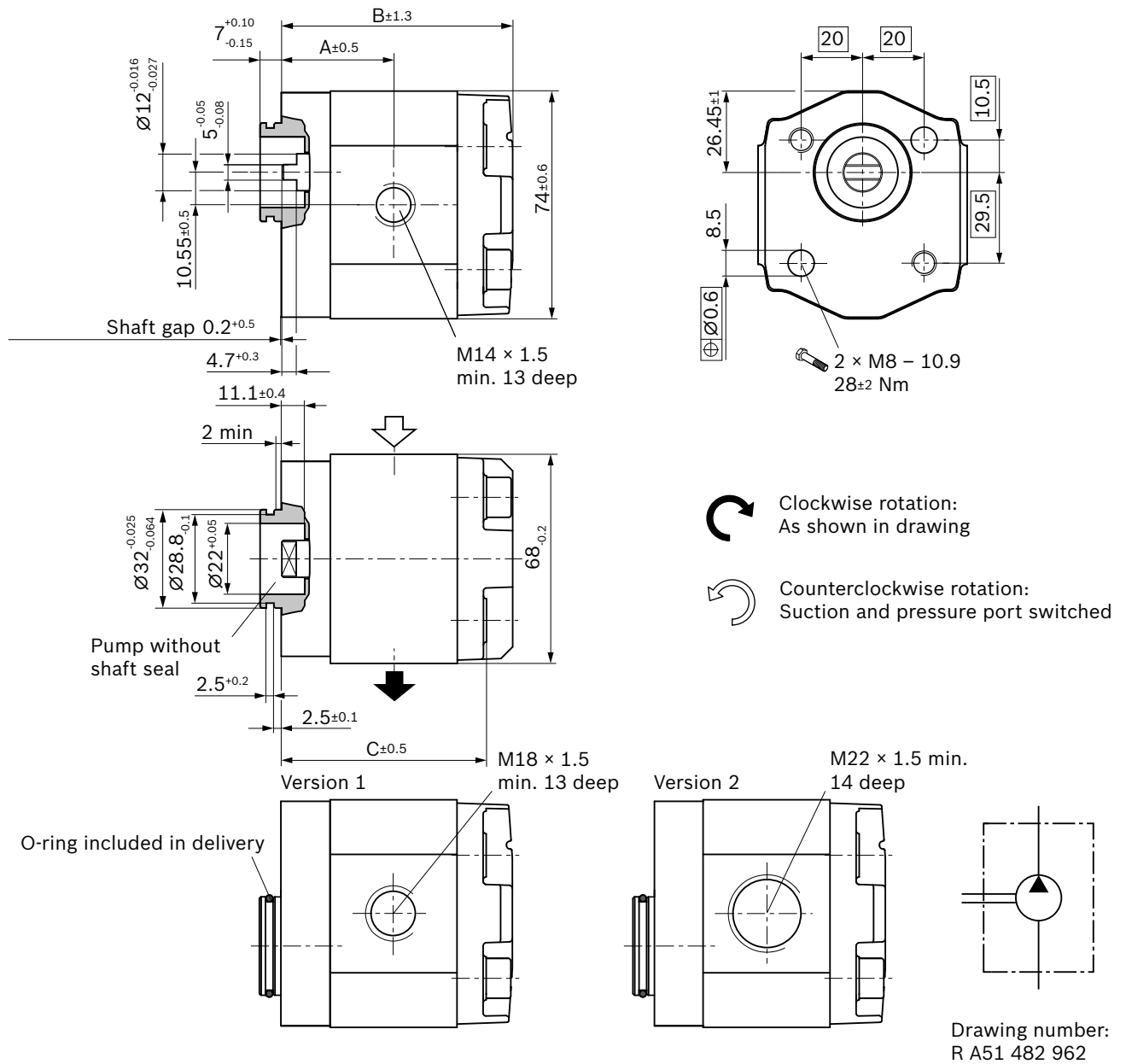
Counterclockwise rotation:  
Suction and pressure port switched



Drawing number:  
R A51 490 577

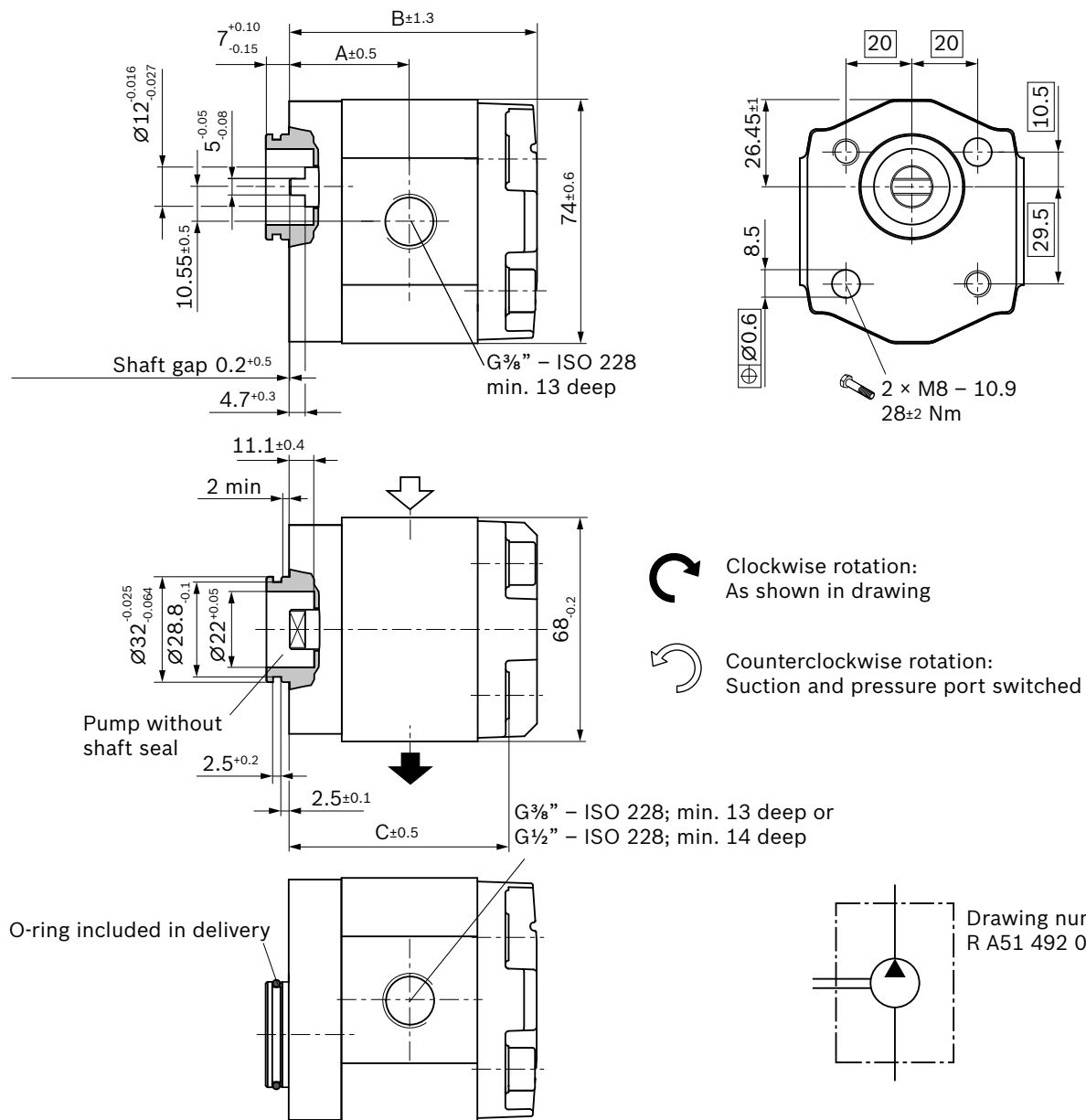
| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |    |    |      |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|----|----|------|
|      | Direction of rotation |            |                                        |                             | A          | B    | C  | D  | E    |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |    |    |      |
| 2.0  | 0510110334            | 0510110027 | 250                                    | 5000                        | 32.8       | 67.9 | 12 | 30 | 59.0 |
| 2.5  | 0510110335            | 0510110028 | 250                                    | 5000                        | 33.8       | 69.8 | 12 | 30 | 60.9 |
| 3.15 | 0510112326            | 0510112020 | 250                                    | 4000                        | 35.0       | 72.3 | 15 | 35 | 63.4 |
| 4.0  | 0510114339            | 0510114033 | 250                                    | 4000                        | 36.6       | 75.5 | 15 | 35 | 66.6 |
| 4.5  | 0510114340            | 0510114034 | 250                                    | 4000                        | 37.6       | 77.4 | 15 | 35 | 68.5 |
| 5.0  | 0510114341            | 0510114035 | 250                                    | 4000                        | 38.6       | 79.5 | 15 | 35 | 70.6 |
| 6.3  | 0510122326            | 0510122022 | 250                                    | 3500                        | 41.0       | 84.2 | 15 | 35 | 75.3 |
| 7.1  | 0510122327            | 0510122023 | 230                                    | 3500                        | 42.5       | 87.3 | 15 | 35 | 78.4 |



▼ Tang drive with 2-hole mounting and metric thread  
**AZPB-32- ... NM02MB**

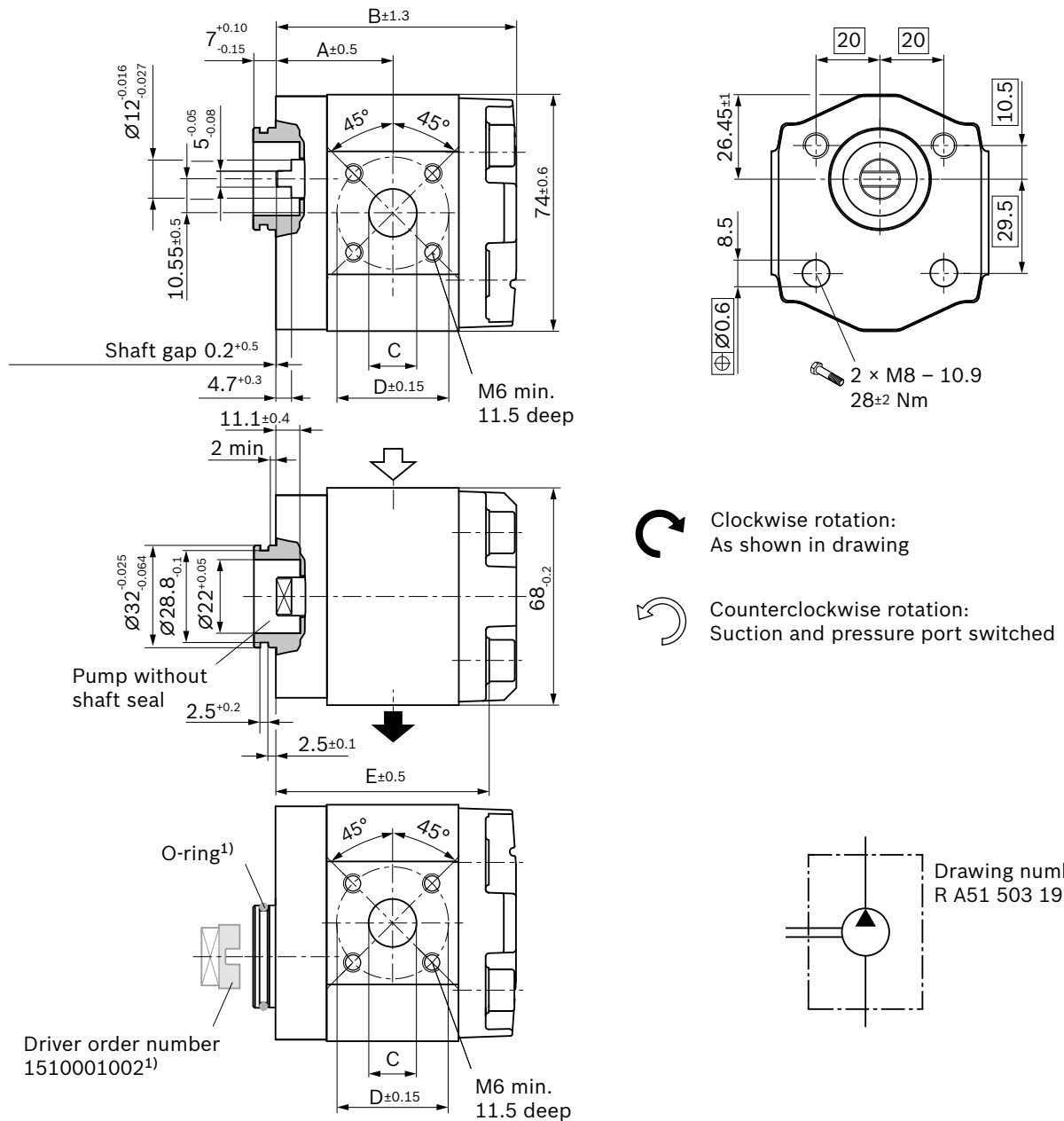
| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |      | Version |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|------|---------|
|      | Direction of rotation |            |                                        |                             | A          | B    | C    |         |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |      |         |
| 1.0  | 0510010314            | 0510010009 | 250                                    | 6000                        | 30.9       | 64.1 | 55.2 | 1       |
| 2.0  | 0510110326            | 0510010019 | 250                                    | 5000                        | 32.8       | 67.9 | 59.0 | 1       |
| 2.5  | 0510110327            | 0510010020 | 250                                    | 5000                        | 33.8       | 69.8 | 60.9 | 1       |
| 3.15 | 0510112322            | 0510112016 | 250                                    | 4000                        | 35.0       | 72.3 | 63.4 | 1       |
| 4.0  | 0510114327            | 0510114021 | 250                                    | 4000                        | 36.6       | 75.5 | 66.6 | 2       |
| 4.5  | 0510114328            | 0510114022 | 250                                    | 4000                        | 37.6       | 77.4 | 68.5 | 2       |
| 5.0  | 0510114329            | 0510114023 | 250                                    | 4000                        | 38.6       | 79.5 | 70.6 | 2       |
| 6.3  | 0510122318            | 0510122014 | 250                                    | 3500                        | 41.0       | 84.2 | 75.3 | 2       |
| 7.1  | 0510122319            | 0510122015 | 230                                    | 3500                        | 42.5       | 87.3 | 78.4 | 2       |

▼ **Tang drive with 2-hole mounting and pipe thread**  
**AZPB-32- ... NM01MB**



| Size | Order number          |                  | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |      | Version |
|------|-----------------------|------------------|----------------------------------------|-----------------------------|------------|------|------|---------|
|      | Direction of rotation | Counterclockwise |                                        |                             | A          | B    | C    |         |
| 1.0  | 0510010316            | 0510010011       | 250                                    | 6000                        | 30.9       | 64.1 | 55.2 | 3/8     |
| 2.0  | 0510110330            | 0510110021       | 250                                    | 5000                        | 32.8       | 67.9 | 59.0 | 3/8     |
| 2.5  | 0510110331            | 0510110024       | 250                                    | 5000                        | 33.8       | 69.8 | 60.9 | 3/8     |
| 3.15 | 0510112324            | 0510112017       | 250                                    | 4000                        | 35.0       | 72.3 | 63.4 | 3/8     |
| 4.0  | 0510114333            | 0510114028       | 250                                    | 4000                        | 36.6       | 75.5 | 66.6 | 1/2     |
| 4.5  | 0510114334            | 0510114024       | 250                                    | 4000                        | 37.6       | 77.4 | 68.5 | 1/2     |
| 5.0  | 0510114335            | 0510114029       | 250                                    | 4000                        | 38.6       | 79.5 | 70.6 | 1/2     |
| 6.3  | 0510122322            | 0510122018       | 250                                    | 3500                        | 41.0       | 84.2 | 75.3 | 1/2     |
| 7.1  | 0510122323            | 0510122019       | 230                                    | 3500                        | 42.5       | 87.3 | 78.4 | 1/2     |

▼ **Tang drive with 2-hole mounting and square flange**  
**AZPB-32- ... NY20MB**

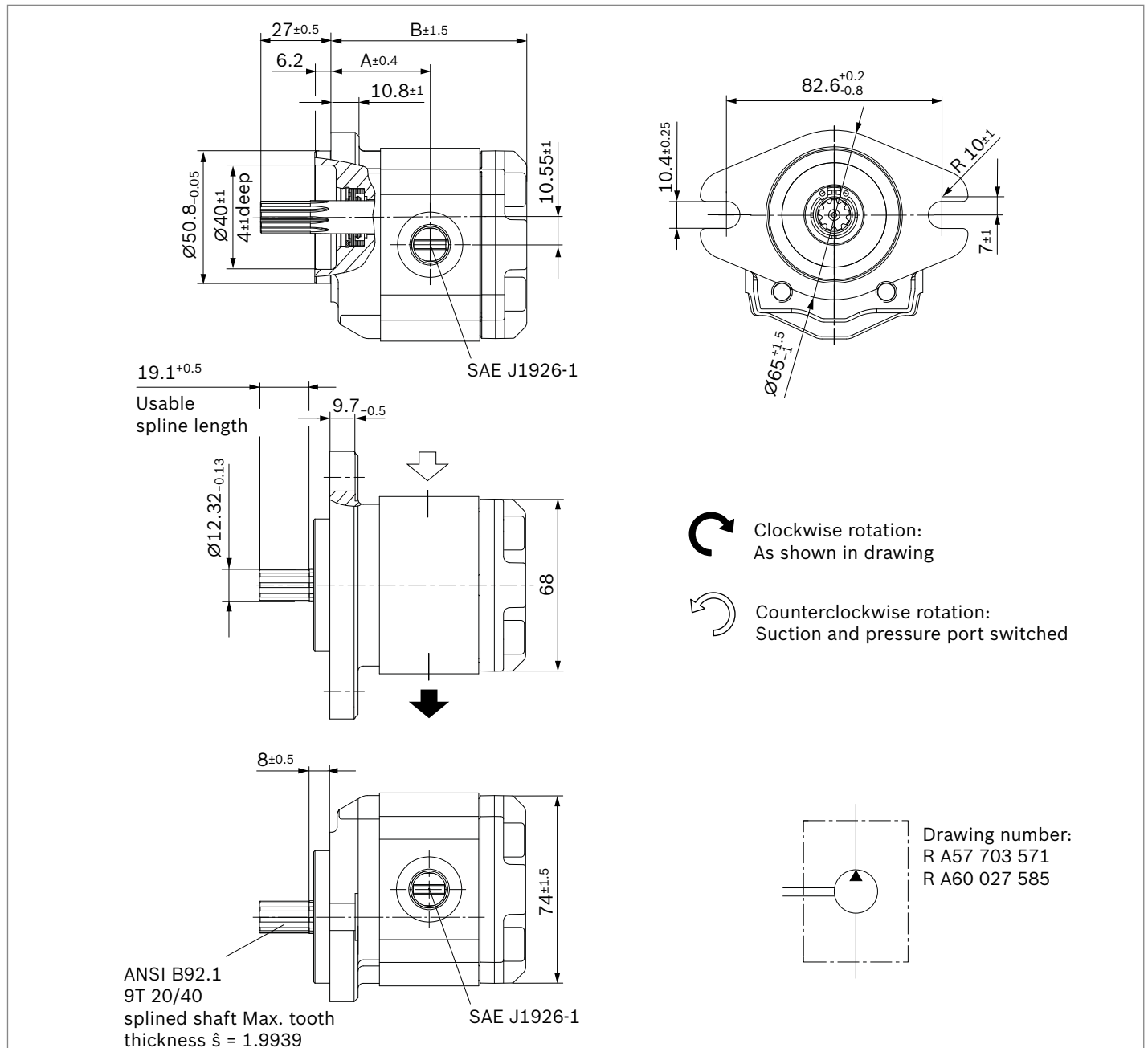


1) Not included in delivery

| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |    |    |      |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|----|----|------|
|      | Direction of rotation |            |                                        |                             | A          | B    | C  | D  | E    |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |    |    |      |
| 2.0  | 1519222469            | 1519222468 | 250                                    | 5000                        | 32.8       | 67.9 | 12 | 30 | 59.0 |
| 2.5  | 1519222471            | 1519222470 | 250                                    | 5000                        | 33.8       | 69.8 | 12 | 30 | 60.9 |
| 3.15 | 1519222473            | 1519222472 | 250                                    | 4000                        | 35.0       | 72.3 | 15 | 35 | 63.4 |
| 4.0  | 1519222475            | 1519222474 | 250                                    | 4000                        | 36.6       | 75.5 | 15 | 35 | 66.6 |
| 4.5  | 1519222477            | 1519222476 | 250                                    | 4000                        | 37.6       | 77.4 | 15 | 35 | 68.5 |
| 5.0  | 1519222479            | 1519222478 | 250                                    | 4000                        | 38.6       | 79.5 | 15 | 35 | 70.6 |
| 6.3  | 1519222481            | 1519222480 | 250                                    | 3500                        | 41.0       | 84.2 | 15 | 35 | 75.3 |
| 7.1  | 1519222483            | 1519222482 | 230                                    | 3500                        | 42.5       | 87.3 | 15 | 35 | 78.4 |

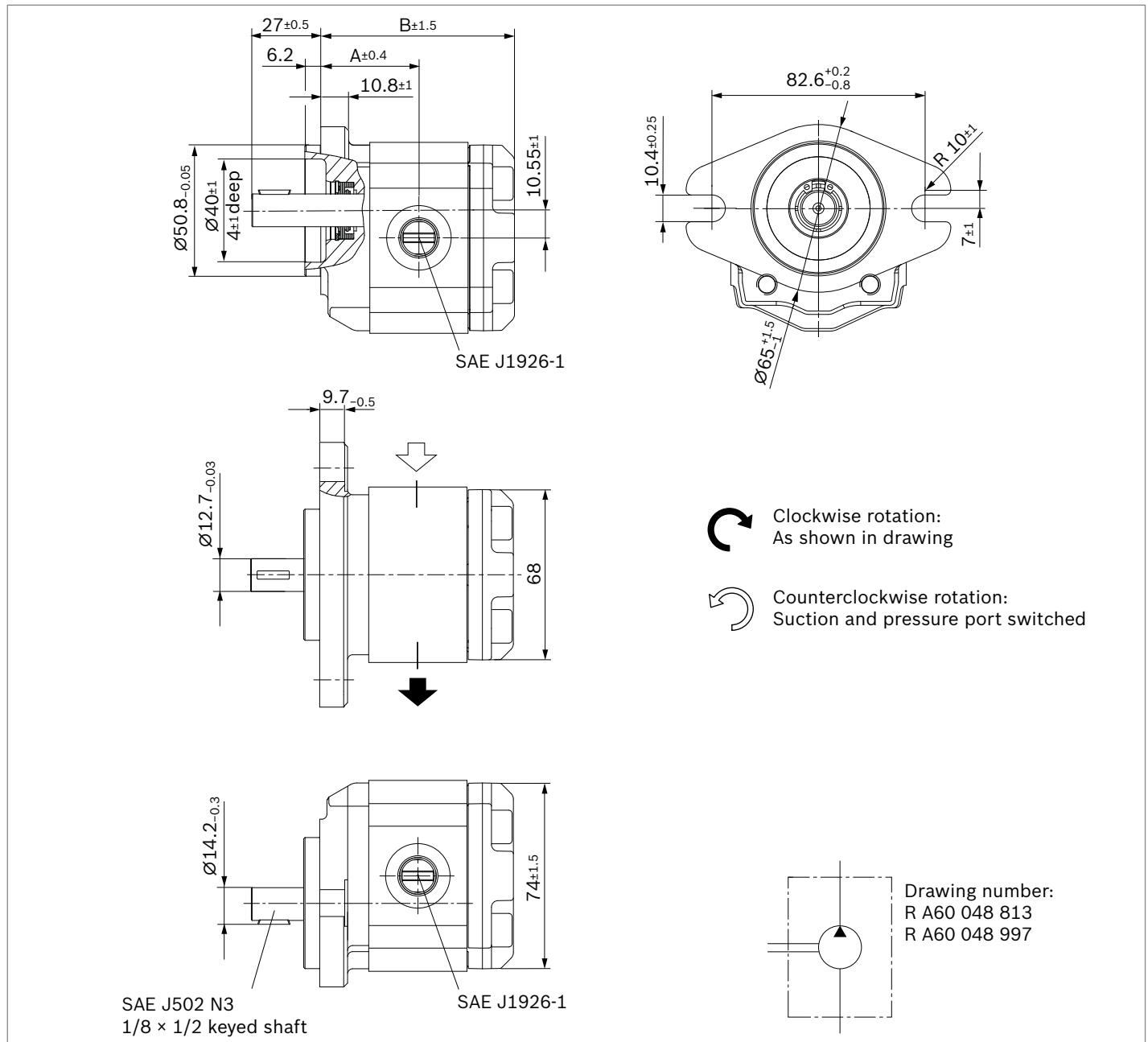
[illegible]

| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |      | Version |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|------|---------|
|      | Direction of rotation |            |                                        |                             | A          | B    | C    |         |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |      |         |
| 1.0  | 1519222444            | 1519222443 | 250                                    | 6000                        | 30.9       | 64.1 | 55.2 | 1       |
| 2.0  | 1519222446            | 1519222445 | 250                                    | 5000                        | 32.8       | 67.9 | 59.0 | 1       |
| 2.5  | 1519222448            | 1519222447 | 250                                    | 5000                        | 33.8       | 69.8 | 60.9 | 1       |
| 3.15 | 1519222450            | 1519222449 | 250                                    | 4000                        | 35.0       | 72.3 | 63.4 | 1       |
| 4.0  | 1519222452            | 1519222451 | 250                                    | 4000                        | 36.6       | 75.5 | 66.6 | 2       |
| 4.5  | 1519222454            | 1519222453 | 250                                    | 4000                        | 37.6       | 77.4 | 68.5 | 2       |
| 5.0  | 1519222456            | 1519222455 | 250                                    | 4000                        | 38.6       | 79.5 | 70.6 | 2       |
| 6.3  | 1519222458            | 1519222457 | 250                                    | 3500                        | 41.0       | 84.2 | 75.3 | 2       |
| 7.1  | 1519222460            | 1519222459 | 230                                    | 3500                        | 42.5       | 87.3 | 78.4 | 2       |

▼ **SAE J744 13-4 (A-A) splined shaft with SAE J744 50-2 2-hole flange**  
**AZPB-32- ... RR12KB**

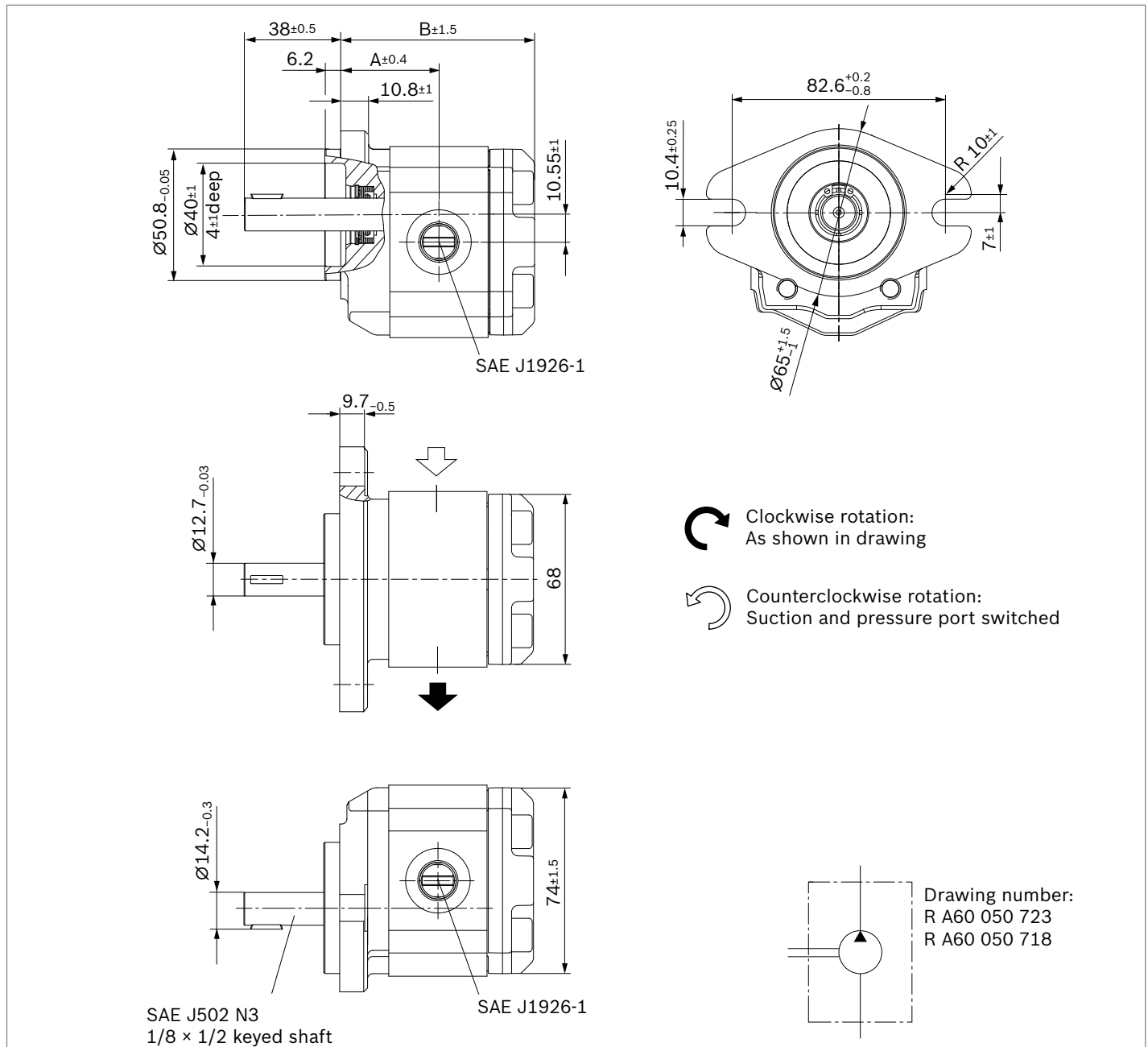
| Size | Order number                              |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |
|------|-------------------------------------------|------------|----------------------------------------|-----------------------------|------------|------|
|      | Direction of rotation<br>Counterclockwise | Clockwise  |                                        |                             | A          | B    |
| 1.0  | R979107392                                | R979107365 | 250                                    | 6000                        | 34.0       | 66.9 |
| 2.0  | R979107393                                | R979107366 | 250                                    | 5000                        | 35.8       | 70.7 |
| 2.5  | R979107394                                | R979107367 | 250                                    | 5000                        | 36.8       | 72.6 |
| 3.15 | R979107395                                | R979107368 | 250                                    | 4000                        | 38.0       | 75.0 |
| 4.0  | R979107396                                | R979107369 | 250                                    | 4000                        | 39.6       | 78.3 |
| 4.5  | R979107397                                | R979107370 | 250                                    | 4000                        | 40.6       | 80.2 |
| 5.0  | R979107398                                | R979107371 | 250                                    | 4000                        | 41.6       | 82.3 |
| 6.3  | R979107399                                | R979107372 | 250                                    | 3500                        | 44.0       | 87.0 |
| 7.1  | R979107400                                | R979107373 | 230                                    | 3500                        | 45.5       | 90.1 |

▼ **SAE J744 13-1 cylindrical shaft with SAE J744 50-2 2-hole flange**  
**AZPB-32- ... QR12KB**



| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|
|      | Direction of rotation |            |                                        |                             | A          | B    |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |
| 1.0  | R979107401            | R979107374 | 250                                    | 6000                        | 34.0       | 66.9 |
| 2.0  | R979107402            | R979107375 | 250                                    | 5000                        | 35.8       | 70.7 |
| 2.5  | R979107403            | R979107376 | 250                                    | 5000                        | 36.8       | 72.6 |
| 3.15 | R979107404            | R979107377 | 250                                    | 4000                        | 38.0       | 75.0 |
| 4.0  | R979107405            | R979107378 | 250                                    | 4000                        | 39.6       | 78.3 |
| 4.5  | R979107406            | R979107379 | 250                                    | 4000                        | 40.6       | 80.2 |
| 5.0  | R979107407            | R979107380 | 250                                    | 4000                        | 41.6       | 82.3 |
| 6.3  | R979107408            | R979107381 | 250                                    | 3500                        | 44.0       | 87.0 |
| 7.1  | R979107409            | R979107382 | 230                                    | 3500                        | 45.5       | 90.1 |

▼ **SAE J502 N3 cylindrical shaft long with SAE J744 50-2 2-hole flange**  
**AZPB-32- ... QR12KB-S0022**

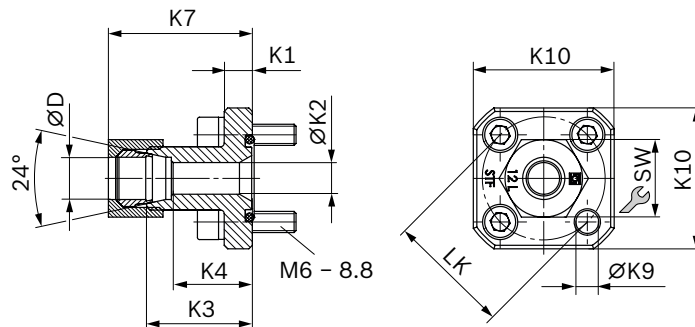


| Size | Order number          |            | Max. intermittent pressure $p_2$ [bar] | Max. rotational speed [rpm] | Dimensions |      |
|------|-----------------------|------------|----------------------------------------|-----------------------------|------------|------|
|      | Direction of rotation |            |                                        |                             | A          | B    |
|      | Counterclockwise      | Clockwise  |                                        |                             |            |      |
| 1.0  | R979107410            | R979107383 | 250                                    | 6000                        | 34.0       | 66.9 |
| 2.0  | R979107411            | R979107384 | 250                                    | 5000                        | 35.8       | 70.7 |
| 2.5  | R979107412            | R979107385 | 250                                    | 5000                        | 36.8       | 72.6 |
| 3.15 | R979107413            | R979107386 | 250                                    | 4000                        | 38.0       | 75.0 |
| 4.0  | R979107414            | R979107387 | 250                                    | 4000                        | 39.6       | 78.3 |
| 4.5  | R979107415            | R979107388 | 250                                    | 4000                        | 40.6       | 80.2 |
| 5.0  | R979107416            | R979107389 | 250                                    | 4000                        | 41.6       | 82.3 |
| 6.3  | R979107417            | R979107390 | 250                                    | 3500                        | 44.0       | 87.0 |
| 7.1  | R979107418            | R979107391 | 230                                    | 3500                        | 45.5       | 90.1 |

## Accessories

### Straight gear pump flange for Square Flange 20 (see chapter “Line connection”)

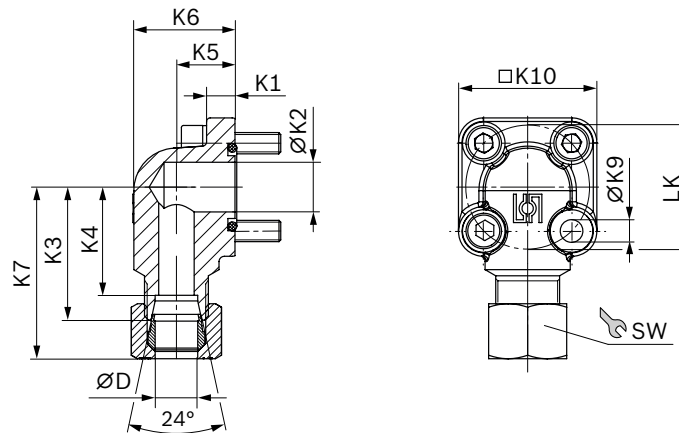
Complete fitting with O-ring, metric screw set, nuts and cutting ring.



| LK | D  | Series <sup>1)</sup> | Material number | p   | K1 | K2 | K3 | K4 | K7   | K9  | K10 | AF | Screws  | O-ring   | Weight |
|----|----|----------------------|-----------------|-----|----|----|----|----|------|-----|-----|----|---------|----------|--------|
| mm | mm |                      |                 | bar | mm | mm | mm | mm | mm   | mm  | mm  | mm | 4 ×     | NBR      | kg     |
| 35 | 10 | L                    | 1 515 702 064   | 315 | 8  | 7  | 30 | 23 | 38.0 | 6.5 | 40  | 19 | M6 × 22 | 20 × 2.5 | 0.13   |
| 35 | 12 | L                    | 1 515 702 065   | 315 | 8  | 9  | 30 | 23 | 38.5 | 6.5 | 40  | 22 | M6 × 22 | 20 × 2.5 | 0.14   |
| 35 | 15 | L                    | 1 515 702 066   | 250 | 8  | 11 | 30 | 23 | 39.0 | 6.5 | 40  | 27 | M6 × 22 | 20 × 2.5 | 0.15   |

### 90° gear pump flange for Square Flange 20 (see chapter “Line connection”)

Complete fitting with O-ring, metric screw set, nuts and cutting ring.



| LK | D  | Series <sup>1)</sup> | Material number | p   | K1 | K2 | K3   | K4   | K5   | K6   | K7 | K9  | K10 | AF | Screws  |         | O-ring   | Weight |
|----|----|----------------------|-----------------|-----|----|----|------|------|------|------|----|-----|-----|----|---------|---------|----------|--------|
| mm | mm |                      |                 | bar | mm | mm | mm   | mm   | mm   | mm   | mm | mm  | mm  | mm | 2 ×     | 2 ×     | NBR      | kg     |
| 35 | 10 | L                    | 1 515 702 070   | 315 | 8  | 14 | 37.5 | 30.5 | 16.5 | 28.5 | 45 | 6.4 | 39  | 19 | M6 × 22 | M6 × 35 | 20 × 2.5 | 0.18   |
| 35 | 12 | L                    | 1 515 702 071   | 315 | 8  | 14 | 37.5 | 30.5 | 16.5 | 28.5 | 46 | 6.4 | 39  | 22 | M6 × 22 | M6 × 35 | 20 × 2.5 | 0.19   |
| 35 | 15 | L                    | 1 515 702 072   | 250 | 8  | 14 | 37.5 | 30.5 | 16.5 | 28.5 | 46 | 6.4 | 39  | 27 | M6 × 22 | M6 × 35 | 20 × 2.5 | 0.20   |
| 35 | 16 | S                    | 1 515 702 002   | 315 | 8  | 15 | 38.0 | 29.5 | 20.0 | 33.0 | 49 | 6.4 | 39  | 30 | M6 × 22 | M6 × 40 | 20 × 2.5 | 0.25   |
| 35 | 18 | L                    | 1 545 702 006   | 250 | 8  | 15 | 37.5 | 30.0 | 20.0 | 33.0 | 47 | 6.4 | 39  | 32 | M6 × 22 | M6 × 40 | 20 × 2.5 | 0.22   |
| 35 | 20 | S                    | 1 515 702 017   | 315 | 8  | 15 | 45.0 | 34.5 | 25.0 | 38.0 | 57 | 6.4 | 39  | 36 | M6 × 22 | M6 × 45 | 20 × 2.5 | 0.30   |

#### Notice

Max. tightening torques can be found in the “General instruction manual for external gear units” (07012-B).

<sup>1)</sup> See DIN EN ISO 8434-1.



## Project planning notes

### Technical data

All specified technical data is based on manufacturing tolerances and apply with certain constraints.

Note that this makes certain deviations possible and that technical data may vary with certain constraints (e.g., viscosity).

Pumps by Bosch Rexroth come tested for function and performance.

The pumps should only be operated to tested data (see chapter "Technical data").

### Curves

When dimensioning the gear pump, observe the max. possible application data based on the curves in this document.

### Hydraulic fluid filtration

Since the majority of premature failures of gear pumps occur due to contaminated hydraulic fluid, filtration should maintain a cleanliness level of 20/18/15 as defined by ISO 4406.

This can reduce contamination to an acceptable degree in terms of particle size and concentration.

Bosch Rexroth generally recommends full-flow filtration.

Basic contamination of the hydraulic fluid used should not exceed level 20/18/15 as defined by ISO 4406. New fluids are often above this value. In this case, a filling device with a special filter should be used.

Bosch Rexroth is not liable for wear due to contamination.

For hydraulic systems or devices with function-related critical failure effects, such as steering and brake valves, the type of filtration selected must be adapted to the sensitivity of these devices.

### Further information

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

Further information and notes on project planning can be found in the "General instruction manual for external gear units" (07012-B1, Chapter 5.5).

### Notice

When used as an auxiliary steering pump, the vehicle manufacturer should make sure the steering system continues to operate safely per ECE R-79 even if the auxiliary steering pump fails.

## Order number overview

| Order number | Type               | Page |
|--------------|--------------------|------|
| 0510120326   | AZPB-32-2.0LHO20MB | 19   |
| 0510120327   | AZPB-32-2.5LHO20MB | 19   |
| 0510120328   | AZPB-32-3.1LHO20MB | 19   |
| 0510120329   | AZPB-32-4.0LHO20MB | 19   |
| 0510120330   | AZPB-32-4.5LHO20MB | 19   |
| 0510120331   | AZPB-32-5.0LHO20MB | 19   |
| 0510120332   | AZPB-32-6.3LHO20MB | 19   |
| 0510120333   | AZPB-32-7.1LHO20MB | 19   |
| 0510120028   | AZPB-32-2.0RHO20MB | 19   |
| 0510120029   | AZPB-32-2.5RHO20MB | 19   |
| 0510120030   | AZPB-32-3.1RHO20MB | 19   |
| 0510120031   | AZPB-32-4.0RHO20MB | 19   |
| 0510120032   | AZPB-32-4.5RHO20MB | 19   |
| 0510120033   | AZPB-32-5.0RHO20MB | 19   |
| 0510120034   | AZPB-32-6.3RHO20MB | 19   |
| 0510120035   | AZPB-32-7.1RHO20MB | 19   |
| 0510020303   | AZPB-32-1.0LHO01MB | 20   |
| 0510120318   | AZPB-32-2.0LHO01MB | 20   |
| 0510120319   | AZPB-32-2.5LHO01MB | 20   |
| 0510120320   | AZPB-32-3.1LHO01MB | 20   |
| 0510120321   | AZPB-32-4.0LHO01MB | 20   |
| 0510120322   | AZPB-32-4.5LHO01MB | 20   |
| 0510120323   | AZPB-32-5.0LHO01MB | 20   |
| 0510120324   | AZPB-32-6.3LHO01MB | 20   |
| 0510120325   | AZPB-32-7.1LHO01MB | 20   |
| 0510020003   | AZPB-32-1.0RHO01MB | 20   |
| 0510120020   | AZPB-32-2.0RHO01MB | 20   |
| 0510120021   | AZPB-32-2.5RHO01MB | 20   |
| 0510120022   | AZPB-32-3.1RHO01MB | 20   |
| 0510120023   | AZPB-32-4.0RHO01MB | 20   |
| 0510120024   | AZPB-32-4.5RHO01MB | 20   |
| 0510120025   | AZPB-32-5.0RHO01MB | 20   |
| 0510120026   | AZPB-32-6.3RHO01MB | 20   |
| 0510120027   | AZPB-32-7.1RHO01MB | 20   |
| 0510110332   | AZPB-32-2.0LCP20MB | 21   |
| 0510110333   | AZPB-32-2.5LCP20MB | 21   |
| 0510112325   | AZPB-32-3.1LCP20MB | 21   |
| 0510114336   | AZPB-32-4.0LCP20MB | 21   |
| 0510114337   | AZPB-32-4.5LCP20MB | 21   |
| 0510114338   | AZPB-32-5.0LCP20MB | 21   |
| 0510122324   | AZPB-32-6.3LCP20MB | 21   |
| 0510122325   | AZPB-32-7.1LCP20MB | 21   |
| 0510110025   | AZPB-32-2.0RCP20MB | 21   |
| 0510110026   | AZPB-32-2.5RCP20MB | 21   |
| 0510112019   | AZPB-32-3.1RCP20MB | 21   |
| 0510114030   | AZPB-32-4.0RCP20MB | 21   |
| 0510114031   | AZPB-32-4.5RCP20MB | 21   |

| Order number | Type                     | Page |
|--------------|--------------------------|------|
| 0510114032   | AZPB-32-5.0RCP20MB       | 21   |
| 0510122020   | AZPB-32-6.3RCP20MB       | 21   |
| 0510122021   | AZPB-32-7.1RCP20MB       | 21   |
| 0510010313   | AZPB-32-1.0LCP02MB       | 22   |
| 0510110324   | AZPB-32-2.0LCP02MB       | 22   |
| 0510110325   | AZPB-32-2.5LCP02MB       | 22   |
| 0510112321   | AZPB-32-3.1LCP02MB       | 22   |
| 0510114324   | AZPB-32-4.0LCP02MB       | 22   |
| 0510114325   | AZPB-32-4.5LCP02MB       | 22   |
| 0510114326   | AZPB-32-5.0LCP02MB       | 22   |
| 0510122316   | AZPB-32-6.3LCP02MB       | 22   |
| 0510122317   | AZPB-32-7.1LCP02MB       | 22   |
| 0510010008   | AZPB-32-1.0RCP02MB       | 22   |
| 0510110017   | AZPB-32-2.0RCP02MB       | 22   |
| 0510110018   | AZPB-32-2.5RCP02MB       | 22   |
| 0510112015   | AZPB-32-3.1RCP02MB       | 22   |
| 0510112014   | AZPB-32-3.1RCP02KB       | 22   |
| 0510114018   | AZPB-32-4.0RCP02MB       | 22   |
| 0510114019   | AZPB-32-4.5RCP02MB       | 22   |
| 0510114020   | AZPB-32-5.0RCP02MB       | 22   |
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| 0510122017   | AZPB-32-7.1RCP02MB-S0177 | 23   |
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| Order number | Type               | Page |
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| Order number | Type               | Page |
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| Order number | Type                     | Page |
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| R979107391   | AZPB-32-7.1RQR12KB-S0022 | 31   |

## AZ configurator

With our practical product selector, it will take you next to no time to find the right solution for your applications, no matter whether Standard Performance or another external gear unit.

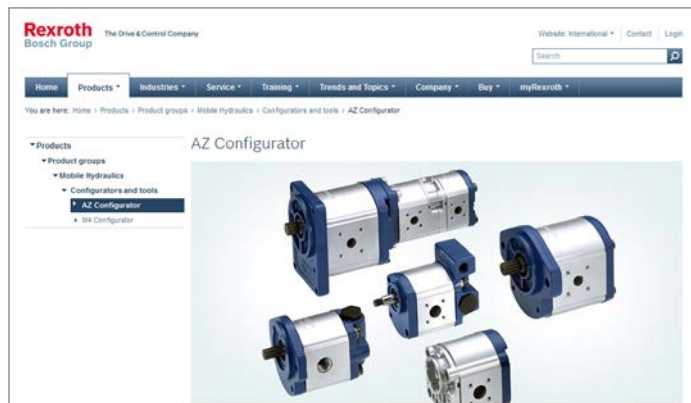
The selector guides you through a selection of features to all of the products available for order. By clicking on the order number, you can view and download the following product information: data sheet, dimension sheet, instruction manual, operating conditions and tightening torques.

You can order your selection directly via our online shop and at the same time benefit from an additional discount of 2%. And if you need something really quickly, simply use our fast delivery and preferred programs (GoTo). Your order will then be sent within 10 business days.

You also have the possibility of easily and conveniently configuring your custom external gear unit with our AZ configurator. All the necessary data you need for the project planning of external gear units can be obtained through the menu navigation.

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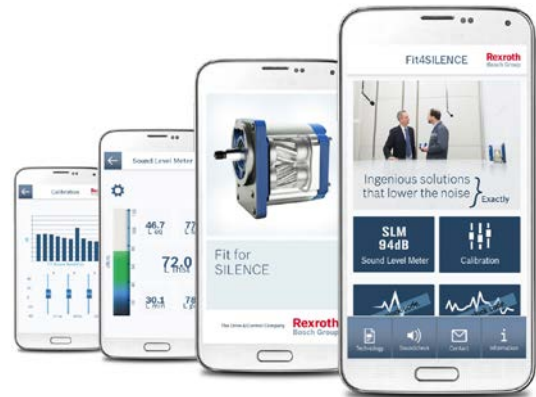


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