

# External gear pump High Performance AZPG



Note: Product photo deviates from delivery condition

- ▶ Platform G
- ▶ Fixed displacement
- ▶ Size 22 ... 100
- ▶ Continuous pressure up to 250 bar
- ▶ Intermittent pressure up to 280 bar

## Features

- ▶ Consistently high quality due to high-volume series production
- ▶ Long service life
- ▶ Slide bearings for high loading
- ▶ Drive shafts conforming to ISO or SAE and customer-specific solutions
- ▶ Line connections: Connection flanges or screw-in threads
- ▶ Combinations of several pumps possible

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## 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-dependent gap sealing and high-precision manufacturing technology.

Rexroth external gear pumps are available in four frame sizes: 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. Additional versions with different flanges, shafts, valve attachments and multiple pump combinations are also available.

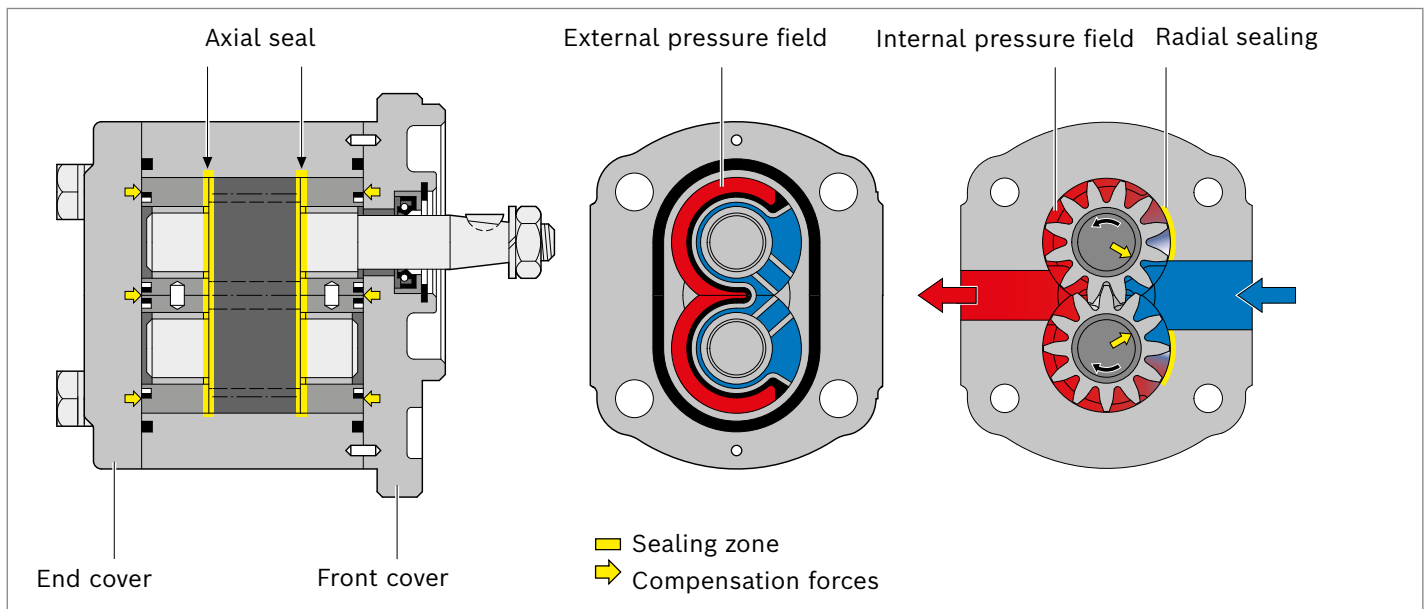
### Design

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

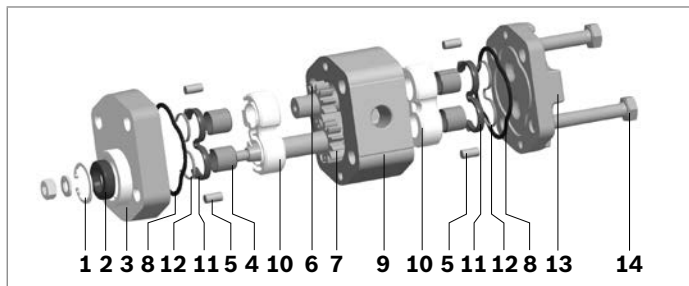
The drive shaft protrudes from the front cover where it is usually sealed by the shaft seal. The bearing forces are absorbed by slide bearings. These bearings were designed for high pressures and have excellent emergency running properties, especially at low rotational speeds.

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 bushings are pressurized with working pressure and pressed as seals against the gear wheels. The pressurized compression areas are limited by special seals. The seal in 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

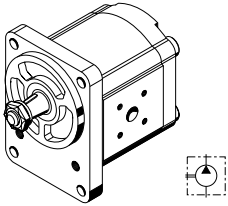
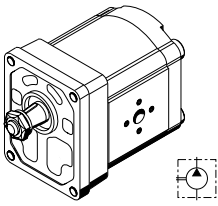
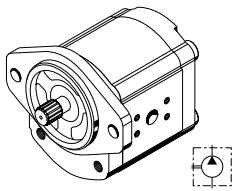
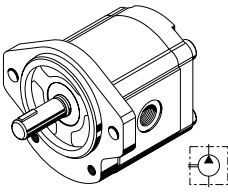
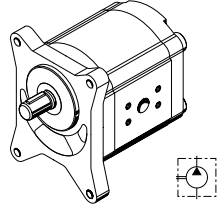
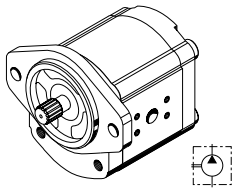
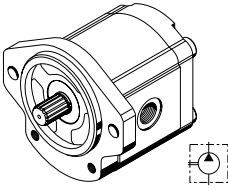
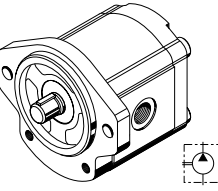
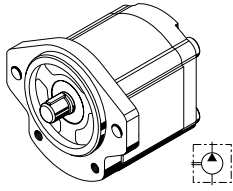
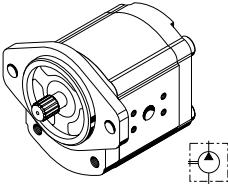
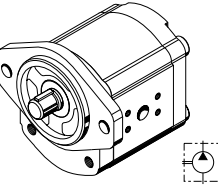
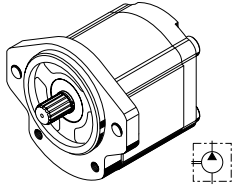
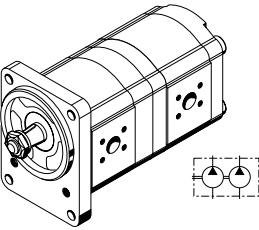
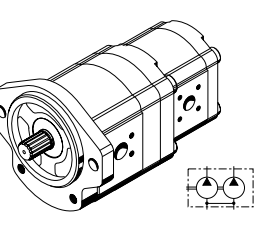
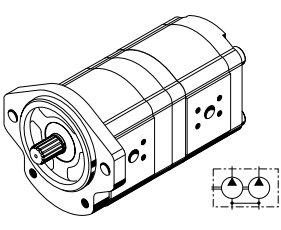


### ▼ Layout AZPG (schematic representation)



- |                  |                       |
|------------------|-----------------------|
| 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 End cover          |
| 7 Drive shaft    | 14 Torx screws        |

## AZPG preferred types product overview

Version	Page	Version	Page	Version	Page
	22		23		24 25 26
	27 28 29		30 31 32		33 34 35
	36 37 38		39 40 41		42
	43 44 45		46 47 48		49
	50 51		52 54 55		53

4 **AZPG** | External gear pump High Performance  
Single pump type code

**Single pump type code<sup>1)</sup>**

01	02	03	04	05	06	07	08	09	10	11	12	13	14	
<b>AZP</b>	<b>G</b>	-		<b>2</b>	-							-		

**External gear unit**

01	External gear pump	<b>AZP</b>
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**Series**

02	High Performance, Platform G	<b>G</b>
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**Series**

03	Reinforced bearings	<b>1</b>
	Standard bearings	<b>2</b>
	Standard bearings, housing in GJS-400	<b>3</b>

**Version**

04	Corrosion-resistant, pinned	<b>2</b>
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**Size (NG)**

05	For geometric displacement $V_g$ [cm <sup>3</sup> ], see "Table of values"	<b>022</b>	<b>025</b>	<b>028</b>	<b>032</b>	<b>036</b>	<b>040</b>	<b>045</b>	<b>050</b>	<b>056</b>	<b>063</b>	<b>070</b>	<b>080</b>	<b>100</b>
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**Direction of rotation**

06	Viewed on drive shaft	clockwise	<b>R</b>
		counter-clockwise	<b>L</b>

**Drive shaft**






Suitable front cover

07	Tapered shaft	1 : 5	B	<b>C</b>
		1 : 8	O	<b>H</b>
	Splined shaft	SAE J744 22-4 13T	C	<b>D</b>
		SAE J744 25-4 15T	C	<b>E</b>
	Parallel keyed shaft	SAE J744 22-1	C	<b>Q</b>
		ISO $\varnothing$ 25 mm	X	<b>A</b>

**Front cover**

08	Rectangular flange $\varnothing$ 105 mm	<b>B</b>
	Rectangular flange $\varnothing$ 50.78 mm	<b>O</b>
	2-hole flange $\varnothing$ 101.6 mm SAE J744 101-2 B	<b>C</b>

**Line connection**

09	SAE rectangular flange, metric thread		<b>07</b>
	SAE rectangular flange, UNC thread		<b>40</b>
	Square flange		<b>20</b>
	Square flange		<b>30</b>
	SAE thread (UN-2B), BOSS O-ring		<b>12</b>

**Sealing material**

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

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

**End cover**

11	With axial pressure and suction port			<b>A</b>
	Without valve (standard)			<b>B</b>
	With pressure relief valve	Pressure discharge	Internal	<b>D</b>
	With flow control valve	Residual flow	External	<b>E</b>
			Internal	<b>S</b>
With pressure relief valve and flow control valve			<b>V</b>	

**Valve setting pressure relief valve** (parameter only required for end cover with pressure relief valve and/or flow control valve)

12	Without pressure relief valve			<b>XXX</b>
	Cracking pressure in bar, 3-digit, e.g. 180 bar			<b>180</b>

**Valve setting flow control valve** (parameter only required for end cover with pressure relief valve and/or flow control valve)

13	Without flow control valve			<b>XX</b>
	Flow in l/min, 2-digit, e.g. 9 l/min			<b>09</b>

**Special version**

14	Special version			<b>SXXXX</b>
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## Multiple pump type code<sup>1)</sup>

01	02	03	04	05	06	07	08	09	10	11	12
<b>AZP</b>	<b>G</b>	-			-						

### External gear unit

01	External gear pump	<b>AZP</b>
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### Series<sup>2)</sup>

02	High-Performance	1.0 to 7.1 cm <sup>3</sup> /rev	Data sheet 10088	<b>B</b>
		4.0 to 28 cm <sup>3</sup> /rev	Data sheet 10089	<b>F</b>
		20.0 to 36 cm <sup>3</sup> /rev	Data sheet 10091	<b>N</b>
		22.5 to 100 cm <sup>3</sup> /rev	Data sheet 10093	<b>G</b>
	SILENCE	4.0 to 28 cm <sup>3</sup> /rev	Data sheet 10095	<b>S</b>
		20.0 to 36 cm <sup>3</sup> /rev	Data sheet 10092	<b>T</b>
		22.5 to 63 cm <sup>3</sup> /rev	Data sheet 10098	<b>U</b>
	SILENCE PLUS	12.0 to 28 cm <sup>3</sup> /rev	Data sheet 10094	<b>J</b>

### Series (according to data sheet of pump stage 1)

03	Standard bearings	<b>1</b>
	Reinforced bearings	<b>2</b>

### Version (according to data sheet of pump stage 1)

04	Phosphated, pinned	<b>1</b>
	Chromated, pinned	<b>2</b>

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

05	In accordance with data sheet for the individual series	
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### Direction of rotation

06	Viewed on drive shaft	clockwise	<b>R</b>
		counter-clockwise	<b>L</b>

### Drive shaft (relates to pump stage 1)

07	In accordance with data sheet for pump stage 1	
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### Front cover (relates to pump stage 1)

08	In accordance with data sheet for pump stage 1	
----	--	--

### 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>
	FKM (fluoroelastomer)	<b>P</b>
	NBR (nitrile rubber), shaft seal made of FKM (fluoroelastomer)	<b>K</b>

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

11	In accordance with data sheet for last pump stage	
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### Special version

12	Special version	<b>SXXXX</b>
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1) – Some type code combinations are not possible.  
– Please select the desired pump with the help of the selection tables (preferred types) or after consultation with Bosch Rexroth.  
– Further special options are available on request

2) A letter is to be selected for each pump stage,

e.g. 3-way pump AZPJ + AZPJ + AZPB: JJB

3) A numerical value is to be selected for each pump stage,  
e.g. 3-way pump 028/016/2.0

4) A numerical value is to be selected for each pump stage,  
e.g. 3-way pump 202020

**Example for 4-way pump:**

AZPG... 032... + AZPG... 022... + AZPJ...016... +  
 AZPJ...012...

01	02	03	04	05		06	07	08	09	10	11	
AZP	GGJJ	-	2	2	-	032/022/016/012	R	C	B	20202020	K	B

## Technical data

### ▼ Table of values

Size			22	25	28	32	36	40	45		
Series						2x					
Geometric displacement, per revolution	$V_g$	cm <sup>3</sup>	22.5	25	28	32	36	40	45		
Pressure at suction port S <sup>1)</sup>	absolute	$p_e$	bar		0.7 ... 3						
Maximum continuous pressure		$p_1$	bar	250	250	250	250	250	250		
Maximum intermittent pressure <sup>2)</sup>		$p_2$	bar	280	280	280	280	280	280		
Maximum pressure peak		$p_3$	bar	300	300	300	300	300	300		
Minimum rotational speed at	$v = 12 \text{ mm}^2/\text{s}$	$p < 100 \text{ bar}$	$n_{\min}$	rpm	500	500	500	500	500	500	
		$p = 100 \dots 180 \text{ bar}$	$n_{\min}$	rpm	1200	1200	1000	1000	1000	800	800
		$p = 180 \text{ bar} \dots p_2$	$n_{\min}$	rpm	1400	1400	1400	1400	1200	1200	1000
	$v = 25 \text{ mm}^2/\text{s}$	at $p_2$	$n_{\min}$	rpm	600	600	500	500	500	500	
Maximum rotational speed		at $p_2$	$n_{\max}$	rpm	3000	3000	3000	2800	2800	2800	2600

Size			50	56	63	70	80	100		
Series										
Geometric displacement, per revolution	$V_g$	cm <sup>3</sup>	50	56	63	70	80	100		
Pressure at suction port S <sup>1)</sup>	abs.	$p_e$	bar		0.7 ... 3					
Max. continuous pressure		$p_1$	bar	220	195	170	120	90	80	
Max. intermittent pressure <sup>2)</sup>		$p_2$	bar	250	225	200	150	120	100	
Max. pressure peak		$p_3$	bar	280	250	230	180	150	120	
Minimum rotational speed at	$v = 12 \text{ mm}^2/\text{s}$	$p < 100 \text{ bar}$	$n_{\min}$	rpm	500	500	500	500	500	500
		$p = 100 \dots 180 \text{ bar}$	$n_{\min}$	rpm	800	800	800	800	800	800
		$p = 180 \text{ bar} \dots p_2$	$n_{\min}$	rpm	1000	1000	1000	1000	1000	1000
	$v = 25 \text{ mm}^2/\text{s}$	at $p_2$	$n_{\min}$	rpm	500	500	500	500	600	800
Maximum rotational speed		at $p_2$	$n_{\max}$	rpm	2600	2300	2300	2200	2000	1700

### General technical data

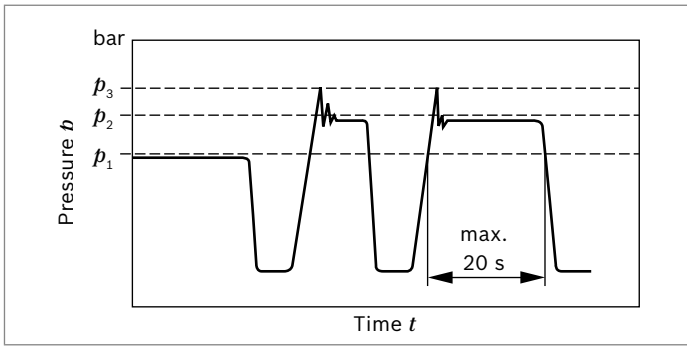
Weight	$m$	kg	See chapter "Dimensions"
Installation position	No restrictions		
Type of mounting	Flange or through-bolting with spigot		
Line connections	See chapter "Dimensions"		
Direction of rotation viewed on drive shaft	Clockwise or counterclockwise; only operate the pump in the direction indicated		
Drive shaft loading	Axial and radial forces upon consultation only		
Ambient temperature range	$t$	°C	-30 to +80 with NBR seals (NBR = nitrile rubber) -20 to +110 with FKM seals (FKM = fluoroelastomer)

1) In the case of tandem pumps, the suction-side pressure difference between the individual pump stages must not exceed 0.5 bar.

2) Limited service life for line connections with thread and  $p_2 > 210 \text{ bar}$



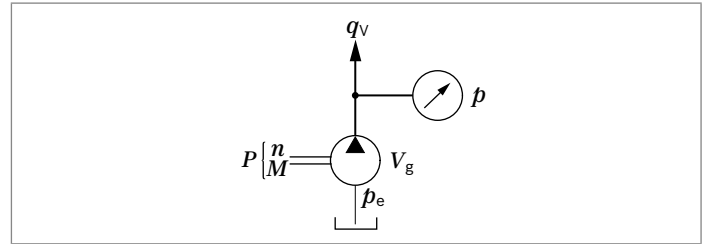
▼ **Pressure definition**



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

Determining the operating 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
  - $\eta_{hm}$  Hydraulic-mechanical efficiency
  - $\eta_t$  Total efficiency ( $\eta_t = \eta_v \times \eta_{hm}$ )

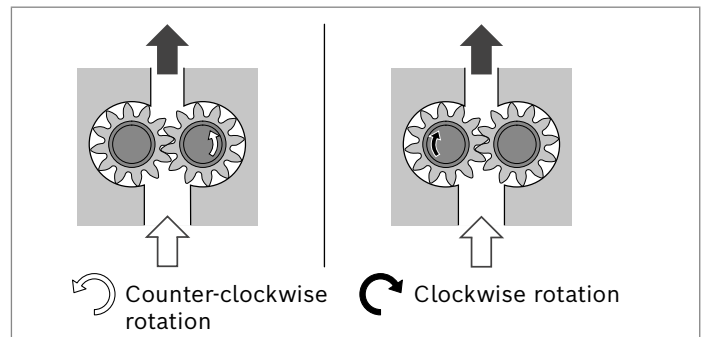


**Notice**

- The chapters "Characteristic curves" and "Diagrams" contain diagrams for a rough calculation.
- Please observe the safety requirements for the overall system.
- Please contact us regarding applications with frequent load cycles.

▼ **Direction of rotation viewed on drive shaft**

The dimensional drawings in the chapter "Dimensions" show pumps for clockwise rotation. The position of the drive shaft and/or the position of suction and pressure port changes for counter-clockwise rotation.



## Hydraulic fluid

The external gear unit is designed for operation with HLP mineral oil according to DIN 51524 1–3. For higher loading, Bosch Rexroth recommends HLP according to DIN 51524 Part 2 as a 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 project planning:

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

### Selection of hydraulic fluid

Bosch Rexroth evaluates hydraulic fluids on the basis of the Fluid Rating according to the technical data sheet 90235.

Hydraulic fluids with positive evaluation in the Fluid Rating are provided in the following technical data sheet:

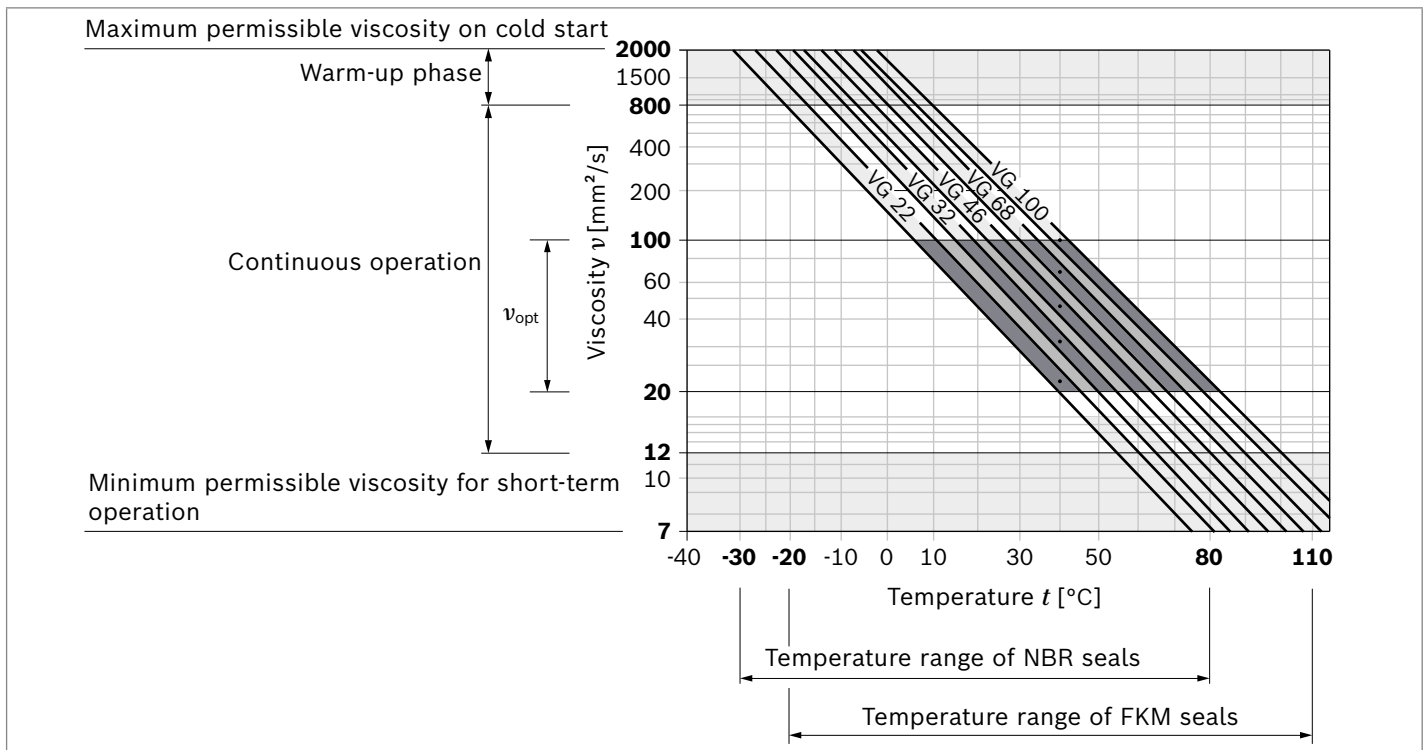
- ▶ 90245: Bosch Rexroth Fluid Rating List for Rexroth hydraulic components (pumps and motors)

The hydraulic fluid should be selected so that the operating viscosity in the operating temperature range is within the optimum 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)	$t = -30 \text{ °C} \dots +80 \text{ °C}$
With FKM seals (FKM = fluoroelastomer)	$t = -20 \text{ °C} \dots +110 \text{ °C}$

#### ▼ Selection diagram



#### Notice

- ▶ Please observe the information on the filtration of hydraulic fluid (see chapter "Project planning notes").

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

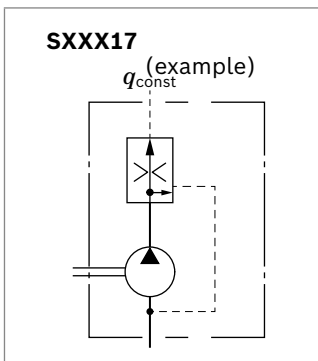
## Gear pumps with integrated valves

In order to reduce piping complexity, a flow control valve or pressure relief valve can be integrated in the cover of the gear pump. Such solutions are used, for instance, for the hydraulic oil supply of power steering systems. The pump delivers a constant flow irrespective of the rotational speed. The residual flow is either returned internally to the suction port or distributed externally to other consumers.



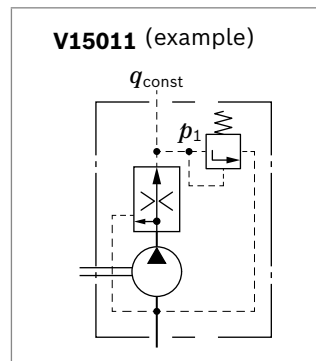
▼ **3-way flow control valve, residual flow return in suction line**

$q_{const} = 2$  to 30 l/min



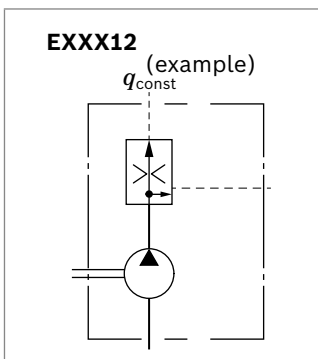
▼ **3-way flow control valve with pressure relief valve, residual flow return in suction line**

$q_{const} = 2$  to 30 l/min;  $p_1 = 100$  to 180 bar



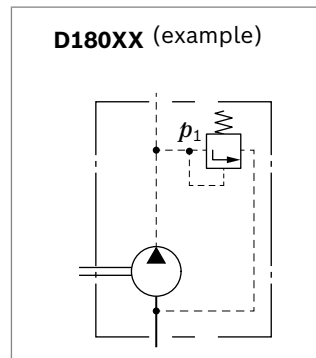
▼ **3-way flow control valve, external residual flow return, loadable**

$q_{const} = 2$  to 30 l/min



▼ **Pressure relief valve, pressure discharge into suction line**

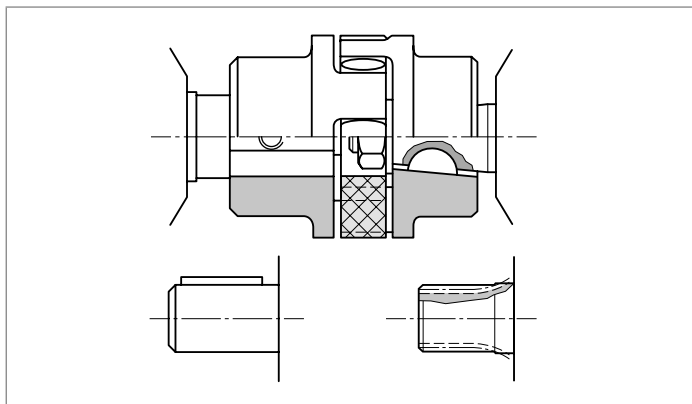
$p_1 = 5$  to 250 bar



## Drive

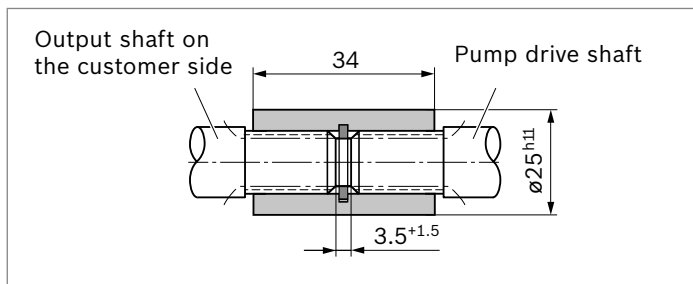
### 1. Elastic couplings

- ▶ The coupling may 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 coupling manufacturer's assembly instructions for shaft misalignment tolerances.



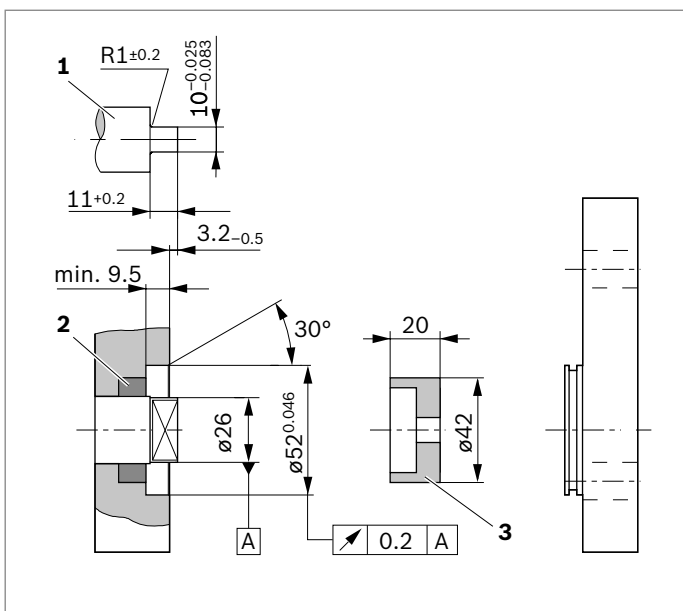
### 2. Coupling sleeve

- ▶ To be used for splined shaft profile according to DIN and SAE
- ▶ Attention: Make sure no radial or axial forces act on the pump drive shaft or coupling sleeve. The coupling sleeve should freely move in the axial direction.
- ▶ The distance between the pump drive shaft and the output shaft on the customer side should be  $3.5^{+1.5}$  mm
- ▶ Reserve installation space for the retaining ring.
- ▶ Oil-bath or oil-mist lubrication required



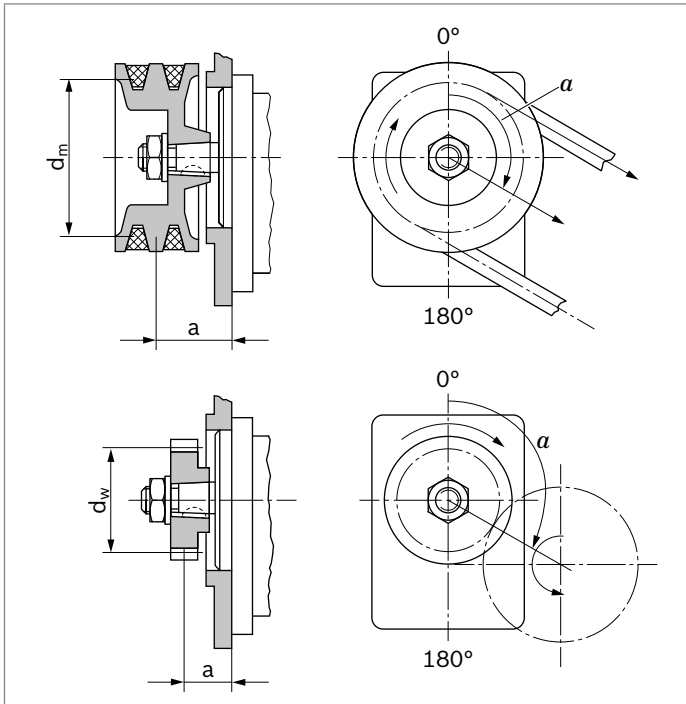
### 3. Tang drive coupling

- ▶ For attaching the pump directly to an electric motor or combustion engine, gearbox, etc.
- ▶ Pump drive shaft with special tang drive coupling and driver (3)
- ▶ No shaft seal
- ▶ Drive-side installation and sealing according to the following recommendations and dimensions
- ▶ Drive shaft on the customer side (1)
  - Case-hardened steel DIN EN 10084, e.g. 20 MnCrS 5 case-hardened 1.0 deep; HRA 83±2
  - Seal ring contact surface ground without rifling  $R_{\max} \leq 4 \mu\text{m}$
- ▶ Radial shaft seal ring on the customer side (2)
  - Provide with rubber cover (see DIN 3760, type AS, or double-lipped ring)
  - Provide installation edges with 15° slant or install shaft seal with protection sleeve



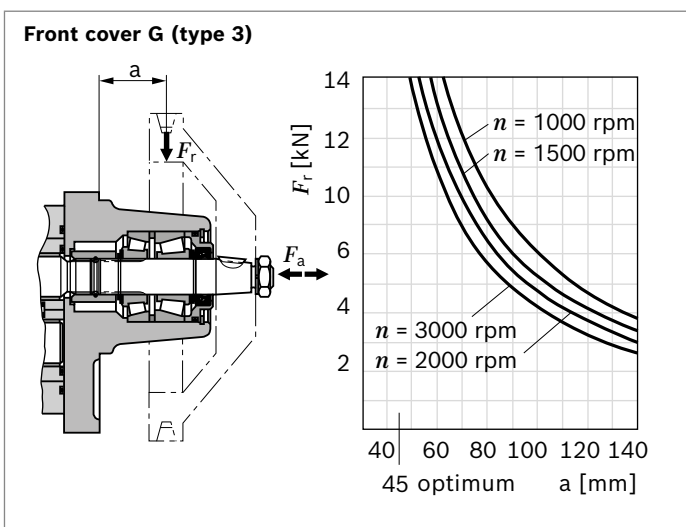
**4. V-belt and straight gear wheel or helical gear drives without outrigger bearing**

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



**5. Outrigger bearing**

Pumps with outrigger bearing are offered to eliminate possible problems when the pumps are driven by V-belts or gear wheels. The diagrams show the radial and axial load capacity in relation to a bearing service life of  $L_H = 1000$  h.



## Max. transmissible drive torques

### Splined shafts

Drive shaft		$M_{\max}$ Nm	Nominal size	$p_{2 \max}$ bar
Code	Designation			
D	SAE J744 22-4 13T	300	22...45	280
			50	250
			56	225
			63	200
			70	150
			50	120
			100	100
E	SAE J744 25-4 15T	450	22...45	280
			50	250
			56	225
			63	200
			70	150
			80	120
			100	100

### Parallel keyed shafts

Drive shaft		$M_{\max}$ Nm	Nominal size	$p_{2 \max}$ bar
Code	Designation			
Q	SAE J744 22-1	180	22...36	280
			40	250
			45	225
			50	200
			56	180
			63	160
			70	140
A	ISO $\varnothing$ 25 mm	160	80	120
			100	100
			40	280
			50	250
			63	200
			70	150
			80	120
			100	100

### Tapered shafts

Drive shaft		$M_{\max}$ Nm	Nominal size	$p_{2 \max}$ bar
Code	Type			
C	1 : 5	290	22...45	280
			50	250
			56	225
			63	200
			70	150
			80	120
			100	100
H	1 : 8	240	22...45	280
			50	250
			56	225
			63	200
			70	150
			80	120
			100	100

## Multiple gear pumps

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

The characteristics of the single pumps 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.

### Addition of drive torques

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

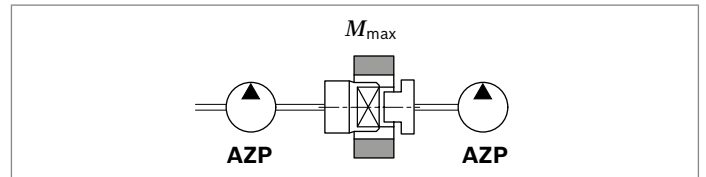
$$\frac{\Delta p_1 \times V_{g1} + \Delta p_2 \times V_{g2} + \Delta p_3 \times V_{g3}}{18 \times \pi} \leq M_{\max} \text{ 1)}$$

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

This may result in pressure limitations in each pump stage.

### Standard through drive (tang drive coupling)

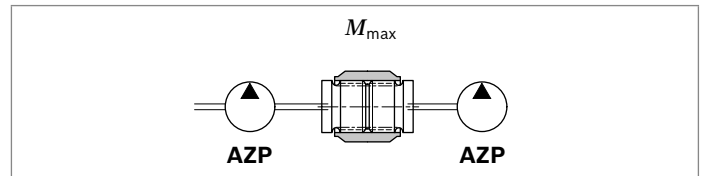
For Platform G pumps, the driver for the next pump stage can support loads up to  $M_{\max} = 130$  Nm. This may result in pressure limitations for subsequent pump stages. Subsequent pumps of a smaller series determine the max. transmissible torque.



Downstream pump		$M_{\max}$ [Nm]
Platform G	AZPG	130
	AZPU	130
Platform N	AZPN	95
	AZPT	95
Platform F	AZPF	65
	AZPS	65
Platform B	AZPB	25

### Reinforced through drive

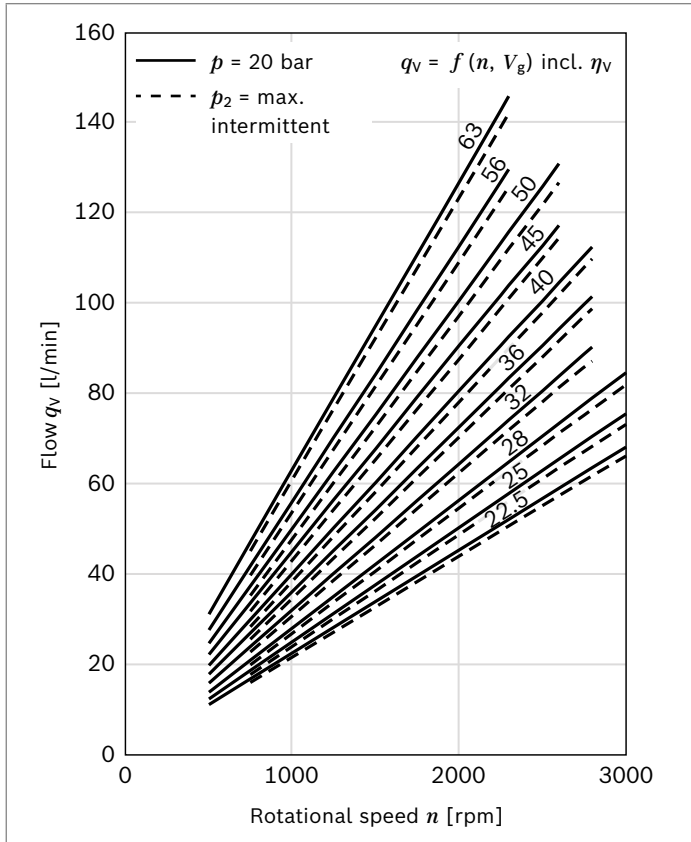
Reinforced through drives (for up to  $M_{\max} = 320$  Nm) are available for applications with higher torques/torsional vibrations. Design available on request.



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

## Diagrams/characteristic curves

### Flow characteristic curves

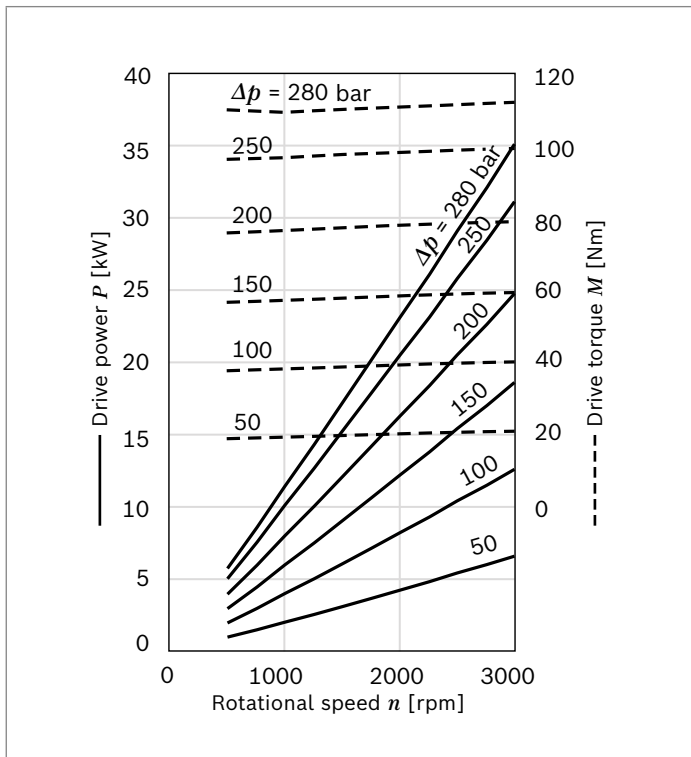


### Notice

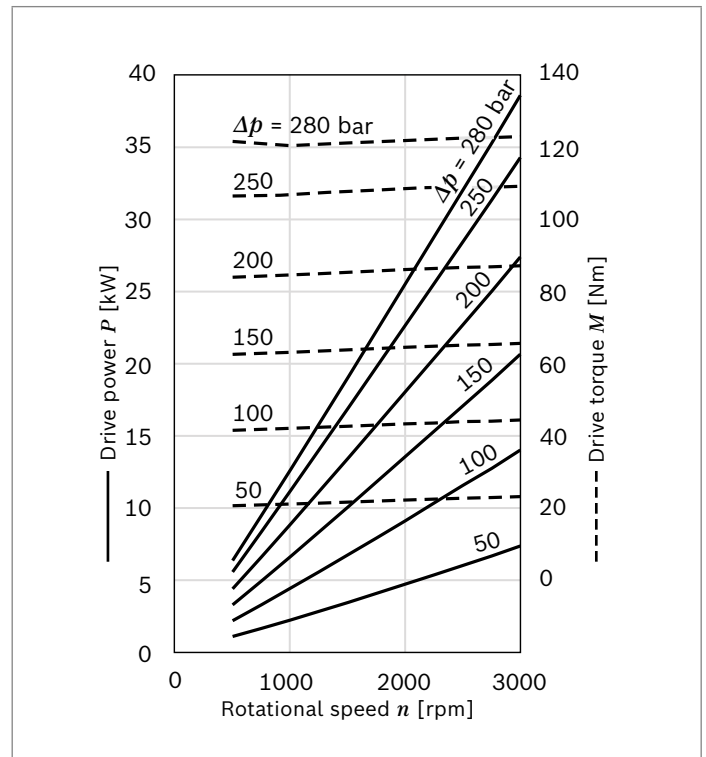
- Characteristic curves measured at  $\nu = 32 \text{ mm}^2/\text{s}$  and  $t = 50 \text{ }^\circ\text{C}$

### Performance charts

#### ▼ Size 22

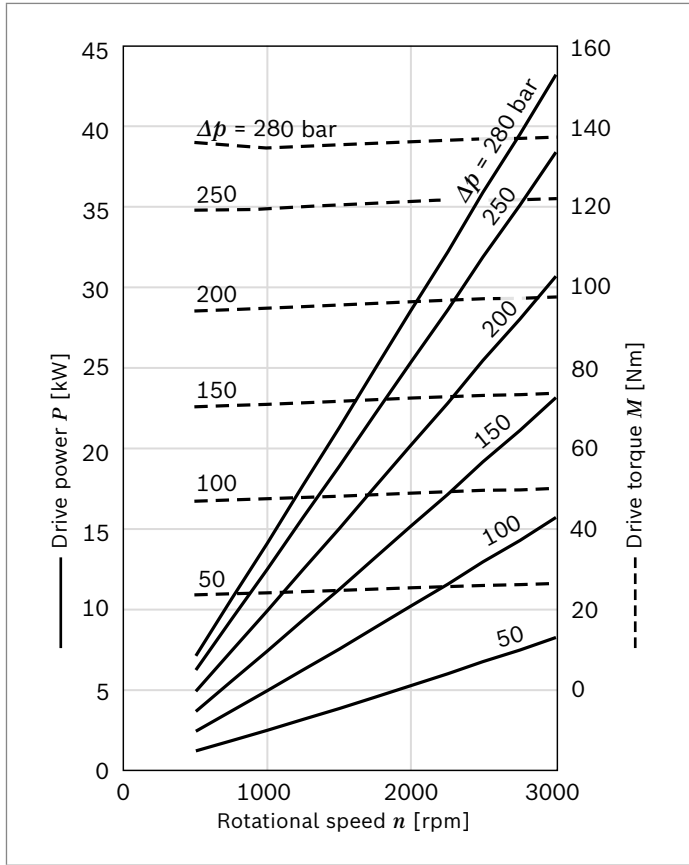


#### ▼ Size 25

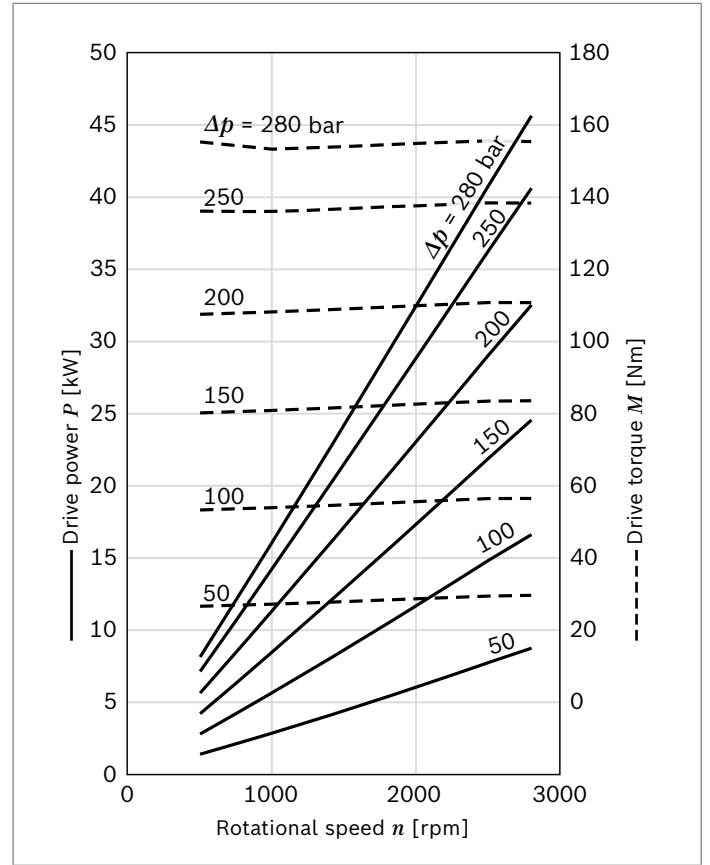




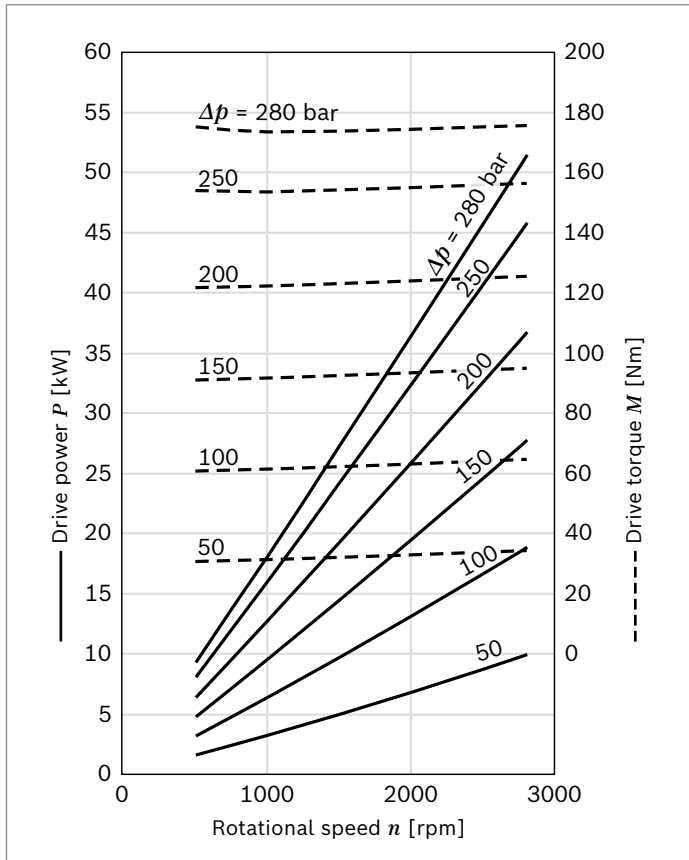
▼ **Size 28**



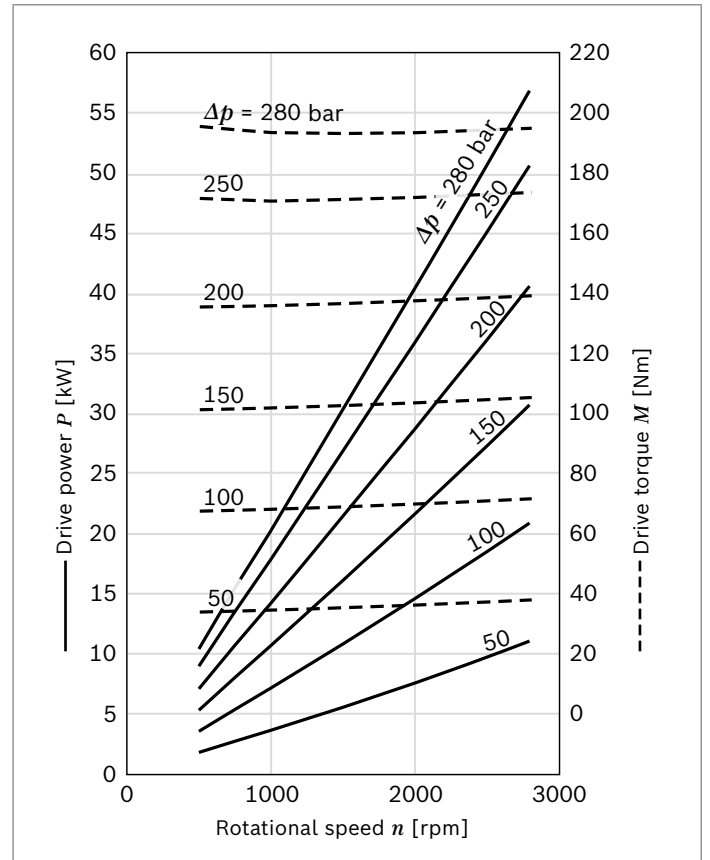
▼ **Size 32**



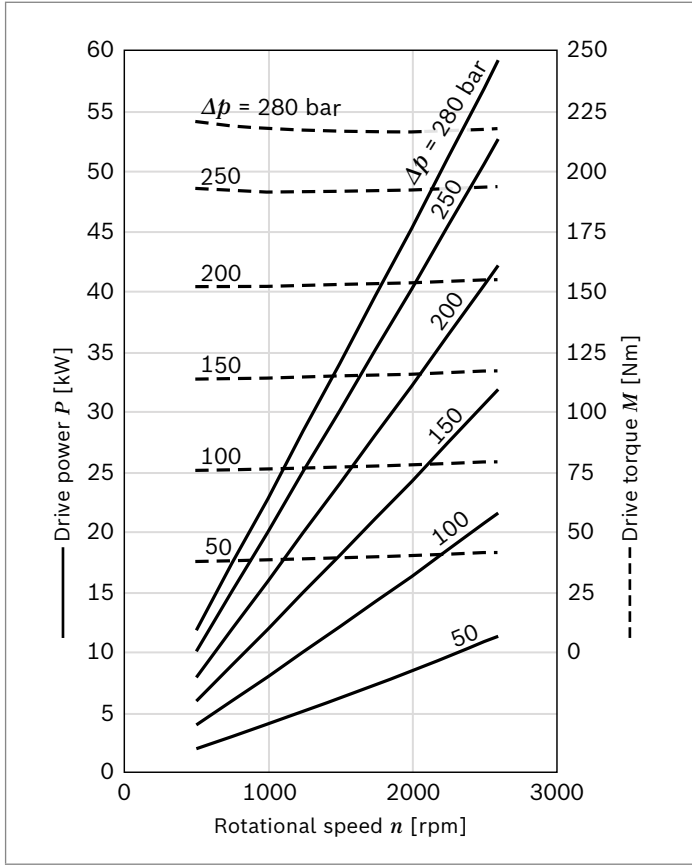
▼ **Size 36**



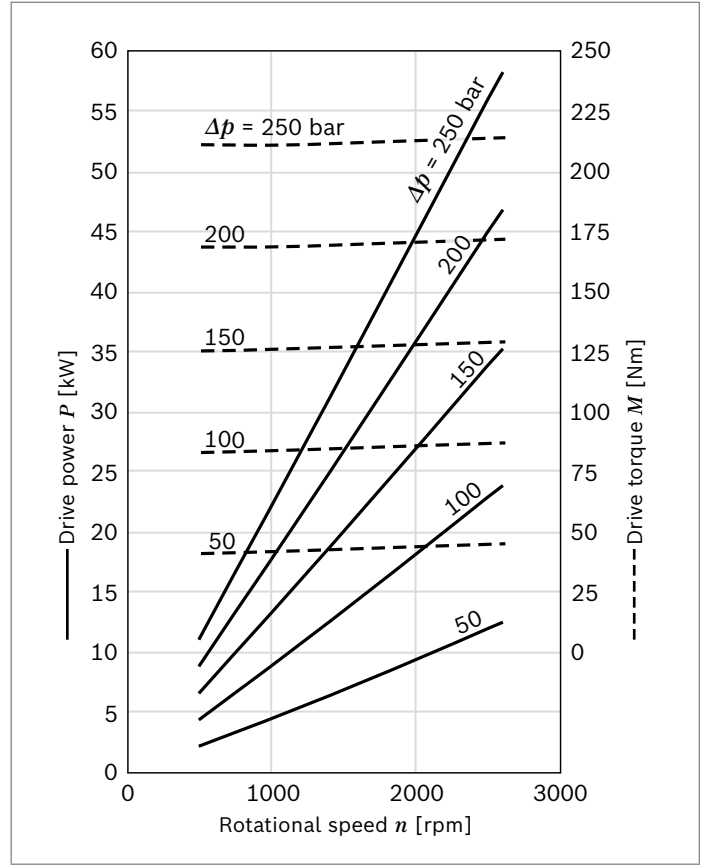
▼ **Size 40**



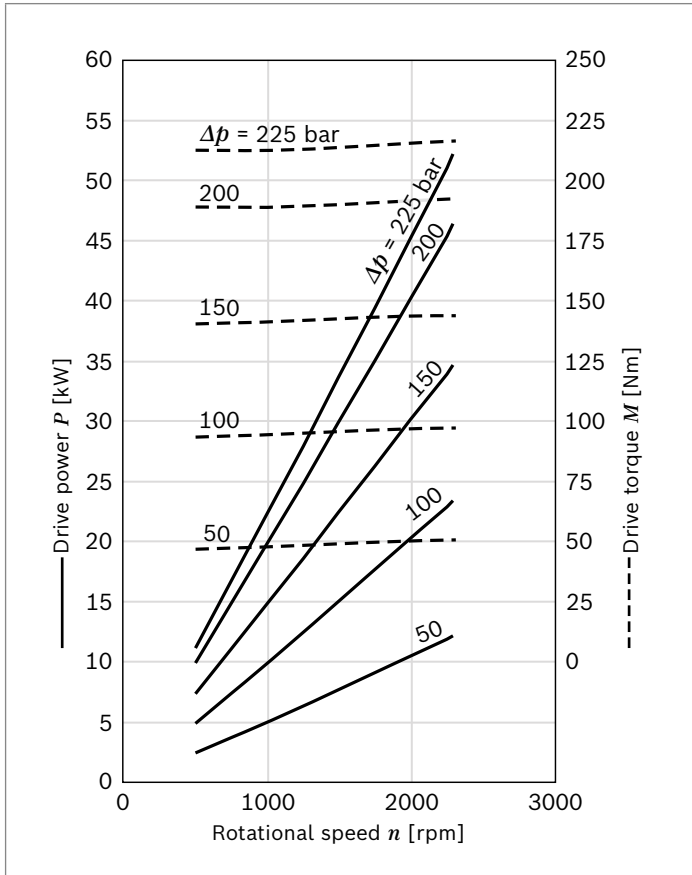
▼ **Size 45**



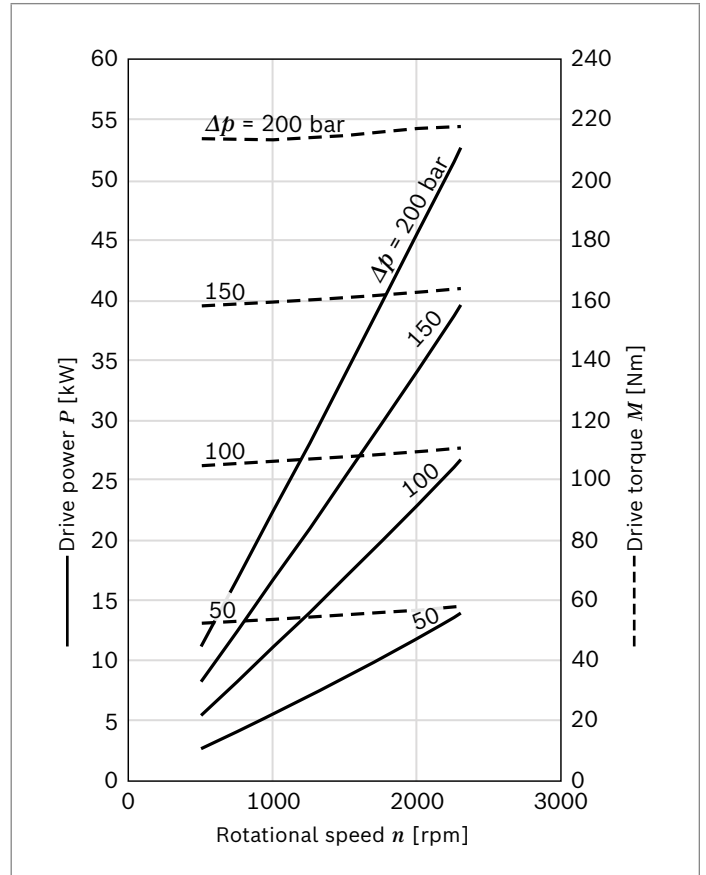
▼ **Size 50**



▼ **Size 56**



▼ **Size 63**



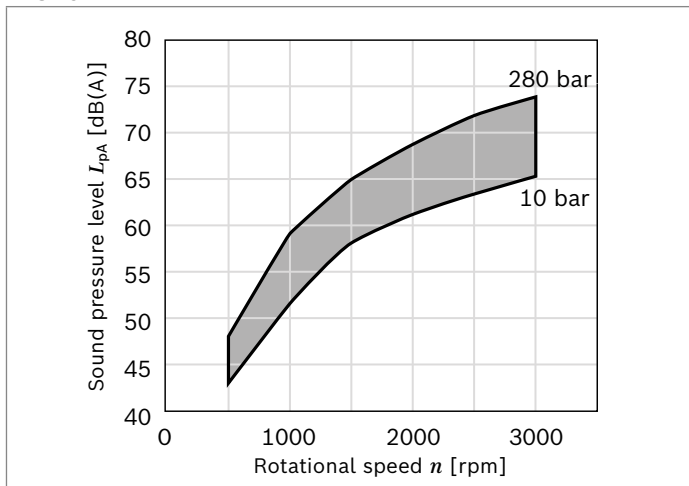
**Noise charts**

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.

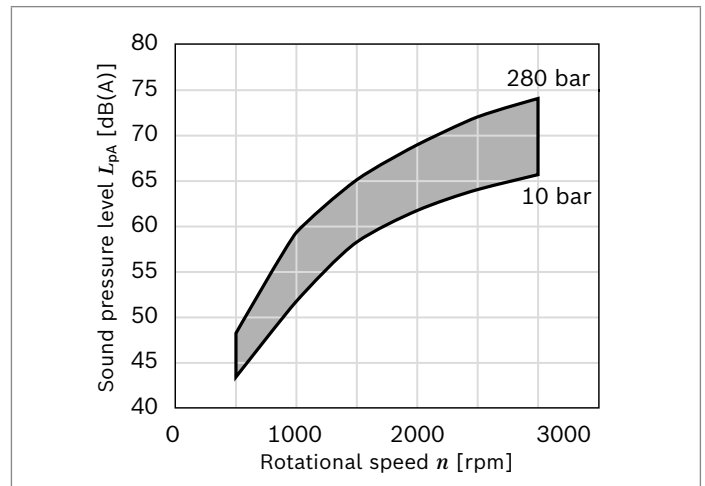
**Notice**

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

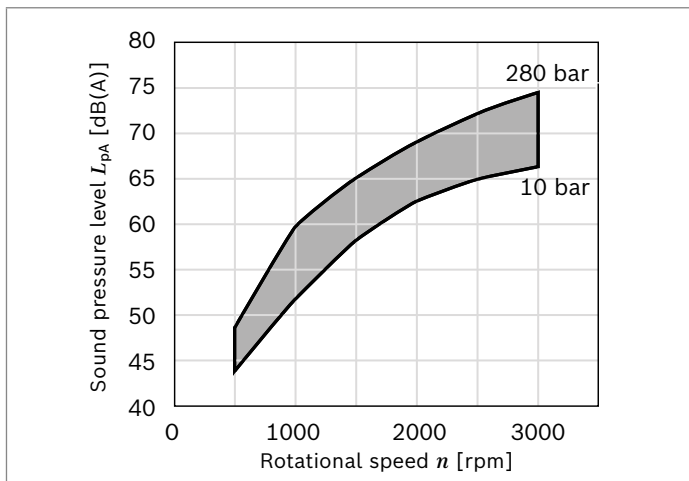
▼ **Size 22**



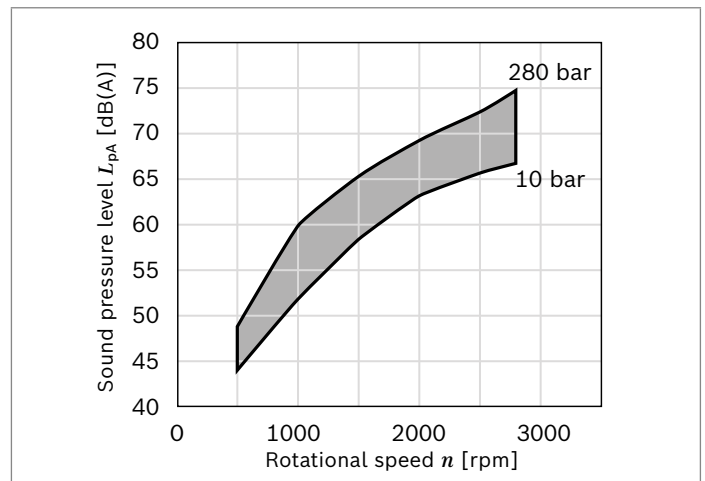
▼ **Size 25**



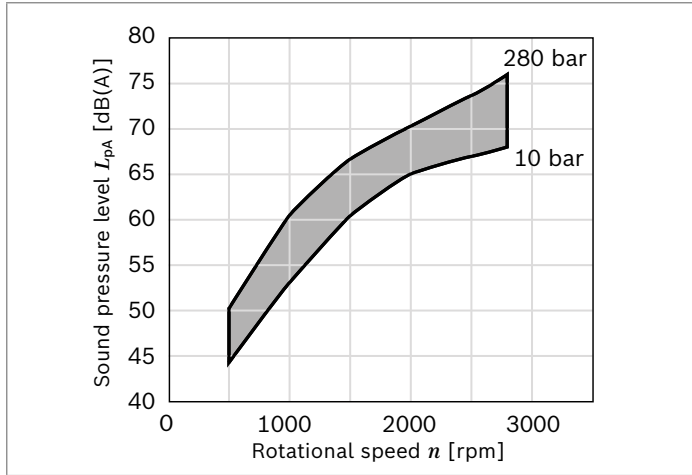
▼ **Size 28**



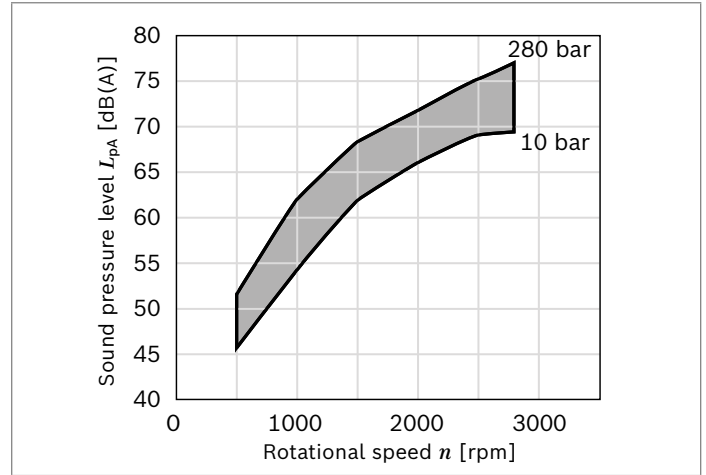
▼ **Size 32**



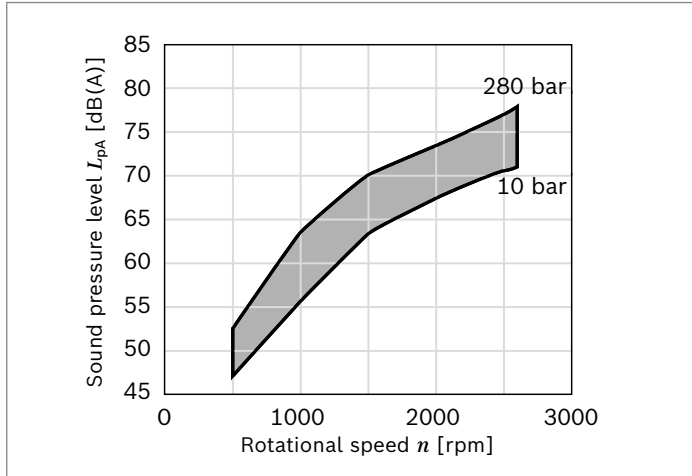
▼ **Size 36**



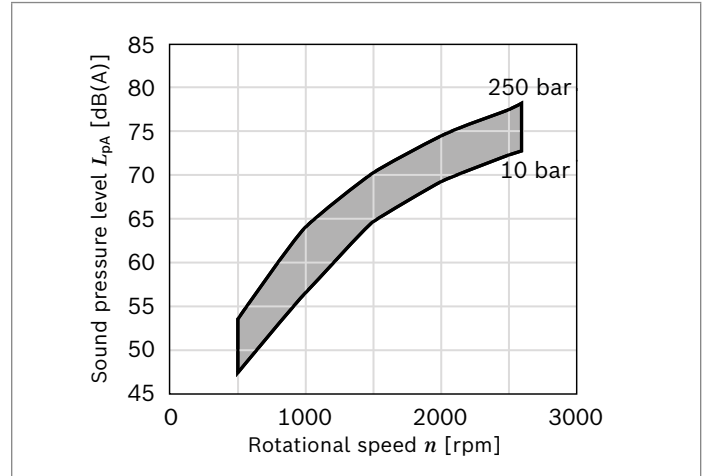
▼ **Size 40**



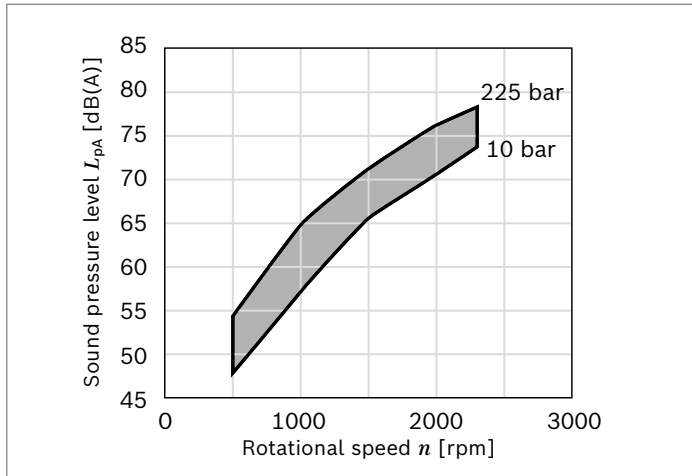
▼ **Size 45**



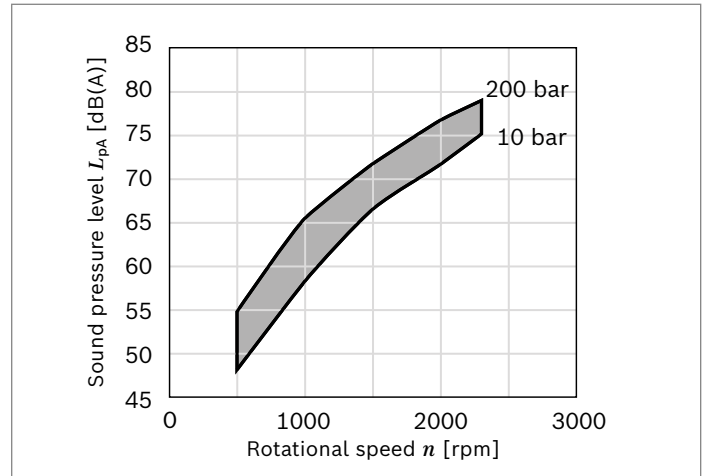
▼ **Size 50**



▼ **Size 56**

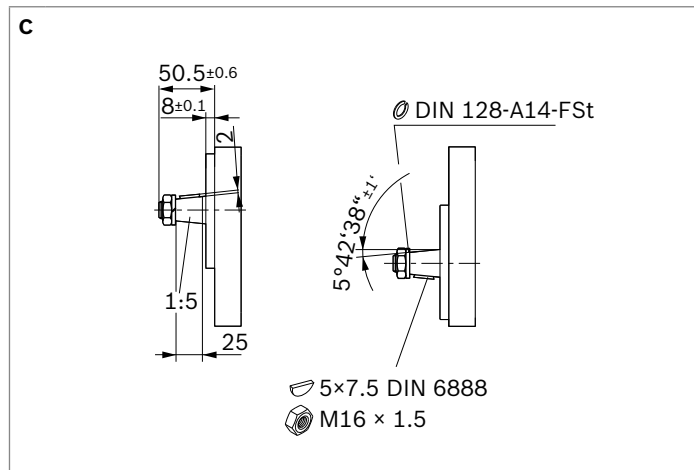


▼ **Size 63**

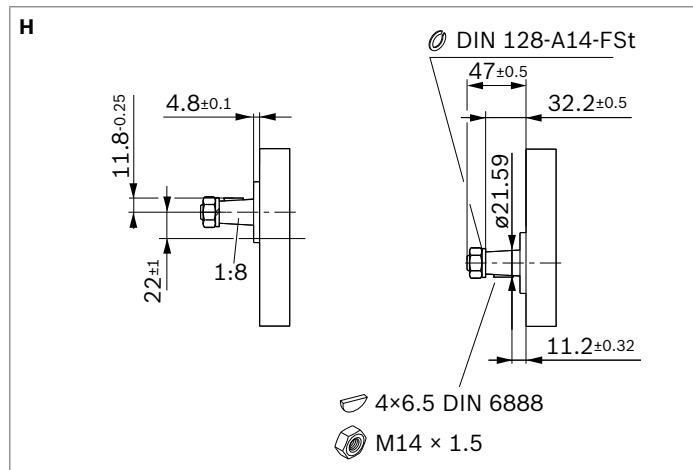


### Dimensions – drive shaft

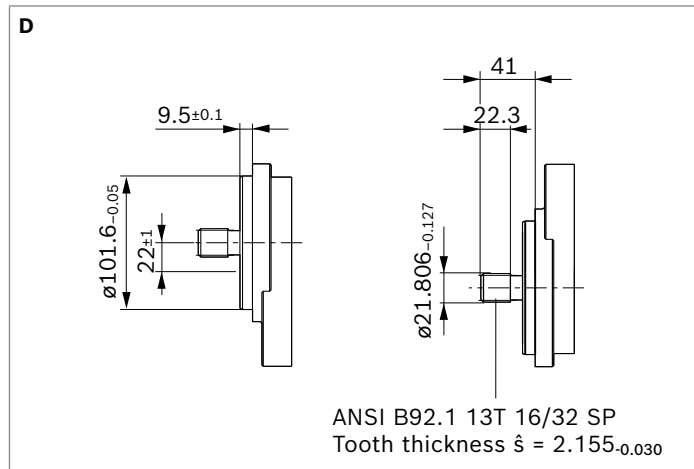
▼ 1:5 tapered shaft



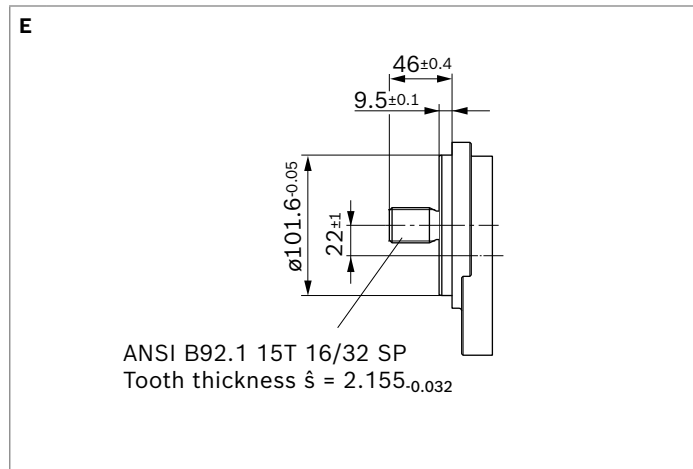
▼ 1:8 tapered shaft



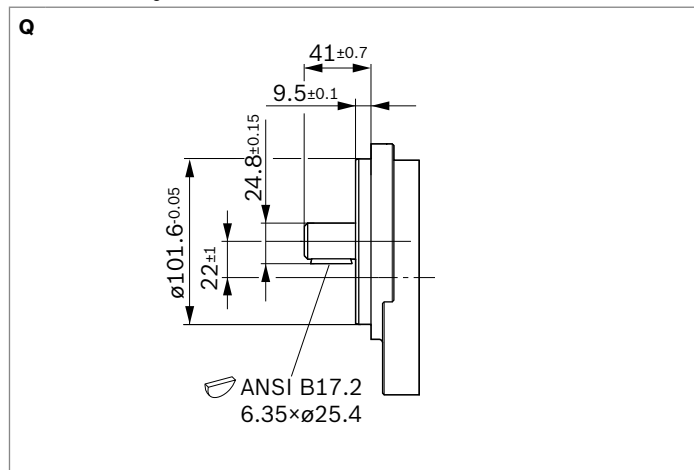
▼ Splined shaft SAE J744 22-4 13T



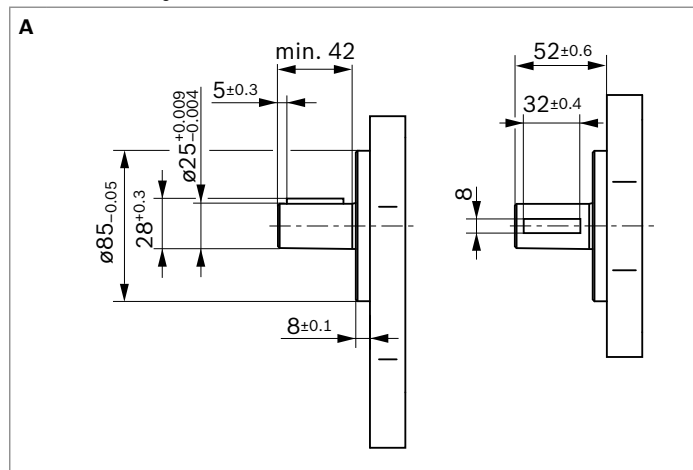
▼ Splined shaft SAE J744 25-4 15T



▼ Parallel keyed shaft SAE J744 22-1

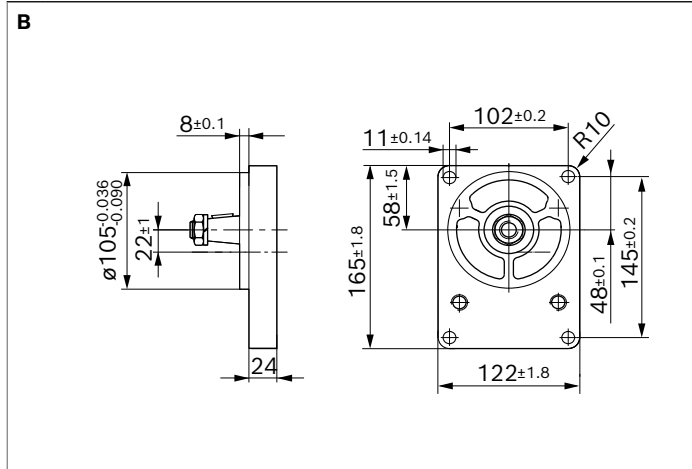


▼ Parallel keyed shaft ISO 25 mm

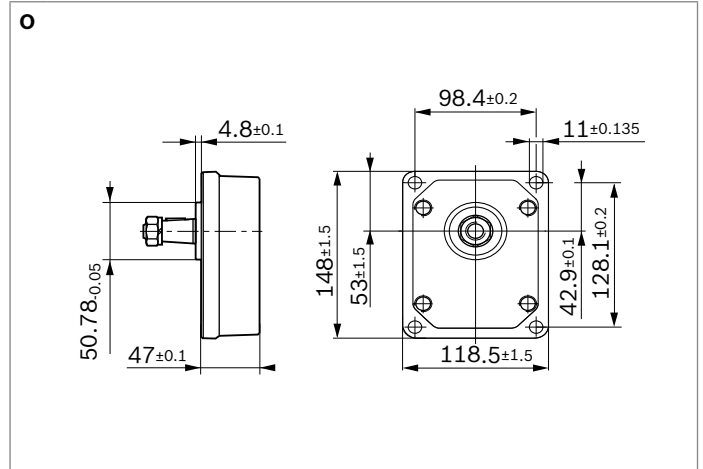


## Dimensions – front cover

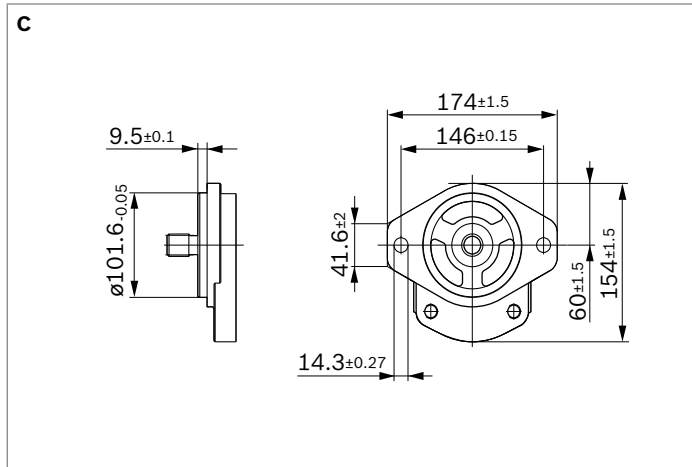
### ▼ Rectangular flange $\varnothing 105$ mm



### ▼ Rectangular flange $\varnothing 50.78$ mm

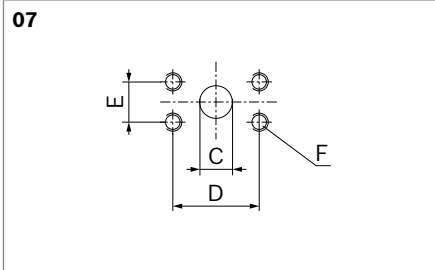


### ▼ 2-hole flange $\varnothing 101.6$ mm, SAE J744 101-2 B



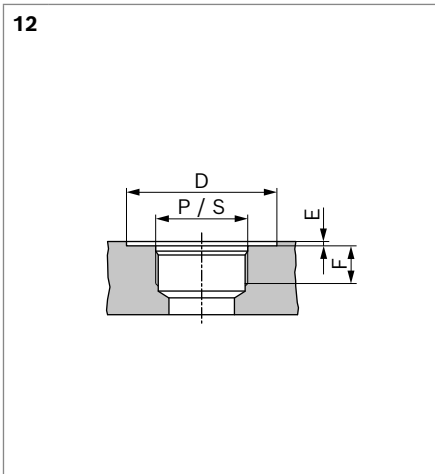
### Dimensions – line connections

▼ SAE rectangular flange with metric threads



Size	Pressure side				Suction side			
	C	D	E	F	C	D	E	F
	mm	mm	mm		mm	mm	mm	
22 ... 28	18	47.6	22.2		25	52.4	26.2	M10; 18 mm deep
32 ... 50	25	52.4	26.2	M10; 18 mm deep	32	58.7	30.2	
56 ... 70	32	58.7	30.2		38	69.8	35.8	M12; 23 mm deep
80 ... 100	38	69.8	35.8	M12; 23 mm deep	50	77.8	42.8	

▼ SAE thread (with BOSS O ring seal)

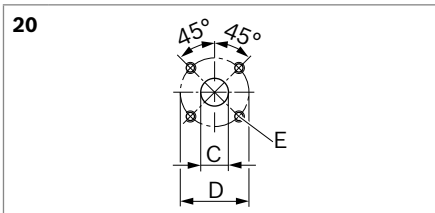


Size	Pressure side			Suction side				
	P	D	E	F	S	D	E	F
		mm	mm	mm		mm	mm	mm
22 ... 28	1 1/16-12 UN-2B	45			1 5/16-12 UN-2B	50		
32 ... 45	1 5/16-12 UN-2B	50	0.5	19	1 5/8-12 UN-2B	58	0.5	19
50 ... 63	1 5/8-12 UN-2B	58			1 7/8-12 UN-2B	68		

Line connections in end cover

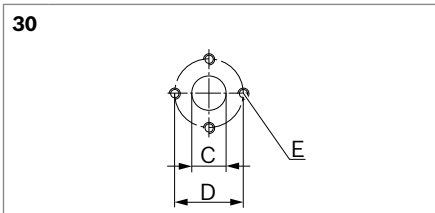
Size	Pressure side		Suction side			
	P	E	F	S	E	F
		mm	mm		mm	mm
22 ... 28	1 1/16-12 UN-2B	1	19	1 5/16-12 UN-2B	1	19
32 ... 63	1 5/16-12 UN-2B			1 5/8-12 UN-2B		

▼ Square flange



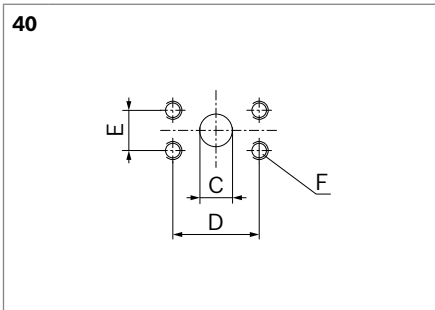
Size	Pressure side			Suction side		
	C	D	E	C	D	E
	mm	mm		mm	mm	
22 ... 63	18	55	M8; 13 mm deep	26	55	M8; 13 mm deep

▼ Square flange



Size	Pressure side			Suction side		
	C	D	E	C	D	E
	mm	mm		mm	mm	
22 ... 56	18	39.7	M8; 13 mm deep	26	50.8	M10; 13 mm deep
63	26	50.8	M10; 13 mm deep	36	62	

▼ SAE rectangular flange, UNC thread

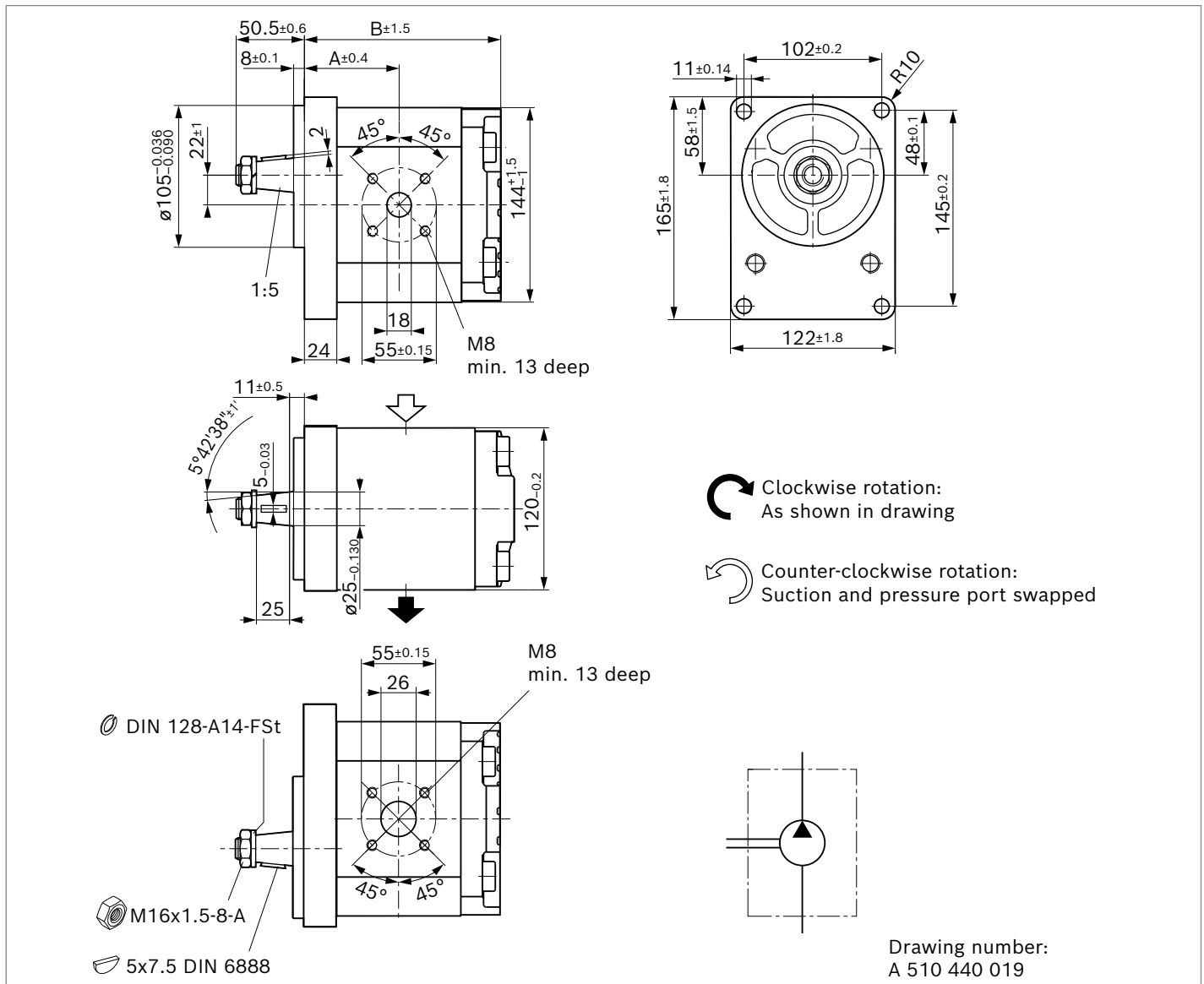


Size	Pressure side				Suction side			
	C	D	E	F	C	D	E	F
	mm	mm	mm		mm	mm	mm	
22 ... 36	19	47.6	22.2		25	52.4	26.2	3/8-16 UNC-2B; 18 mm deep
40 ... 50	25	52.4	26.2	3/8-16 UNC-2B; 18 mm deep	32	58.7	30.2	7/16-14 UNC-2B; 18 mm deep
56 ... 63	32	58.7	30.2	7/16-14 UNC-2B; 18 mm deep	38	69.8	35.8	1/2-13 UNC-2B 18 mm deep

## Dimensions – preferred series

### ▼ 1:5 tapered shaft with rectangular flange $\varnothing 105$ mm

AZPG-22- ... CB20MB

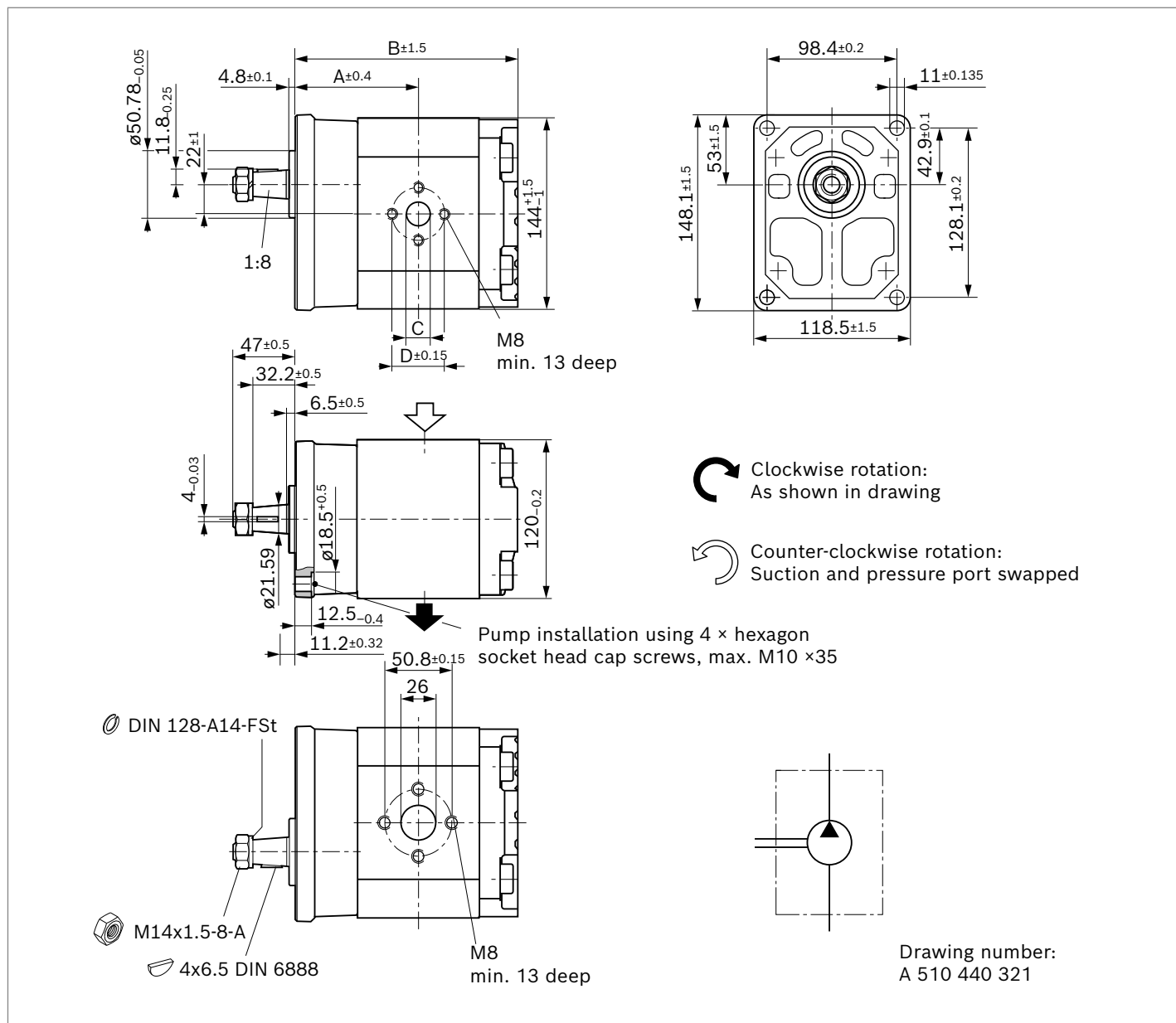


NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Weight m [kg]	Dimensions	
	Direction of rotation					A mm	B mm
	Counter-clockwise	Clockwise					
22	0510725441	0510725164	280	3000	10.3	60.9	124.6
25	0510725442	0510725165	280	3000	10.4	61.9	126.6
28	0510725443	0510725166	280	3000	10.5	63.2	129.1
32	0510725444	0510725167	280	2800	10.7	64.8	132.4
36	0510725445	0510725168	280	2800	10.9	66.4	135.7
40	0510725446	0510725169	280	2800	11.0	68.1	139.0
45	0510725447	0510725170	280	2600	11.2	70.1	143.1
50	0510825324	0510825024	250	2600	11.4	72.2	147.2
56	0510825325	0510825025	225	2300	11.7	74.7	152.2
63	0510825326	0510825026	200	2300	12.0	77.6	158.0



▼ **1:8 tapered shaft with rectangular flange ø50.78 mm**

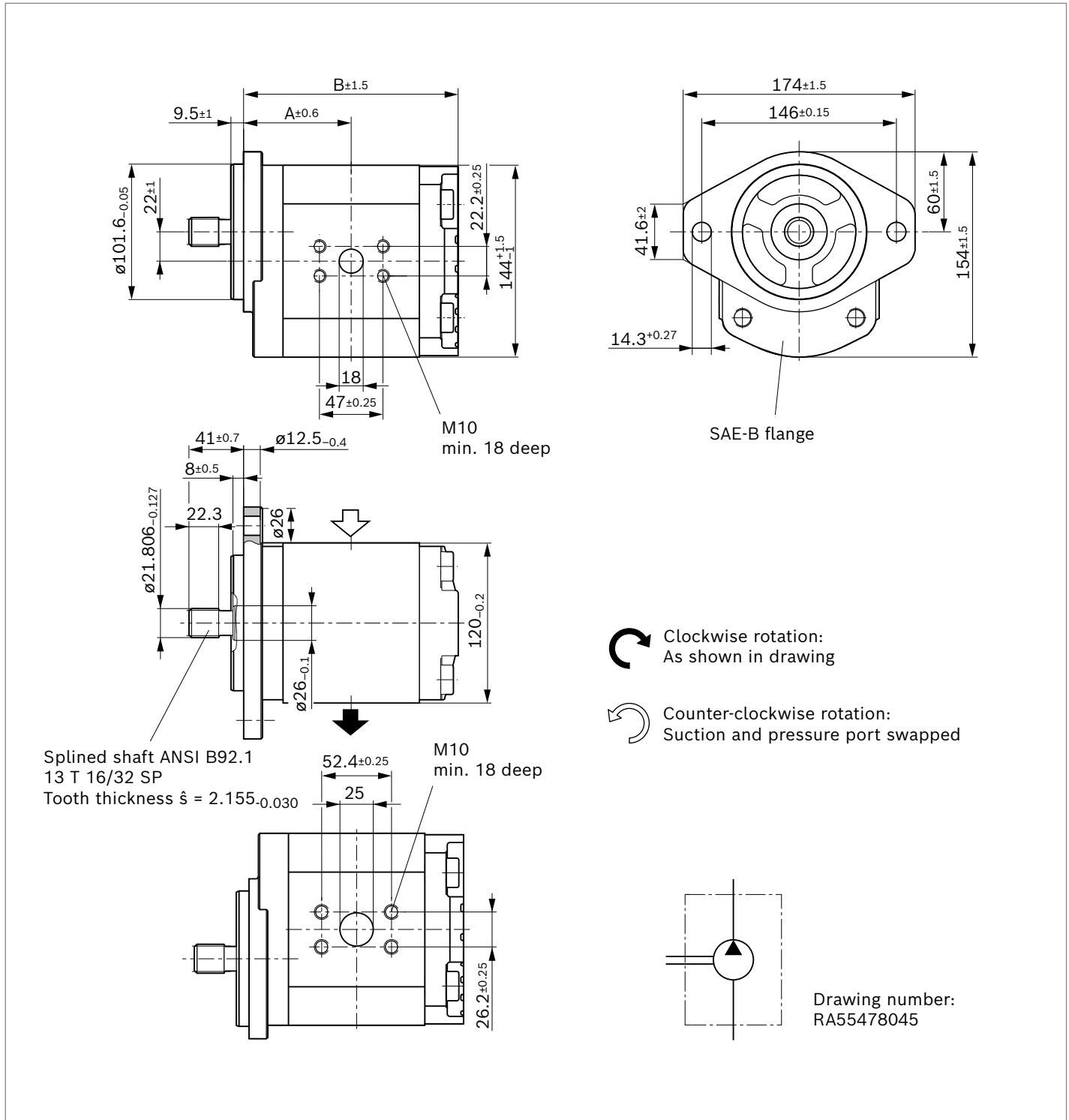
AZPG-22- ... HO30MB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Weight m [kg]	Dimensions	
	Direction of rotation Counter-clockwise	Clockwise				A mm	B mm
22	0510725448	0510725171	280	3000	9.6	63.9	147.8
25	0510725449	0510725172	280	3000	9.7	84.9	149.8
28	0510725450	0510725173	280	3000	9.8	86.2	152.3
32	0510725451	0510725174	280	2800	10.0	87.8	155.6
36	0510725452	0510725175	280	2800	10.1	89.4	158.9
40	0510725453	0510725176	280	2800	10.3	91.1	162.3
45	0510725454	0510725177	280	2600	10.5	93.1	166.3
50	0510825327	0510825027	250	2600	10.7	95.2	170.5
56	0510825328	0510825028	225	2300	11.0	97.7	175.4
63	0510825329	0510825029	200	1800	11.2	100.6	181.3

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

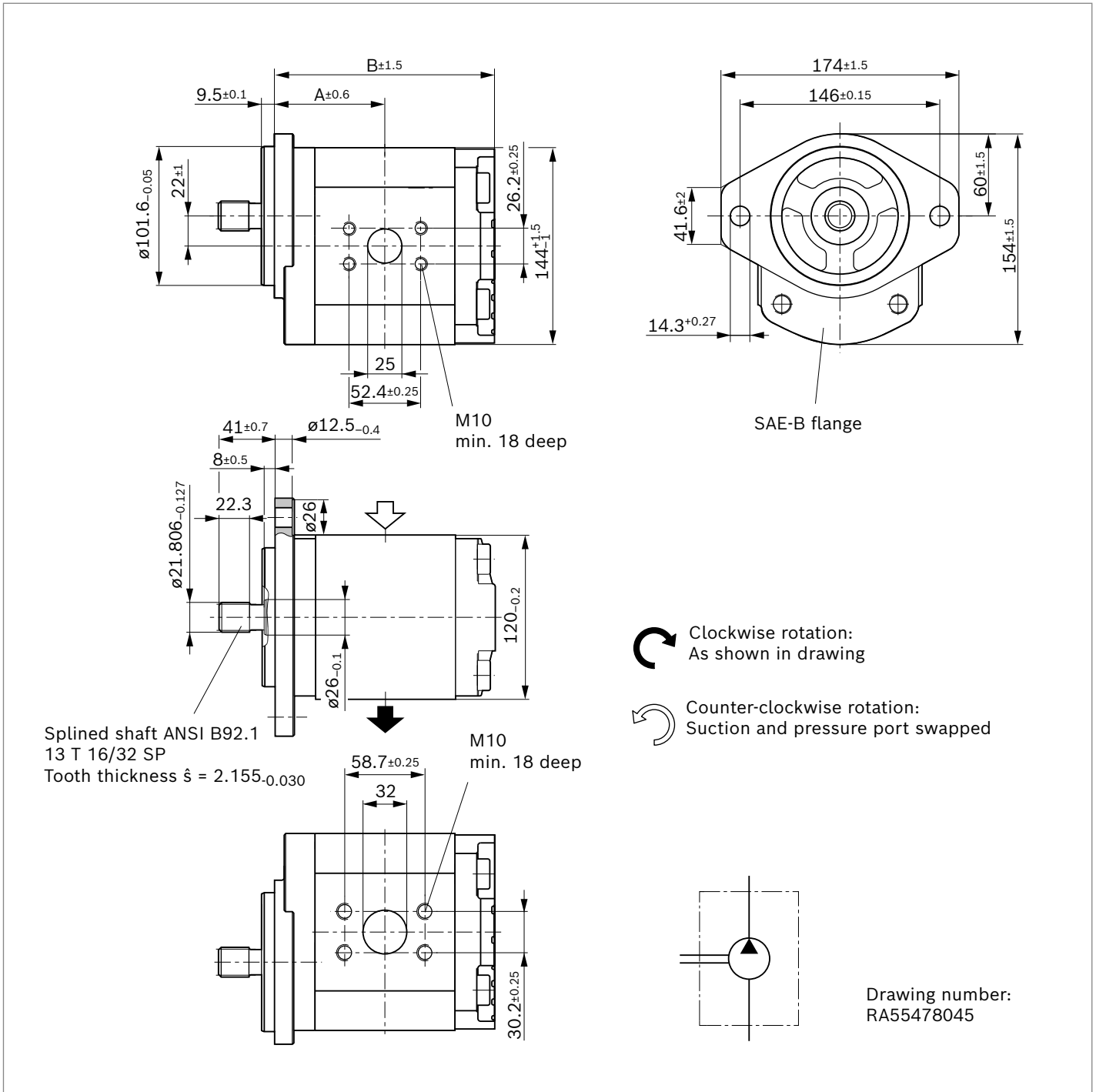
AZPG-22- ... DC07KB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{\max}$ [rpm]	Weight m [kg]	Dimensions	
	Direction of rotation					A mm	B mm
	Counter-clockwise	Clockwise					
22	0510725434	0510725157	280	3000	9.6	66.4	130.1
25	0510725435	0510725158	280	3000	9.7	67.4	132.1
28	0510725436	0510725159	280	3000	9.8	68.7	134.6

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

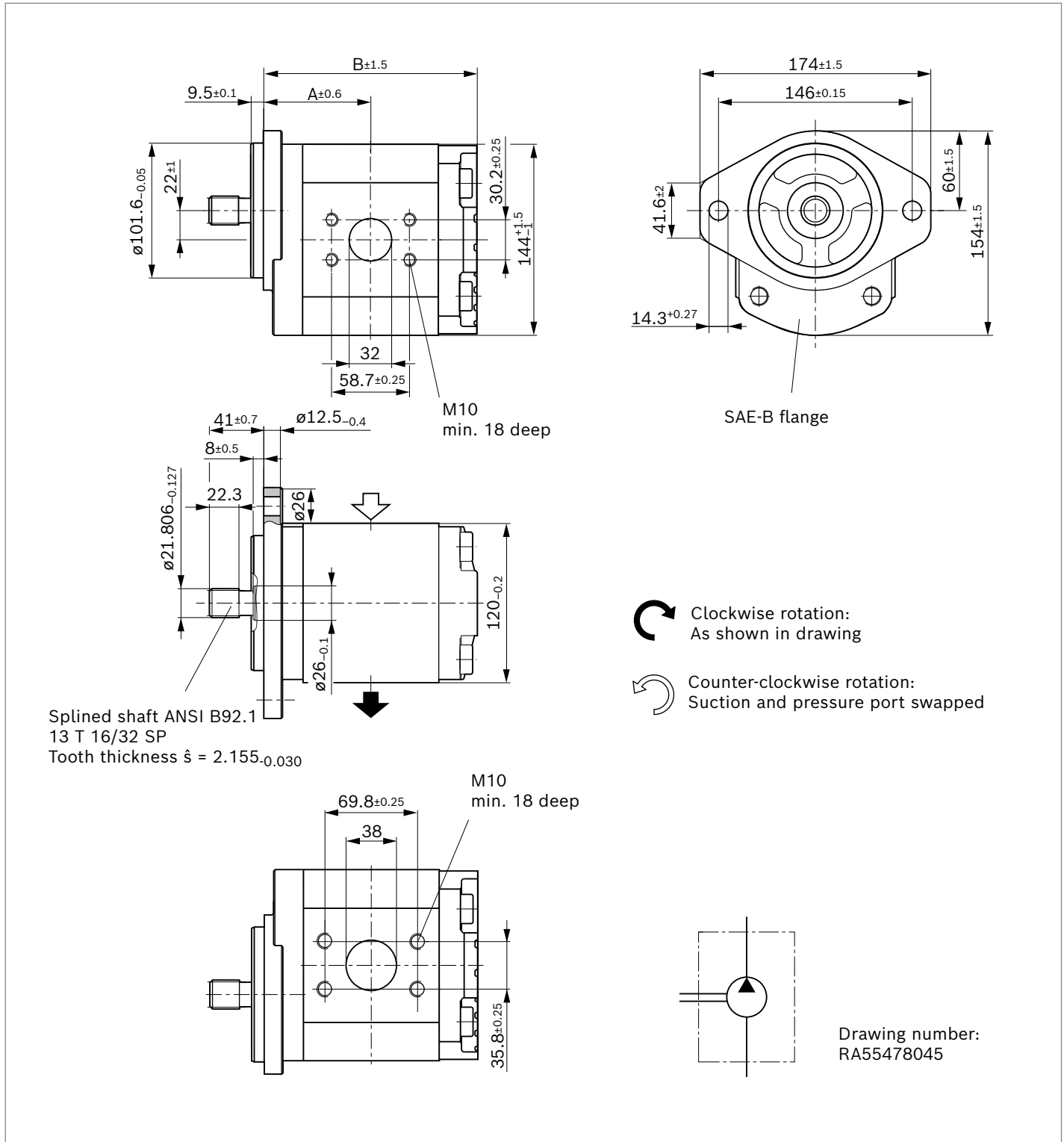
AZPG-22- ... DC07KB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Weight m [kg]	Dimensions	
	Direction of rotation Counter-clockwise	Clockwise				A mm	B mm
32	0510725437	0510725160	280	2800	10.0	70.3	137.9
36	0510725438	0510725161	280	2800	10.1	71.9	141.2
40	0510725439	0510725162	280	2800	10.3	73.6	144.5
45	0510725440	0510725163	280	2600	10.5	75.6	148.6
50	0510825321	0510825021	250	2600	10.7	77.7	152.7

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

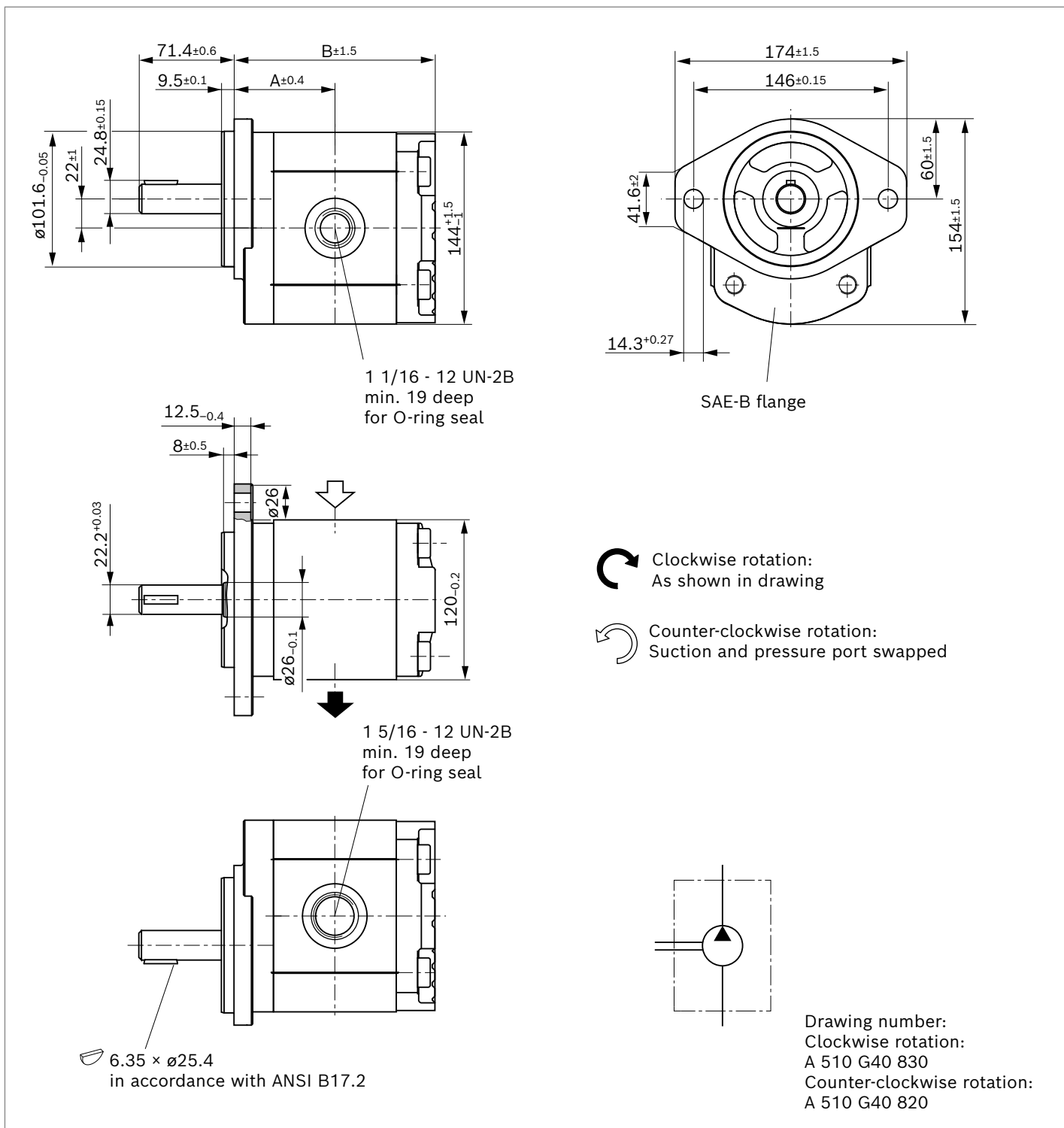
AZPG-22- ... DC07KB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Weight m [kg]	Dimensions	
	Direction of rotation					A mm	B mm
	Counter-clockwise	Clockwise					
56	0510825322	0510825022	225	2300	11.0	80.2	157.7
63	0510825323	0510825023	200	2300	11.3	83.1	163.5

▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

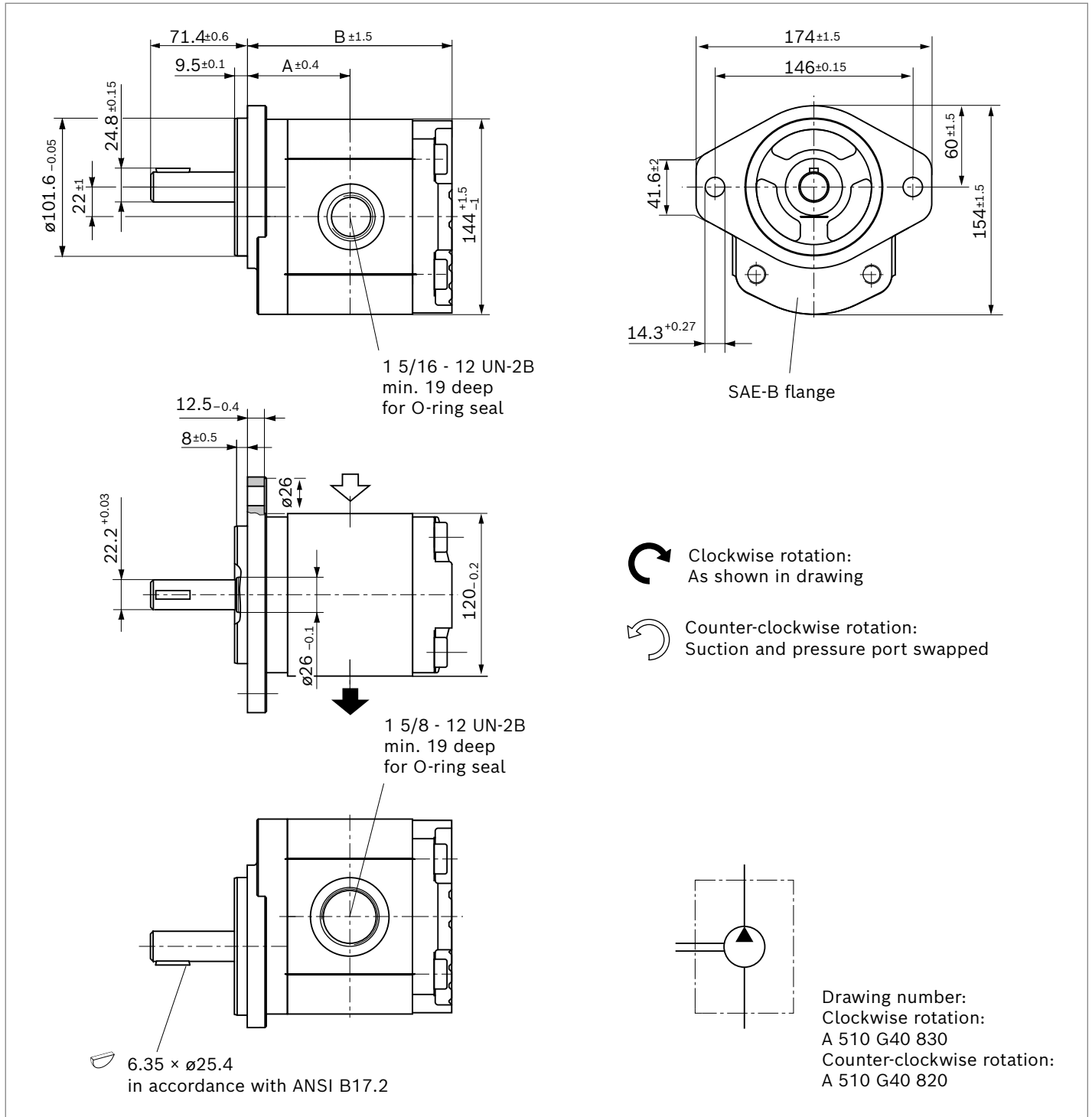
AZPG-22- ... **QC12MB** - S0662



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
22	9510490132	9510490122	250	3000	66.4	130.3
25	9510490133	9510490123	250	3000	67.4	132.3
28	9510490134	9510490124	250	3000	68.7	134.8

▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

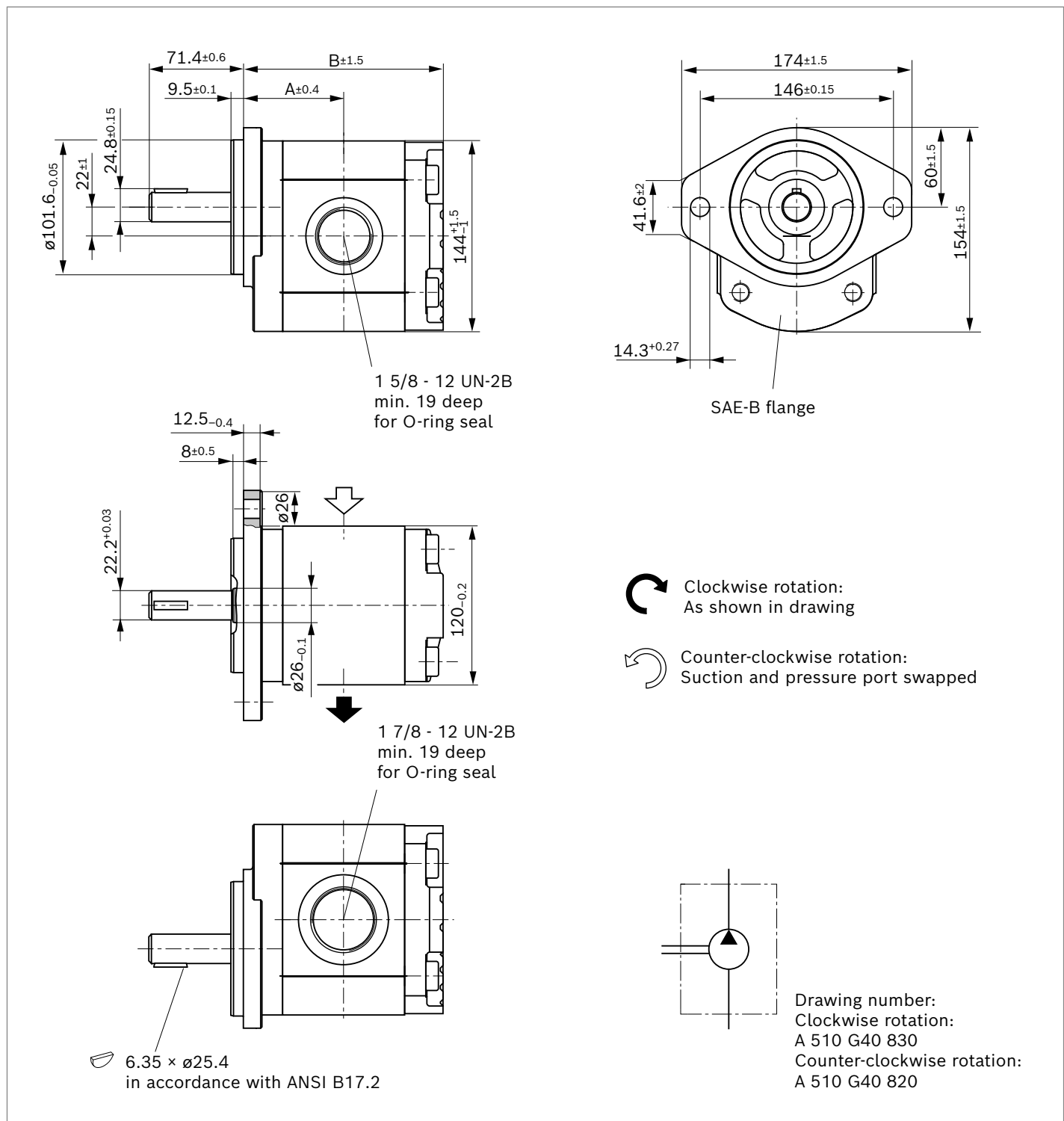
AZPG-22- ... **QC12MB** - S0662



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{\max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
32	9510490135	9510490125	250	2800	70.3	138.1
36	9510490136	9510490126	250	2800	71.9	141.5
40	9510490137	9510490127	250	2800	73.6	144.8
45	9510490138	9510490128	250	2800	75.6	148.8

▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

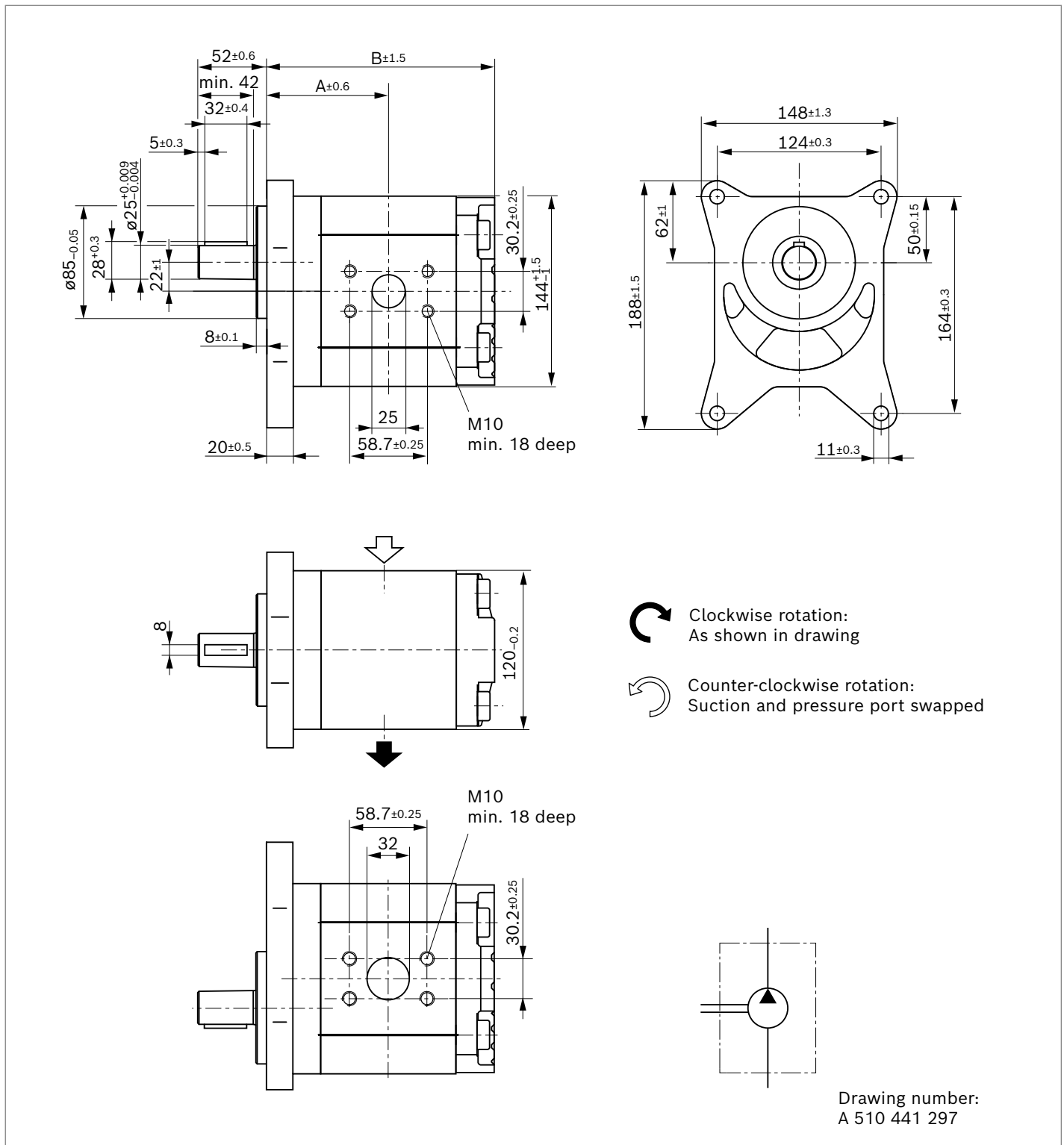
AZPG-22- ... **QC12MB** - S0662



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
50	9510490139	9510490129	220	2600	77.7	153.0
56	9510490140	9510490130	195	2300	80.2	157.9
63	9510490141	9510490131	170	2300	83.1	163.8

▼ **Parallel keyed shaft (ISO  $\varnothing 25$  mm) with special version of the front cover**

AZPG-22- ... AX07KB - S0303



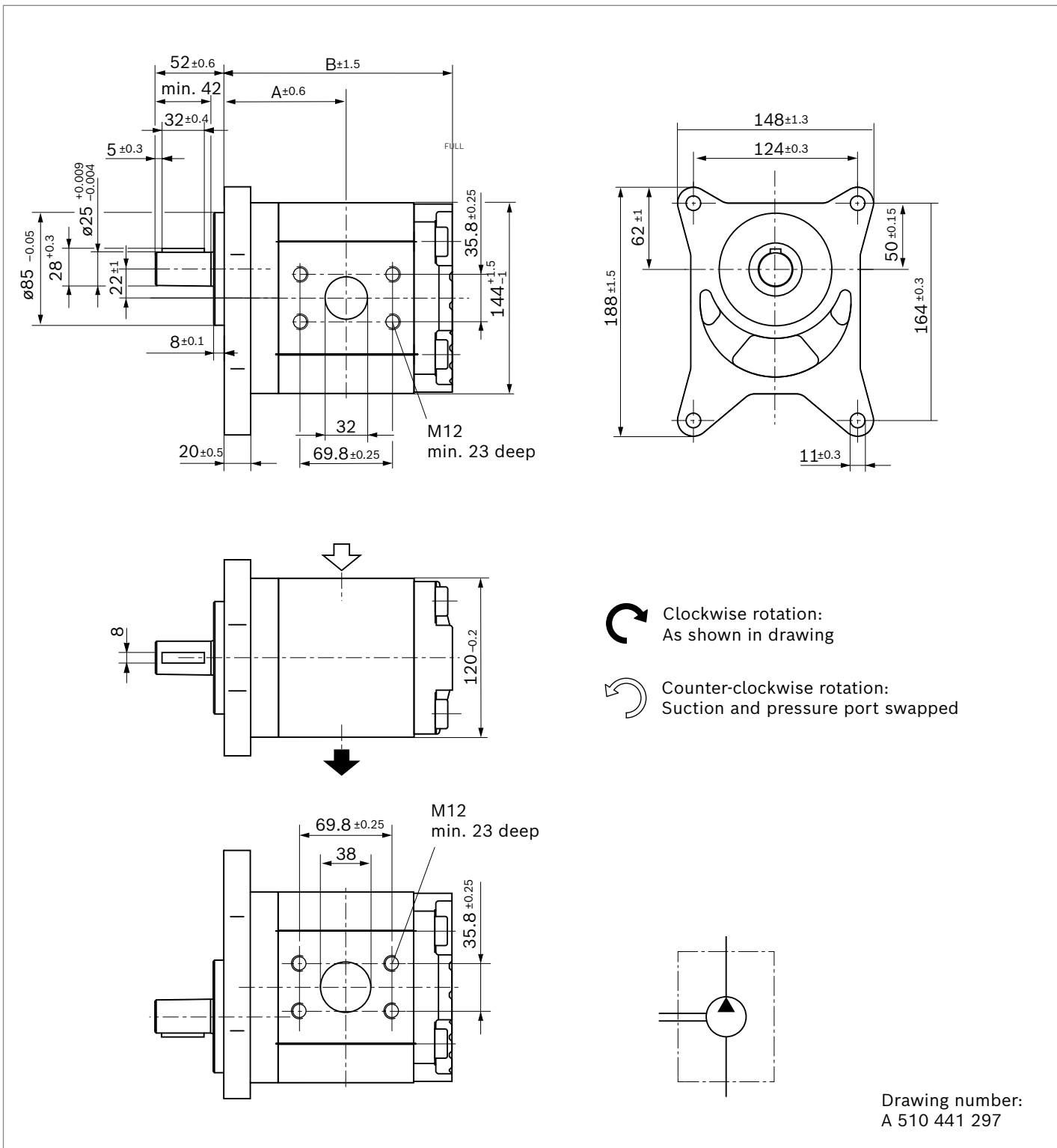
Drawing number:  
A 510 441 297

NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{\text{max}}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
40	0510725432	0510725147	280	2800	85.1	157.7
50	0510825314	0510825015	250	2600	89.2	165.9



▼ **Parallel keyed shaft (ISO  $\varnothing 25$  mm) with special version of the front cover**

AZPG-22- ... AX07KB - S0303

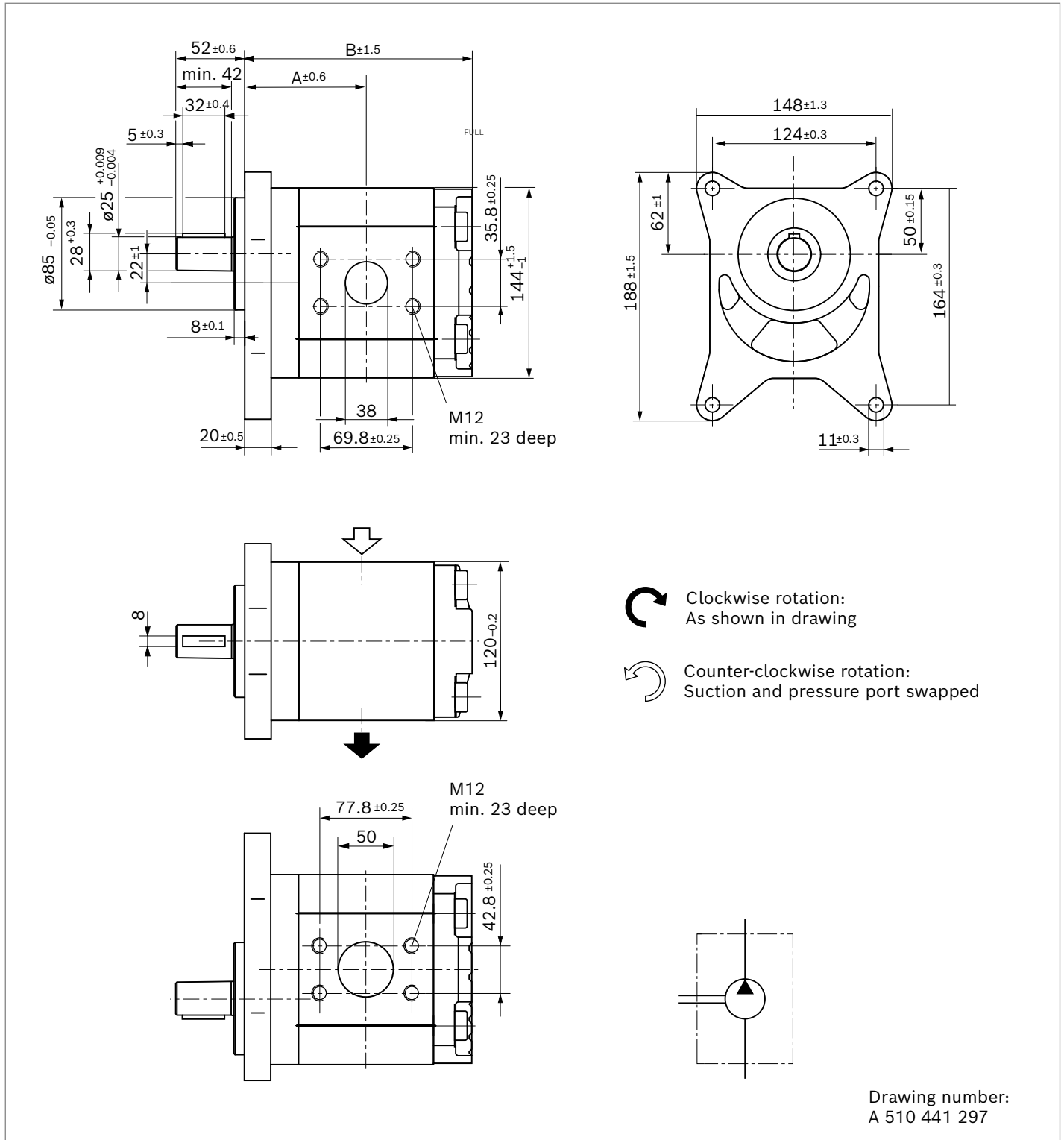


Drawing number:  
A 510 441 297

NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{\text{max}}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	<b>Counter-clockwise</b>	<b>Clockwise</b>				
63	0510825315	0510825016	200	2300	94.6	176.7
70	0510825316	0510825017	150	2200	97.5	182.5

▼ **Parallel keyed shaft (ISO  $\varnothing 25$  mm) with special version of the front cover**

AZPG-22- ... AX07KB - S0303

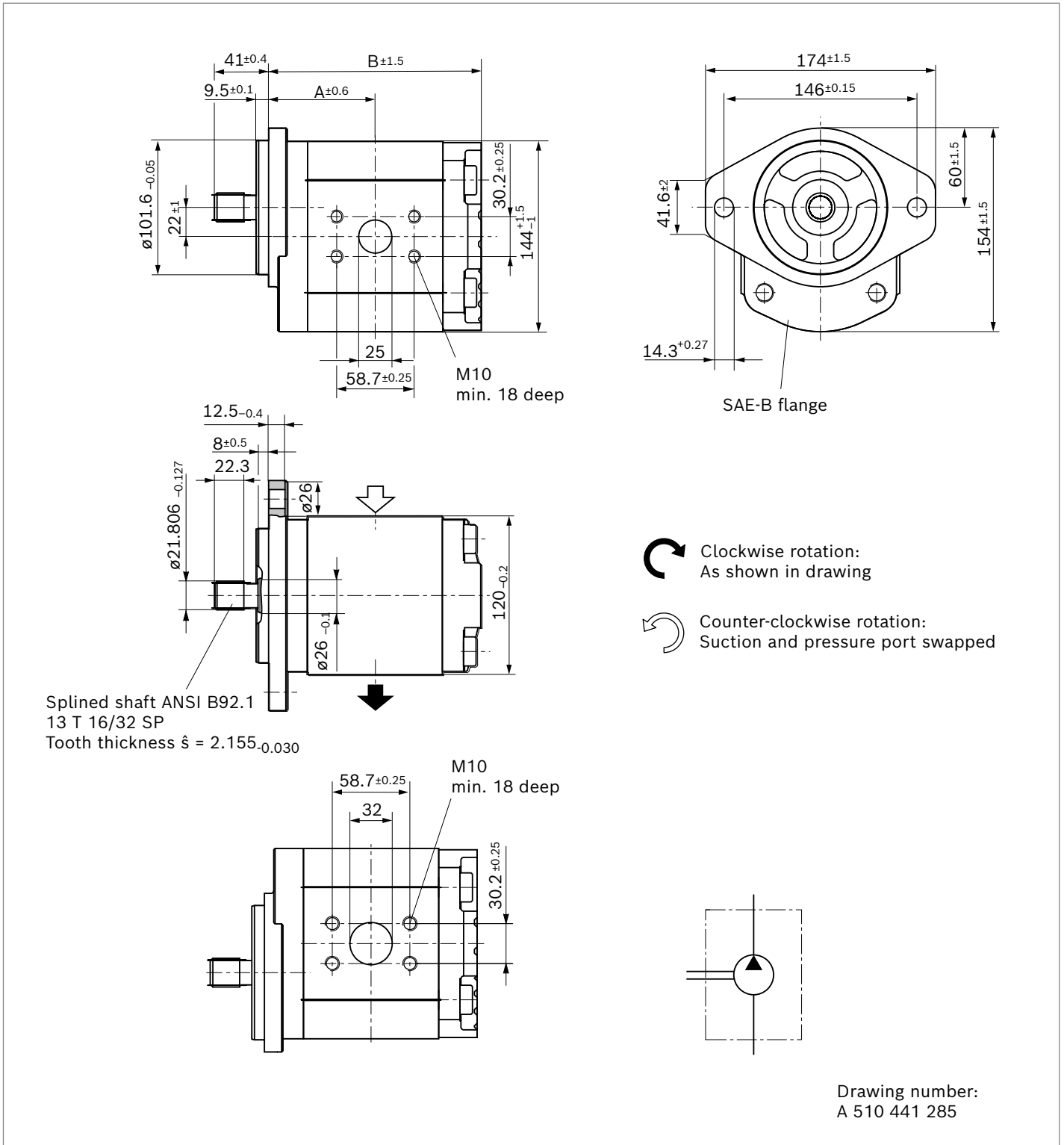


Drawing number:  
A 510 441 297

NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{\text{max}}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
80	0510825317	0510825018	120	2200	100.6	190.7
100	0510825318	0510825019	100	1700	109.8	207.2

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

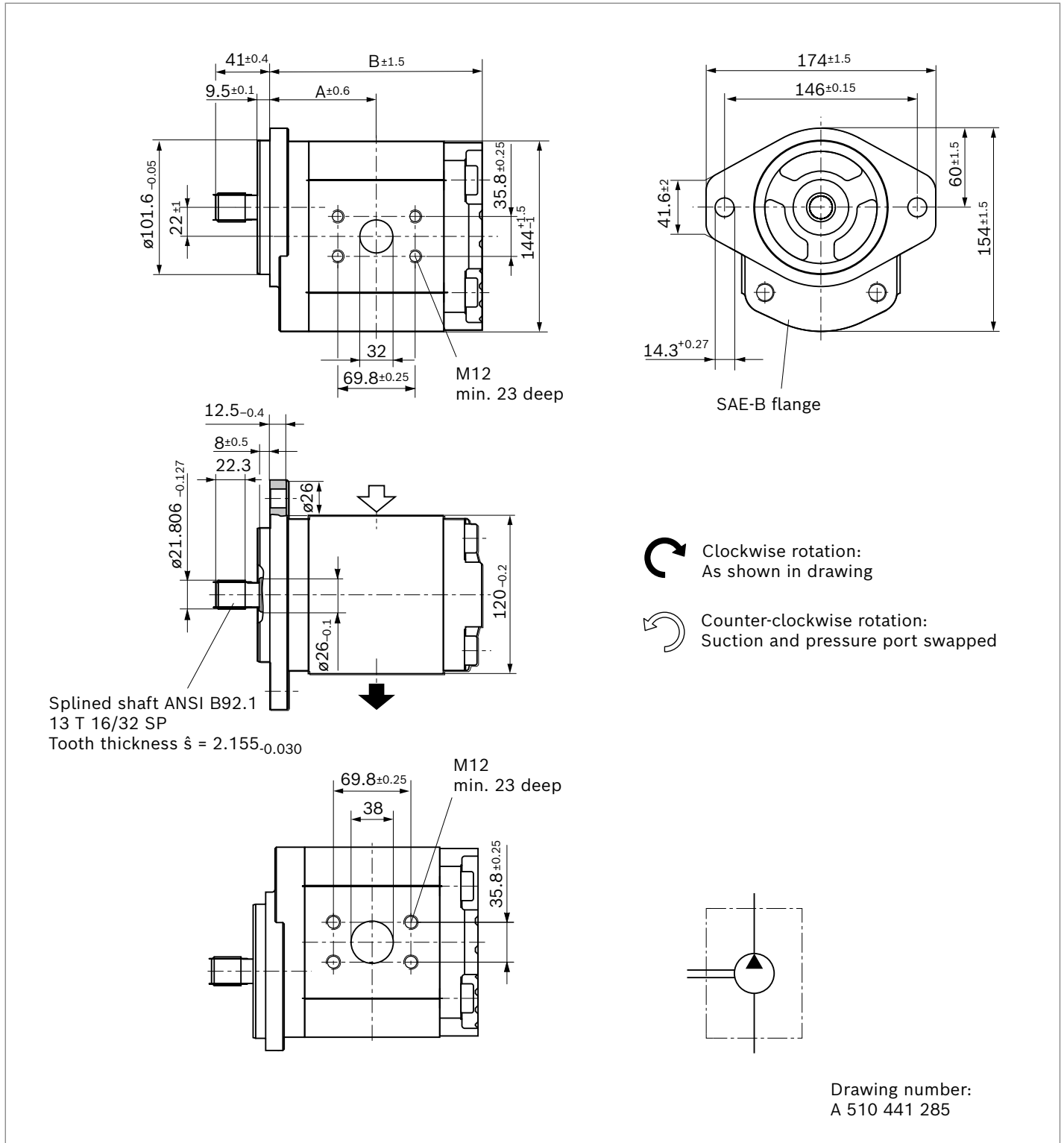
AZPG-22- ... DC07KB - S0039



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
40	0510725421	0510725136	280	2800	73.6	144.8
50	0510725420	0510725135	250	2600	77.7	153.0

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

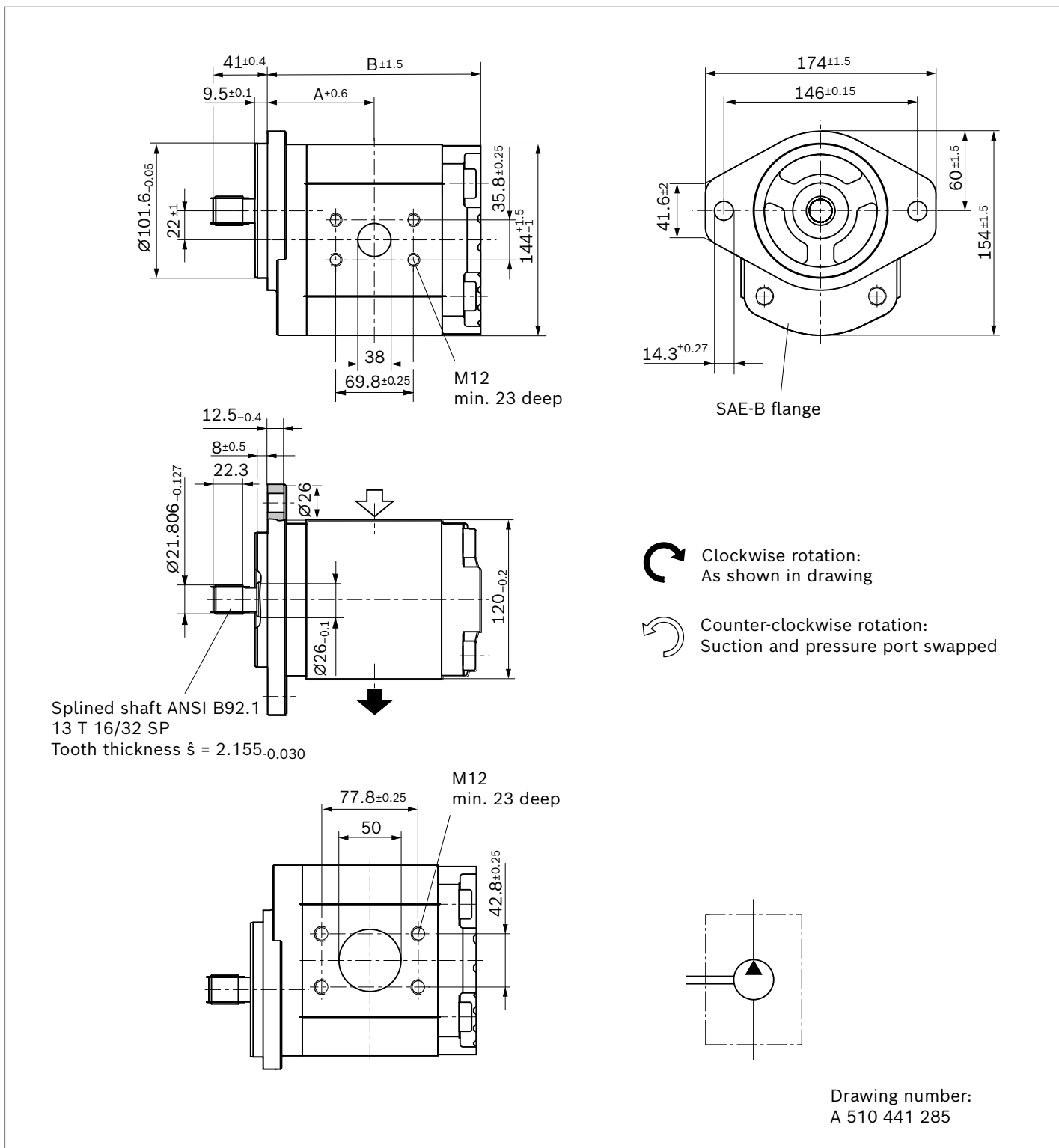
AZPG-22- ... DC07KB - S0039



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
63	0510825313	0510825011	200	2300	83.1	163.8
70	0510825312	0510825014	150	2200	86.0	169.5

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

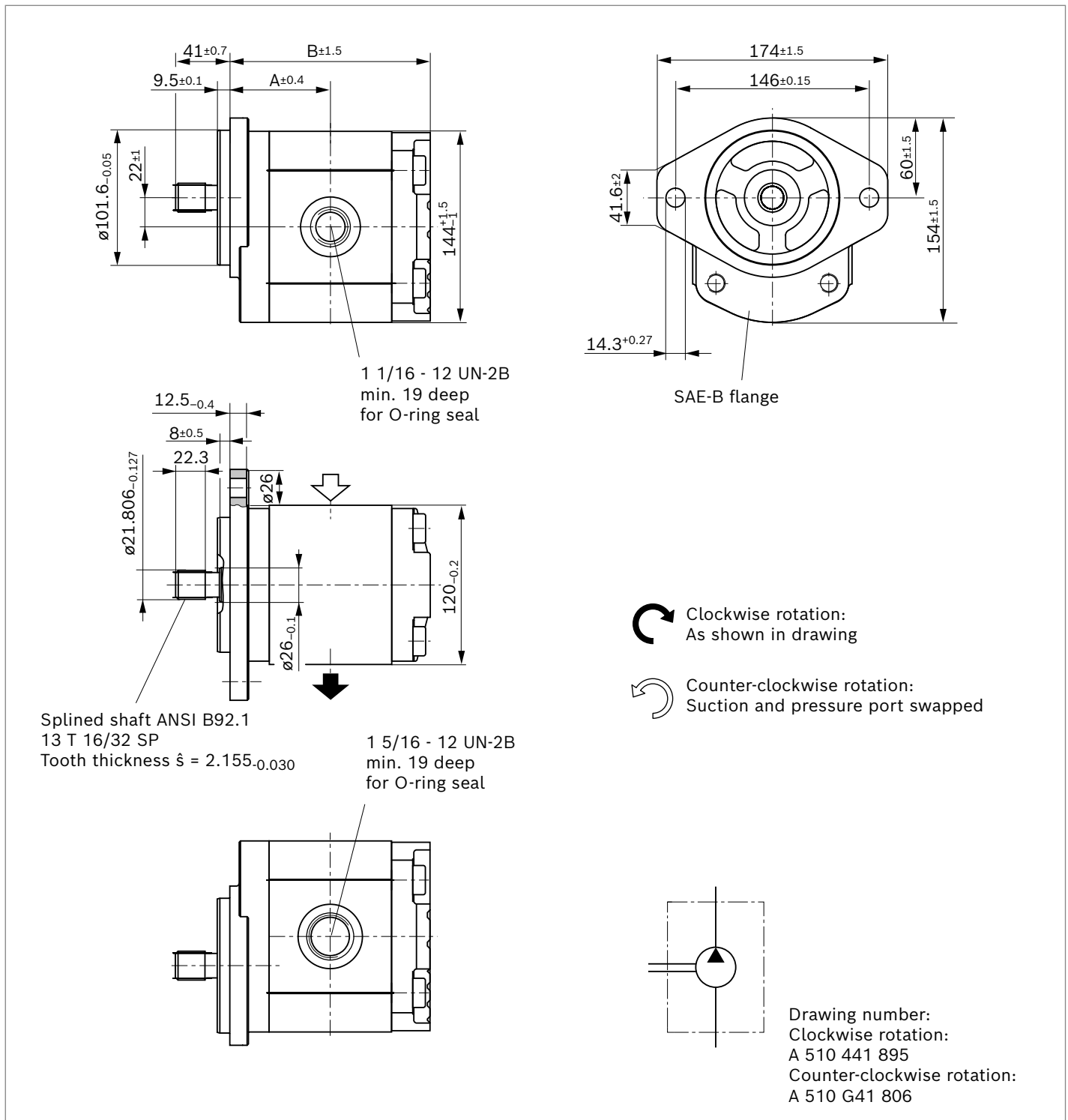
AZPG-22- ... DC07KB - S0039



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	<b>Counter-clockwise</b>	<b>Clockwise</b>				
80	0510825311	0510825012	120	2200	90.1	177.8
100	0510825310	0510825013	100	1700	98.3	194.3

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

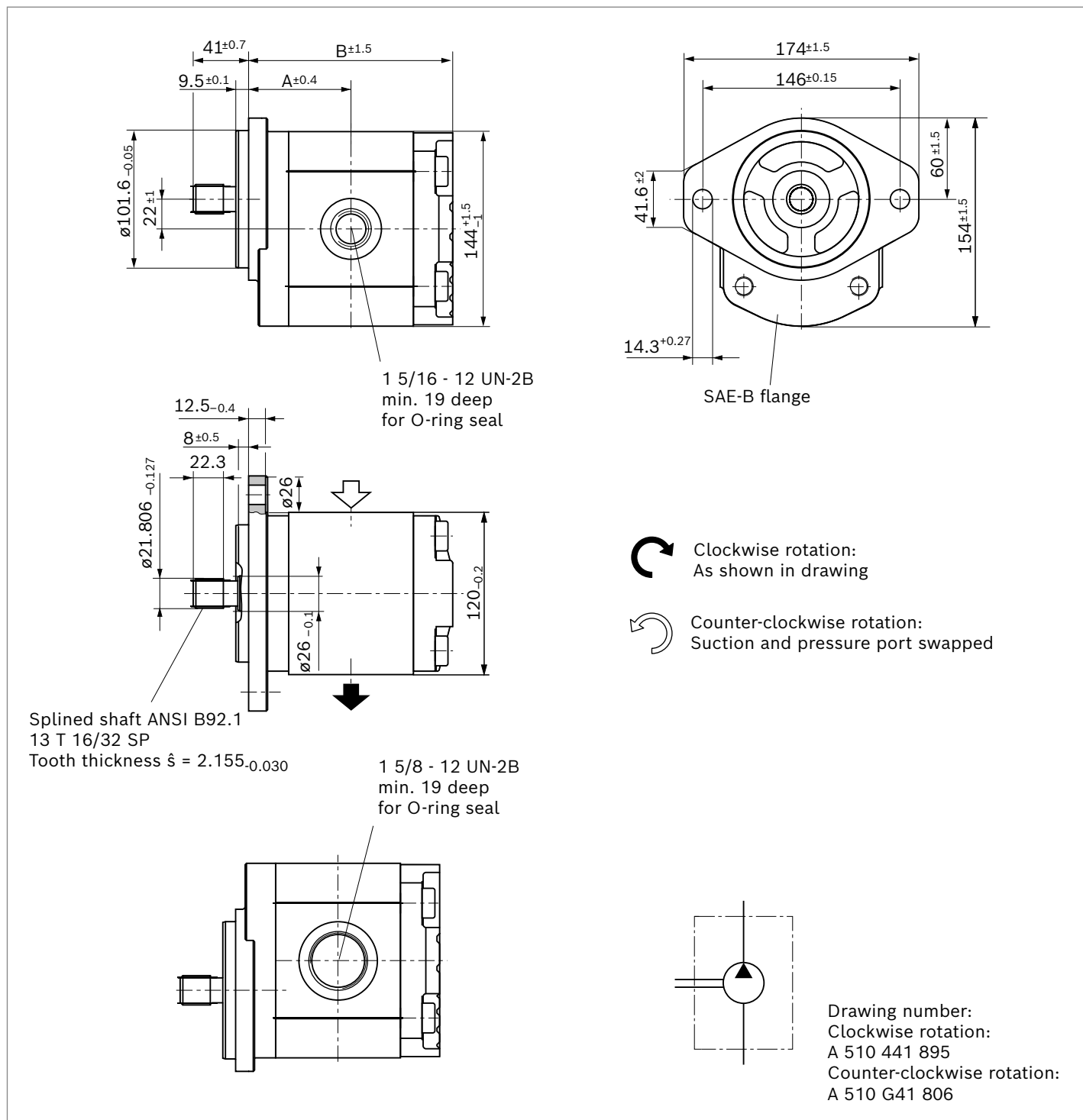
AZPG-22- ... DC12MB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
22	9510490011	9510490001	250	3000	66.4	130.3
25	9510490012	9510490002	250	3000	67.4	132.3
28	9510490013	9510490003	250	3000	68.7	134.8

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

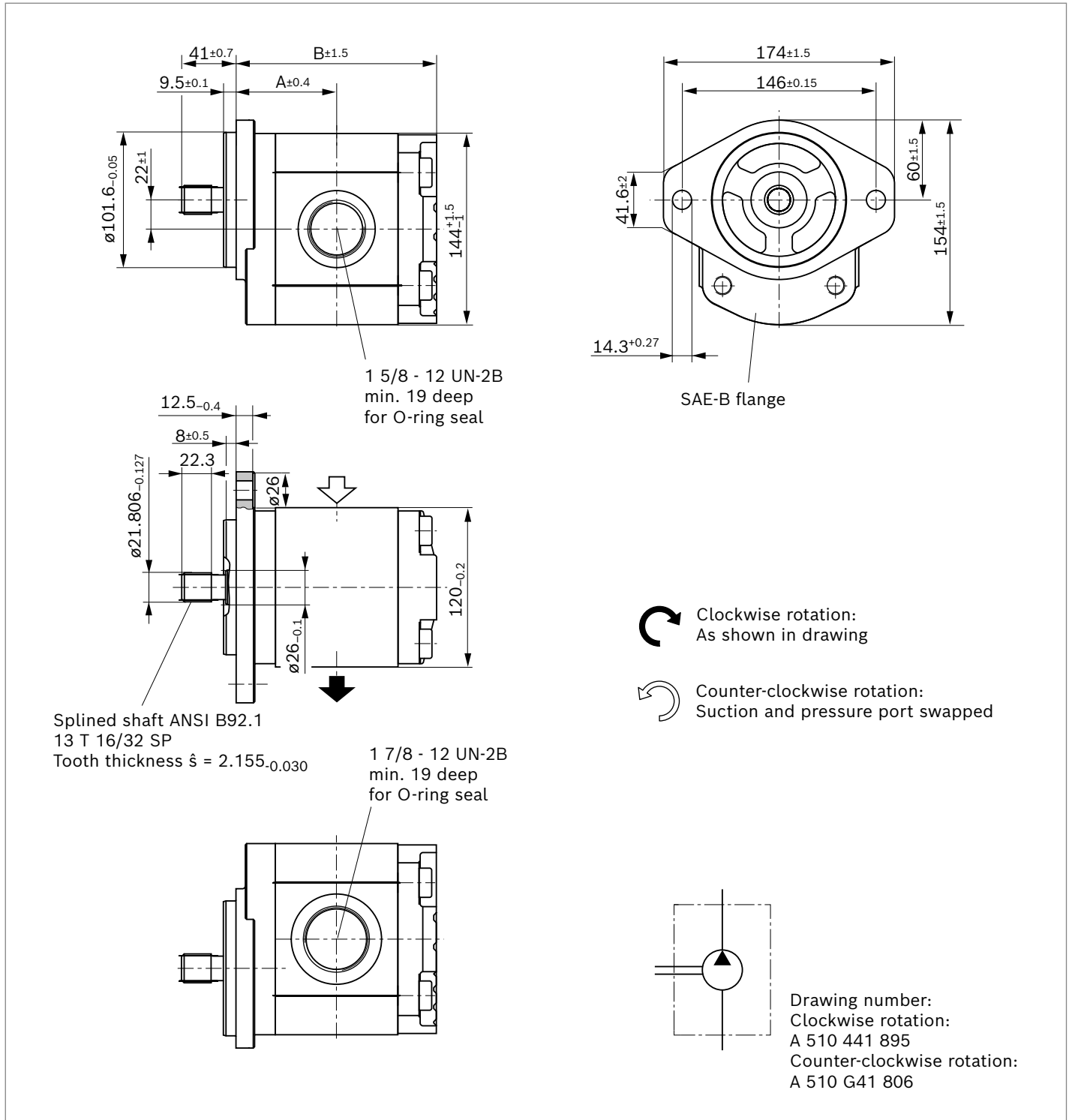
AZPG-22- ... DC12MB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation	Direction of rotation			A mm	B mm
	Counter-clockwise	Clockwise				
32	9510490014	9510490004	250	2800	70.3	138.1
36	9510490015	9510490005	250	2800	71.9	141.5
40	9510490016	9510490006	250	2800	73.6	144.8
45	9510490017	9510490007	250	2600	75.6	148.8

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

AZPG-22- ... DC12MB

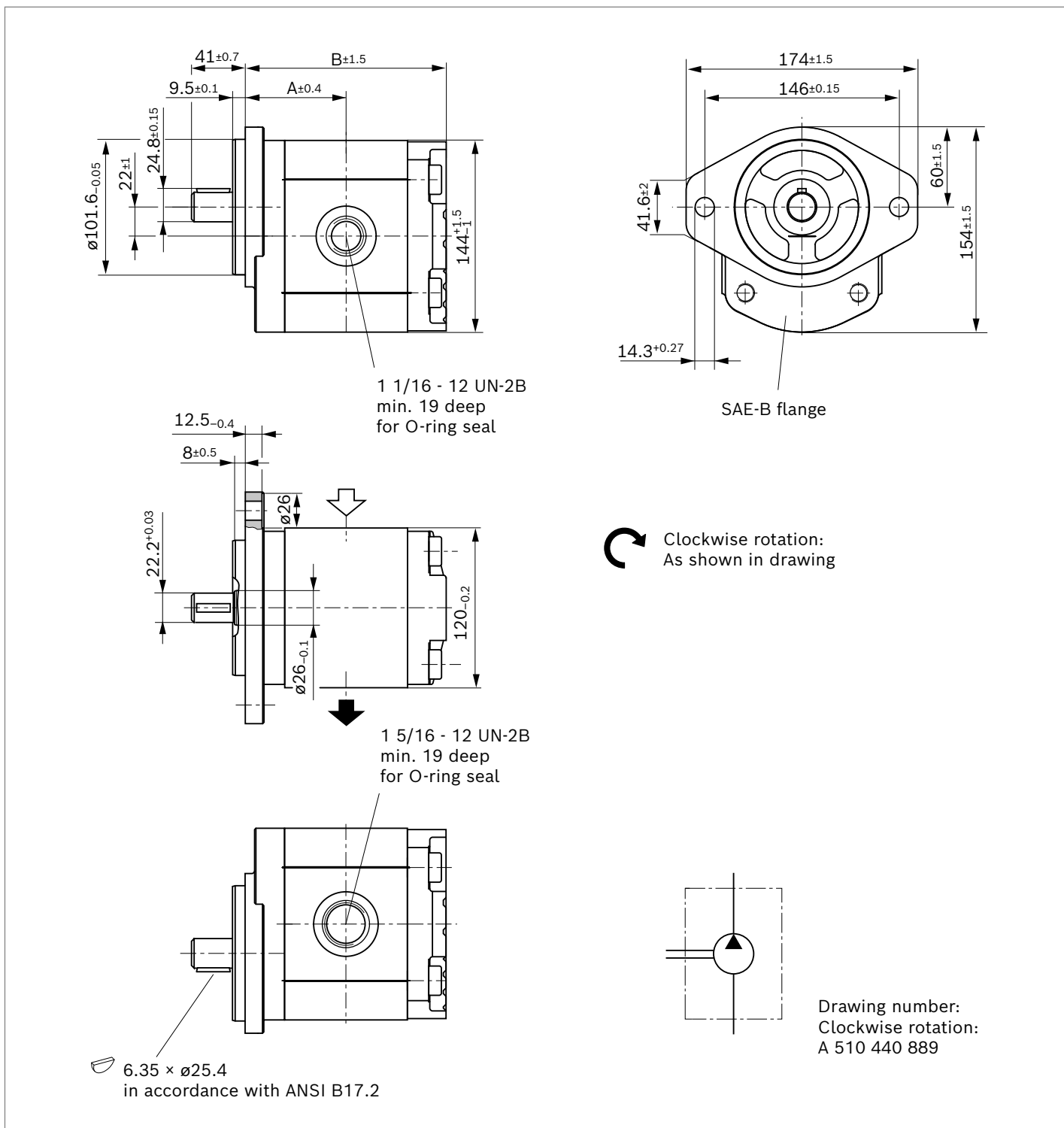


NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
50	9510490018	9510490008	220	2600	77.7	153.0
56	9510490019	9510490009	195	2300	80.2	157.9
63	9510490020	9510490010	170	2300	63.1	163.8



▼ Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange

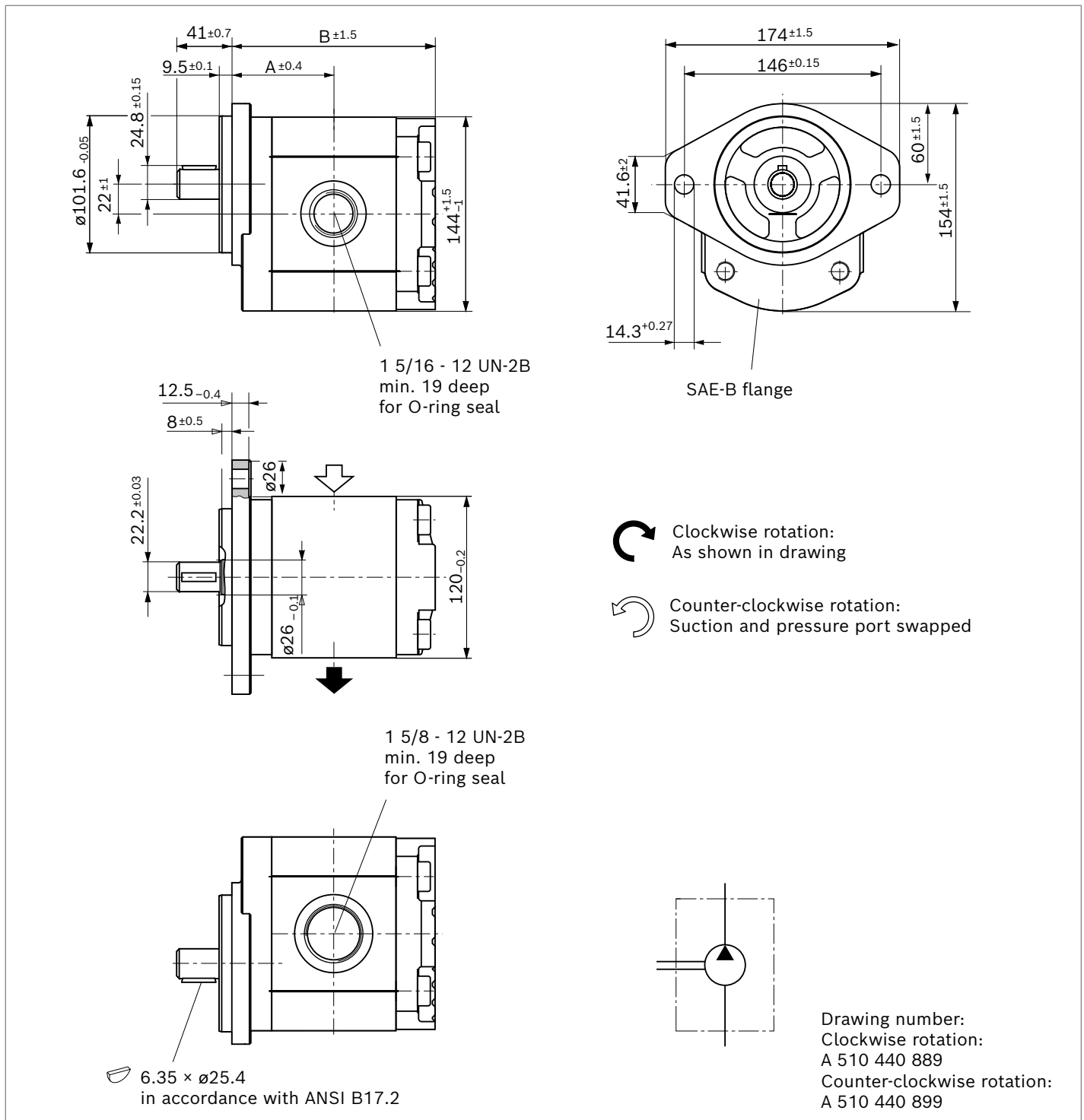
AZPG-22- ... QC12MB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
22		9510490021	250	3000	66.4	130.3
25		9510490022	250	3000	67.4	132.3
28		9510490023	250	3000	68.7	134.8

▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

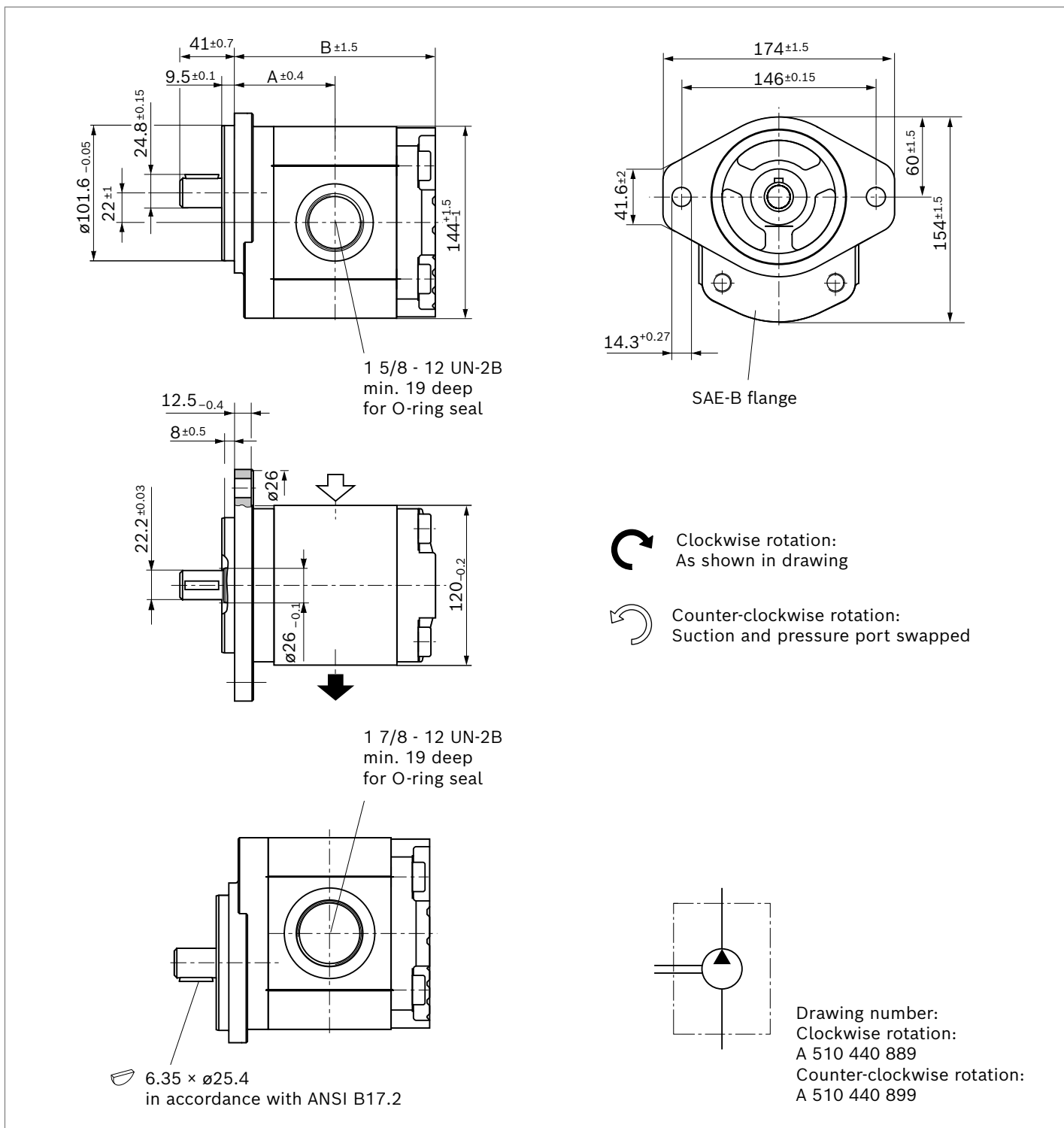
AZPG-22- ... **QC12MB**



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
32	9510490034	9510490024	250	2800	70.3	138.1
36	9510490035	9510490025	250	2800	71.9	141.5
40		9510490026	250	2800	73.6	144.8
45	9510490037	9510490027	250	2600	75.6	148.8

▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

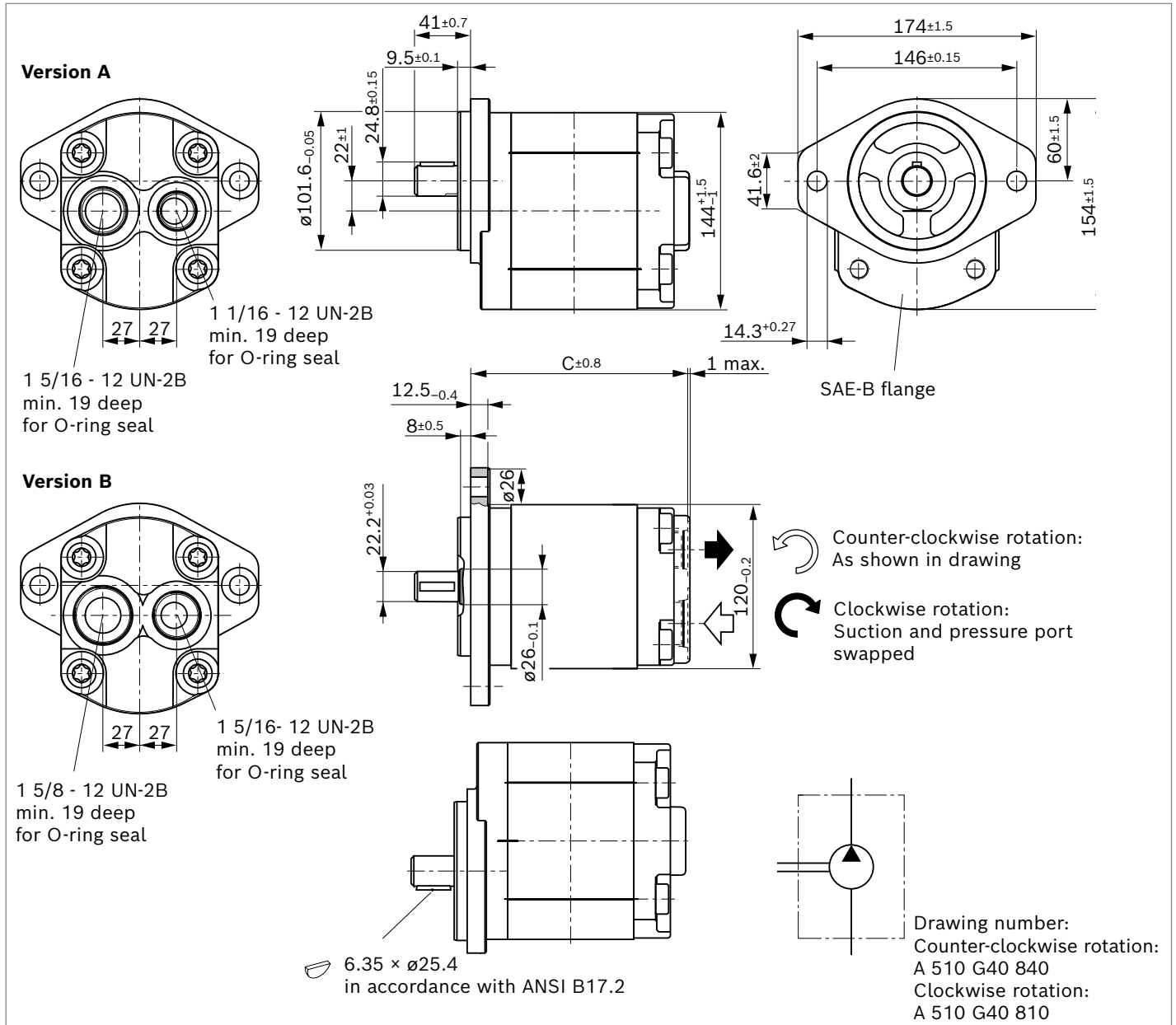
AZPG-22- ... **QC12MB**



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Maximum rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
50	9510490038	9510490028	220	2600	77.7	153.0
56	9510490039	9510490029	195	2300	80.2	157.9
63	9510490040	9510490030	170	2300	83.1	163.8

▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

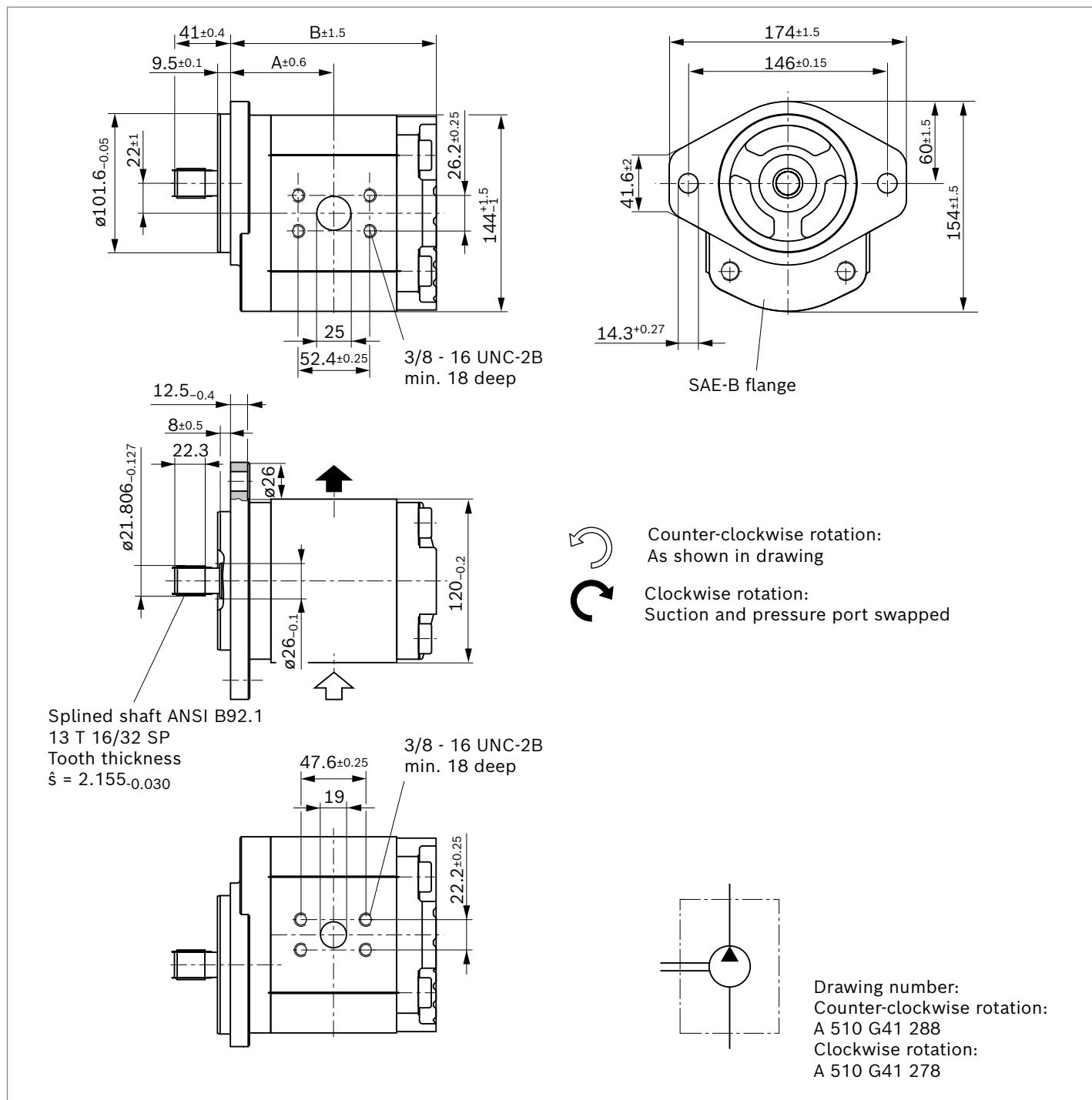
AZPG-22- ... **QC12MA**



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Dimensions C mm	Version
	Direction of rotation					
	Counter-clockwise	Clockwise				
22	9510490111	9510490101	250	3000	141.2	A
25	9510490112	9510490102	250	3000	143.2	A
28	9510490113	9510490103	250	3000	145.7	A
32	9510490114	9510490104	250	2800	149.0	B
36	9510490115	9510490105	250	2800	152.4	B
40	9510490116	9510490106	250	2800	155.7	B
45	9510490117	9510490107	250	2600	159.7	B
50	9510490118	9510490108	220	2600	163.9	B
56	9510490119	9510490109	195	2300	169.8	B
63	9510490120	9510490110	170	2300	174.7	B

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

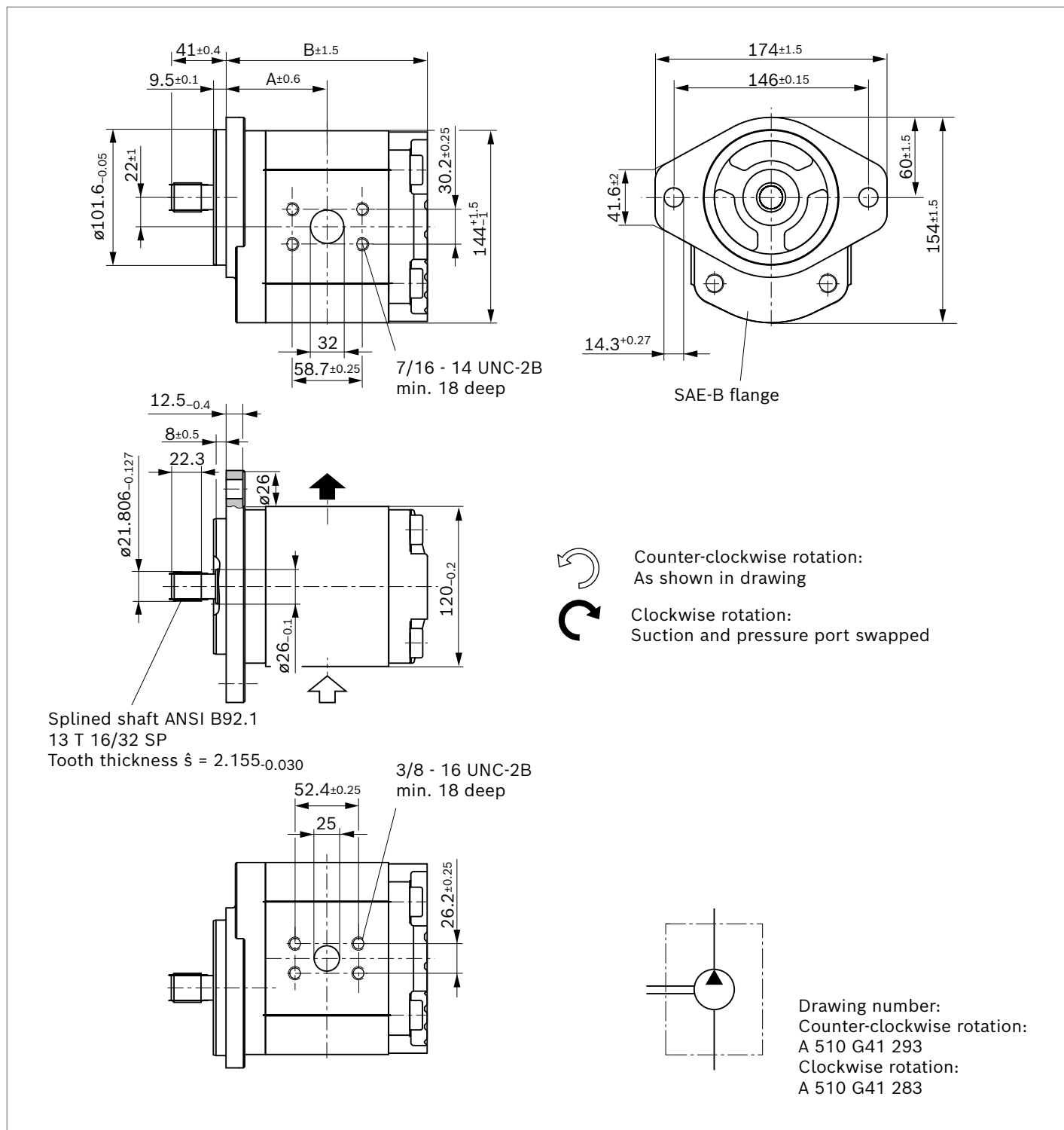
AZPG-22- ... DC40MB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{\max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
22	9510490051	9510490041	250	3000	66.4	130.3
25	9510490052	9510490042	250	3000	67.4	132.3
28	9510490053	9510490043	250	3000	68.7	134.8
32	9510490054	9510490044	250	2800	70.3	138.1
36	9510490055	9510490045	250	2800	71.9	141.5

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

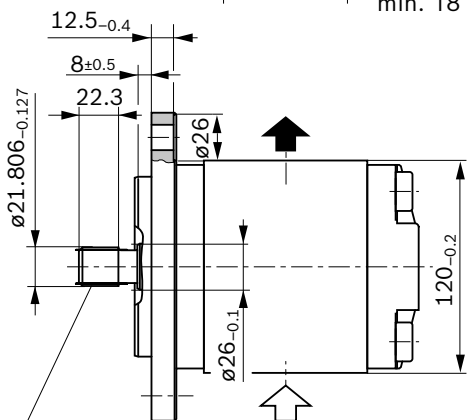
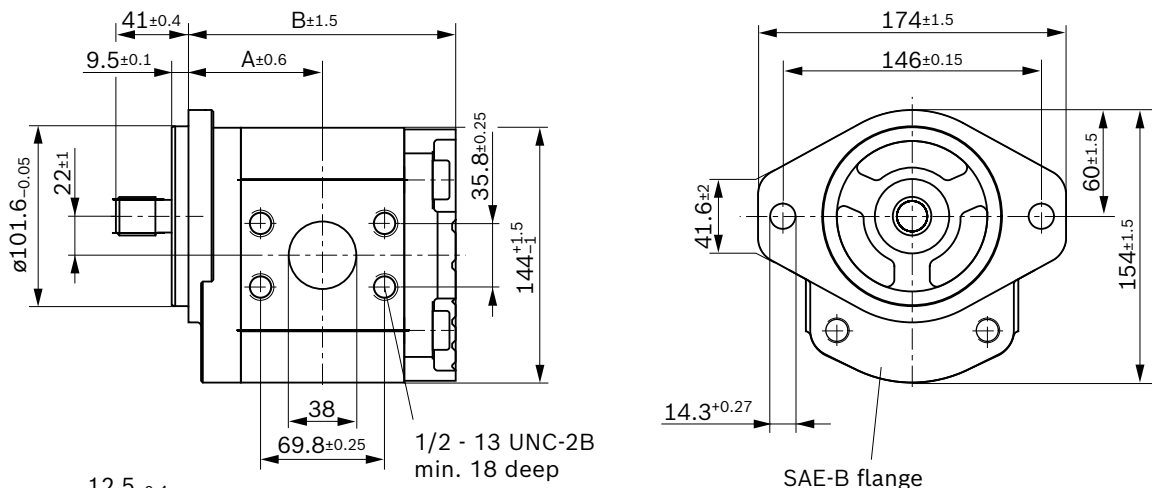
AZPG-22- ... DC40MB



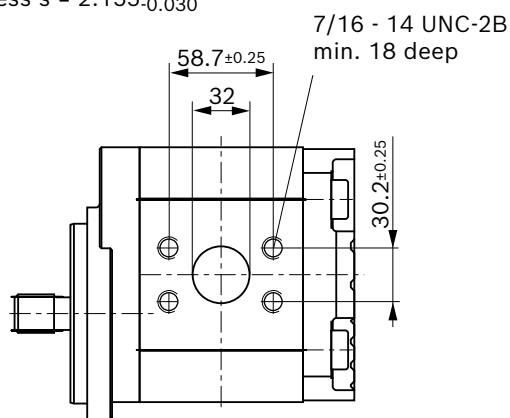
NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
40	9510490056	9510490046	250	2800	73.6	144.8
45	9510490057	9510490047	250	2600	75.6	148.8
50	9510490058	9510490048	220	2600	77.7	153.0



▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

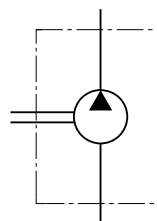
AZPG-22- ... DC40MB



Splined shaft ANSI B92.1  
 13 T 16/32 SP  
 Tooth thickness  $\hat{s} = 2.155_{-0.030}$



 Counter-clockwise rotation:  
 As shown in drawing  
 Clockwise rotation:  
 Suction and pressure port swapped

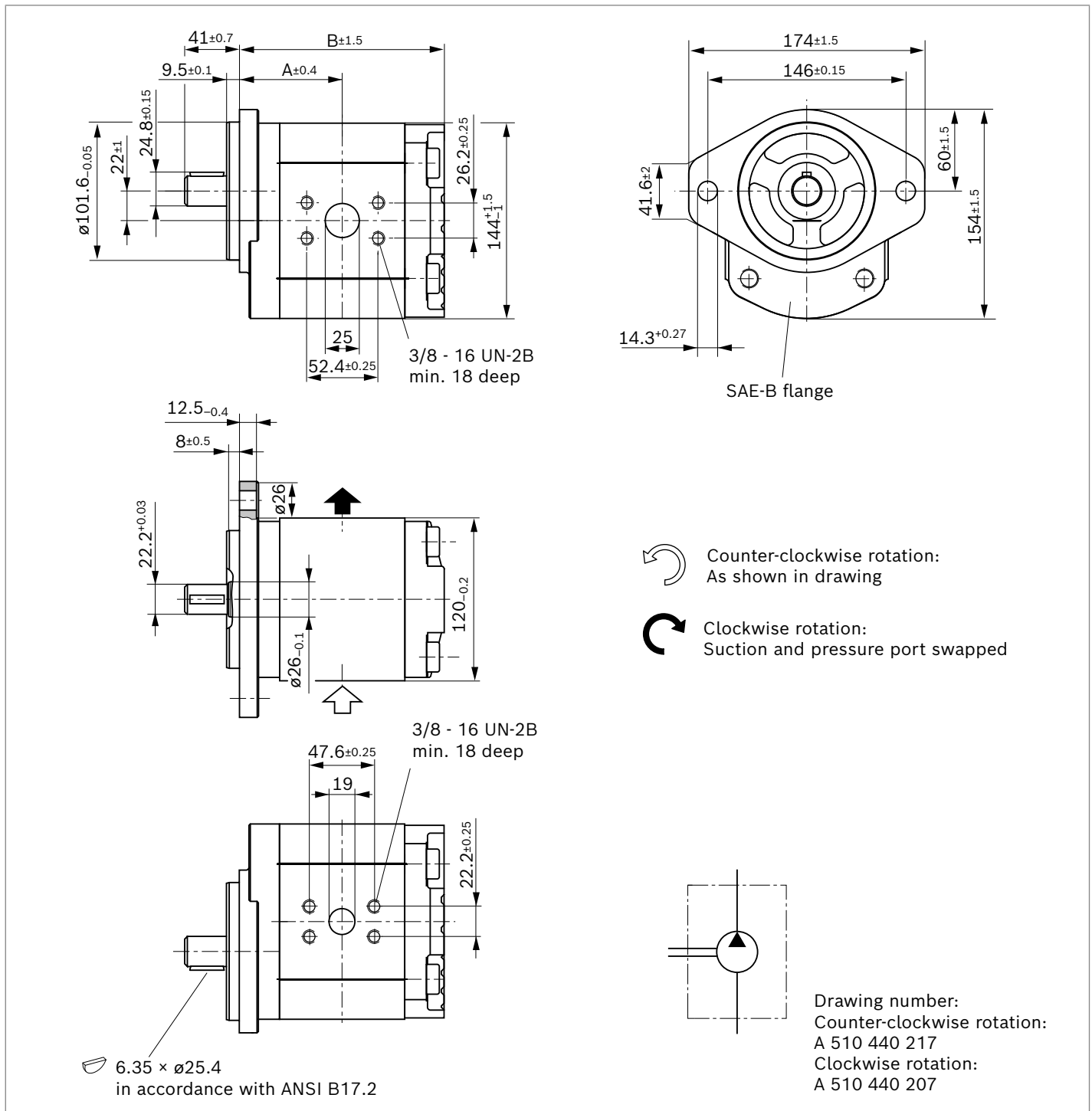


Drawing number:  
 Counter-clockwise rotation:  
 A 510 G41 296  
 Clockwise rotation:  
 A 510 G41 286

NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
56	9510490059	9510490049	195	2300	80.2	157.9
63	9510490060	9510490050	170	2300	83.1	163.8

▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

AZPG-22- ... **QC40MB**

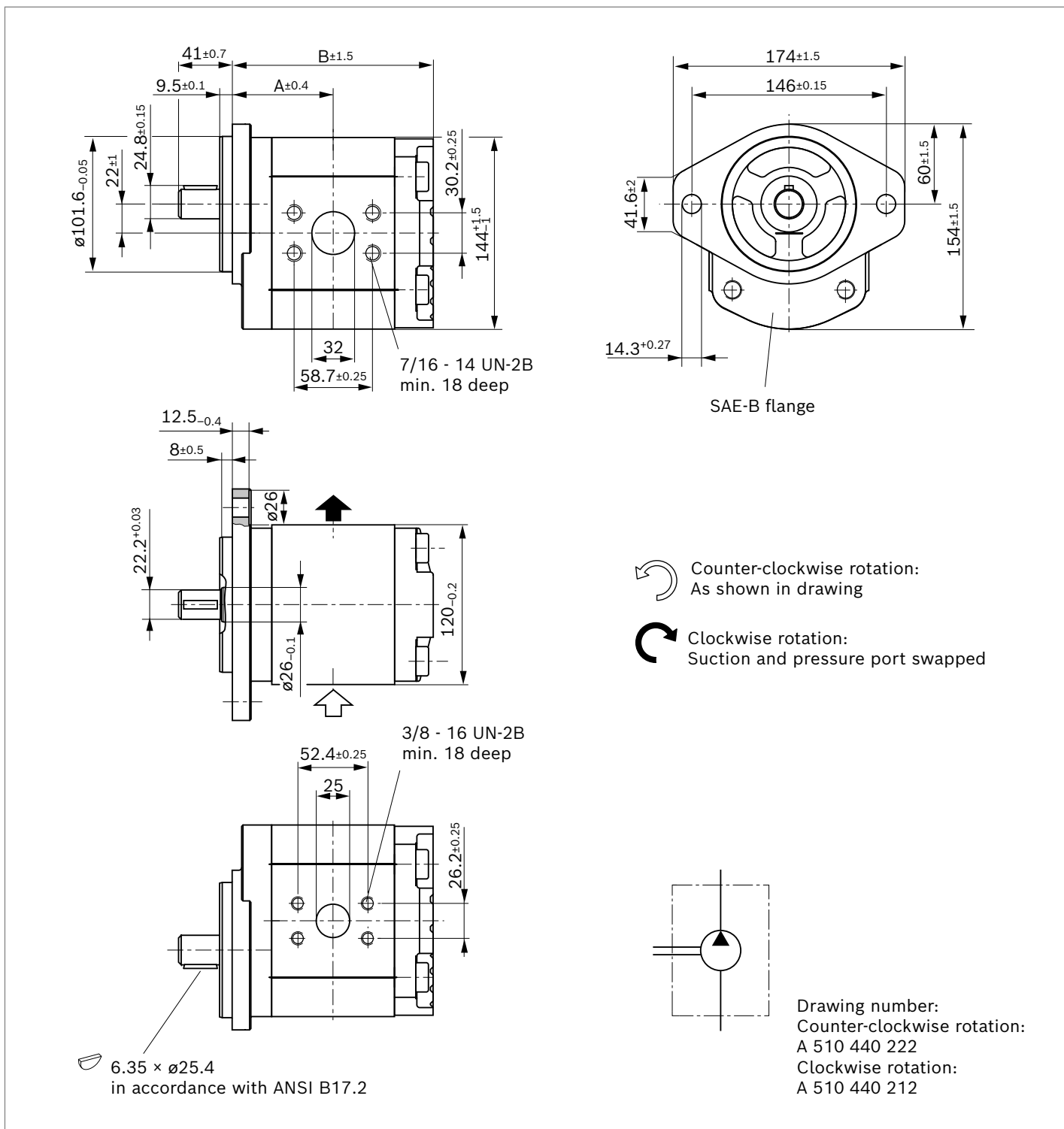


NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{\max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
22	9510490091	9510490081	250	3000	66.4	130.3
25	9510490092	9510490082	250	3000	67.4	132.3
28	9510490093	9510490083	250	3000	68.7	134.8
32	9510490094	9510490084	250	2800	70.3	138.1
36	9510490095	9510490085	250	2800	71.9	141.5



▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

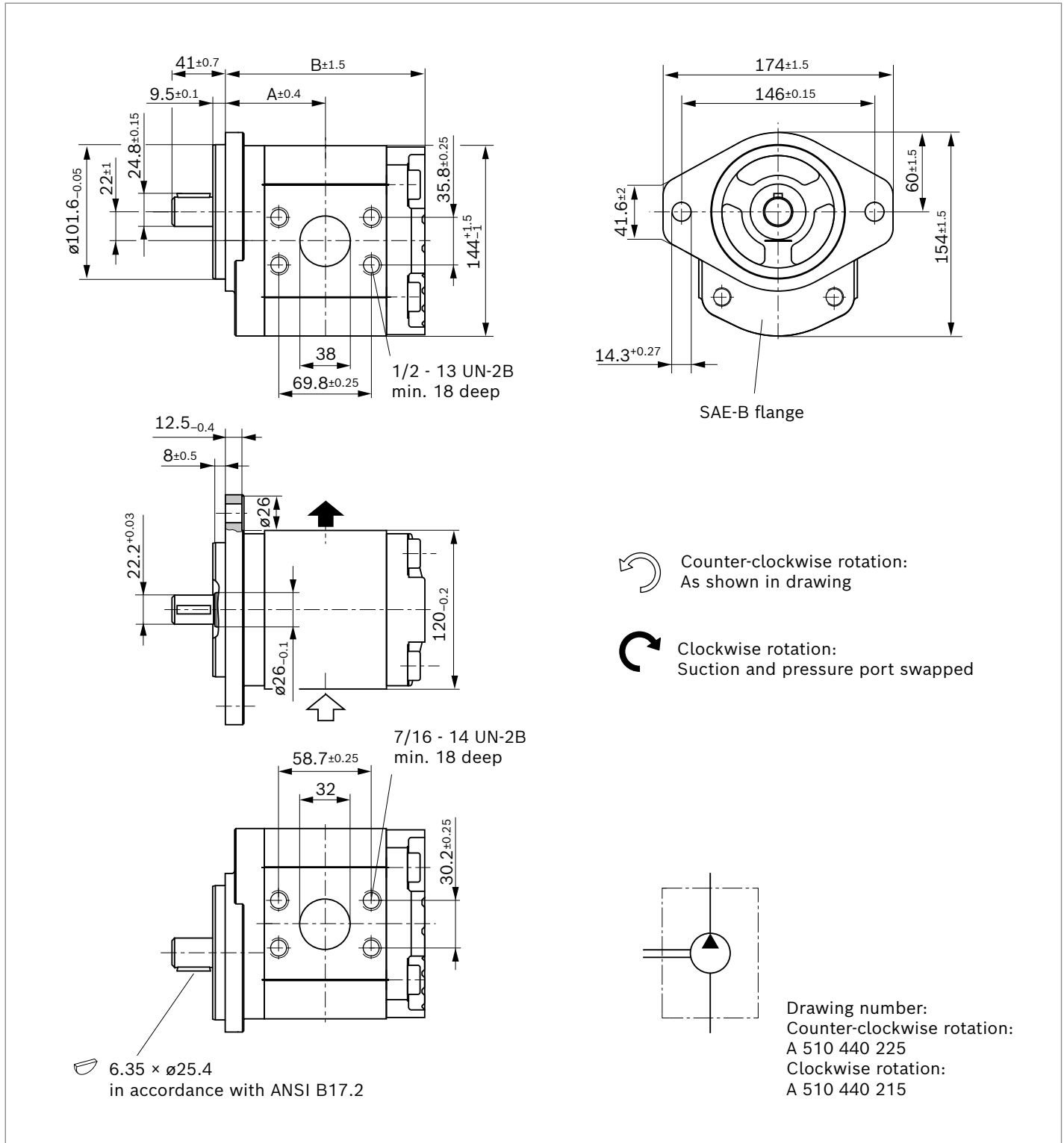
AZPG-22- ... **QC40MB**



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
40	9510490096	9510490086	250	2800	73.6	144.8
45	9510490097	9510490087	250	2600	75.6	148.8
50	9510490098	9510490088	220	2600	77.7	153.0

▼ **Parallel keyed shaft (SAE J744 22-1) with SAE J744 101-2 (B) 2-hole flange**

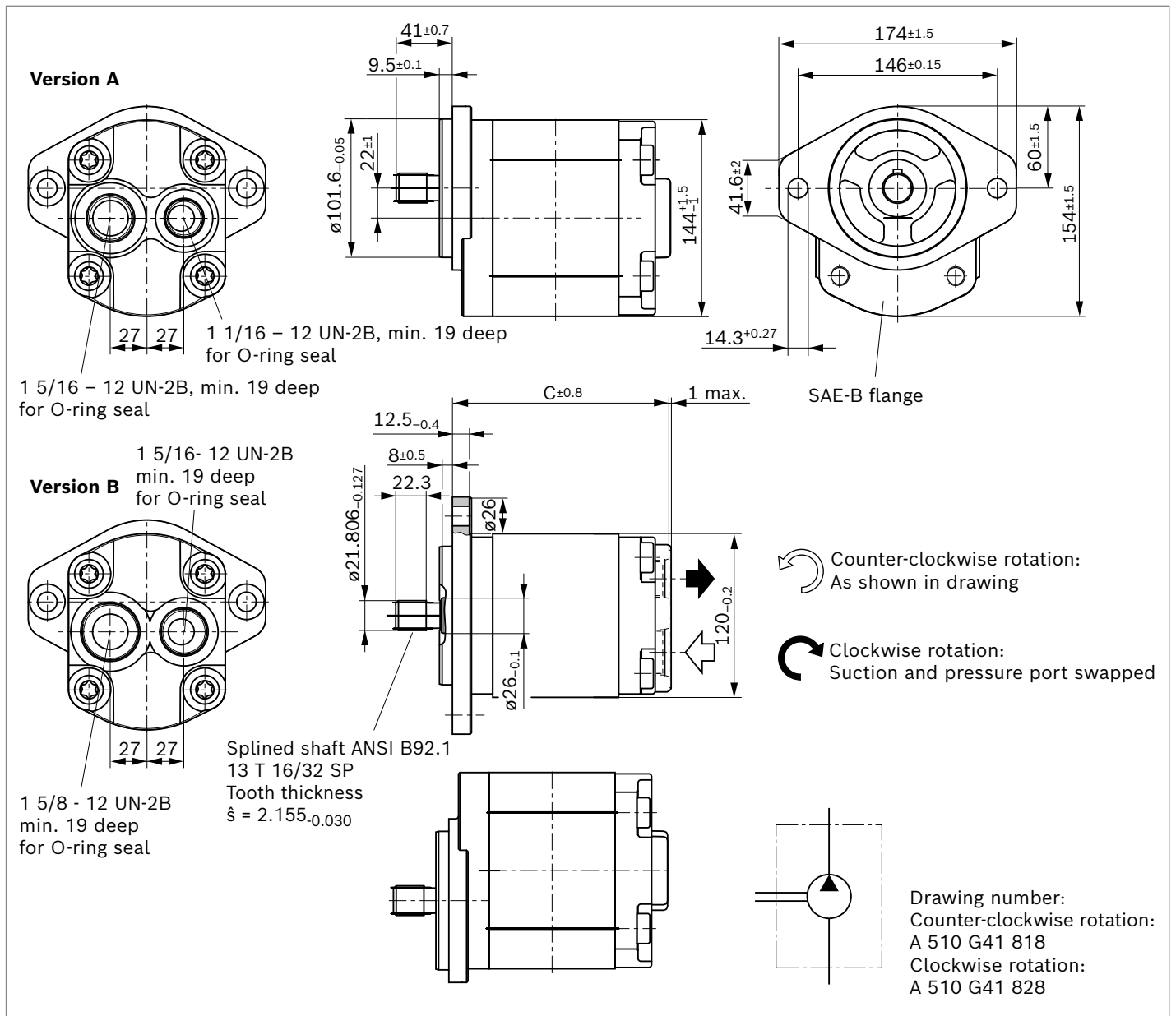
AZPG-22- ... **QC40MB**



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Dimensions	
	Direction of rotation				A mm	B mm
	Counter-clockwise	Clockwise				
56	9510490099	9510490089	195	2300	80.2	157.9
63	9510490100	9510490090	170	2300	83.1	163.8

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

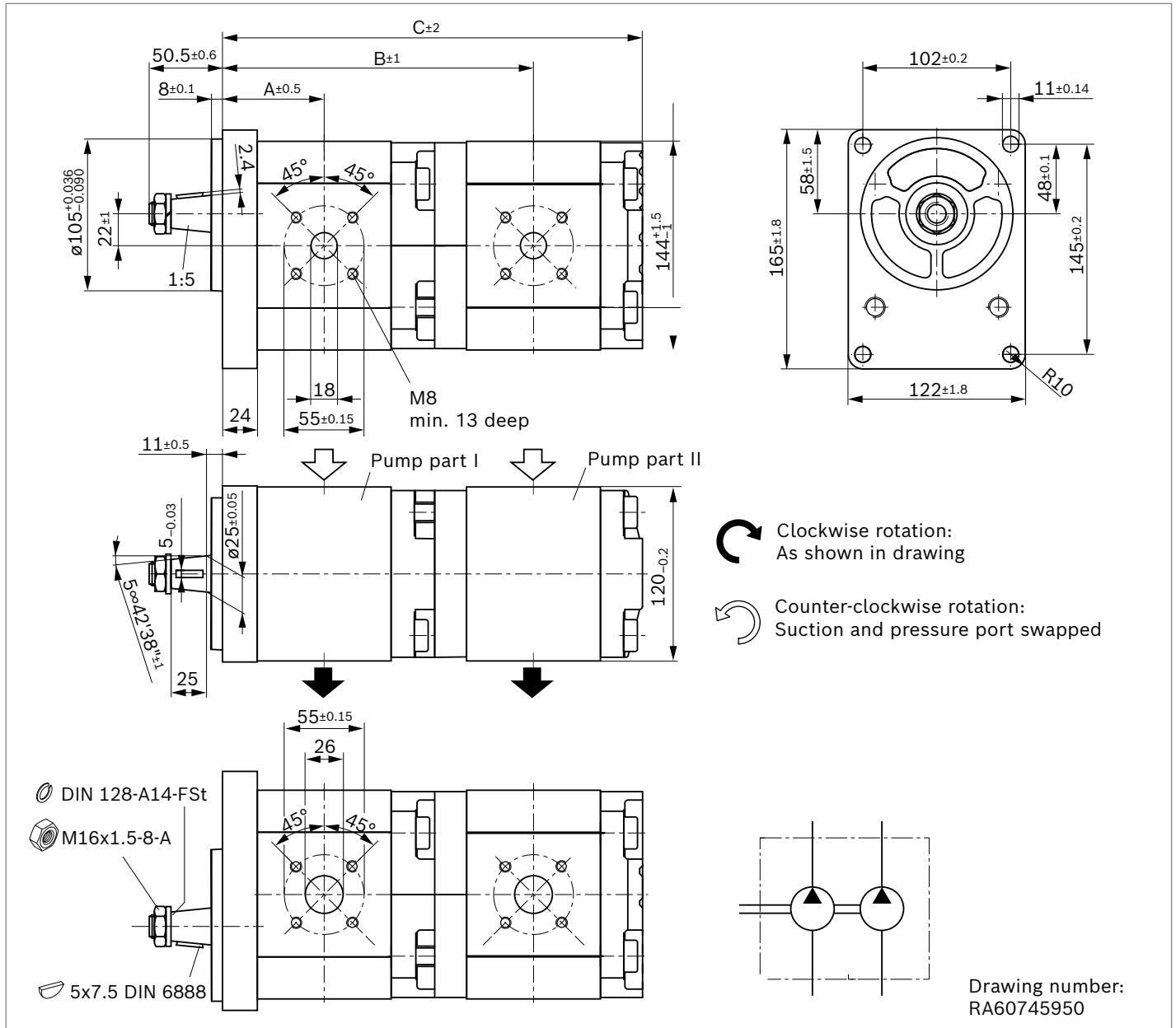
AZPG-22- ... DC12MA



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Dimensions C mm	Version
	Direction of rotation Counter-clockwise	Clockwise				
22	9510490071	9510490061	250	3000	141.2	A
25	9510490072	9510490062	250	3000	143.2	A
28	9510490073	9510490063	250	3000	145.7	A
32	9510490074	9510490064	250	2800	149.0	B
36	9510490075	9510490065	250	2800	152.4	B
40	9510490076	9510490066	250	2800	155.7	B
45	9510490077	9510490067	250	2600	159.7	B
50	9510490078	9510490068	220	2600	163.9	B
56	9510490079	9510490069	195	2300	169.8	B
63	9510490080	9510490070	170	2300	174.6	B

▼ **1:5 tapered shaft with rectangular flange  $\varnothing 105$  mm**

AZPGG-22- ... **CB2020MB**

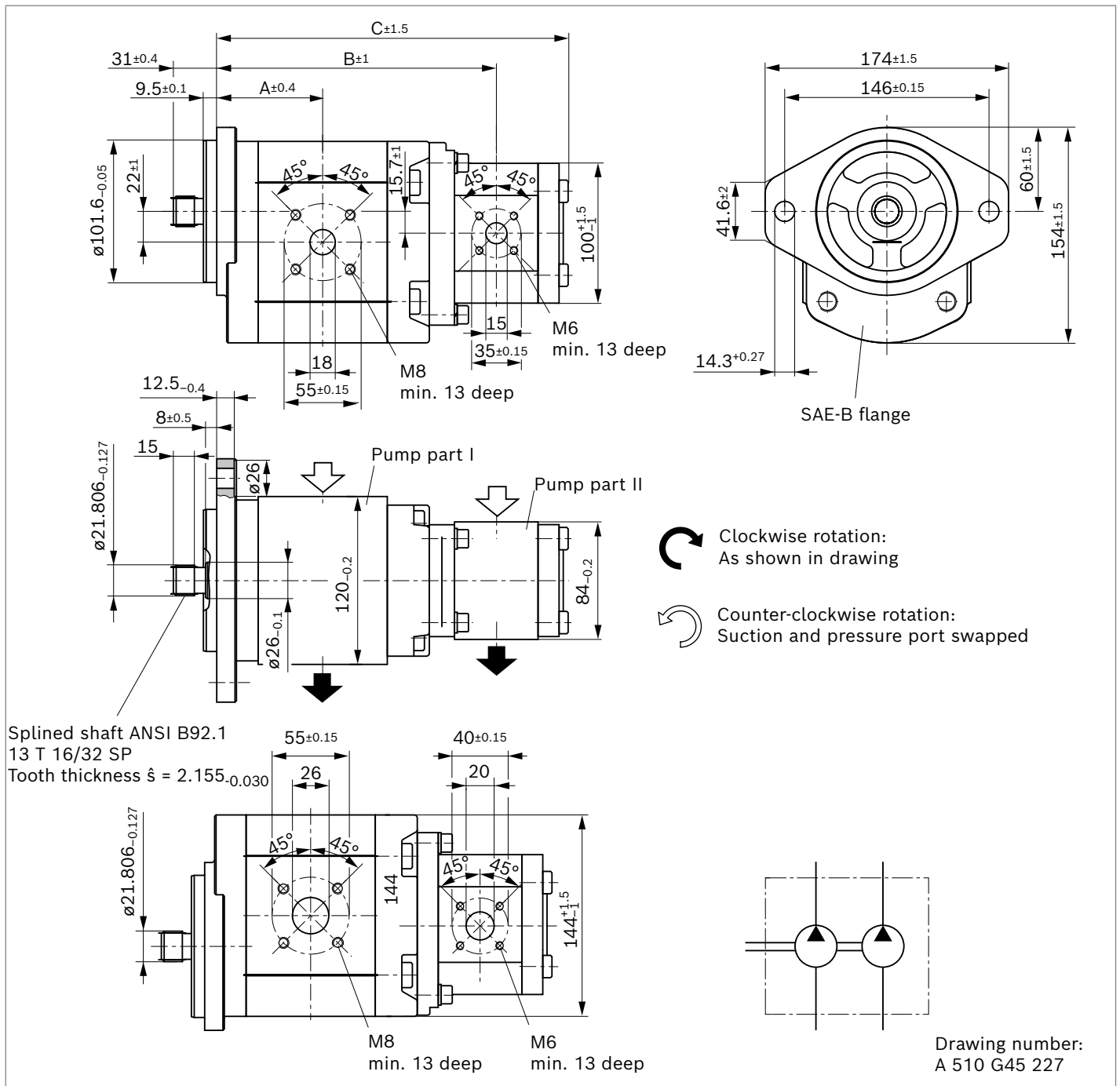


Drawing number:  
RA60745950

NG		Order number		Max. intermittent pressure $p_2$ [bar]		Max. rotational speed $n_{\max}$ [rpm]	Dimensions		
		Direction of rotation					A mm	B mm	C mm
P I	P II	Counter-clockwise	Clockwise	P I	P II				
22	22	0510765430	0510765115	280	280	3000	60.9	186.4	250.4
32	22	0510767337	0510767079	280	280	2800	64.8	194.2	258.2
32	32	0510767336	0510767078	280	230	2800	64.8	198.1	266.0
40	22	0510768332	0510768051	260	280	2800	68.1	200.9	264.8
40	32	0510768331	0510768050	230	230	2800	68.1	204.8	272.6
40	40	0510768330	0510768049	230	180	2800	68.1	208.1	279.3
45	22		0510769033	230	280	2600	70.1	204.9	268.9
45	32		0510769032	200	230	2600	70.1	208.9	276.3
45	40		0510769031	200	180	2600	70.1	212.2	283.3
45	45	0510769325	0510769030	200	160	2600	70.1	214.2	287.4
56	40		0510865013	170	180	2300	74.7	221.3	292.4

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

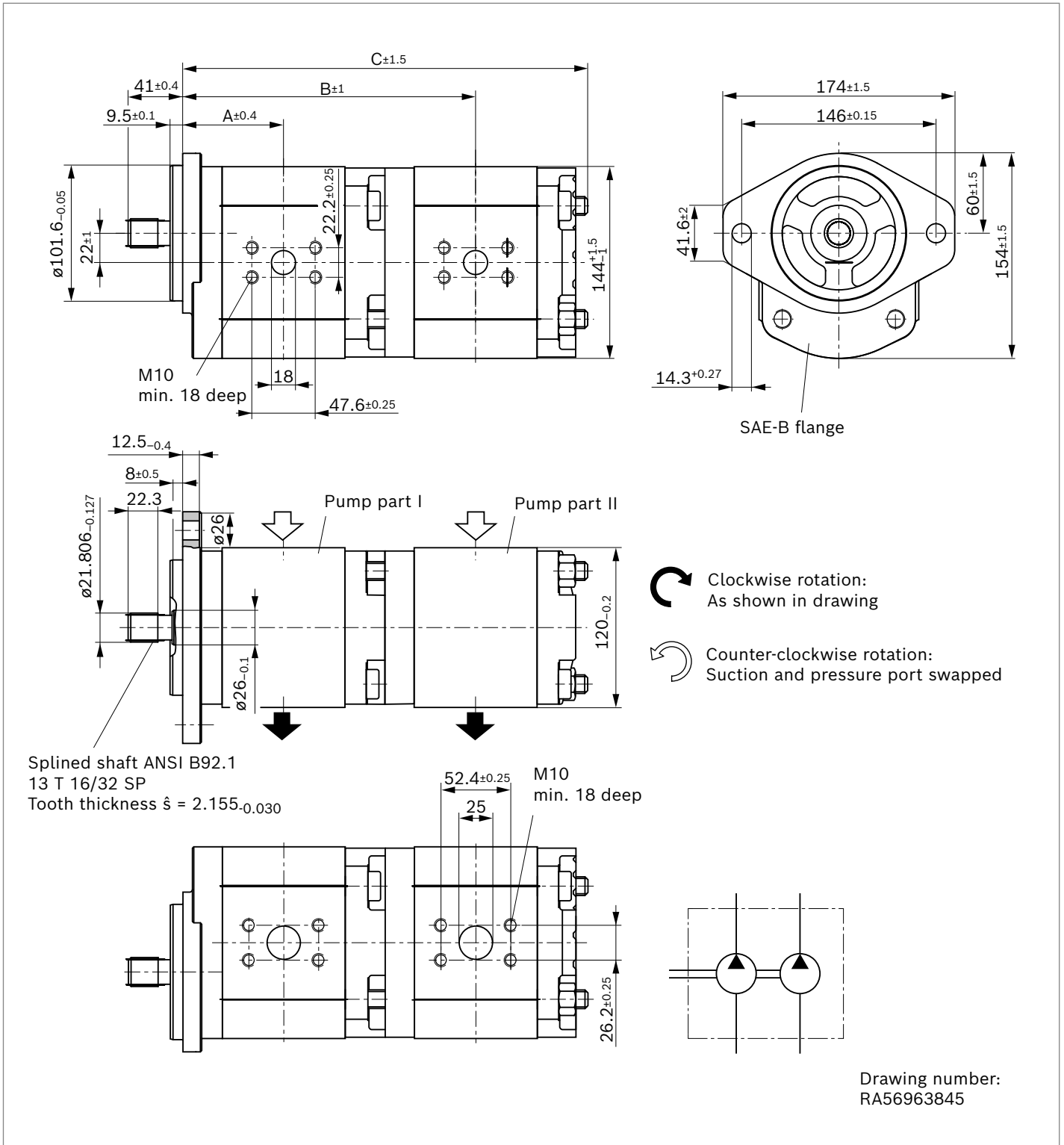
AZPGF-22- ... DC2020MB



NG		Order number		Max. intermittent pressure $p_2$ [bar]		Max. rotational speed $n_{max}$ [rpm]	Dimensions		
Direction of rotation							A mm	B mm	C mm
P I	P II	Counter-clockwise	Clockwise	P I	P II				
22	16		0510765118	250	230	3000	66.4	181.2	236.2
32	16			250	230	2800	70.3	189.0	244.0
56	16	0510665320	0510767067	200	230	2300	80.2	208.8	263.8
56	16	0510665319		200	190	2300	80.2	208.8	268.8
56	22		0510865016	200	190	2300	80.2	216.4	274.2

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

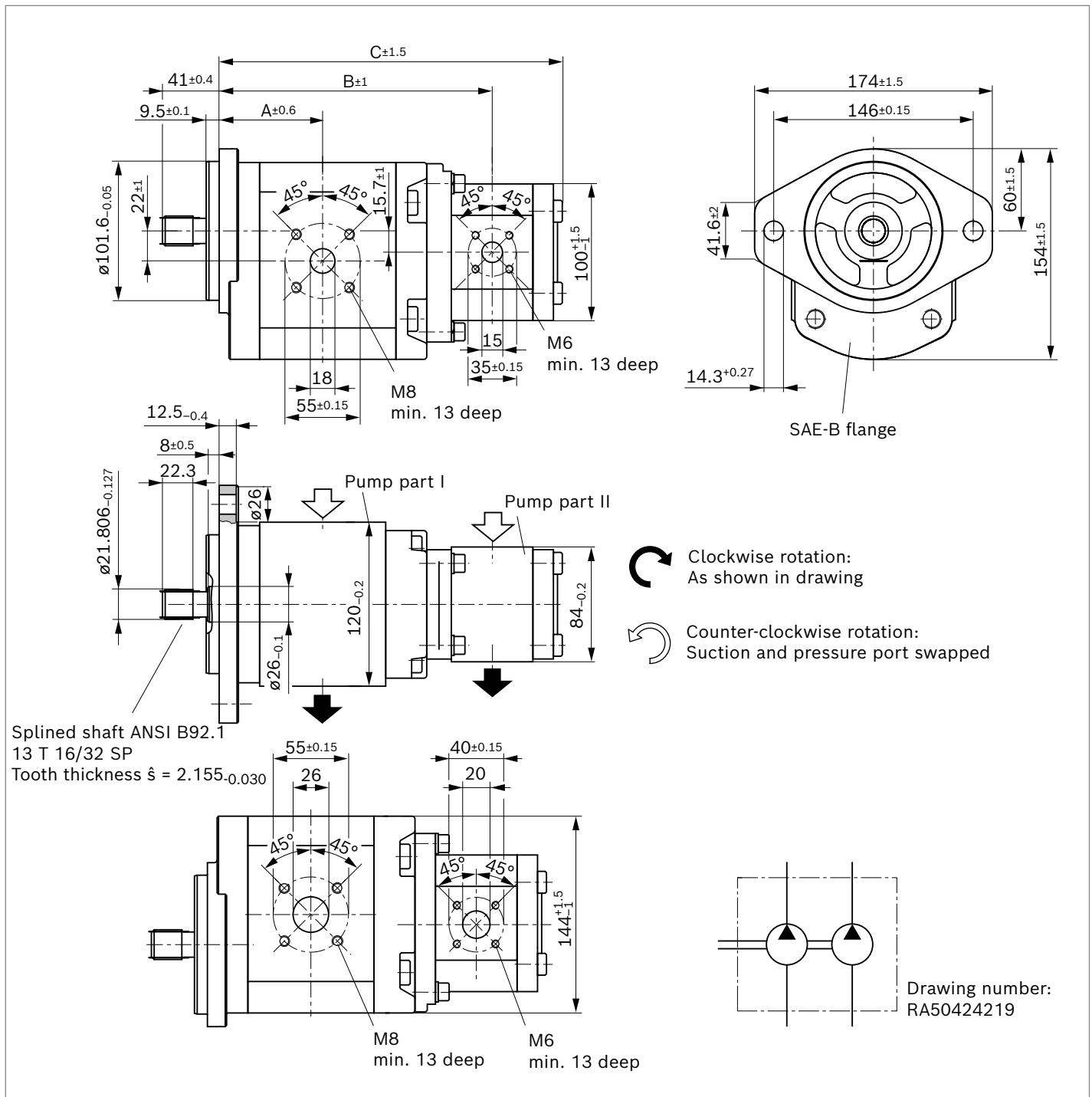
AZPGG-22- ... DC0707MB



NG	Order number		Max. intermittent pressure $p_2$ [bar]	Max. rotational speed $n_{max}$ [rpm]	Dimensions				
	Direction of rotation				A mm	B mm	C mm		
P I	P II	Counter-clockwise	Clockwise	P I	P II				
28	28		0510766016	260	260	2500	68.7	198.7	269.2

▼ **Splined shaft (SAE J744 22-4 13T) with 2-hole flange SAE J744 101-2 (B)**

AZPGF-22- ... DC2020MB (... KB)





NG		Order number		Max. intermittent pressure $p_2$ [bar]		Max. rotational speed $n_{max}$ [rpm]	Dimensions		
		Direction of rotation					A mm	B mm	C mm
P I	P II	Counter-clockwise	Clockwise	P I	P II				
32	11	0510767324 <sup>1)</sup>		280	280	1700	70.3	188.5	235.6
32	14		0510767066	280	260	2800	70.3	189.0	240.6
32	16	0510767330		280	230	2800	70.3	189.0	244.0
32	16	0510767328 <sup>1)</sup>	0510767064 <sup>1)</sup>	280	230	2800	70.3	189.0	244.0
40	14		0510768043	280	260	2800	73.6	195.6	247.3
45	11	0510769318 <sup>1)</sup>		250	280	1700	75.6	199.2	246.4
45	16	0510769319 <sup>1)</sup>		250	230	1700	75.6	199.7	254.8
45	16		0510769022	280	230	2600	75.6	199.7	254.8
45	19	0510769321	0510769023	280	190	2600	75.6	199.7	259.8

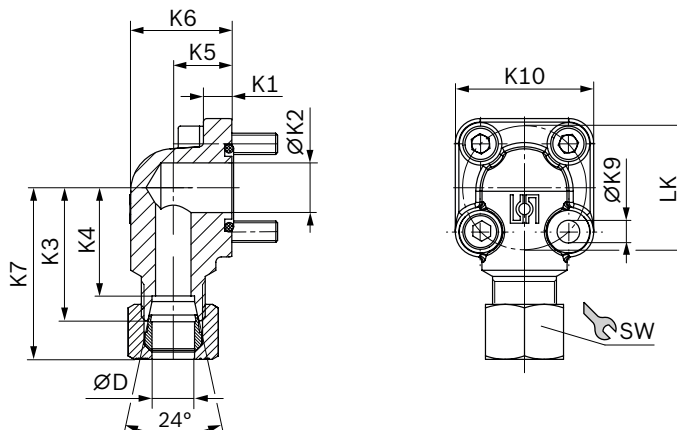
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1) Version with shaft seal in FKM (type code: ...KB)

## Accessories

### 90° angled flange, for square flange 20

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



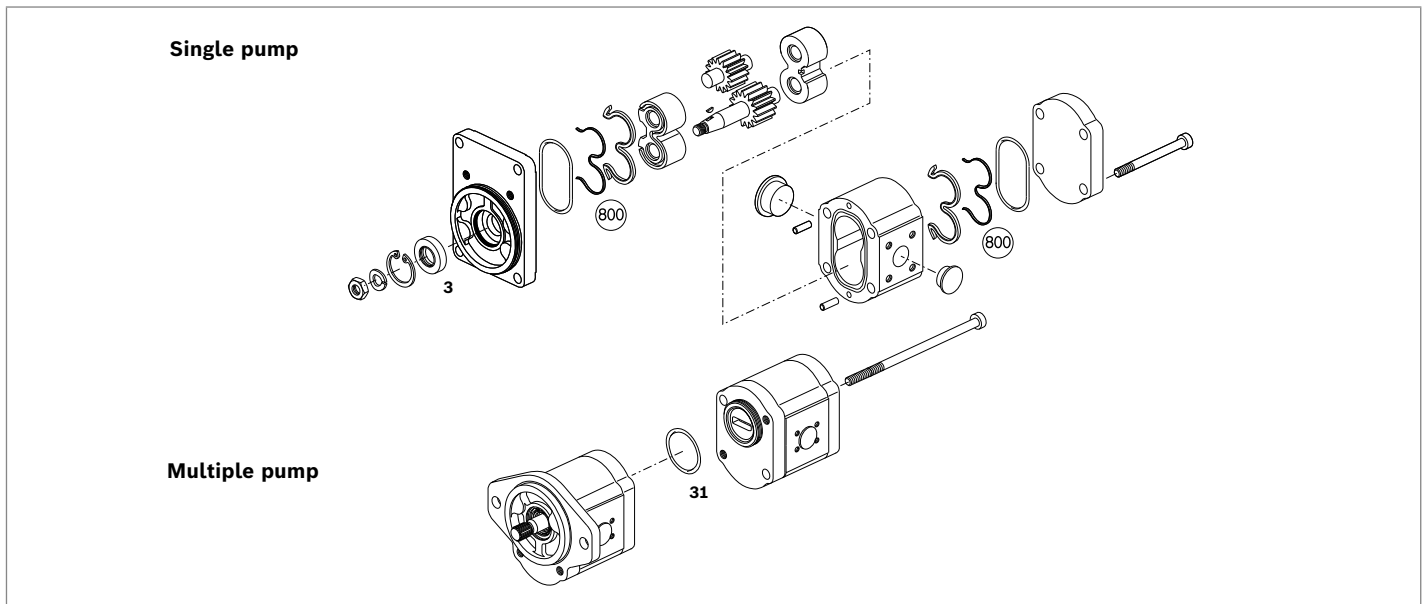
LK	D	Series <sup>1)</sup>	Material number	$p_{max}$ bar	K1	K2	K3	K4	K5	K6	K7	K9	K10	SW	Screws 2 ×	Screws 2 ×	O-ring NBR	Weight kg
55	20	S	1 515 702 004	250	13	18.2	45	34.5	24	38	57	8.4	58	36	M8 × 25	M8 × 50	32 × 2.5	0.62
55	30	S	1 545 719 006	250	12	26.5	49	38.5	32	51	63.5	8.4	58	50	M8 × 25	M8 × 50	32 × 2.5	0.63
55	35	L	1 515 702 005	100	12	26.5	49	38.5	32	52	61	8.4	58	50	M8 × 25	M8 × 60	32 × 2.5	0.77
55	42	L	1 515 702 019	100	12	26.5	49	38	40	64	61.5	8.4	58	60	M8 × 25	M8 × 70	32 × 2.5	1.04

#### Notice

Max. permissible 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

## Spare parts



Page	Type code	Seal kit "G" NBR	Shaft seal Pos. 3	Quantity	Dimensions	Material
23	AZPG – 22 – ....CB20MB	1517010231	1510283072	1	42×26×7	NBR
24	AZPG – 22 – ....HO30MB	1517010231	1510283072	1	42×26×7	NBR
25, 26, 27	AZPG – 22 – ....DC07KB	1517010231	1510283069	1	42×26×7	FKM
28, 29, 30	AZPG – 22 – ....QC12MB – S0662	1517010231	1510283072	1	42×26×7	NBR
31, 32, 33	AZPG – 22 – ....AX07KB – S0303	1517010231	1510283069	1	42×26×7	FKM
34, 35, 36	AZPG – 22 – ....DC07KB – S0039	1517010231	1510283069	1	42×26×7	FKM
37, 38, 39	AZPG – 22 – ....DC12MB	1517010231	1510283072	1	42×26×7	NBR
40, 41, 42	AZPG – 22 – ....QC12MB	1517010231	1510283072	1	42×26×7	NBR
43	AZPG – 22 – ....QC12MA	1517010234	1510283072	1	42×26×7	NBR
44, 45, 46,	AZPG – 22 – ....DC40MB	1517010231	1510283072	1	42×26×7	NBR
47, 48, 49	AZPG – 22 – ....QC40MB	1517010231	1510283072	1	42×26×7	NBR
50	AZPG – 22 – ....DC12MA	1517010234	1510283072	1	42×26×7	NBR
51, 52	AZPGG – 22 – .... CB2020MB			1	42×26×7	NBR
	Pump stage 1	1517010231	1510283072	1	42×26×7	NBR
			1510283075	1	42×26×7	FKM
	Pump stage 2	1517010208				
53	AZPGF – 22 – .... DC2020MB					
	Pump stage 1	1517010231	1510283069	2	42×26×7	FKM
	Pump stage 2	1517010208				
54	AZPGG – 22 – .... DC0707MB					
	Pump stage 1	1517010231	1510283072	1	42×26×7	NBR
			1510283075	1	42×26×7	FKM
	Pump stage 2	1517010231				
55, 56	AZPGF–22– ... DC2020MB					
	Pump stage 1	1517010231	1510283069	2	42×26×7	FKM
	Pump stage 2	1517010208				
<b>For multiple pumps</b>	O-ring: Pos. 31	1900210145				NBR

## 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 pump should only be operated to tested data (see chapter "Technical data").

### Characteristic curves

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

### Filtration of the hydraulic fluid

Since the majority of premature failures in gear pumps occur due to contaminated hydraulic fluid, filtration should maintain a cleanliness level of at least 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 may not exceed class 20/18/15 according to ISO 4406. Experience has shown that even 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 selected type of filtration must be adapted to the sensitivity of these devices.

### Notice

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

### Further information

Installation drawings and dimensions are valid at date of publication, subject to modifications.

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

## Order number overview

Order number	Type	Page	Order number	Type	Page
0510725441	AZPG-22-022LCB20MB	24	0510725437	AZPG-22-032LDC07KB	27
0510725442	AZPG-22-025LCB20MB	24	0510725438	AZPG-22-036LDC07KB	27
0510725443	AZPG-22-028LCB20MB	24	0510725439	AZPG-22-040LDC07KB	27
0510725444	AZPG-22-032LCB20MB	24	0510725440	AZPG-22-045LDC07KB	27
0510725445	AZPG-22-036LCB20MB	24	0510825321	AZPG-22-050LDC07KB	27
0510725446	AZPG-22-040LCB20MB	24	0510725160	AZPG-22-032RDC07KB	27
0510725447	AZPG-22-045LCB20MB	24	0510725161	AZPG-22-036RDC07KB	27
0510825324	AZPG-22-050LCB20MB	24	0510725162	AZPG-22-040RDC07KB	27
0510825325	AZPG-22-056LCB20MB	24	0510725163	AZPG-22-045RDC07KB	27
0510825326	AZPG-22-063LCB20MB	24	0510825021	AZPG-22-050RDC07KB	27
0510725164	AZPG-22-022RCB20MB	24	0510825322	AZPG-22-056LDC07KB	28
0510725165	AZPG-22-025RCB20MB	24	0510825323	AZPG-22-063LDC07KB	28
0510725166	AZPG-22-028RCB20MB	24	0510825022	AZPG-22-056RDC07KB	28
0510725167	AZPG-22-032RCB20MB	24	0510825023	AZPG-22-063RDC07KB	28
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0510767066	AZPGF-22-032 / 014RDC2020MB	56-57
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0510769022	AZPGF-22-045 / 016RDC2020MB	56-57
0510769023	AZPGF-22-045 / 019RDC2020MB	56-57

## 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 you are looking for SILENCE PLUS or any other external gear unit.

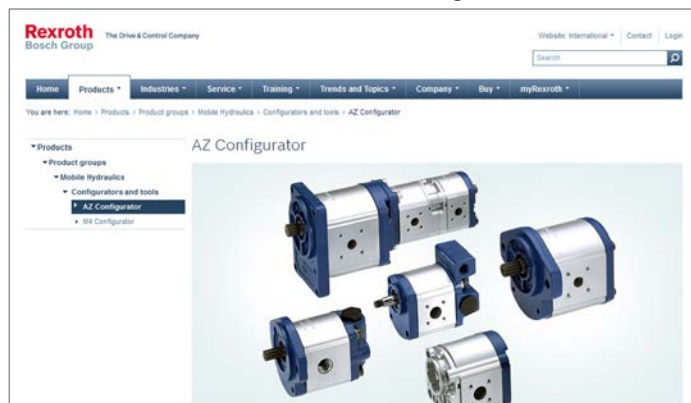
Based on a selection of features, the selector guides you through all of the products available for order. By clicking on the order number, you can view and download the following product information: data sheet, dimension sheet, instruction manual, operating conditions and tightening torques.

You can order your selection directly via our online shop and benefit from an additional discount of 2% in this way. And if you need something really quickly, simply use our fast delivery and preferred programs (GoTo). Your order will then be dispatched 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 data required for the project planning of external gear units can be obtained through the menu navigation.

For an existing configuration, the result is the order number, the type code and further information. If your configuration does not result in an orderable product, our online tools give you the possibility of sending a project request directly to Bosch Rexroth. We will then get in contact with you.

Link: [www.boschrexroth.com/az-configurator](http://www.boschrexroth.com/az-configurator)



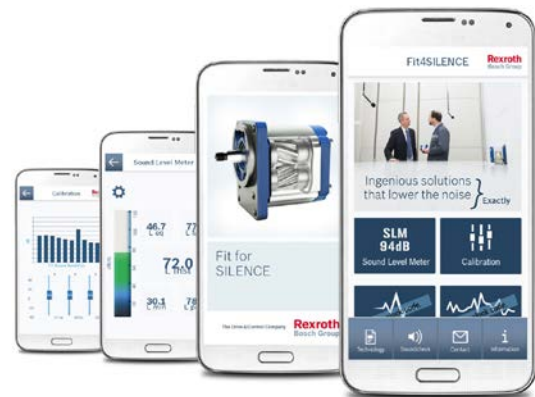
## Fit4SILENCE app

Do you want to quickly determine the noise level of an application but don't have a measuring device at hand? With Fit4SILENCE, this is no longer a problem! Our new noise measurement app for all Android devices can be directly downloaded for free. After calibration, you can start using it straight away and conduct fast, accurate noise measurements with different weightings in no time at all. An additional measuring device is no longer required since calibrated smartphones using the app can achieve an accuracy that approximates professional measuring devices.

Last but not least, the app contains interesting information about SILENCE PLUS technology, including an audio sample.

Link: [www.boschrexroth.com/silence-plus](http://www.boschrexroth.com/silence-plus)

### ▼ Download the Android app:



## Other related documents

Extensive notes and suggestions can be found in the Hydraulic Trainer, volume 3: "Planning and Design of Hydraulic Power Systems", order number R900018538.

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