

External gear pump Standard performance

AZPW

RE 10090

Edition: 06.2016



- ▶ Platform F
- ▶ Fixed displacement
- ▶ Sizes 4 to 22
- ▶ Continuous pressure up to 190 bar
- ▶ Intermittent pressure up to 210 bar

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 customer-specific solutions
- ▶ Line connections: Connection flange or screw-in thread

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Functional description

General

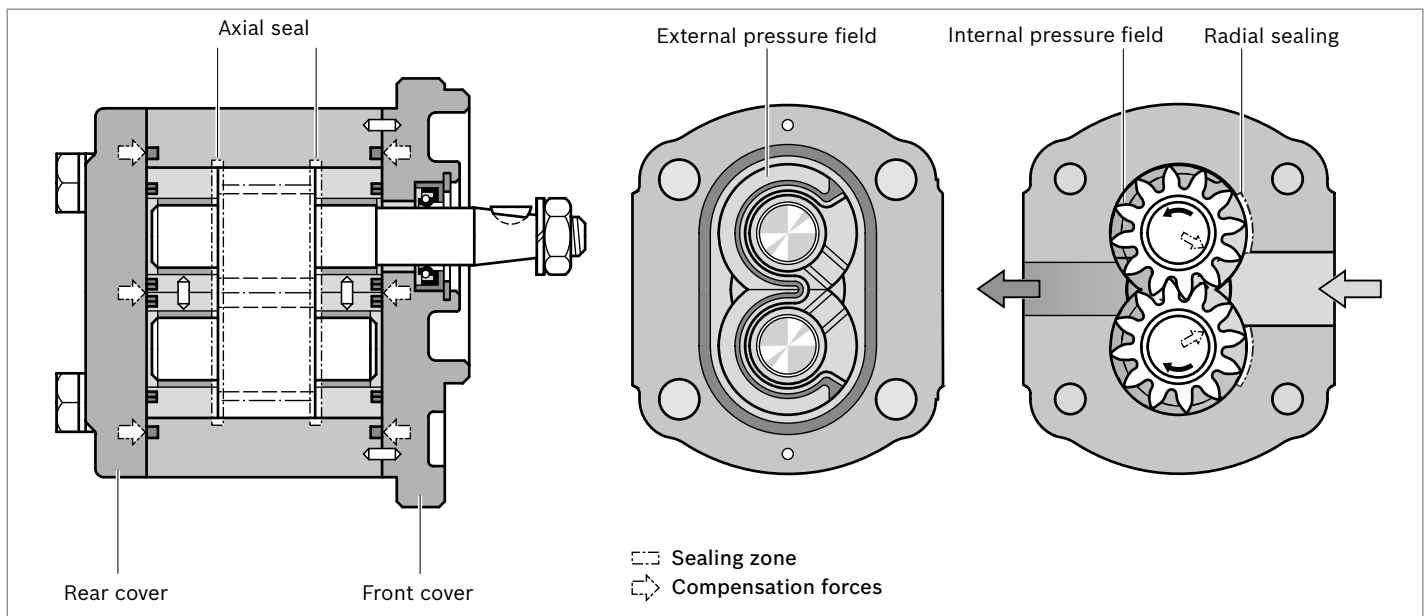
Rexroth external gear pumps are available as standard performance gear pumps in the series W. The displacements are graded by different gear widths. Further configuration variants are given by different flanges, shafts, valve arrangements and multiple pump combinations.

Construction

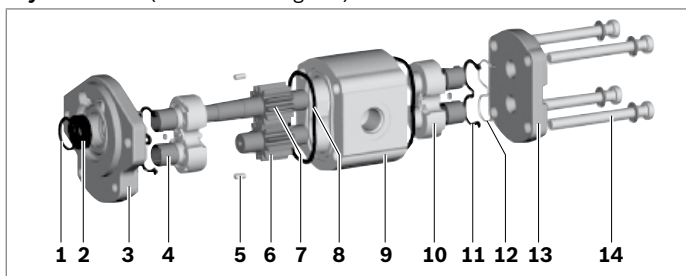
The external gear pump consists essentially of a pair of gear wheels supported in bearing bushes and the housing with a front and a rear cover. The drive shaft protrudes from the front cover where it is usually sealed by the shaft seal. The bearing forces are absorbed by slide bearings.

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. Special seals form the boundary of the pressurized zone. The radial sealing at the tips of the gear teeth against the case is provided by smallest possible gaps that are formed pressure-dependent between the gear wheels and the housing.

▼ Axial compensation standard performance

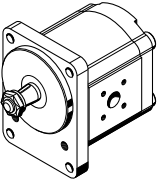
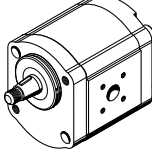
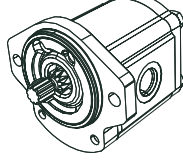
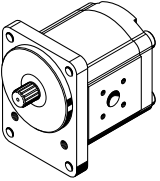
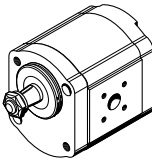
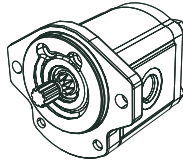
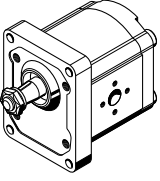
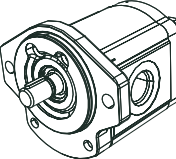
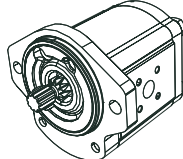
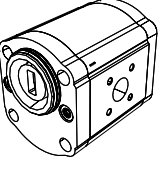
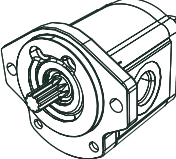
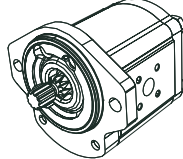
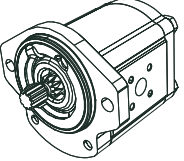


▼ Layout AZPW (schematic diagram)



- | | |
|------------------|---------------------|
| 1 Snap 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 Support element |
| 6 Gear wheel | 13 Rear cover |
| 7 Drive shaft | 14 Hexagon screw |

Product overview AZPW preferred types

Version	Page	Version	Page	Version	Page
	16		20		24
				Suction port in the front cover	
	17		21		25
	18		22		26
				Suction port in the front cover	
	19		23		27
	28				
Line connections in Non-standard version					

4 **AZPW Standard performance** | External gear pump
Type code single pump

Type code single pump

01	02	03	04	05	06	07	08	09	10	11	12	
AZP	W	-	1	-						B	-	

External gear unit

01	External gear pump	AZP
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Series

02	Standard performance, platform F	W
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Series

03	Standard housing	1
	Stronger housing	2

Version

04	Phosphated	1
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Size (NG)

05	Geometric displacement V_g [cm ³], see "Technical data" on page 6	004	005	008	011	014	016	019	022
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Direction of rotation

06	Viewed on drive shaft	clockwise	R
		counter-clockwise	L

Drive shaft



Suitable front cover

07	Tapered shaft	1 : 5	B, P	C
		1 : 8	O	H
	Dihedral, claw		T	N
	Splined shaft	SAE J744 16-4 9T	R	R
		DIN 5482 B17 × 14	B, P	F
	Parallel keyed shaft	SAE J744 16-1 A	R	Q

Front cover

08	Rectangular flange	Ø80 mm	B	
		Ø36.47 mm	O	
	2-bolt flange	Ø82.55 mm	SAE J744 82-2 A	R
		Ø50 mm	connection variant 1	N
		Ø50 mm	connection variant 2	P
	4-bolt mounting	Ø52 mm	with O-ring	T

Line connection

09	Thread UNF-2B, SAE O-ring		12
	Square flange		20
	Square flange		30
	Non-standard size		XX

Sealing material

10	NBR (nitrile rubber)	M
	FKM (fluoroelastomer)	P

01	02	03	04	05	06	07	08	09	10	11	12	
AZP	W	-		1	-					B	-	

Rear cover

11	Without valve (standard)	B
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Special version

12	Serial number, e.g., S0001	SXXXX
	Without nut and washer	S0007
	For mounting on an axial piston unit and suction port in the front cover	S0036
	For mounting on an axial piston unit	S0081
	For mounting on an axial piston unit and line connections in Non-standard version	S0593

Note

- ▶ Not all of the variants according to the type code are 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.

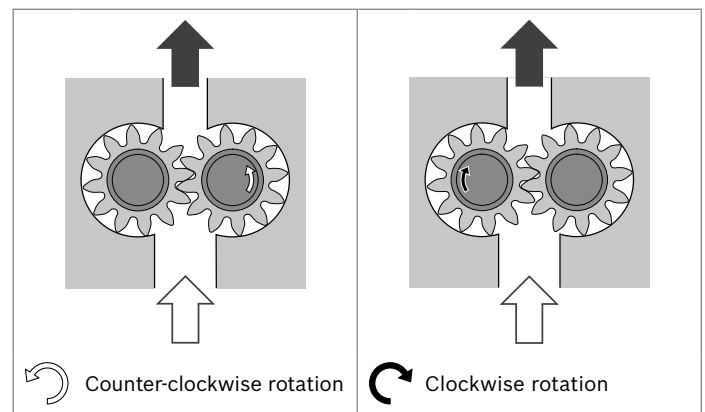
Technical data

General			
Installation position		Any	
Mounting type		See proposal drawing	
Line connections		See proposal drawing The screw threads for the suction and pressure port, that are manufactured true to gauge, are deformed slightly due to the pump assembly. The mounting of conventional screw fittings in accordance with DIN EN ISO 1179, 6149, 9974 etc. is easily possible.	
Direction of rotation (viewed on drive shaft)		Clockwise or counter-clockwise, the pump may only be driven in the direction indicated	
Drive shaft loading		Radial and axial forces only after consultation	
Ambient temperature range θ		°C	-30 to +80 with NBR seals -20 to +110 with FKM seals
Hydraulic			
Hydraulic fluid		Mineral oil according to DIN 51524, 1-3, however under higher load at least HLP compliant with DIN 51524 Part 2 is recommended. Please observe data sheet 90220. Other hydraulic fluids on request	
Hydraulic fluid temperature range		θ °C	-30 to +80 with NBR seals (NBR = nitrile rubber) -20 to +110 with FKM seals (FKM = fluoroelastomer)
Viscosity range	Permissible in continuous operation	ν	mm ² /s 12 to 800
	Recommended in continuous operation	ν_{opt}	mm ² /s 20 to 100
	Permissible for cold start	ν_{max}	mm ² /s ≤ 2000
Maximum admissible degree of contamination of the hydraulic fluid Cleanliness level according to ISO 4406 (c)		20/18/15 ¹⁾	

Note

- ▶ Safety requirements pertaining to the whole system are to be observed.
- ▶ Please contact us for applications with frequent load changes.
- ▶ The dimensions represent pumps for clockwise rotation. The position of the drive shaft or suction and pressure port changes for counter-clockwise rotation.

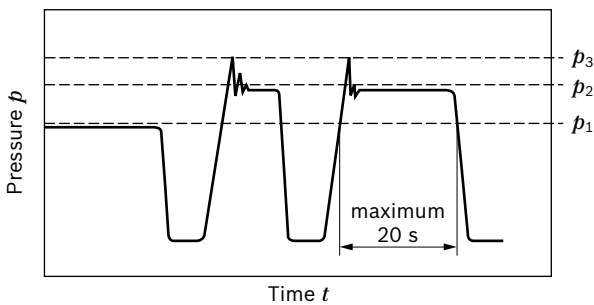
▼ Direction of rotation, viewed on drive shaft



1) 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.

AZPW-1x		NG	004	005	008	011	014	016	019	022	
Displacement, geometric, per revolution		V_g	cm ³	4.0	5.5	8.0	11.0	14.0	16.0	19.0	22.5
Pressure in suction port absolute		p_e	bar	0.7 to 3							
Maximum continuous pressure		p_1	bar	190	190	190	190	190	190	180	170
Maximum intermittent pressure		p_2	bar	210	210	210	210	210	210	200	190
Maximum pressure peak		p_3	bar	230	230	230	230	230	230	220	210
Minimum speed	at 12 mm ² /s and < 100 bar	n_{min}	rpm	700	700	700	700	700	700	700	700
			rpm	1200	1200	1000	1000	800	800	800	800
			rpm	1400	1400	1400	1200	1000	1000	1000	1000
	at 25 mm ² /s and p_2		rpm	700	700	700	700	700	700	700	700
Maximum speed	at p_2	n_{max}	rpm	3500	3500	3500	3500	3000	3000	3000	2500

▼ **Pressure definition**

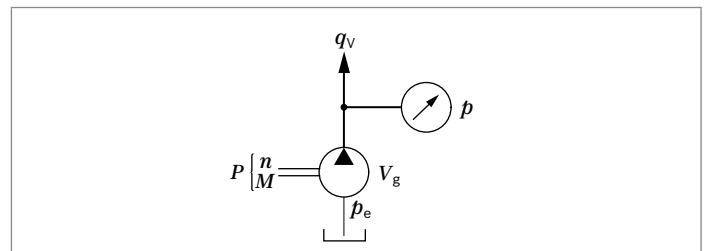


- p_1 Maximum continuous pressure
- p_2 Maximum intermittent pressure
- p_3 Maximum pressure peak

Design calculations for pumps		
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]
Pressure	$\Delta p = \frac{M \times 20 \times \pi \times \eta_{hm}}{V_g}$	[bar]
	$\Delta p = \frac{P \times 600 \times \eta_t}{q_v}$	[bar]
Displacement	$V_g = \frac{q_v \times 1000}{n \times \eta_v}$	[cm ³]
	$V_g = \frac{M \times 20 \times \pi \times \eta_{hm}}{\Delta p}$	[cm ³]
Rotational speed	$n = \frac{q_v \times 1000}{V_g \times \eta_v}$	[rpm]

Key

- V_g Displacement per revolution [cm³]
- Δp Differential pressure [bar] ($\Delta p = p - p_e$)
- n Rotational speed [rpm]
- q_v Flow [l/min]
- M Torque [Nm]
- P Power [kW]
- η_v Volumetric efficiency¹
- η_{hm} Hydraulic-mechanical efficiency¹
- η_t Total efficiency ($\eta_t = \eta_v \times \eta_{hm}$)¹



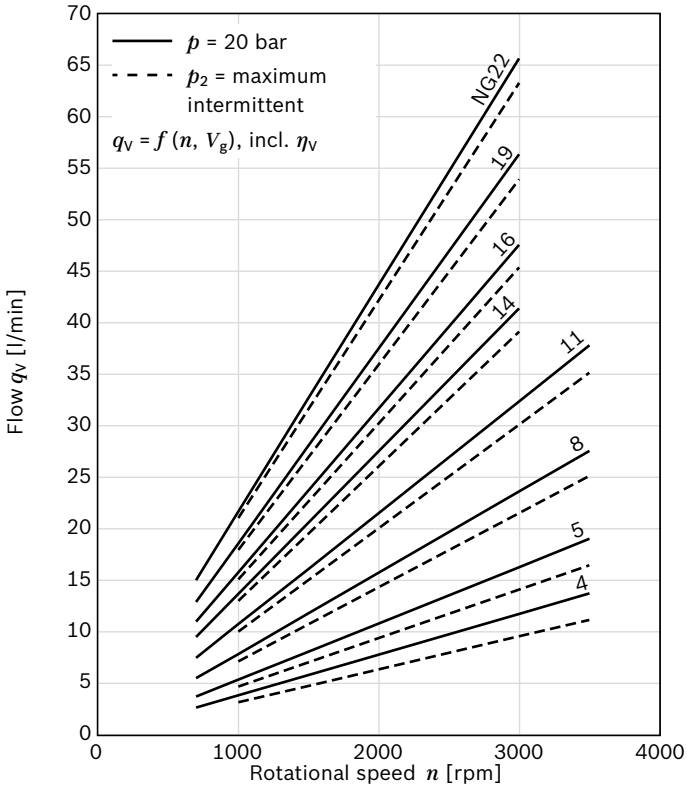
Note

On the following pages you can find diagrams for a rough calculation.

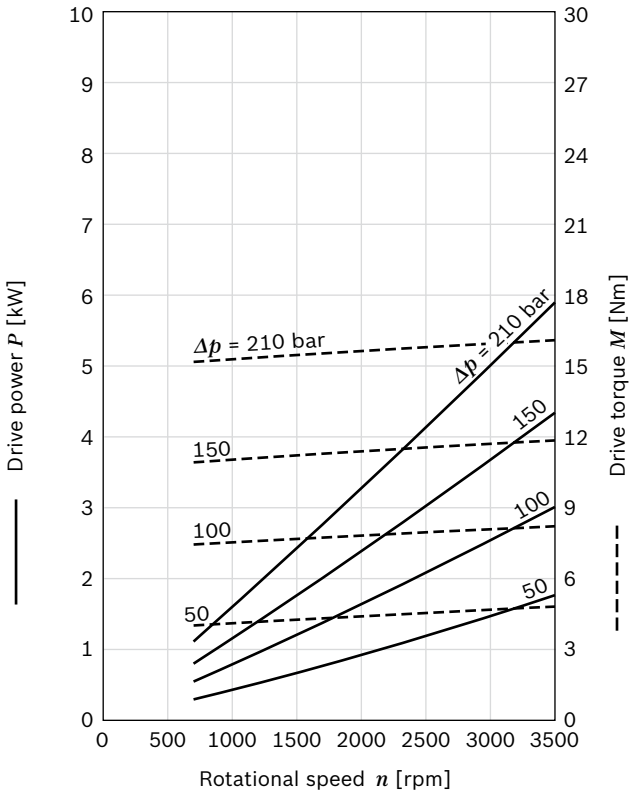
1) Parameter as a decimal, e.g. 0.9

Flow and power characteristic curves

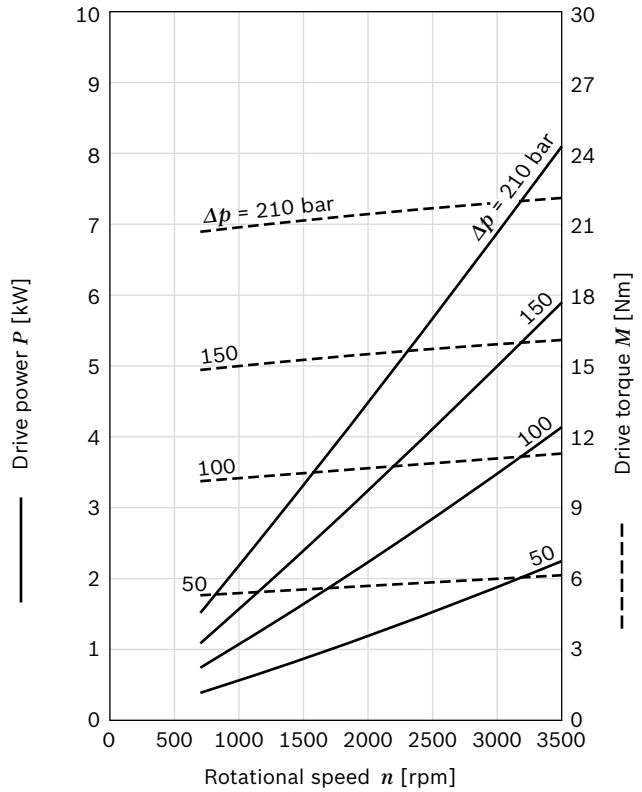
▼ **Flow**



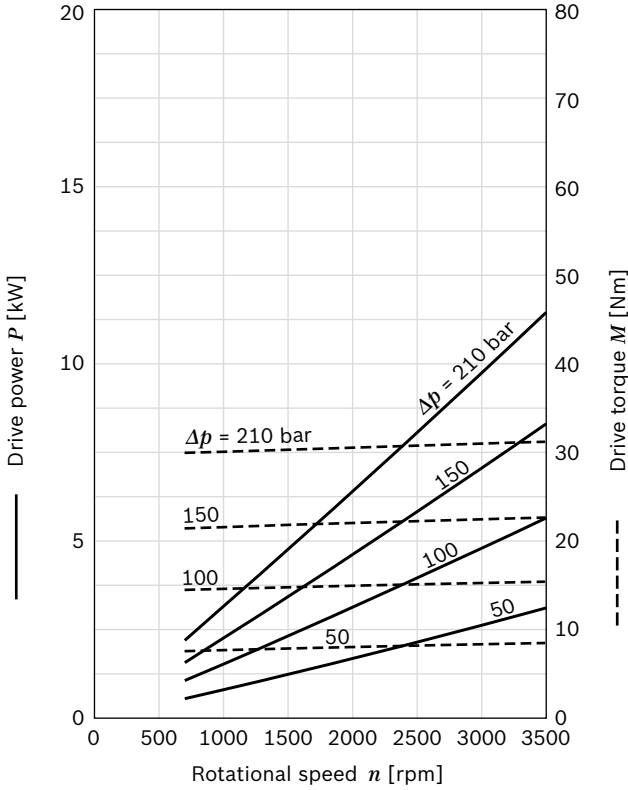
▼ **Size 4**



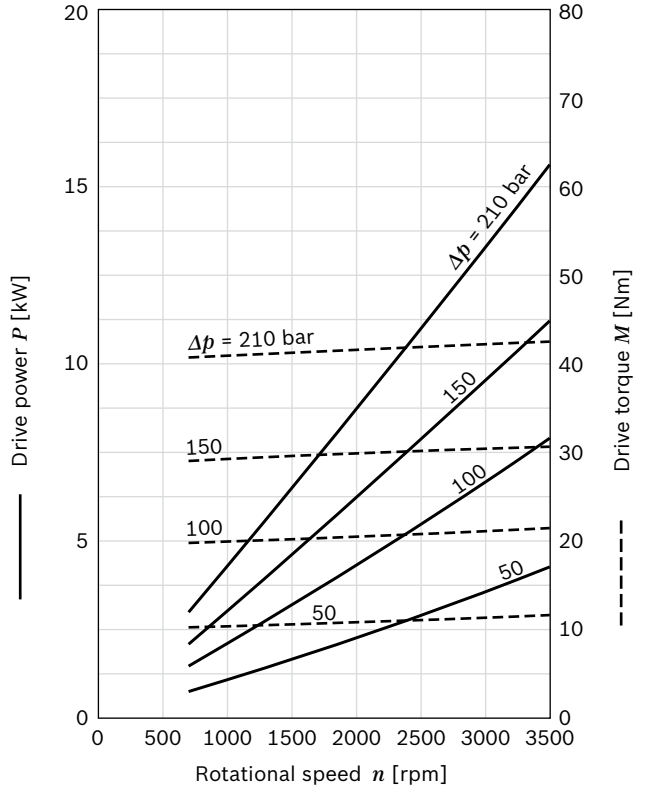
▼ **Size 5**



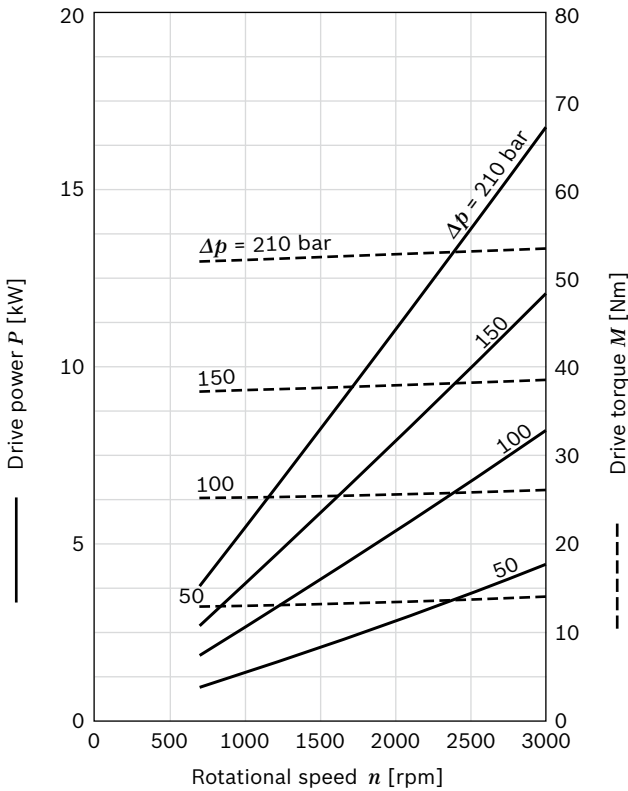
▼ Size 8



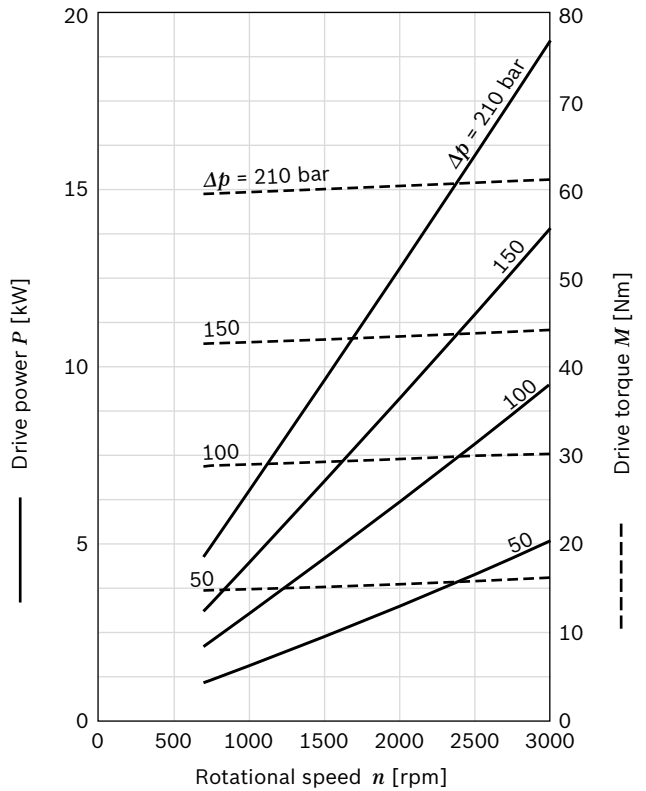
▼ Size 11



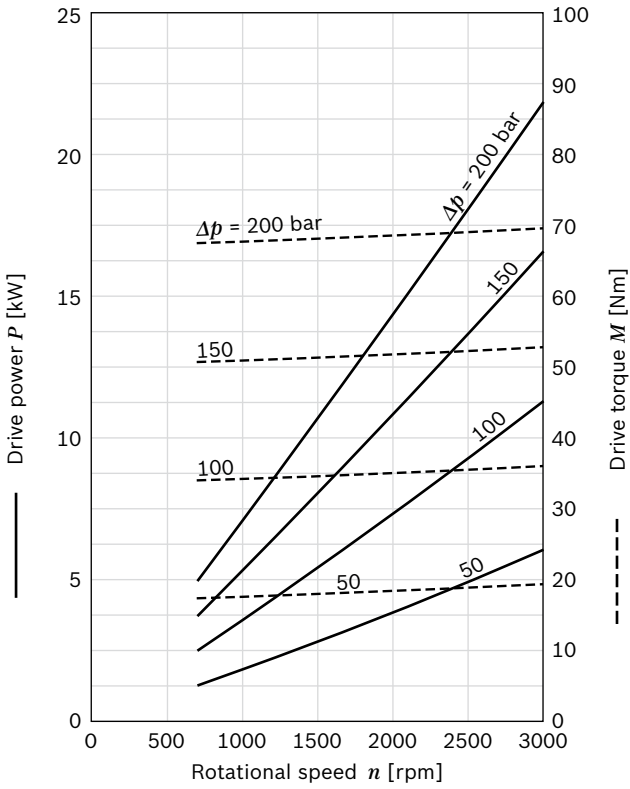
▼ Size 14



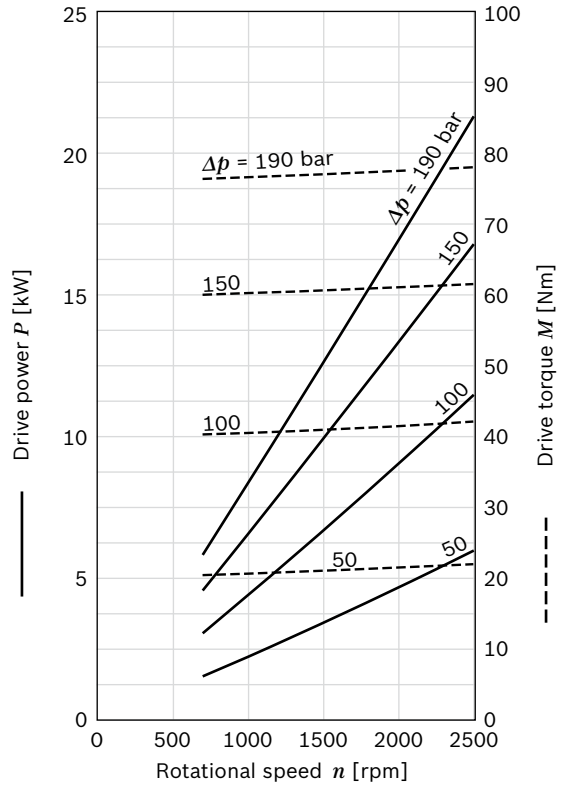
▼ Size 16



▼ **Size 19**



▼ **Size 22**



Note

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

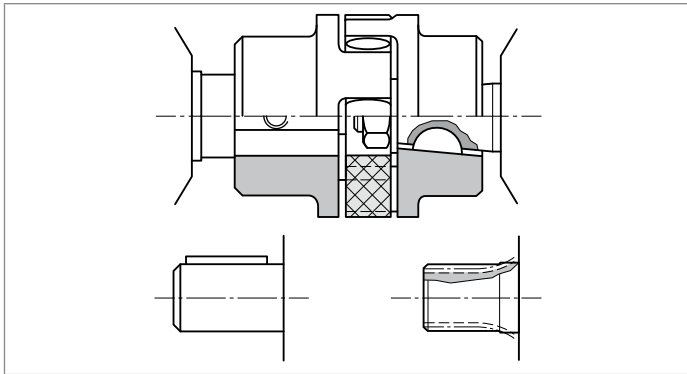
$P = f(n, p)$, incl. η_t ———

$M = f(n, p)$, incl. η_{hm} - - - - -

Drives

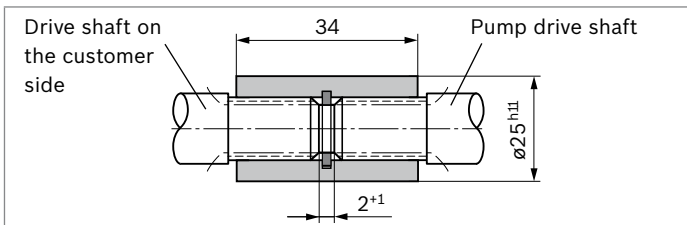
1. Elastic coupling

- ▶ The coupling must not transfer any radial or axial forces to the pump.
- ▶ The maximum radial runout from the shaft to the spigot may not exceed 0.3 mm.
- ▶ See the coupling manufacturer's assembly instructions for acceptable shaft misalignments.



2. Coupling sleeve

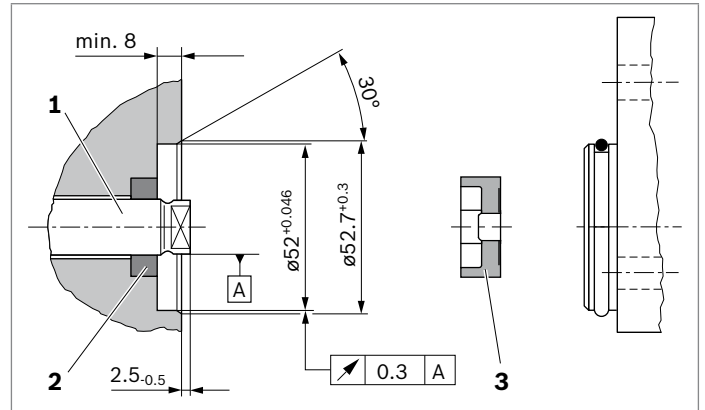
- ▶ To be used on splined shaft profile according to DIN and SAE
- ▶ Attention: No radial or axial forces are permitted on the pump shaft or coupling sleeve. The coupling sleeve must be free to move axially.
- ▶ The distance between the pump drive shaft and drive shaft on the customer side must be 2^{+1} mm
- ▶ Oil-bath or oil-mist lubrication is required



Drive shaft	M_{max} [Nm]	Size	p_{max} [bar]
F	100	4 to 16	210
		19	200
		22	190
R	110	4 to 16	210
		19	200
		22	190

3. Coupling dog

- ▶ For attaching the pump directly to an electric motor or combustion engine, gear, etc.
- ▶ The pump shaft has a special coupling dog and driver (3)
- ▶ No shaft seal
- ▶ Drive-side installation and sealing according to the following recommendations and dimensions



Drive shaft	M_{max} [Nm]	Size	p_{max} [bar]
N	52	4 to 14	210
		16	180
		19	150
		22	130

▶ Drive shaft on the customer side (1)

- Case-hardening steel DIN 17210 e.g., 20 MnCrS 5 case-hardened 0.6 deep; HRC 60^{±3}
- Seal ring running surface ground without rifling
 $R_{max} \leq 4 \mu m$

▶ Radial shaft seal on the customer side (2)

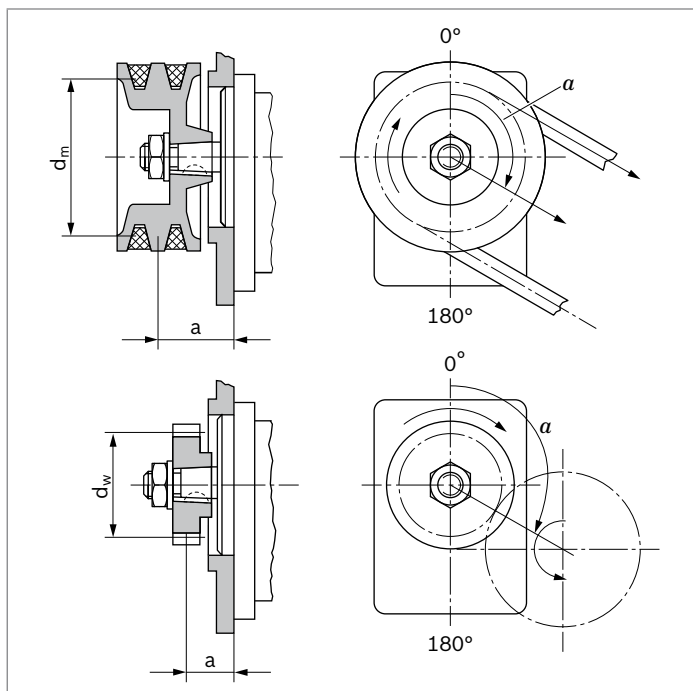
- Provide with rubber cover (see DIN 3760, type AS, or double-lipped ring)
- Provide installation edge with 15° slant or install shaft seal with protection sleeve

4. Tapered and keyed shafts

Drive shaft	M_{\max} [Nm] ¹⁾	Size	p_{\max} [bar]
C	130	4 to 16	210
		19	200
		22	190
H	130	4 to 16	210
		19	200
		22	190
Q	55	4 to 14	210
		16	190
		19	165
		22	140

5. V-belts and straight gear wheels or helical toothed gear drives without outboard bearing

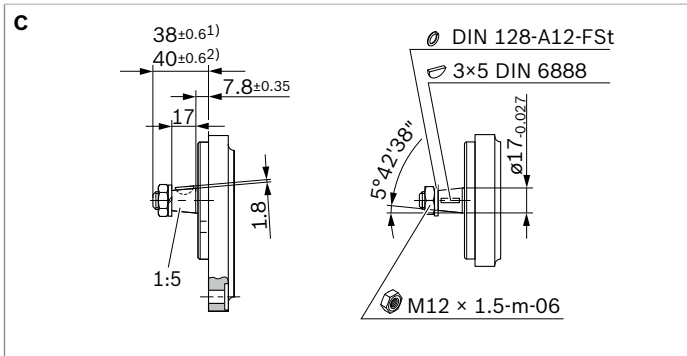
For V-belt or gear wheel drives, please contact us specifying the application and mounting conditions (dimensions a , d_m , d_w and angle α). For helical toothed gear drives, details of the helix angle β are also required.



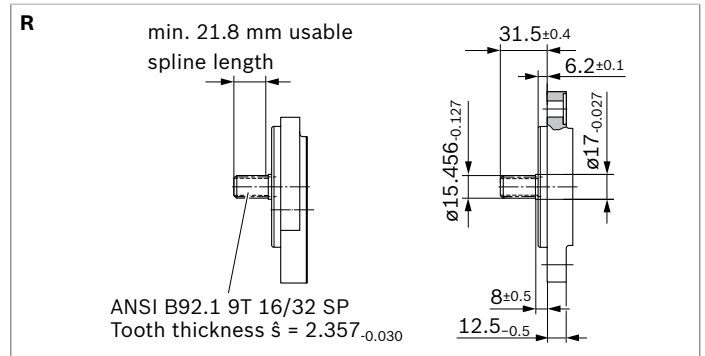
1) These values only apply while adhering to the defined conditions on page 6. Please consult Bosch Rexroth if the specified values are to be exceeded.

Dimensions – drive shaft

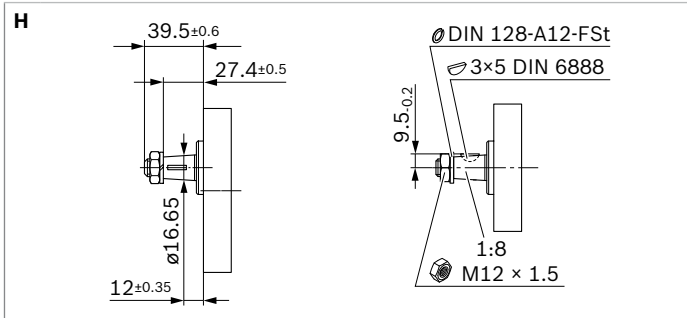
▼ **Tapered shaft 1:5**



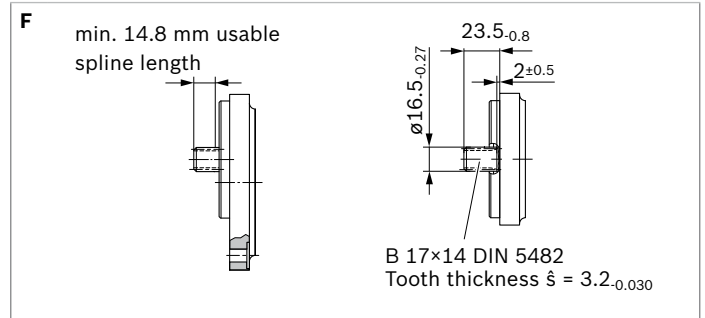
▼ **Splined shaft (SAE J744 16-4 9T)³⁾**



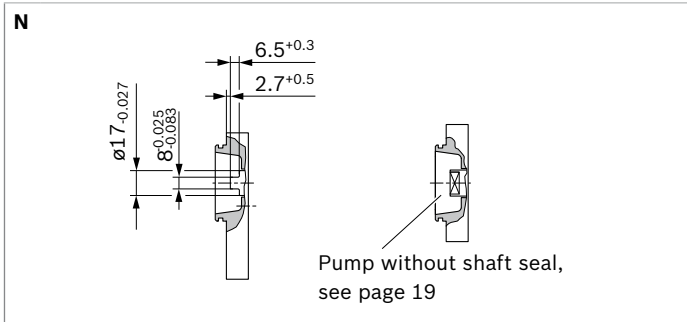
▼ **Tapered shaft 1:8**



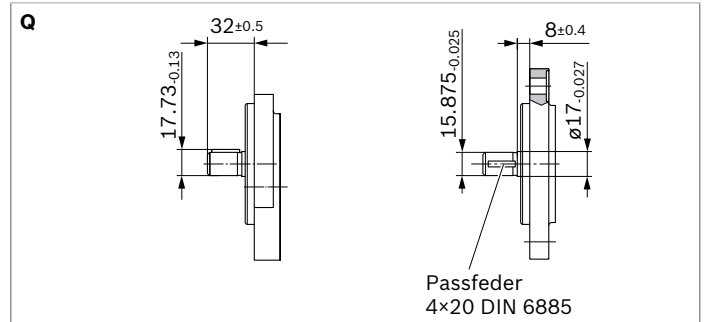
▼ **Splined shaft (DIN 5482 B17 x 14)**



▼ **Dihedral claw**



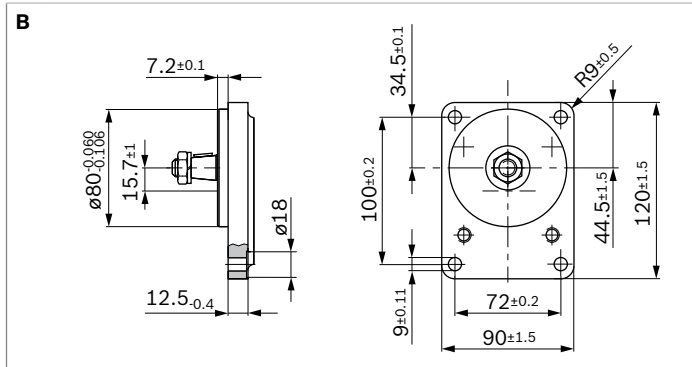
▼ **Parallel keyed shaft (SAE J744 16-1 A)**



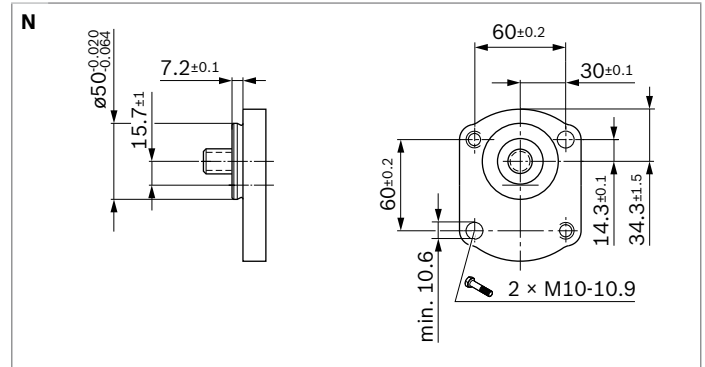
1) In combination with front cover B
 2) In combination with front cover P and front cover N
 3) For combination with an axial piston unit, see page 24 to 28

Dimensions – front cover

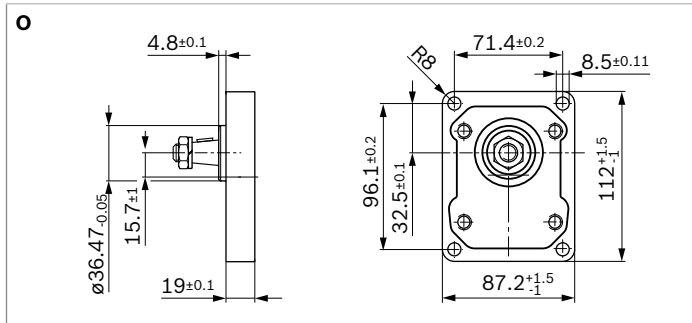
▼ Rectangular flange $\varnothing 80$ mm



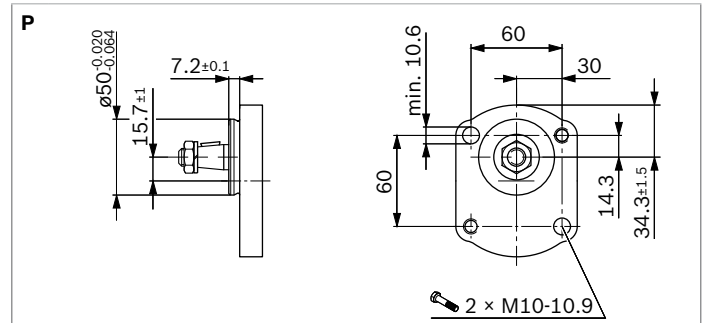
▼ 2-bolt mounting $\varnothing 50$ mm, connection variant 1



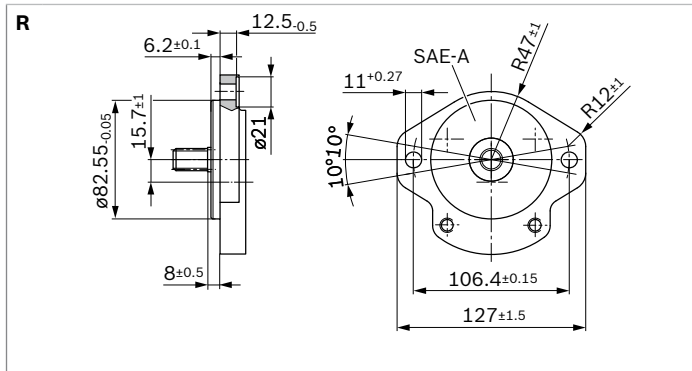
▼ Rectangular flange $\varnothing 36.47$ mm



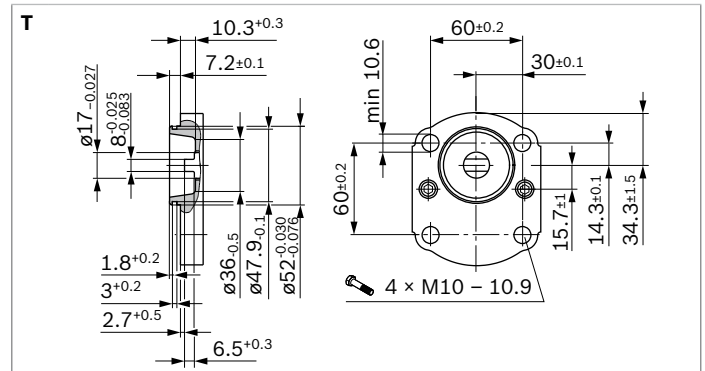
▼ 2-bolt mounting $\varnothing 50$ mm, connection variant 2



▼ 2-bolt flange $\varnothing 82.55$ mm, SAE J744 82-2 A¹⁾



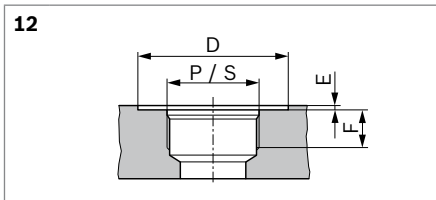
▼ 4-bolt mounting $\varnothing = 52$ mm with O-ring



1) For combination with an axial piston unit, see page 24 to 28

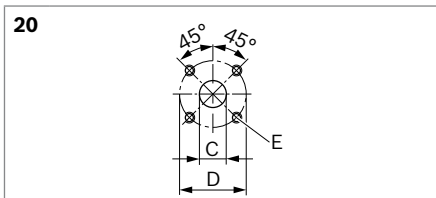
Dimensions – line connection

▼ Thread UNF-2B, SAE with O-ring

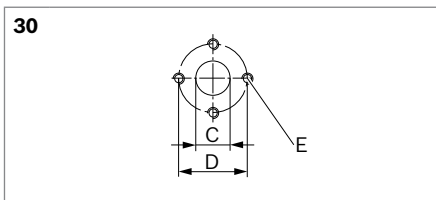


Size	Pressure side			Suction side				
	P	D	E	F	S	D	E	F
4 to 5	3/4-16 UNF-2B	30.2	0.5	14	7/8-14 UNF-2B	35	0.5	17
8 to 22	7/8-14 UNF-2B	35	0.5	17	1 1/16-12 UN-2B	45	0.5	19

▼ Square flange



Size	Pressure side			Suction side		
	C	D	E	C	D	E
4 to 5	15	35	M6; 13 deep	15	40	M6; 13 ⁺¹ deep
8 to 22	15	35	M6; 13 deep	20	40	M6; 13 ⁺¹ deep

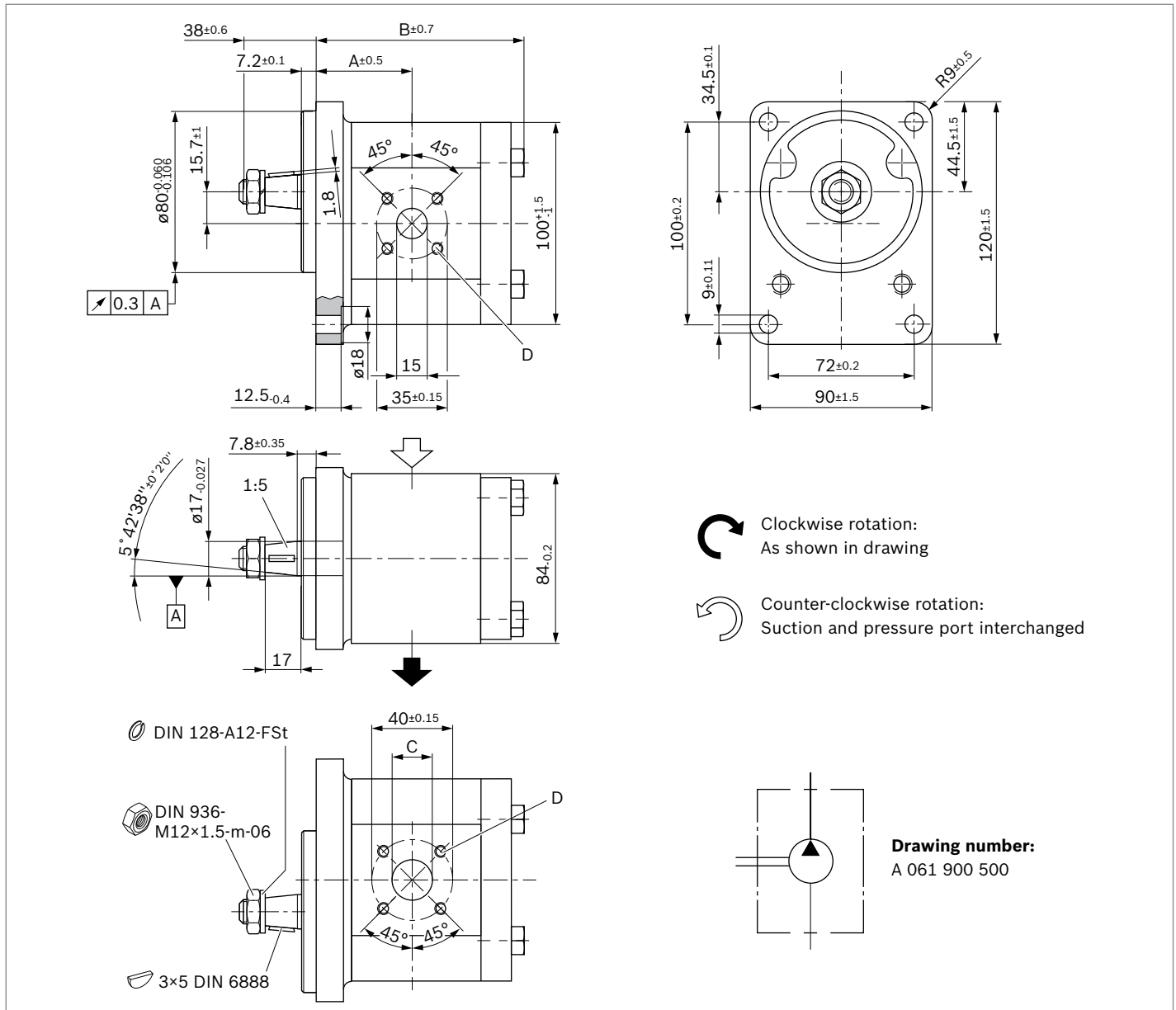


Size	Pressure side			Suction side		
	C	D	E	C	D	E
4 to 8	13.5	30.2	M6; 13 deep	13.5	30.2	M6; 13 ⁺¹ deep
11 to 22	13.5	30.2	M6; 13 deep	20	39.7	M8; 13 ⁺¹ deep

Dimensions – preferred series

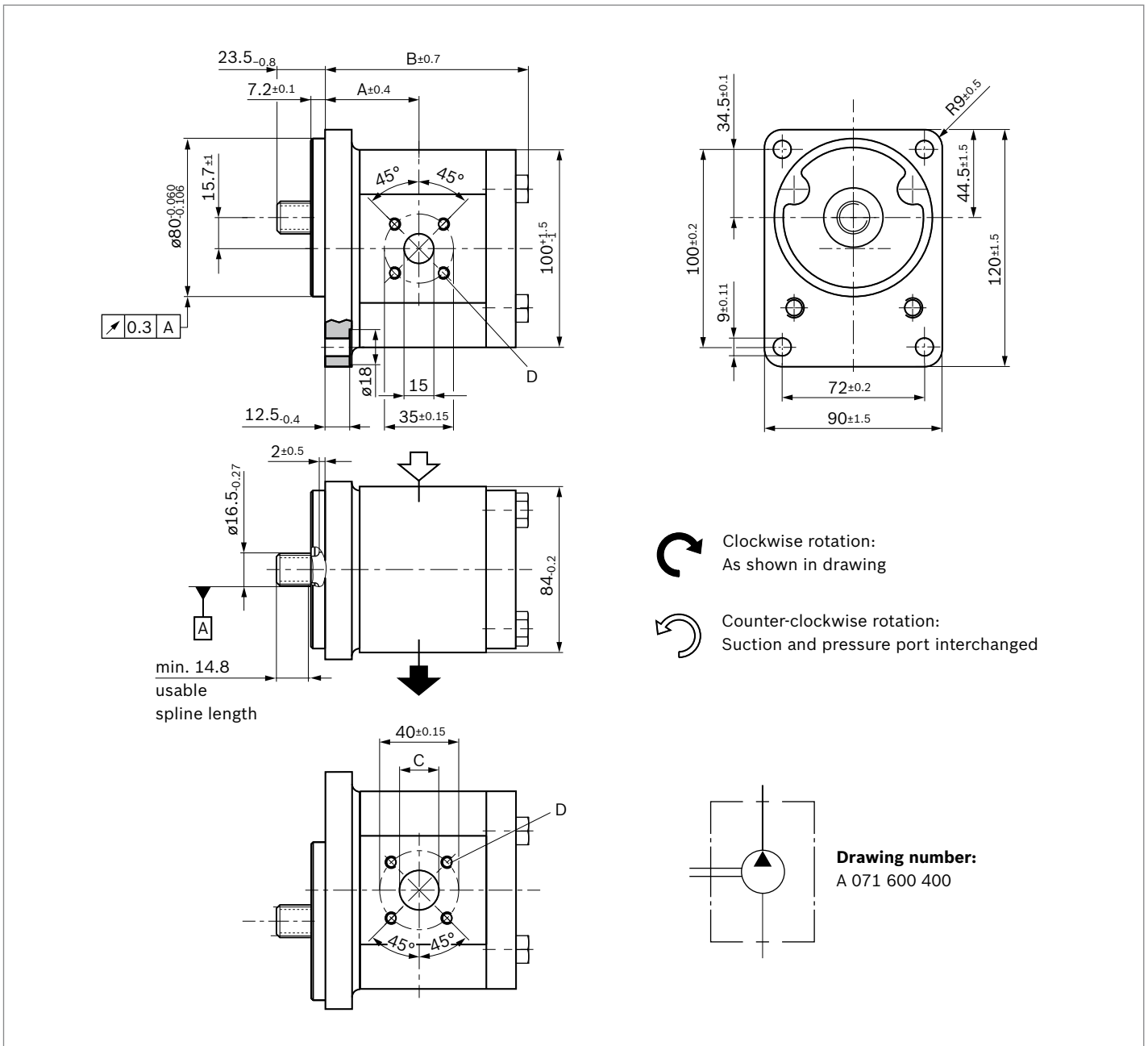
▼ Tapered shaft 1:5 with rectangular flange $\varnothing 80$ mm

AZPW-11- ... CB20MB



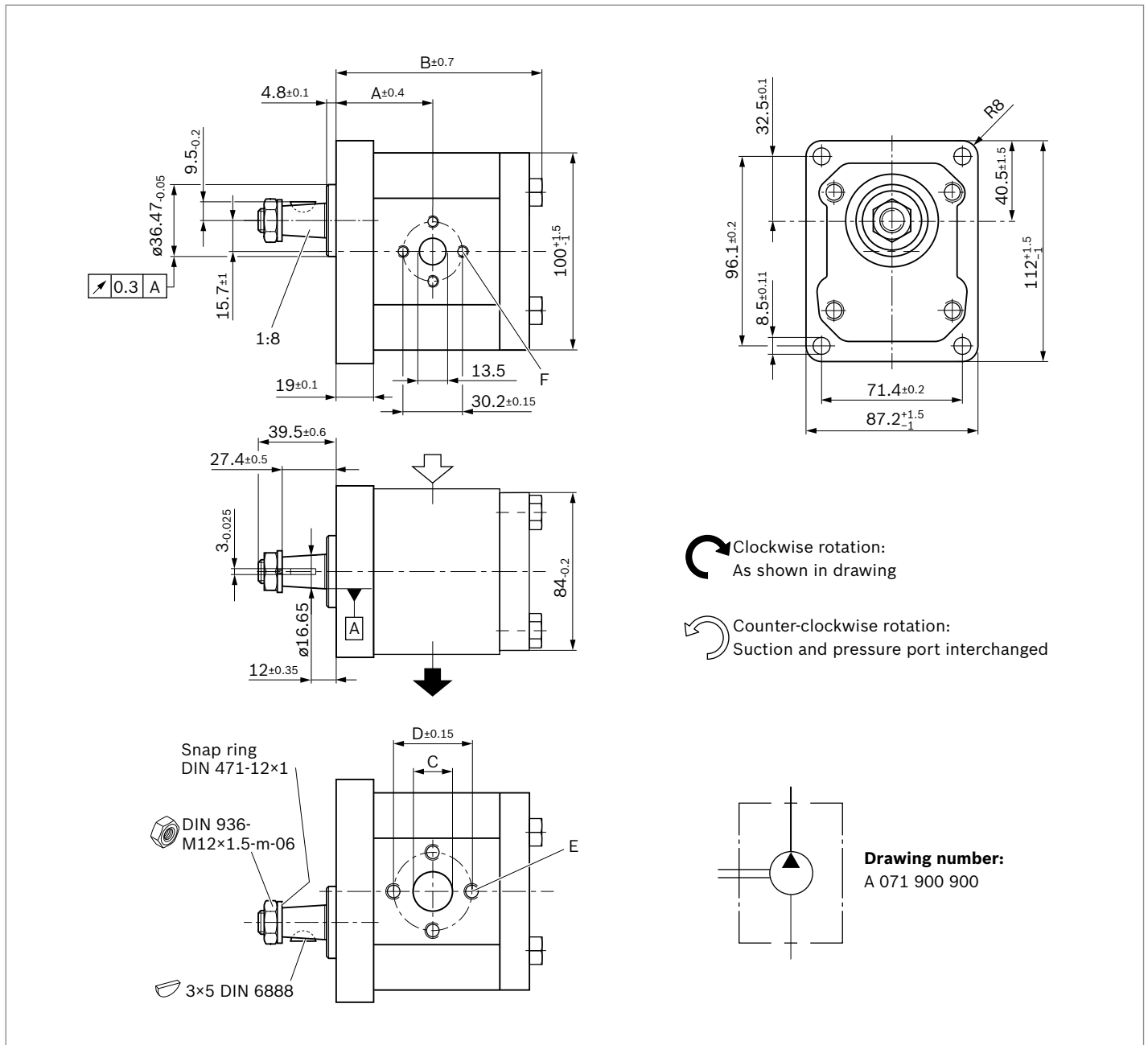
NG	Order number		Maximum intermittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions			
	Direction of rotation Counter-clockwise	Direction of rotation Counter-clockwise			A	B	C	D
4	R983074473	R983074465	210	3500	39.9	83.8	15	M6; 13 ⁺¹ deep
5	R983074474	R983074466	210	3500	41.1	86.3	15	
8	R983074475	R983074467	210	3500	43.2	90.4	20	
11	R983074476	R983074468	210	3500	47	95.4	20	
14	R983074477	R983074469	210	3000	47.5	100.4	20	
16	R983074478	R983074470	210	3000	47.5	103.8	20	
19	R983074479	R983074471	200	3000	47.5	108.8	20	
22	R983074480	R983074472	190	2500	55.1	114.2	20	

▼ **Splined shaft (DIN 5482 B17 × 14) with rectangular flange Ø80 mm**
 AZPW-11 – ... FB20MB



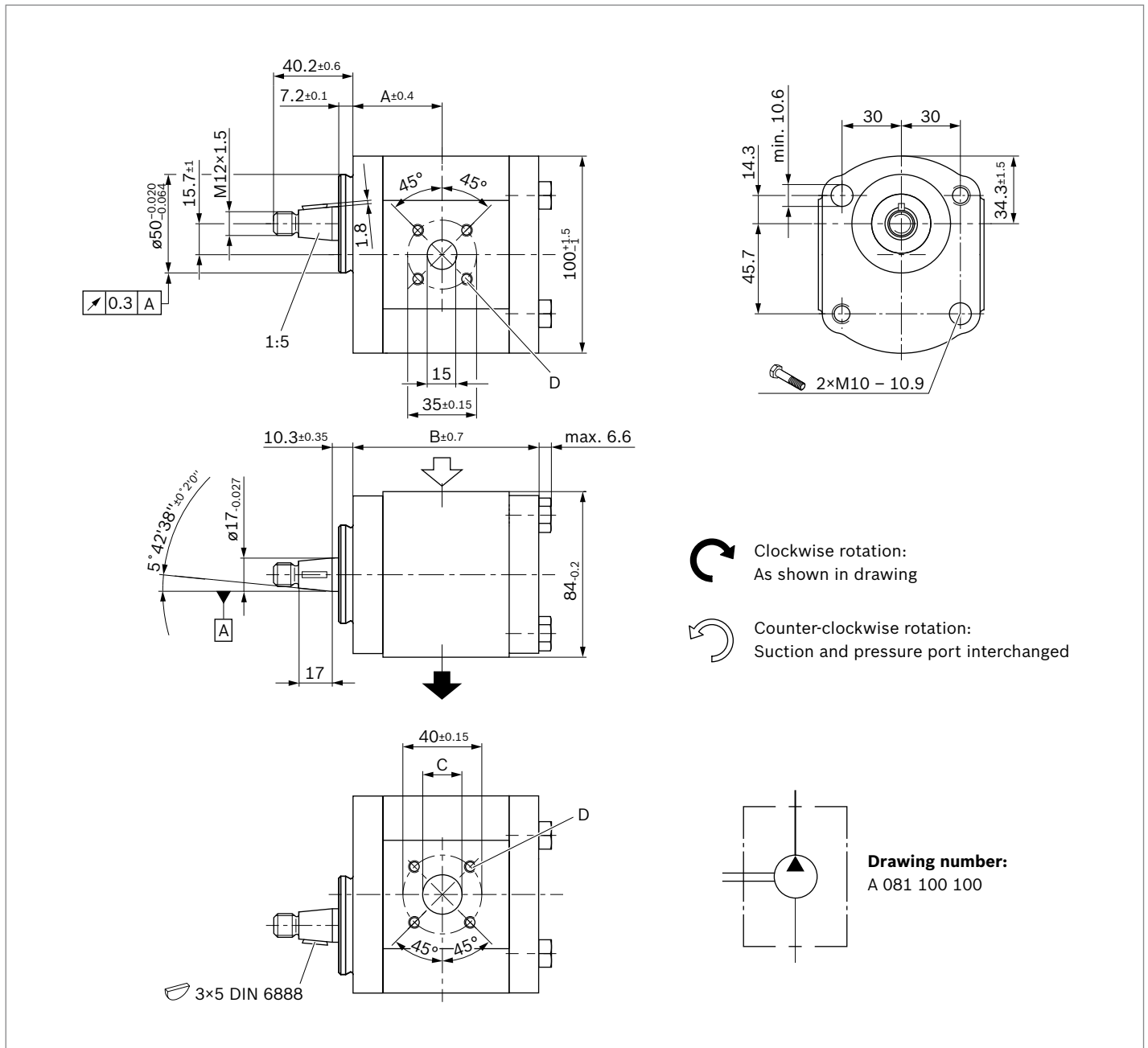
NG	Order number	Direction of rotation		Maximum intermittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions			
		Counter-clockwise	Clockwise			A	B	C	D
4	R983072848	R983072840		210	3500	39.9	83.8	15	M6; 13 ⁺¹ deep
5	R983072849	R983072841		210	3500	41.1	86.3	15	
8	R983072850	R983072842		210	3500	43.2	90.4	20	
11	R983072851	R983072843		210	3500	47	95.4	20	
14	R983072852	R983072844		210	3000	47.5	100.4	20	
16	R983072853	R983072845		210	3000	47.5	103.8	20	
19	R983072854	R983072846		200	3000	47.5	108.8	20	
22	R983072855	R983072847		190	2500	55.1	114.2	20	

▼ **Tapered shaft 1:8 with rectangular flange $\varnothing 36.47$ mm**
 AZPW-11 – ... **HO30MB**



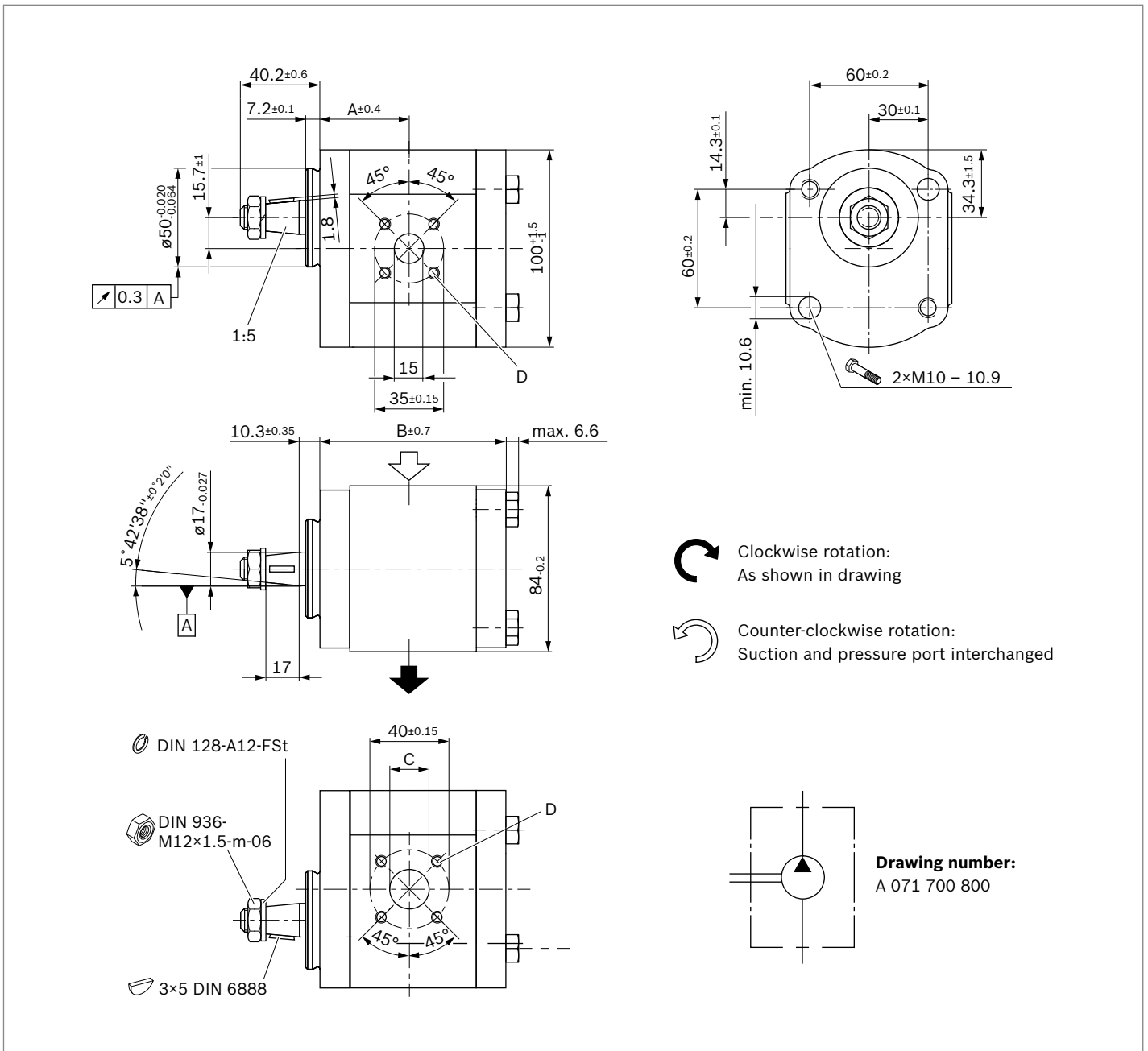
NG	Order number	Direction of rotation		Maximum intermittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions					
		Counter-clockwise	Counter-clockwise			A	B	C	D	E	F
4	R983072831	R983072823		210	3500	41.4	85.4	13.5	30.2	M6; 13 ⁺¹ deep	M6; 13 ⁺¹ deep
5	R983072832	R983072824		210	3500	42.6	87.9	13.5	30.2		
8	R983072833	R983072825		210	3500	44.7	92	13.5	30.2		
11	R983072834	R983072826		210	3500	48.5	97	20	39.7	M8; 13 ⁺¹ deep	
14	R983072835	R983072827		210	3000	49	102	20	39.7		
16	R983072836	R983072828		210	3000	49	105.4	20	39.7		
19	R983072837	R983072829		200	3000	49	110.4	20	39.7		
22	R983072838	R983072830		190	2500	56.6	115.8	20	39.7		

▼ **Tapered shaft 1:5 with 2-bolt flange $\varnothing 50$ mm without nut and washer**
AZPW-11 – ... CP20MB-S0007



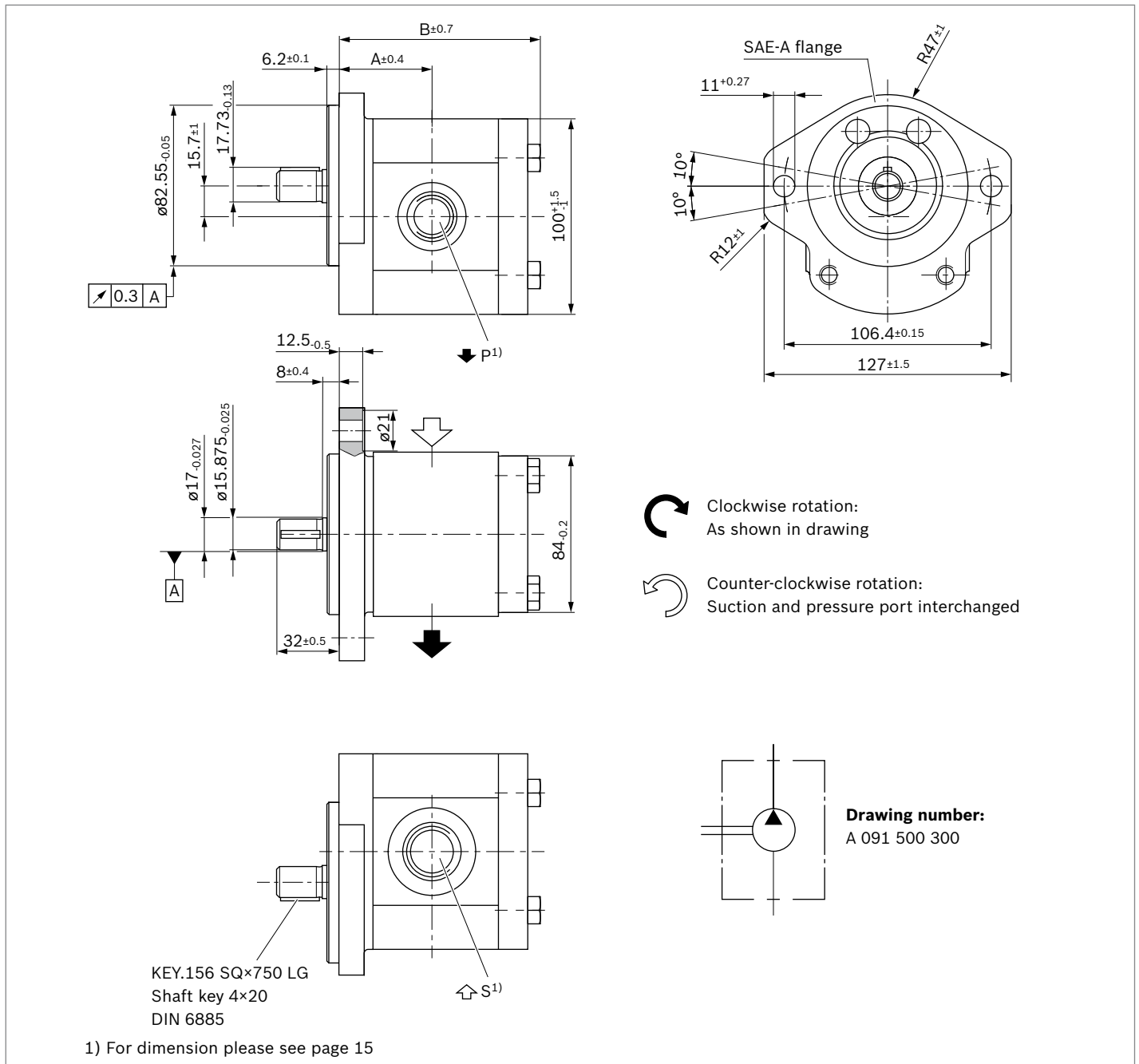
NG	Order number		Maximum intermittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions			
	Direction of rotation Counter-clockwise	Clockwise			A	B	C	D
4	R983072788	R983072780	210	3500	37.3	75	15	M6; 13 ⁺¹ deep
5	R983072789	R983072781	210	3500	38.6	77.5	15	
8	R983072790	R983072782	210	3500	40.6	81.6	20	
11	R983072791	R983072783	210	3500	44.5	86.6	20	
14	R983072792	R983072784	210	3000	45	91.6	20	
16	R983072793	R983072785	210	3000	45	95	20	
19	R983072794	R983072786	200	3000	45	100	20	
22	R983072795	R983072787	190	2500	52.6	105.4	20	

▼ **Tapered shaft 1:5 with 2-bolt flange Ø50 mm**
 AZPW-11 – ... CN20MB



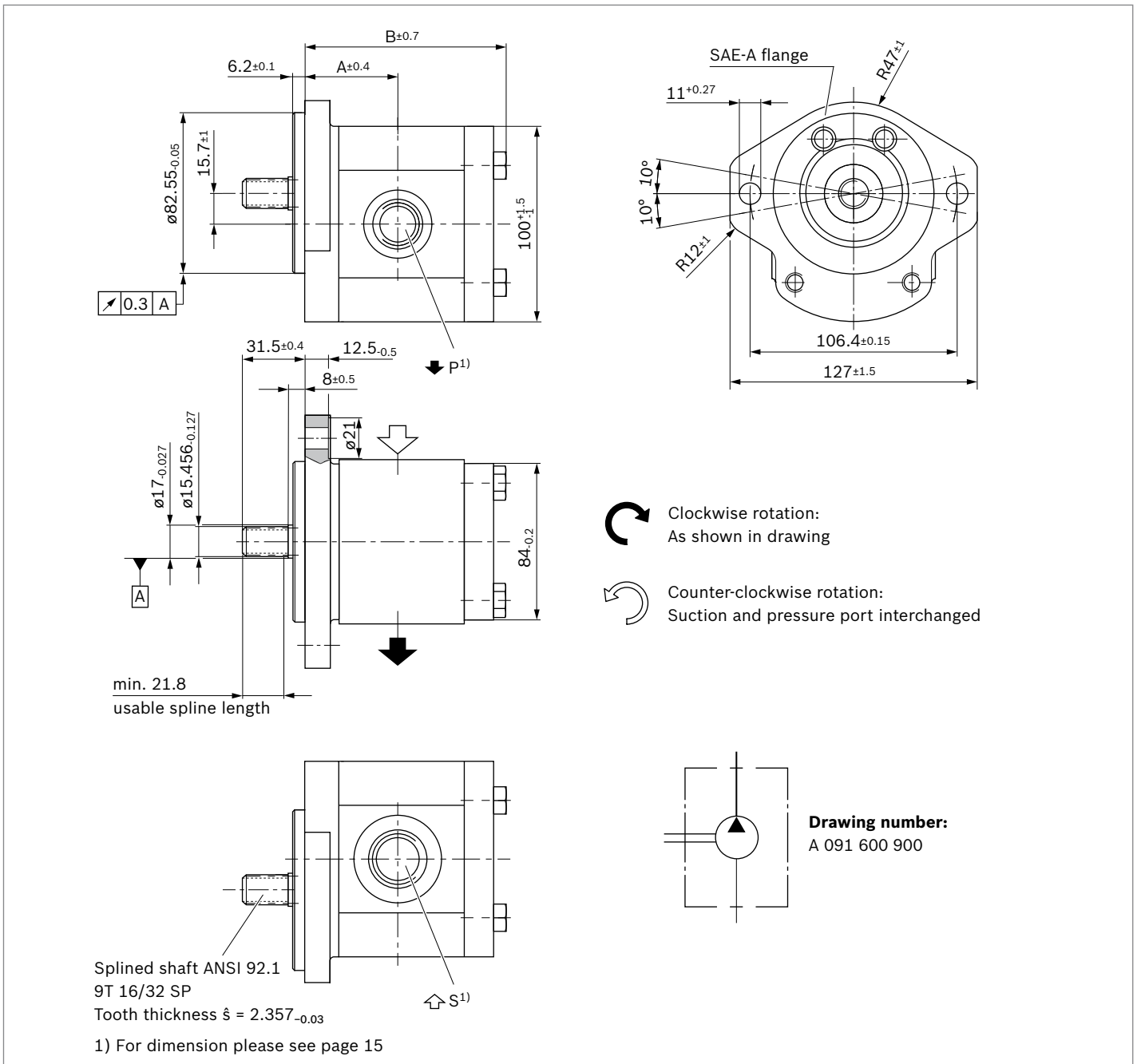
NG	Order number		Maximum intermittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions			
	Direction of rotation Counter-clockwise	Clockwise			A	B	C	D
4	R983072886	R983072878	210	3500	37.3	75	15	M6; 13 ⁺¹ deep
5	R983072887	R983072879	210	3500	38.6	77.5	15	
8	R983072888	R983072880	210	3500	40.6	81.6	20	
11	R983072889	R983072881	210	3500	44.5	86.6	20	
14	R983072890	R983072882	210	3000	45	91.6	20	
16	R983072891	R983072883	210	3000	45	95	20	
19	R983072892	R983072884	200	3000	45	100	20	
22	R983072893	R983072885	190	2500	52.6	105.4	20	

▼ **Parallel keyed shaft (SAE J744 16-1 A) with 2-bolt flange Ø82.55 mm (SAE J744 82-2 A)**
AZPW-11 – ... QR12MB



NG	Order number	Direction of rotation		Maximum inter-mittent pressure p_2 [bar]	Maximum rota-tional speed [rpm]	Dimensions			
		Counter-clockwise	Clockwise			A	B	P	S
4	R983072763	R983072755	210	3500	39.9	83.8	3/4-16 UNF-2B	7/8-14 UNF-2B	
5	R983072765	R983072756	210	3500	41.1	86.3	3/4-16 UNF-2B	7/8-14 UNF-2B	
8	R983072766	R983072757	210	3500	43.2	90.4	7/8-14 UNF-2B	1 1/16-12 UN-2B	
11	R983072767	R983072758	210	3500	47	95.4	7/8-14 UNF-2B	1 1/16-12 UN-2B	
14	R983072768	R983072759	210	3000	47.5	100.4	7/8-14 UNF-2B	1 1/16-12 UN-2B	
16	R983072769	R983072760	190	3000	47.5	103.8	7/8-14 UNF-2B	1 1/16-12 UN-2B	
19	R983072770	R983072761	165	3000	47.5	108.8	7/8-14 UNF-2B	1 1/16-12 UN-2B	
22	R983072772	R983072762	140	2500	55.1	114.2	7/8-14 UNF-2B	1 1/16-12 UN-2B	

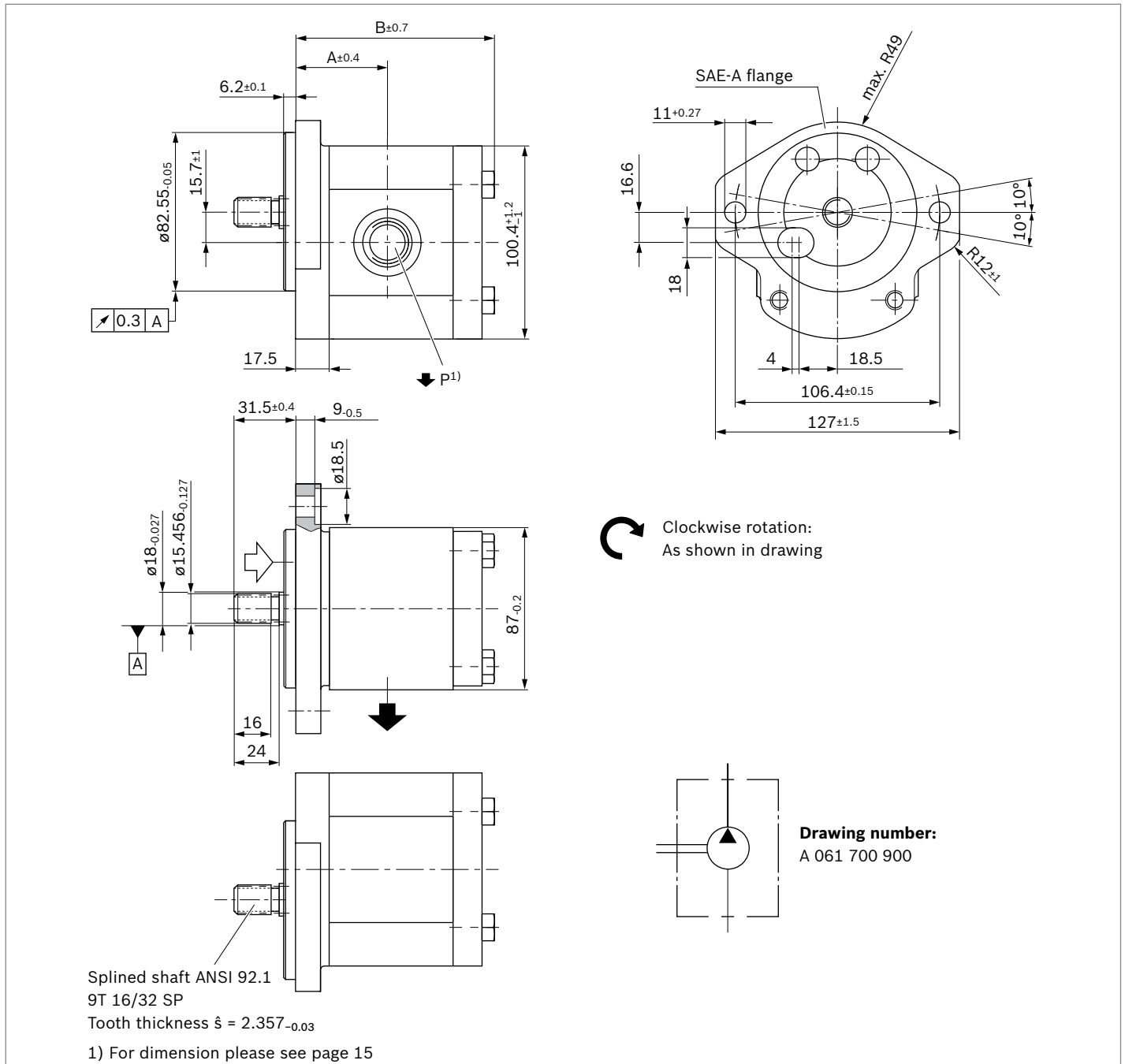
▼ **Splined shaft (SAE J744 16-4 9T) with 2-bolt flange Ø82.55 mm (SAE J744 82-2 A)**
AZPW-11 – ... RR12MB



NG	Order number	Direction of rotation		Maximum inter- mittent pressure p_2 [bar]	Maximum rota- tional speed [rpm]	Dimensions			
		Counter-clockwise	Clockwise			A	B	P	S
4	R983075416	R983075404	R983075404	210	3500	39.9	83.8	3/4-16 UNF-2B	7/8-14 UNF-2B
5	R983075417	R983075405	R983075405	210	3500	41.1	86.3	3/4-16 UNF-2B	7/8-14 UNF-2B
8	R983075418	R983075406	R983075406	210	3500	43.2	90.4	7/8-14 UNF-2B	1 1/16-12 UN-2B
11	R983075419	R983075409	R983075409	210	3500	47	95.4	7/8-14 UNF-2B	1 1/16-12 UN-2B
14	R983075420	R983075412	R983075412	210	3000	47.5	100.4	7/8-14 UNF-2B	1 1/16-12 UN-2B
16	R983075421	R983075413	R983075413	210	3000	47.5	103.8	7/8-14 UNF-2B	1 1/16-12 UN-2B
19	R983075422	R983075414	R983075414	200	3000	47.5	108.8	7/8-14 UNF-2B	1 1/16-12 UN-2B
22	R983075423	R983075415	R983075415	190	2500	55.1	114.2	7/8-14 UNF-2B	1 1/16-12 UN-2B

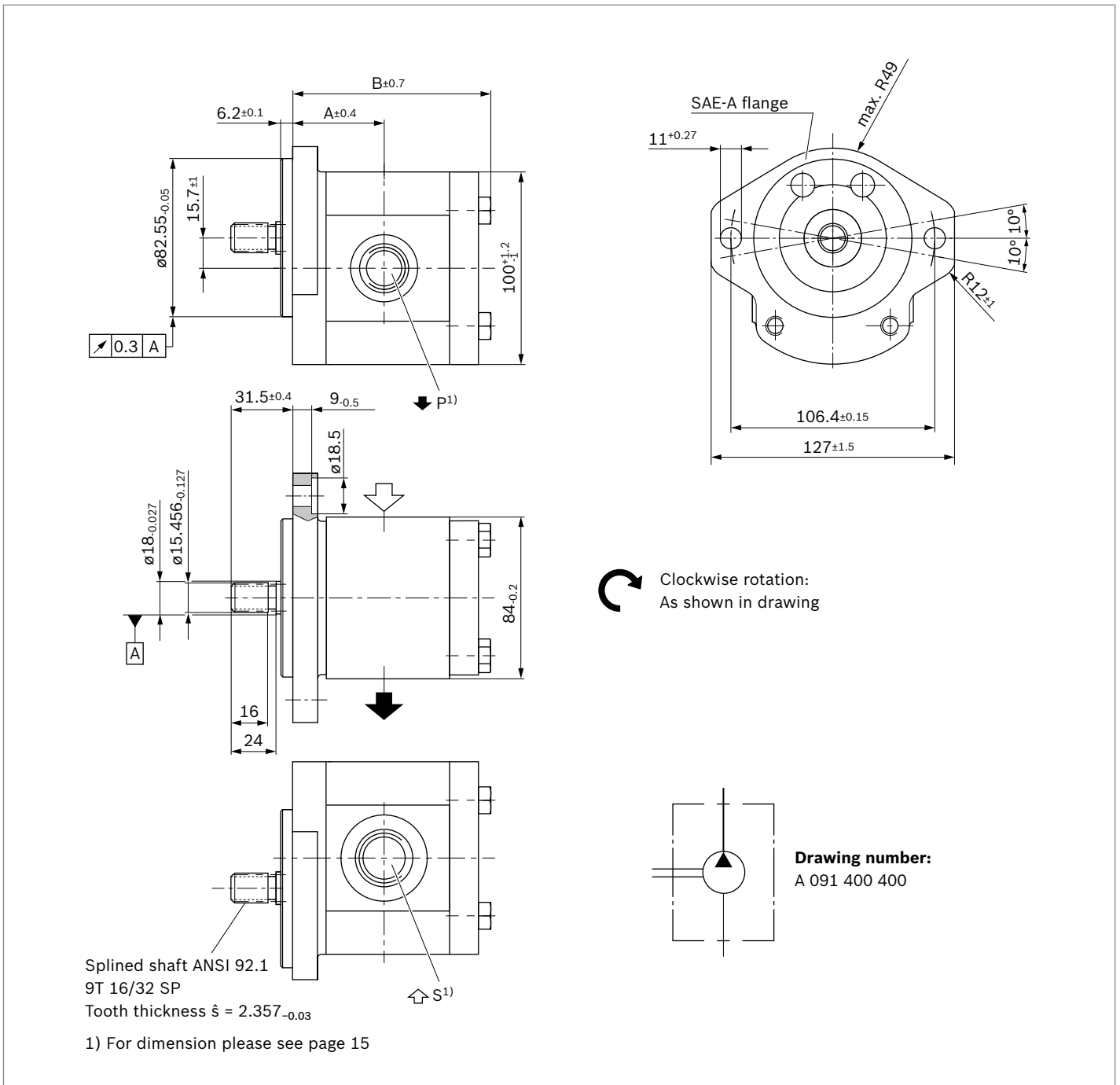
▼ **Splined shaft (SAE J744 16-4 9T) with 2-bolt flange $\varnothing 82.55$ mm (SAE J744 82-2 A) for mounting on an axial piston unit and suction port in the front cover**

AZPW-11 – ... **RR12PB-S0036**



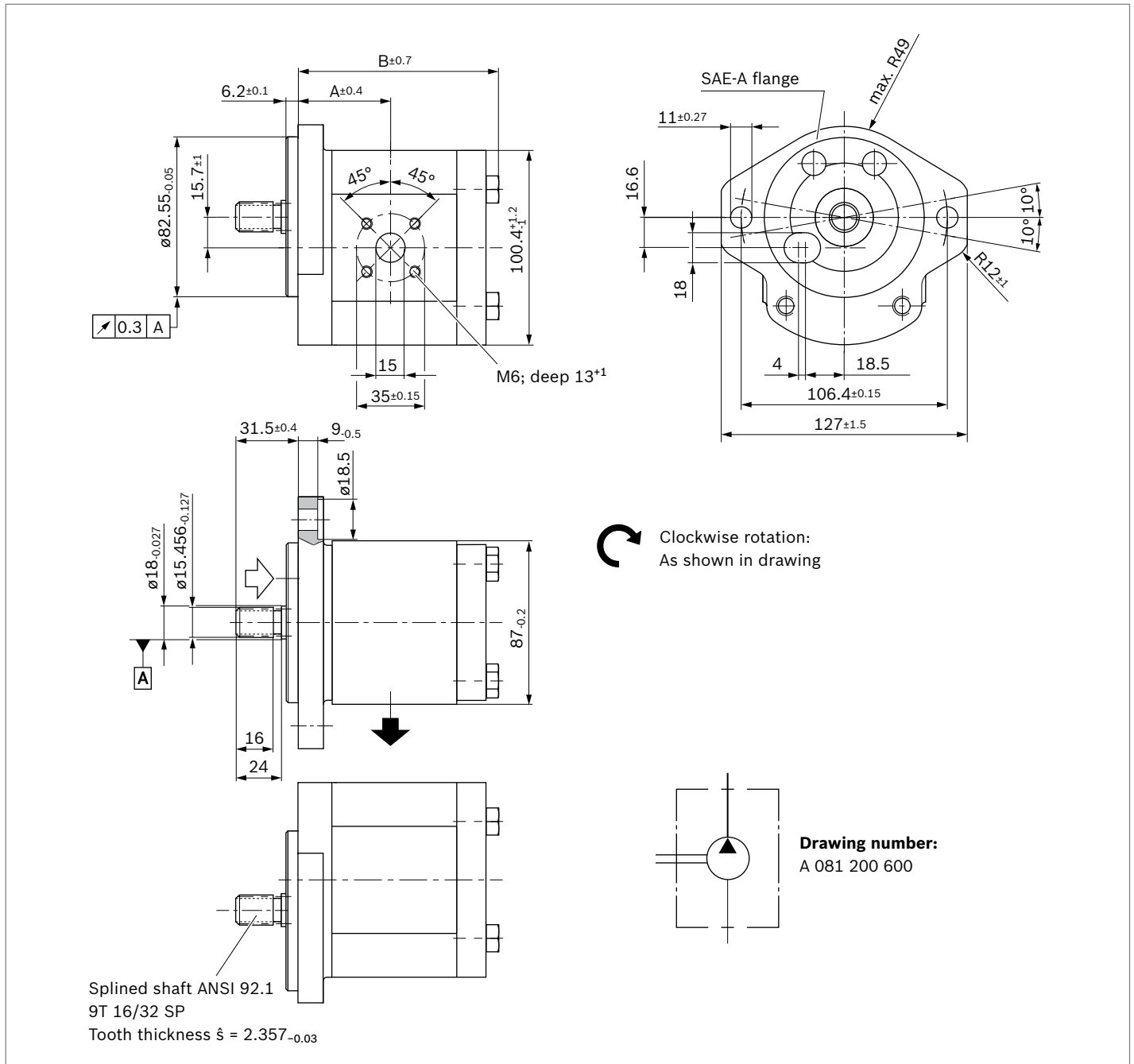
NG	Order number	Maximum intermittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions		
	Direction of rotation Clockwise			A	B	P
5	R983074188	210	3500	41.2	86.3	3/4-16 UNF-2B
8	R983067892	210	3500	43.2	90.4	7/8-14 UNF-2B
11	R983074189	210	3500	45.6	95.4	7/8-14 UNF-2B
14	R983070537	210	3000	48.4	100.4	7/8-14 UNF-2B
16	R983074190	210	3000	49.9	103.8	7/8-14 UNF-2B
19	R983064536	200	2900	53.9	108.8	7/8-14 UNF-2B
22	R983074191	190	2400	55	114.2	7/8-14 UNF-2B

▼ **Splined shaft (SAE J744 16-4 9T) with 2-bolt flange Ø82.55 mm (SAE J744 82-2 A) for mounting on an axial piston unit**
 AZPW-11 – ... **RR12PB-S0081**



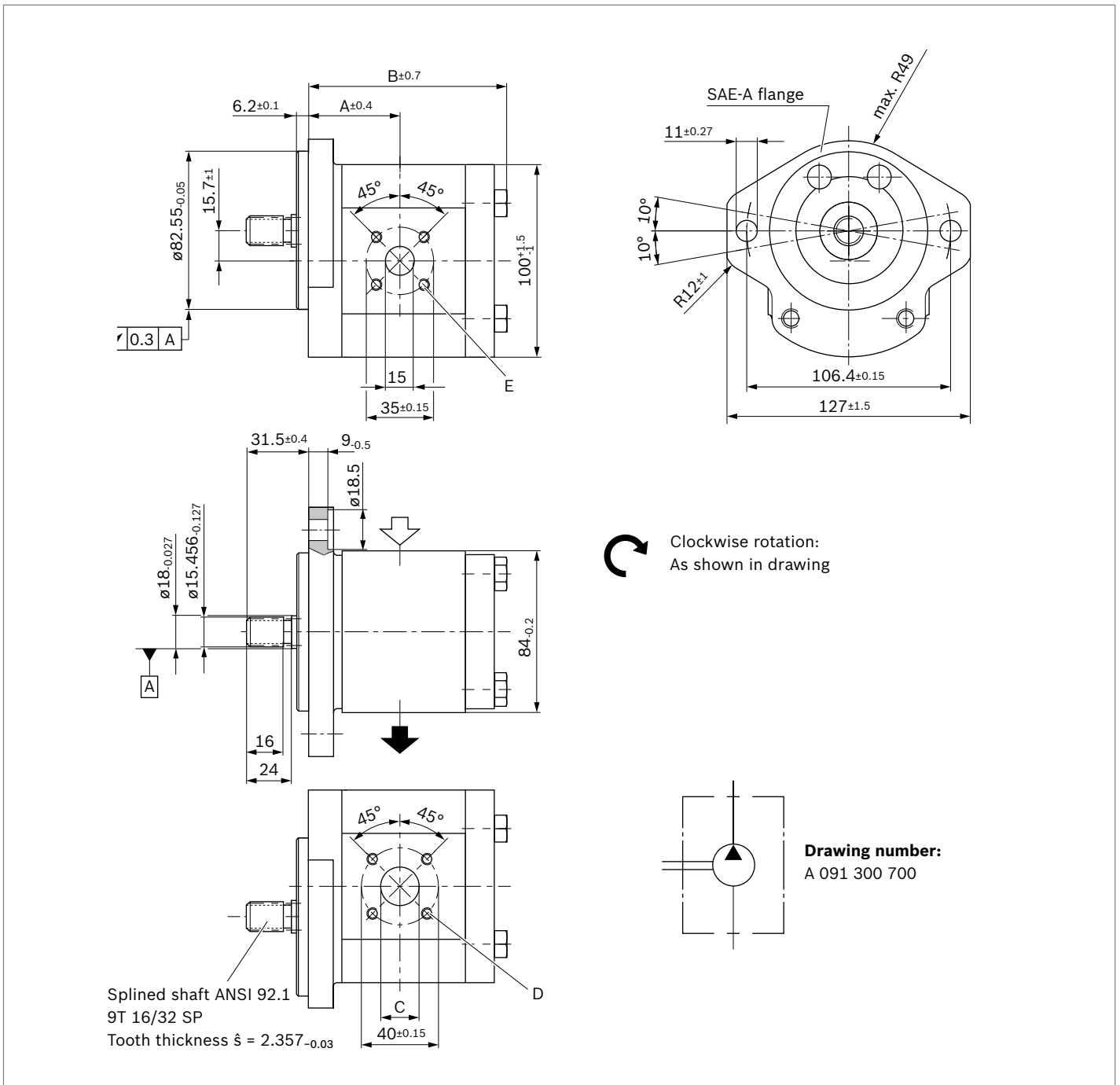
NG	Order number	Maximum intermit- tent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions			
				A	B	P	S
5	R983072871	210	3500	41.1	86.4	3/4-16 UNF-2B	7/8-14 UNF-2B
8	R983072872	210	3500	43.2	90.5	7/8-14 UNF-2B	1 1/16-12 UN-2B
11	R983072873	210	3500	45.7	95.5	7/8-14 UNF-2B	1 1/16-12 UN-2B
14	R983072874	210	3000	48.2	100.5	7/8-14 UNF-2B	1 1/16-12 UN-2B
16	R983072875	210	3000	49.9	103.9	7/8-14 UNF-2B	1 1/16-12 UN-2B
19	R983072876	200	3000	52.4	108.9	7/8-14 UNF-2B	1 1/16-12 UN-2B
22	R983072877	190	2500	55.1	114.3	7/8-14 UNF-2B	1 1/16-12 UN-2B

- ▼ **Splined shaft (SAE J744 16-4 9T) with 2-bolt flange $\varnothing 82.55$ mm (SAE J744 82-2 A) for mounting on an axial piston unit and suction port in the front cover**
AZPW-11 – ... **RR20PB-S0036**



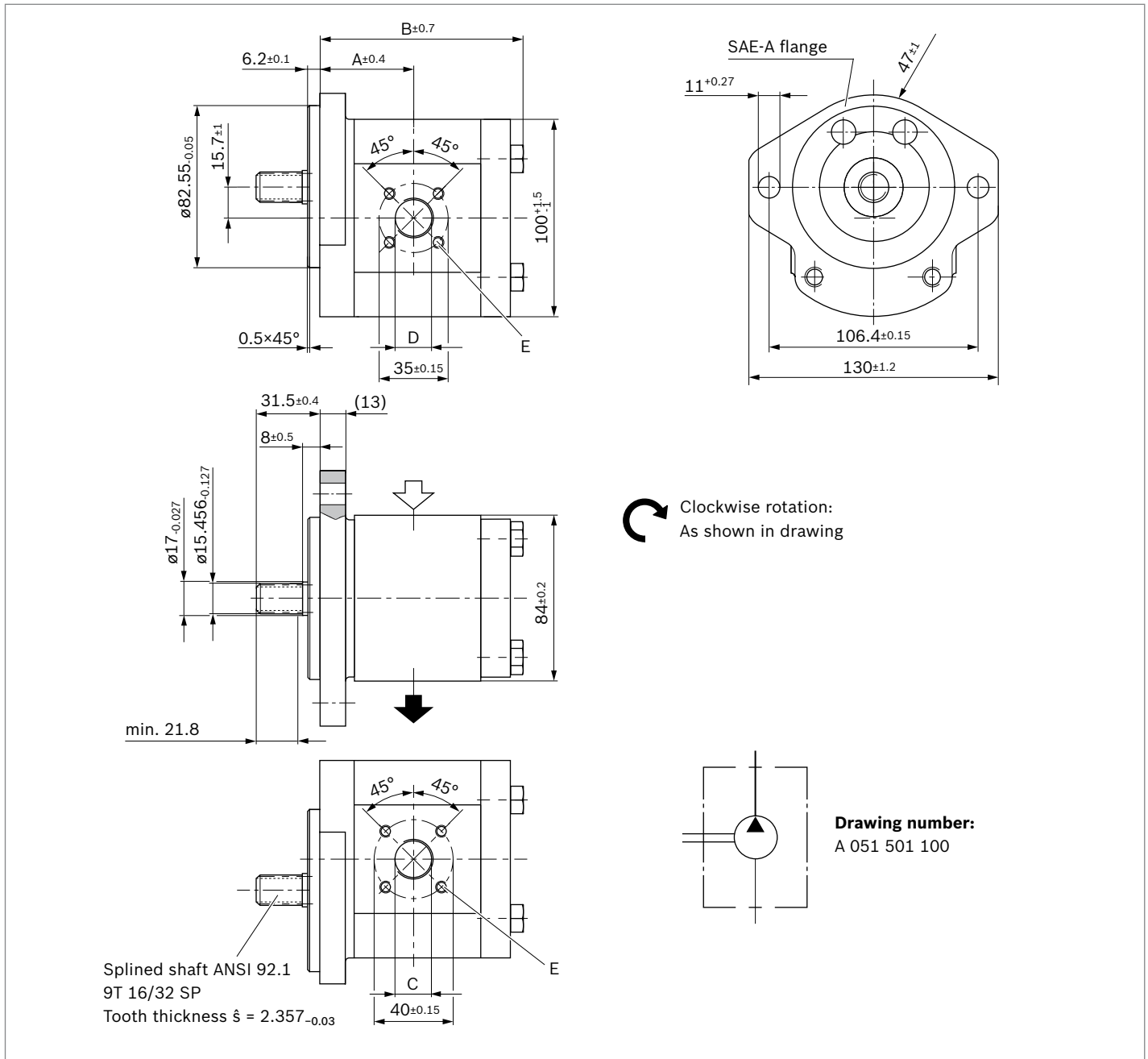
NG	Order number	Maximum intermittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions	
	Direction of rotation			A	B
	Clockwise				
5	R983072894	210	3500	41.1	86.3
8	R983072895	210	3500	43.2	90.4
11	R983072896	210	3500	47	95.4
14	R983072897	210	3500	47.5	100.4
16	R983072898	210	3500	47.5	103.8
19	R983072899	200	2900	47.5	108.8
22	R983072900	190	2400	55.1	114.2

▼ **Splined shaft (SAE J744 16-4 9T) with 2-bolt flange Ø82.55 mm (SAE J744 82-2 A) for mounting on an axial piston unit**
 AZPW-11 – ... **RR20PB-S0081**



NG	Order number	Maximum inter-mittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions				
				A	B	C	D	E
5	R983077585	210	3500	41.1	86.3	15	M6;	M6;
8	R983077586	210	3500	43.2	90.4	20	13 ⁺¹ deep	13 ⁺¹ deep
11	R983077587	210	3500	47	95.4	20		
14	R983077588	210	3500	47.5	100.4	20		
16	R983077589	210	3500	47.5	103.8	20		
19	R983077590	200	3300	47.5	108.8	20	M8;	
22	R983077591	190	3200	55.1	114.2	20	13 ⁺¹ deep	

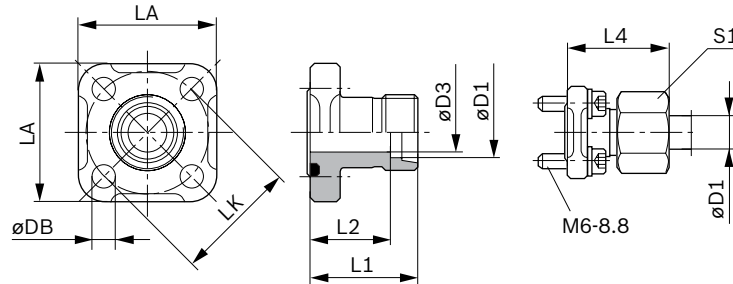
▼ **Splined shaft (SAE J744 16-4 9T) with 2-bolt flange $\varnothing 82.55$ mm (SAE J744 82-2 A) for mounting on an axial piston unit and line connections in Non-standard version**
 AZPW-21 – ... RRXXMB-S0593



NG	Order number	Maximum intermittent pressure p_2 [bar]	Maximum rotational speed [rpm]	Dimensions				
				A	B	C	D	E
4	R983035496	210	3500	39.9	84.7	3/8; 15 deep	3/8; 15 deep	M6; min. 13 deep
5	R983035497	210	3500	41.1	87.3	3/8; 15 deep	3/8; 15 deep	
8	R983035498	210	3500	43.2	91.4	1/2; 15 deep	1/2; 15 deep	
11	R983035499	210	3500	47	95.7	1/2; 19 deep	1/2; 15 deep	
14	R983035500	210	3500	47.5	101.4	3/4; 19 deep	1/2; 15 deep	
16	R983035501	210	3500	47.5	104.8	3/4; 19 deep	1/2; 15 deep	
19	R983035502	200	3300	47.5	109.8	3/4; 19 deep	1/2; 15 deep	
22	R983035503	190	3200	55.1	115.2	3/4; 19 deep	1/2; 15 deep	

Accessories**Gear pump flanges, straight, for square flange 20 (see page 14)**

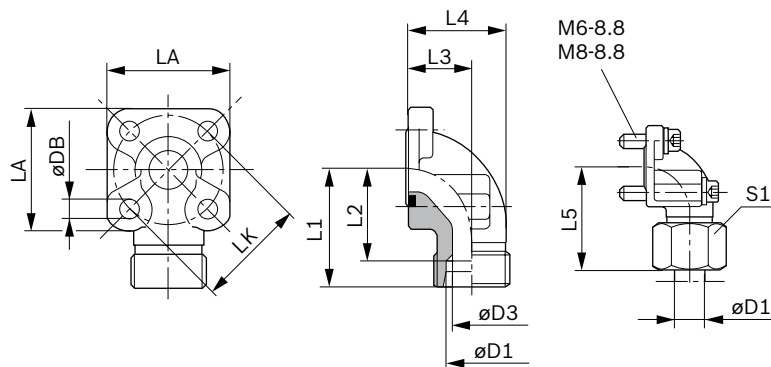
Complete fitting with
O-ring, metric screw set,
nuts and olive.



LK	D1	D3	L1	L2	L4	LA	1	DB	Screws 4 pcs.	O-ring NBR	Weight [kg]	Order number	p [bar]
35	10L	8	30	23.0	39.0	40	19	6.4	M6 × 22	20 × 2.5	0.09	1 515 702 064	315
35	12L	10	30	23.0	39.0	40	22	6.4	M6 × 22	20 × 2.5	0.10	1 515 702 065	315
35	15L	12	30	23.0	38.0	40	27	6.4	M6 × 22	20 × 2.5	0.10	1 515 702 066	250
40	15L	12	35	28.0	43.0	42	27	6.4	M6 × 22	24 × 2.5	0.12	1 515 702 067	100
40	18L	15	35	27.5	44.0	42	32	6.4	M6 × 22	24 × 2.5	0.13	1 515 702 068	100
40	22L	19	35	27.5	44.5	42	36	6.4	M6 × 22	24 × 2.5	0.12	1 515 702 069	100
40	28L	24	42	27.5	34.5	42	41	6.4	M6 × 22	24 × 2.5	0.15	1 515 702 008	100

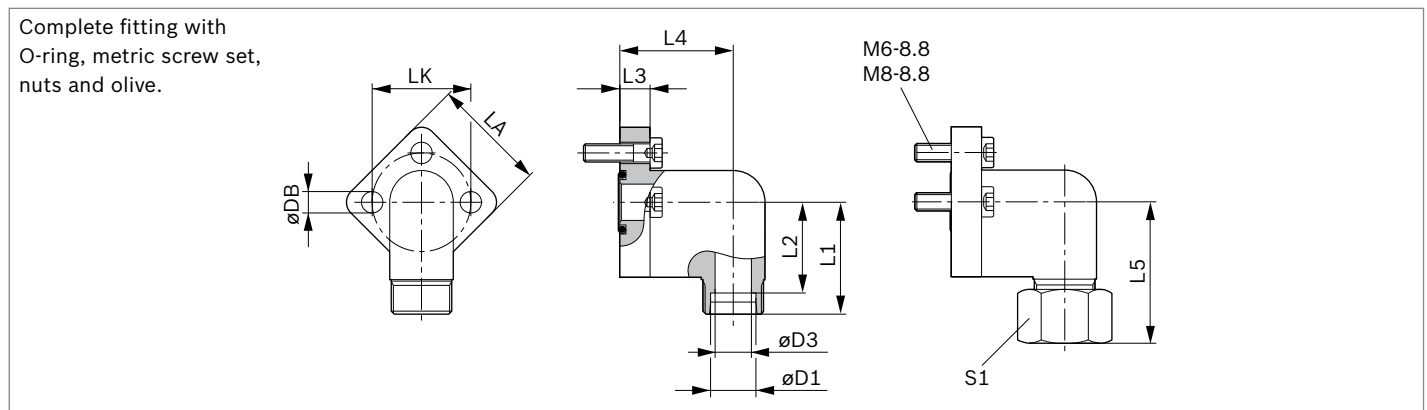
Gear pump flanges, 90° angle, for square flange 20 (see page 14)

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



LK	D1	D3	L1	L2	L3	L4	L5	LA	1	DB	Screws 2 pcs.	O-ring NBR	Weight [kg]	Order number	p [bar]
35	10L	8	38	31.0	16.5	26.5	47.0	40	19	6.4	M6 × 22	20 × 2.5	0.16	1 515 702 070	315
35	12L	10	38	31.0	16.5	26.5	47.0	40	22	6.4	M6 × 22	20 × 2.5	0.16	1 515 702 071	315
35	15L	12	38	31.0	16.5	26.5	46.0	40	27	6.4	M6 × 22	20 × 2.5	0.15	1 515 702 072	250
35	16S	12	38	29.5	20.0	31.0	48.0	40	30	6.4	M6 × 22	20 × 2.5	0.18	1 515 702 002	315
35	18L	15	38	29.5	20.0	31.0	47.0	40	32	6.4	M6 × 22	20 × 2.5	0.18	1 545 702 006	250
35	20S	16	45	34.5	25.0	38.0	56.0	40	36	6.4	M6 × 22	20 × 2.5	0.24	1 515 702 017	315
40	15L	12	38	31.0	22.5	36.5	46.0	42	27	6.4	M6 × 22	24 × 2.5	0.15	1 515 702 073	100
40	18L	15	38	30.5	22.5	36.5	47.0	42	32	6.4	M6 × 22	24 × 2.5	0.17	1 515 702 074	100
40	20S	16	40	29.5	22.5	35.5	50.0	42	36	6.4	M6 × 22	24 × 2.5	0.20	1 515 702 011	250
40	22L	19	38	30.5	22.5	36.5	47.5	42	36	6.4	M6 × 22	24 × 2.5	0.17	1 515 702 075	100
40	28L	22	40	32.5	28.0	43.0	49.0	42	41	6.4	M6 × 20	24 × 2.5	0.24	1 515 702 010	100
40	35L	31	41	30.5	34.0	55.0	52.0	42	50	6.4	M6 × 22	24 × 2.5	0.33	1 515 702 018	100

Gear pump flange, 3-hole, 90° angle, for square flange 30 (see page 14)



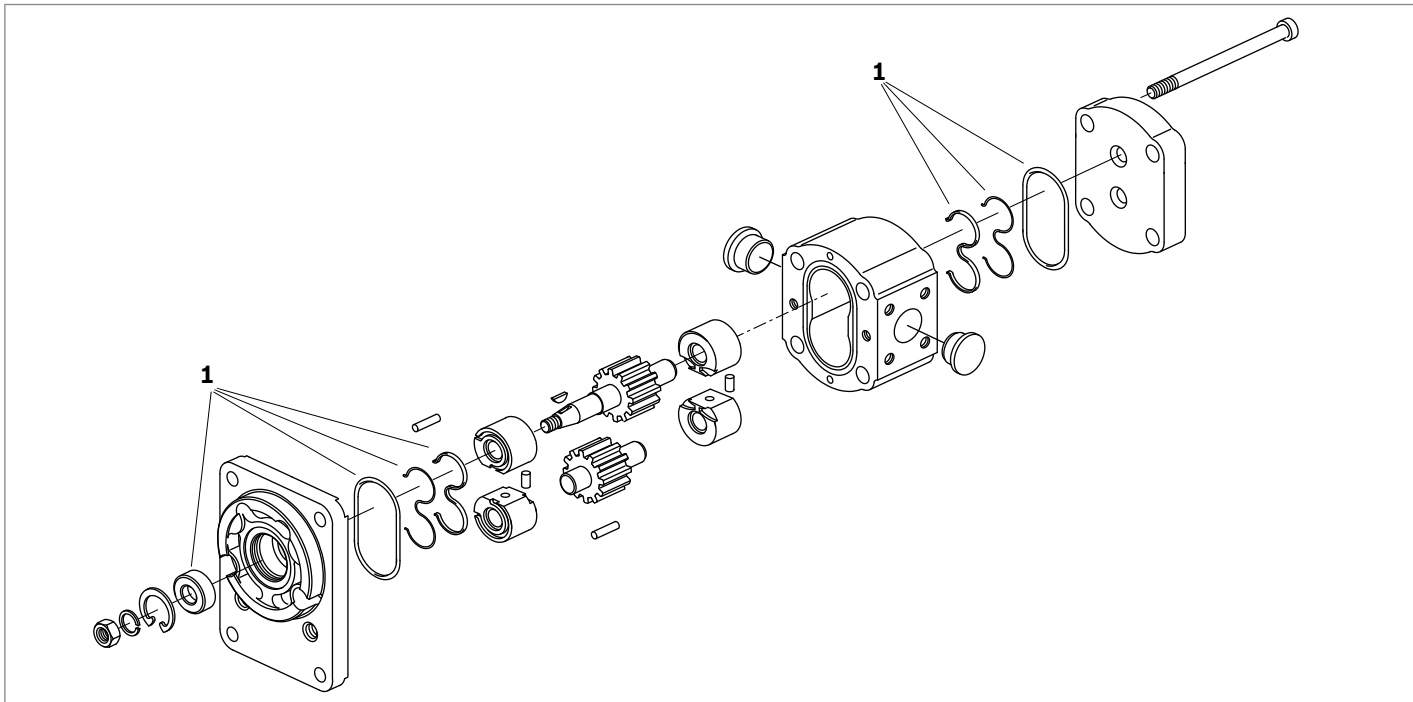
LK	D1	D3	L1	L2	L3	L4	L5	LA	1	DB	Screws 3 pcs.	O-ring NBR	Weight [kg]	Order number	p [bar]
30	12L	10	37	30.0	10	37.5	46	38	22	6.4	M6 × 22	16 × 2.5	0.13	1 515 702 146	250
30	15L	12	37	30.0	10	37.5	47	38	27	6.4	M6 × 22	16 × 2.5	0.14	1 515 702 147	250
30	18L	15	37	30.0	10	37.5	47	38	32	6.4	M6 × 22	16 × 2.5	0.17	1 515 702 148	160
40	22L	19	43	35.5	14	41.0	53	48	36	8.4	M8 × 30	24 × 2.5	0.29	1 515 702 149	160
40	28L	24	43	35.5	14	41.0	53	48	41	8.4	M8 × 30	24 × 2.5	0.40	1 515 702 150	160

Note

You can find the permissible tightening torques in our publication 07012-B1 “General Instruction Manual for External Gear Units”.

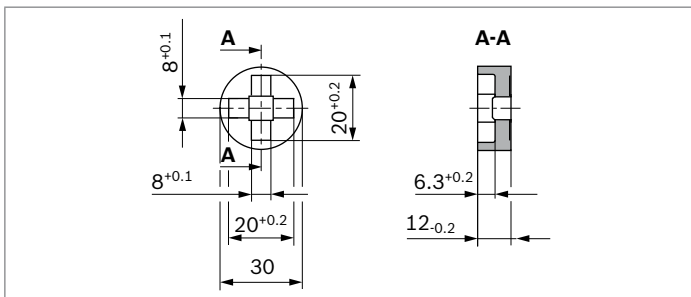
Spare parts

▼ Schematic diagram

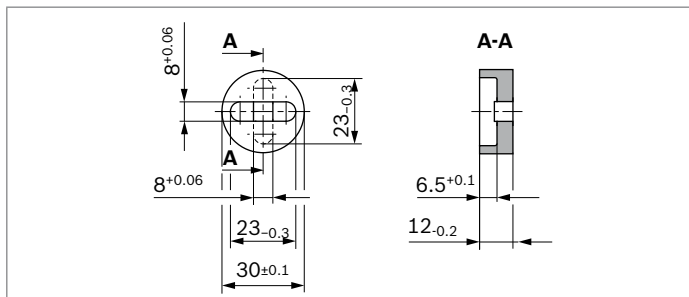


Item	Designation	Order number	Material	AZPW-22 - ...										
				CB...	FB...	HO...	NT...	CP...	CN...	QR...	RR12	RR20		
1	Seal kit	R 983 032 388	NBR	x	x	x	x	x	x	x	x	x		
		R 983 069 216	FKM										x	x

▼ Driver for sizes 4 to 11



▼ Driver for sizes 14 to 22



Designation	Order number EU	Order number APA / US
Driver for sizes 4 to 11	1 510 240 009	R 002 G11 025
Driver for sizes 14 to 22	1 510 240 011	F 000 511 445

Note
Spare parts can be found online at www.boschrexroth.com/spc

Notes on commissioning

General

Pumps delivered by Bosch Rexroth are tested for function and performance. No changes of any nature may be made, otherwise the warranty is rendered void.

The pump may only be operated with the permissible data (see page 6).

Technical data

All mentioned technical data are dependent on manufacturing tolerances and are applicable for certain boundary conditions. Note that certain deviations are therefore possible and that technical data may vary when certain boundary conditions (e.g., viscosity) change.

Characteristic curves

When dimensioning the gear pump, observe the maximum possible application data on the basis of the characteristic curves shown starting on page 8.

Scope of delivery

The scope of delivery includes the components with the characteristics described under type codes and dimensions starting on page 16.

Further information

- ▶ Further information on installation, commissioning, and operation can be found in the publication 07012-B1: "General Operating Instructions for External Gear Units".
- ▶ Extensive notes and suggestions can be found in the Hydraulic Trainer, volume 3: "Planning and Design of Hydraulic Power Systems", order number R900018547.

Filter recommendation

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

Cleanliness level 20/18/15 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. New fluids are often above this value. In such instances, a filling device with a special filter should be used.

Bosch Rexroth is not liable for wear due to contamination.

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AZ configurator

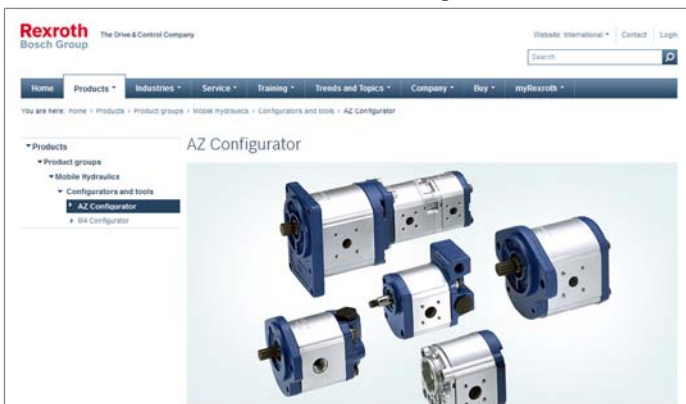
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The selector guides you through a selection of features to all of the products available for order. By clicking on the order number, you can view and download the following product information: Data sheet, dimension sheet, instruction manual, operating 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). Then the goods will be sent within 10 business days.

You also have the possibility to easily and conveniently configure your individual external gear unit with our AZ configurator. All the necessary data that you need for the project planning of external gear units is requested by means of the menu navigation.

For an already existing configuration you receive as a result the order number, the type code, as well as further information. If your configuration does not lead to a product that is available for order, our online tools provide you with 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



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Your notes

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