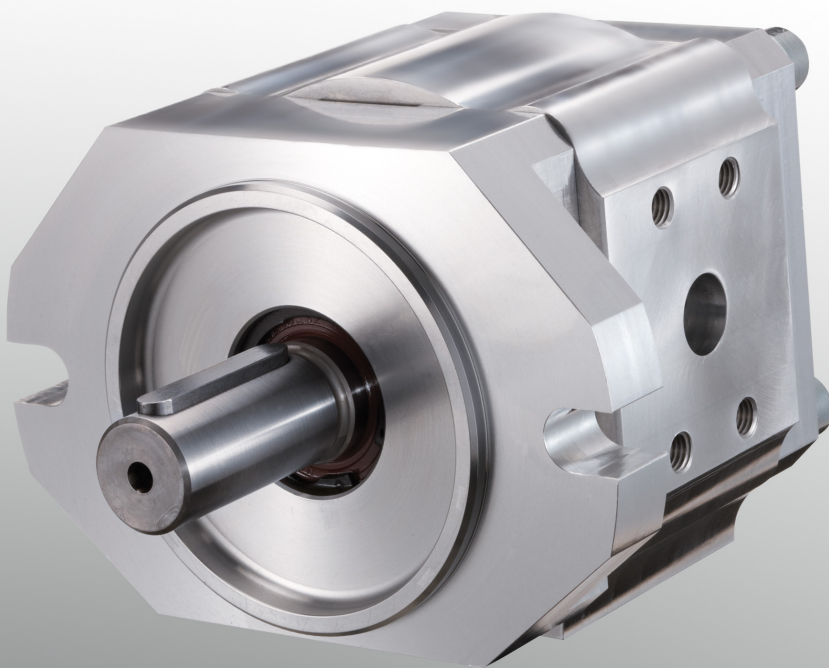


Industrial Components

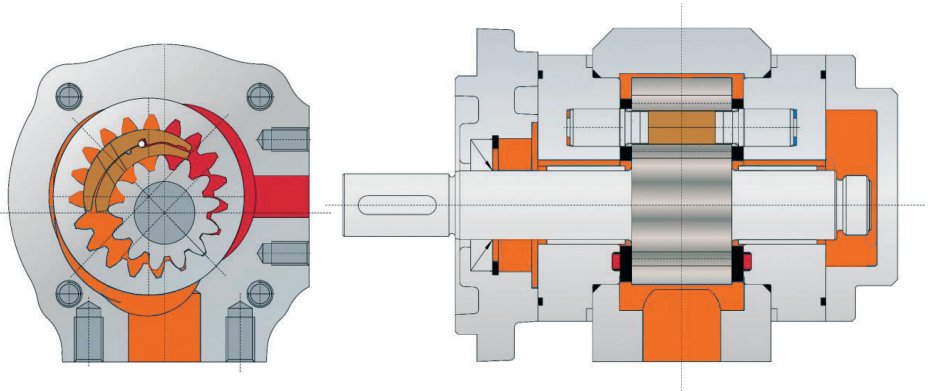
Internal gear pumps
DHPC3, DHPC5, DHPC6



Internal gear pump Type DHPC3 for industrial applications with constant displacement volume

Characteristics

- Internal gear pump with axial and radial gap compensation
- Radial compensation with segments
- Suction and pressure port radial
- Field of application: Industrial hydraulic
- Low noise
- Long time life
- Low pulsation (pressure pulsation ~2 %)
- Multi flow combinations



Technical Data

Rated Size	020	025	032	040	050	063	064
Spec. volume V_{th} [cm ³ /rev] ^{***}	20,0	24,8	32,1	40,1	50,3	63,1	64,4
Continuous operating pressure [bar] ^{**}	250					180	250
Peak operating pressure [bar] max. 10 sec 15 % duty cycle ^{**}	320			300	280	210	280
Cut-in pressure peak [bar] ^{**}	350			325	300	210	300
Nominal speed [min ⁻¹]	200 – 3.400	200 – 3.200	200 – 3.000	100 – 2.500	100 – 1.800		100 – 1.800
Max. speed [min ⁻¹]	3.900	3.800	3.700	2.500	1.800		1.800
Nominal speed [min ⁻¹] ^{****}				100 – 3.200	100 – 3.000	200 – 2.200	100 – 2.200
Max. speed [min ⁻¹] ^{****}				3.600	3.600	2.400	2.400
Operating viscosity [mm ² /s]	10 – 300						
Starting viscosity [mm ² /s]	2.000						
Operating temperature [°C]	-20 to +100						
Operating medium	HL – HLP DIN 51 524 part 1/2						
Max. medium temperature [°C]	120						
Min. medium temperature [°C]	-40						
Max. ambient temperature [°C]	80						
Min. ambient temperature [°C]	-40						
Max. admission pressure (intake side) [bar]	2 bar absolute						
Min. admission pressure (intake side) [bar]	0.8 bar absolute (Start 0.6)						
Weight appr. [kg]	8,3	8,6	9,2	9,8	10,5	5,4	11,5
Degree of filtration	Class 20/18/15 due to ISO 4406						
Life expectancy	not less than 1×10^7 load cycles against peak operating pressure						
Efficiency η_{vol} :	93	93	94	95	95	94	95
Efficiency η_{hm} :	91	92	92	93	93	92	93
Pump noise* (measured in sound chamber) dB[A]	62	63	64	65	66	64	68

$n = 1.450 \text{ min}^{-1}$ $\Delta p = 250 \text{ bar}$ (180 bar at size 063) $T = 50 \text{ °C}$ Medium: HLP 46

* Measured in anechoic room of Eckerle Hydraulic Division; Axial microphone distance 1.0 m

** For acceptable pressure at 400–1.800 rpm. Further rpm on request.

*** Due to manufacturing tolerances the displacement volume could vary.

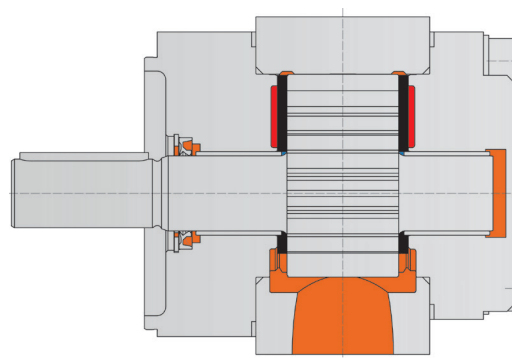
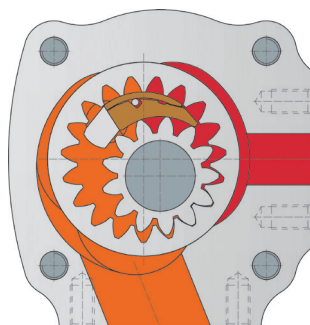
**** 2" suction port

The pumps have no corrosion protection. The max. permissible values must not be applied cumulatively. Please contact us.

Internal gear pump Type DHPC5 for industrial applications with constant displacement volume

Characteristics

- Internal gear pump with axial and radial gap compensation
- Radial compensation with segments
- Suction and pressure port radial
- Field of application: Industrial hydraulic
- Low noise
- Long time life
- Low pulsation (pressure pulsation ~2 %)
- Multi flow combinations on request



Technical Data

Rated Size	064	080	100
Spec. volume V_{th} [cm ³ /rev] ^{***}	65,3	80,4	100,5
Continuous operating pressure [bar] ^{**}	250		
Peak operating pressure [bar] max. 10 sec 15 % duty cycle ^{**}	270		
Cut-in pressure peak [bar] ^{**}	280		
Nominal speed [min ⁻¹]	100 – 2.800	100 – 2.800	100 – 2.500
Max. speed [min ⁻¹]	3.000	3.000	3.000
Operating viscosity [mm ² /s]	10 – 300		
Starting viscosity [mm ² /s]	2.000		
Operating temperature [°C]	-20 to +100		
Operating medium	HL – HLP DIN 51 524 part 1/2		
Max. medium temperature [°C]	120		
Min. medium temperature [°C]	-40		
Max. ambient temperature [°C]	80		
Min. ambient temperature [°C]	-40		
Max. admission pressure (intake side) [bar]	2 bar absolute		
Min. admission pressure (intake side) [bar]	0,8 bar absolute (Start 0,6)		
Weight appr. [kg]	11,5	13,0	13,5
Degree of filtration	Class 20/18/15 due to ISO 4406		
Life expectancy	not less than 1×10^7 load cycles against peak operating pressure		
Efficiency η_{vol} :	94	95	95
Efficiency η_{hm} :	92	93	93
Pump noise* (measured in sound chamber) dB[A]	69	70	71

$n = 1.450 \text{ min}^{-1}$ $\Delta p = 250 \text{ bar}$ $T = 50 \text{ °C}$ Medium: HLP 46

* Measured in anechoic room of Eckerle Hydraulic Division; Axial microphone distance 1.0 m

** For acceptable pressure at 400–1.800 rpm. Further rpm on request.

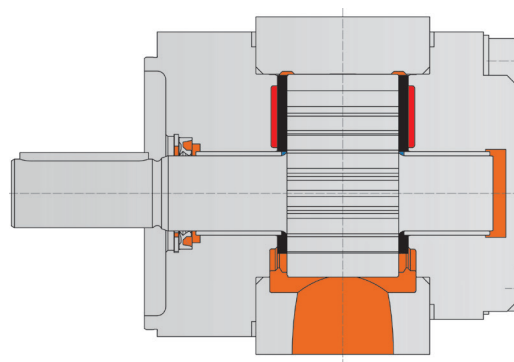
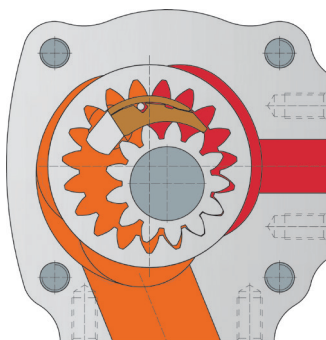
*** Due to manufacturing tolerances the displacement volume could vary.

The pumps have no corrosion protection. The max. permissible values must not be applied cumulatively. Please contact us.

Internal gear pump Type DHPC6 for industrial applications with constant displacement volume

Characteristics

- Internal gear pump with axial and radial gap compensation
- Radial compensation with segments
- Suction and pressure port radial
- Field of application: Industrial hydraulic
- Low noise
- Long time life
- Low pulsation (pressure pulsation ~2 %)
- Multi flow combinations on request



Technical Data

Rated Size	125	160	200	250
Spec. volume V _{th} [cm³/rev]***	125,7	160,1	200,9	249,9
Continuous operating pressure [bar]**	250		160	140
Peak operating pressure [bar] max. 10 sec 15 % duty cycle**	280		170	150
Cut-in pressure peak [bar]**	300		180	160
Nominal speed [min ⁻¹]****	400 – 2.500	400 – 2.000		
Max. speed [min ⁻¹]	2.800	2.200		
Operating viscosity [mm²/s]	10 – 300			
Starting viscosity [mm²/s]	2.000			
Operating temperature [°C]	-20 to +100			
Operating medium	HL – HLP DIN 51 524			
Max. medium temperature [°C]	80			
Min. medium temperature [°C]	-20			
Max. ambient temperature [°C]	80			
Min. ambient temperature [°C]	-20			
Max. admission pressure (intake side) [bar]	2 bar absolute			
Min. admission pressure (intake side) [bar]	0.8 bar absolute (Start 0.6)			
Weight appr. [kg]	27,5	30	43	54
Degree of filtration	Class 20/18/15 due to ISO 4406			
Life expectancy	not less than 1x 10 ⁷ load cycles against peak operating pressure			
Efficiency η _{vol} :	94	94	93	93
Efficiency η _{hm} :	90		91	
Pump noise* (measured in sound chamber) dB[A]	76	77	77	78

n = 1.450 min⁻¹ Δ p = 250 bar (160 bar at size 200 and 140 bar at size 250) T = 50 °C Medium: HLP 46

* Measured in anechoic room; Axial microphone distance 1.0 m

** For acceptable pressure at 400–1.800 rpm. Further rpm on request.

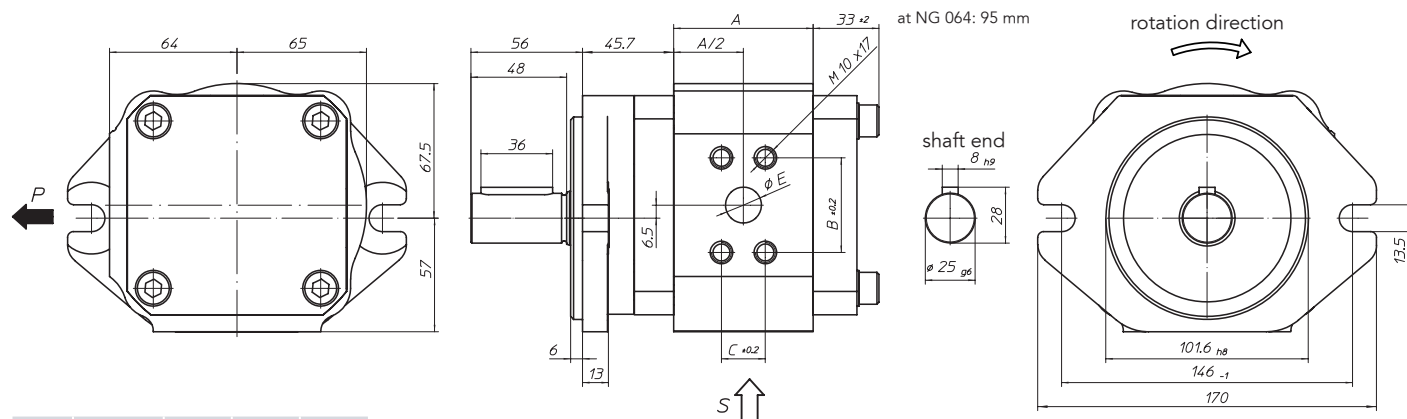
*** Due to manufacturing tolerances the displacement volume could vary.

**** Further rpm on request.

The pumps have no corrosion protection. The max. permissible values must not be applied cumulatively. Please contact us.

Pump with SAE-2-B-hole flange and cylindrical shaft

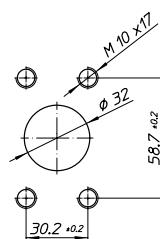
Order example: DHPC3-___RA23-1X



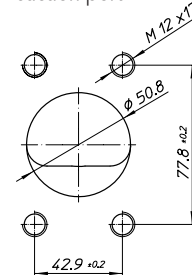
Size	A	B	C	E
020	58,5	47,5	22	18
025	65,0	47,5	22	18
028	70,0	47,5	22	18
032	75,0	47,5	22	18
040	86,0	52,4	26,2	20
050	100,0	52,4	26,2	20
063	118,0	52,4	26,2	25,4
064	100,0	52,4	26,2	20

* is suitable for speed controlled drive applications
(available only for size 040, 050, 063, 064)

suction port

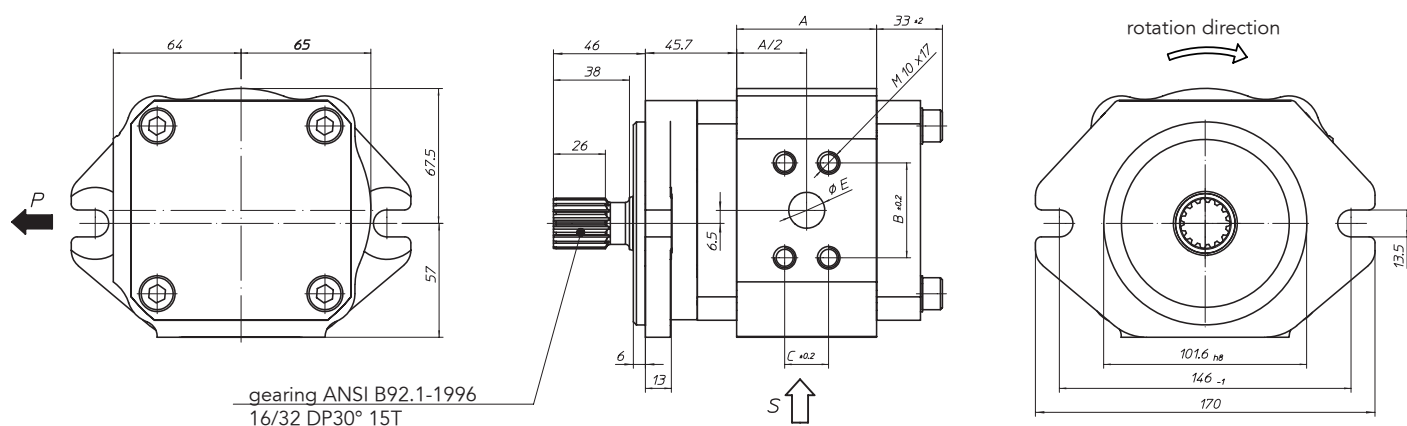


enlarged suction port*



Pump with SAE-2-B-hole flange and spline shaft

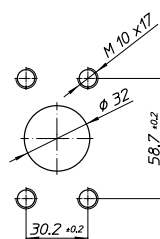
Order example: DHPC3-___RB23-1X



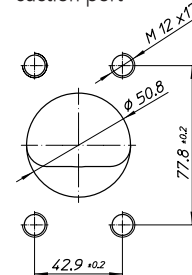
Size	A	B	C	E
020	58,5	47,5	22	18
025	65,0	47,5	22	18
028	70,0	47,5	22	18
032	75,0	47,5	22	18
040	86,0	52,4	26,2	20
050	100,0	52,4	26,2	20
063	118,0	52,4	26,2	25,4
064	100,0	52,4	26,2	20

* is suitable for speed controlled drive applications
(available only for size 040, 050, 063, 064)

suction port

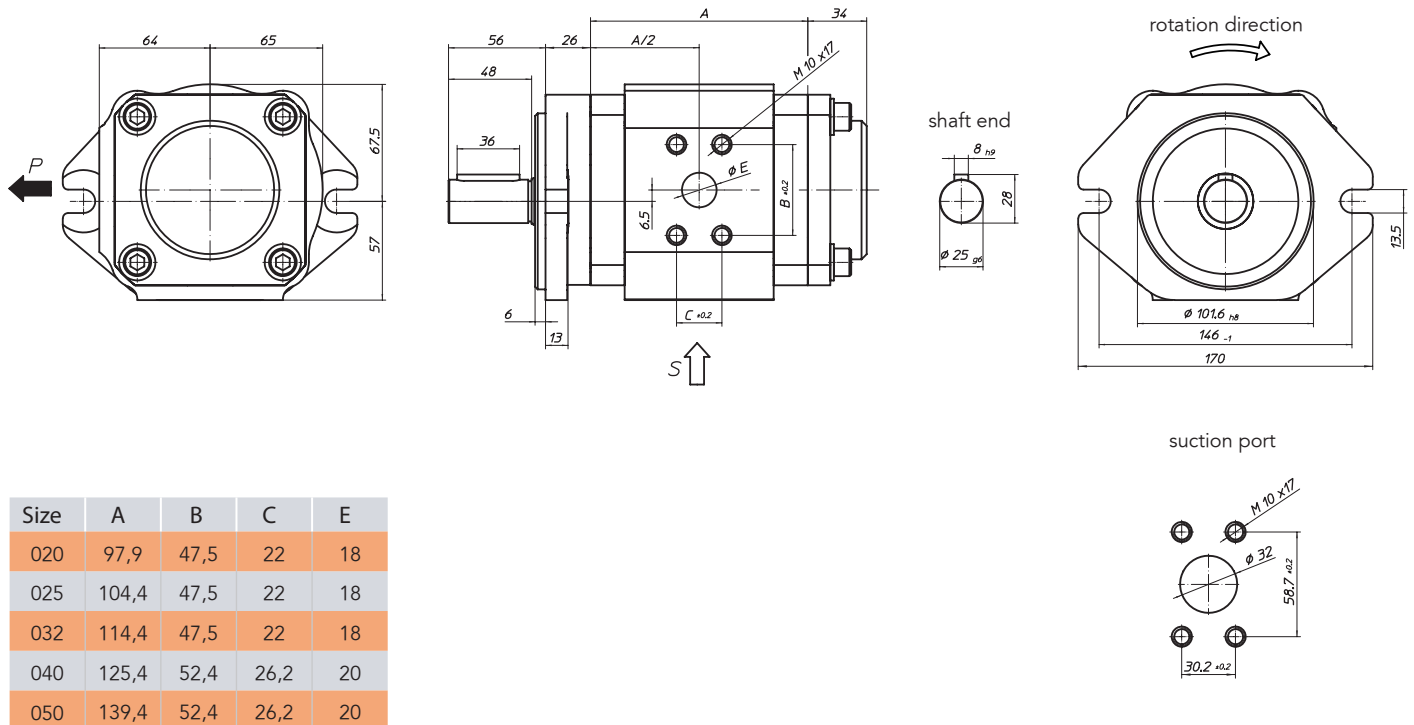


enlarged suction port*



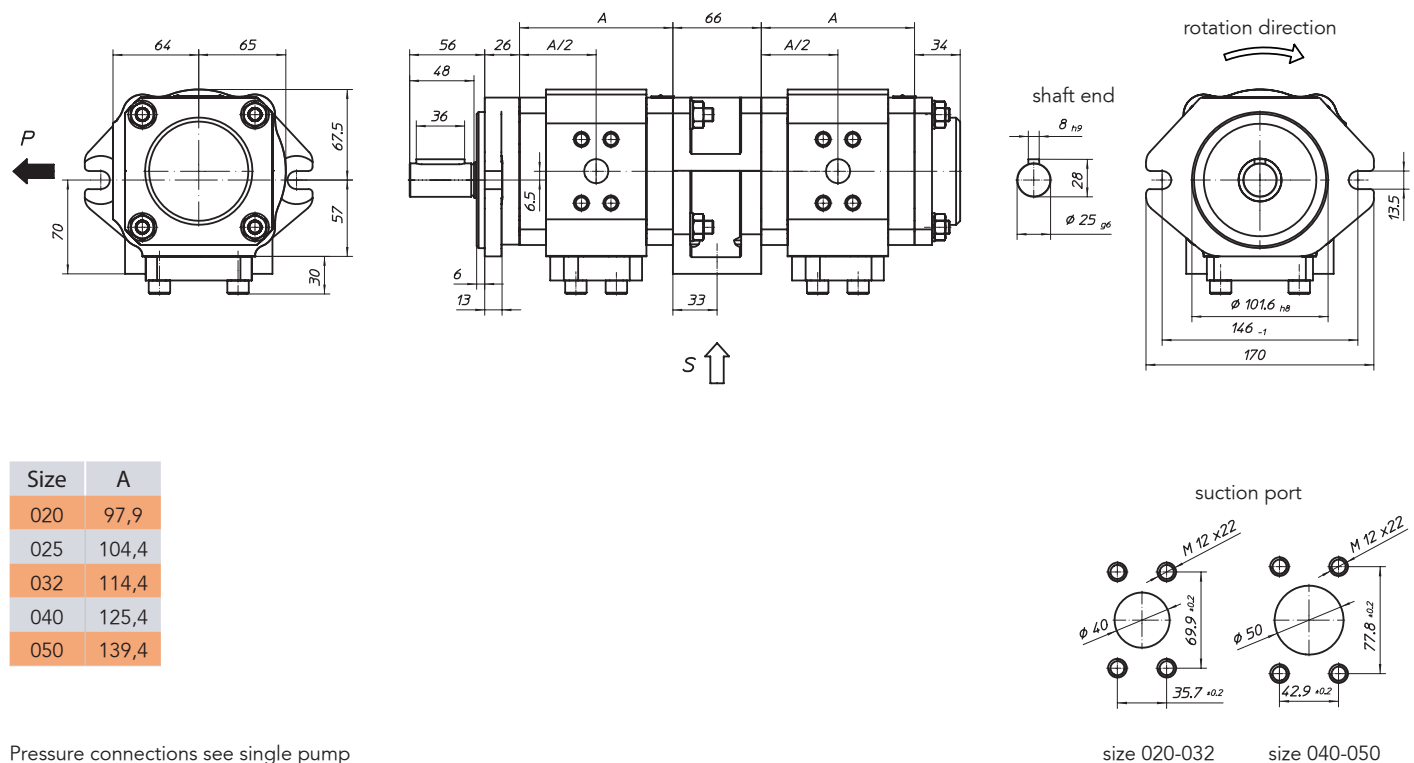
Pump with SAE-B-2-hole flange and cylindrical shaft with PTO through drive option

Order example: DHPC3-___RK23-1X



Double pump with SAE-B-2-hole flange and cylindrical shaft

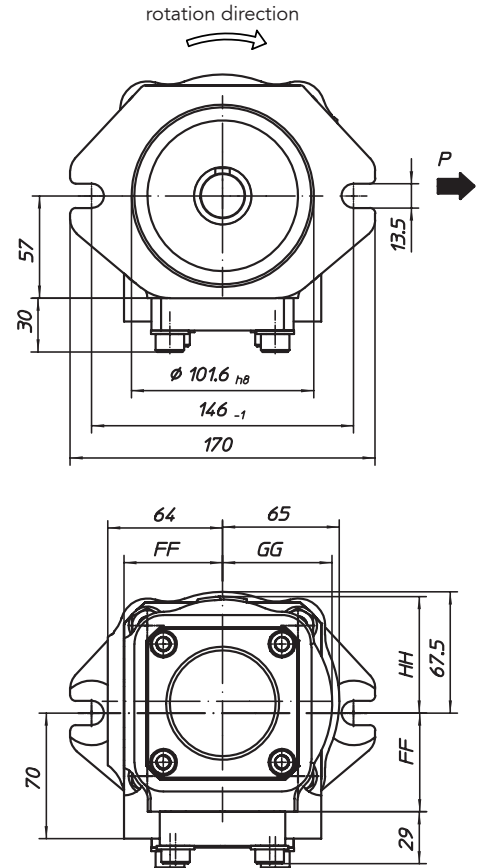
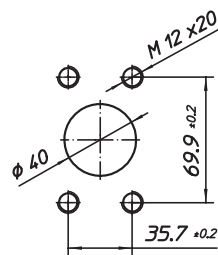
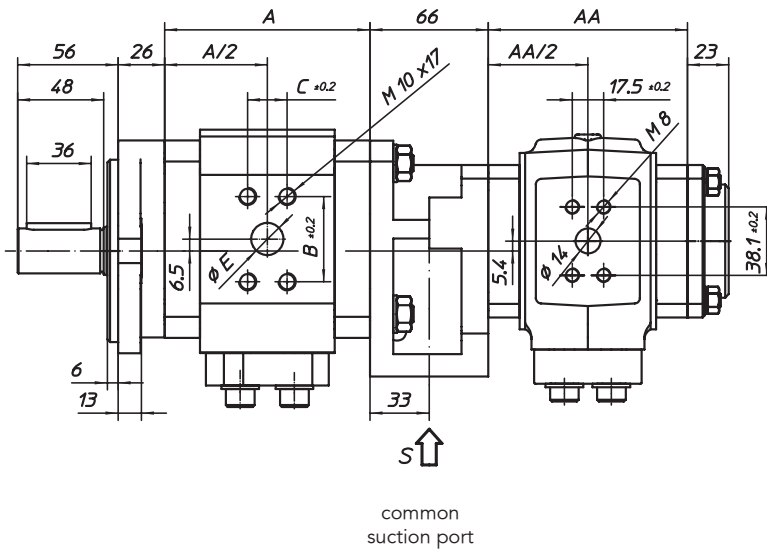
Order example: DHPC3-___RK20-1X+ und DHPC3-___RP30-1X



Pressure connections see single pump

Double pump with SAE-B-2-hole flange and cylindrical shaft

Order example: DHPC3-___RK20-1X+ und DHPH2-___RP30-1X



DHPH2

Size	AA	FF	GG	HH
004	71	50	55	59
005	71	50	55	59
006	73	50	55	59
008	76	50	55	59
011	82	50	55	59
013	87	50	55	60
016	92	50	55	60
019	99	55	61	65
022	105	55	61	65
025	111	55	61	65

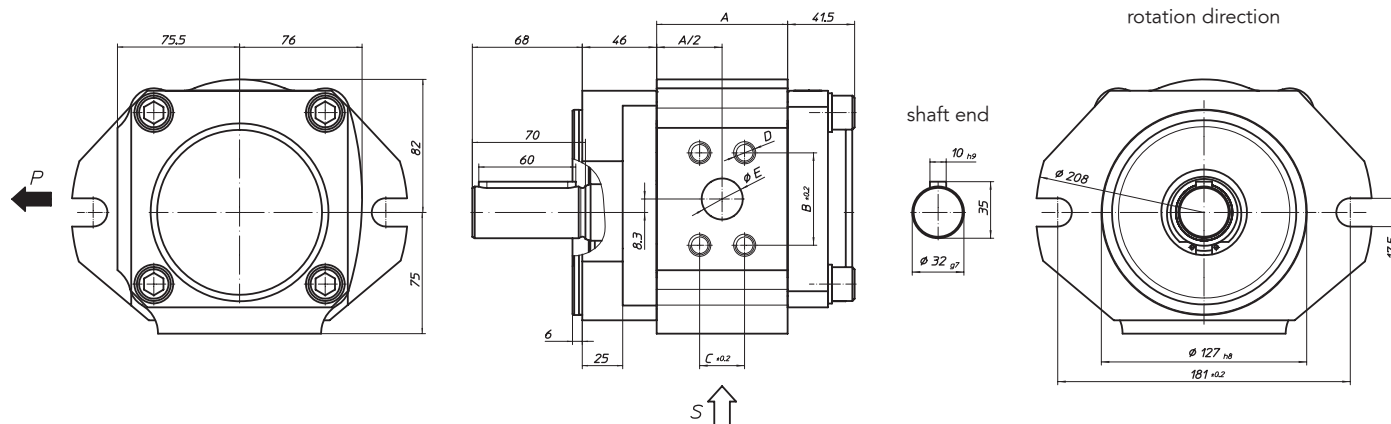
DHPC3

Size	A	B	C	E
020	97,9	47,5	22	18
025	104,4	47,5	22	18
032	114,4	47,5	22	18
040	125,4	52,4	26,2	20
050	139,4	52,4	26,2	20

The single pumps of a multiple pump assembly are internally connected, even if you connect to the pump inlet. It is therefore no operating with different fluids possible.

Pump with SAE-C-2-hole flange and zylindrical shaft

Order example: DHPC5-___RA23-1X



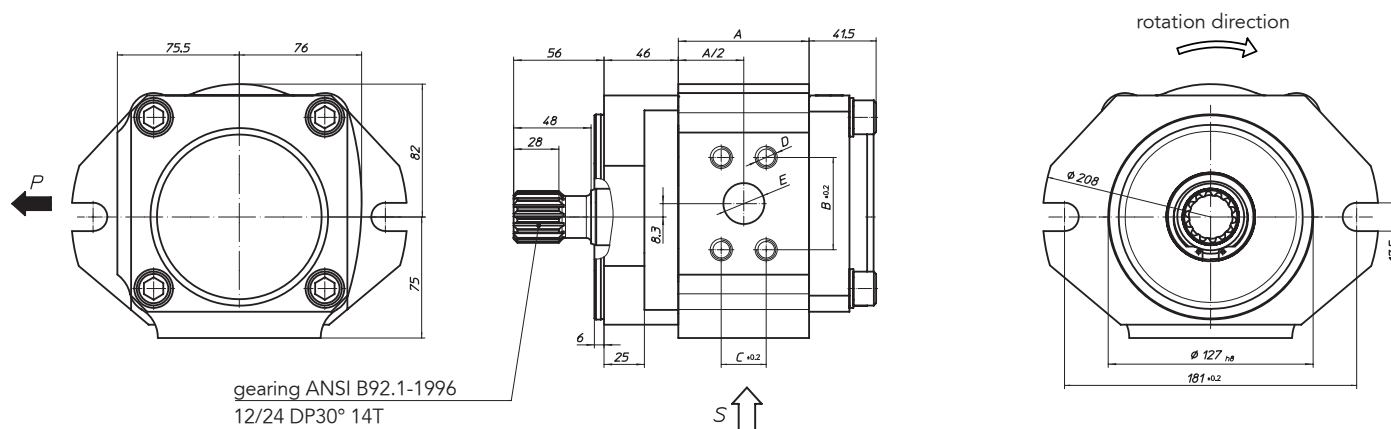
Size	A	B*	C*	D	E	L**	M**	N
064	81	57,2	27,8	M12x22	25,4	77,8	42,9	47,2
080	93	66,7	31,8	M14x24	31,8	77,8	42,9	47,2
100	109	66,7	31,8	M14x24	31,8	88,9	50,8	63,5

* Pressure port: SAE J518, high pressure series (code 62)

** Suction port: SAE J518, standard pressure series (code 61)

Pump with SAE-C-2-hole flange and spline shaft

Order example: DHPC5-___RB23-1X



gearing ANSI B92.1-1996
12/24 DP30° 14T

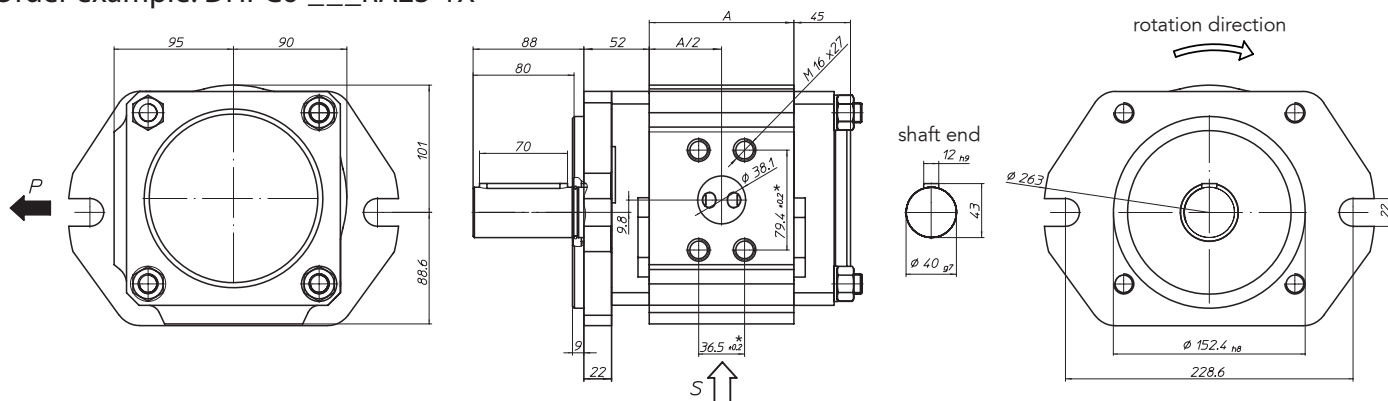
Size	A	B*	C*	D	E	L**	M**	N
064	81	57,2	27,8	M12x22	25,4	77,8	42,9	47,2
080	93	66,7	31,8	M14x24	31,8	77,8	42,9	47,2
100	109	66,7	31,8	M14x24	31,8	88,9	50,8	63,5

* Pressure port: SAE J518, high pressure series (code 62)

** Suction port: SAE J518, standard pressure series (code 61)

Pump with SAE-D-2-hole flange and zylindrical shaft

Order example: DHPC6-___RA23-1X



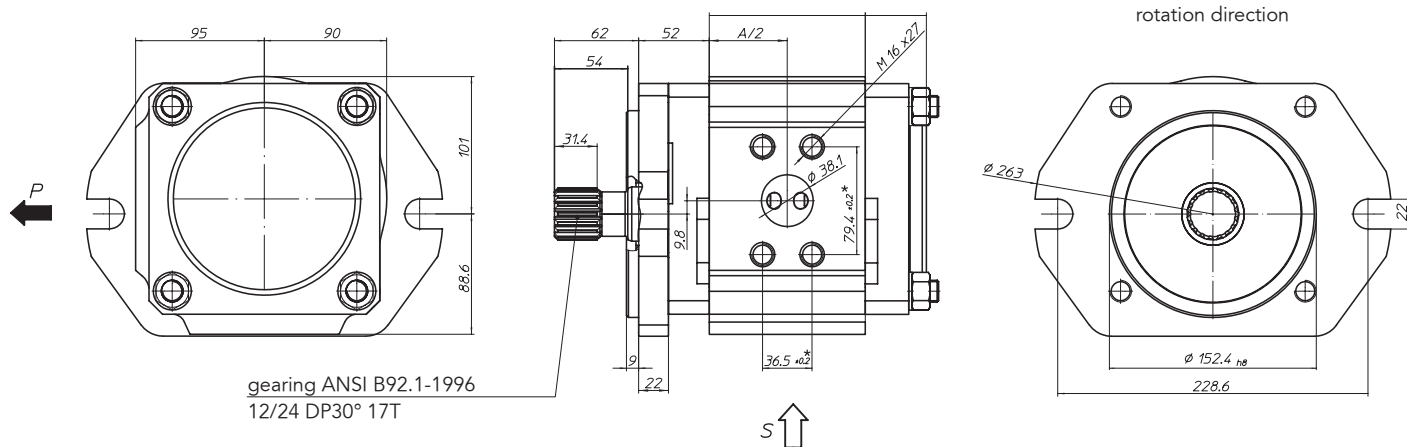
Size	A	L**	M**	N	P
125	115	88,9	50,8	63,5	M12x22
160	136	106,4	61,9	76,2	M16x25
200	161	120,7	69,9	88,9	M16x25
250	191	120,7	69,9	88,9	M16x25

* Pressure port: SAE J518, high pressure series (code 62)

** Suction port: SAE J518, standard pressure series (code 61)

Pump with SAE-D-2-hole flange and spline shaft

Order example: DHPC6-___RB23-1X



Size	A	L**	M**	N	P
125	115	88,9	50,8	63,5	M12x22
160	136	106,4	61,9	76,2	M16x25
200	161	120,7	69,9	88,9	M16x25
250	191	120,7	69,9	88,9	M16x25

* Pressure port: SAE J518, high pressure series (code 62)

** Suction port: SAE J518, standard pressure series (code 61)

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

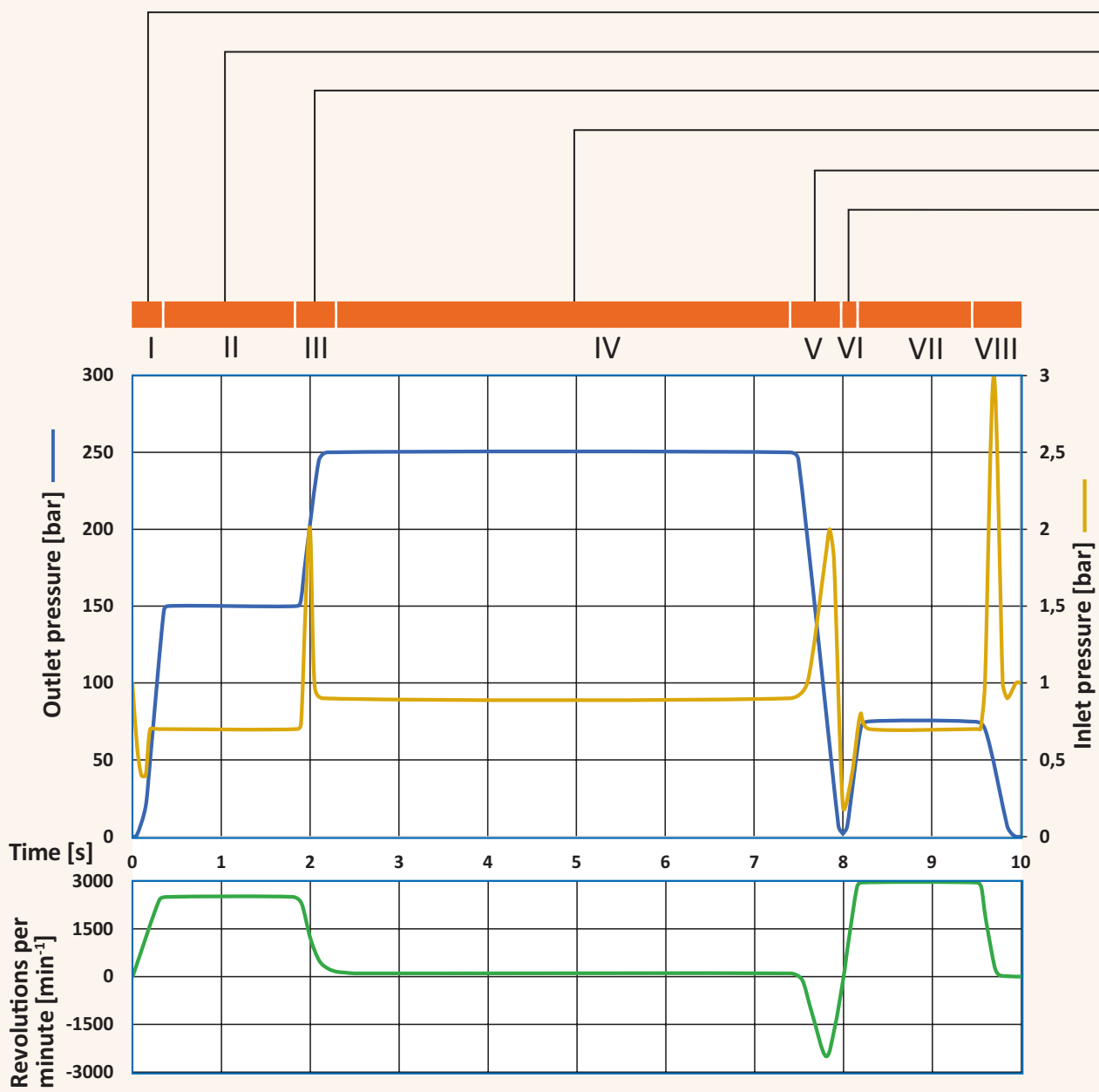
Connecting flanges SAE for double pump DHPC3

Summary of SAE Pressure- and Suction flange SAE J518C, ISO 6162

Bezeichnung	Inlet	Outlet
DHPC3-020-032	SAE 1 1/4" 3000psi	SAE 3/4" 3000psi
DHPC3-040-064	SAE 1 1/4" 3000psi	SAE 1" 3000psi
DHPC3-040-064	SAE 2" 3000psi	SAE 1" 3000psi
DHPC5-064	SAE 2" 3000psi	SAE 1" 3000psi
DHPC5-080	SAE 2" 3000psi	SAE 1 1/4" 6000psi
DHPC5-100	SAE 2 1/2" 3000psi	SAE 1 1/4" 6000psi
DHPC6-125	SAE 2 1/2" 3000psi	SAE 1 1/2" 6000psi
DHPC6-160	SAE 3" 3000psi	SAE 1 1/2" 6000psi
DHPC6-200	SAE 3 1/2" 3000psi	SAE 1 1/2" 6000psi
DHPC6-250	SAE 3 1/2" 3000psi	SAE 1 1/2" 6000psi

Suction flange for Intermediate housing

Bezeichnung	Inlet
DHPC3/3 bis NG032	SAE 1 1/2" 3000psi
DHPC3/3 ab NG040	SAE 2" 3000psi



As a matter of principle, Dorninger Hytronics internal gear pumps are eminently suited for variable speed operation. Even at low viscosities and high temperatures of the pumping medium, the pumps run extremely energy efficiently and highly dynamically over a wide speed range due to the radial and axial gap compensation.

However, with variable speed operation certain boundary conditions should be observed. The exemplary cycle shown below illustrates this clearly.

I. Start:

Dorninger Hytronics internal gear pumps are able to build up pressure from standstill. This happens smoothly when the pump starts from an unpressurized state. Please talk to Dorninger Hytronics, if due to the system design the pump is pressurized at standstill.

II. Pump operation:

Dorninger Hytronics internal gear pumps are capable of providing a speed-dependent volumetric flow at any pressure level during pump operation. However, application limits of the respective sizes must be observed. ²⁾

III. Deceleration:

With Dorninger Hytronics internal gear pumps very high decelerations can be achieved. It must be ensured though that line-dependent pressure peaks can develop within the suction side. These should not exceed the maximum permissible inlet pressure. ^{2) 3)}

IV. Pressure Holding Operation:

Dorninger Hytronics internal gear pumps are able to build up high pressures even at very low speeds due to the gap compensation. Hold pressure operation is thus extremely energy-efficient. Pump operation should follow after the hold pressure operation to flush out the pump.

V. Reverse operation:

Eckerle internal gear pumps are usually able to run highly dynamically in the opposite direction of rotation in order to lower pressure peaks, or by means of a hydraulic motor. However, it must be ensured that the output pressure is always higher than the input pressure. ^{1) 3)}

VI. Acceleration:

With Dorninger Hytronics internal gear pumps very large speed-ups can be run. These are limited by inlet pressure, geometry of the suction line and viscosity. However, these may not drop below the specified minimum inlet pressure of the series. ^{1) 3)}

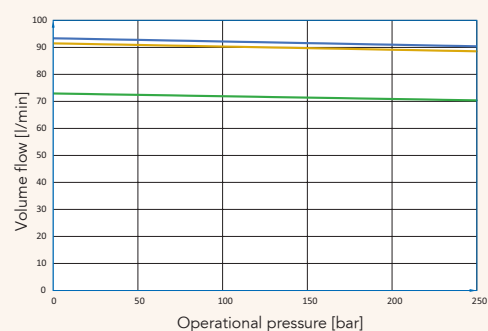
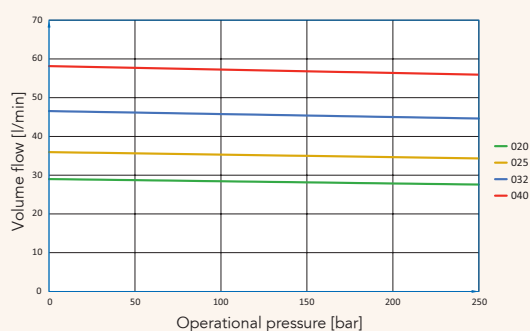
1) See Characteristics

2) See Technical data

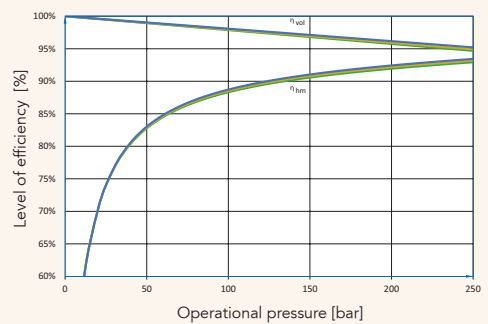
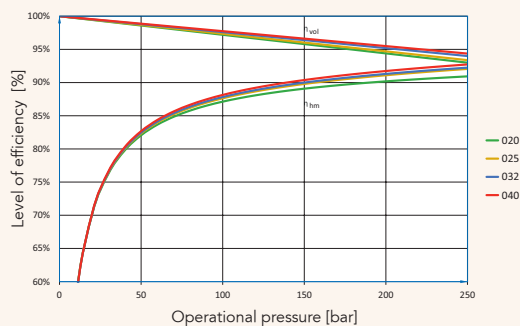
3) To avoid critical operating points, we recommend taking measurements of the pump's inlet and outlet pressure near the pump with a scanning rate of at least 1 kHz when a new pump cycle starts.

Characteristics DHPC3

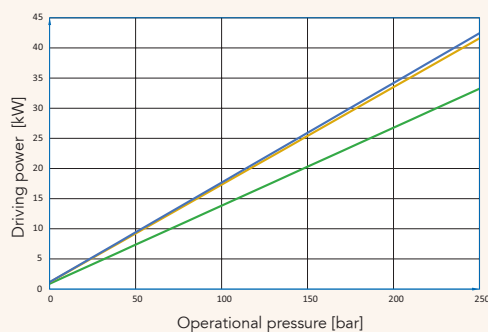
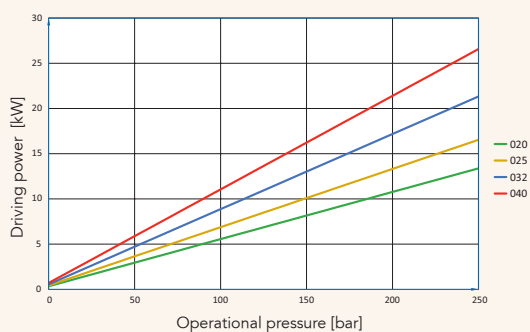
Volume flow



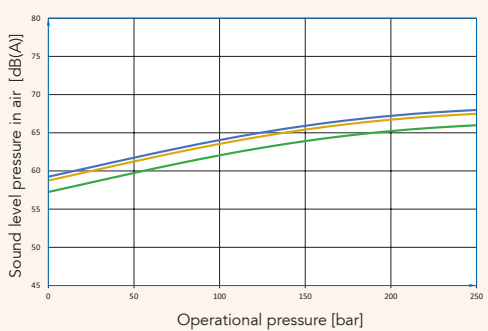
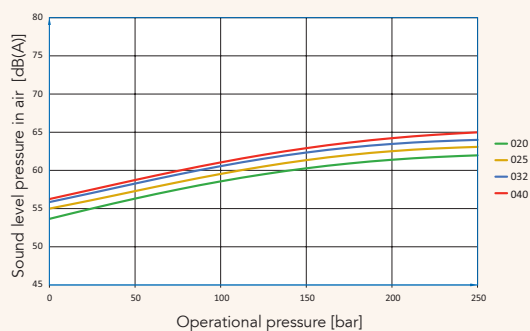
Level of efficiency



Driving power

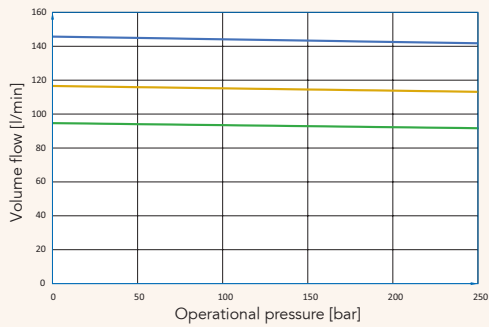


Sound level pressure in air

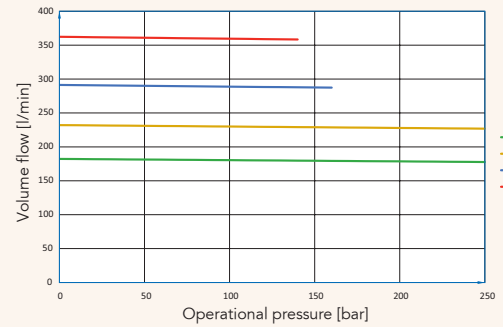


Measurement conditions: Speed 1450 rpm, viscosity 46 mm²/sec., operating temperature 40 °C, Sound pressure measured in low-reflection anechoic room in accordance with DIN 45 635 sheet 26; Microphone distance 1.0 m axial.

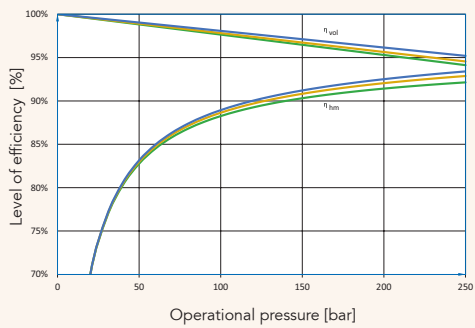
Volume flow



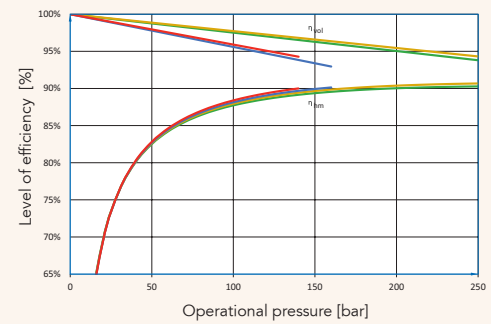
Volume flow



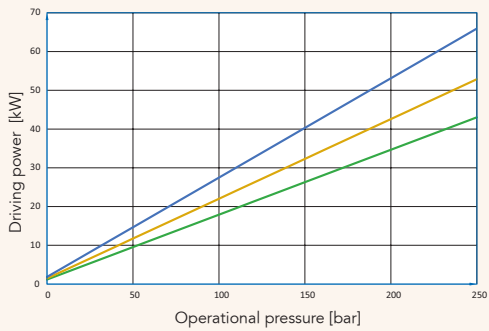
Level of efficiency



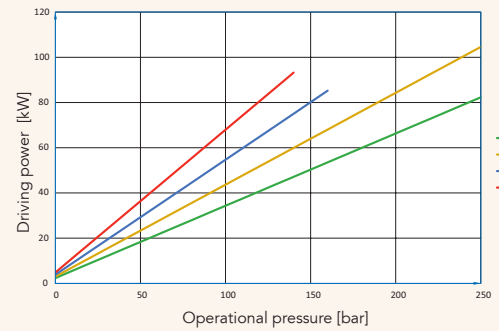
Level of efficiency



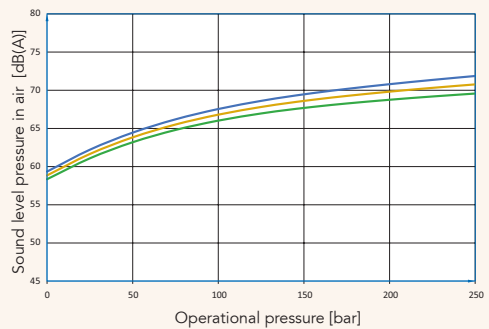
Driving power



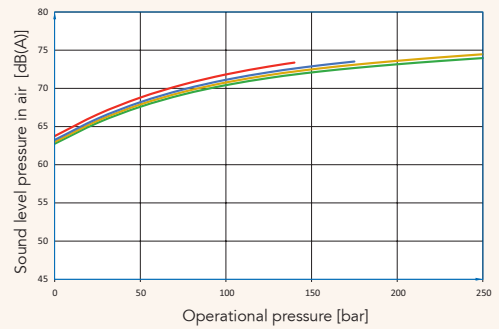
Driving power



Sound level pressure in air

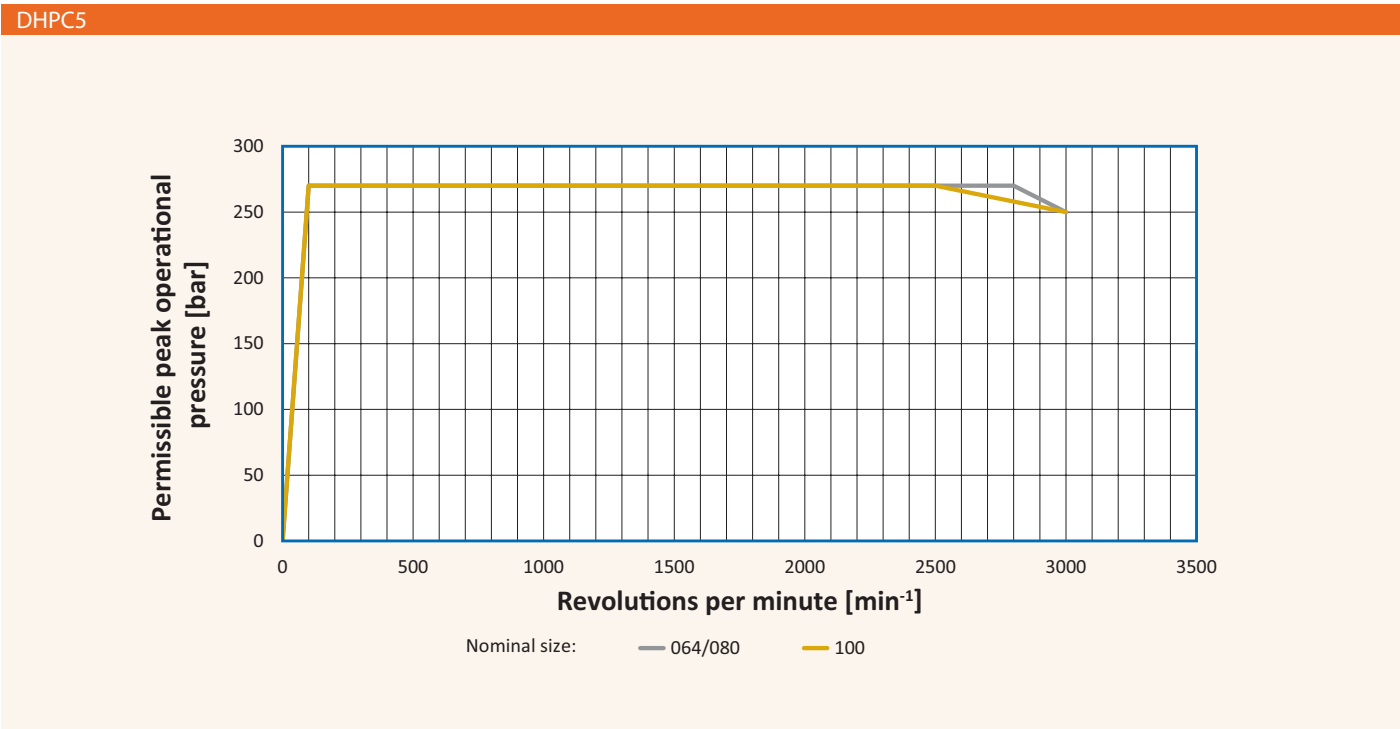
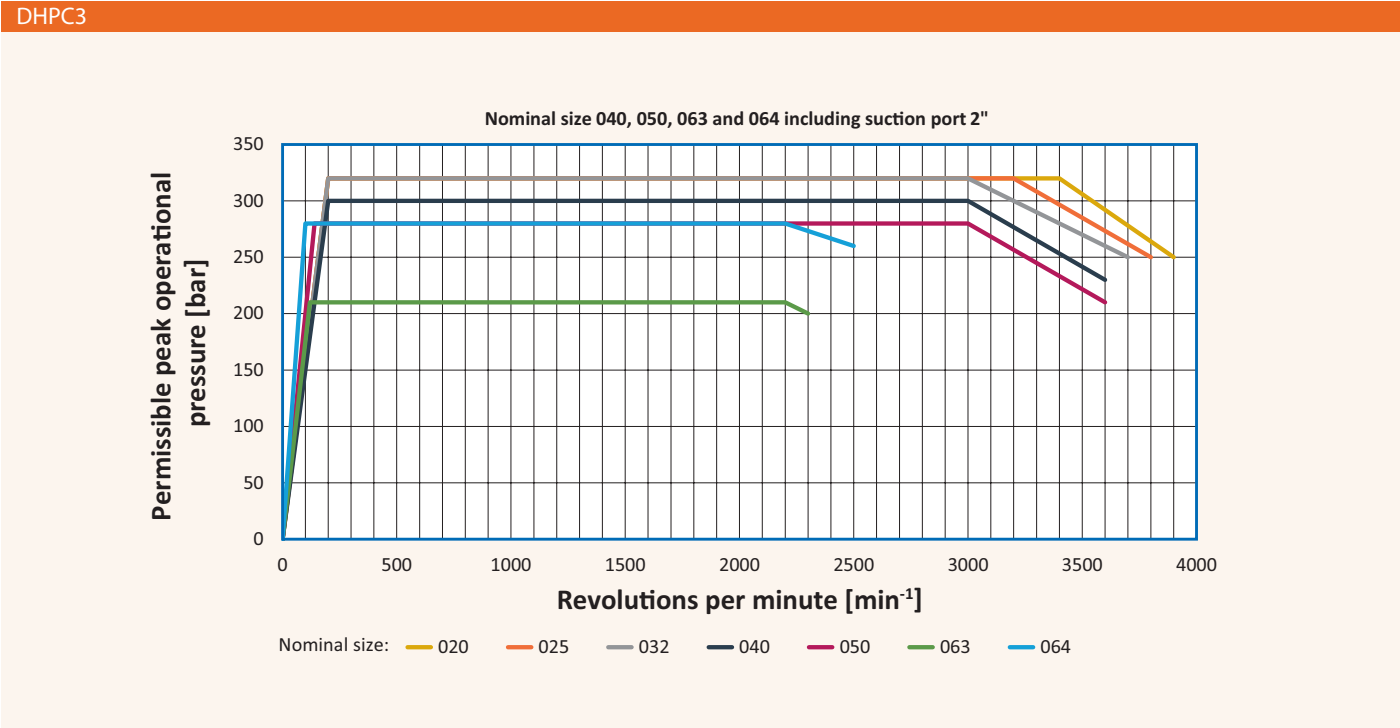


Sound level pressure in air



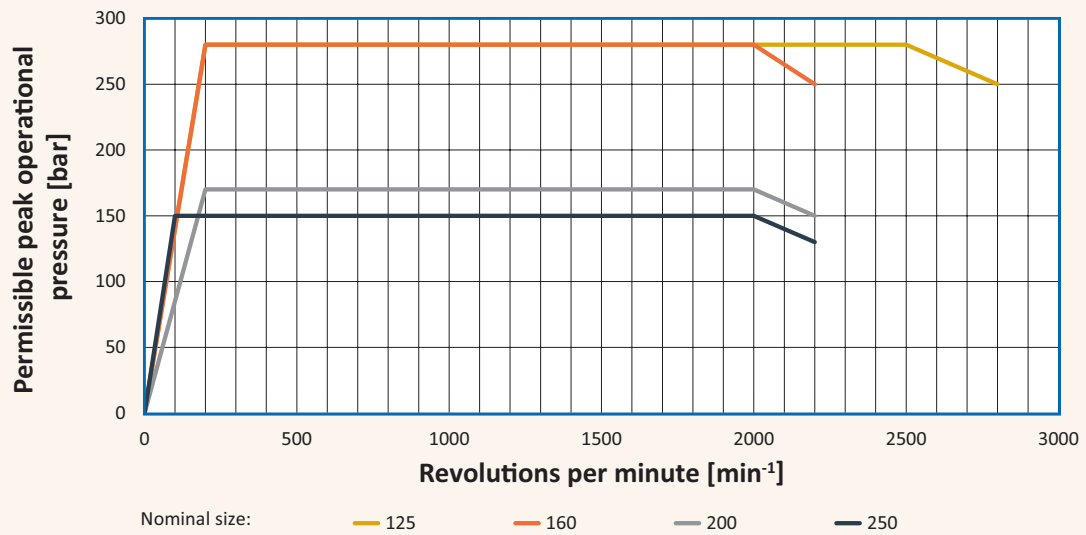
Measurement conditions: Speed 1450 rpm, viscosity 46 mm²/sec., operating temperature 40 °C, Sound pressure measured in low-reflection anechoic room in accordance with DIN 45 635 sheet 26; Microphone distance 1.0 m axial.

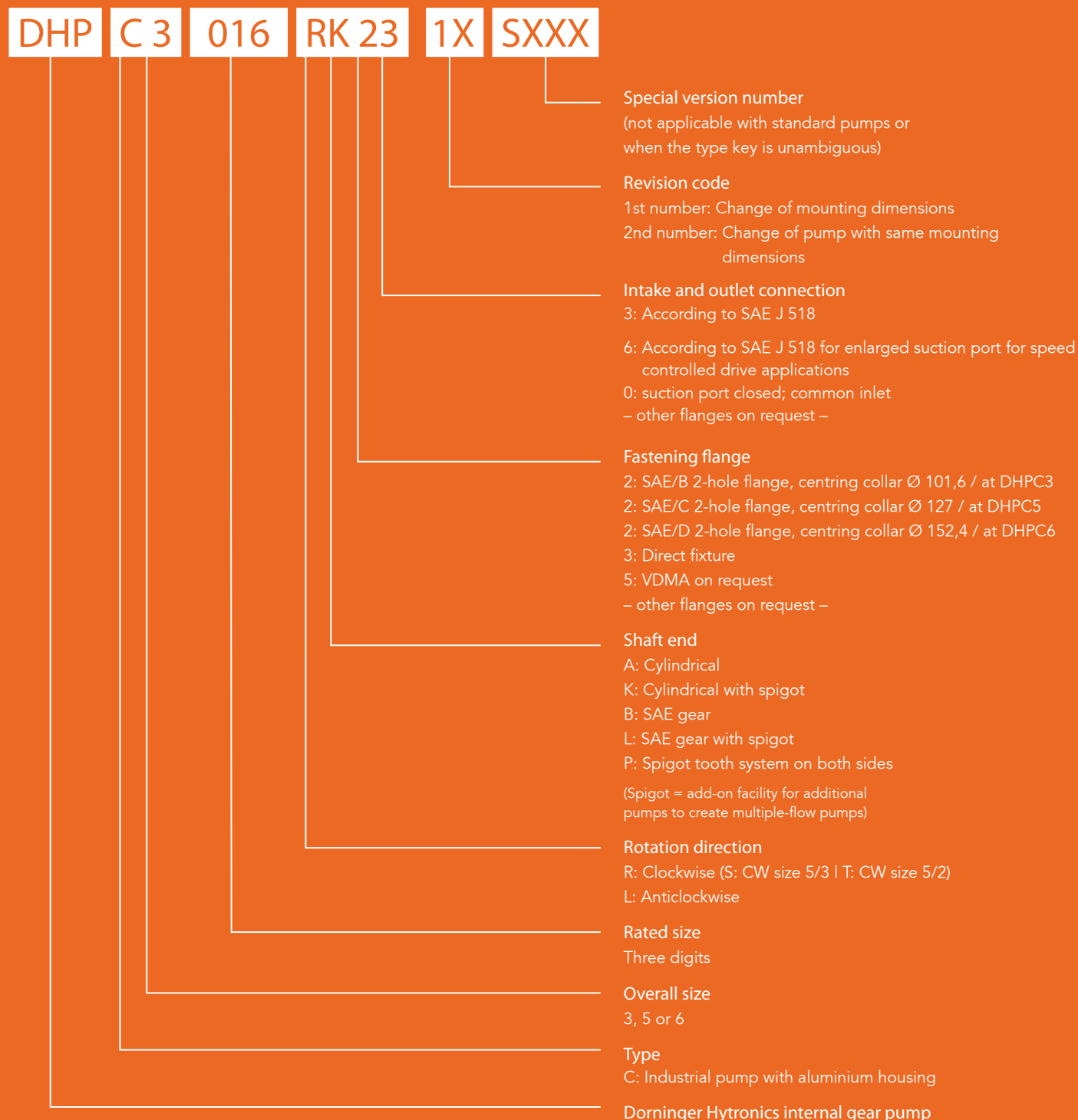
Permissible peak operational pressure dependent on speed



Peak operating pressures are permitted for a maximum of 10 seconds or 15% of the duty cycle

DHPC6





Order example: DHPC3-032 RK23-1X

for industrial applications, overall size 3 with 32.1 cm³/U, clockwise rotation, cylindrical shaft with cone, SAE/B-2-hole flange, SAE flange connection, revision code 1X