2PSE

Low Noise Gear Pumps

Technical Brochure

E0.147.0421.11.00IM00

COMPANY WITH
QUALITY SYSTEM
CERTIFIED BY DNV
ISO 9001

salami
FLUID POWER SYSTEMS ®

Final revised edition - April 2021

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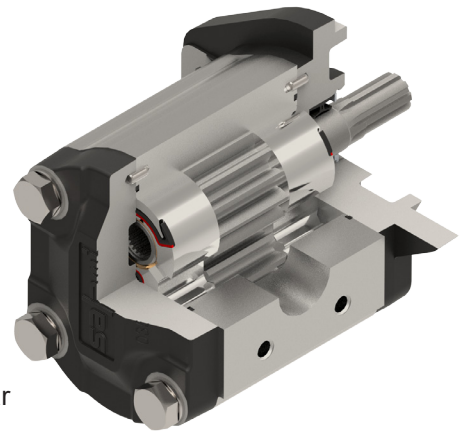
Features

2PSE is a Low Noise Salami gear pump, available with displacements from 4.6 cm³/rev to 26 cm³/rev *(from 0.27 cu.in/rev to 1.62 cu.in/rev).* Intermittent pressure up to 280 bar *(4060 psi).*



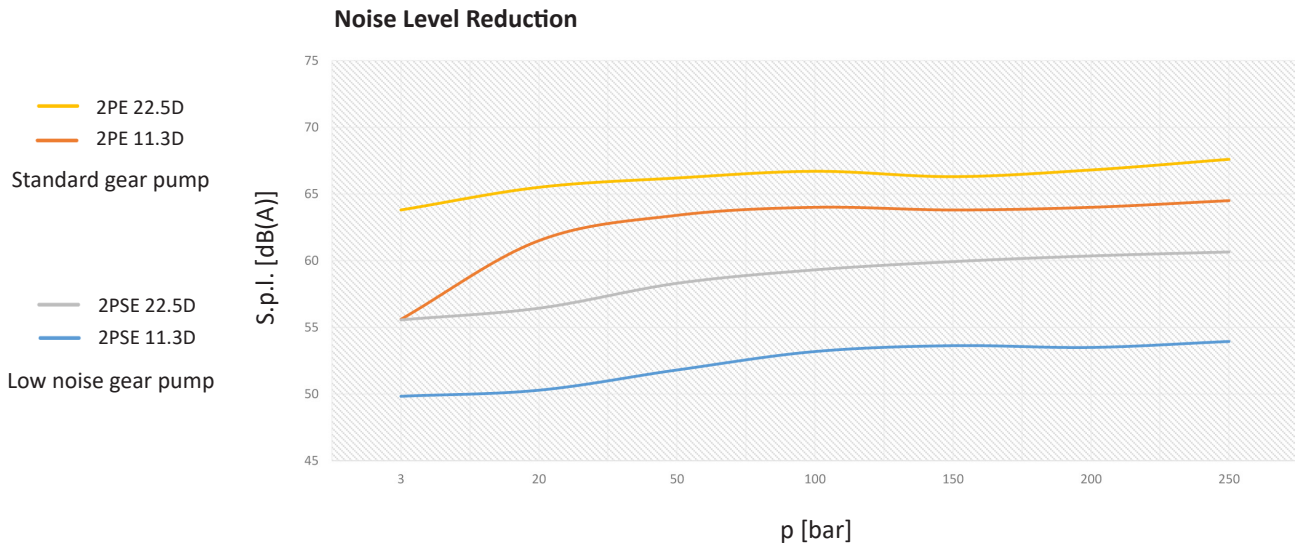
- Reduction of the flow pulsations of 80%.
- Reduction of the noise emissions by up to 7-9 dB(A) (average) compared to standard gear pumps.
- Vibration reduction
- Longer pump life

- Gear: Double flank engagement, tooth profile optimization to reduce relative sliding, specific heat treatment to minimize the gear deformation.
- Axial balancing bushings optimized to minimize the volume trapped during teeth engagement.
- High volumetric efficiency achieved by floating bushings and axial compensation.
- 12 teeth integral shaft: one piece, solid gear.
- Modular construction.
- Compact design.

- Aluminium gear housing, cast iron flanges and covers.
- Double shaft seal.
- Outrigger bearing available.
- Wide range of rear covers with built-in valves.
- Flanges: European, German, SAE A, SAE B.
- Ports: European, German and American standards.
- Shafts: European and American standards.
- Sharing the same gear housing, flanges and rear covers of 2PE pump.

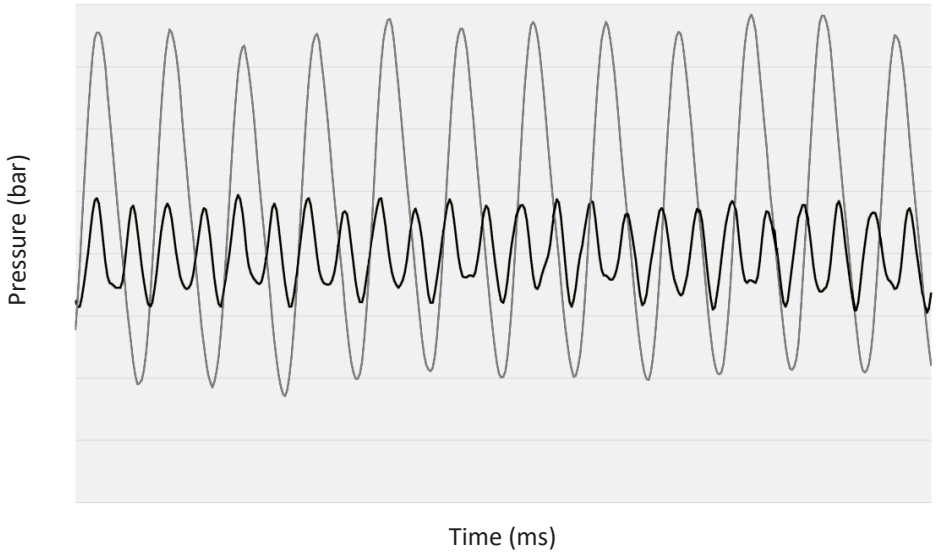
Applications

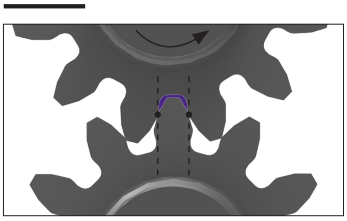
- Hydraulic presses, Waste compactors, Forklifts, Drives for elevators/ hoists, Farm vehicles, Municipal vehicles, Earthmoving machines, Hydraulic steering systems.



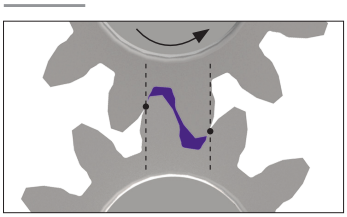
Features

Pressure Ripple Comparison





Low noise gear pump



Standard gear pump

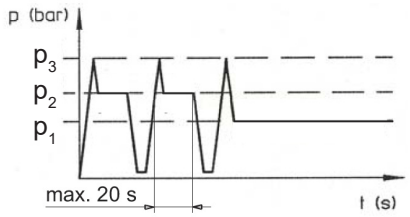
Working Conditions

HYDRAULIC FLUID
Mineral oil according to DIN 51524, other hydraulic fluids on request.

Pump inlet pressure (absolute pressure)		0.8 to 1.5 bar (11.6 to 21.7 psi)
Viscosity	Minimum operating fluid viscosity	12 mm²/sec
	Max starting viscosity	800 mm²/sec
	Suggested fluid viscosity range	17 ÷ 65 mm²/sec
Temperature	fluid operating temperature range	-25 ÷ 80 °C
	fluid operating temperature range with FPM seals (Viton)	-20 ÷ 110°C
	fluid operating temperature range with HNBR seals*	-30 ÷ 110°C

* Available on request

Definition of Pressures



p_3 = Peak pressure

p_2 = Intermittent operating pressure (1/3 of working time)

p_1 = Continuous operating pressure

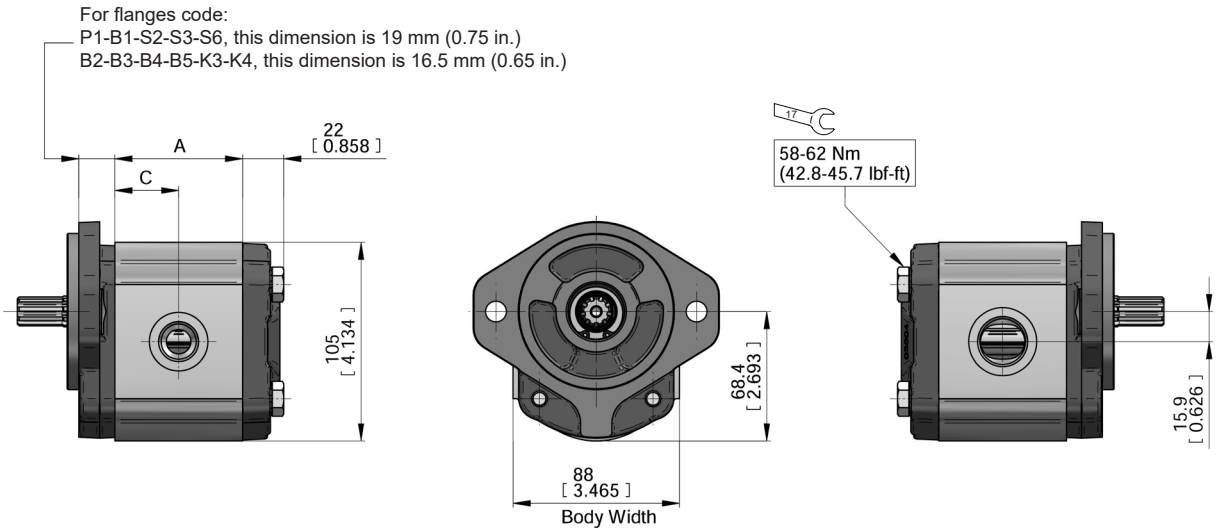
Single Unit

Displacements up to 26.6 cm3/rev - *1.62 cu.in./rev*

TYPE	Displacement		Dimension A		Dimension C		Continuous pressure p_1		Intermittent pressure p_2		Peak pressure p_3		Min. speed at p_1	Max. speed at p_2**	Weight	
	cm^3/rev	*cu.in/rev*	mm	*in*	mm	*in*	bar	*psi*	bar	*psi*	bar	*psi*	min^{-1}		kg	*lbs*
2PSE - 3.2*	3.2	*0.19*	47.1	*1.83*	23.55	*0.93*	250	*3625*	280	*4060*	300	*4350*	600	4000	3.00	*6.61*
2PSE - 3.9*	3.9	*0.24*					250	*3625*	280	*4060*	300	*4350*	600	4000	3.05	*6.72*
2PSE - 4.5	4.6	*0.27*					250	*3625*	280	*4060*	300	*4350*	600	4000	3.10	*6.83*
2PSE - 6.5	6.5	*0.4*	49.95	*1.97*	25	*0.98*	250	*3625*	280	*4060*	300	*4350*	600	4000	3.50	*7.72*
2PSE - 8.3	8.2	*0.5*	52.8	*2.07*	26.4	*1.04*	250	*3625*	280	*4060*	300	*4350*	500	3500	3.60	*7.94*
2PSE - 10.5 ●	10.6	*0.65*	56.3	*2.22*	28.15	*1.11*	250	*3625*	280	*4060*	300	*4350*	500	3500	3.70	*8.16*
2PSE - 11.3	11.5	*0.68*	59.7	*2.35*	29.75	*1.17*	250	*3625*	280	*4060*	300	*4350*	500	3500	3.75	*8.27*
2PSE - 12.5 ●	12.7	*0.77*					250	*3625*	280	*4060*	300	*4350*	500	3500	3.78	*8.33*
2PSE - 13.8	13.8	*0.84*	63.5	*2.5*	31.75	*1.25*	250	*3625*	280	*4060*	300	*4350*	500	3500	3.86	*8.51*
2PSE - 16	16.6	*1.01*	67.5	*2.65*	33.75	*1.33*	250	*3625*	280	*4060*	300	*4350*	400	3000	4.00	*8.82*
2PSE - 19	19.4	*1.15*	75.6	*2.97*	37.80	*1.49*	220	*3140*	240	*3480*	260	*3750*	400	3000	4.18	*9.22*
2PSE - 22.5	22.9	*1.37*	81	*3.19*	40.5	*1.59*	200	*2900*	220	*3140*	240	*3480*	400	2750	4.29	*9.46*
2PSE - 26	26.6	*1.62*	86.8	*3.42*	43.4	*1.71*	180	*2610*	200	*2900*	220	*3190*	300	2500	4.54	*10.1*

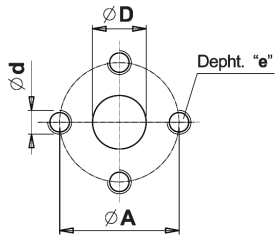
*= Available only as rear pump - ●= Available only for quantity

***=Max speed allowed with p_2 pressure working continously at p_1 the max. speed must be reduced by10%.*



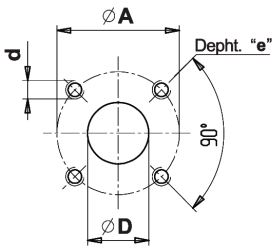
Ports

Flanged Port



P - European standard

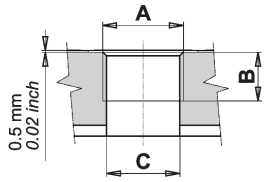
TYPE	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 3.2 to 8.3	13 *(0.51”)*	30 *(1.19”)*	M6	13 *(0.51”)*	13 *(0.51”)*	30 *(1.18”)*	M6	13 *(0.51”)*
From 11.3 to 22.5	20 *(0.79”)*	40 *(1.57”)*	M8					
26	22 *(0.87”)*							



B - German standard

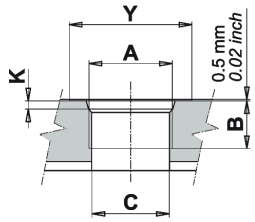
TYPE	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 3.2 to 22.5	20 *(0.78”)*	40 *(1.56”)*	M6	13 *(0.51”)*	15 *(0.59”)*	35 *(1.38”)*	M6	13 *(0.51”)*
26	22 *(0.87”)*							

Threaded Port



G - GAS (BSPP)

TYPE	INLET			OUTLET		
	A	B	ØC	A	B	ØC
From 3.2 to 26	G3/4	16 *(0.62”)*	20 *(0.78”)*	G1/2	14 *(0.54”)*	13 *(0.51”)*



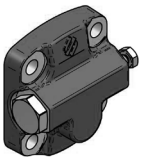
R - SAE (ODT)

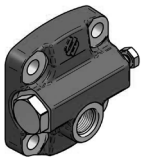
TYPE	INLET					OUTLET				
	A	B	ØC	Y	K	A	B	ØC	Y	K
From 3.2 to 26	1-1/16-12 UN (SAE 12)	16 *(0.62”)*	20 *(0.78”)*	41 *(1.61”)*	3.3 *(0.12”)*	7/8-14 UNF (SAE 10)	14 *(0.54”)*	13 *(0.78”)*	34 *(1.32”)*	2.5 *(0.10”)*

Standard Configurations

Cover with Rear Ports

Cover with Valves

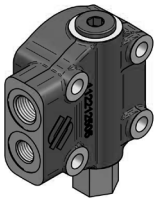


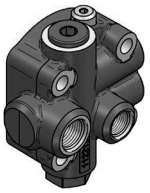


Bearing Support+Continental Shaft

VS
Cover with Valve
Internal discharge

VSE
Cover with Valve
External discharge

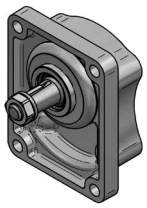




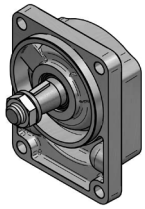
VP/VP1/VPS/VPS1
Cover with
Priority Flow Valve

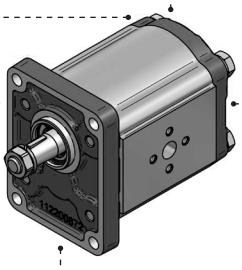
VPD/VPD1/VPDS/VPDS1
Cover with
Load Sensing Priority Valve

28CP
European standard
+
Tapered 1:8

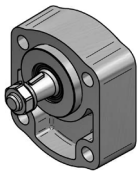


26CB
German standard
+
Tapered 1:5

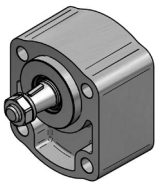




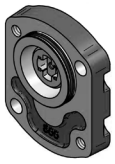
25CL
For Internal combustion engines
+
Tapered 1:5

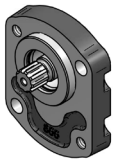


25CF
For Internal combustion engines with axial and radial loads
+
Tapered 1:5



Flanges+Drive Shaft type



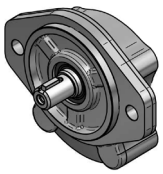


52CS
SAE A
+
SAE A splined 9T

54CS
SAE A
+
SAE A splined 11T

82CS
SAE A
+
5/8 SAE A Parallel

85CS
SAE A
+
3/4 SAE A Parallel



03B2/B3	62B4/B5	25B1	52S2	28P1
German standard + Tang drive for electric motors	German standard + Splined 9T DIN 5482	German standard + Tapered 1:5	SAE A 2 bolts + SAE A splined 9T	European standard + Tapered 1:8
•	**25B4/B5** German standard + Tapered 1:5	**62B1** German standard + Splined 9T DIN 5482	**54S2** SAE A 2 bolts + SAE A splined 11T	**62P1** European standard + Splined 9T DIN 5482
•	•	•	**85S2** SAE A 2 bolts + 3/4 SAE A Parallel	•
•	•	•	**82S2** SAE A 2 bolts + 5/8 SAE A Parallel	•

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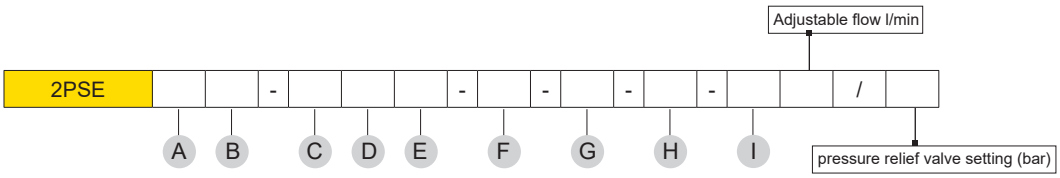

A	TYPE	DISPLACEMENTS	
	4.5	4.6 cm³/rev.	*0.27 cu.in/rev.*
	6.5	6.5 cm³/rev.	*0.40 cu.in/rev.*
	8.3	8.2 cm³/rev.	*0.50 cu.in/rev.*
	10.5	10.6 cm³/rev.	*0.65 cu.in/rev.*
	11.3	11.5 cm³/rev.	*0.68 cu.in/rev.*
	12.5	12.5 cm³/rev.	*0.77 cu.in/rev.*
	13.8	13.8 cm³/rev.	*0.84 cu.in/rev.*
	16	16.6 cm³/rev.	*1.01 cu.in/rev.*
	19	19.4 cm³/rev.	*1.18 cu.in/rev.*
	22.5	22.9 cm³/rev.	*1.37 cu.in/rev.*
	26	26.6 cm³/rev.	*1.62 cu.in/rev.*

B	ROTATION	CODE
	Clockwise	D
	Anti-clockwise	S

C	PORTS (page 5)	CODE
	Flanged ports european standard	P
	Flanged ports german standard	B
	Threaded ports GAS (BSPP)	G
	Threaded ports SAE (ODT)	R

D	▶DRIVE SHAFT	CODE
	Tang drive for electric motors	03
	Tang drive	04
	Tapered 1:5	25
	Tapered 1:8	28
	SAE A splined 9T	52
	SAE A splined 10T	53
	SAE A splined 11T	54
	SAE B splined 13T **(Coupling sleeve)**	55
	DIN 5480 internal splined **(only for rear pumps)**	60
	9 teeth DIN 5482 splined	62
	5/8" SAE A parallel	82
	3/4" SAE A parallel	85
	Tapered 1:5 Continental shaft **(Only for CB)**	26

▶ See Technical Catalogue **2PE** (E0.120.0219.02.00IM04)

I	▶REAR COVERS	CODE
	Adjustable pressure relief valve-Internal discharge	VS
	Adjustable setting pressure relief valve-External discharge	VSE
	Priority flow valve with excess flow to 2nd actuator	VP-VP1
	Priority flow valve with excess flow to 2nd actuator with pressure relief valve	VPS-VPS1
	Load sensing priority valve with dinamic signal	VPD-VPD1
	Load sensing priority valve with dinamic signal and pressure relief valve	VPDS-VPDS1
	Electric unloading valve (12V)	EV1/EV3
	Electric unloading valve (24V)	EV2/EV4
	Pressure relief and electric unloading valves (12V)	EVS1/EVS3
	Pressure relief and electric unloading valves (24V)	EVS2/EVS4
	Pre-arranged for 1.5PE rear	PD1.5

H	▶OUTRIGGER BEARING	CODE
	For Internal combustion engines	CL
	For Internal combustion engines with axial and radial loads	CF
	SAE A	CS
	German standard	CB
	European standard	CP

G	PORTS POSITION	CODE
	Side ports (standard configuration)	-
	Rear ports	1

F	SEAL	CODE
	Buna standard (standard configuration)	-
	Viton	V

E	▶MOUNTING FLANGES	CODE
	European standard	P1
	German standard Ø80	B1
	German standard Ø52	B2-B3
	German standard Ø50	B4-B5
	SAE A 2 bolts	S2
	SAE B 2 bolts	S3
	SAE A 2 bolts (with o-ring on the centering collar)	S6
	German standard with shaft seal Ø52	K3
	German standard with shaft seal Ø52	K4

Order example: 2PSE 19D, ports SAE (R), drive shaft (54), mounting flange (S2).
2PSE19D-R54S2

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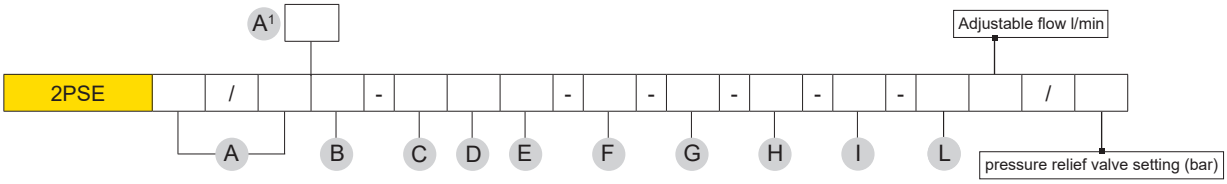
MULTIPLE UNITS ORDERING CODE



A	TYPE	DISPLACEMENTS	
	4.5	4.6 cm³/rev.	*0.27 cu.in/rev.*
	6.5	6.5 cm³/rev.	*0.40 cu.in/rev.*
	8.3	8.2 cm³/rev.	*0.50 cu.in/rev.*
	10.5	10.6 cm³/rev.	*0.65 cu.in/rev.*
	11.3	11.5 cm³/rev.	*0.68 cu.in/rev.*
	12.5	12.5 cm³/rev.	*0.77 cu.in/rev.*
	13.8	13.8 cm³/rev.	*0.84 cu.in/rev.*
	16	16.6 cm³/rev.	*1.01 cu.in/rev.*
	19	19.4 cm³/rev.	*1.18 cu.in/rev.*
	22.5	22.9 cm³/rev.	*1.37 cu.in/rev.*
	26	26.6 cm³/rev.	*1.62 cu.in/rev.*

A1	▶COMBINATION WITH 2PE or 1.5PE

B	ROTATION	CODE
	Clockwise	D
	Anti-clockwise	S

C	PORTS (page 5)	CODE
	Flanged ports european standard	P
	Flanged ports german standard	B
	Threaded ports GAS (BSPP)	G
	Threaded ports SAE (ODT)	R

D	▶DRIVE SHAFT	CODE
	Tang drive for electric motors	03
	Tang drive	04
	Tapered 1:5	25
	Tapered 1:8	28
	SAE A splined 9T	52
	SAE A splined 10T	53
	SAE A splined 11T	54
	SAE B splined 13T **(Coupling sleeve)**	55
	DIN 5480 internal splined **(only for rear pumps)**	60
	9 teeth DIN 5482 splined	62
	5/8" SAE A parallel	82
	3/4" SAE A parallel	85
	Tapered 1:5 Continental shaft **(Only for CB)**	26

*UA-Common suction: number 1 - 2 or 3, correspond to the body where inlet is located.

▶ See Technical Catalogue **2PE** (E0.120.0219.02.00IM04)

L	▶REAR COVERS	CODE
	Adjustable pressure relief valve-Internal discharge	VS
	Adjustable setting pressure relief valve-External discharge	VSE
	Priority flow valve with excess flow to 2nd actuator	VP-VP1
	Priority flow valve with excess flow to 2nd actuator with pressure relief valve	VPS-VPS1
	Load sensing priority valve with dinamic signal	VPD-VPD1
	Load sensing priority valve with dinamic signal and pressure relief valve	VPDS-VPDS1
	Electric unloading valve (12V)	EV1/EV3
	Electric unloading valve (24V)	EV2/EV4
	Pressure relief and electric unloading valves (12V)	EVS1/EVS3
	Pressure relief and electric unloading valves (24V)	EVS2/EVS4
	Pre-arranged for 1.5PE rear	PD1.5

I	▶OUTRIGGER BEARING	CODE
	For Internal combustion engines	CL
	For Internal combustion engines with axial and radial loads	CF
	SAE A	CS
	German standard	CB
	European standard	CP

H	PORTS POSITION	CODE
	Side ports (standard configuration)	-
	Rear ports	1

G	SUCTION PORTS	CODE
	Common Inlet	UA*
	Separated stages	AS

F	SEAL	CODE
	Buna standard (standard configuration)	-
	Viton	V

E	▶MOUNTING FLANGES	CODE
	European standard	P1
	German standard Ø80	B1
	German standard Ø52	B2-B3
	German standard Ø50	B4-B5
	SAE A 2 bolts	S2
	SAE B 2 bolts	S3
	SAE A 2 bolts (with o-ring on the centering collar)	S6
	German standard with shaft seal Ø52	K3
	German standard with shaft seal Ø52	K4

Order example: 2PSE 19D, ports SAE (R), drive shaft (54), mounting flange (S2).
2PSE19/19D-R54S2

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Note

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