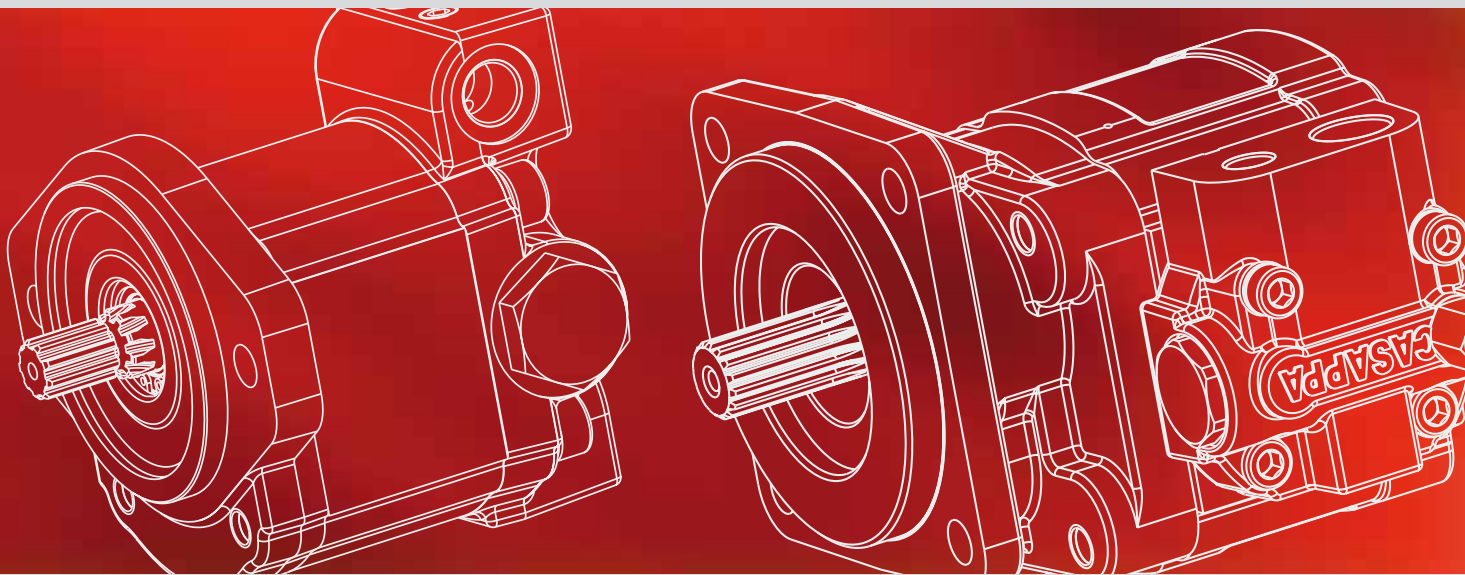




BUILT-IN VALVES
FOR HYDRAULIC
GEAR PUMPS
AND MOTORS

BUILT-IN VALVES

Anti-cavitation valves, maximum pressure relief valves, priority valves, “load sensing” priority valves and unloading valves built in the following series of gear pumps and motors:



Replaces: 01/05.2005

For general data, dimensions, drive shafts, mounting flanges and ports, refer to the technical catalogues of each specific series.

INDEX

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ANTI-CAVITATION VALVES.....	3
MAXIMUM PRESSURE RELIEF VALVES.....	8
PRIORITY VALVES	17
LOAD SENSING PRIORITY VALVES	30
“SLS” LOAD SENSING PRIORITY VALVES	50
UNLOADING VALVES	64

02/10.2021

Additional valves for Fan Drive application are available on the Electro-hydraulic fan drive system technical catalogue.



Modification from former edition.

ANTI-CAVITATION VALVES - GENERAL DATA

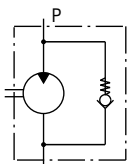
Anti-cavitation valves are housed directly in the rear cover of gear motors. These valves are designed so that the oil circulates through the motor in only one direction, thus protecting against any possible cavitation that may occur each time the system stops.

Replaces: 01/01.2005

ANTI-CAVITATION VALVES

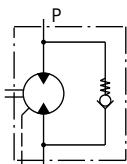
V8

For unidirectional motors.



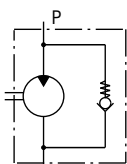
V8/1

For reversible motors with rear or side external drain port.



C1

For unidirectional motors with anti-clockwise rotation. Only for Kappa 30 (CSC).



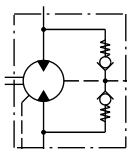
C2

For unidirectional motors with clockwise rotation. Only for Kappa 30 (CSC).

n.1 inlet valve

C3

For reversible motors with external drain. Only for Kappa 30 (CSC).



n. 2 valves

02/10.2021

1 Reversible motors with anti-cavitation valve can rotate in one direction only.

V8/CRD

Clockwise rotation

V8/CRS

Anti-clockwise rotation

ANTI-CAVITATION VALVES - DIMENSIONS

V8

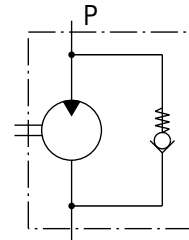
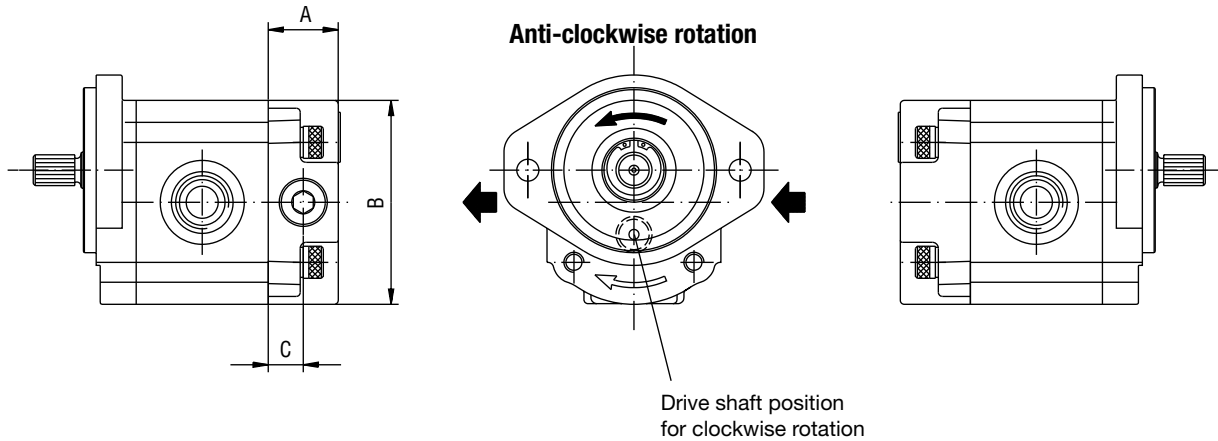
Mounting possibility:
Polaris 10, Polaris 20, Polaris PH20

Unidirectional motors

S - D

O

D045 - D96 / 0904



Replaces: 01/05.2005

Order example

PLM20-4S0-03 S1-L OC/OC-N-EL - V8

O 02/10.2021

Motor type	A	B	C
	mm (in)	mm (in)	mm (in)
PLM 10	30 (1.181)	74 (2.913)	15 (0.591)
PLM 20	35 (1.378)	102 (4.016)	17,5 (0.689)
PHM 20			

ANTI-CAVITATION VALVES - DIMENSIONS

V8/...

Mounting possibility:
Polaris 10, Polaris 20, Polaris PH20

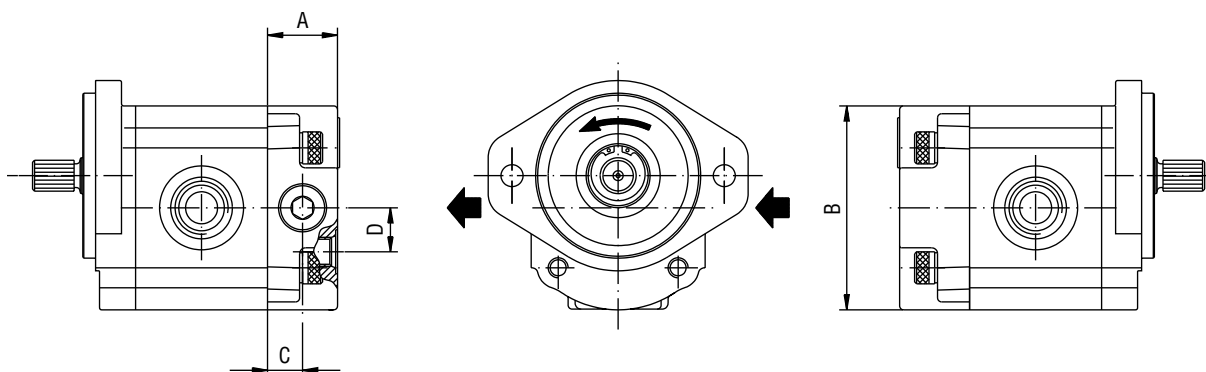
O

Reversible motors with rear external drain port

R

ANTI-CLOCKWISE ROTATION

V8/CRS



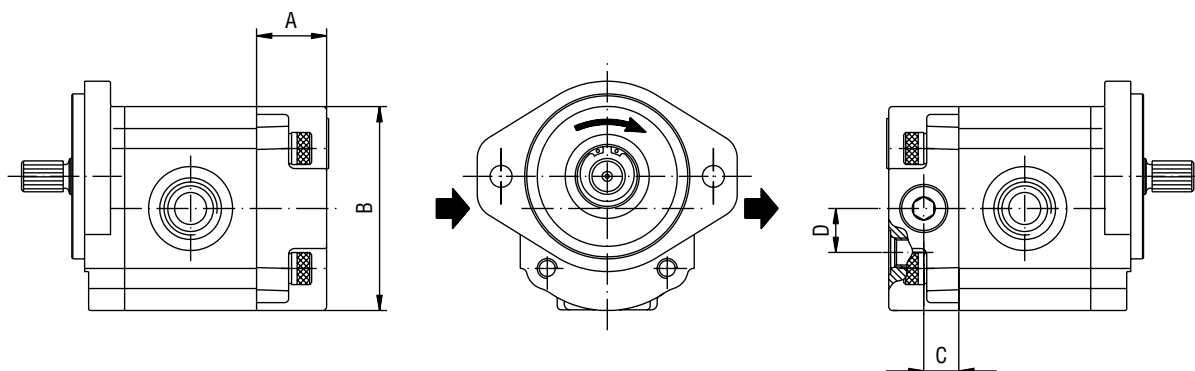
D045-114/1104

Order example

PLM20-4R0-03 S1-L OC/OC-N-EL - V8/CRS

CLOCKWISE ROTATION

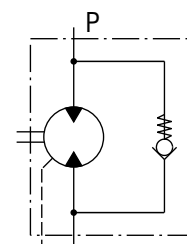
V8/CRD



D045-115/1104

Order example

PLM20-4R0-03 S1-L OC/OC-N-EL - V8/CRD



Motor type	A mm (in)	B mm (in)	C mm (in)	D mm (in)
PLM 10	30 (1.181)	74 (2.913)	15 (0.591)	11,3 (0.445)
PLM 20	35 (1.378)	102 (4.016)	17,5 (0.689)	16,1 (0.634)
PHM 20				

Replaces: 01/01.2005

O 02/10.2021

ANTI-CAVITATION VALVES - DIMENSIONS

V8/...

Mounting possibility:
Polaris 10, Polaris 20, Polaris PH20

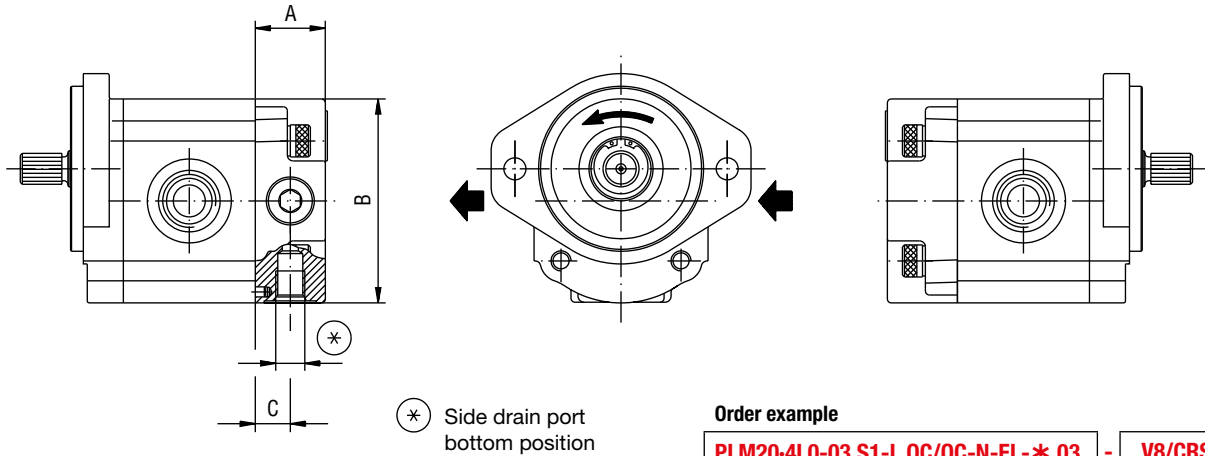
Reversible motors with side external drain port

L

ANTI-CLOCKWISE ROTATION

V8/CRS

D045-118/1104



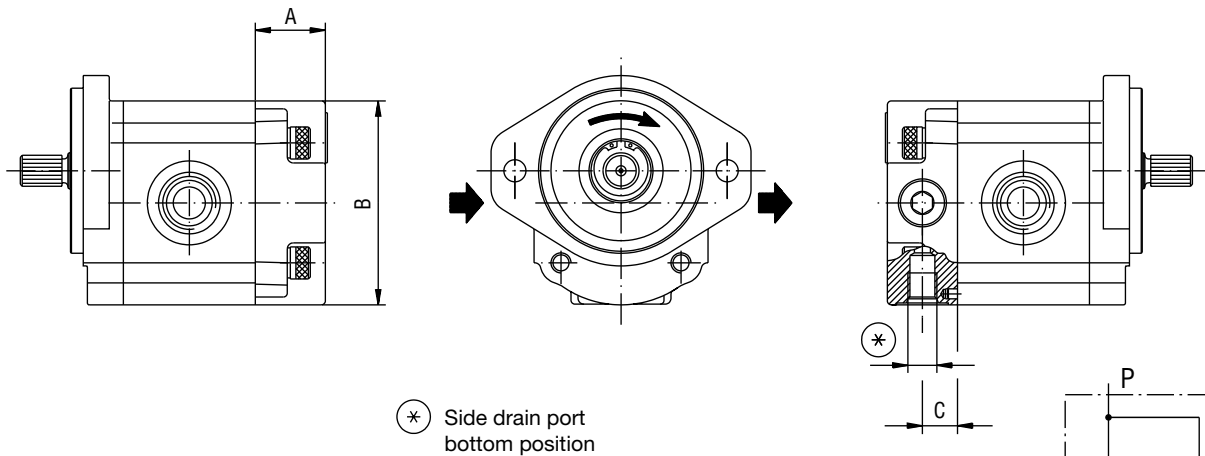
Order example

PLM20-4L0-03 S1-L OC/OC-N-EL-* 03 - V8/CRS

CLOCKWISE ROTATION

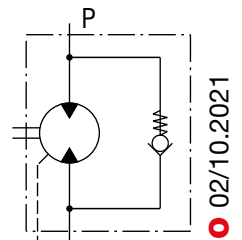
V8/CRD

D045-119/1104



Order example

PLM20-4L0-03 S1-L OC/OC-N-EL-* 03 - V8/CRD



Replaces: 01/01.2005

02/10.2021

Motor type	A	B	C
	mm (in)	mm (in)	mm (in)
PLM 10	30 (1.181)	74 (2.913)	15 (0.591)
PLM 20	35 (1.378)	102 (4.016)	17,5 (0.689)
PHM 20			

ANTI-CAVITATION VALVES - DIMENSIONS

C ...

Mounting possibility:
Kappa 30 CSC

Unidirectional motors

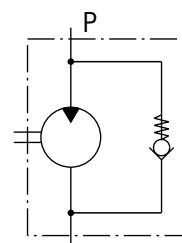
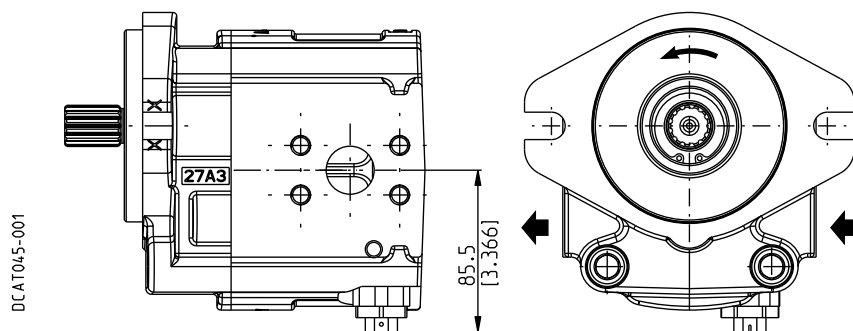
S - D

ANTI-CLOCKWISE ROTATION

C1

Order example

KM30-34S0-A8 K9-L MB/MC-N - C1 - CSC

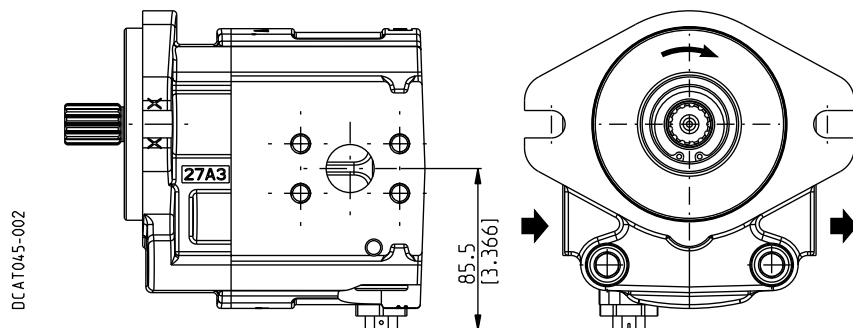


CLOCKWISE ROTATION

C2

Order example

KM30-34D0-A8 K9-L MB/MC-N - C2 - CSC



Reversible motors with external drain

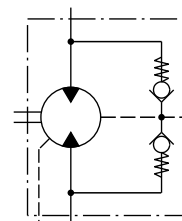
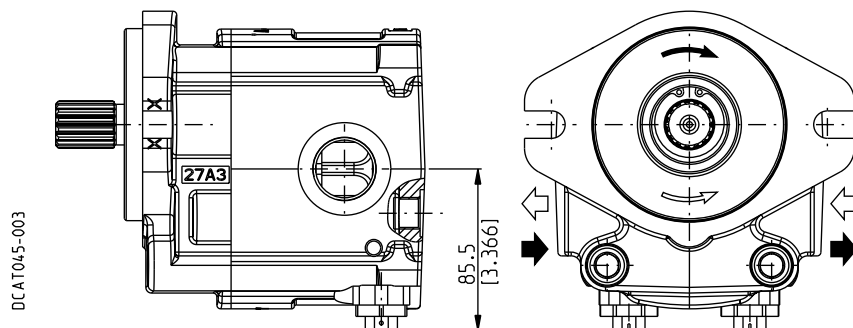
R

REVERSIBLE ROTATION

C3

Order example

KM30-34R0-A8 K9-L MB/MC-N - C3 - CSC



02/10.2021

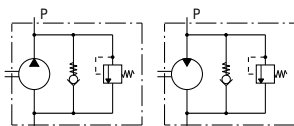
MAXIMUM PRESSURE RELIEF VALVES - GENERAL DATA

The maximum pressure relief valves are housed directly in the rear cover of gear pumps and motors. They are available with fixed or adjustable setting with internal or external drain. These valves are designed to keep the setting pressure constant while protecting the pump or motor against any peaks of pressure.

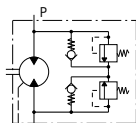
MAX. PRESSURE RELIEF VALVE FIXED SETTING

Built-in anti-cavitation

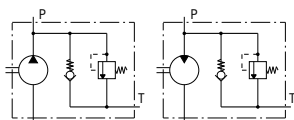
VPIF (1) Internal drain.



V5 (1-1) Internal drain.



VPEF (1) External drain to tank.



1 Fixed setting pressure [a]

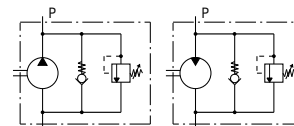
bar	psi
35	508
40	580
50	725
60	870
70	1015
80	1160
100	1450
120	1740
125	1813
140	2030
150	2175
160	2320
175	2538
180	2610
190	2755
206	2987
210	3045
230	3335
250	3625
260	3770
280	4060
300	4350

[a]: In the order write the pressure setting value in bar.

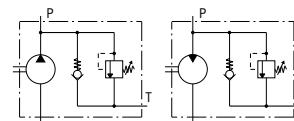
Order example: **VPIF (180)**

MAX. PRESSURE RELIEF VALVE ADJUSTABLE SETTING

VPIR/2(3) Internal drain.

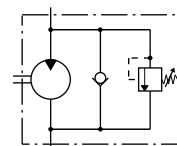


VPER/2(3) External drain to tank.



U1 (4-5)

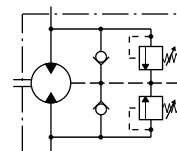
For unidirectional motors with anti-clockwise rotation. Only for Kappa 30 (CSC).



n.1 inlet valve

U2 (4-5)

For unidirectional motors with clockwise rotation. Only for Kappa 30 (CSC).



n. 2 valves

U3 (4-5)

For reversible motors with external drain. Only for Kappa 30 (CSC).

2

Spring type

3 Adjustable setting pressure range [a]

	bar	psi
N	10 ÷ 70	145 ÷ 1015
B	71 ÷ 130	1030 ÷ 1885
G	131 ÷ 210	1900 ÷ 3045

[a]: In the order write the pressure setting value in bar. Valves are sized to control a Q=60 l/min (15.85 US gpm) maximum flow rate. Please contact us for more information.

Order example:

VPIR/G(150)

4

Spring type

5

Pressure setting [a]

	bar	psi
G3	100 ÷ 250	1450 ÷ 3625
G4	180 ÷ [b] p ₃	2610 ÷ p ₃

[a]: In the order write the pressure setting value in bar. [b]: G4 spring maximum setting range, see p₃ peak pressure in Kappa 30 technical catalogue.

Please contact us for more information.

Order example:

U1 (G3-230)

Replaces: 01/01.2005

02/10.2021

MAXIMUM PRESSURE RELIEF VALVES - DIMENSIONS

VPIF

Type:
Internal drain fixed setting

Mounting possibility:
Polaris 20, Whisper 20, Polaris PH20

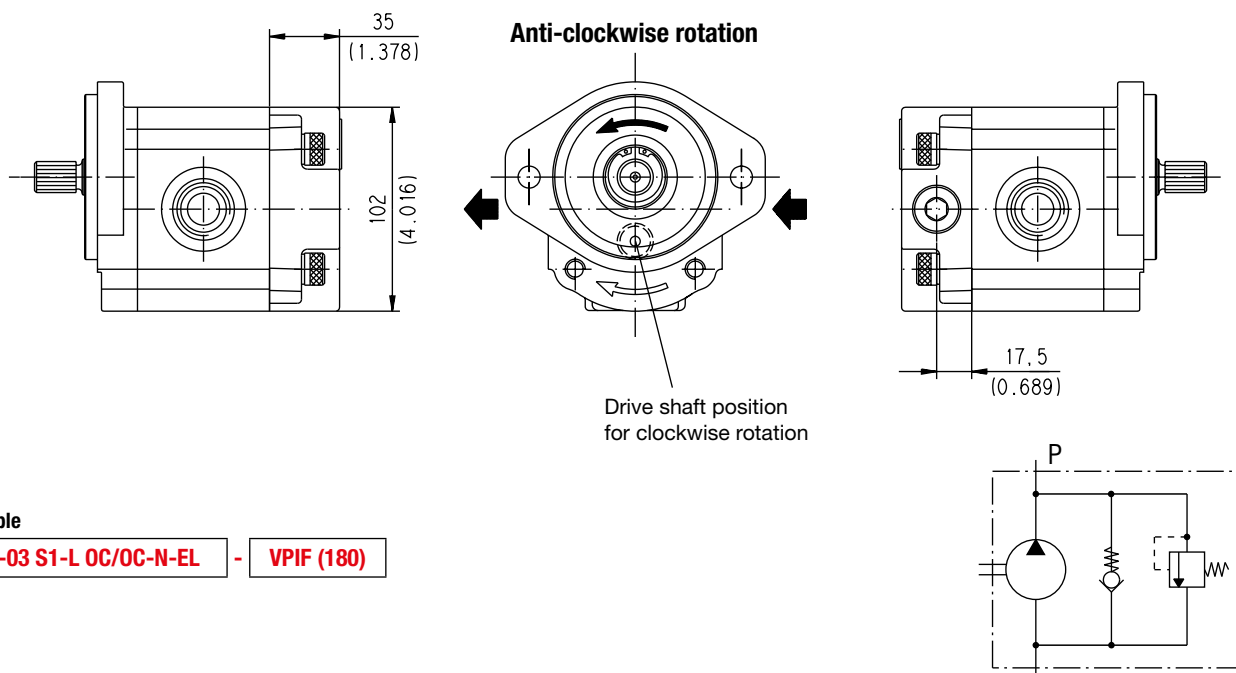


Unidirectional pumps

S - D

Replaces: 01/01.2005

D045-D95/0904



Order example

PLP20-4S0-03 S1-L OC/OC-N-EL - VPIF (180)

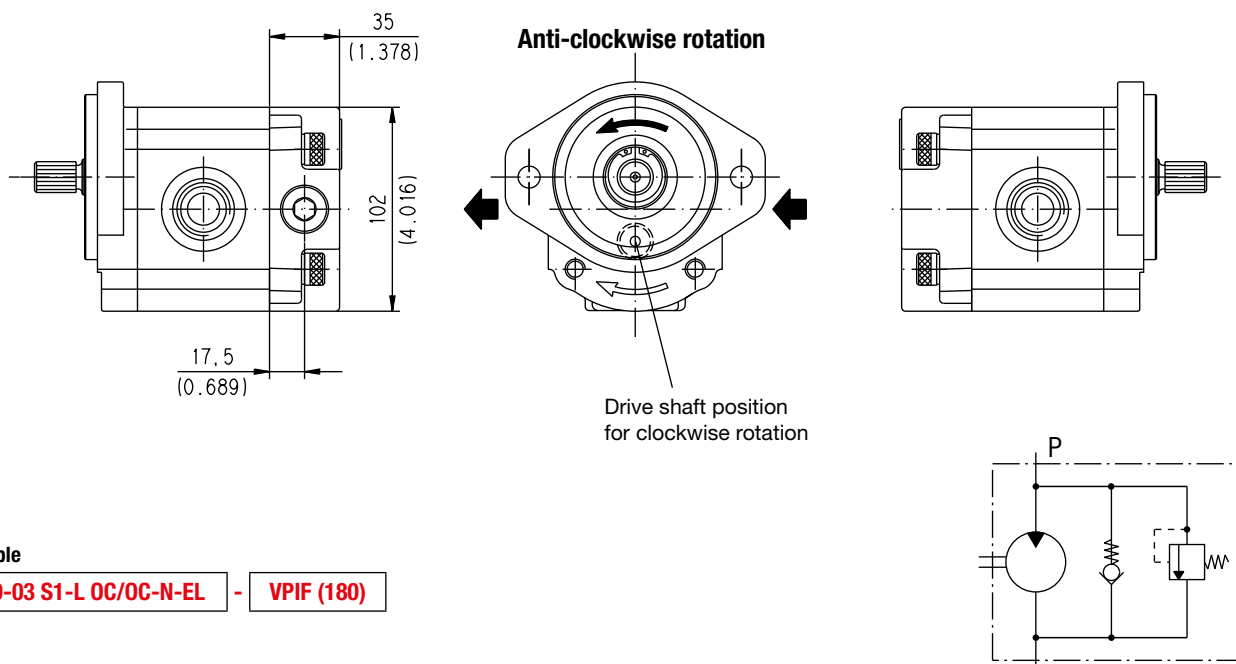
Unidirectional motors

S - D

The valve is also available for reversible motors with rear (R) and side (L) external drain port to protect the motor in one direction of rotation (CRS for anti-clockwise rotation, CRD for clockwise rotation).

02/10.2021

D045-D95/0904



Order example

PLM20-4S0-03 S1-L OC/OC-N-EL - VPIF (180)

MAXIMUM PRESSURE RELIEF VALVES - DIMENSIONS

V5

Type:
Internal drain fixed setting

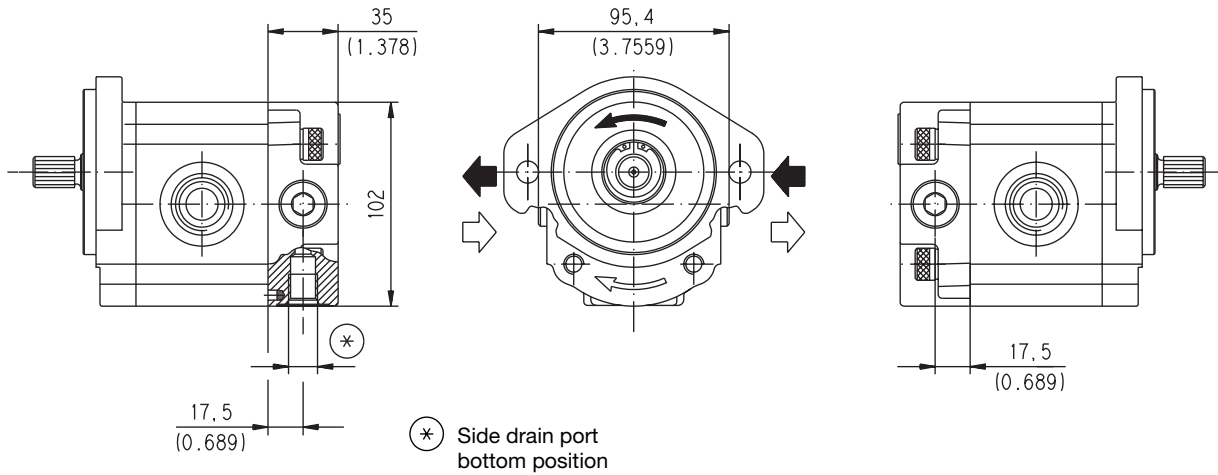
Mounting possibility:
Polaris 20, Polaris PH20

O

Reversible motors with side external drain port

L

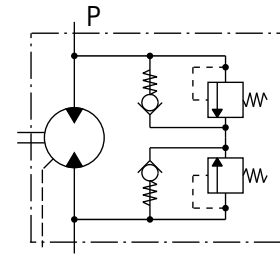
D045-D99/0904



Replaces: 01/01.2005

Order example

PLM20-4L0-03 S1-L OC/OC-N-EL-* 03 - V5 (180-180)



O 02/10.2021

MAXIMUM PRESSURE RELIEF VALVES - DIMENSIONS

VPEF

Type:
External drain fixed setting

Mounting possibility:
Polaris 20, Whisper 20, Polaris PH20

Drain port: T see page 15

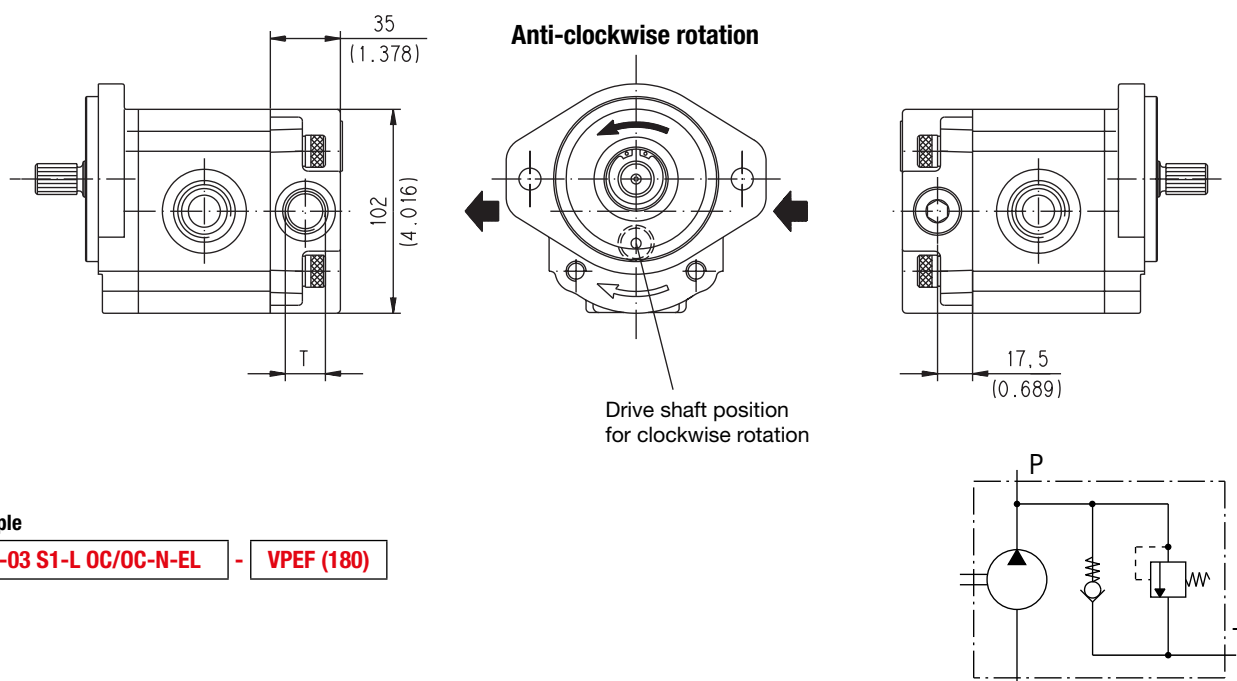
O

Unidirectional pumps

S - D

Replaces: 01/01.2005

D045-D97/0904



Order example

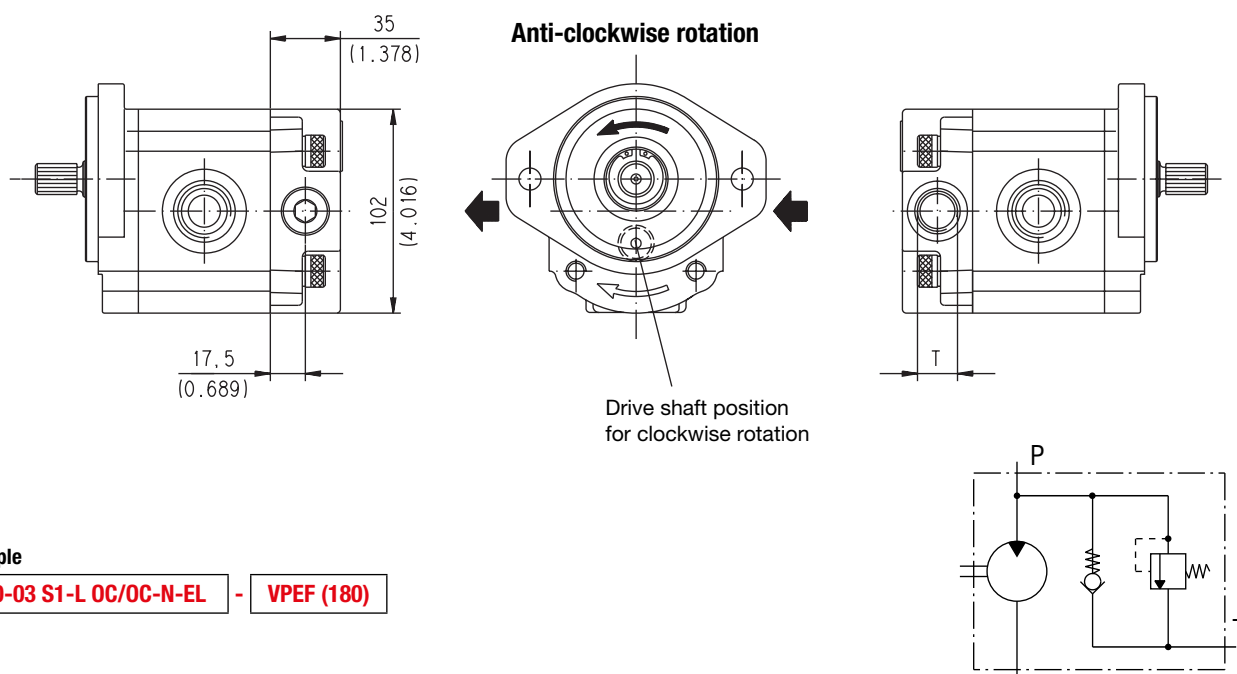
PLP20-4S0-03 S1-L OC/OC-N-EL - VPEF (180)

Unidirectional motors

S - D

O 02/10.2021

D045-D98/0904



Order example

PLM20-4S0-03 S1-L OC/OC-N-EL - VPEF (180)

MAXIMUM PRESSURE RELIEF VALVES - DIMENSIONS

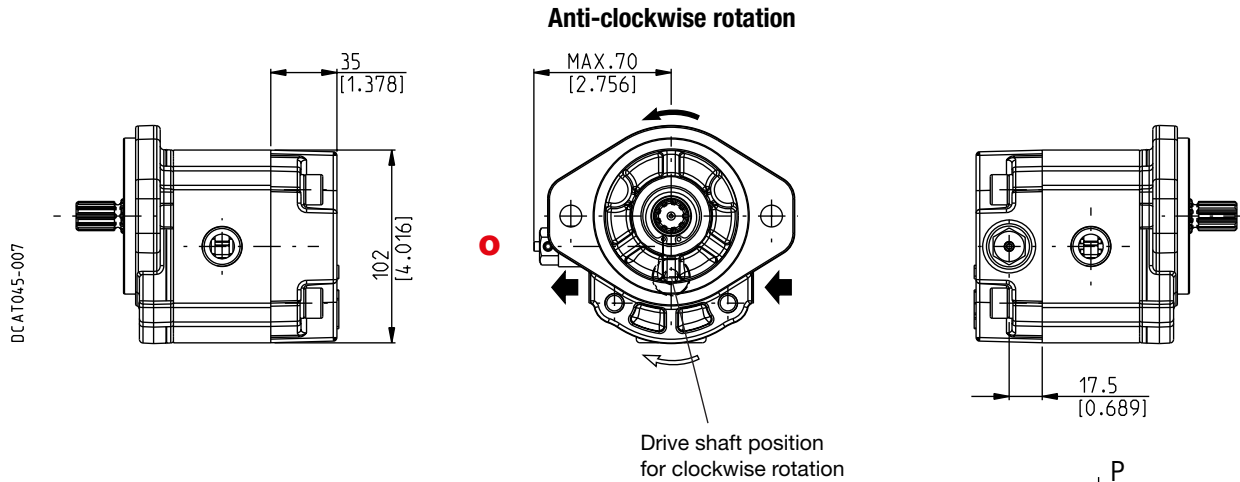
VPIR

Type:
Internal drain adjustable setting

Mounting possibility:
Polaris 20, Whisper 20, Polaris PH20

Unidirectional pumps

S - D

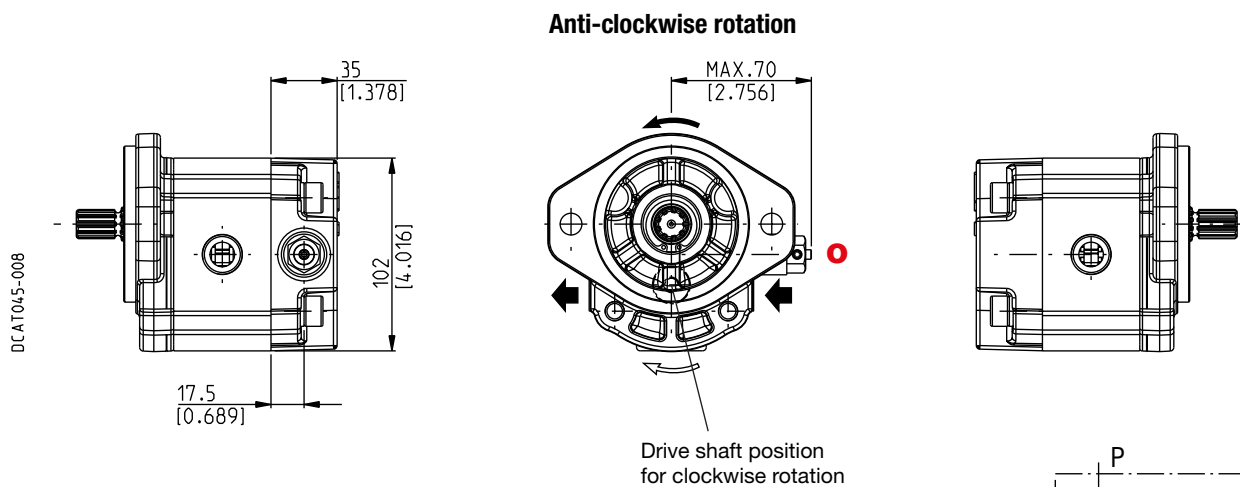


Order example

PLP20-4S0-03 S1-L OC/OC-N-EL - VPIR/B(120)

Unidirectional motors

S - D



Order example

PLM20-4S0-03 S1-L OC/OC-N-EL - VPIR/B(120)

Replaces: 01/01.2005

02/10.2021

MAXIMUM PRESSURE RELIEF VALVES - DIMENSIONS

VPER

Type:
External drain adjustable setting

Mounting possibility:
Polaris 20, Whisper 20, Polaris PH20

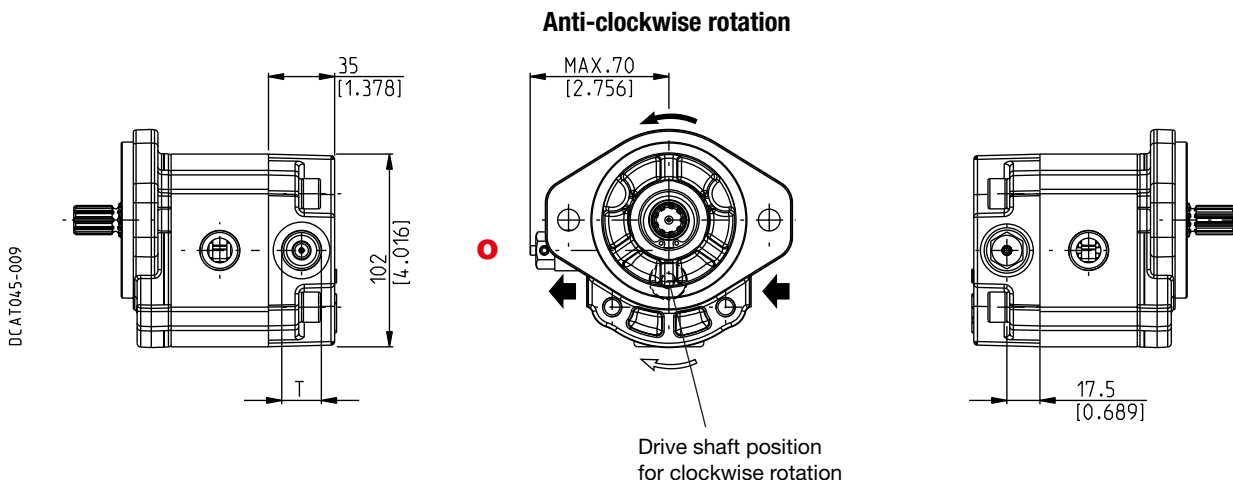
Drain port: T see page 15

O

Unidirectional pumps

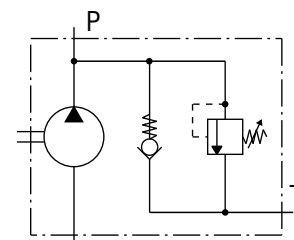
S - D

Replaces: 01/01.2005



Order example

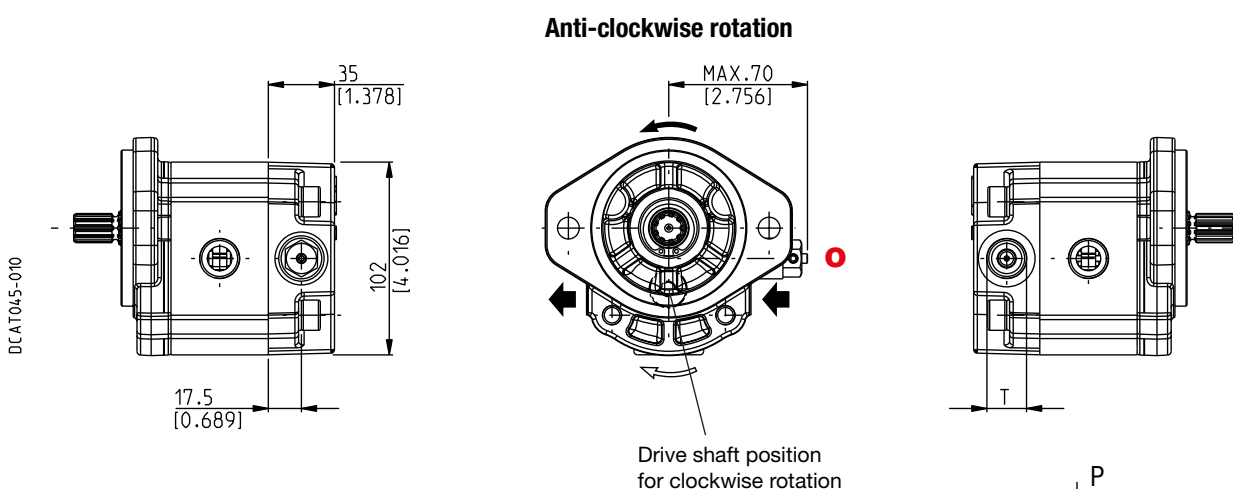
PLP20-4S0-03 S1-L OC/OC-N-EL - VPER/B(120) O



Unidirectional motors

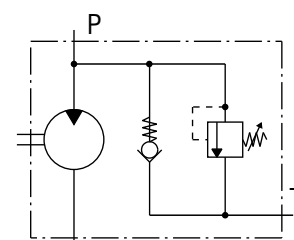
S - D

O 02/10.2021



Order example

PLM20-4S0-03 S1-L OC/OC-N-EL - VPER/B(120) O



MAXIMUM PRESSURE RELIEF VALVES - DIMENSIONS

U ...

Type:
Internal drain adjustable setting

Mounting possibility:
Kappa 30 CSC

Unidirectional motors

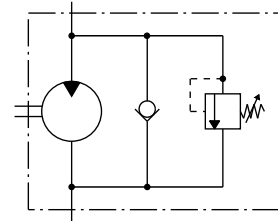
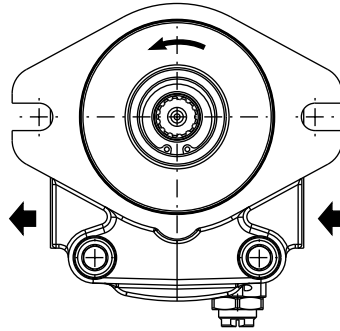
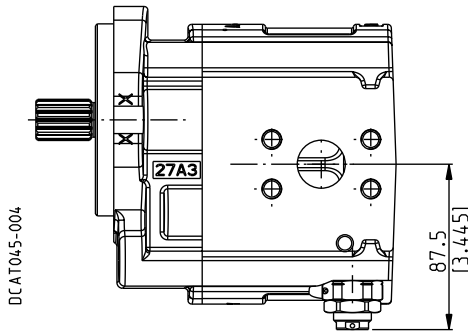
S - D

ANTI-CLOCKWISE ROTATION

U1

Order example

KM30-34S0-A8 K9-L MB/MC-N - U1 (G3-220) - CSC

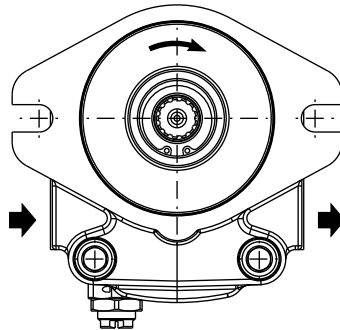
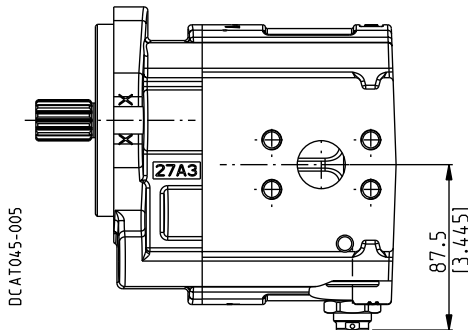


CLOCKWISE ROTATION

U2

Order example

KM30-34D0-A8 K9-L MB/MC-N - U2 (G3-220) - CSC



Reversible motors with external drain

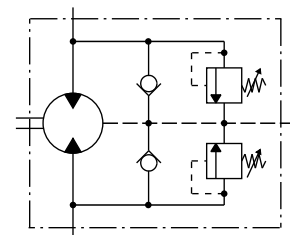
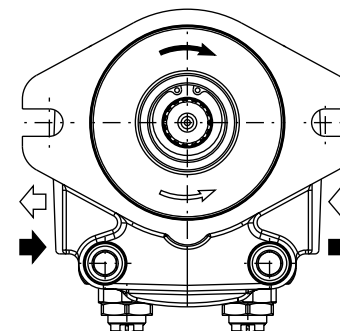
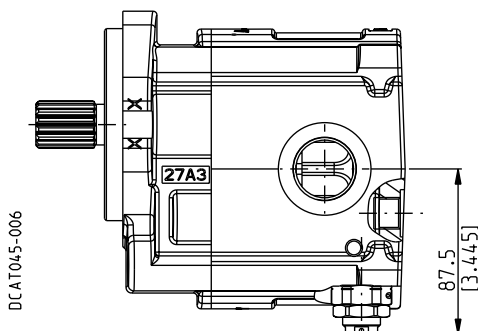
R

REVERSIBLE ROTATION

U3

Order example

KM30-34R0-A8 K9-L MB/MC-N - U3 (G4-250) - CSC



02/10.2021

DRAIN PORT DIMENSIONS

T DRAIN PORT

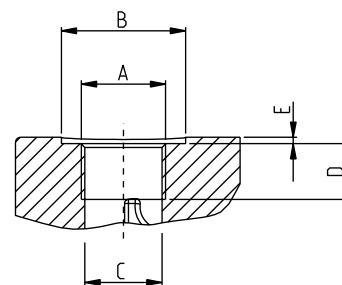
Valve type	Gas BSPP	SAE ODT
VPEF...	GC	OC
VPER...	GC	OC

GAS STRAIGHT THREAD PORTS

BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228

DCAT_006_026_21064779



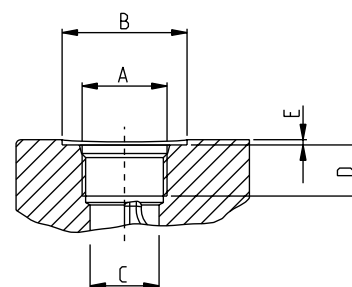
CODE	Nominal size	A	Ø B mm (in)	Ø C mm (in)	D mm (in)	E mm (in)	Nm (lbf in)
GC	3/8"	G 3/8	30 (1.1811)	16 (0.6299)	17 (0.6693)	1 (0.0394)	15 ⁺¹ (133 ÷ 142)

SAE STRAIGHT THREAD PORTS J514

ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

DCAT_006_027_21060524



CODE	Nominal size	A	Ø B mm (in)	Ø C mm (in)	D mm (in)	E mm (in)	Nm (lbf in)
OC	5/8"	7/8" - 14 UNF - 2B	35 (1.3780)	16 (0.6299)	17 (0.6693)	1,5 (0.0197)	30 ^{+2,5} (266 ÷ 288)

01/01.2005

NOTES

02/10.2021

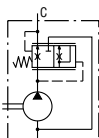
PRIORITY VALVES - GENERAL DATA

Casappa offers a wide range of priority valves. They are integrated in the rear cover of pumps to limit overall dimensions and to simplify the hydraulic system. The priority valves control the flow rate and guarantee constant flow (C) to the main circuit regardless of the pressure and pump operating speed. The constant flow rate value is regulated by an internal metering device while the exceeded flow, depending on the type of valve, can be recirculated to the inlet of the pump, to feed other circuits (R) or be sent to the tank (T). Other versions of the priority valves are available with pressure control at fixed or adjustable setting values.

Replaces: 01/01.2005

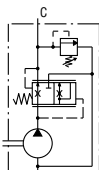
P1

Constant flow rate and internal recirculation of excess flow.



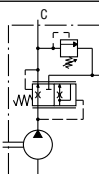
P2

Constant flow rate at controlled pressure. Internal recirculation of excess flow and drain valve.



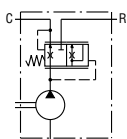
P3

Constant flow rate at controlled pressure. Excess flow and drain valve must be connected to tank.



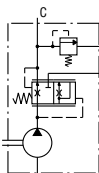
P4

Constant flow rate and excess flow can both be used under load.



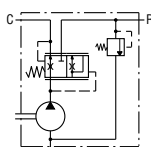
P5T

Constant flow rate at controlled pressure with drain valve connected to tank. Excess flow can be used under load.



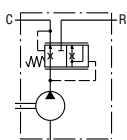
P7

Constant flow rate. Excess flow at controlled pressure can be used under load. Internal recirculation of drain valve. Rear ports.



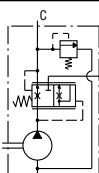
P8

Constant flow rate and excess flow can both be used under load. Rear ports.



P9

Constant flow rate at controlled pressure. Internal recirculation of drain valve. Excess flow can be used under load.



Constant flow rate (C)

l/min (US gpm)	l/min (US gpm)
1,2 (0.3)	14 (3.7)
2 (0.5)	16 (4.2)
4,5 (1.2)	20 (5.3)
6 (1.6)	24 (6.3)
8 (2.1)	30,5 (8.1)
11 (2.9)	

P5T - P7 - P9

Controlled pressure at fixed setting [10 l/min (2.6 US gpm)]	Δp min. begin opening valve
bar (psi)	bar (psi)
35 (508)	32 (464)
40 (580)	37 (537)
50 (725)	46 (667)
60 (870)	54 (783)
70 (1015)	66 (957)
80 (1160)	76 (1102)
100 (1450)	96 (1392)
120 (1740)	116 (1682)
125 (1813)	120 (1740)
140 (2030)	135 (1958)
150 (2175)	145 (2103)
160 (2320)	155 (2248)
175 (2538)	170 (2465)
180 (2610)	174 (2523)
190 (2755)	184 (2668)
206 (2987)	199 (2886)
210 (3045)	203 (2944)
230 (3335)	222 (3219)
250 (3625)	242 (3509)
260 (3770)	252 (3654)
280 (4060)	271 (3930)
300 (4350)	291 (4220)

P2 - P3

Controlled pressure at adjustable setting
bar (psi)
20 ÷ 70 (290 ÷ 1015)
50 ÷ 180 (725 ÷ 2610)
100 ÷ 290 (1450 ÷ 4205)

Valves are sized to control a Q = 40 l/min (10.57 US gpm) maximum flow rate.

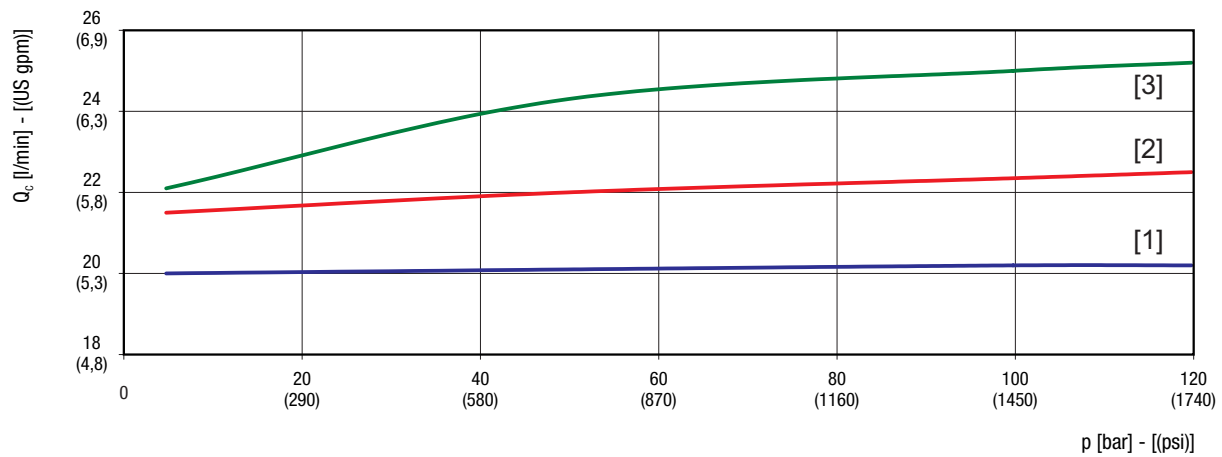
02/10.2021

PERFORMANCE CURVES

CONTROLLED FLOW VS. INLET FLOW

Each curve has been obtained at:
Controlled flow $Q_c = 20 \text{ l/min}$ (2.6 US gpm)
Hydraulic oil ISO VG 46
Temperature 50°C (122°F)

[1] Inlet flow = 25 l/min (6.6 US gpm)
[2] Inlet flow = 50 l/min (13.2 US gpm)
[3] Inlet flow = 75 l/min (19.8 US gpm)



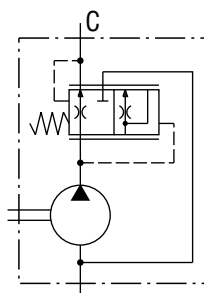
01/01.2005

PRIORITY VALVES

P1

Mounting possibility: see page 27

Ports: see page 28

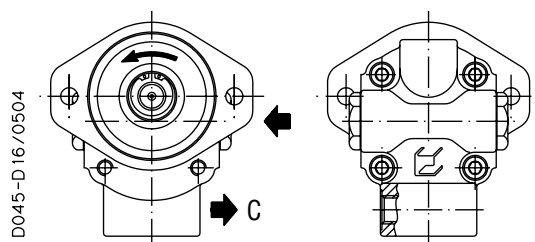


➤ **Constant flow (C)**

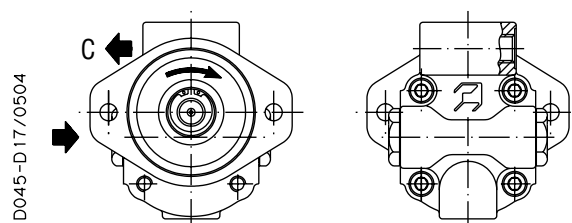
➤ **Excess flow**
Internally recirculated

Ports positions - valve with side ports

Anti-clockwise rotation



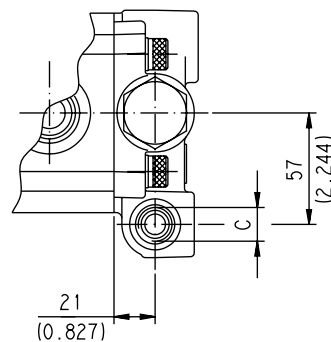
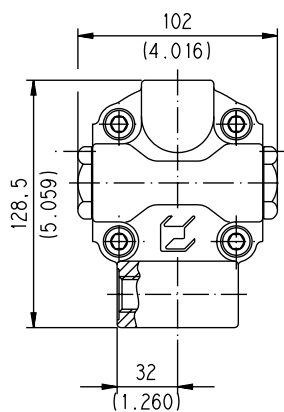
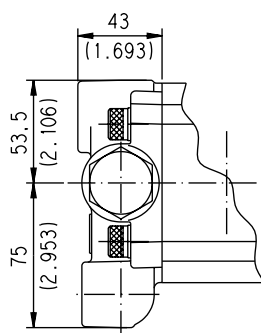
Clockwise rotation



Dimensions

01/01.2005

D045-D09/0504



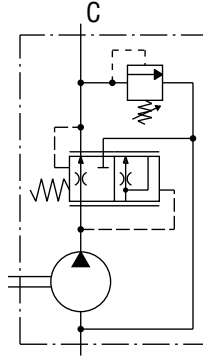
PRIORITY VALVES

P2

Mounting possibility: see page 27

Ports: see page 28

O



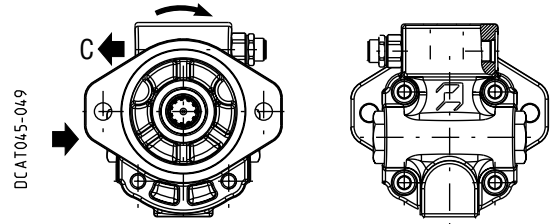
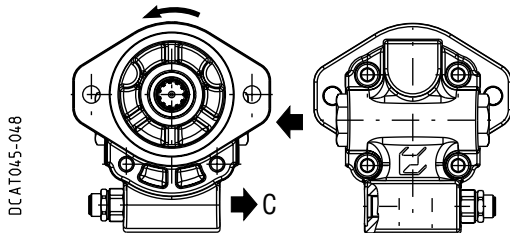
- **Constant flow (C) at controlled pressure**
Max. pressure relief valve adjustable setting with internal recirculation of the drain
- **Excess flow**
Internally recirculated

Replaces: 01/01.2005

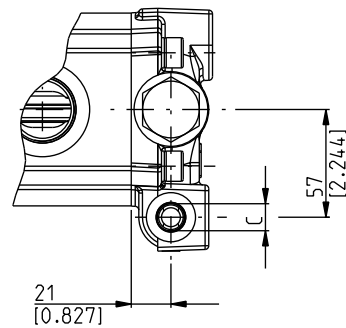
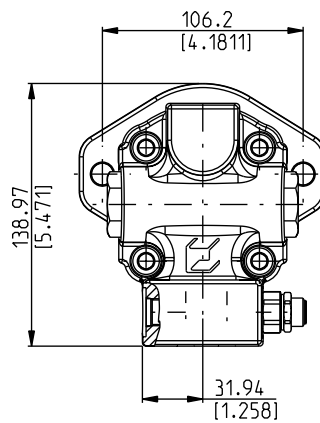
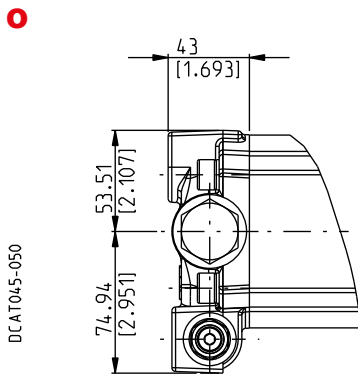
Ports positions - valve with side ports

Anti-clockwise rotation

Clockwise rotation



Dimensions



O 02/10.2021

PRIORITY VALVES

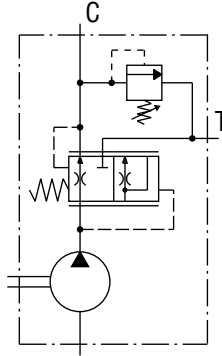
P3

Mounting possibility: see page 27

Ports: see page 28

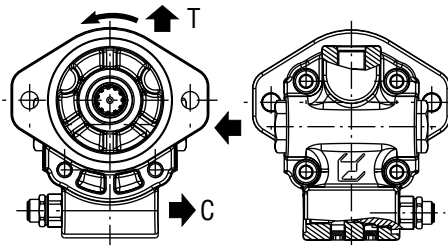
O

- **Constant flow (C) at controlled pressure**
Max. pressure relief valve adjustable setting with drain connected to tank (T)
- **Excess flow**
To tank (T)

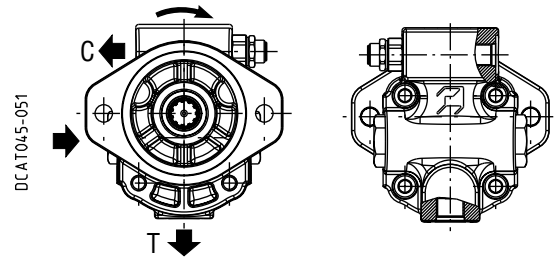


Ports positions - valve with side ports

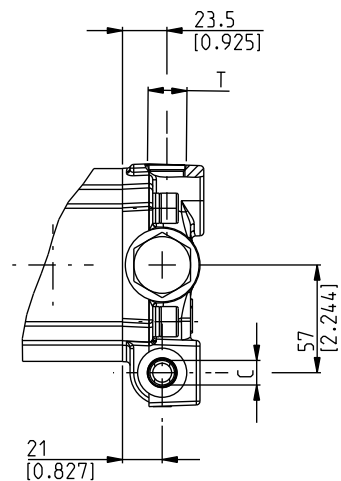
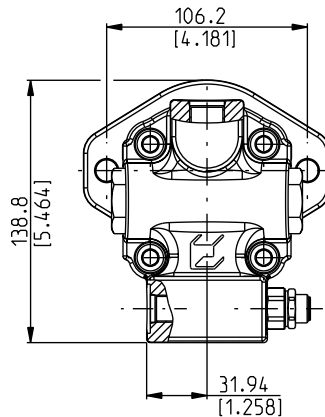
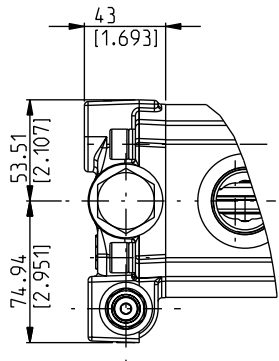
Anti-clockwise rotation



Clockwise rotation



Dimensions

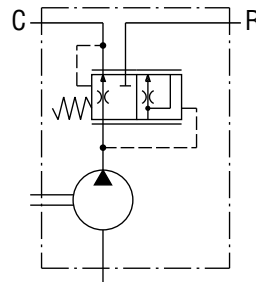


PRIORITY VALVES

P4

Mounting possibility: see page 27

Ports: see page 28



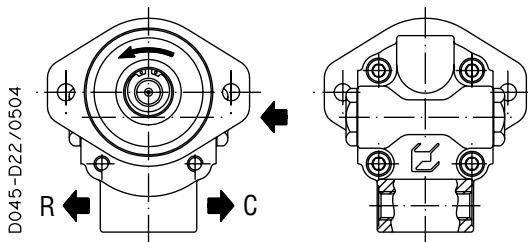
➤ **Constant flow (C)**

➤ **Excess flow**

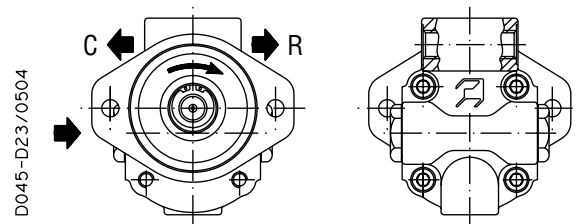
To be used under load (R)

Ports positions - valve with side ports

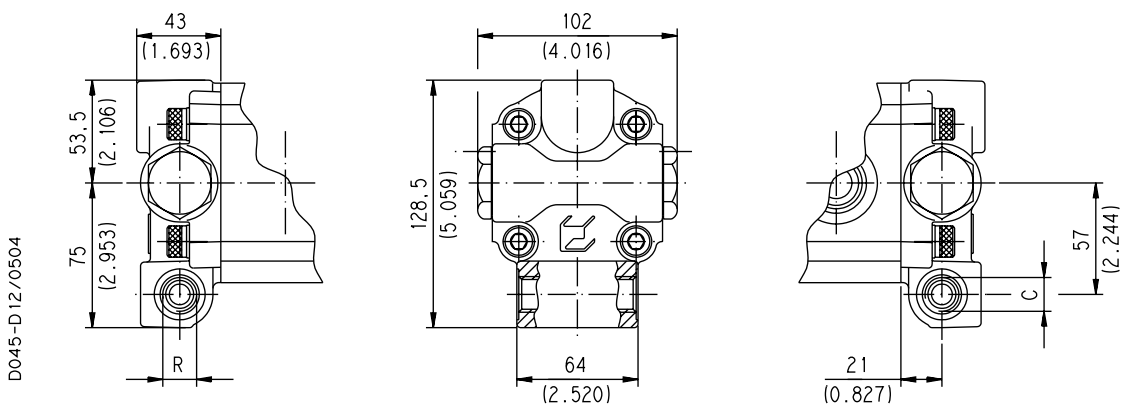
Anti-clockwise rotation



Clockwise rotation



Dimensions



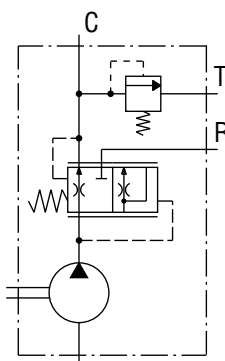
01/01.2005

PRIORITY VALVES

P5T

Mounting possibility: see page 27

Ports: see page 28



➤ **Constant flow (C) at controlled pressure**

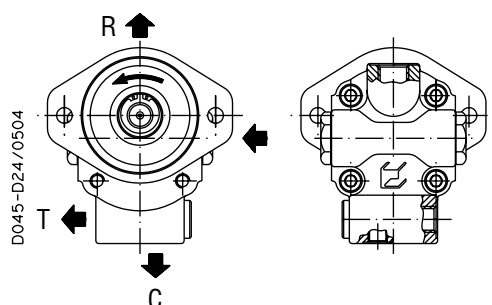
Max. pressure relief valve fixed setting with drain connected to tank (T)

➤ **Excess flow**

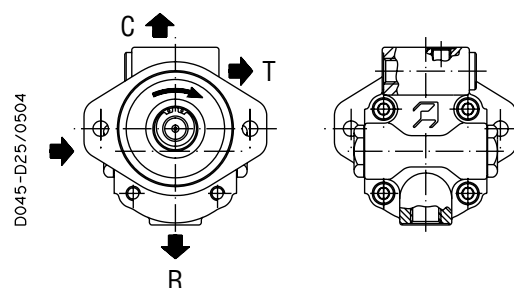
To be used under load (R)

Ports positions - valve with side ports

Anti-clockwise rotation



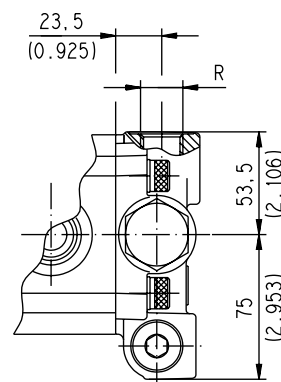
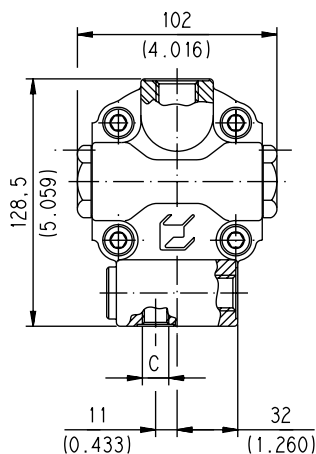
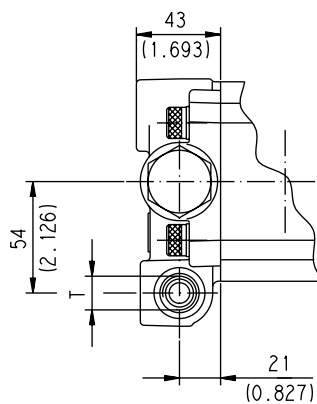
Clockwise rotation



Dimensions

01/01.2005

D045-D13/0504

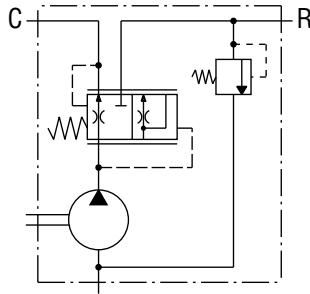


PRIORITY VALVES

P7

Mounting possibility: see page 27

Ports: see page 28



➤ **Constant flow (C)**

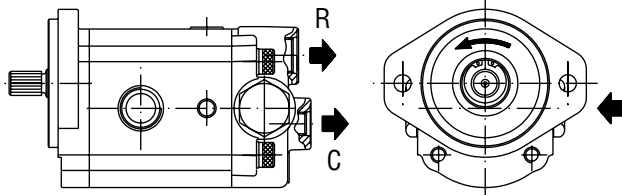
➤ **Excess flow at controlled pressure**

To be used under load (R).
Max. pressure relief valve fixed setting with internal recirculation of the drain

Ports positions - valve with rear ports

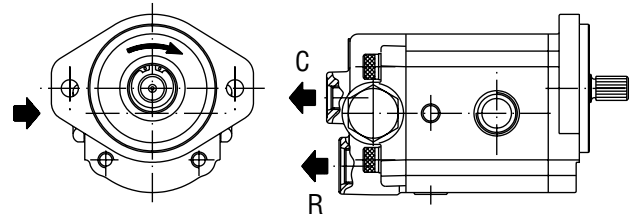
Please contact us for side ports position

Anti-clockwise rotation



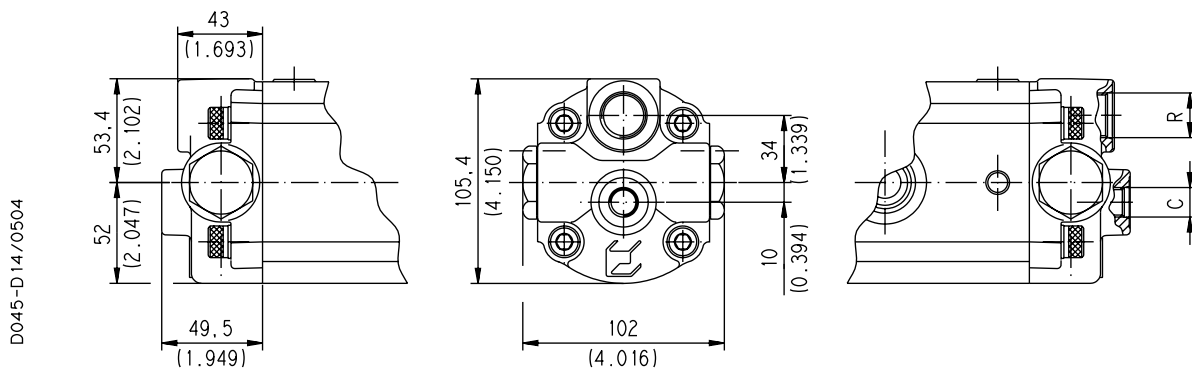
D045-D26/0504

Clockwise rotation



D045-D27/0504

Dimensions - Pump type 2P



D045-D14/0504

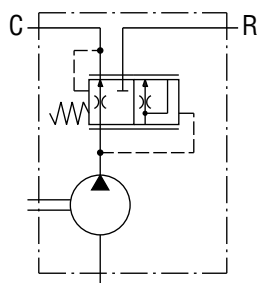
01/01.2005

PRIORITY VALVES

P8

Mounting possibility: see page 27

Ports: see page 28



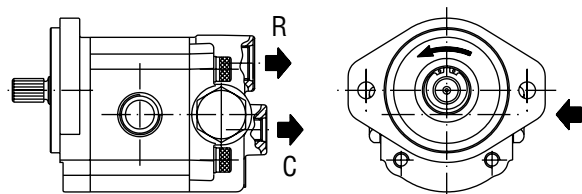
➤ **Constant flow (C)**

➤ **Excess flow**

To be used under load (R)

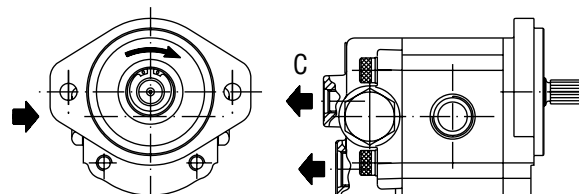
Ports positions - valve with rear ports

Anti-clockwise rotation



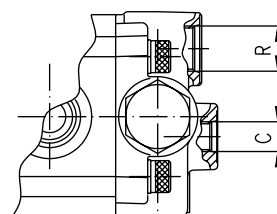
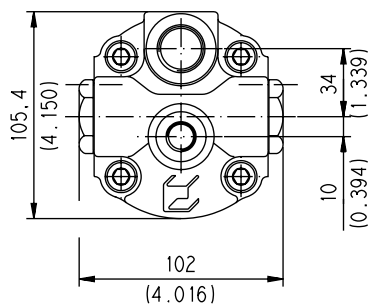
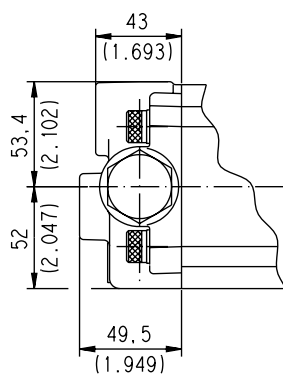
D045-D28/0504

Clockwise rotation



D045-D29/0504

Dimensions



01/01.2005

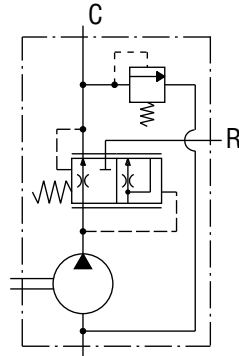
D045-D15/0504

PRIORITY VALVES

P9

Mounting possibility: see page 27

Ports: see page 28

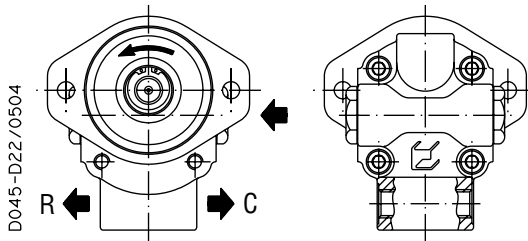


- **Constant flow (C) at controlled pressure**
Max. pressure relief valve fixed setting with internal recirculation of the drain
- **Excess flow**
To be used under load (R)

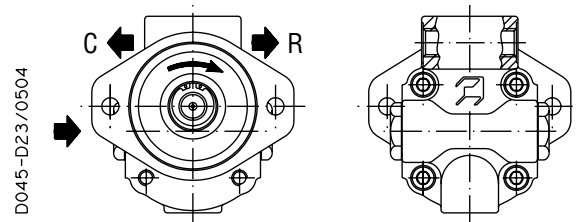
Ports positions - valve with side ports

Please contact us for rear ports position

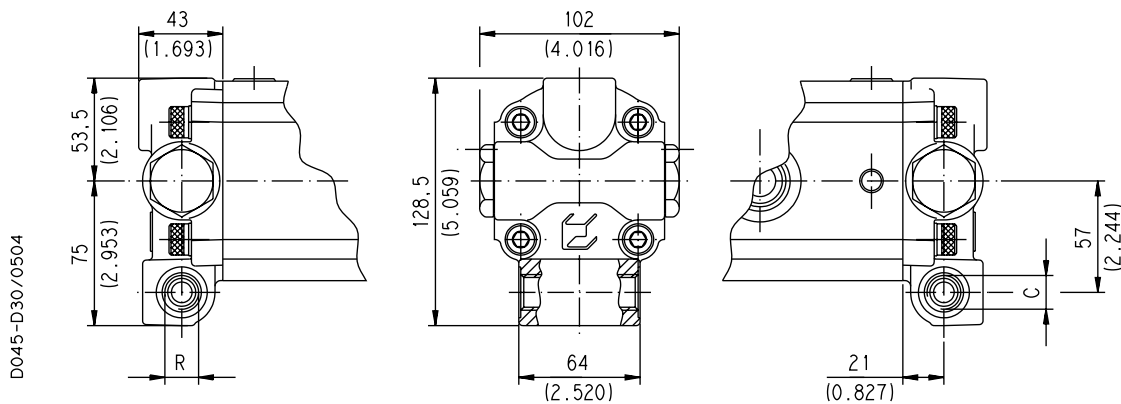
Anti-clockwise rotation



Clockwise rotation



Dimensions - Pump type 2P



01/01.2005

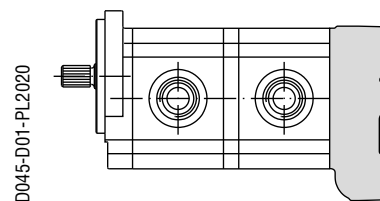
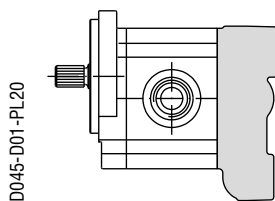
PRIORITY VALVES - MOUNTING POSSIBILITY

VALVE

P1 - P2 - P3 - P4 - P5T

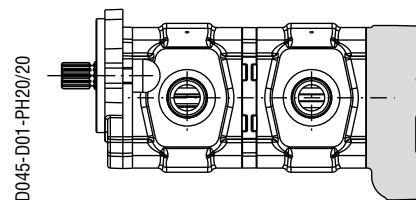
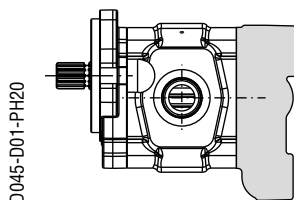
Replaces: 01/01.2005

POLARIS 20
WHISPER 20

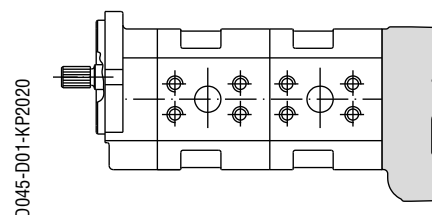
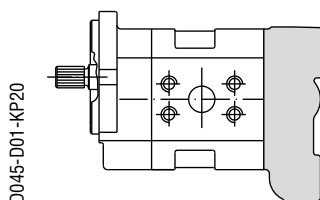


POLARIS PH 20

○



KAPPA 20

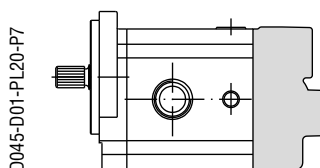


VALVE

P7

POLARIS 20
Version 2P

Please contact us for
dimensions

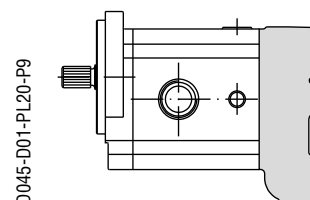


VALVE

P9

POLARIS 20
Version 2P

Please contact us for
dimensions

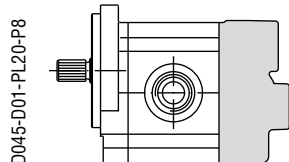


02/10.2021

VALVE

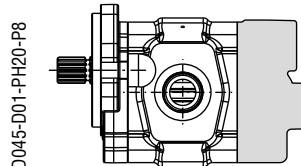
P8

POLARIS 20
WHISPER 20

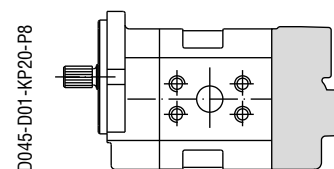


POLARIS PH 20

○



KAPPA 20



PRIORITY VALVES - PORTS TYPE AND DIMENSIONS

VALVE TYPE	PORT TYPE	SIDE PORTS						REAR PORTS					
		Gas BSPP			SAE ODT			Gas BSPP			SAE ODT		
		C	R	T	C	R	T	C	R	T	C	R	T
	P1	GC	-	-	OA	-	-	GB	-	-			
	P2	GC	-	-	OA	-	-	GD	-	-			
	P3	GC	-	GD	OA	-	OB	GC	-	GD			
	P4	GC	GC	-	OA	OA	-	GC	GC	-			
	P5T	GB	GD	GB									
	P7										OA	OC	-
	P8							GC	GD	-	OA	OC	-
	P9	GC	GD	-				GC	GD	-			

Replaces: 01/01.2005

GAS STRAIGHT THREAD PORTS

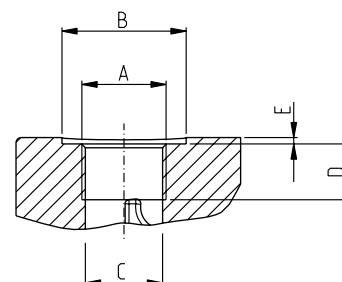
BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228

 Tightening torque for low pressure side port

 Tightening torque for high pressure side port
[(values obtained at 350 bar (5075 psi))]

DCAT_006_026_21064779



CODE	Nominal size	A	Ø B	Ø C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
GB	1/4"	G 1/4"	21,5 (0.8465)	8,75 (0.3444)	12 (0.4724)	1 (0.0394)	15 ⁺¹ (133 ÷ 142)	15 ⁺¹ (133 ÷ 142)
GC	3/8"	G 3/8"	25 (0.9843)	15 (0.5906)	14 (0.5512)	1 (0.0394)	15 ⁺¹ (133 ÷ 142)	25 ⁺¹ (221 ÷ 230)
GD	1/2"	G 1/2"	30 (1.1811)	19 (0.7480)	17 (0.6693)	1 (0.0394)	20 ⁺¹ (177 ÷ 186)	50 ^{+2,5} (443 ÷ 465)

SAE STRAIGHT THREAD PORTS SAE J514

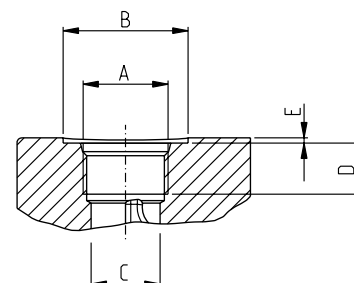
ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

 Tightening torque for low pressure side port

 Tightening torque for high pressure side port
[(values obtained at 350 bar (5075 psi))]

DCAT_006_027_21060524



CODE	Nominal size	A	Ø B	Ø C	D	E		
			mm (in)	mm (in)	mm (in)	mm (in)	Nm (lbf in)	Nm (lbf in)
OA	3/8"	9/18" - 18 UNF - 2B	26 (1.0236)	13 (0.5118)	15 (0.5906)	1 (0.03934)	15 ⁺¹ (133 ÷ 142)	25 ⁺¹ (221 ÷ 230)
OB	1/2"	3/4" - 16 UNF - 2B	32 (1.2598)	17,5 (0.690)	15 (0.5906)	1,5 (0.0591)	20 ⁺¹ (177 ÷ 186)	45 ^{+2,5} (398 ÷ 420)
OC	5/8"	7/8" - 14 UNF - 2B	35 (1.3780)	20,5 (0.8071)	17 (0.6693)	1,5 (0.0197)	30 ^{+2,5} (266 ÷ 288)	70 ⁺⁵ (620 ÷ 664)

02/10.2021

PRIORITY VALVES - HOW TO ORDER

Replaces: 01/01.2005

1	2	3	2	4	2	5	6	7	8	9
... - L EA	/	*	GC	/			- P1	- 8		- N
... - L EA	/	*	GC				- P2	- 8	- 150	- N
... - L EA	/	*	GC	/	*	GD	- P3	- 8	- 150	- N
... - L EA	/	*	GC	/	*	GC	- P4	- 8		- N
... - L EA	/	*	GB	/	*	GD / *	GB	- P5T	- 8	- 150 - N
... - L EA	/	P	OA	/	P	OC	/	- P7	- 11	- 150 - N
... - L EA	/	P	GC	/	P	GD	/	- P8	- 11	- N
... - L EA	/	*	GC	/	*	GD	/	- P9	- 11	- 150 - N

1	Type	Code
Polaris 20 cm³/rev (in³/rev) (a)		PLP20 • ...
Whisper 20 cm³/rev (in³/rev) (a)		WSP20 • ...
Polaris PH20 cm³/rev (in³/rev) (a)		PHP20 • ...
Kappa 20 cm³/rev (in³/rev) (a)		KP20 • ...

2	Ports position	Code
Side		*
Rear		P

3	Port C	Code
GAS STRAIGHT THREAD PORTS (BSPP)		
G 1/4		GB
G 3/8		GC
G 1/2		GD
SAE STRAIGHT THREAD PORTS (ODT)		
9/16" - 18 UNF - 2B		OA
3/4" - 16 UNF - 2B		OB
7/8" - 14 UNF - 2B		OC

4	Port R	Code
GAS STRAIGHT THREAD PORTS (BSPP)		
G 3/8		GC
G 1/2		GD
SAE STRAIGHT THREAD PORTS (ODT)		
9/16" - 18 UNF - 2B		OA
3/4" - 16 UNF - 2B		OB
7/8" - 14 UNF - 2B		OC

Code	Port T	5
GAS STRAIGHT THREAD PORTS (BSPP)		
GB	G 1/4	
GD	G 1/2	
SAE STRAIGHT THREAD PORTS (ODT)		
OB	3/4" - 16 UNF - 2B	

Code	Priority valve type	6
P1	See page 19	
P2	See page 20	
P3	See page 21	
P4	See page 22	
P5T	See page 23	
P7	See page 24	
P8	See page 25	
P9	See page 26	

Code	Controlled constant flow	7
...	Value in l/min - See page 17	

Code	Controlled pressure setting	8
...	Value in bar - See page 17	

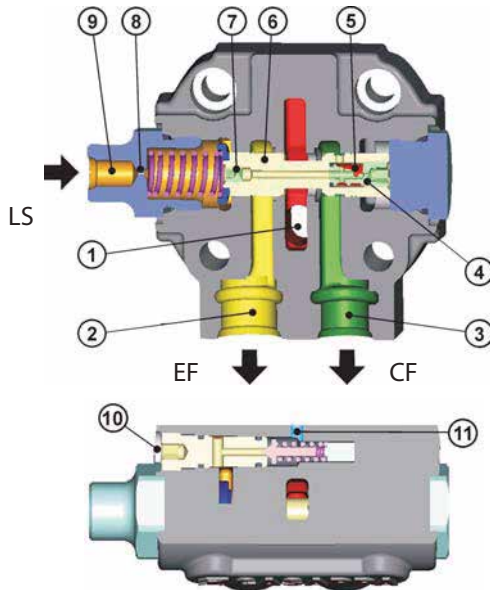
Code	Seals	9
N	Buna (standard)	

- (a) See the technical catalogues of each specific series.
 How to order: until inlet port IN.
 Please contact us for multiple pumps ordering.

02/10.2021

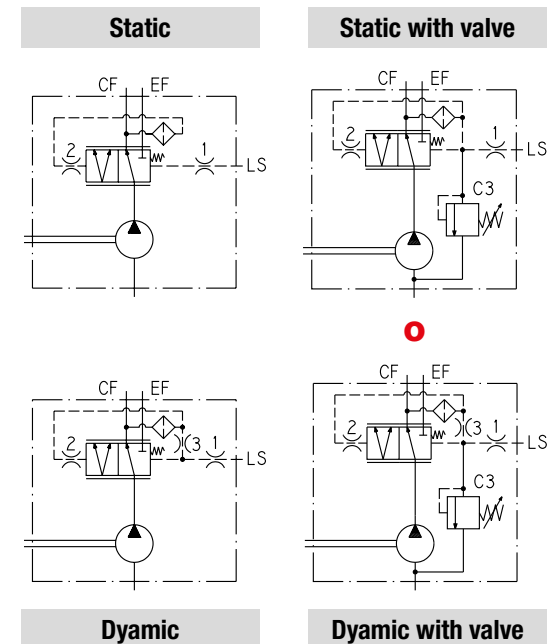
LOAD SENSING PRIORITY VALVES - GENERAL DATA

- Energy savings – the valve delivers to the priority controlled circuit (Q_{CF}) the flow at the pressure required from the application, while the secondary circuit (Q_{EF}) receives the excess flow.
- Independent pressure on CF and EF
- The valve built into the pump simplifies the hydraulic system
- Flow rate control (Q_{CF}) reduces noise emissions in the hydraulic system



1	Valve inlet flow rate (Q_{IN})
2	Excess flow (Q_{EF})
3	Controlled flow rate (Q_{CF})
4	Orifice 2
5	Filter
6	Load sensing valve spool
7	Orifice 3
8	Orifice 1
9	Load sensing signal (LS)
10	Max. pressure relief valve C3
11	Drain valve C3 (#)

(#) The drain of the valve is internal to return oil to the pump inlet.



The “load sensing” priority valves are built into gear pumps and divide the flow rate delivered by the pump (Q_{IN}) into two separate and variable flows ($Q_{CF} + Q_{EF}$). Q_{CF} varies in relation to the priority port demand, while the excess flow is conveyed to Q_{EF} . These valves are used mainly to feed mobile machinery steering systems equipped with a closed-centre steering unit. The CF port is connected to the steering unit inlet port, and the EF port is connected to the auxiliary hydraulic control system (hoist, shovel, etc.), while the LS port is connected to the respective LS of the steering unit. The valves are available as a static or dynamic version depending on the type of system to feed. A version with a pressure relief valve (C3), in a static or dynamic configuration, is available to protect the controlled line (Q_{CF}), for the case in which the steering unit is not so equipped.

In the **static “load sensing”** when the steering unit is at rest (steering stopped), the LS signal has no flow.

As soon as the steering wheel begins to move, the steering unit sends a signal, through the pilot line, to the pump “load sensing” valve that automatically regulates the flow rate and the pressure to the real levels demanded by the steering unit.

In the **dynamic “load sensing”** even when the steering unit is at rest (steering stopped), the LS signal has a pilot flow. The static or dynamic “load sensing” function on

the pump must be selected according to the type of system to feed, recalling that dynamic “load sensing” ensures shorter response times, more fluid movements and eliminates malfunctioning that may occur under low-temperature operating conditions.

Replaces: 01/01.2005

02/10.2021

LOAD SENSING PRIORITY VALVES - GENERAL DATA

9	Nominal flow	l/min (US gpm)
O	40	40 (10.6)
	80	80 (21.1)

13	Max. pressure relief valve	Pressure setting range bar (psi)
	C3 (...)	20 ÷ 280 (290 ÷ 4060)

(...) = Requested setting value in bar

STAND-BY PRESSURE PENDING THE TYPE OF ORIFICES AND SPRINGS

			Nominal stand-by pressure	12			10	11	
10	11	12		Orifice 1	Orifice 2		Orifice 3		Spring setting
			bar (psi)	mm (in)	mm (in)			mm (in)	bar (psi)
*	D	*	5 (73)	0,75 (0.0295)	0,8 (0.0315)	Closed (■)			4 (58)
E	D	*	7 (102)	0,75 (0.0295)	0,8 (0.0315)	0,5 (0.0197)			4 (58)
F	D	*	8 (116)	0,75 (0.0295)	0,8 (0.0315)	0,6 (0.0236)			4 (58)
G	D	*	9 (131)	0,75 (0.0295)	0,8 (0.0315)	0,7 (0.0276)			4 (58)
K	D	*	5 (73)	0,75 (0.0295)	1,3 (0.0512)	Closed (■)			4 (58)
R	D	*	7 (102)	0,75 (0.0295)	1,3 (0.0512)	0,5 (0.0197)			4 (58)
Y	D	*	8 (116)	0,75 (0.0295)	1,3 (0.0512)	0,6 (0.0236)			4 (58)
Z	D	*	9 (131)	0,75 (0.0295)	1,3 (0.0512)	0,7 (0.0276)			4 (58)
*	G	*	9 (131)	0,75 (0.0295)	0,8 (0.0315)	Closed (■)			7 (102)
E	G	*	13 (189)	0,75 (0.0295)	0,8 (0.0315)	0,5 (0.0197)			7 (102)
F	G	*	15 (218)	0,75 (0.0295)	0,8 (0.0315)	0,6 (0.0236)			7 (102)
G	G	*	17 (247)	0,75 (0.0295)	0,8 (0.0315)	0,7 (0.0276)			7 (102)
K	G	*	9 (131)	0,75 (0.0295)	1,3 (0.0512)	Closed (■)			7 (102)
R	G	*	13 (189)	0,75 (0.0295)	1,3 (0.0512)	0,5 (0.0197)			7 (102)
Y	G	*	15 (218)	0,75 (0.0295)	1,3 (0.0512)	0,6 (0.0236)			7 (102)
Z	G	*	17 (247)	0,75 (0.0295)	1,3 (0.0512)	0,7 (0.0276)			7 (102)
*	L	*	13 (189)	0,75 (0.0295)	0,8 (0.0315)	Closed (■)			10 (145)
E	L	*	15 (218)	0,75 (0.0295)	0,8 (0.0315)	0,5 (0.0197)			10 (145)
F	L	*	19 (276)	0,75 (0.0295)	0,8 (0.0315)	0,6 (0.0236)			10 (145)
G	L	*	24 (348)	0,75 (0.0295)	0,8 (0.0315)	0,7 (0.0276)			10 (145)
K	L	*	13 (189)	0,75 (0.0295)	1,3 (0.0512)	Closed (■)			10 (145)
R	L	*	15 (218)	0,75 (0.0295)	1,3 (0.0512)	0,5 (0.0197)			10 (145)
Y	L	*	19 (276)	0,75 (0.0295)	1,3 (0.0512)	0,6 (0.0236)			10 (145)
Z	L	*	24 (348)	0,75 (0.0295)	1,3 (0.0512)	0,7 (0.0276)			10 (145)

The values shown in the table were obtained at the following conditions:

 Nominal flow= 80 l/min (21.1 US gpm)
 Line CF= closed - Line EF= 0 bar (0 psi)

(■) Static load sensing (orifice 3 closed)

Standard combination

The stand-by pressure is the pressure on CF when the system is at rest.

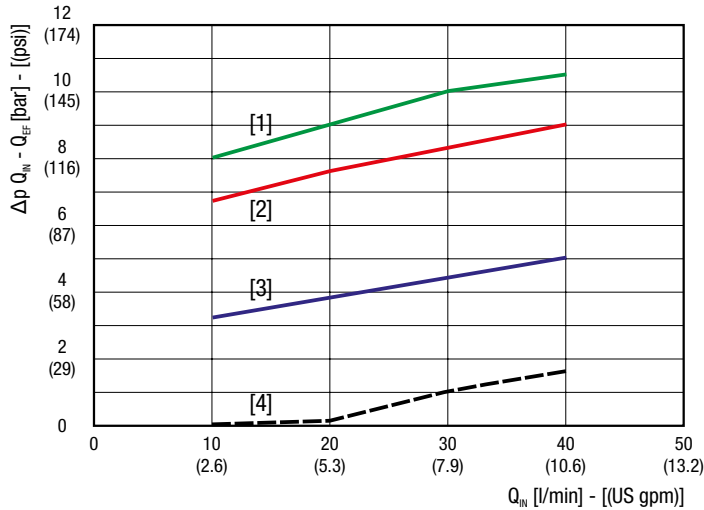
 An increase in stand-by pressure increases the steering system's reactivity while, on the other hand, increases energy consumption. Orifice 2 changes the response of the valve when Q_{CF} and Q_{EF} are both under pressure, while an increase in the diameter of orifice 3 increases the stand-by pressure.

LOAD SENSING PRIORITY VALVES - PERFORMANCE CURVES

PRESSURE DROP BETWEEN Q_{IN} AND Q_{EF} AT DIFFERENT INLET FLOW RATE



Nominal flow = 40 l/min (10.6 US gpm)

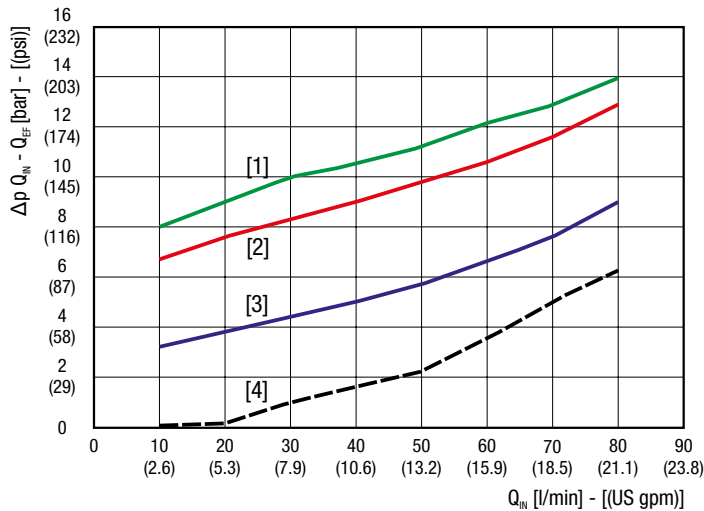


Each curve has been obtained at:
Load sensing valve connected to steering unit at rest (steering stopped).
Lubricant oil ISO VG 46
Temperature 50 °C (122°F)

- [1] Δp spring 10 bar (145 psi) (pressure on EF = 0)
- [2] Δp spring 7 bar (102 psi) (pressure on EF = 0)
- [3] Δp spring 4 bar (58 psi) (pressure on EF = 0)
- [4] Δp min (pressure on EF > of the spring setting)

Replaces: 01/01.2005

Nominal flow = 80 l/min (21.1 US gpm)



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LOAD SENSING PRIORITY VALVES - MOUNTING OPTIONS

The main characteristic of the load sensing valve is its assembly versatility. To satisfy all systems in which reduced overall dimensions are a critical factor, this valve is available with different equipment options:

Replaces: 01/01.2005

- **Valve version**
Version L (standard)
Version R
- **Ports CF/EF**
Side (mounting position valve: rear or side)
Rear (mounting position valve: rear)
- **Port LS**
On the valve casing
On the plug

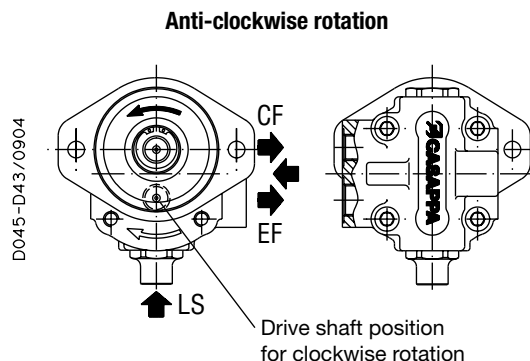
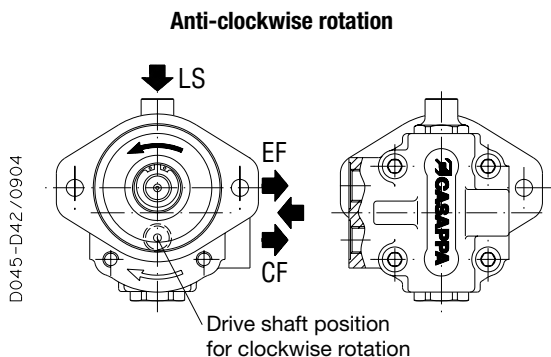
CF/EF SIDE PORTS - REAR MOUNTING

VERSION (STANDARD)	L
PORTS ON INLET SIDE	A

7

VERSION (STANDARD)	R
PORTS ON INLET SIDE	A

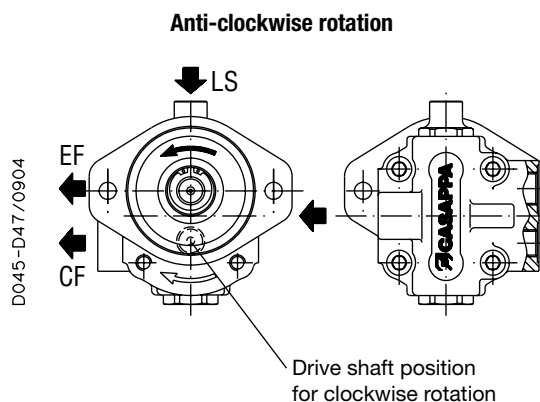
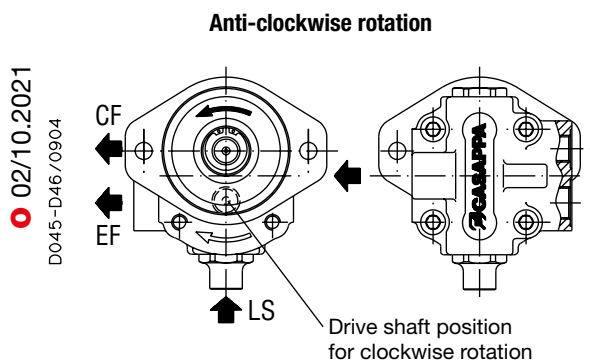
8



PORTS ON OUTLET SIDE	N
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8

PORTS ON OUTLET SIDE	N
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02/10.2021

Mounting possibility: pumps series Polaris 20, Whisper 20, Polaris PH20, Kappa 20 and Kappa 30 (see page 41).
Valve dimensions: version L on page 37 - version R on page 38.

CF/EF SIDE PORTS - SIDE MOUNTING

VERSION (STANDARD)

L

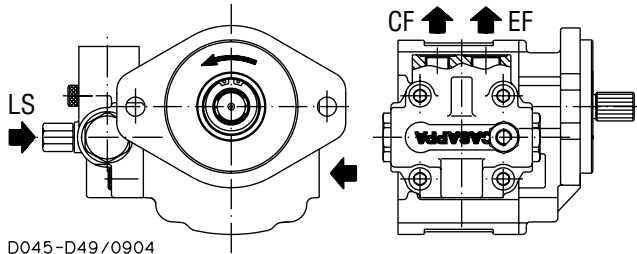
7

PORTS ON DRIVE GEAR

L

8

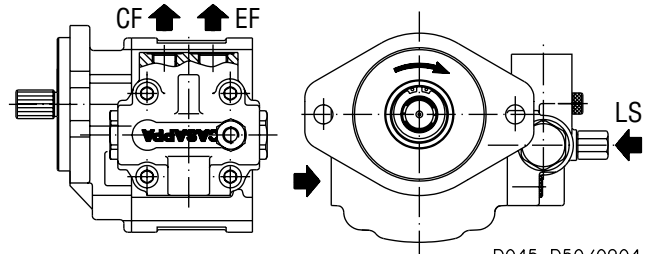
Anti-clockwise rotation



D045-D49/0904

LS port only on the valve casing ○

Clockwise rotation



D045-D50/0904

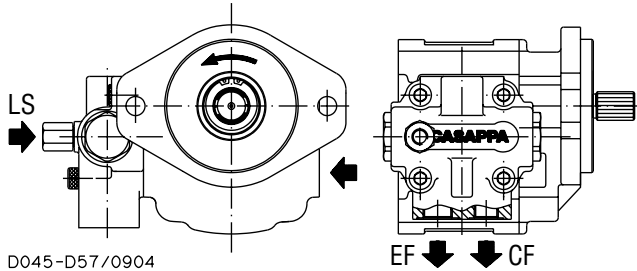
Replaces: 01/01.2005

PORTS ON DRIVEN GEAR

M

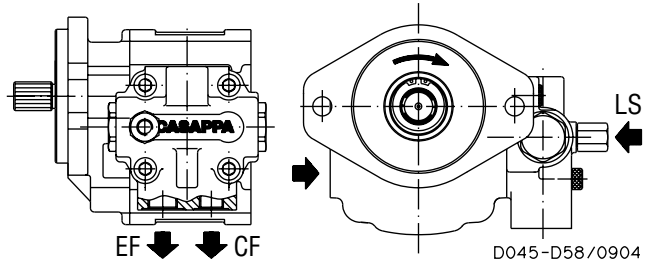
8

Anti-clockwise rotation



D045-D57/0904

Clockwise rotation



D045-D58/0904

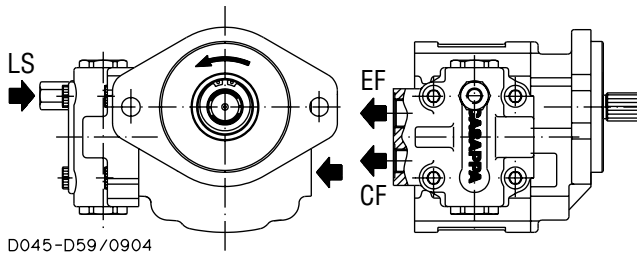
LS port only on the valve casing ○

PORTS ON THE BACK

R

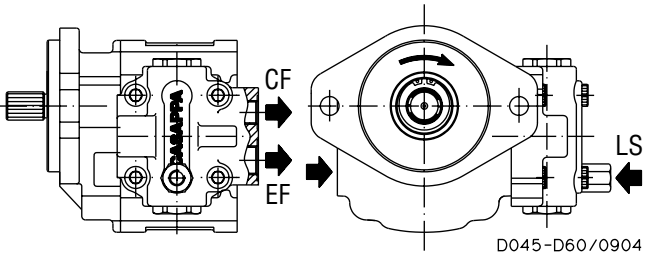
8

Anti-clockwise rotation



D045-D59/0904

Clockwise rotation



D045-D60/0904

02/10.2021 ○

○

Mounting possibility: pumps series Kappa 30, see page 42.
With C3 valve, an additional port for an external drain to the tank is added.
Valve dimensions on page 37.

CF/EF SIDE PORTS - SIDE MOUNTING

VERSION **R**

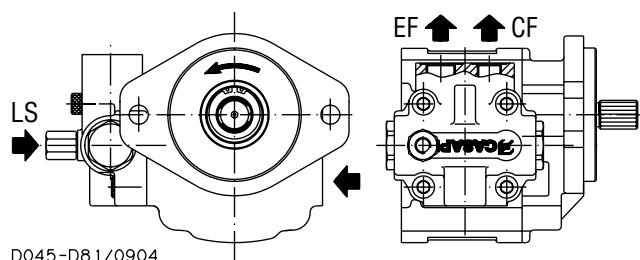
7

PORTS ON DRIVE GEAR **L**

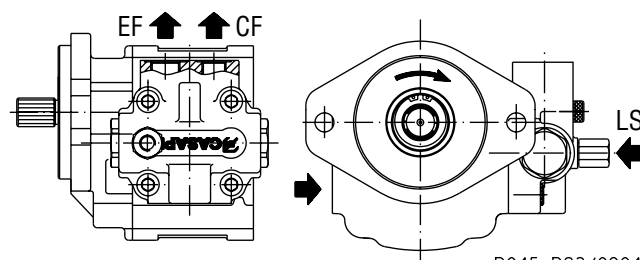
8

Replaces: 01/01.2005

Anti-clockwise rotation



Clockwise rotation

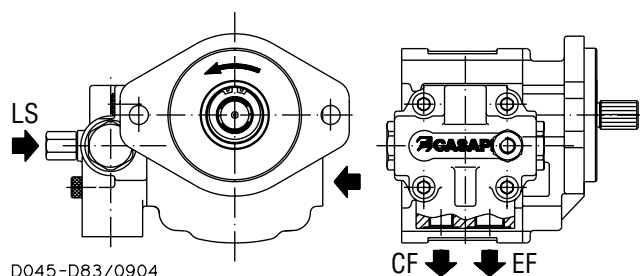


LS port only on the valve casing **O**

PORTS ON DRIVEN GEAR **M**

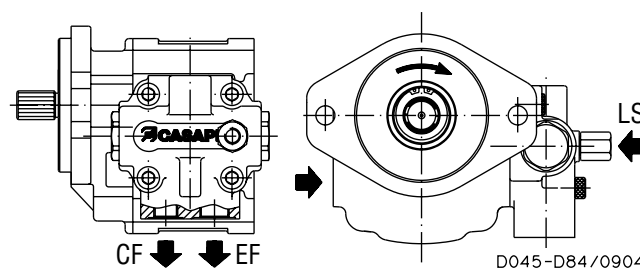
8

Anti-clockwise rotation



LS port only on the valve casing **O**

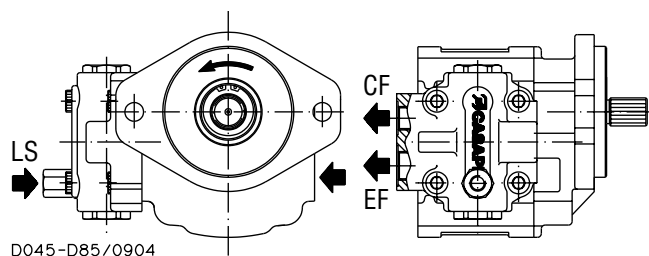
Clockwise rotation



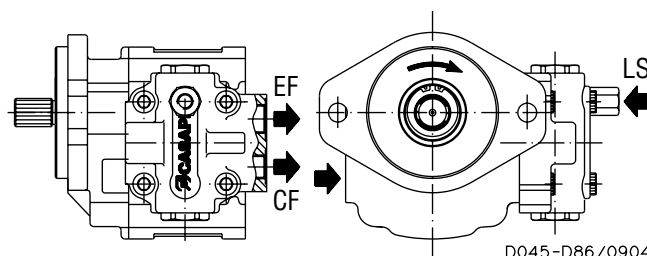
PORTS ON THE BACK **R**

8

Anti-clockwise rotation



Clockwise rotation



02/10.2021

O

Mounting possibility: pumps series Kappa 30, see page 42.
With C3 valve, an additional port for an external drain to the tank is added.
Valve dimensions on page 38.

CF/EF REAR PORTS - REAR MOUNTING

VERSION (STANDARD) **L**

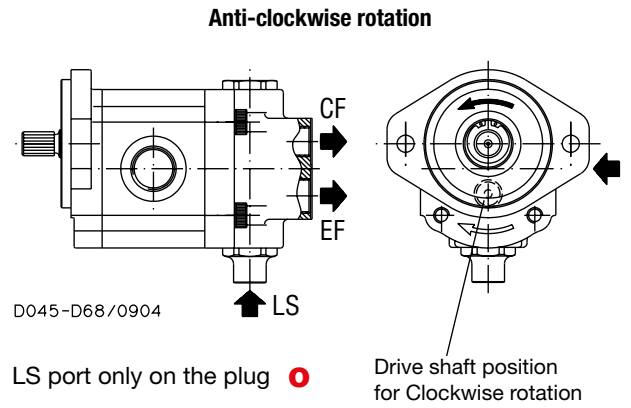
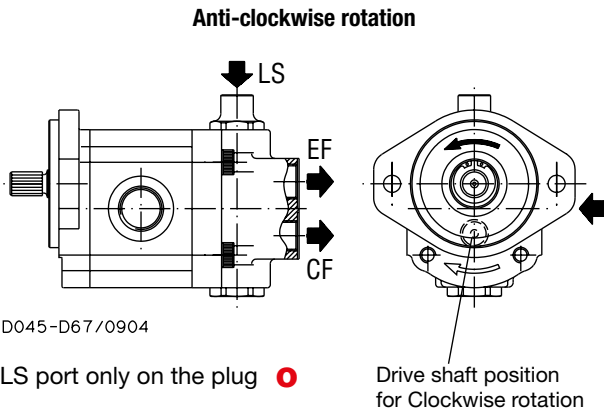
PORTS ON THE BACK **C**

7

8

VERSION **R**

PORTS ON THE BACK **C**

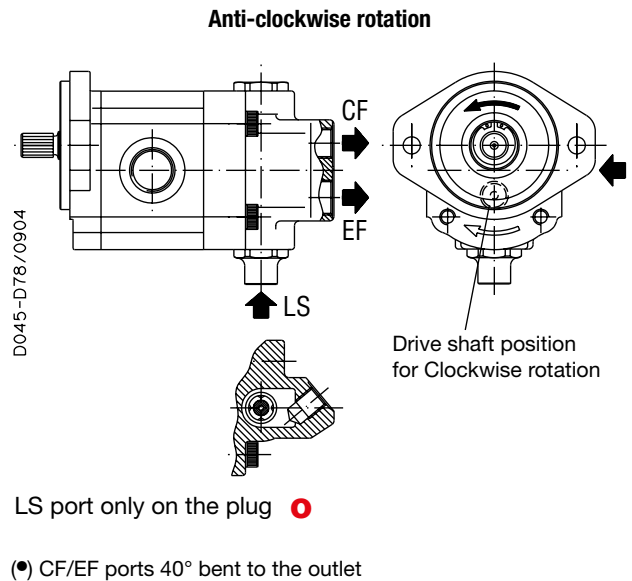
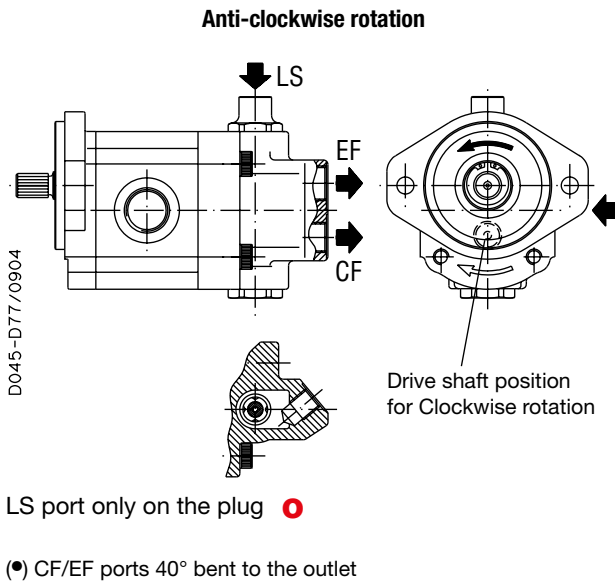


Replaces: 01/01.2005

PORTS ON THE BACK 40° (●) **R**

8

PORTS ON THE BACK 40° (●) **E**



02/10.2021 **●**

●

Mounting possibility: pumps series Polaris 20, Whisper 20, Polaris PH20 and Kappa 20, see page 43.
Valve dimensions on page 39 and page 40.

CF/EF SIDE PORTS - DIMENSIONS

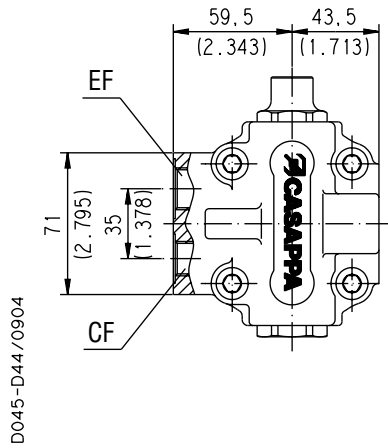
L

CF/EF ports see page 44
LS port see page 45 and 46

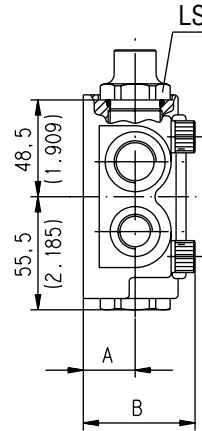
Standard flange

Replaces: 01/01.2005

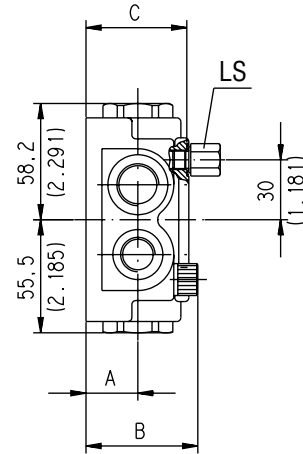
O



LS on the plug



LS on the valve casing

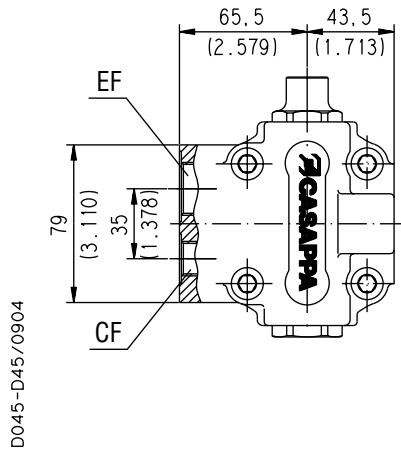


Dimensions	A	B	C
	mm (in)	mm (in)	mm (in)
Without valve	26 (1.0236)	55 (2.1654)	50,5 (1.9882)
With C3 valve	29 (1.1417)	58 (2.2835)	53,5 (2.1063)

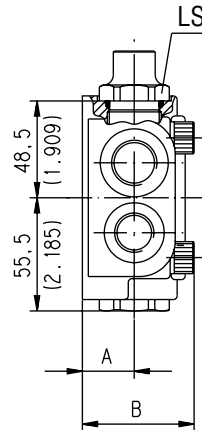
Enlarged flange

O 02/10.2021

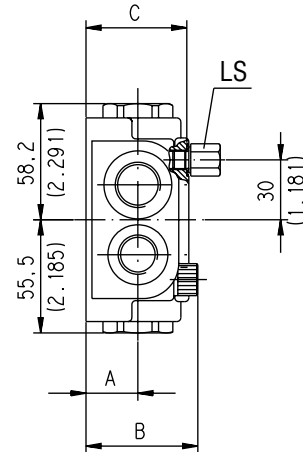
O



LS on the plug



LS on the valve casing



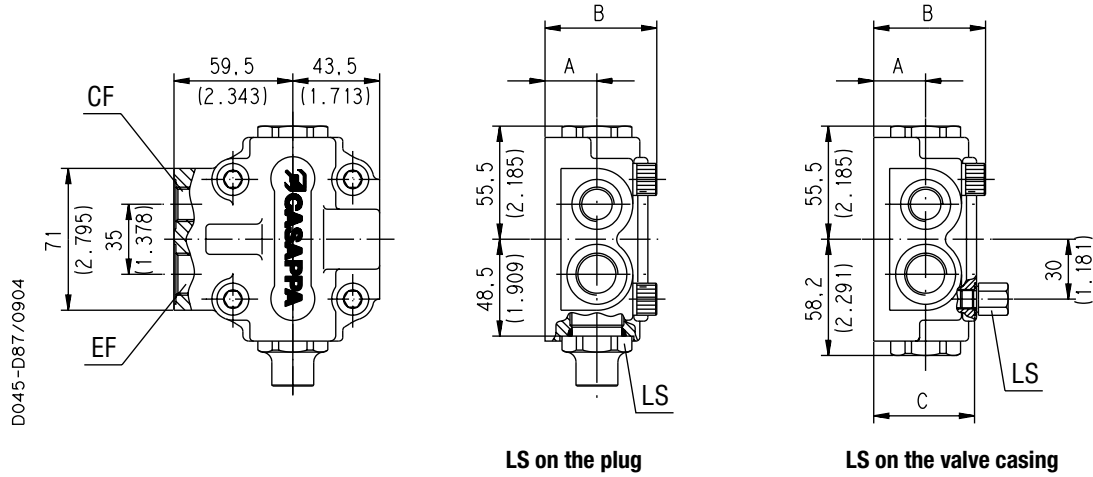
Dimensions	A	B	C
	mm (in)	mm (in)	mm (in)
Without valve	26 (1.0236)	55 (2.1654)	50,5 (1.9882)
With C3 valve	29 (1.1417)	58 (2.2835)	53,5 (2.1063)

CF/EF SIDE PORTS - DIMENSIONS

R

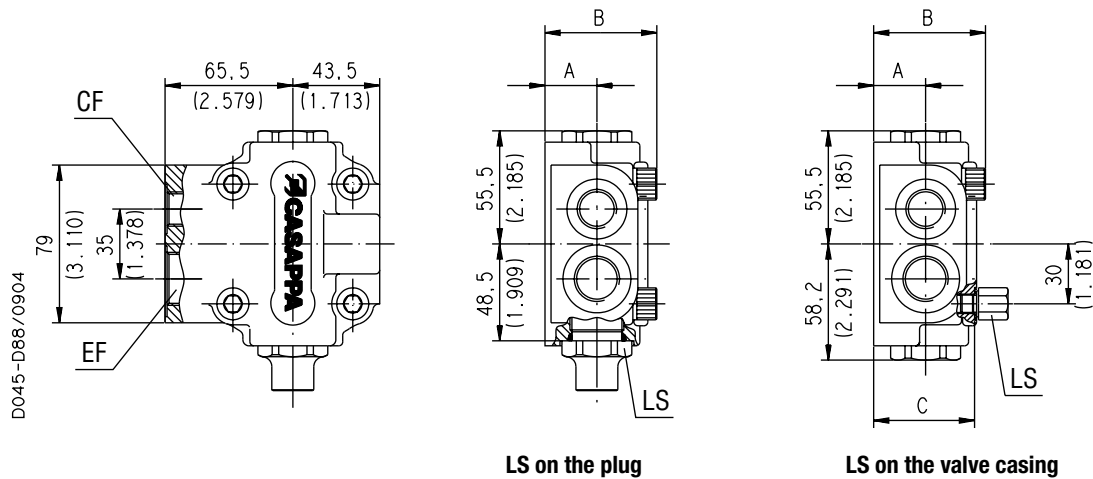
CF/EF ports see page 44
LS port see page 45 and 46

Standard flange



Dimensions	A	B	C
	mm (in)	mm (in)	mm (in)
Without valve	26 (1.0236)	55 (2.1654)	50,5 (1.9882)
With C3 valve	29 (1.1417)	58 (2.2835)	53,5 (2.1063)

Enlarged flange



Dimensions	A	B	C
	mm (in)	mm (in)	mm (in)
Without valve	26 (1.0236)	55 (2.1654)	50,5 (1.9882)
With C3 valve	29 (1.1417)	58 (2.2835)	53,5 (2.1063)

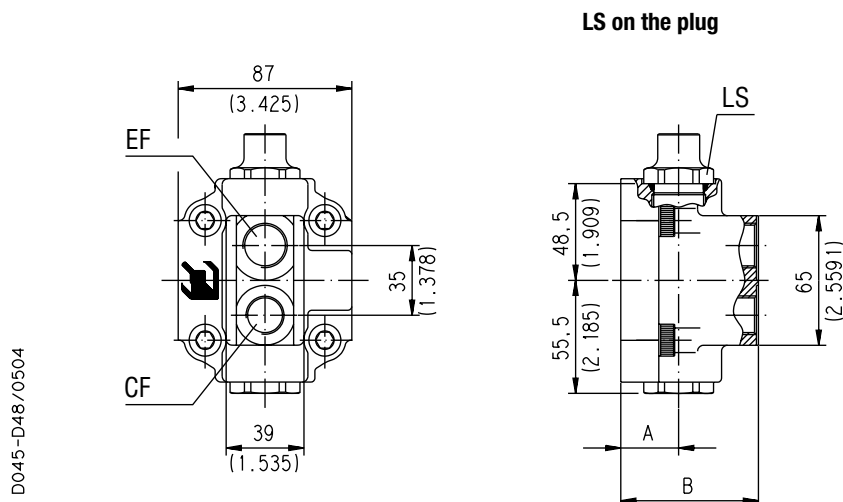
01/05.2005

CF/EF REAR PORTS - DIMENSIONS

L

CF/EF ports see page 44
LS port see page 45

Standard flange

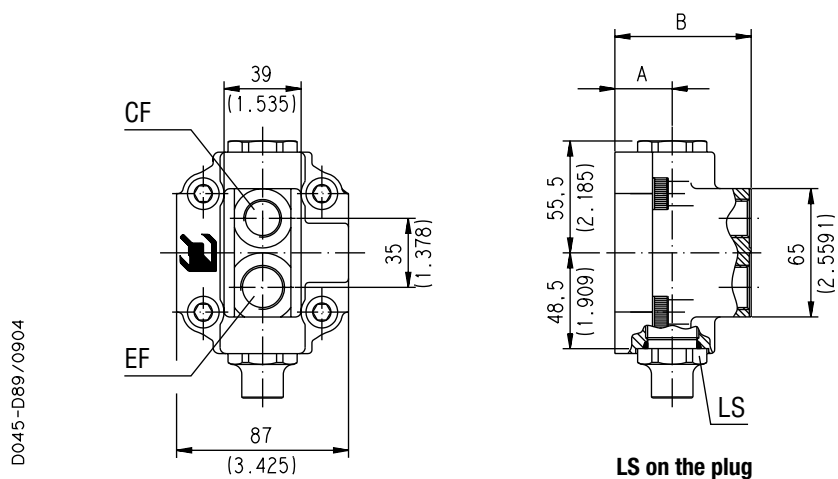


Dimensions	A	B
	mm (in)	mm (in)
Without valve	26 (1.0236)	66 (2.5984)
With C3 valve	29 (1.1417)	69 (2.7165)

CF/EF REAR PORTS - DIMENSIONS

R

Standard flange



Dimensions	A	B
	mm (in)	mm (in)
Without valve	26 (1.0236)	66 (2.5984)
With C3 valve	29 (1.1417)	69 (2.7165)

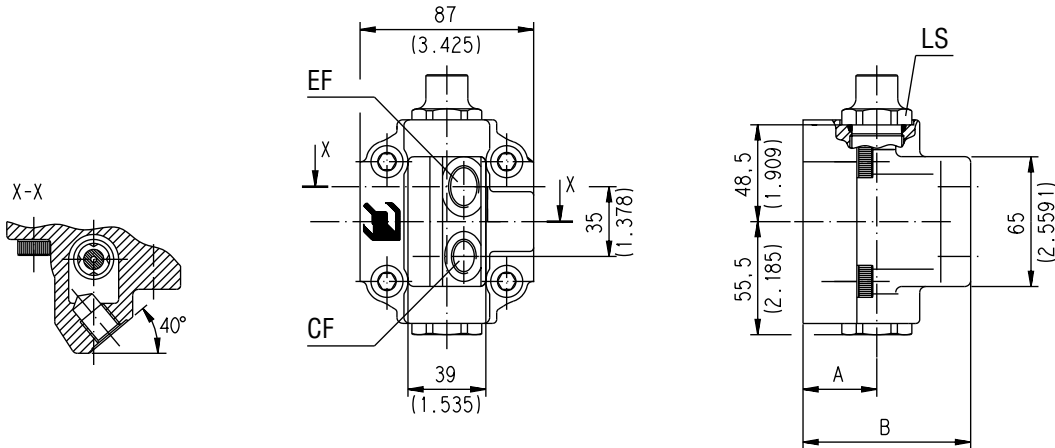
CF/EF REAR PORTS 40° BENT - DIMENSIONS

L

CF/EF ports see page 44
LS port see page 45

Standard flange

D045-D76/0904



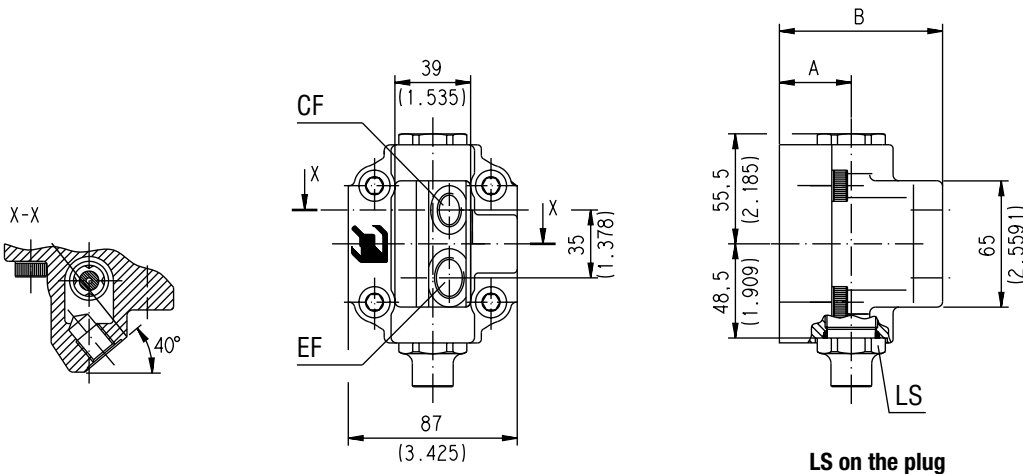
Dimensions	A	B
	mm (in)	mm (in)
Without valve	26 (1.0236)	66 (2.5984)
With C3 valve	29 (1.1417)	69 (2.7165)

CF/EF REAR PORTS 40° BENT - DIMENSIONS

R

Standard flange

D045-D90/0904



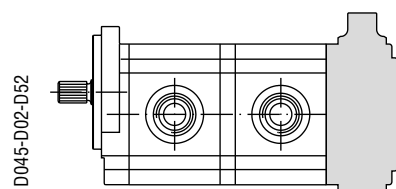
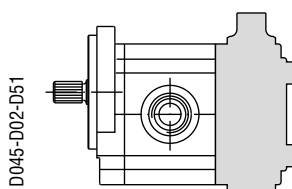
Dimensions	A	B
	mm (in)	mm (in)
Without valve	26 (1.0236)	66 (2.5984)
With C3 valve	29 (1.1417)	69 (2.7165)

01/01.2005

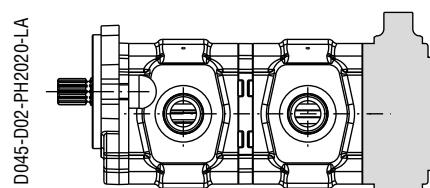
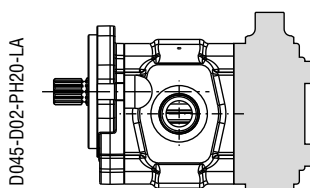
MOUNTING POSSIBILITY - CF/EF SIDE PORTS - REAR MOUNTING

Replaces: 01/01.2005

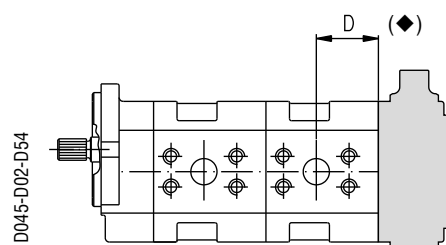
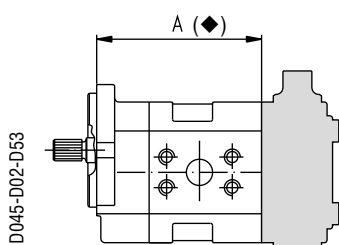
POLARIS 20
WHISPER 20



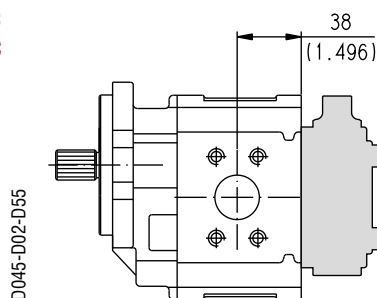
POLARIS PH 20



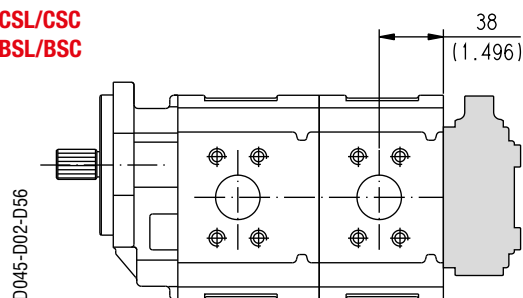
KAPPA 20



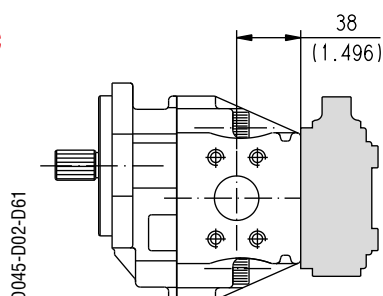
KAPPA 30 CSC
KAPPA 30 BSC



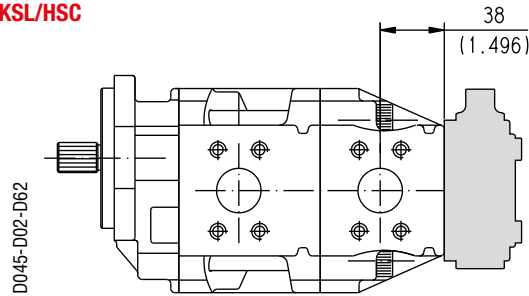
KAPPA 30 CSL/CSC
KAPPA 30 BSL/BSC



KAPPA 30 HSC



KAPPA 30 KSL/HSC



(◆): For Kappa 20 • 27,8 and Kappa 20 • 31,5 the overall dimensions are 16 mm shorter then dimensions shown on technical catalogue.

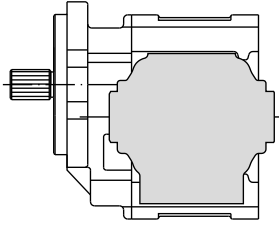
MOUNTING POSSIBILITY - CF/EF SIDE PORTS - SIDE MOUNTING

L

**KAPPA 30 CSC
KAPPA 30 BSC**

O

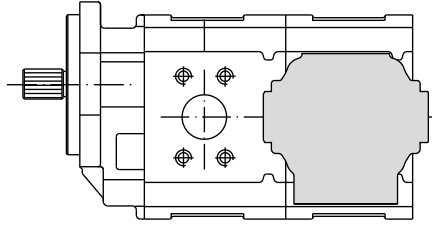
D045-D02-D63



**KAPPA 30 CSL/CSC
KAPPA 30 BSL/BSC**

O

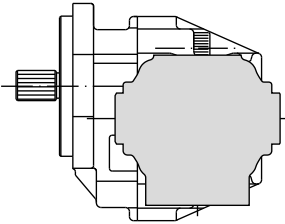
D045-D02-D64



KAPPA 30 HSC

O

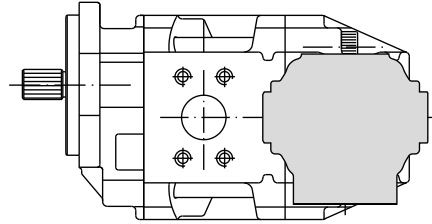
D045-D02-D65



KAPPA 30 KSL/HSC

O

D045-D02-D66



Replaces: 01/01.2005

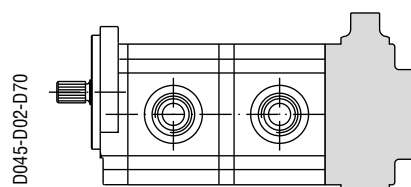
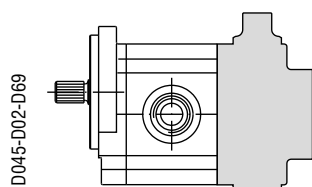
For multiple pumps the valve can be mounted on each section.

O 02/10.2021

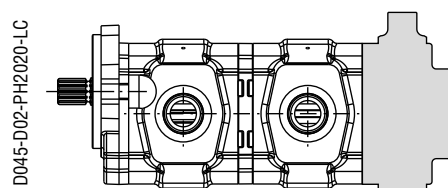
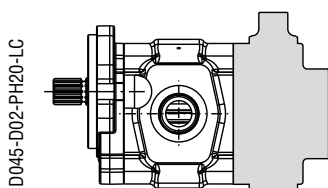
MOUNTING POSSIBILITY - CF/EF REAR PORTS - REAR MOUNTING

Replaces: 01/01.2005

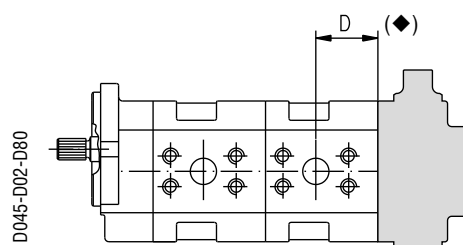
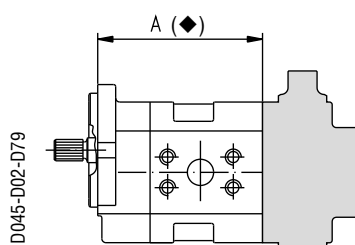
POLARIS 20
WHISPER 20



POLARIS PH 20



KAPPA 20



(◆): For Kappa 20 • 27,8 and Kappa 20 • 31,5 the overall dimensions are 16 mm shorter then dimensions shown on technical catalogue.

02/10.2021

PORTS TYPE AND DIMENSIONS

Flange	CF/EF SIDE PORT				CF/EF REAR PORTS			
	Gas BSPP		SAE ODT		Gas BSPP		SAE ODT	
	CF	EF	CF	EF	CF	EF	CF	EF
Standard	GC	GD	OB	OC	GC	GD	OB	OC
Enlarged	GC	GE	OB	OD				
	GD	GE	OC	OD				

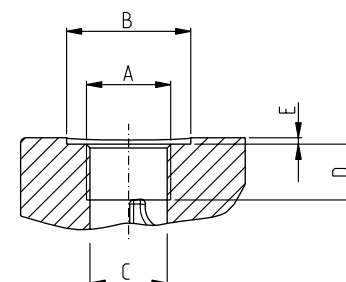
○

GAS STRAIGHT THREAD PORTS

BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228

DCAT_006_026_21064779



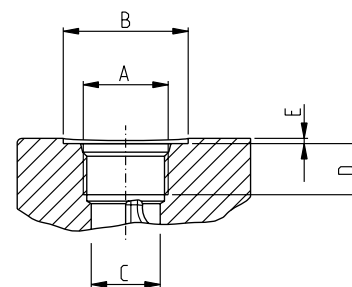
CODE	Nominal size	A	Ø B	Ø C	D	E	
			mm (in)	mm (in)	mm (in)	mm (in)	
GC	3/8"	G 3/8	25 (0.9843)	15 (0.5906)	14 (0.5512)	1 (0.0394)	25 ⁺¹ (221 ÷ 230)
GD	1/2"	G 1/2	30 (1.1811)	19 (0.7480)	17 (0.6693)	1 (0.0394)	50 ^{+2,5} (443 ÷ 465)
GE	3/4"	G 3/4	39 (1.5354)	24,5 (0.9646)	20 (0.6693)	1 (0.0394)	90 ⁺⁵ (797 ÷ 841)

SAE STRAIGHT THREAD PORTS SAE J514

ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

DCAT_006_027_21060524



CODE	Nominal size	A	Ø B	Ø C	D	E	
			mm (in)	mm (in)	mm (in)	mm (in)	
OB	1/2"	3/4" - 16 UNF - 2B	32 (1.2598)	17,5 (0.690)	15 (0.5906)	1,5 (0.0591)	45 ^{+2,5} (398 ÷ 420)
OC	5/8"	7/8" - 14 UNF - 2B	35 (1.3780)	20,5 (0.8071)	17 (0.6693)	1,5 (0.0591)	70 ⁺⁵ (620 ÷ 664)
OD	3/4"	1 1/16" - 12 UNF - 2B	35 (1.3780)	20,5 (0.8071)	17 (0.6693)	1,5 (0.0197)	120 ⁺¹⁰ (1062 ÷ 1151)

○

Replaces: 01/01.2005

○ 02/10.2021

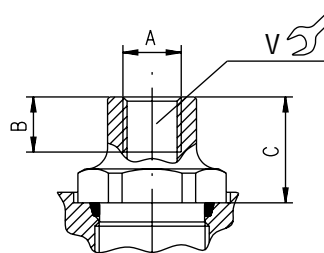
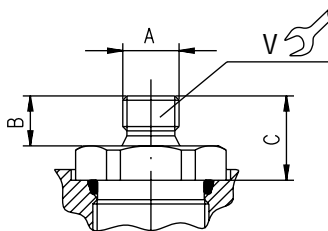
LS PORT ON THE PLUG

Replaces: 01/01.2005

Male

4

Female



GAS STRAIGHT THREAD PLUGS

BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
A	Male	1/4"	G 1/4	11,6 (0.4567)	22,3 (0.8780)	15 + ^{1,5} (133 ÷ 146)
B	Female	1/4"	G 1/4	13 (0.5118)	27,5 (1.0827)	15 + ^{1,5} (133 ÷ 146)

METRIC STRAIGHT THREAD

METRIC

O

Metric straight thread conforms to ISO 9974

CODE	Connection	A	B	C	V
			mm (in)	mm (in)	Nm (lbf in)
D	Male	M 14x1,5	8 (0.3150)	22,1 (0.8701)	25 + ^{2,5} (221 ÷ 243)

SAE STRAIGHT THREAD PLUGS SAE J514

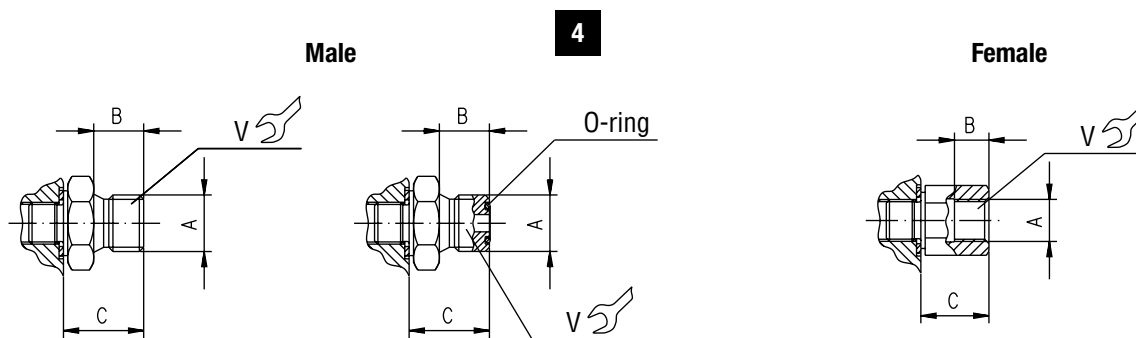
ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
E	Female	1/4"	7/16" - 20 UNF-2B	12 (0.4724)	27,5 (1.0827)	12 + ^{1,2} (106 ÷ 117)
J	Female	3/8"	9/16" - 18 UNF-2B	13 (0.5118)	27,5 (1.0827)	25 + ^{2,5} (221 ÷ 243)

02/09.2021

LS PORT ON THE VALVE CASING



GAS STRAIGHT THREAD CONNECTORS

BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
Z	Female	1/8"	G 1/8	8 (0.3150)	13 (0.5118)	5 + 0,5 (44 ÷ 49)
Y	Male	1/4"	G 1/4	11,6 (0.4567)	18,6 (0.7323)	15 + 1,5 (133 ÷ 146)
W	Female	1/4"	G 1/4	14 (0.5512)	22,5 (0.8858)	15 + 1,5 (133 ÷ 146)

SAE STRAIGHT THREAD CONNECTORS

JIC
O

American straight thread conforms to SAE J514 - ISO 8434-2

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
H	Male	5/16"	1/2" - 20 SAE 37°	14 (0.5512)	21 (0.8268)	15 + 1,5 (133 ÷ 146)
I	Male	3/8"	9/16" - 18 SAE 37°	14,5 (0.5709)	23,5 (0.9252)	15 + 1,5 (133 ÷ 146)

METRIC THREAD

METRIC
O

Metric straight thread conforms to ISO 9974

CODE	Connection	A	B	C	V
			mm (in)	mm (in)	Nm (lbf in)
F	Female	M 12x1,5	14 (0.5512)	22,5 (0.8858)	12 + 1,2 (106 ÷ 117)
L	Male	M 16x1,5	9 (0.3543)	19 (0.7480)	25 + 2,5 (221 ÷ 243)

SAE STRAIGHT THREAD CONNECTORS SAE J514

ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
X	Female	1/4"	7/16" - 20 UNF-2B	13 (0.5118)	20 (0.7874)	12 + 1,2 (106 ÷ 117)
K	Male with O-ring	3/8"	11/16" - 16 UNF-2B	11,5 (0.4528)	18,5 (0.7283)	20 + 2 (177 ÷ 195)

Replaces: 01/01.2005

02/10.2021

HOW TO ORDER

O

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15												
...	LGD	/	GC	/	GD	/	A	-	N	-	E	-	R	N	-	80	F	-	G	*	-	C3 (...)	-	CSC	-	VNR01

Replaces: 01/01.2005

1	Type	Pump type
	Polaris 20 cm ³ /rev (in ³ /rev) (a)	PLP20 • ...
	Whisper 20 cm ³ /rev (in ³ /rev) (a)	WSP20 • ...
	Polaris PH20 cm ³ /rev (in ³ /rev) (a)	PHP20 • ...
	Kappa 20 cm ³ /rev (in ³ /rev) (a)	KP20 • ...
	Kappa 30 cm ³ /rev (in ³ /rev) (a)	KP30 • ...

2	Port CF	Code
GAS STRAIGHT THREAD PORTS (BSPP)		
G 3/8		GC
G 1/2		GD
SAE STRAIGHT THREAD PORTS (ODT)		
3/4" - 16 UNF - 2B		OB
7/8" - 14 UNF - 2B		OC

3	Port EF	Code
GAS STRAIGHT THREAD PORTS (BSPP)		
G 1/2		GD
G 3/4		GE
SAE STRAIGHT THREAD PORTS (ODT)		
7/8" - 14 UNF - 2B		OC
1 1/16" - 12 UNF - 2B		OD

4	Port LS	Code
GAS STRAIGHT THREAD PORTS (BSPP)		
G 1/4 - Male - on the plug		A
G 1/4 - Female - on the plug		B
G 1/8 - Female - valve casing		Z
G 1/4 - Male - valve casing		Y
G 1/4 - Female - valve casing		W
SAE STRAIGHT THREAD CONNECTORS (JIC)		
1/2" - 20 SAE 37° - Male - valve casing		H
9/16" - 18 SAE 37° - Male - valve casing		I
METRIC THREAD (METRIC)		
M 14x1,5 - Male - on the plug		D
M 12x1,5 - Female - valve casing		F
M 16x1,5 - Male - valve casing		L
SAE STRAIGHT THREAD PORTS (ODT)		
7/16" - 20 UNF-2B - Female - on the plug		E
9/16" - 18 UNF-2B - Female - on the plug		J
7/16" - 20 UNF-2B - Female - on valve casing		X
1 1/16" - 20 UNF-2B+OR - Male - on valve casing		K

Code	Seals	5
N	Buna (standard)	
V	Viton	

Code	Front cover material (b)	6
	Cast iron (no code)	
E	Aluminium	

Code	Load sensing valve version	7
L	Version L (standard)	
R	Version R	

Code	Mounting valve - CF/EF position	8
A	Rear mount. - side ports on inlet side	
N	Rear mount. - side ports on outlet side	
L	Side mount. - side ports on drive gear	
M	Side mount. - side ports on driven gear	
R	Side mount. - side ports on the back	
C	Rear mount. - rear ports on the back	
E	Rear mount. - rear ports 40° bent on outlet	

Code	Nominal flow	9
40	40 l/min (10.6 US gpm)	
80	80 l/min (21.1 US gpm)	

Code	Orifices 2 and 3	10
*	(2) 0,8 - (3) closed - static load sensing	
E	(2) 0,8 - (3) 0,5	
F	(2) 0,8 - (3) 0,6	
G	(2) 0,8 - (3) 0,7 - (standard)	
K	(2) 1,3 - (3) closed - static load sensing	
R	(2) 1,3 - (3) 0,5	
Y	(2) 1,3 - (3) 0,6	
Z	(2) 1,3 - (3) 0,7	

Code	LS setting spring	11
D	4 bar (58 psi)	
G	7 bar (102 psi)	
L	10 bar (145 psi)	

02/10.2021

HOW TO ORDER

12	Orifice 1	Code
0,75 (standard)		*

13	Max. pressure relief valve C3	Code
Without valve (no code)		...
With valve (...) = required press. value in bar		C3 (...)
Pressure setting range: 20 ÷ 280 bar (290 ÷ 4060 psi)		

14	Body design (c)	Code
Standard		CSC
Compact		HSC
High performance		BSC

15	Painting (c)	Code
Without painting (standard) no code		...
Black painting		VNR01
Grey painting		VGR01

- (a) See the technical catalogues of each specific series.
How to order: until inlet port IN.
- (b) Only for Polaris 20, Whisper 20 and Polaris PH20.
- (c) Only for Kappa 30
Please contact us for multiple pumps ordering.

Replaces: 01/01.2005

002/10.2021

NOTES

02/10.2021

LOAD SENSING PRIORITY VALVES - GENERAL DATA

SLS

New SLS load sensing valve designed for mounting on Kappa 30 series pumps with side ports.
The extremely compact design and the possibility to choose the ports position offer greater flexibility of use.

- **Valve version**
Version L (standard)
Version R
- **Ports CF/EF**
Axial position
Side position
- **Ports LS**
On the valve casing
On the plug

SLS

CF/EF PORTS POSITION

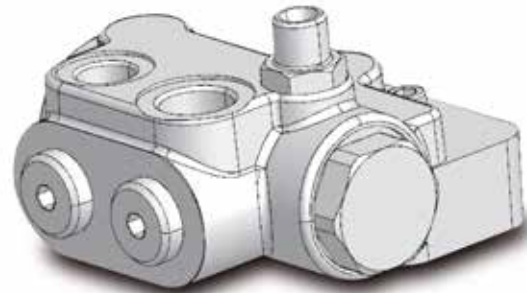
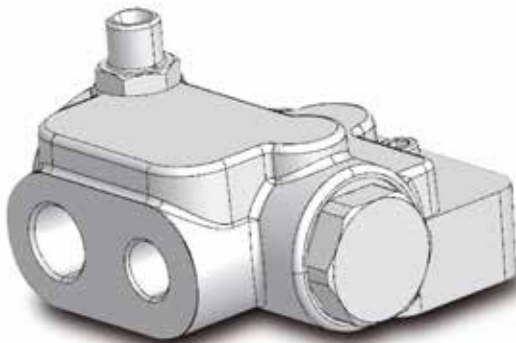
AXIAL

M

10

SIDE

L



02/10.2021

LOAD SENSING PRIORITY VALVES - GENERAL DATA

SLS

11	Nominal flow	l/min (US gpm)
	40	40 (10.6)
	80	80 (21.1)

STAND-BY PRESSURE PENDING THE TYPE OF ORIFICES AND SPRINGS

			Nominal stand-by pressure	14			12			13
12	13	14		Orifice 1	Orifice 2		Orifice 3		Spring setting	
			bar (psi)	mm (in)	mm (in)			mm (in)	bar (psi)	
*	D	*	5 (73)	0,75 (0.0295)	0,8 (0.0315)	Closed (■)			4 (58)	
E	D	*	7 (102)	0,75 (0.0295)	0,8 (0.0315)	0,5 (0.0197)			4 (58)	
F	D	*	8 (116)	0,75 (0.0295)	0,8 (0.0315)	0,6 (0.0236)			4 (58)	
G	D	*	9 (131)	0,75 (0.0295)	0,8 (0.0315)	0,7 (0.0276)			4 (58)	
K	D	*	5 (73)	0,75 (0.0295)	1,3 (0.0512)	Closed (■)			4 (58)	
R	D	*	7 (102)	0,75 (0.0295)	1,3 (0.0512)	0,5 (0.0197)			4 (58)	
Y	D	*	8 (116)	0,75 (0.0295)	1,3 (0.0512)	0,6 (0.0236)			4 (58)	
Z	D	*	9 (131)	0,75 (0.0295)	1,3 (0.0512)	0,7 (0.0276)			4 (58)	
*	G	*	9 (131)	0,75 (0.0295)	0,8 (0.0315)	Closed (■)			7 (102)	
E	G	*	13 (189)	0,75 (0.0295)	0,8 (0.0315)	0,5 (0.0197)			7 (102)	
F	G	*	15 (218)	0,75 (0.0295)	0,8 (0.0315)	0,6 (0.0236)			7 (102)	
G	G	*	17 (247)	0,75 (0.0295)	0,8 (0.0315)	0,7 (0.0276)			7 (102)	
K	G	*	9 (131)	0,75 (0.0295)	1,3 (0.0512)	Closed (■)			7 (102)	
R	G	*	13 (189)	0,75 (0.0295)	1,3 (0.0512)	0,5 (0.0197)			7 (102)	
Y	G	*	15 (218)	0,75 (0.0295)	1,3 (0.0512)	0,6 (0.0236)			7 (102)	
Z	G	*	17 (247)	0,75 (0.0295)	1,3 (0.0512)	0,7 (0.0276)			7 (102)	
*	L	*	13 (189)	0,75 (0.0295)	0,8 (0.0315)	Closed (■)			10 (145)	
E	L	*	15 (218)	0,75 (0.0295)	0,8 (0.0315)	0,5 (0.0197)			10 (145)	
F	L	*	19 (276)	0,75 (0.0295)	0,8 (0.0315)	0,6 (0.0236)			10 (145)	
G	L	*	24 (348)	0,75 (0.0295)	0,8 (0.0315)	0,7 (0.0276)			10 (145)	
K	L	*	13 (189)	0,75 (0.0295)	1,3 (0.0512)	Closed (■)			10 (145)	
R	L	*	15 (218)	0,75 (0.0295)	1,3 (0.0512)	0,5 (0.0197)			10 (145)	
Y	L	*	19 (276)	0,75 (0.0295)	1,3 (0.0512)	0,6 (0.0236)			10 (145)	
Z	L	*	24 (348)	0,75 (0.0295)	1,3 (0.0512)	0,7 (0.0276)			10 (145)	

The values shown in the table were obtained at the following conditions:

Nominal flow= 80 l/min (21.1 US gpm)
 Line CF= closed - Line EF= 0 bar (0 psi)

■ Static load sensing (orifice 3 closed)

Standard combination

The stand-by pressure is the pressure on CF when the system is at rest.

An increase in stand-by pressure increases the steering system's reactivity while, on the other hand, increases energy consumption. Orifice 2 changes the response of the valve when Q_{CF} and Q_{EF} are both under pressure, while an increase in the diameter of orifice 3 increases the stand-by pressure.

CF/EF AXIAL PORTS - PORTS ORIENTATION

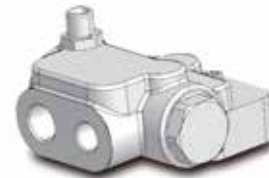
SLS

VERSION (STANDARD) **L**

9

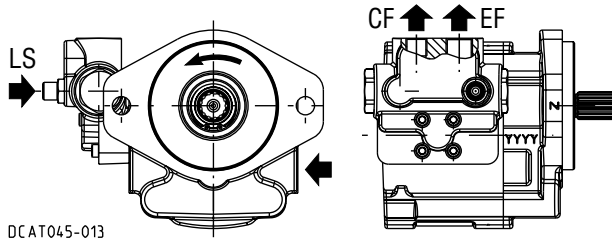
PORTS ON DRIVE GEAR **S**

5



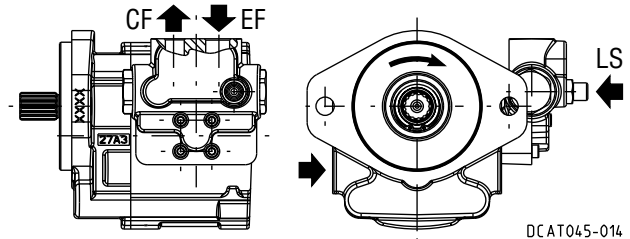
Anti-clockwise rotation

Clockwise rotation



DCAT045-013

LS port only on the valve casing



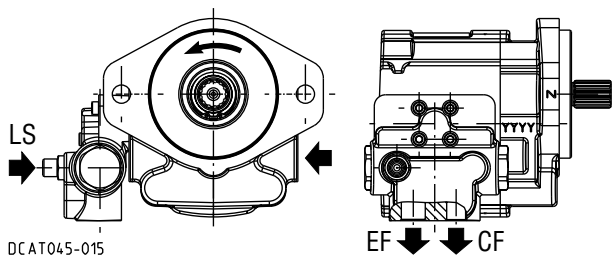
DCAT045-014

PORTS ON DRIVEN GEAR **I**

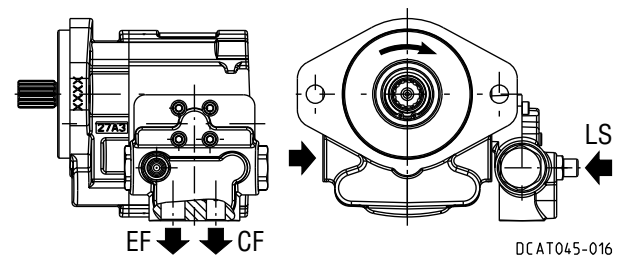
5

Anti-clockwise rotation

Clockwise rotation



DCAT045-015



DCAT045-016

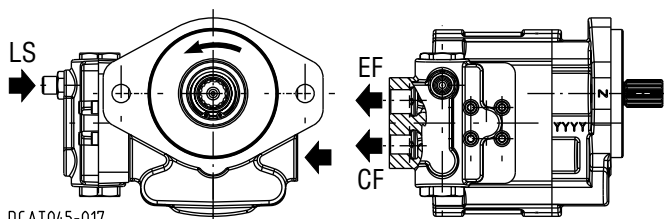
LS port only on the valve casing

PORTS ON THE BACK **P**

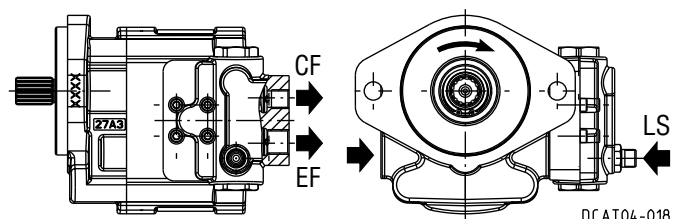
5

Anti-clockwise rotation

Clockwise rotation



DCAT045-017



DCAT045-018

Mounting possibility: pumps series Kappa 30, see page 58.
Valve dimensions: see page 56.

02/10.2021

CF/EF AXIAL PORTS - PORTS ORIENTATION

SLS

VERSION **R**

9

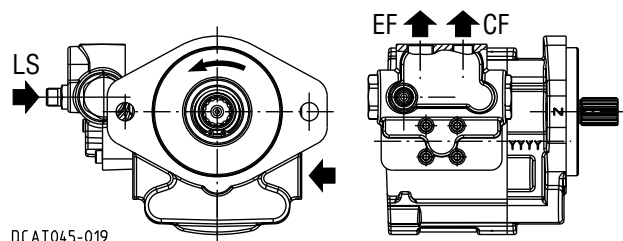
PORTS ON DRIVE GEAR **S**

5

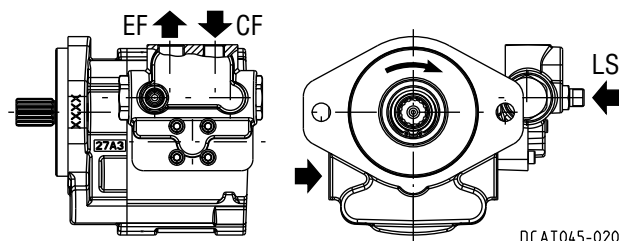


Anti-clockwise rotation

Clockwise rotation



DCAT045-019



DCAT045-020

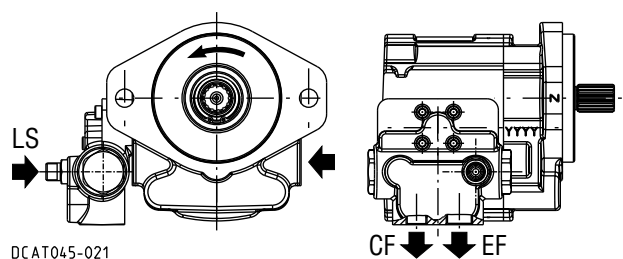
LS port only on the valve casing

PORTS ON DRIVEN GEAR **I**

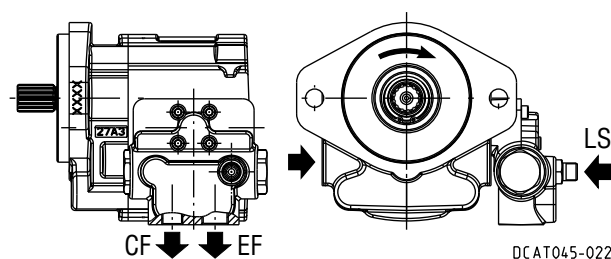
5

Anti-clockwise rotation

Clockwise rotation



DCAT045-021



DCAT045-022

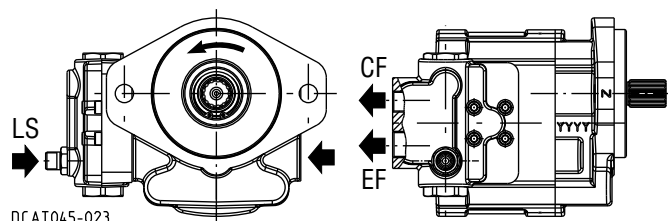
LS port only on the valve casing

PORTS ON THE BACK **P**

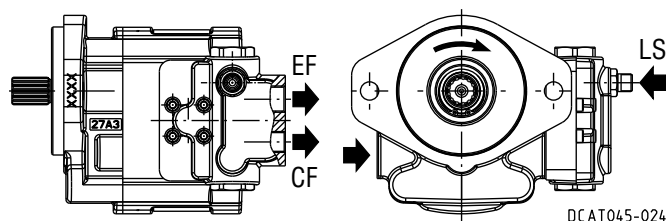
5

Anti-clockwise rotation

Clockwise rotation



DCAT045-023



DCAT045-024

Mounting possibility: pumps series Kappa 30, see page 58.
Valve dimensions: see page 56.

SLS

CF/EF SIDE PORTS - PORTS ORIENTATION

VERSION (STANDARD)

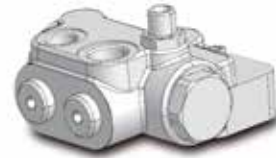
L

9

PORTS ON DRIVE GEAR

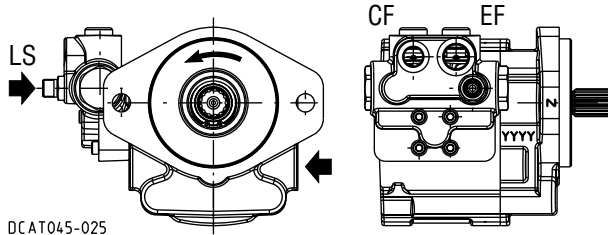
S

5

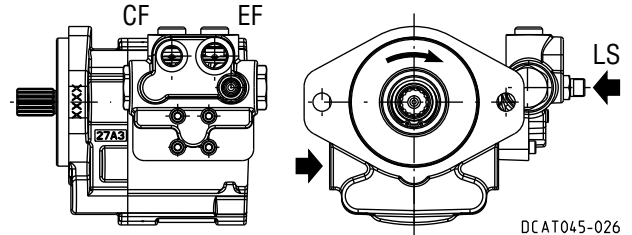


Anti-clockwise rotation

Clockwise rotation



LS port only on the valve casing



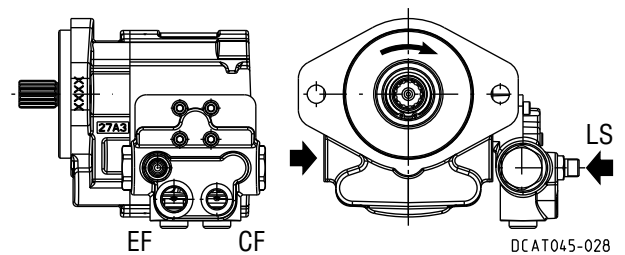
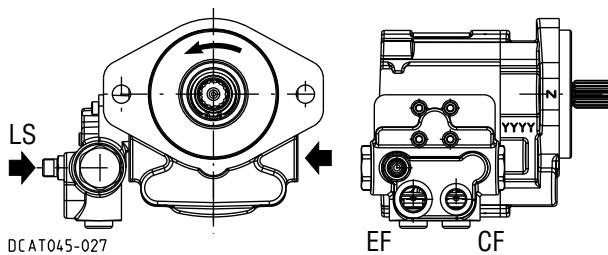
PORTS ON DRIVEN GEAR

I

5

Anti-clockwise rotation

Clockwise rotation



LS port only on the valve casing

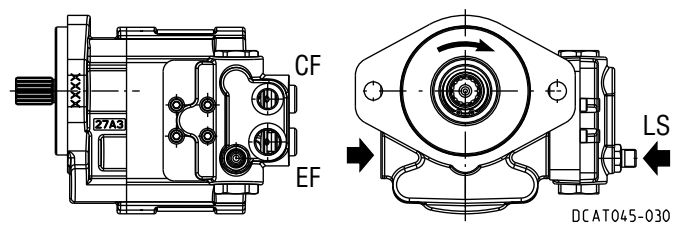
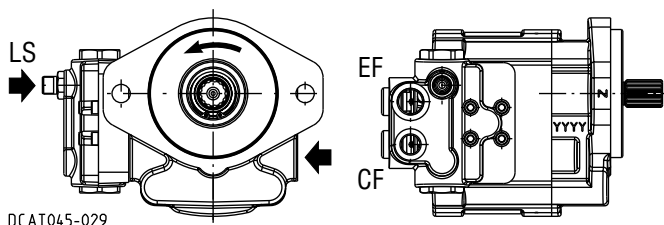
PORTS ON THE BACK

P

5

Anti-clockwise rotation

Clockwise rotation



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Mounting possibility: pumps series Kappa 30, see page 58.
Valve dimensions: see page 57.

SLS

CF/EF SIDE PORTS - ORIENTATION

VERSION **R**

9

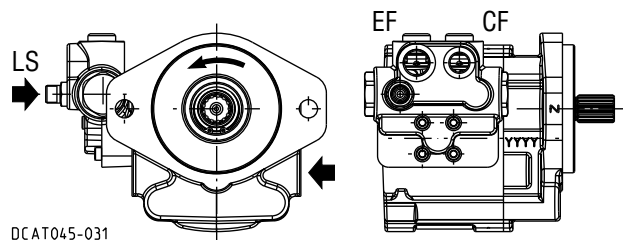
PORTS ON DRIVE GEAR **S**

5

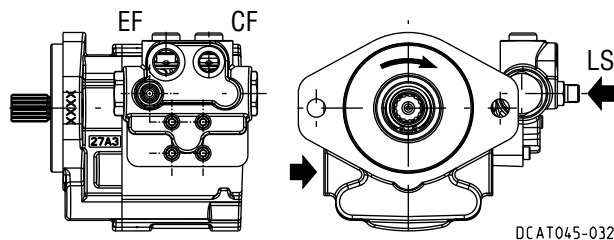


Anti-clockwise rotation

Clockwise rotation



DCAT045-031



DCAT045-032

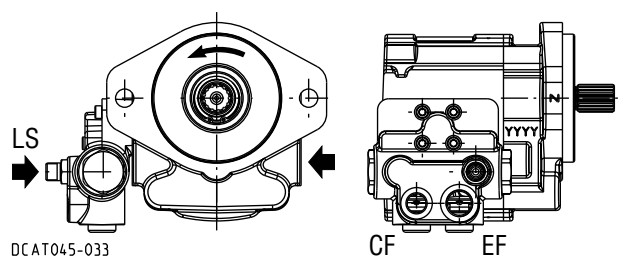
LS port only on the valve casing

PORTS ON DRIVEN GEAR **I**

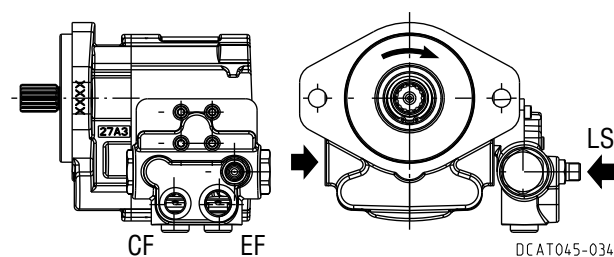
5

Anti-clockwise rotation

Clockwise rotation



DCAT045-033



DCAT045-034

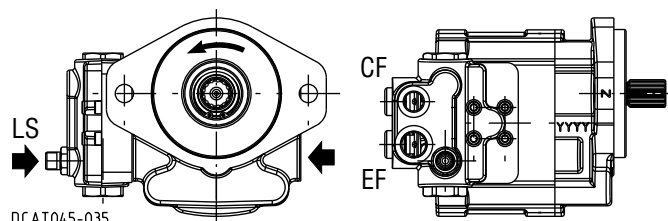
LS port only on the valve casing

PORTS ON THE BACK **P**

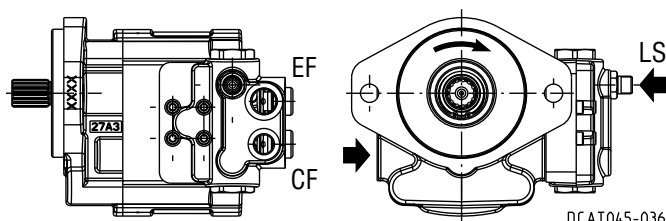
5

Anti-clockwise rotation

Clockwise rotation



DCAT045-035



DCAT045-036

Mounting possibility: pumps series Kappa 30, see page 58.
Valve dimensions: see page 57.

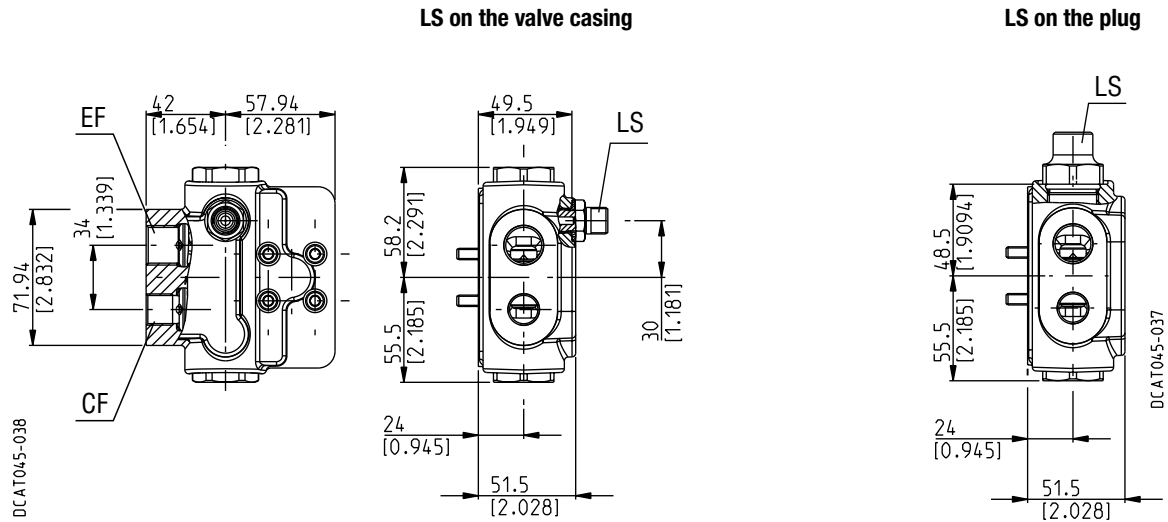
CF/EF AXIAL PORTS - DIMENSIONS

SLS

CF/EF ports: see page 59
LS port: see page 60 and 61

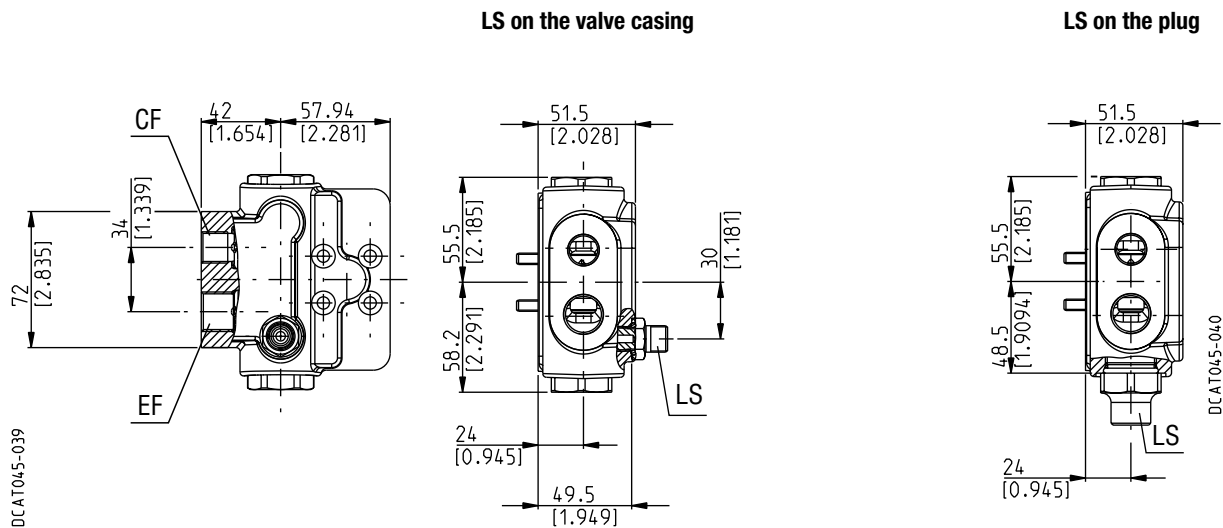
VERSION (STANDARD)

L



VERSION

R



02/10.2021

CF/EF SIDE PORTS - DIMENSIONS

SLS

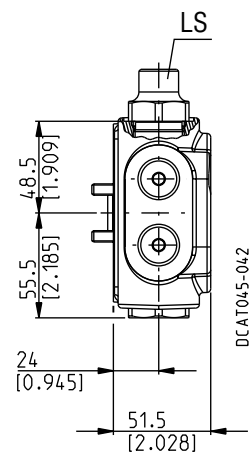
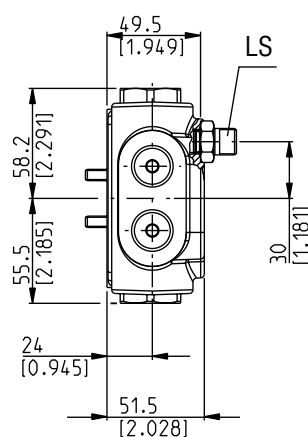
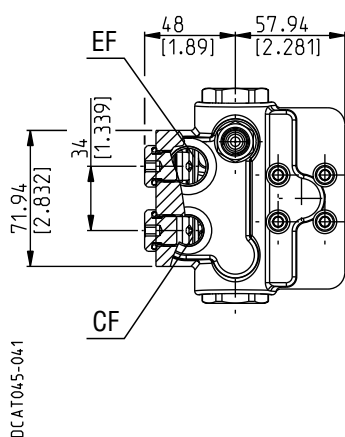
CF/EF ports: see page 59
LS port: see page 60 and 61

VERSION (STANDARD)

L

LS on the valve casing

LS on the plug

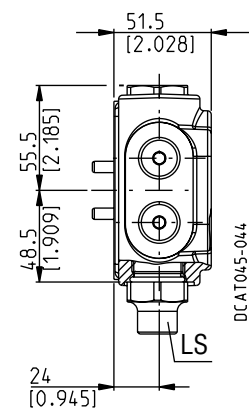
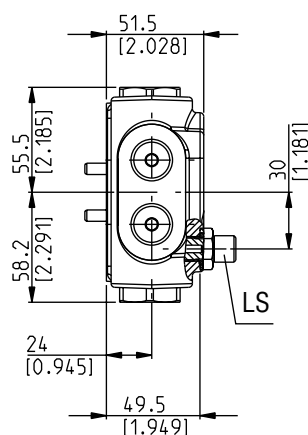
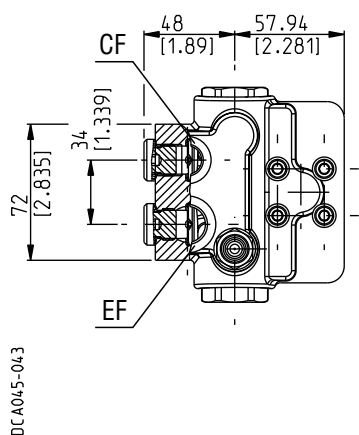


VERSION

R

LS on the valve casing

LS on the plug

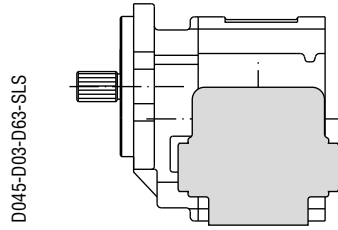


02/10.2021

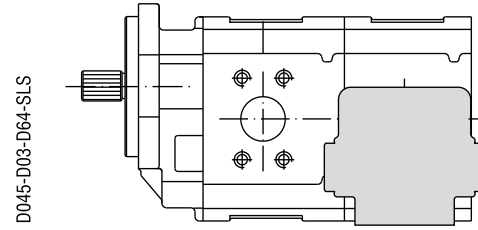
MOUNTING POSSIBILITY - SIDE MOUNTING

SLS

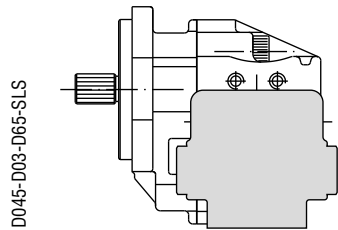
KAPPA 30 CSC
KAPPA 30 BSC



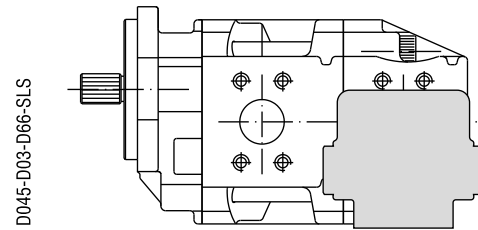
KAPPA 30 CSL/CSC
KAPPA 30 BSL/BSC



KAPPA 30 HSC



KAPPA 30 KSL/HSC



For multiple pumps the valve can be mounted on each section.

CF/EF PORTS TYPE AND DIMENSIONS

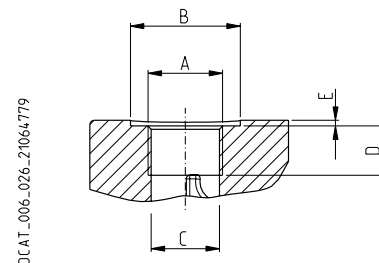
SLS

Ports position	PORTS TYPE					
	Gas BSPP		SAE ODT		Metric	
	CF	EF	CF	EF	CF	EF
Axial	GC	GD	OB	OC	RD	RE
Side	GC	GD	—	—	RD	RE

GAS STRAIGHT THREAD PORTS

BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228



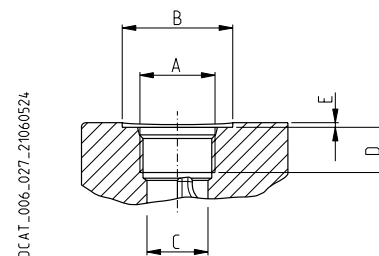
DCAT_006.026_21064779

CODE	Nominal size	A	Ø B	Ø C	D	E	
			mm (in)	mm (in)	mm (in)	mm (in)	
GC	3/8"	G 3/8	25 (0.9843)	15 (0.5906)	14 (0.5512)	1 (0.0394)	25 ⁺¹ (221 ÷ 230)
GD	1/2"	G 1/2	30 (1.1811)	19 (0.7480)	17 (0.6693)	1 (0.0394)	50 ^{+2,5} (443 ÷ 465)

SAE STRAIGHT THREAD PORTS SAE J514

ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1



DCAT_006.027_21060524

CODE	Nominal size	A	Ø B	Ø C	D	E	
			mm (in)	mm (in)	mm (in)	mm (in)	
OB	1/2"	3/4" - 16 UNF - 2B	32 (1.2598)	17,5 (0.690)	15 (0.5906)	1,5 (0.0591)	45 ^{+2,5} (398 ÷ 420)
OC	5/8"	7/8" - 14 UNF - 2B	35 (1.3780)	20,5 (0.8071)	17 (0.6693)	1,5 (0.0591)	70 ⁺⁵ (620 ÷ 664)

INTERNATIONAL STRAIGHT THREAD PORTS ISO 6149

METRIC

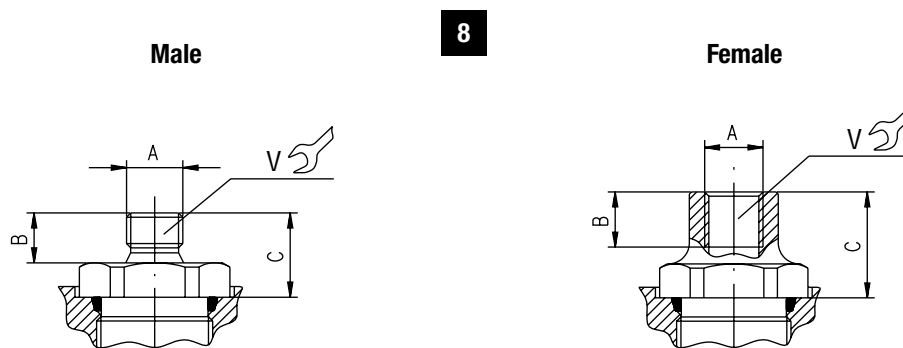
Metric thread ISO 60° conforms to ISO/R 262

CODE	Nominal size	A	Ø B	Ø C	D	E	
			mm (in)	mm (in)	mm (in)	mm (in)	
RD	1/2"	M16x1,5	26 (1.0236)	14,5 (0.5709)	13 (0.5118)	0,5 (0.0197)	25 ⁺¹ (221 ÷ 230)
RE	1/2"	M18x1,5	29 (1.1417)	16,5 (0.6496)	13 (0.5118)	0,5 (0.0197)	35 ^{+2,5} (310 ÷ 332)

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LS PORT ON THE PLUG

SLS



GAS STRAIGHT THREAD PLUGS

BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
A	Male	1/4"	G 1/4	11,6 (0.4567)	22,3 (0.8780)	15 ^{+1,5} (133 ÷ 146)
B	Female	1/4"	G 1/4	13 (0.5118)	27,5 (1.0827)	15 ^{+1,5} (133 ÷ 146)

METRIC STRAIGHT THREAD

METRIC

Metric straight thread conforms to ISO 9974

CODE	Connection	A	B	C	V
			mm (in)	mm (in)	Nm (lbf in)
D	Male	M 14x1,5	8 (0.3150)	22,1 (0.8701)	25 ^{+2,5} (221 ÷ 243)

SAE STRAIGHT THREAD PLUGS SAE J514

ODT

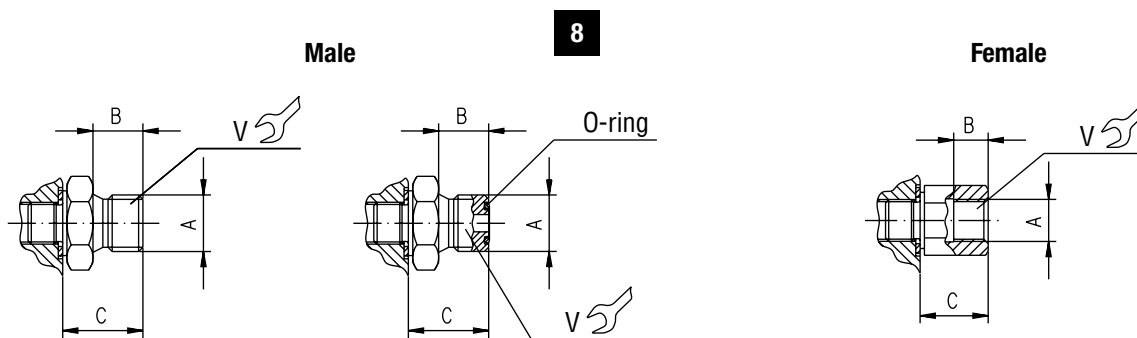
American straight thread UNC-UNF 60° conforms to ANSI B 1.1

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
E	Female	1/4"	7/16" - 20 UNF-2B	12 (0.4724)	27,5 (1.0827)	12 ^{+1,2} (106 ÷ 117)
J	Female	3/8"	9/16" - 18 UNF-2B	13 (0.5118)	27,5 (1.0827)	25 ^{+2,5} (221 ÷ 243)

02/109.2021

LS PORT ON THE VALVE CASING

SLS



GAS STRAIGHT THREAD CONNECTORS

BSPP

British standard pipe parallel (55°) conforms to UNI - ISO 228

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
Z	Female	1/8"	G 1/8	8 (0.3150)	13 (0.5118)	5 ^{+0.5} (44 ÷ 49)
Y	Male	1/4"	G 1/4	11,6 (0.4567)	18,6 (0.7323)	15 ^{+1.5} (133 ÷ 146)
W	Female	1/4"	G 1/4	14 (0.5512)	22,5 (0.8858)	15 ^{+1.5} (133 ÷ 146)

SAE STRAIGHT THREAD CONNECTORS

JIC

American straight thread conforms to SAE J514 - ISO 8434-2

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
H	Male	5/16"	1/2" - 20 SAE 37°	14 (0.5512)	21 (0.8268)	15 ^{+1.5} (133 ÷ 146)
I	Male	3/8"	9/16" - 18 SAE 37°	14,5 (0.5709)	23,5 (0.9252)	15 ^{+1.5} (133 ÷ 146)

METRIC THREAD

METRIC

Metric straight thread conforms to ISO 9974

CODE	Connection	A	B	C	V
			mm (in)	mm (in)	Nm (lbf in)
F	Female	M 12x1,5	14 (0.5512)	22,5 (0.8858)	12 ^{+1.2} (106 ÷ 117)
L	Male	M 16x1,5	9 (0.3543)	19 (0.7480)	25 ^{+2.5} (221 ÷ 243)

SAE STRAIGHT THREAD CONNECTORS SAE J514

ODT

American straight thread UNC-UNF 60° conforms to ANSI B 1.1

CODE	Connection	Nominal size	A	B	C	V
				mm (in)	mm (in)	Nm (lbf in)
X	Female	1/4"	7/16" - 20 UNF-2B	13 (0.5118)	20 (0.7874)	12 ^{+1.2} (106 ÷ 117)
K	Male with O-ring	3/8"	11/16" - 16 UNF-2B	11,5 (0.4528)	18,5 (0.7283)	20 ⁺² (177 ÷ 195)

02/10.2021

HOW TO ORDER

SLS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
...	LGD	-	N	-	CSC	-	VNR01	-	SLS	-	I	-	GC / GD / Z - L M - 80 * - G *

1	Type (a)	Pump type
	Kappa 30 cm ³ /rev (in ³ /rev)	KP30 • ...

2	Seals (b)	Code
	Buna NBR (standard)	N
	Viton-FKM	V
	Hydrogenated buna HNBR seals with Viton-FKM shaft seals	T-PV
	Buna NBR and bronze thrust plates	N Bz
	Viton-FKM and bronze thrust plate	V Bz

3	Body design (b)	Code
	Standard	CSC
	Compact	HSC
	High performance (c)	BSC

4	Painting (b)	Code
	Without painting (standard) no code	...
	Black painting	VNR01
	Grey painting	VGR01

5	Mounting valve - CF/EF orientation	Code
	Side mounting - CF/EF ports on drive gear	S
	Side mounting - CF/EF ports on driven gear	I
	Side mounting - CF/EF ports on the back	P

6	Port CF	Code
	GAS STRAIGHT THREAD PORTS (BSPP)	
	G 3/8	GC
	SAE STRAIGHT THREAD PORTS (ODT)	
	3/4" - 16 UNF - 2B	OB
	INTERNATIONAL STRAIGHT THREAD PORTS (METRIC)	
	M16x1,5	RD

7	Port EF	Code
	GAS STRAIGHT THREAD PORTS (BSPP)	
	G 1/2	GD
	SAE STRAIGHT THREAD PORTS (ODT)	
	G 3/4	GE
	INTERNATIONAL STRAIGHT THREAD PORTS (METRIC)	
	M18x1,5	RE

Code	Port LS	8
	GAS STRAIGHT THREAD PORTS (BSPP)	

A	G 1/4 - Male - on the plug
B	G 1/4 - Female - on the plug
Z	G 1/8 - Female - valve casing
Y	G 1/4 - Male - valve casing
W	G 1/4 - Female - valve casing

	SAE STRAIGHT THREAD CONNECTORS (JIC)
--	---

H	1/2" - 20 SAE 37° - Male - valve casing
I	9/16" - 18 SAE 37° - Male - valve casing

	METRIC THREAD (METRIC)
--	-------------------------------

D	M 14x1,5 - Male - on the plug
F	M 12x1,5 - Female - valve casing
L	M 16x1,5 - Male - valve casing

	SAE STRAIGHT THREAD PORTS (ODT)
--	--

E	7/16" - 20 UNF-2B - Female - on the plug
J	9/16" - 18 UNF-2B - Female - on the plug
X	7/16" - 20 UNF-2B - Female - on valve casing
K	1 1/16" - 20 UNF-2B+OR - Male - on valve casing

Code	Load sensing valve version	9
L	Version L (standard)	
R	Version R	

Code	CF/EF ports position	10
M	Axial	
L	Side	

Code	Nominal flow	11
40	40 l/min (10.6 US gpm)	
80	80 l/min (21.1 US gpm)	

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HOW TO ORDER

SLS

12	Orifices 2 and 3	Code
(2) 0,8 - (3) closed - static load sensing		*
(2) 0,8 - (3) 0,5		E
(2) 0,8 - (3) 0,6		F
(2) 0,8 - (3) 0,7 - (standard)		G
(2) 1,3 - (3) closed - static load sensing		K
(2) 1,3 - (3) 0,5		R
(2) 1,3 - (3) 0,6		Y
(2) 1,3 - (3) 0,7		Z

13	LS setting spring	Code
4 bar (58 psi)		D
7 bar (102 psi)		G
10 bar (145 psi)		L

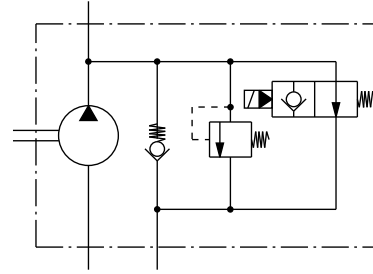
14	Orifice 1	Code
0,75 (standard)		*

- (a) See Kappa 30 technical catalogue.
How to order: until inlet port IN.
- (b) See Kappa 30 technical catalogue for more information.
Please contact us for multiple pumps ordering.

UNLOADING VALVES

UNL...

2 way normally open, solenoid operated directional control valves are housed directly in the rear cover of Polaris 20 and Polaris PH20 unidirectional gear pumps.



Unloading valve	Max. flow l/min (US gpm)	Max. pressure bar (psi)	1 Voltage	2 Mounting positions (a)	3 Connectors (b)
UNL - 1 - 2 - 3	45 (11.89)	350 (5075)	6 12 V DC 7 24 V DC	B	M - D - S - JT/R

(a): Mounting positions see below.

Version C with y axis valve oriented available on request. Please contact us for more information.

(b): Connectors see page 65.

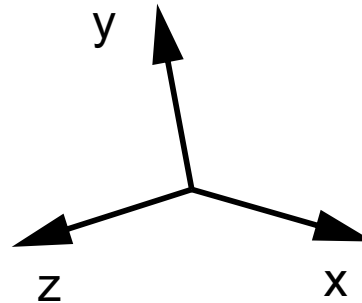
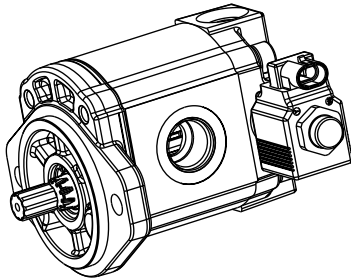
Order example:

UNL-6-B-M

MOUNTING POSITION

B

x axis oriented

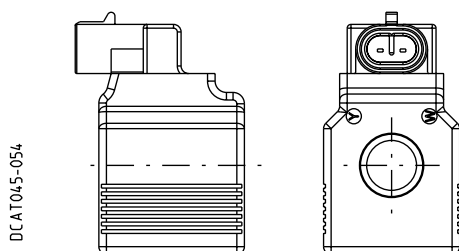


CONNECTORS

CONNECTOR: Metri Pack 150

M

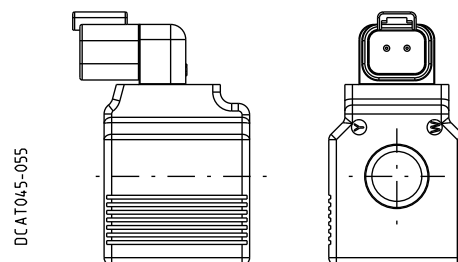
Protection: IP69K with mating connector mounted



CONNECTOR: Deutsch DT04-2P

D

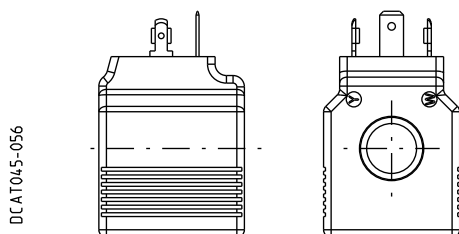
Protection: IP69K with mating connector mounted



CONNECTOR: DIN 43650

S

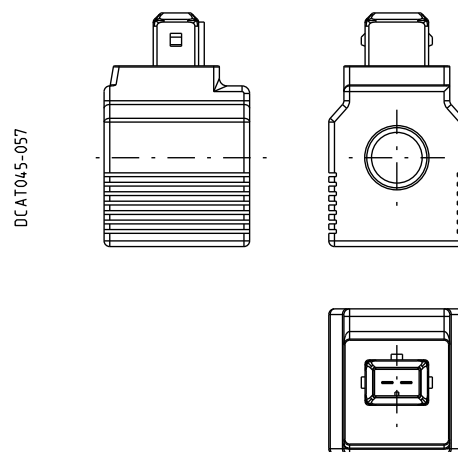
Protection: IP65 with mating connector mounted



CONNECTOR: Junior Timer

JT/R

Protection: IP67 with mating connector mounted



Technical data

Connectors	Metri Pack 150, Deutsch DT04-2P, DIN 43650, Junior Timer	
Voltage	12 V DC	24 V DC
Dither frequency	200 Hz	200 Hz
Resistance at 20 °C (68 °F)	7,5 ± 7% Ω	30 ± 7% Ω

02/10.2021

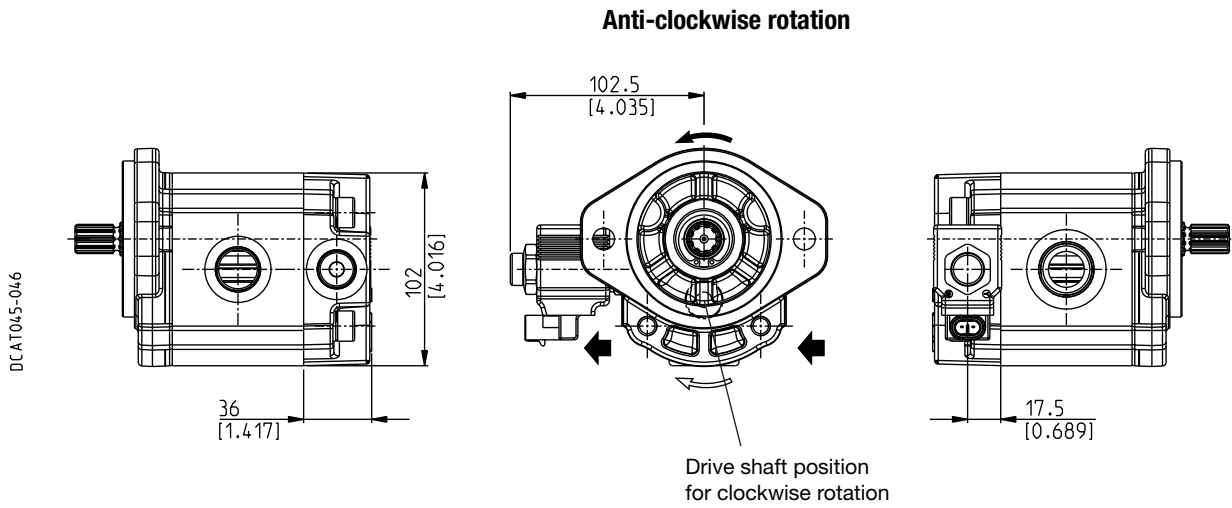
UNLOADING VALVES - DIMENSIONS

UNL...

Mounting possibility:
Polaris 20, Polaris PH20

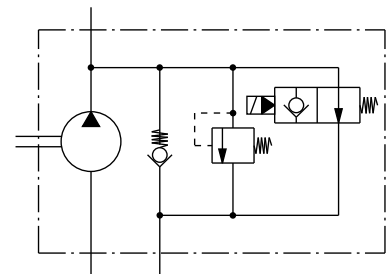
Unidirectional pumps

S - D



Order example

PLP20-4S0-03 S1-L OC/OC-N-EL - UNL-6-B-M



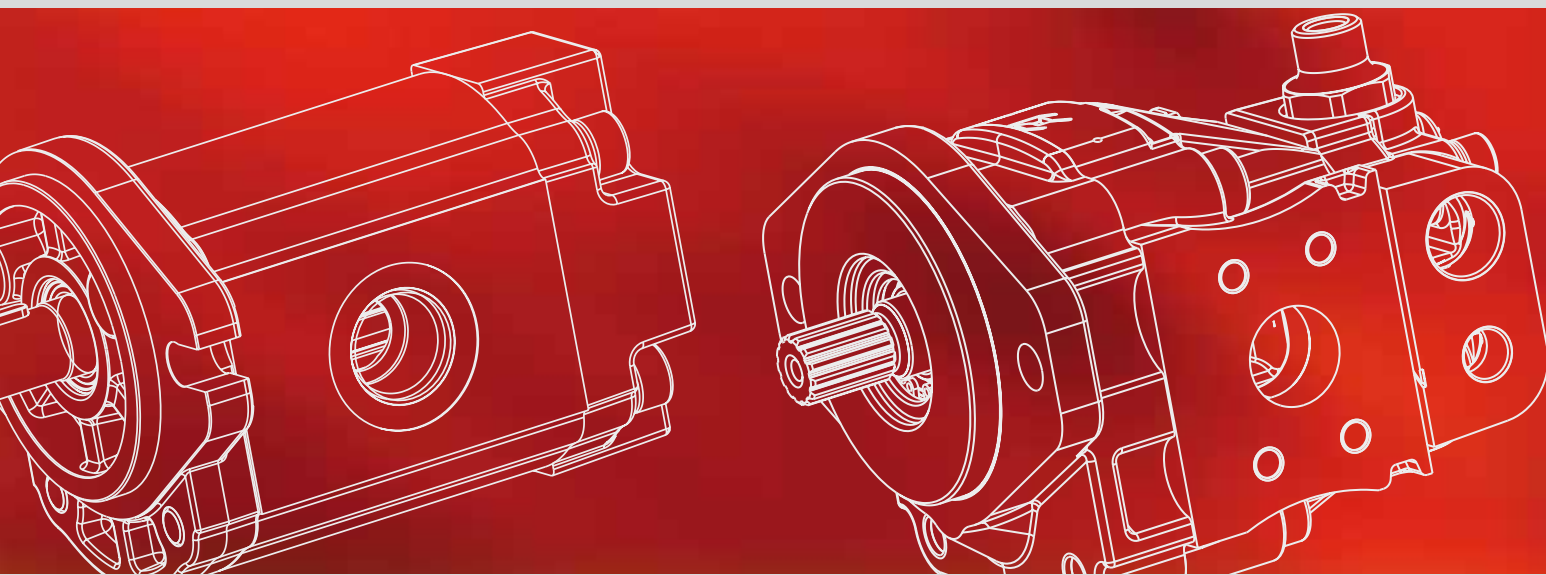
02/10.2021

Our policy is one of continuous improvement in product. Specification of items may, therefore, be changed without notice.

V 02 T A

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Headquarters:

CASAPPA S.p.A.

Via Balestrieri, 1

43044 Lemignano di Collecchio

Parma (Italy)

Tel. (+39) 0521 30 41 11

Fax (+39) 0521 80 46 00

E-mail: info@casappa.com

www.casappa.com

