KRACHT®
FLUID TECHNOLOGY AND SYSTEMS

DV
PRESSURE VALVES

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KRACHT®

FLUID TECHNOLOGY AND SYSTEMS

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General

Description

The DV pressure valves are hydraulically pilot-controlled valves. They comprise a main valve and one or several pilot-controlled valves. The modular design permits using different pilot control valves which means a multitude of functions can be implemented. Along with pressure limiting and pressure control functions, this also includes special solutions such as pressure range switching valves and valves with electric relief. Typical application areas are oil hydraulics and lubrication technology.

Product characteristics

- Pilot-controlled pressure valves for large volume flows of up to 1800 l/min
- Wide functionality through modular construction
- Supplied standard with outlet port measurement connector
- External control-oil regulation (e. g. for hydraulic relief)
- Redundant pressure protection with maximum pressure limitation (optional)
- Dimensionally interchangeable with KRACHT type SPV and HV valves
- Marine acceptance by various classification companies on request

Pressure relief valve DV B

Pressure control valve DV R

Pressure stage control valve DV S

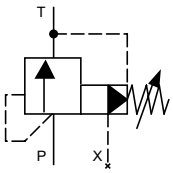
Pressure relief valve DV B

Function

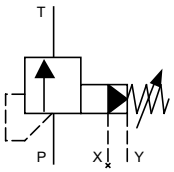
When the valve is closed, both the main valve cone and the pilot valve cone are held in closed position by the force of the return spring. As soon as the pressure exceeds the pressure set on the adjusting screw of the pilot valve, the pilot valve opens and the spring chamber of the main valve is relieved to the tank. There is now a pressure gradient between the pressure connection and the spring wheel, so that the main valve cone opens and keeps the system pressure constant. The control oil can be discharged either internally or externally, and all versions have a measuring connection and a connection for external control oil regulation as standard.

Circuit symbols

In addition, the valve is furnished with a permanently set maximum pressure relief
(set-to-operate pressure = 12 bar).



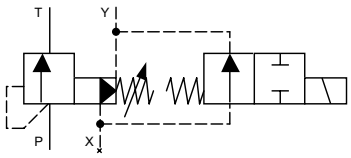
Control oil: internal drainage



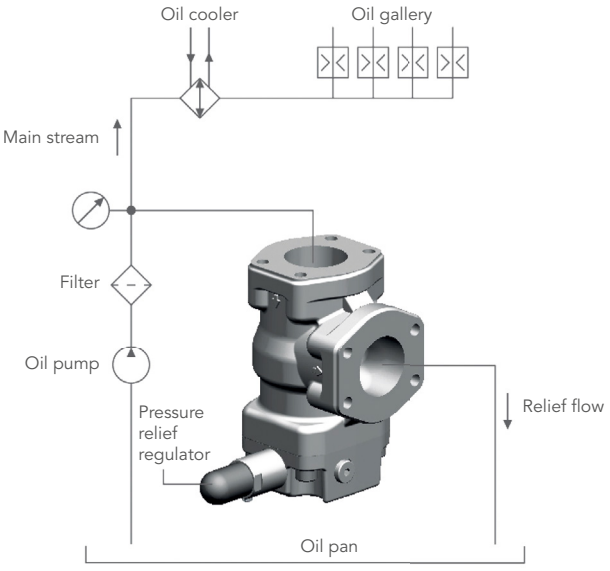
Control oil: external drainage (Y)

Circuit symbol with optional directional control valve

The DV B pressure relief valve is also available on request with an additional 2/2-directional valve (e.g. for depressurized circulation). The directional valve here is available as an open de-energised or closed de-energised version. The combination with a maximum pressure
relief is not possible here.



Application example



Pressure control valve DV R

Function

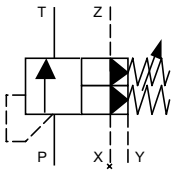
The pressure control valve is a pilot-controlled pressure relief valve with external hydraulic triggering. It facilitates controlling a system pressure independent of the pressure losses between the valve and the point of the external control-oil tap. To accomplish that the pressure preset on the adjusting spindle on the connection Z* is kept constant.
In addition, the valve is furnished with a permanently set maximum pressure relief (set-to-operate pressure = 9 bar).
A typical application field is the pressure control of lubrication oil circuits in diesel engines.

Notes

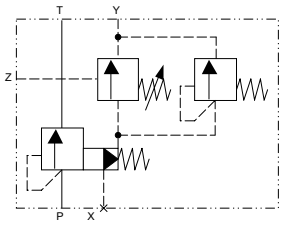
Hydraulic counter-pressures in connection T* with internal control-oil return or in connection Y* with external control-oil return add up 1:1 to the response pressure of the valve set on the pilot control.

* see technical drawing

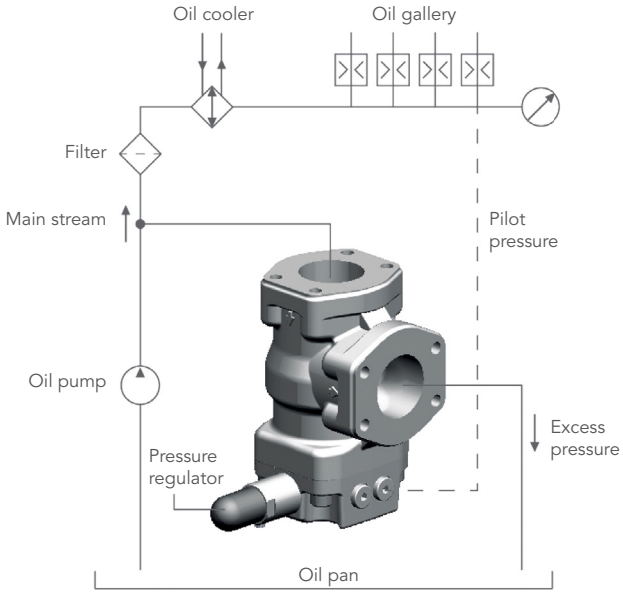
Circuit symbol (simplified)



Circuit symbol (comprehensive)



Application example



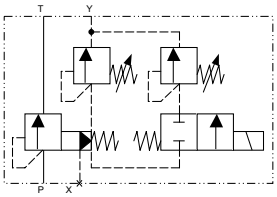
Pressure stage control valve DV S

Function

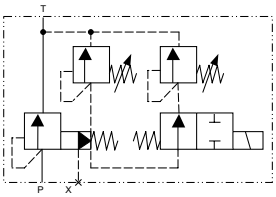
The pressure stage control valve is a pilot-controlled pressure relief valve with two parallel switched pilotcontrol valves which can be set to different pressures. The basic setup corresponds to the DV B pressure relief valve. The pressure stage control valve has an integrated 2/2 directional valve in addition.

It is used to switch the low pressure stage (upstream pressure) on and off. The magnetic valve here is available as an open de-energised or closed de-energised design. The control oil drainage here can also be implemented internally or externally. A typical application field is the coupling control of ship transmissions.

Circuit symbols pressure stage 035

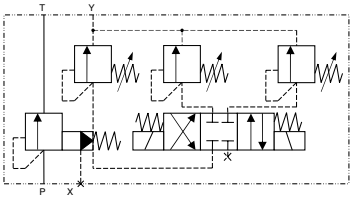


Control oil:
External drainage (Y), magnetic valve closed de-energised



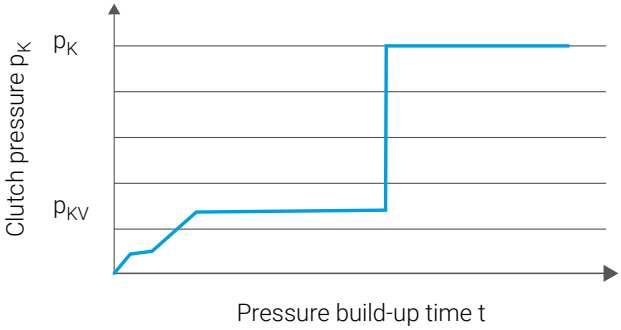
Control oil:
Internal drainage, magnetic valve open de-energised

Circuit symbol pressure stage 030

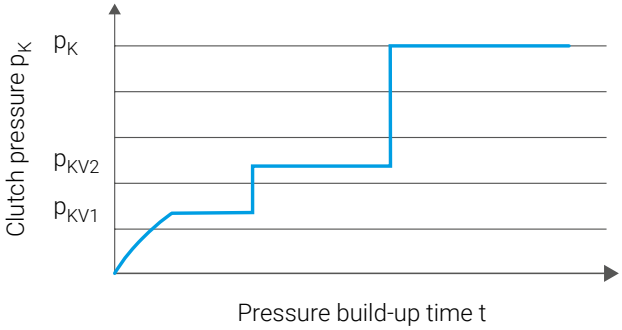


Control oil: External drainage (Y)

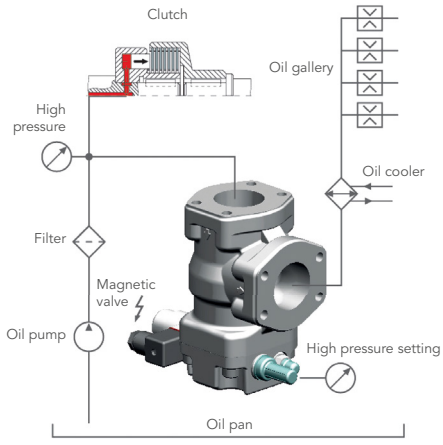
Pressure build-up curve pressure stage 035

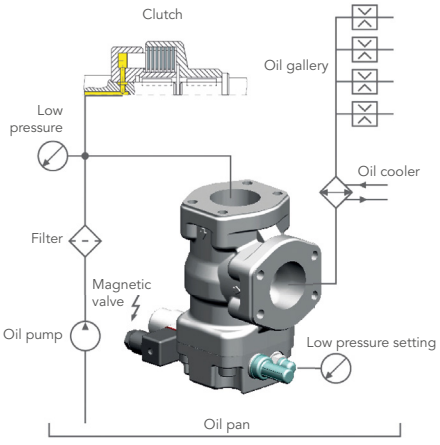


Pressure build-up curve pressure stage 030



Application examples





Technical data

General characteristics

Nominal size	50 · 80
Type of construction	Seat valve, hydraulically pilot operated
Mounting type	Pipe installation
Hydraulic connection	SAE-Flange (SAE J518, Code 61)
Mounting position	Any
Actuation type	Mechanical, adjusting screw
Housing material	EN-GJS-400-15
Sealing material	FKM
Oil cleanliness	NAS 1638 Class 9 ISO 4406:1999 Code 20/18/15
Pressurised fluids	– Hydraulic fluids according to DIN 51524/25 – Marine fuels according to DIN ISO 8217 – Engine and gear oils – Bio-oils of the „HEES“ group (others on request)

Hydraulic characteristics

Nominal size	**50**	**80**
Maximum flow rate	800 l/min	1800 l/min
Nominal pressure	210 bar	140 bar
Media temperature	-20 … 150 °C	-20 … 150 °C
Ambient temperature	-20 … 60 °C	-20 … 60 °C
Viscosity	4 … 1000 mm^2/s	4 … 1000 mm^2/s
Δp-Q characteristic curves	Page 10	Page 10

Pressure setting ranges

Valve type	**Pressure stage**	**Set pressure range in bar**	
DV B	012	3 … 12	(with maximum pressure limitation 12 bar)
	025	3 … 25	
	070	8 … 70	
	140	15 … 140	NS 80
	210	15 … 210	NS 50
DV R	009	3 … 9	(with maximum pressure limitation 9 bar)
	025	3 … 25	
DV S	030	6 … 20 and 8 … 22 and 10 … 30	
	035	3 … 10 and 10 … 35	

Type key

DV B	50	S	2	F	1	S	025	S	1	C	3	/	00.
1	2	3	4	5	6	7	8	9	10	11	12		13

1 Product	
DV B	Pressure relief valve
DV R	Pressure control valve
DV S	Pressure stage control valve

2 Nominal size	
50	Nominal size 50 resp. SAE 2"
80	Nominal size 80 resp. SAE 3"

3 Type of construction	
S	Seat valve

4 Housing material	
2	Spheroidal graphite cast iron EN-GJS-400-15

5 Sealing material	
F	FKM

6 Pressure adjustment type	
1	Adjusting screw, manual

7 Hydraulic connection	
S	Flange connection SAE (ISO 6162-1 / SAE J518) and internal control oil drainage
Y	Flange connection SAE (ISO 6162-1 / SAE J518) and external control oil drainage

8 Pressure stage (pressure setting range)			DV B	DV R	DV S
009	3 … 9 bar		x	•	x
012	3 … 12 bar		•	x	x
025	3 … 25 bar		•	•	x
030	6 … 30 bar		x	x	•
035	3 … 35 bar		x	x	•
070	8 … 70 bar		•	x	x
140	15 … 140 bar	NS 80	•	x	x
210	15 … 210 bar	NS 50	•	x	x

9 Media temperature	
S	-20 … 150 °C

10 Damping	
1	Standard specification

11 Hydraulic control				DV B	DV R	DV S
A	Without hydraulic control			•	x	x
C	2/2-way valve	de-energised closed	Only in conjunction with 12: **1**, **2** or **3**	•	x	•
O	2/2-way valve	de-energised open	Only in conjunction with 12: **1**, **2** or **3**	•	x	•
D	4/3-way valve	centre-centred	Only in conjunction with 12: **1**, **2** or **3**	x	x	•
M	Maximum pressure protection	DV B 12 bar DV R 9 bar		•	•	x

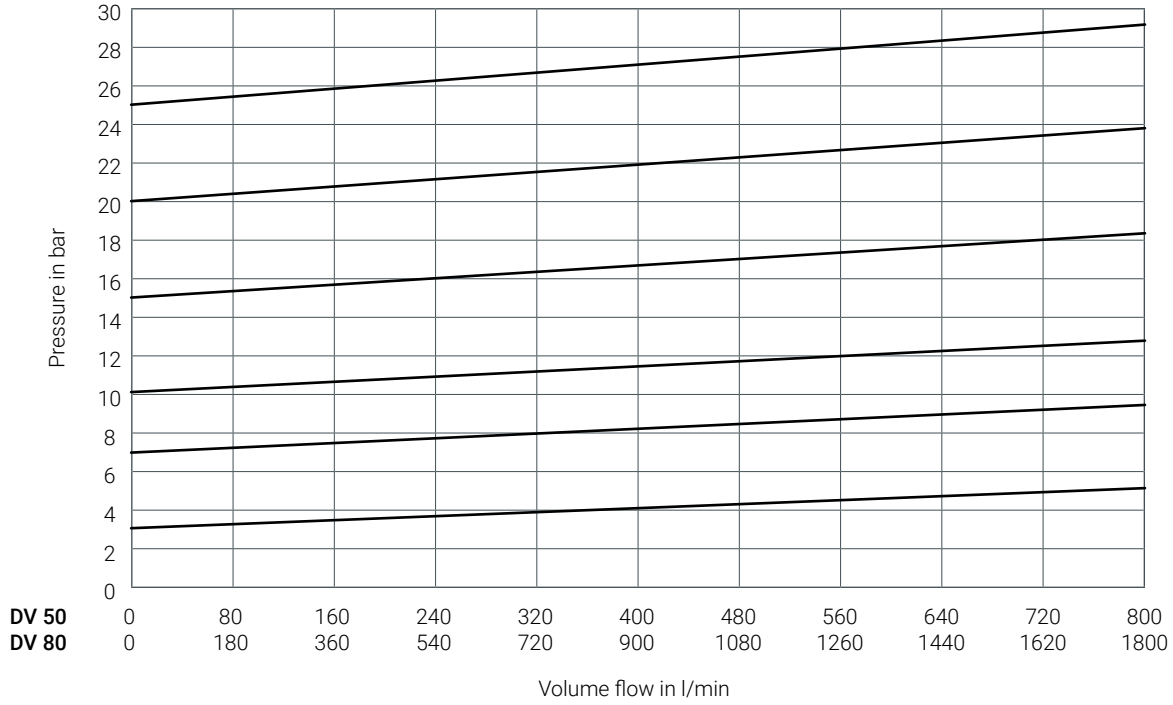
12 Electrical voltage	
1	12 V DC
2	24 V DC
3	230 V / 50 Hz

13 Special number	
00.	On request

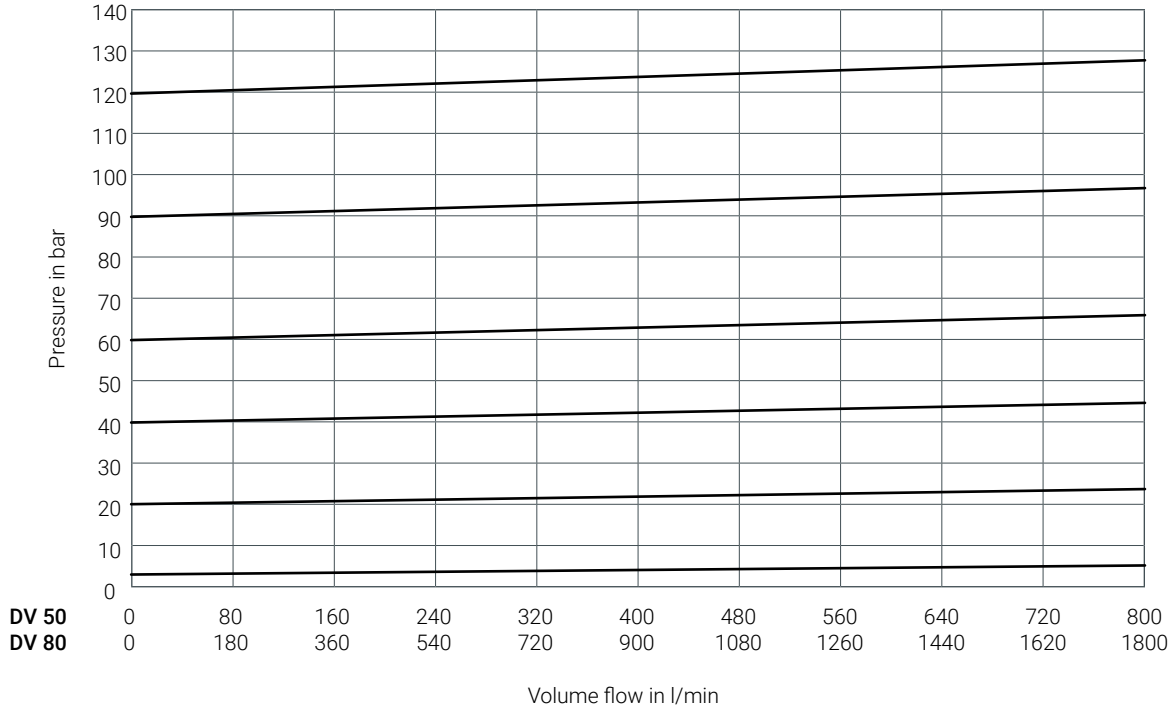
• available
x not available

Δp-Q characteristic curves (Viscosity = 34 mm²/s)

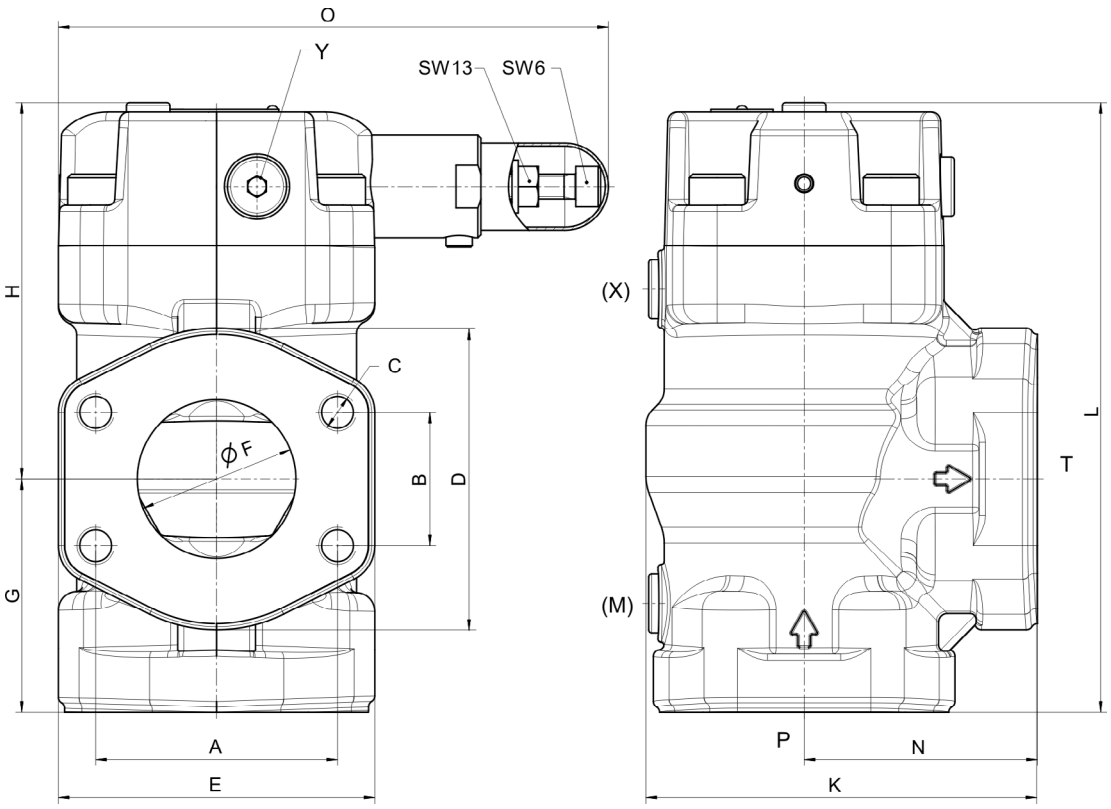
Exemplary curves for 0 … 30 bar



Exemplary curves for 0 … 140 bar



Dimensions / Weights – Pressure relief valve DV B

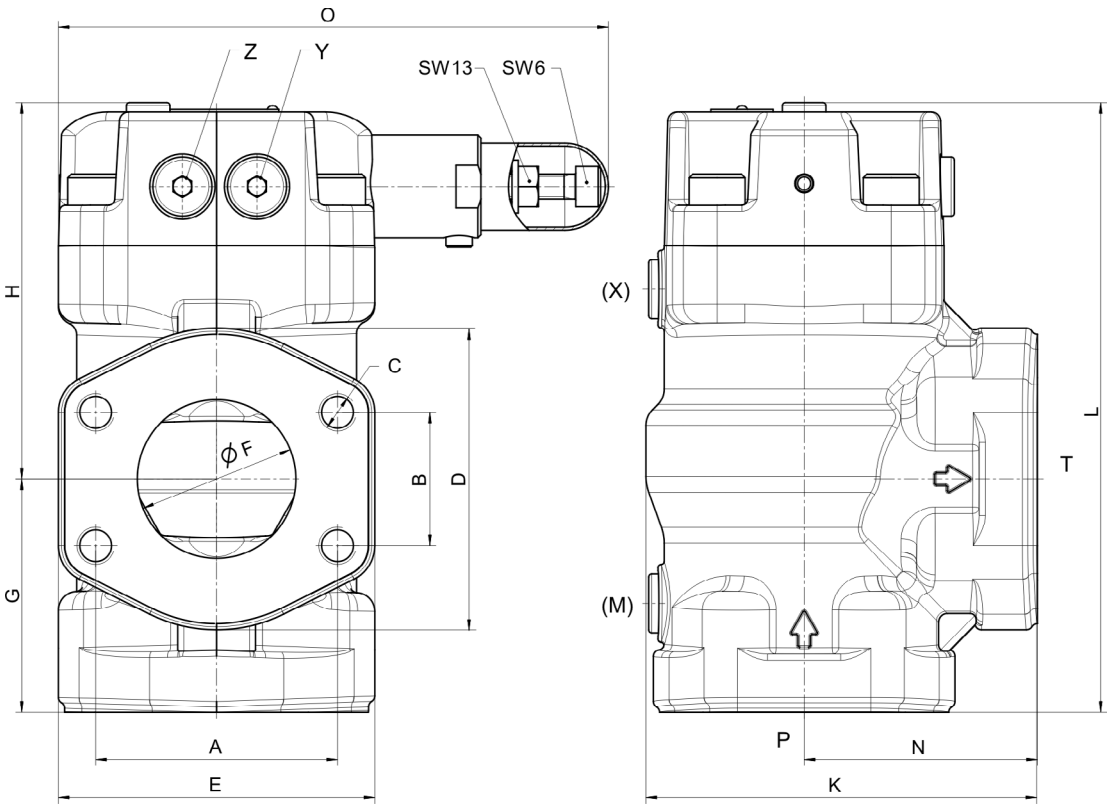


Nominal size	SAE	A	B	C	D	E	F	G	H	K	L	N	O	Weight
50	2"	77.8	42.9	M12	97	102	51	75	121	126	196	75	177	9.7
80	3"	106.4	61.9	M16	131	135	76	110	151	177	261	110	209	21.2

Connections (M), (X), Y: G ¼"
Connections P and T have the same dimensions

Dimensions in mm / Weights in kg

Dimensions / Weights – Pressure control valve DV R

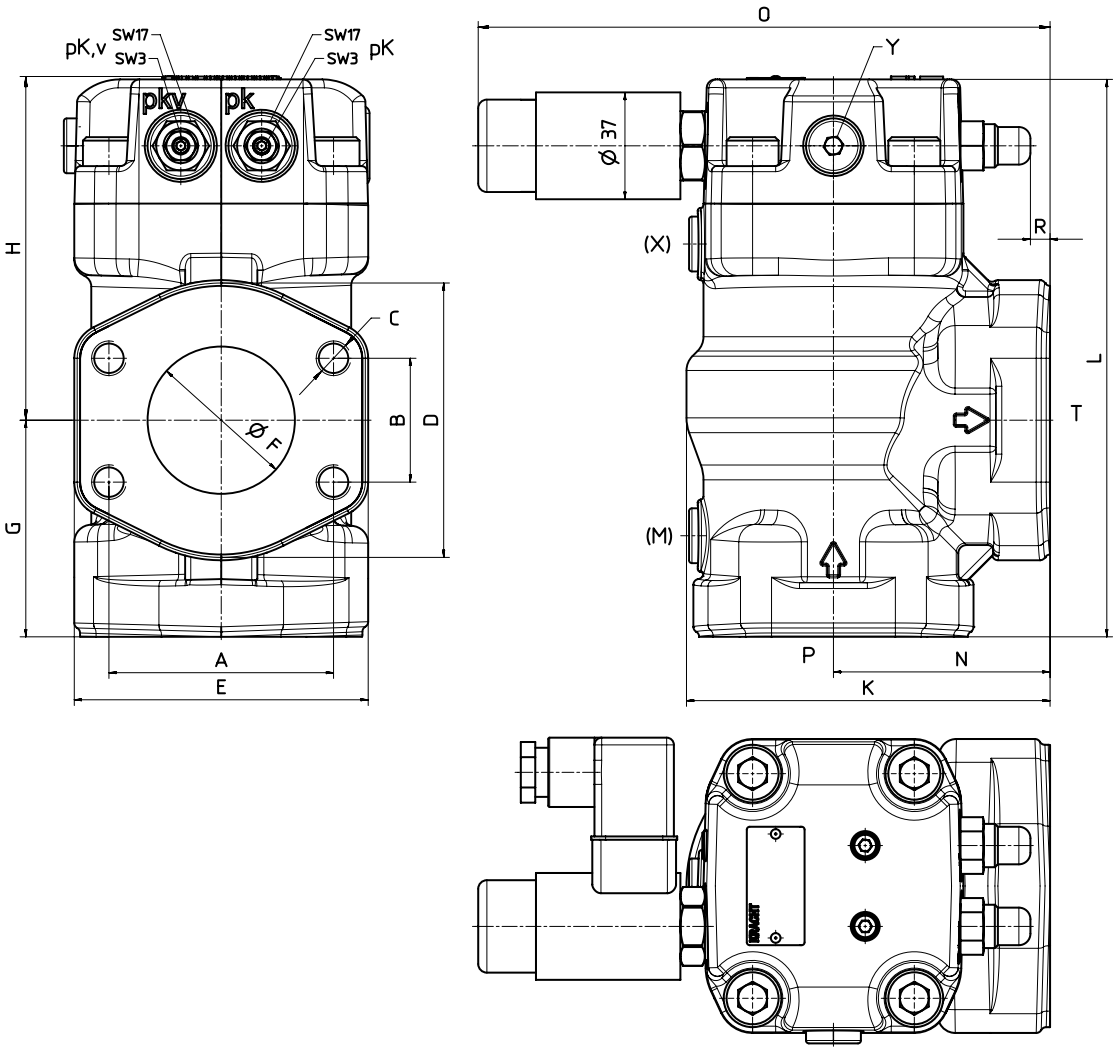


Nominal size	SAE	A	B	C	D	E	F	G	H	K	L	N	O	Weight
50	2″	77.8	42.9	M12	97	102	51	75	121	126	196	75	177	9.7
80	3″	106.4	61.9	M16	131	135	76	110	151	177	261	110	209	21.2

Connections (M), (X), Y: G ¼″
Connections P and T have the same dimensions

Dimensions in mm / Weights in kg

Dimensions / Weights – Pressure stage control valve DV S (Pressure stage 035)



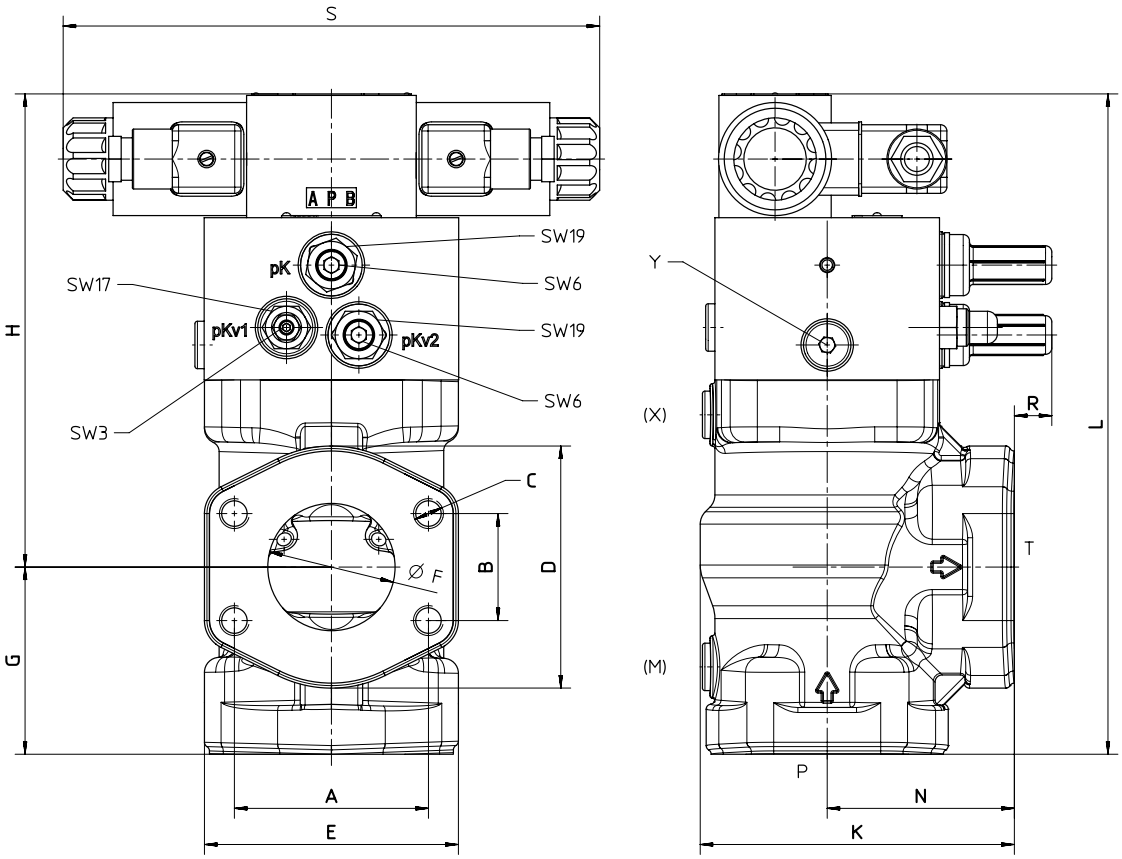
Nominal size	SAE	A	B	C	D	E	F	G	H	K	L	N	O	R	Weight
50	2"	77.8	42.9	M12 - 25 deep	97	102	51	75	119	126	194	75	198	6	9.8
80	3"	106.4	61.9	M16 - 30 deep	131	135	76	110	149	177	259	110	206	34	21.4

Connections (M), (X), Y: G ¼"
Connections P and T have the same dimensions

p_K = clutch pressure (higher pressure setting)
p_{KV} = clutch pre-pressure (low pressure setting)

Dimensions in mm / Weights in kg

Dimensions / Weights – Pressure stage control valve DV S (Pressure stage 030)



Nominal size	SAE	A	B	C	D	E	F	G	H	K	L	N	R	S	Weight
50	2"	77.8	42.9	M12	97	102	51	75	180	126	265	75	15	215	13.7

Dimensions in mm / Weights in kg

Notes

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