PRV-1DA
Pilot operated pressure relief valve
various designs up to 400 l/min

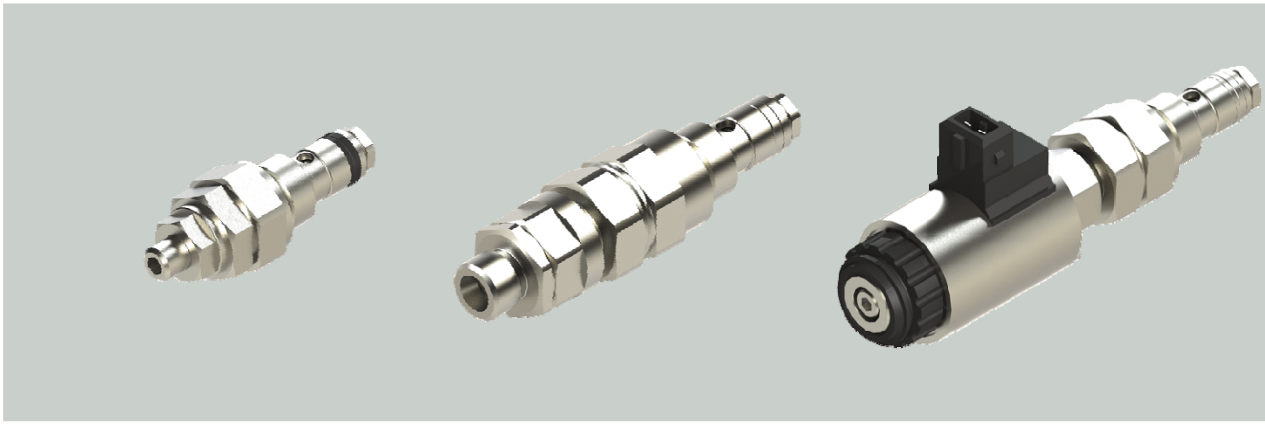


Table of Content

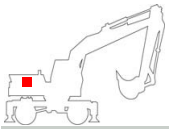
1 Product Details

The pressure-limiting valve PRV-1DA is a direct-controlled, robust valve for small volume flows and high pressures up to 420 bar. It is usually used in control blocks in the function of a pressure cut-off valve. This valve is available as a manually adjustable valve, as a hydraulically adjustable valve with a control pressure, and as an electrically proportional valve. The valve is also available in an electrically proportional version for the pilot pressure range of 0-50 bar.

1.1 Application

This type of valve is usually used for pressure cutting. In conjunction with a pressure compensator, a consumer pressure can also be limited at high volume flows. Likewise, a pump pressure limiter can be realized as a pressure cut-off. This valve may also be used as a piloting section of a piloted pressure relief valve.

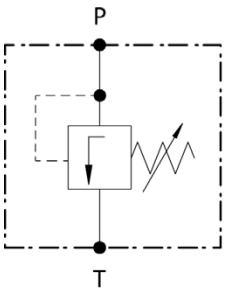
1.2 Installation Location (recommended)



The PRV-1 DA is installed as a cartridge valve in control blocks or control valves. These can be positioned anywhere in a construction machine.

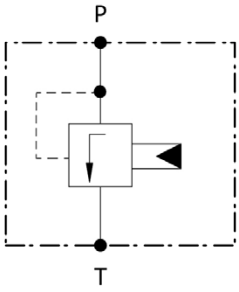
1.3 Function

MAN300

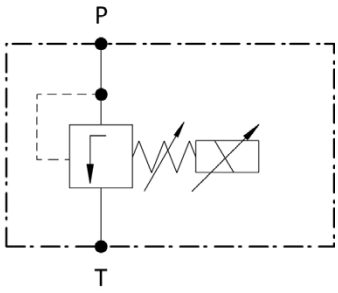


P Pump
T Tank

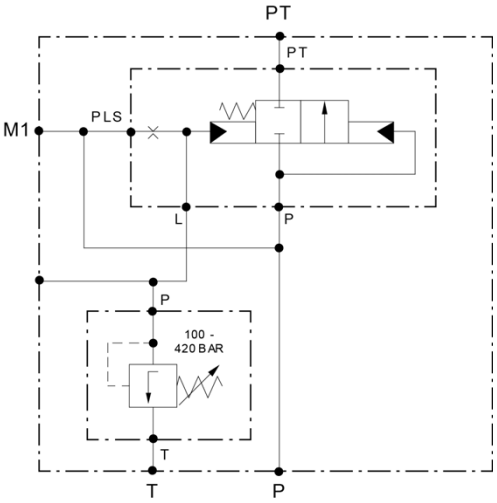
HYD100



ELE120+ELE007



Application: In conjunction with a hydraulically actuated 2/2-way valve, a pressure limiting function with a flat characteristic can be established. P opens to PT as soon as the set pressure is exceeded. The return pressure has no influence on the pressure at P, thus it is also possible to establish follow-up or priority circuits.



1.4 Features

- Cartridge screwed into stepped bore of different housings
- Directly actuated
- Hardened valve seats and cones
- Reliable even with high pressure
- Available in various variants

2 Technical Data

Criteria	Unit	Value
Installation position		Any
Weight	kg	MAN300: 0,2 – ELE120: 0,5 - ELE007: 0,5 - HYD100: 0,3
Maximum input pressure (P, A)	bar	MAN300: 420 - ELE120: 420 - ELE007: 50 - HYD100: 420
Adjustable pressure	bar	MAN300: 100-420 – ELE120: 120-420 – ELE007: 7-33 HYD100: VSt 6bar=100 VSt 26bar=420
Maximum return pressure (T)	bar	2 (recommended, added to the set)
Maximum volume flow (P)	l/min	MAN300: 2 – ELE120: 2 – ELE007: 5 - HYD100: 2
Hydraulic fluid		Mineral oil (HL, HLP) conforming with DIN 51524, other fluids upon request
Hydraulic fluid pressure range	°C	-20 to +80
Ambient temperature	°C	< +50
Viscosity range	mm^2/s	2,8 - 500
Contamination grade		Filtering conforming with NAS 1638, class 9, with minimum retention rate β10≥75
Electrical-proportional Version:		
Supply voltage	VDC	12 or 24
Voltage tolerance	%	± 10
Power consumption solenoid	W	33
Current consumption solenoid	A	2,9 at 12VDC, 1,4 at 24VDC
Duty solenoid	%	100
Protection according to DIN 40050		IP 65
Power supply plug		AMP Junior Timer Plug

3 Ordering Information

3.1 Type Code

PRV	1DA	CA				152	N
00	01	02	03	04	05	06	07

00	Product group	Pressure relief valves		**PRV**
01	Variant	Pilot operated		**1DA**
02	Port / Case	Cartridge		**CA**
03	Input flow rate Qmax.	2 l/min		**2**
		5 l/min (only at electrically adjustable version ELE007, 7–33bar)		**5**
04	Max.permissible pressure Pmax.	**420**bar (adjustable range -420bar)		**420**
		50bar (adjustable range 7 - 33bar)		**50**
05	Activation	**man**ually adjustable 100-420bar	e.g., preset **300**bar (consider adjustable range)	**MAN300**
		electrically adjustable 120-420bar	e.g., preset **120**bar (consider adjustable range)	**ELE120**
		electrically adjustable 7-33bar	e.g., preset **7**bar (consider adjustable range)	**ELE007**
		hydraulically adjustable 100-420bar (VSt 6bar = 100bar, VSt 26bar= 420bar)	e.g., preset **100**bar (consider adjustable range)	**HYD100**
06	Cavity	WESSEL-cartridge cavity 8.00**152**		**152**
07	Seal	NBR, temperature range -25°C to +80°C		**N**

XXX – fixed features **XXX** – customer selectable features ■ available ○ not available

Further versions in the range of the above mentioned features are available on request.

4 Description of Characteristics in Accordance with Type Code

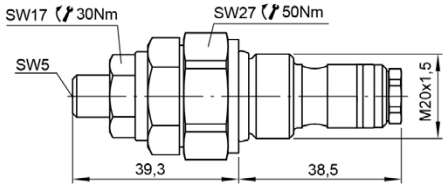
4.1 Characteristic 1 – Variant: **1DA** – Directly actuated

Pilot operated pressure relief valve for small volume flows

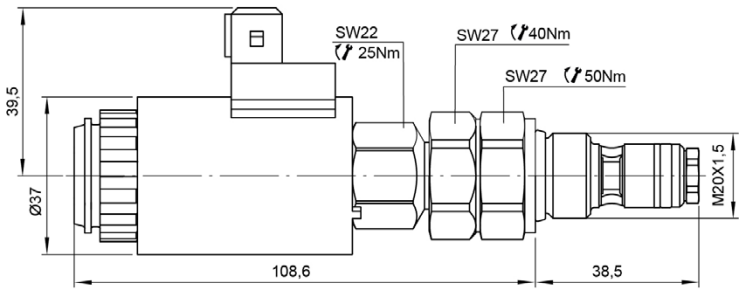
4.2 Characteristic 2 - Port / Housing: **CA** - Cartridge

In the variant CA, the valve is delivered as a cartridge valve. The cavity has to be designed according to characteristic 6 (Cavity).

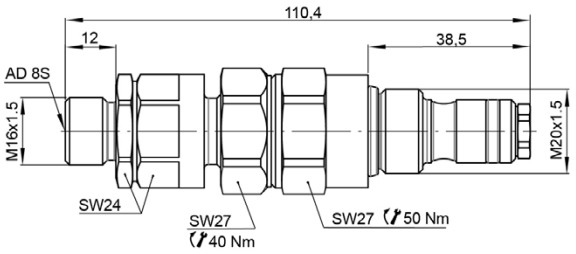
MAN300



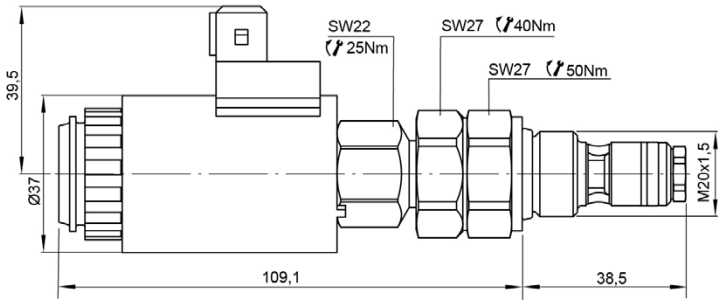
ELE120



HYD100



ELE007



Designation	Type Code	Part No.
PRV -1DA –CA -2LPM –420BAR –MAN300 –8.00152 -NBR	PRV –1DA –CA -2 -420 –MAN300 -152 -N	412.072.403.9
PRV -1DA –CA -2LPM –420BAR –ELE120 –8.00152 -NBR	PRV –1DA –CA -2 -420 –ELE120 -152 -N	412.072.406.9
PRV -1DA –CA -2LPM –420BAR –ELE007 –8.00152 -NBR	PRV –1DA –CA -2 -420 –ELE007 -152 -N	412.072.418.9
PRV -1DA –CA -5LPM –50BAR –HYD100 –8.00152 -NBR	PRV –1DA –CA -5 -50 –HYD100 -152 -N	412.072.404.9

4.3 Characteristic 3 - Input flow rate

- 2 l/min
- 5 l/min at electrically adjustable 7 – 33bar. This variant has a larger seat diameter, therefore the pressure is reduced while increasing the maximum flow.

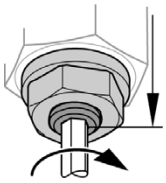
4.4 Characteristic 4 - Maximum permissible pressure

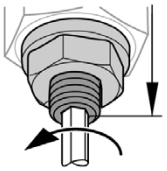
The maximum allowable pressure results from the spring.

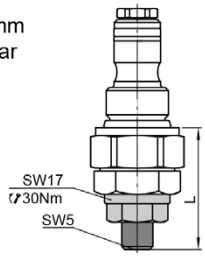
- 420bar (range of 100 - 420bar)
- 50bar (range of 7 - 33bar)

4.5 Characteristic 5 - Activation

Pressure setting **mechanical MAN300**

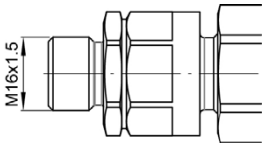


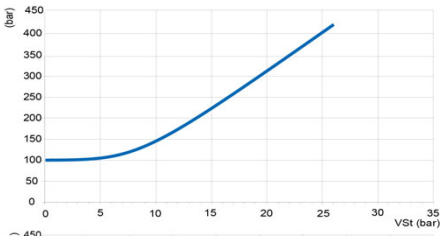




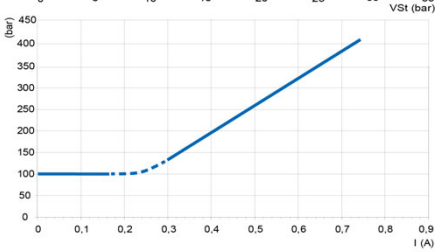
CAUTION: No not unscrew adjustment bolt further than 43mm from the housing.

hydraulic HYD100 (100 – 420bar)
The hydraulic version of the valve has an M16x1.5 connection. If an external pilot pressure is applied to the valve, the setting value for the pressure cut-off valve increases according to the characteristic on the right

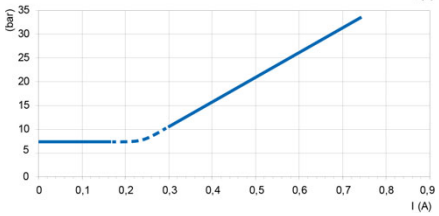




elektric ELE100 (100 – 420bar)
With the electrically proportional design ELE100 the basic setting of the valve can be changed by energizing the magnet. The characteristic corresponds to the graphic on the right.
The magnet has a junior timer connector.

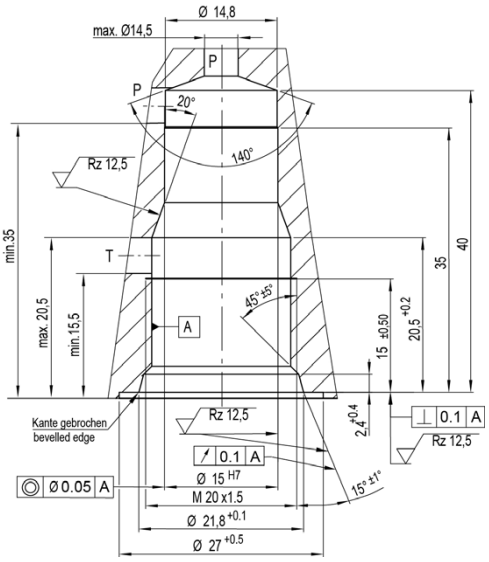


elektric ELE007 (7 – 33bar)
In the case of the electrically proportional design ELE007, the basic setting of the valve can be changed by energizing the magnet. The characteristic corresponds to the graphic on the right. This design is used for influencing or adjusting piloting circuits.
The magnet has a junior timer connector.



4.6 Characteristic 6 - Cavity: **0152**

The pilot-operated pressure relief valve is a cartridge device and is screwed into a stepped bore.



WESSEL-HYDRAULIK cavity 8.00152

4.7 Characteristic 7 – Seal: **N** - NBR

NBR, temperature range -25°C bis +80°C

5 Installation

5.1 General Information

- Observe all installation and safety information of the construction machine manufacturer.
- Only technically permitted changes are to be made on the construction machine.
- The user has to ensure that the device is suitable for the respective application.
- Application exclusively for the range of application specified by the manufacturer.
- Before installation or de-installation, the hydraulic system is to be depressurized.
- Settings are to be made by qualified personnel only.
- Opening is only to be performed with the approval of the manufacturer, otherwise the warranty is invali-dated.

5.2 Connection suggestion

NOTE: Enclosed proposed resolution is not always guaranteed. The functionality and the technical details of the construction machine must be checked.

5.3 Installation - Space

The valve is screwed into a block with a torque of 50 Nm. A torque wrench AF 27 is required.

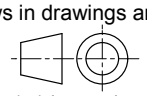
- Observe connection names.
- Do not damage seals and flange surface.
- Its hydraulic system must be vented
- Ensure a tension-free assembly
- Ensure sufficient free space for setting and installation work

CAUTION: Hydraulic hoses must not touch the pressure relief valve, otherwise they are subject to thermal damaging. Tightening torques must be observed. Torque wrench needed.

6 Notes, Standards and Safety Instructions

6.1 General Instructions

- The views in drawings are shown in accordance with the European normal projection variant



- A comma (,) is used as a decimal point in drawings
- All dimensions are given in mm

6.2 Standards

The following standards must be observed when installing and operating the valve:

- DIN EN ISO 13732-1:2008-12, Temperatures on accessible surfaces

7 Accessories