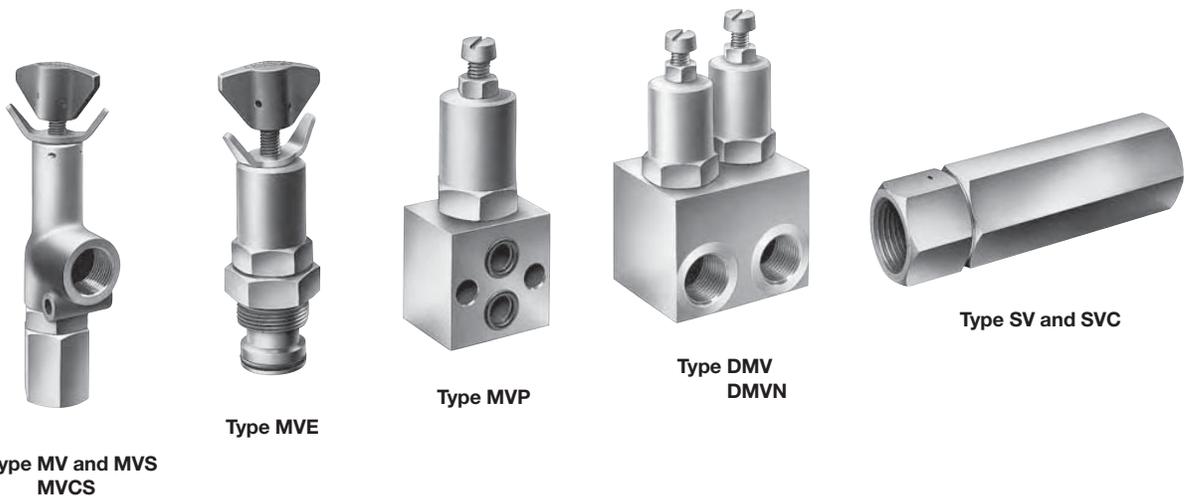


Pressure valves type MV., DMV.. and SV..

Pressure limiting valves, differential pressure regulators

- Versions as assembly kit see D 7000 E/1
- Versions with component approval (TÜV inspected) see D 7000 TÜV

Pressure p_{max} = 700 bar
Flow Q_{max} = 160 lpm



1. General

Pressure valves primarily influence the pressure in hydraulic installations (DIN ISO 1219-1). The types listed here are to complete following tasks:

- **Pressure limiting valve**

Protection against exceeding the maximum pressures approved for the system (relief valve) or limiting the working pressures. All valves listed in this leaflet can be used for this purpose.

- **Differential pressure regulator**

Generation of a constant pressure difference between the inlet and outlet of the flow. Valves with a housing in steel or spheroidal casting can be used for this purpose (see list of types on sect. 3.1).

- **Pressure limiting valve without damping**

For special operating conditions, e.g. to prevent creeping pressure rises in sealed cylinder chambers during temperature rise or compulsory creeping piston movement because of externally induced forces. Very low difference between opening and reseal pressure.

2. Typical construction

Means of adjustment with adjustable version

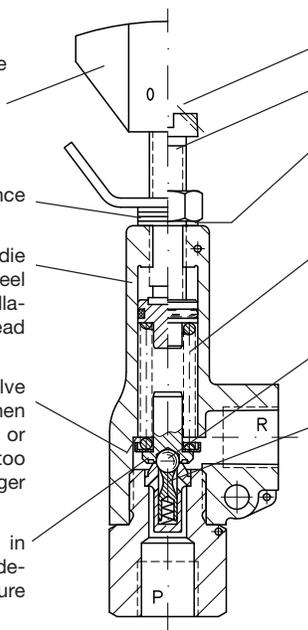
(Coding R = Wing screw
Coding V and H= Turn knob, see section 3.1)

Washer to limit the adjustment distance (see Section 5)

Valve housing (spring barrel) in zinc die casting, spheroidal casting or in steel for maximum adaption to local installation conditions (pipes plate or thread mounting)

Lift limiting stop prevents the valve cone from being lifted out too far when the spring is completely relieved or when the flow through the valve is too high, also prevents the cushion plunger from blocking the flow passages

Dynamically acting lift aid results in pressure setting which is rather independent of the flow (constant pressure characteristics)



Fixed design
Setting spindle
Setting limit to prevent spring blockage

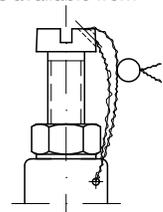
Valve spring depending on pressure range

Seated ball valve insensitive to dirt

Spring-loaded cushion plunger with a long guide ensures freedom from chatter throughout a wide viscosity range, for uncushioned valves, see section 1.

The valve ball and cushion plunger are separate functional parts which do not obstruct one another during dynamic stress (pressure peaks), thereby ensuring rapid response of the ball upon sudden pressure rise, the cushion plunger is missing in the uncushioned valve design

Lead seal provision (Lead sealing is available from HAWE when added in uncoded text to your order)



2.3

3. Types available

3.1. Type code and main data

Order examples:

MVP 4 A - 650
MV 53 B R X
DMV 4 B/C - 300/200

Desired pressure setting (bar) (without specification, see table 2)

X = Undamped version in accordance with sect. 1

Table 1: Basic type and Size

Brief description	Connection size and thread		Spring dome material Port pressure rating		
	Basic type Size	DIN ISO 228/1 (BSPP)			
Pressure limiting valve Corner valve for pipe installation (Tapped ports P and R)	41	G 1/4	Zinc die casting Perm. pressure P = 700 bar R = 20 bar see sect.3.2		
	42	G 3/8			
	MV 52	G 3/8			
	53	G 1/2			
	63	G 1/2			
Pressure limiting valve and sequence valves Corner valve for pipe installation (Tapped ports P and R)	41	G 1/4	Spheroidal casting		
	42	G 3/8			
	52	G 3/8	Perm. pressure P = 700 bar R = 500 bar see sect.3.2		
	MVS 53	G 1/2			
	63	G 1/2			
	64	G 3/4			
	84	G 3/4	Steel: Perm. pressure P u. R = 400 bar		
	85	G 1			
	Screw-in valve (for manifold installation)	MVE 4	Stepped bore, see dimension. drawing	Steel: Perm. pressure P = 700 (400) bar R = 350 bar	
		5			
6					
8					
Valve for plate installation (for manifold installation)	MVP 4	Manifold, see dimensional drawing	Steel: Perm. pressure P and R = 500 (400) bar		
	5				
	6				
	8				
For inline installation in a pipe system (Tapped hole at P and R)	SV 42	G 3/8	Steel: Perm. pressure P = 700 (400) bar R = 500 (400) bar		
	53	G 1/2			
	64	G 3/4			
	85	G 1			
Pressure limiting valve (as shock valve), Double valve for hydraulic motor (Tapped hole at P and R)	DMV 41	G 1/4	Steel: Perm. pressure P and R = 350 bar		
	42	G 3/8			
	52	G 3/8			
	53	G 1/2			
	63	G 1/2			
	64	G 3/4			
	84	G 3/4			
Pressure limiting valve Double valve with suction valve for cylinders, (tapped hole at A, B, R)	DMVN 42	G 3/8	Steel: Perm. pressure A, B = 350 bar R = 20 bar		
	53	G 1/2			
	64	G 3/4			
	64	G 3/4			
Pressure limiting valve Single valve with thru-holes (tapped hole at P and R)	MVT 41	G 1/4	Steel: Perm. pressure P and R = 500 bar		
	52	G 3/8			
	63	G 1/2			
Pressure limiting valve with free return R→P via a by-pass check valve Corner valve, pipe mounting Tapped hole at P and R	MVCS 46	G 3/8	Spheroidal casting		
	56	G 1/2			
	66	G 3/4			
	47	G 3/8 (A)			
	58	G 1/2 (A)			
	69	G 3/4 (A)	Perm. pressure P and R = 500 bar		
	For inline installation in a pipe system Tapped hole at P and R	SVC 46		G 3/8	Steel: Perm. pressure P and R = 500 bar
		56		G 1/2	
		66		G 3/4	
		47		G 3/8 (A)	
58		G 1/2 (A)			
69	G 3/4 (A)				

Table 3: Adjustment (during operation)

Without coding	Standard, tool adjustable
R	Manually adjustable (Wing screw+wing nut)
V 5) 8)	Turn knob (self-locking)
H 5) 10)	Turn knob lockable Keys conforming the regulations of the automotive industry; One key is scope of delivery (usually anyway in the possession of the authorized work staff)

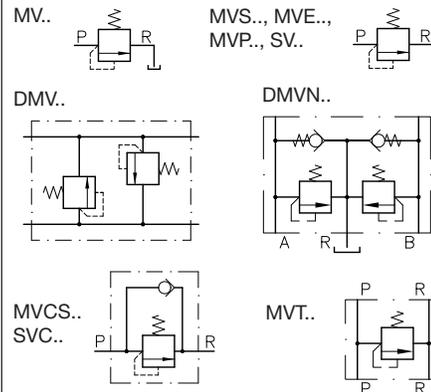
Table 2: Pressure range and flow

Attention: The pressure will be set acc. to the table below, if not ordered otherwise

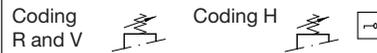
Pressure range	A 3)	B	C	E	F
(0) 4) ...	700	500	315	160	80
... P _{max} (bar)	Size 4, 5, 6	---	400 ⁹⁾	315	160
Size 8	---	---	---	---	---
Pressure setting from HAWE (bar) 2)	450	400	315	160	80
Corresponding flow Q _{max} (lpm)	Size 4	12	20		
	Size 5	20	40		
	Size 6	40	75		
	Size 8	--	160		

Symbols

Illustration of the standard version (tool adjustable)



Additional adjustability:



- 1) Tool adjustable version only
- 2) When not specified in the order
- 3) Pressure range coding A not avail. For type DMV, DMVN, MVT, MVCS, and SVC
- 4) A setting below 0.1 ... 0.15 p_{max} is not effective. The min. pressure that can be achieved, when the spring is completely decompressed depends on the valve related back pressure and the flow (sect. 3.2)
- 5) Not available as size 8
- 6) Suction valves serve for the volume compensation, preventing the formation of a vacuum within hydraulic cylinders
- 8) Coding V not available for type MVS 4
- 9) pressure range B not available for type SV 85
- 10) Coding H not available for type MVE 4 and MVP 4

3.2. Additional data

Nomenclature and design Pressure valve controlled directly, ball seat design

Conditions for application
 Zinc die-casting: Standard model for normal production conditions
 Spheroidal casting: For through production conditions; for operational conditions in which mechanical shocks or vibrations cannot be avoided (vehicle construction). Also when there are pressure surges in the return pipe.

Mounting and installed position according to the type, either freely suspended in the pipe, secured via a through-hole or screw-in or plate assembly; installed position arbitrary

Line connection Steel or spherical cast parts zinc galvanized; Spring domes made of zinc pressure die-casting are untreated

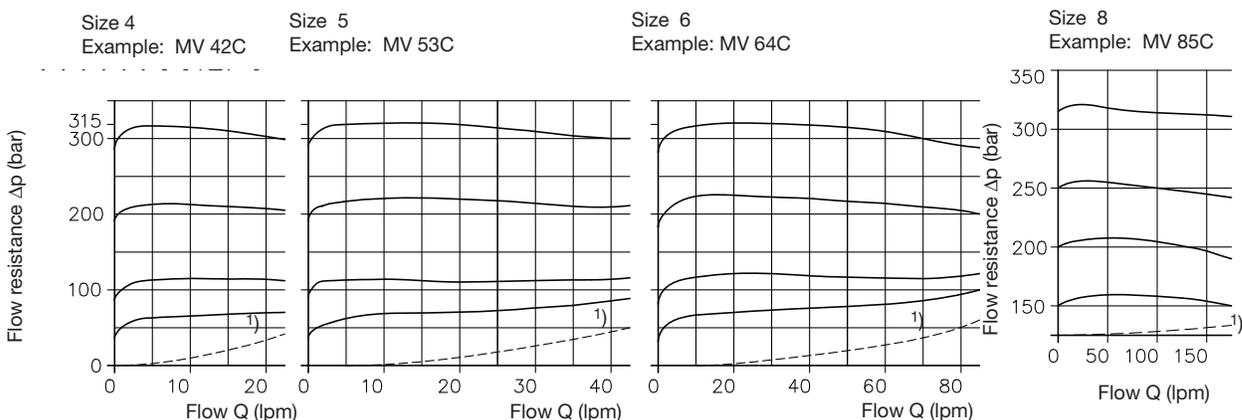
Flow direction P → R, with SVC and MVCS free return flow R → P (Attention: Observe Q_{max} sect. 3.1, table 2)

Mass (weight) approx. kg	Size	MV	MVS	MVE	MVP	SV	DMV	DMVN	MVT	MVCS	SVC
	4	0.2	0.2	0.2	0.3	0.2	0.7	0.8	0.5	0.3	0.3
	5	0.3	0.3	0.3	0.5	0.3	1.3	1.5	1.0	0.4	0.4
	6	0.5	0.5	0.4	0.8	0.7	1.8	2.4	1.3	0.7	0.9
	8	---	2.0	1.0	1.6	0.9	4.5	---	---	---	---

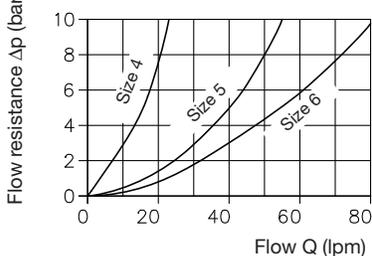
Pressure fluid Hydraulic oil conforming DIN 51524 part 1 to 3: ISO VG 10 to 68 conforming DIN 51519. Viscosity limits: min. approx. 4, max. approx. 1500 mm²/s, opt. operation approx. 10... 500 mm²/s. Also suitable for biological degradable pressure fluids types HEPG (Polyalkylenglycol) and HEES (Synth. Ester) at service temperatures up to approx. +70 °C.

Temperature Ambient: approx. -40 ... +80 °C
 Fluid: -25 ... +80°C, Note the viscosity range!
 Permissible temperature during start: -40°C (Note start-viscosity!), as long as the service temperature is at least 20K higher for the following operation. Biological degradable pressure fluids: Note manufacturer's specifications. By consideration of the compatibility with seal material not over +70 °C.

Δp-Q-characteristics Characteristic curve shown with example MV.C (basic tendency, there are certain differences depending on the pressure range and the housing shape of the various basic types)
 An increased return back pressure will transform the curves into positive Δp-figures.



Flow direction R → P with type MVC.. and SVC..



Oil viscosity during testing 50 mm²/s

Pressure variations (apply to all valves acc. to sect. 3.1). Rough guide line figures (valve idling) per one revolution of the set screw.

Pressure range (bar)	Travel f _{max} (mm) / Δp (bar) per one revolution ²⁾			
	Size 4	Size 5	Size 6	Size 8
A 0 ... 700	4.5 / 195 (4.3 / 220)	8.4 / 105 (9.1 / 140)	7.4 / 120 (7 / 180)	---
B 0 ... 500 (400)	6.3 / 100 (6.1 / 110)	9.7 / 65 (10 / 90)	7.9 / 80 (7 / 130)	9 / 68
C 0 ... 315	7.1 / 55 (6.5 / 65)	7.7 / 51 (7.2 / 80)	10.2 / 35 (9.3 / 62)	13 / 37 (12.8 / 57)
E 0 ... 160	10.5 / 19 (8 / 27)	12 / 17 (11.2 / 26)	11.5 / 17.5 (10 / 29)	12.5 / 20 (12.4 / 30)
F 0 ... 80	10.5 / 9.5 (7.2 / 15)	11.5 / 9 (7.3 / 20)	12.5 / 8 (9.7 / 15)	---

Attention: Any pressure re-adjustment should be monitored with a pressure gauge!
 For adjustment instruction, see section 5

1) Design related characteristic flow resistance with spring relieved (static pressure value 0 bar). Pressures under this limit line are not obtainable, see also footnote ⁴⁾, sect. 3.1

2) Figures in brackets apply to type SV and SVC