

Pressure-limiting valve and pre-load valve type MVG, MVE and MVP

Product documentation



Directly controlled

Operating pressure p_{\max} :

700 bar

Flow rate Q_{\max} :

8 lpm



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1 Overview of pressure-limiting valve and pre-load valve type MVG, MVE and MVP

Pressure-limiting valves and sequence valves are types of pressure control valves. Pressure-limiting valves safeguard the system against excessive system pressure or limit the operation pressure. Sequence valves generate a constant pressure difference between the inlet and outlet flow. Type MV is a directly controlled valve that is damped as standard.

Features and benefits:

- Operating pressures up to 700 bar
- Various adjustment options
- Numerous configurations

Intended applications:

- General hydraulic systems
- Test benches
- Hydraulic tools



Valve for pipe connection type MVG



Valve for manifold mounting type MVP



Screw-in valve type MVE

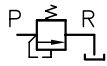
2 Available versions, main data

Circuit symbol:

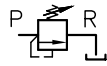
MVG, MVP, MVE

Pressure-limiting valve

Fixed



Adjustable



or

Sequence valve

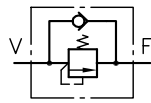
Fixed



MVGC

Sequence valve

Fixed only



Order coding example:

MVE 14 M	R	- 120
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Pressure setting (see also note for Table 1)

Adjustment [See "Table 2: Adjustment"](#)

Basic type and size [See "Table 1: Basic type and size"](#)

Table 1 Basic type and size

Type	Pressure range (bar)	Flow rate (lpm)	Connection type	Brief description
MVG 13 H	20 ... 700	5		
MVG 13 M	20 ... 400			
MVG 14 H	10 ... 400	8	Valve for pipe connection: Ports P and R = G 1/4 (BSPP)	
MVG 14 M	0 ... 200			
MVG 14 N	0 ... 50			
MVP 13 H	20 ... 700	5		
MVP 13 M	20 ... 400			
MVP 14 H	10 ... 400	8	Valve for manifold mounting: For dimension diagram see Chapter 4, "Dimensions"	Valve for one flow direction (working direction)
MVP 14 M	0 ... 200			
MVP 14 N	0 ... 50			
MVE 13 H	20 ... 700	5		
MVE 13 M	20 ... 400			
MVE 14 H	10 ... 400	8	Screw-in valve: For mounting hole see Chapter 4, "Dimensions"	
MVE 14 M	0 ... 200			
MVE 14 N	0 ... 50			
MVGC 14 M	0 ... 200		Valve for pipe connection: Ports F and V = G 1/4 (BSPP)	Valve for two flow directions (working direction and free return flow)
MVGC 14 N	0 ... 50			

i NOTE
Pressure setting

- If there is no pressure specification, the factory settings are:

MV.. 13 H	400 bar
MV.. 13 M	200 bar
MV.. 14 H	400 bar
MV.. 14 M	200 bar
MV.. 14 N	30 bar

Table 2 Adjustment

Coding	Description
No designation	Series, fixed (tool adjustable)
R	Manually adjustable

- i NOTE**
- During use as a sequence valve, the permissible pressure in the reflux must not exceed 400 bar!
- Adjustability under pressure over approx. 100 bar no longer possible with coding R. Adjustment should therefore only be carried out in pressureless state!

3 Parameters

General

General data

Description	Pressure-limiting valve
Design	Cone-seated valve
Model	According to type
Material	Steel; nitrided valve housing, electrogalvanised sealing nuts and connection block, hardened and ground functional inner parts Balls made of rolling bearing steel Steel; valve housing galvanized zinc plated; hardened and ground functional inner parts
Installation position	As desired
Hydraulic fluid	Hydraulic oil: according to part 1 to 3; ISO VG 10 to 68 according to DIN ISO 3448 Viscosity limits: min. approx. 4, max. approx. 1500 mm ² /s opt. operation approx. 10... 500 mm ² /s. Also suitable for biologically degradable hydraulic fluids type HEPG (polyalkylene glycol) and HEES (synthetic ester) at operating temperatures up to approx. +70°C.
Cleanliness level	ISO 4406 <hr/> 21/18/15...19/17/13
Temperatures	Ambient: approx. -40 ... +80°C, Fluid: -25 ... +80°C, Note the viscosity range! Permissible temperature during start: -40°C (observe start-viscosity!), as long as the service temperature is at least 20K higher for the following operation. Biologically degradable pressure fluids: Observe manufacturer's specifications. By consideration of the compatibility with seal material not over +70°C.

Weight

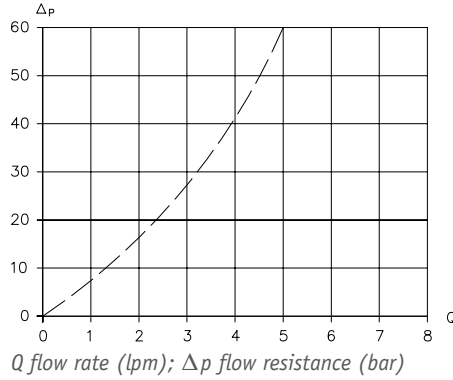
Type	
MVG	= 0.3 kg
MVP	= 0.3 kg
MVE	= 0.1 kg
MVGC	= 0.3 kg

Characteristic curves

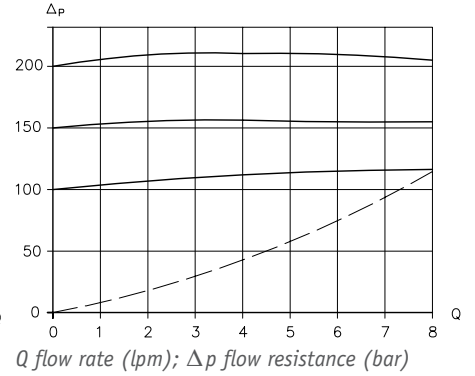
Oil viscosity approx. 60 mm²/s

Δp -Q characteristics

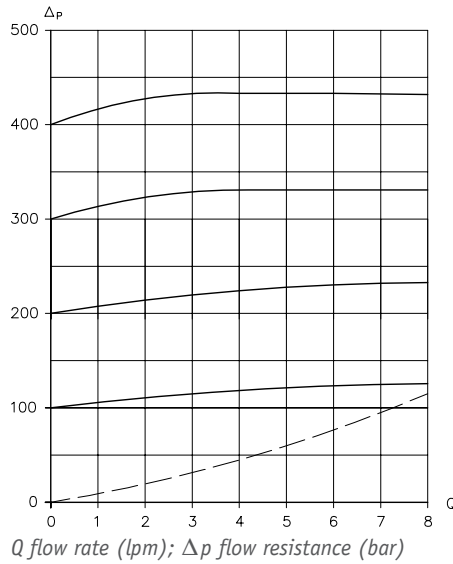
MVG 14 N



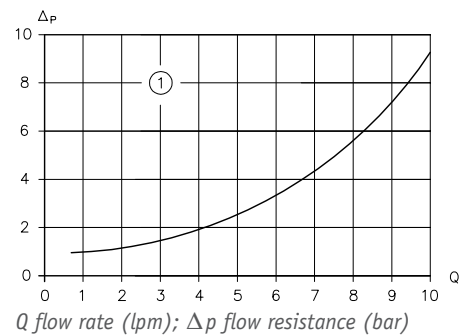
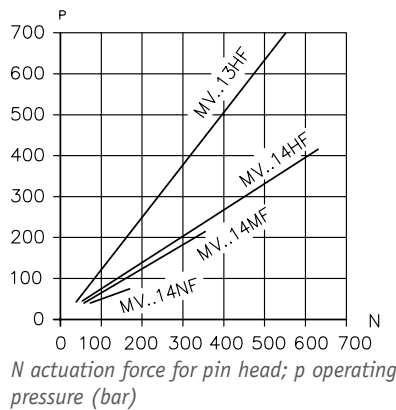
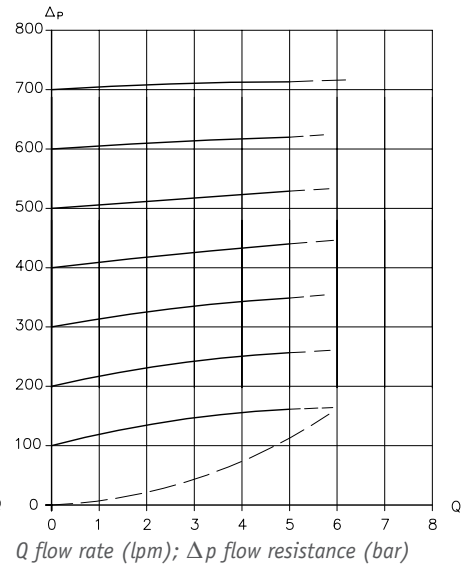
MVG 14 M



MVG 14 H



MVG 13 H

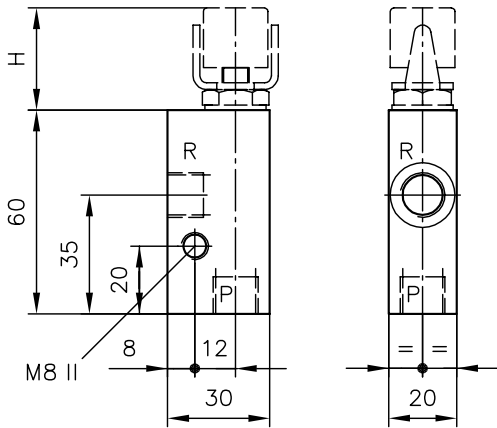


1 Flow resistance MVGC with free return flow
F → V

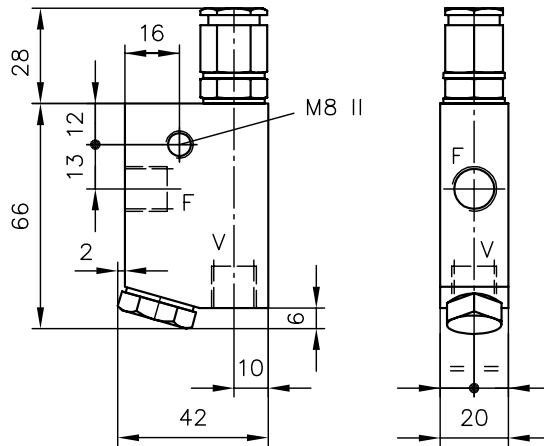
4 Dimensions

All dimensions in mm, subject to change.

MVG



MVGC fixed only

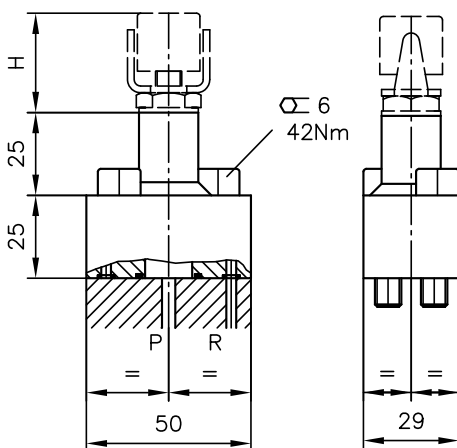


Connections (ISO 228-1)

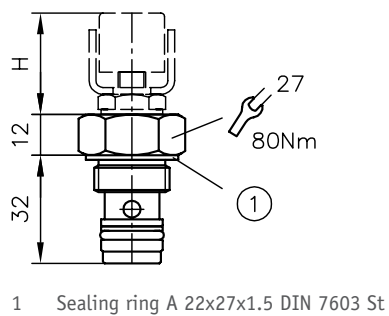
P, R, F, V

G 1/4 (BSPP)

MVP



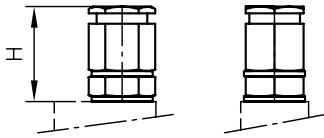
MVE



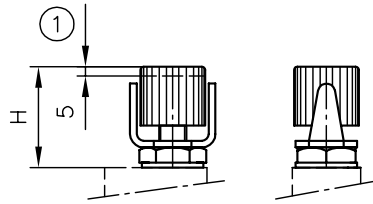
1 Sealing ring A 22x27x1.5 DIN 7603 St

Adjustment

No designation



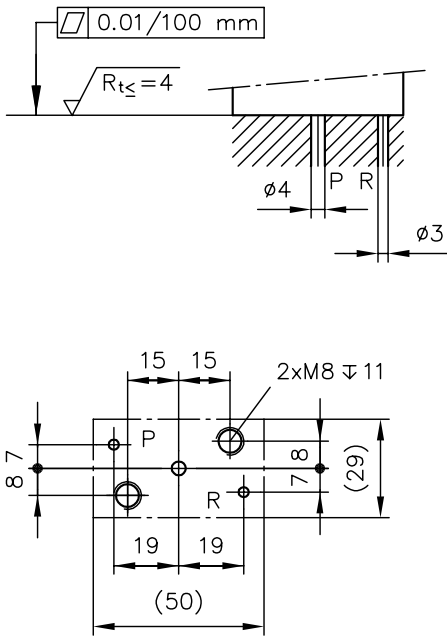
Coding R



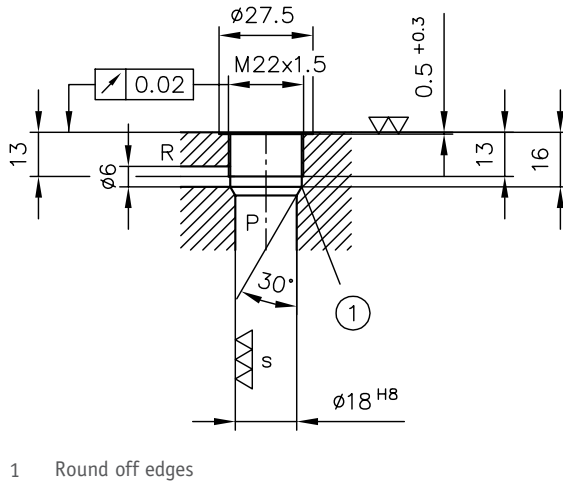
1 Adjustment travel

	H
Fixed	28
Adjustable	30

Base plate hole pattern (type MVP)



Mounting hole (type MVE)



1 Round off edges

Sealing of the ports:

	O-ring
P	17.12x2.62 NBR 90 Sh
R	4.47x1.78 NBR 90 Sh

5**Assembly, operation and maintenance recommendations****5.1 Intended use**

This valve is intended exclusively for hydraulic applications (fluid technology).

The user must observe the safety measures and warnings in this documentation.

Essential requirements for the product to function correctly and safely:

- All information in this documentation must be observed. This applies in particular to all safety measures and warnings.
- The product must only be assembled and put into operation by qualified personnel.
- The product must only be operated within the specified technical parameters. The technical parameters are described in detail in this documentation.
- The operating and maintenance manual of the components, assemblies and the specific complete system must also always be observed.

If the product can no longer be operated safely:

1. Remove the product from operation and mark it accordingly.
- ✓ It is then not permitted to continue using or operating the product.

5.2 Assembly information

The product must only be installed in the complete system with standard and compliant connection components (screw fittings, hoses, pipes, fixtures etc.).

Reaction forces and reaction torques must not influence the valve.

The product must be shut down correctly prior to dismantling (in particular in combination with hydraulic accumulators).

**DANGER****Risk to life caused by sudden movement of the hydraulic drives when dismantled incorrectly!**

Risk of serious injury or death.

- Depressurise the hydraulic system.
- Perform safety measures in preparation for maintenance.

5.3 Operating instructions

Note product configuration and pressure / flow rate

The statements and technical parameters in this documentation must be strictly observed.
The instructions for the complete technical system must also always be followed.

i NOTE

- Read the documentation carefully before usage.
- The documentation must be accessible to the operating and maintenance staff at all times.
- Keep documentation up to date after every addition or update.

⚠ CAUTION

Risk of injury on overloading components due to incorrect pressure settings!

Risk of minor injury.

- Always monitor the pressure gauge when setting and changing the pressure.

Purity and filtering of the hydraulic fluid

Fine contamination can significantly impair the function of the hydraulic component. Contamination can cause irreparable damage.

Examples of fine contamination include:

- Metal chips
- Rubber particles from hoses and seals
- Dirt due to assembly and maintenance
- Mechanical debris
- Chemical ageing of the hydraulic fluid

i NOTE

Fresh hydraulic fluid from the drum does not always have the highest degree of purity. Under some circumstances the fresh hydraulic fluid must be filtered before use.

Adhere to the cleanliness level of the hydraulic fluid in order to maintain faultless operation.
(also see cleanliness level in [Chapter 3, "Parameters"](#)).

Additionally applicable document: [D 5488/1](#) Oil recommendations

5.4 Maintenance information

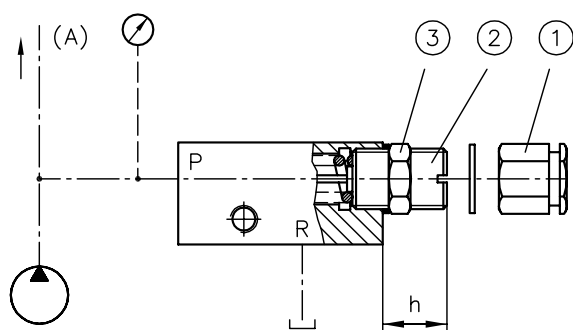
Conduct a visual inspection at regular intervals, but at least once per year, to check if the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

Clean the device surface of dust deposits and dirt at regular intervals, but at least once per year.

5.5 Adjusting the valve

i NOTE

Always monitor the pressure gauge when setting or changing the pressure yourself. The specified pressure change values per revolution of the adjusting spindle are only rough indicative values for approximately finding the desired operating point.



1. Remove cap nut (1).
2. Loosen lock nut (3).
3. Unscrew adjusting spindle (2) to approx. $h = 18.5$ up to max. 19 mm (no noticeable spring preload).
4. If the consumer connected to the system has an end position restricted by a stop (e.g. hydraulic cylinder): Set the directional valve so that the consumer takes up an end position when the pump is switched on (e.g. remains retracted).
If the pump has no end position (hydraulic motor): Close the pressure line blind at (A).
5. Prerequisite: The pump must be active. Screw in the adjusting spindle until the pressure gauge displays the desired pressure value (see table below for reference value for pressure change per revolution).
6. Tighten lock nut and cap nut again (don't forget sealing rings!)

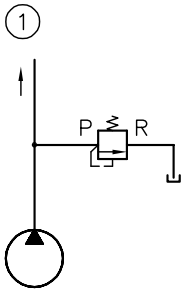
Type	Pressure change per rotation
MV.. 13 H	≈ 370 bar
MV.. 14 H	≈ 200 bar
MV.. 14 M	≈ 90 bar
MV.. 14 N	≈ 20 bar

6 Appendix

6.1 Typical application examples

MVG, MVP and MVE

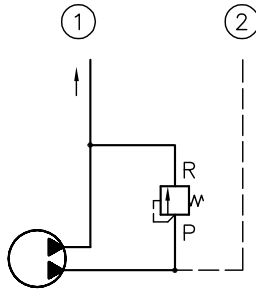
As protection for the hydraulic system against overpressure



1 To the consumer

MVG, MVP and MVE

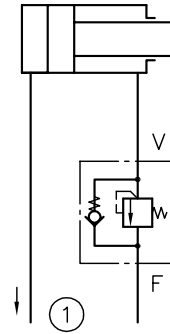
As a pre-load valve for generating minimum inlet pressure, e.g. for a control line



1 To the consumer
2 Control pressure line

MVGC

For generating counter-pressure at the consumer



1 To the directional valve

Further information

Additional versions

- Pressure-limiting valve type MV, SV and DMV: D 7000/1
- Pressure-limiting valve (installation kit) type MV: D 7000 E/1
- Pressure valve type CMV, CMVZ, CSV and CSVZ: D 7710 MV
- Pressure-limiting valve, pilot-controlled type DV, DVE and DF: D 4350