Safety valve with unit approval type MVEX, SVX

Product documentation

Directly controlled

Operating pressure p_{max}:	450 bar
Flow rate Q_{max}:	100 lpm

D 7000 TÜV
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HAWE HYDRAULIK

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1 Overview of safety valve with unit approval type MVEX.., SVX..

The safety valve with unit approval type MVEX.., SVX.. protects pressurised hydraulic systems against overloading in accordance with the Pressure Equipment Directive.
The valve must not be used as an operating pressure-limiting valve. It is not designed for frequent response.
The valve is designed as a direct-acting, spring-loaded cone-seated valve.

Safety valve with unit approval type MVEX..

Features and benefits:

- Operating pressures up to 450 bar
- Easily produced mounting hole

Intended applications:

Safety valve for accumulators in oil-hydraulic systems, taking account of the following regulations:

- Pressure Equipment Directive 2014/68/EU
- Industrial Safety Regulation dated 1 June 2015 / Use of Work Equipment Directive 2009/104/EG
- AD 2000 Code, data sheet A2 and S5, latest release

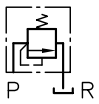
Safety valve with unit approval type SVX..

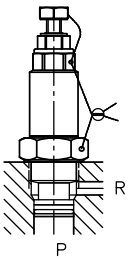
2 Available versions, main data

2.1 Screw-in valve

2.1.1 Screw-in valve

Circuit symbol:





Order coding example:

MVEX 6 E	- 100	- 3/4 A

- **Connection block** "Table 3"
- **Pressure range and pressure setting** "Table 2"
- **Basic type and size** "Table 1"

Table 1 Basic type and size

Type	Description	Pressure setting p_{max} (bar)	Flow rate Q_{max} (lpm)
MVEX 4	Screw-in valve	450	24
MVEX 6			100

NOTE
The max. flow rate and the permissible pressure setting depend on the selected pressure range according to "Table 2".

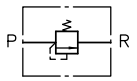
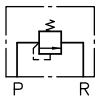
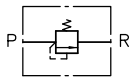
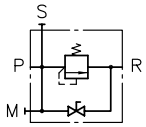
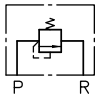
Table 2 Pressure range

Type and size	Pressure range	Pressure setting range p_{min} – p_{max} (bar)	Flow rate Q_{max} (lpm)	Component coding	Nom. ∅ of cone and seat (mm)
MVEX 4	H	80 to 90	22	TÜV.SV.18 - 1149.4.F.22.p	4
	F	91 to 110	22		
	E	111 to 180	24	TÜV.SV.18 - 1149.4.F.24.p	
	C	181 to 290	24		
	G	291 to 320	20	TÜV.SV.18 - 1149.4.F.20.p	
	G	321 to 350	22	TÜV.SV.18 - 1149.4.F.22p	
	B	351 to 450	22		
MVEX 6	E	100 to 140	90	TÜV.SV.20 - 709.do.F.G.p	6
	E	141 to 160	100	TÜV.SV.20 - 709.do.F.G.p	
	D	161 to 210			
	C	211 to 315			
	B	316 to 450	80	TÜV.SV.20 - 709.do.F.G.p	5

NOTE
The maximum operating pressure of the system should be at least 25% lower than the pressure setting on the safety valve.

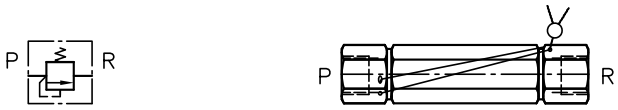
2.1.2 Version with single connection block

Table 3 Connection block

Type and size	Coding	Description	Circuit symbol
MVEX 4	- 1/4	P and R = G 1/4 (BSPP), pipe connection	
	- 3/8	P and R = G 3/8 (BSPP), pipe connection	
	- P4	Manifold mounting, flange pattern like MVPX 4	
MVEX 6	- 1/2	P and R = G 1/2 (BSPP), pipe connection	
	- 3/4	P and R = G 3/8 (BSPP), pipe connection	
	- 1/2 A	P and R = G 1/2 (BSPP), with drain valve	
	- 3/4 A	P and R = G 3/4 (BSPP), with drain valve	
	- P5	Manifold mounting, flange pattern like MVPX 5	
	- P6	Manifold mounting, flange pattern like MVPX 6	

2.2 Straight-way valve for pipe connection

Circuit symbol:



Order coding example:

SVX 41	- 200

- **Pressure range and pressure setting** "Table 5"
- **Basic type and size** "Table 4"

Table 4 Basic type and size

Type and size	Description	Port	Pressure setting p_{max} (bar)	Flow rate Q_{max} (lpm)
SVX 41	Straight-way valve for pipe connection	G 1/4	430	6

NOTE
The max. flow rate and the permissible pressure setting depend on the selected pressure range according to "Table 5".

Table 5 Pressure range

Type and size	Pressure range	Pressure setting range p_{min} – p_{max} (bar)	Flow rate Q_{max} (lpm)	Component coding	Nom. ∅ of cone and seat (mm)
SVX 41	E	80 to 120	3	TÜV.SV.18 - 1109.4.F.3.p	4
	E	121 to 160	4	TÜV.SV.18 - 1109.4.F.4.p	
	C	161 to 250	3.5	TÜV.SV.18 - 1109.4.F.3,5.p	
	C	251 to 300	6	TÜV.SV.18 - 1109.4.F.6.p	
	B	301 to 430	6	TÜV.SV.18 - 1109.4.F.6.p	

NOTE
The maximum operating pressure of the system should be at least 25% lower than the pressure setting on the safety valve.

3 Parameters

General information

Designation	Direct-acting safety valve
Design	Cone-seated design
Model	Valve for pipe installation, manifold mounting valve, screw-in valve
Material	Steel; zinc-nickel coated valve housing, electrogalvanised sealing nut and connection block, hardened and ground functional inner parts Balls made of rolling bearing steel
Base block requirements	Yield strength: $R_{P0.2} \geq 245$ MPa Minimum wall thickness: 5 mm
Installation position	As desired
Direction of flow	P → R
Ports	P = pressure-side connection; R = reflux (pressureless ≤ 1 bar)
Hydraulic fluid	Hydraulic oil: as per DIN 51524-1 Part 1 to 3; according to DIN ISO 3448 Also suitable for biologically degradable hydraulic fluids type HEPG (polyalkylene glycol) and HEES (synthetic ester) at operating temperatures up to approx. +70°C.
Operating viscosity	12 to 230 mm²/s (required)
Cleanliness level	**ISO 4406** 21/18/15...19/17/13 (required)
Temperatures	Environment: approx. -40 to +80°C, oil: -20 to +80°C, pay attention to the viscosity range. Biologically degradable pressure fluids: Note manufacturer specifications. With consideration for the seal compatibility, not above +70°C.
Static overload capacity	2 x p_{max}

Weight

Single valves	MVEX 4	= 0.2 kg		
	MVEX 6	= 0.4 kg		
	SVX 42	= 0.2 kg		
Valves with single connection block	MVEX 4 -...- 1/4	= 0.7 kg	MVEX 4 -...- P 4	= 0.6 kg
	MVEX 4 -...- 3/8	= 0.7 kg	MVEX 6 -...- P 5	= 1.25 kg
	MVEX 6 -...- 1/2	= 1.85 kg	MVEX 6 -...- P 6	= 1.6 kg
	MVEX 6 -...- 3/4	= 2.15 kg		

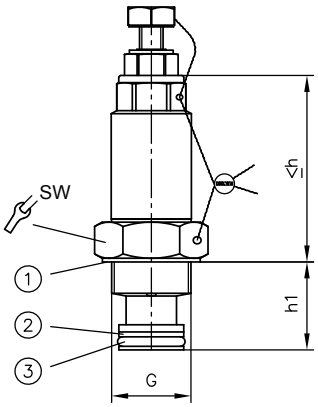
4 Dimensions

All dimensions in mm, subject to change.

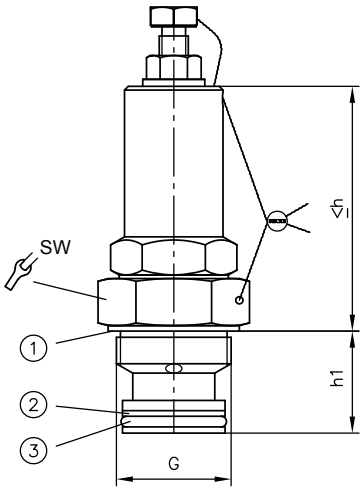
4.1 Screw-in valve

4.1.1 Screw-in valve

MVEX 4



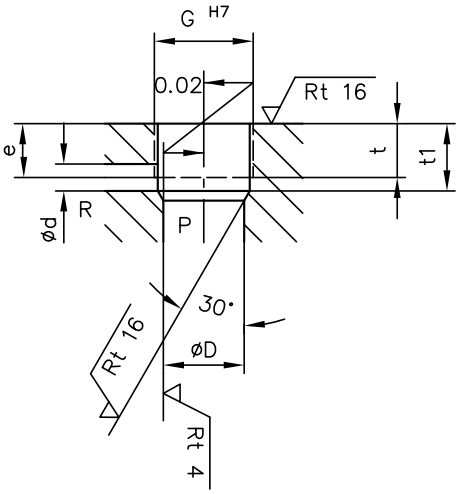
MVEX 6



1 Sealing ring
2 Supporting ring
3 O-ring

Type	h	h1	G	SW
MVEX 4	49.5	26	M22x1.5	27/80 Nm
MVEX 6	67	32	M30x1.5	36/160 Nm

Mounting hole

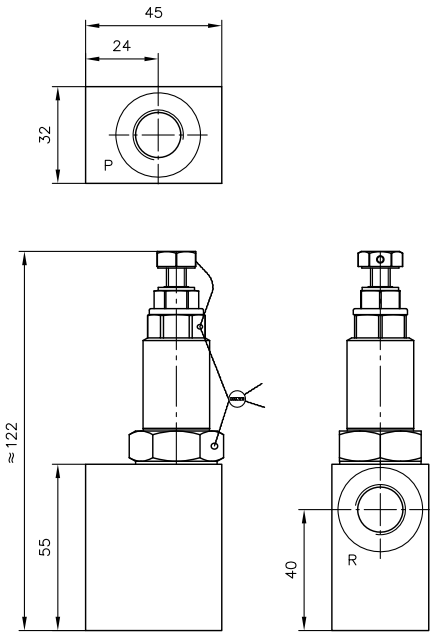


Type	∅D	e	∅d	t	t1	G
MVEX 4	18^{H8}	12	6	12	15	M22x1.5
MVEX 6	25^{H8}	14	12	12	19	M30x1.5

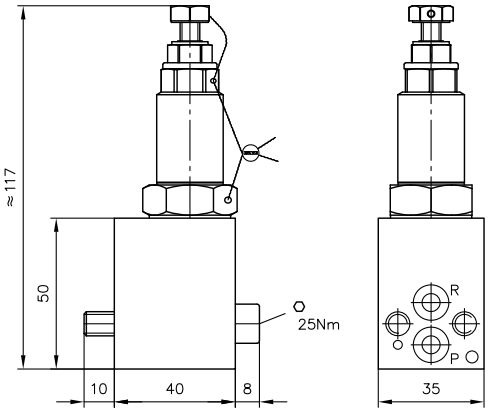
NOTE
Basis block requirements, see Chapter 3, "Parameters"

4.1.2 Version with single connection block

MVEX 4 -...- 1/4
MVEX 4 -...- 3/8



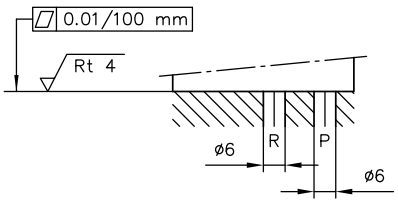
MVEX 4 -...- P4

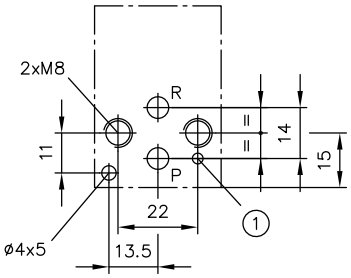


Coding	Ports (ISO 228/1) (BSPP) P, R
- 1/4	G 1/4
- 3/8	G 3/8

Base plate hole pattern

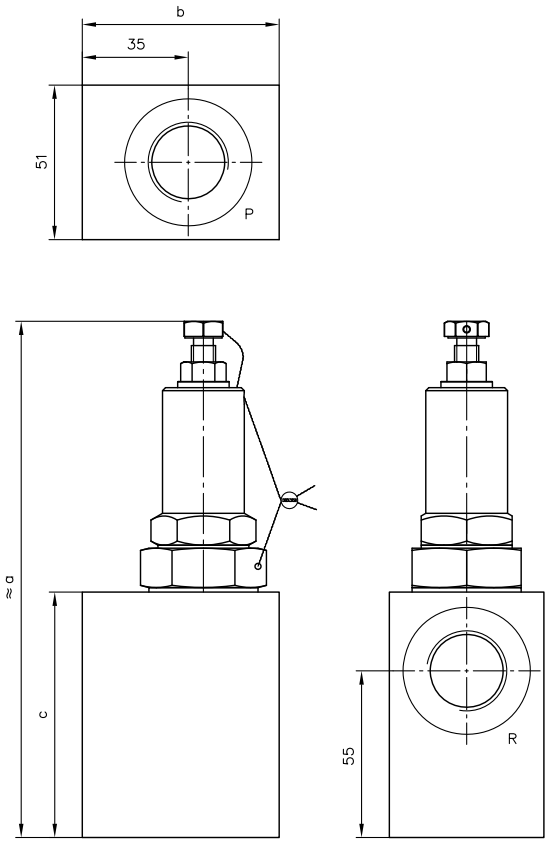
MVEX 4 -...- P4





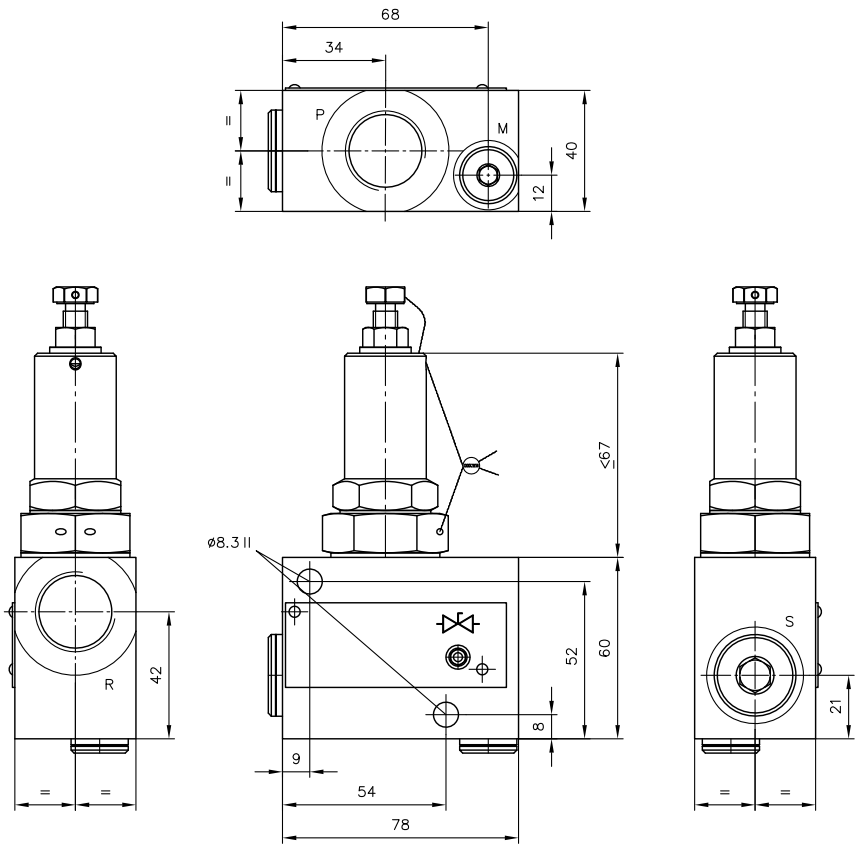
1 Index hole for roll pin ∅3 mm

MVEX 6 -...- 1/2
MVEX 6 -...- 3/4



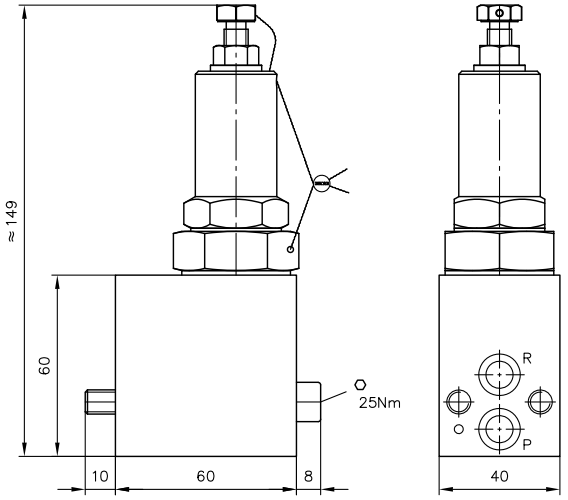
Coding	a	b	c	Ports (ISO 228/1) (BSPP) P, R
- 1/2	161	60	72	G 1/2
- 3/4	170	65	81	G 3/4

MVEX 6 -...- 1/2 A
MVEX 6 -...- 3/4 A

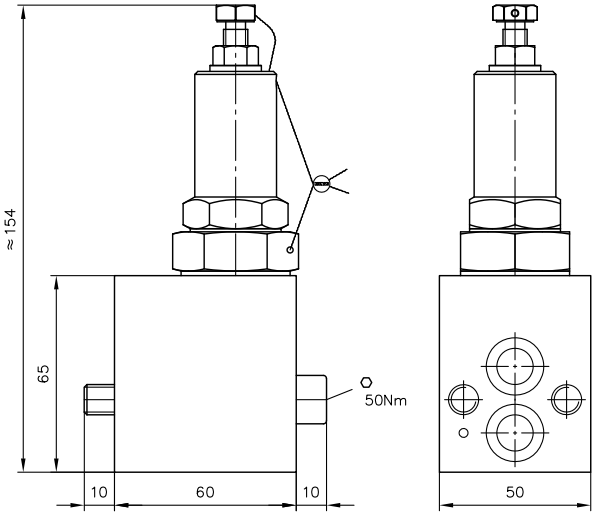


Coding	Ports (ISO 228/1) (BSPP)		
	P, R	S	M
- 1/2 A	G 1/2	G 1/2	G 1/4
- 3/4 A	G 3/4		

MVEX 6 -...- P5

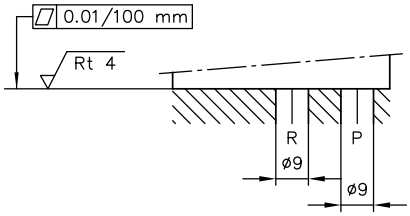


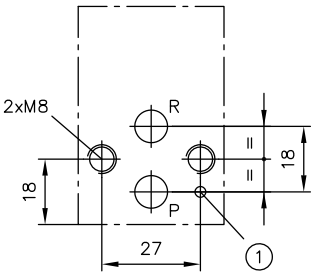
MVEX 6 -...- P6



Base plate hole pattern

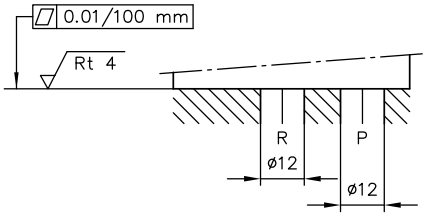
MVEX 6 -...- P5

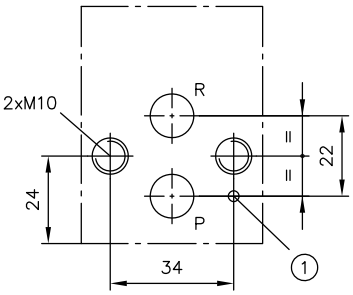




1 Index hole for roll pin ∅3 mm

MVEX 6 -...- P6

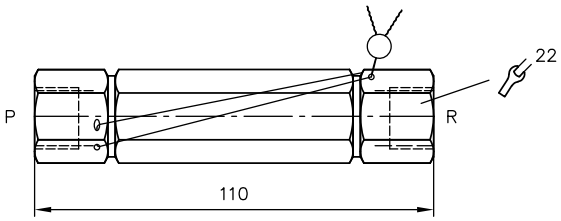




1 Index hole for roll pin ∅3 mm

4.2 Straight-way valve for pipe connection

SVX



	Ports (ISO 228/1) (BSPP)
P, R	G 1/4

5 Assembly, operation and maintenance recommendations

5.1 Intended use

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

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.
- All components must be suitable for the operating conditions in the event of application in an assembly.
- 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 dismounting (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.

5.2.1 Installing the valve

Safety valves must be installed with particular care. The provisions of the Pressure Equipment Directive must be observed. Regular inspections are governed by the national regulations on safety valves and systems.

The flow direction must always be adhered to.

In order to protect against external damage, the valve must be installed in a safe position or a suitable protective device must be fitted.

Connect the return line (R) to the tank. The necessary lines must be sufficiently dimensioned. For the housing screw connections of type MVEX - 1/4, MVEX - 3/8, MVEX - 1/2, MVEX - 3/4 and SVX, the specified torques must never be exceeded.

NOTE
Counterhold the piping when tightening the screws.

Tighten the fastening screws of manifold mounting valve type MVEX .. - P. and the screw-in valves type MVEX only to the required torques.

Use only width across flats SW to tighten type MVEX in the mounting hole of the connecting element.

NOTE
Do not damage the sealing wire!

5.2.2 Drilling the mounting hole (type MVEX)

See description in Chapter 4, "Dimensions".

Tightening torque of the fittings for port "P" and "R"

Type	Tightening torque (Nm)	
	P	R
MVEX 4 - 1/4	45	45
MVEX 4 - 3/8	70	70
MVEX 6 - 1/2	140	140
MVEX 6 - 3/4	230	230
SVX 41	70	70

Tightening torque of the fastening screws or the screw-in cartridge

Type	Tightening torques	
	g	(Nm)
MVEX 4 - P4	M8	25
MVEX 6 - P5	M8	25
MVEX 6 - P6	M10	50

Type	Tightening torques	
	SW1	(Nm)
MVEX 4	27	80
MVEX 6	36	160

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.

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.

- Pay attention to the maximum operating pressure of the pump and the valves.
- 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

NOTE

New hydraulic fluid from the manufacturer does not necessarily have the required level of purity.
The hydraulic fluid must be filtered during filling.

In order to maintain faultless operation, ensure that the cleanliness level of the hydraulic fluid is correct.
(See Cleanliness level in Chapter 3, "Parameters")

Additionally applicable document: D 5488/1 Oil recommendations

5.4 Maintenance information

The valve is sealed and must not be opened by the operator.

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.

6 Other information

6.1 Accessories, spare parts and separate components

Type	Sealing of ports P and R with O-ring NBR 90 Sh
MVEX 4 - P4	8x2
MVEX 6 - P5	10x2
MVEX 6 - P6	13.95x2.62

Type	Sealing ring	O-ring	Supporting ring item number
MVEX 4	A 22x27x1.5 DIN 7603-St	12.37x2.62	5660 002
MVEX 6	A 30x36x2 DIN 7603-Cu	20.29x2.62	3771 003

NOTE
Additional sealing materials available on request.

ZERTIFIKAT ◆ CERTIFICATE ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Industrie Service

ZERTIFIKAT

Die Notifizierte Stelle nach Druckgeräterichtlinie
- Zertifizierungsstelle für Qualitätssicherungssysteme -
Der TÜV SÜD Industrie Service GmbH

bescheinigt, dass das Unternehmen

HAWE Hydraulik SE
Einsteinring 17
85609 Aschheim / München, Deutschland

mit dem Werk
83679 Sachsenkam, Tegernseer Weg 5

für den Geltungsbereich

Fertigung von direkt wirkenden, federbelasteten Sicherheitsventilen für Hydraulikflüssigkeiten

nach EU-Baumusterprüfungen (Baumuster), gemäß Anlage

ein Qualitätssicherungssystem nach der Druckgeräterichtlinie 2014/68/EU Anhang III, Modul D eingeführt hat und anwendet.

Durch ein Audit, Bericht -Nr.: Q-IS-ESP1-MUC-PED-56793-083-19, wurde der Nachweis erbracht, dass die betreffenden Anforderungen erfüllt sind.

Der Hersteller ist berechtigt, die im Rahmen des Geltungsbereiches dieses Qualitätssicherungssystems hergestellten Druckgeräte bei der Kennzeichnung mit unserer Kenn-Nummer wie dargestellt zu versehen:

CE 0036

Zertifikat - Nr. DGR-0036-QS-843-19
gültig bis 11. August 2022
unter der Voraussetzung von bestandenen jährlichen Überwachungsaudits

Filderstadt, 05. Juni 2019

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Notified Body No.: 0036

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ZERTIFIKAT ◆ CERTIFICATE ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Industrie Service

ZERTIFIKAT

gültig bis: 14.01.2030

CERTIFICATE

valid until: 14.01.2030

EU-Baumusterprüfung (Modul B) - Baumuster - nach Richtlinie 2014/68/EU

EU Type examination (module B) - production type - according to Directive 2014/68/EU

Zertifikat-Nr.: *Certificate No.:* **Z-IS-AN1-MAN-20-01-2804846-15165224**

Name und Anschrift des Herstellers: *Name and address of manufacturer:*
HAWE Hydraulik SE
Einsteinring 17
DE-85609 Aschheim

Hiermit wird bescheinigt, dass das unten genannte Baumuster die Anforderungen der Richtlinie 2014/68/EU erfüllt.

We herewith certify that the type mentioned below meets the requirements of the Directive 2014/68/EU.

CE 0036

Prüfbericht Nr.: *Evaluation report No.:* **P-IS-MAN-20-01-2804846-15165224**

Geltungsbereich: *Scope of examination:*
Hydraulik-Sicherheitsventile des Typs MVEX 6
Druckbereiche E - B
Einstelldrücke 100 bis 450 bar

Fertigungsstätte: *Manufacturing plant:*
HAWE Hydraulik SE
Tegernseer Weg 5
DE-83679 Sachsenkamm

Mannheim, 15.01.2020
(Ort, Datum)
(Place, date)

TÜV SÜD Industrie Service GmbH
Zertifizierungsstelle für Druckgeräte

Echtheitsprüfung durch App TÜV SÜD Verify
Verification of Certificate by TÜV SÜD App Verify

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Notified Body, No. 0036
TÜV SÜD Industrie Service GmbH
Westendstr. 199
80686 München

Dokument ID: 2804846Y06ca5

ZERTIFIKAT ◆ CERTIFICATE ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Industrie Service

ZERTIFIKAT

gültig bis: 23.07.2028

CERTIFICATE

valid until: 23.07.2028

EU-Baumusterprüfung (Modul B) - Baumuster - nach Richtlinie 2014/68/EU

EU Type examination (module B) - production type - according to Directive 2014/68/EU

Zertifikat-Nr.: *Certificate No.:* **Z-IS-AN1-MAN-18-07-2831115-24154816**

Name und Anschrift des Herstellers: *Name and address of manufacturer:*
HAWE Hydraulik SE
Einsteinring 17
85609 Aschheim

Hiermit wird bescheinigt, dass das unten genannte Baumuster die Anforderungen der Richtlinie 2014/68/EU erfüllt.

We herewith certify that the type mentioned below meets the requirements of the Directive 2014/68/EU.

CE 0036

Prüfbericht Nr.: *Evaluation report No.:* **P-IS-AN1-MAN-18-06-283115-27094427**

Geltungsbereich: *Scope of examination:*
Sicherheitsventile für Hydraulikanlagen,
Typ SVX 41, Ansprechdrücke 80 - 430 bar

Fertigungsstätte: *Manufacturing plant:*
HAWE Hydraulik SE
Tegernseer Weg 5
83679 Sachsenkam

Mannheim, 24.07.2018
(Ort, Datum)
(Place, date)

TÜV SÜD Industrie Service GmbH
Zertifizierungsstelle für Druckgeräte

Echtheitsprüfung durch App TÜV SÜD Verify
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ZERTIFIKAT ◆ CERTIFICATE ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Industrie Service

ZERTIFIKAT

gültig bis: 13.03.2028

CERTIFICATE

valid until: 13.03.2028

EU-Baumusterprüfung (Modul B) - Baumuster - nach Richtlinie 2014/68/EU

EU Type examination (module B) - production type - according to Directive 2014/68/EU

Zertifikat-Nr.: *Certificate No.:* **Z-IS-AN1-MAN-18-03-2831115-14172942**

Name und Anschrift des Herstellers: *Name and address of manufacturer:*
HAWE Hydraulik SE
Einsteinring 17
85609 Aschheim

Hiermit wird bescheinigt, dass das unten genannte Baumuster die Anforderungen der Richtlinie 2014/68/EU erfüllt.

We herewith certify that the type mentioned below meets the requirements of the Directive 2014/68/EU.

CE 0036

Prüfbericht Nr.: *Evaluation report No.:* **P-IS-AN1-MAN-18-03-2831115-14172942**

Geltungsbereich: *Scope of examination:*
Sicherheitsventile des Typs MVEX4
Druckbereich H - B,
Einstelldruck 80 - 450 bar

Fertigungsstätte: *Manufacturing plant:*
HAWE Hydraulik SE
Tegernseer Weg 5
83679 Sachsenkam

Mannheim, 16.03.2018
(Ort, Datum)
(Place, date)

TÜV SÜD Industrie Service GmbH
Zertifizierungsstelle für Druckgeräte

Echtheitsprüfung durch App TÜV SÜD Verify
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Further information

Additional versions

- Connection blocks for single-circuit pumps types AB, AL: D 6905 AB
- Pressure-limiting valve, with unit approval type CMVX: D 7710 TUV
- 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

D 7000 TÜV - 07-2020-1.13

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