EV METALVÆRK A/S

Project:

Medium Pressure Fittings and Check Valves.

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Title:

Medium Pressure Fittings and Check Valves –
User manual for medium pressure fittings and check valves.

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Table of contents:

1. Safety:

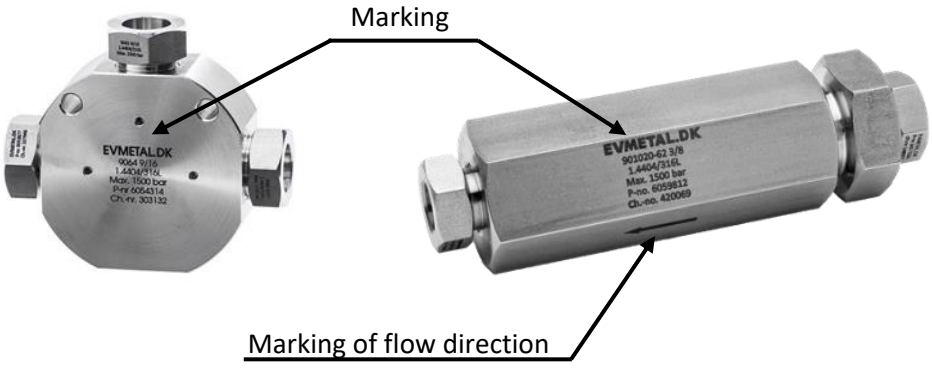
The operator should read and understand this manual before operating the valve. Failure to follow the instructions and safety precautions in this manual can result in serious injury or death.

2. Product description:

Medium pressure fittings and check valves from EV Metalværk A/S are produced in the dimensions ¼", 3/8", 9/16" and ¾". The components are fitted with medium pressure cone & thread connections (C&T connection), NPT or ISO threads. The components are rated to a maximum allowable working pressure of 1500 bar, if the component is fitted with NPT or ISO threads the maximum allowable pressure is reduced to 1050 bar. Check valves are made in two variants, with ball or with O-rings. Note; Bubble tight shut-off cannot be guaranteed for reverse flow through Ball Check Valves.

3. Product Identification:

The fittings and check valves are permanently marked on the side with part number, material grade, maximum allowable pressure, production and charge number.



Flow direction on check valves are marked with an arrow.

4. Intended use:

The fittings and check valves are intended for systems with high pressure fluids in fluid group 1 and 2 according to the pressure directive (2014/68/EU).

The intended service range is specified in section 6 of this manual.

5. Restrictions:

The fittings and check valves should only be installed in systems which are protected against excessive pressure. They should not be subjected to fluids or service conditions causing corrosion and/or deterioration of the materials. Do not use check valves as releif valves.

Warnings:

- Chloride can cause stress corrosion cracking in austenitic stainless materials.
- High flow velocities of the fluid might lead to cavitation.
- Abrasive fluids might damage the sealing function of the check valves.

The fittings and check valves must not be subjected to loads or functional demands exceeding those of section 6 of this manual.

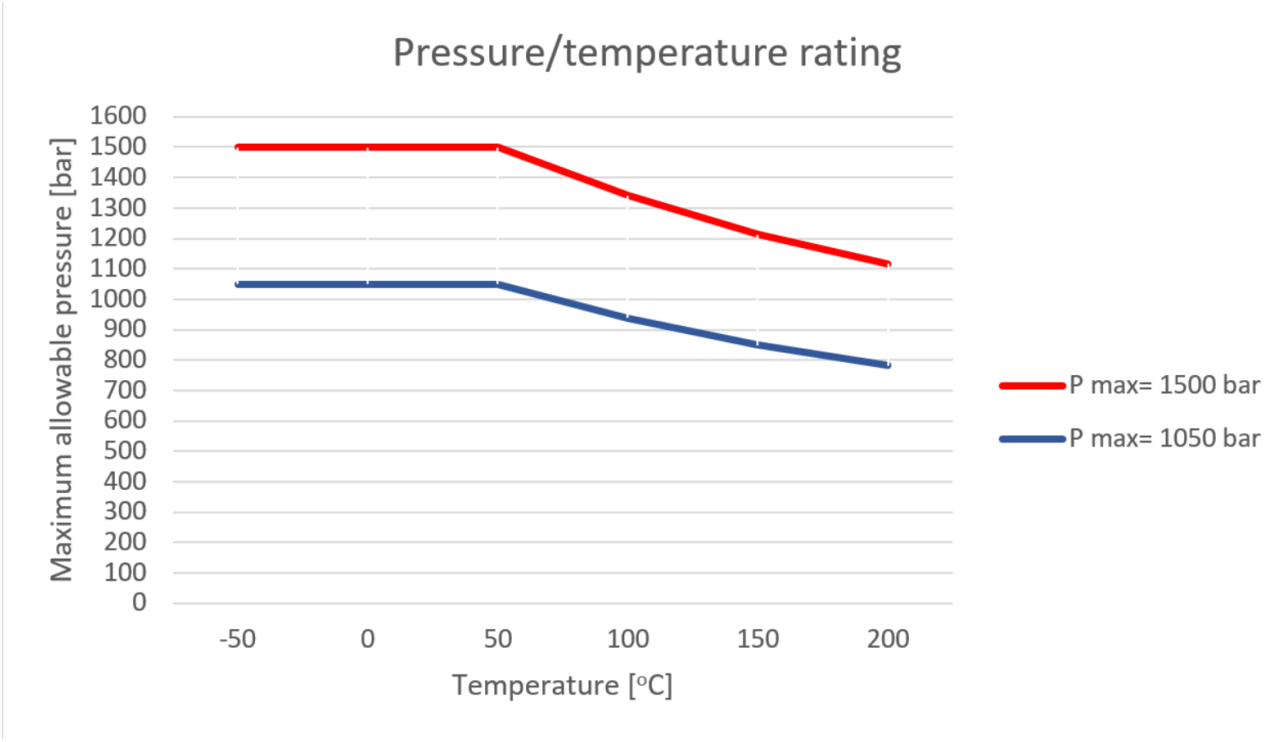
6. Technical data:

Type:	Fittings and check valves with cone and thread connection.
Maximum working pressure:	1500 bar/1050 bar [1])
Crack pressure:	max. 3 bar.
Allowable temperature range:	-196°C to +200°C [2])
Connections:	Medium Pressure cone/thread connection or adaptors with cone/thread connection in one end and pipe thread in the other end.
Materials:	
Valve Body	AISI 316L (1.4404)
O-ring	FKM, other materials on request.
Intended for:	Fluid group 1 and 2 acc. to PED Oil, Hydrogen (H_2), Water, various gases.

Notes:

[1]) Maximum internal pressure is reduced to 1050 bar for fittings with pipe thread.

[2]) Allowable temperature range for fittings and check valves with standard O-rings in FKM is reduced to -20 °C to 180 °C. Allowable temperature range for check valves (type 901023-62) with ball in AISI420 material is reduced to -10 °C to 200 °C.



P_{max} =1500 bar:

Temperature [°C]	< 50	100	150	200
Max. pressure [bar]	1500	1340	1213	1117

P_{max} =1050 bar:

Temperature [°C]	< 50	100	150	200
Max. pressure [bar]	1050	938	849	782

7. Installation:

Only trained personnel may install the fittings and check valves.

WARNING:
Make sure the system and components have been depressurized before any installation work is made on the components.

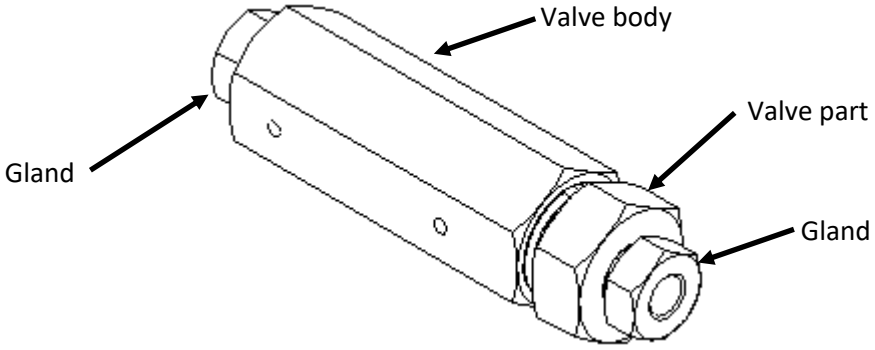
Mounting:

If fitted with mounting holes, mount the fittings using the mounting holes. The fittings and check valves can be mounted in any direction.

WARNING:
Protect the system against excessive pressure. Design the piping so an increased ambient temperature does not lead to unacceptable increase of pressure.

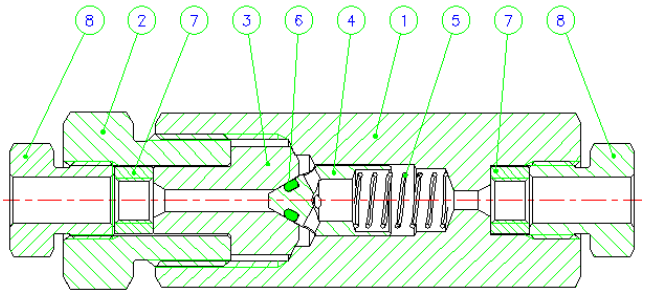
Installation of check valves:

Check valves can be used to prevent reverse flow. Note; Bubble tight shut-off cannot be guaranteed for reverse flow through Ball Check Valves.



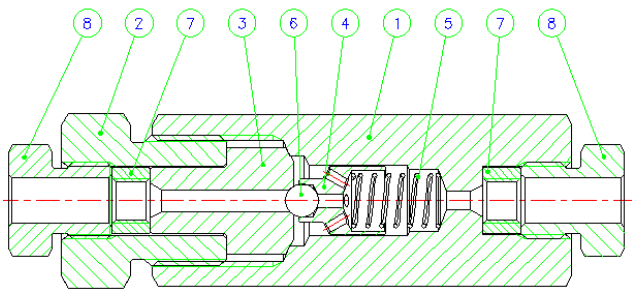
When tightning the glands use a wrech to prevent the valve body and valve part from turning.

Check valve with O-ring:



Pos.	Designation	Material
1	Valve body	AISI 316L
2	Valve part	AISI 316L
3	Valve seat	AISI 316L
4	Valve Cone	AISI 316L
5	Spring	AISI 316
6	O-ring	FKM
7	Collar	AISI 316L
8	Gland	AISI 316L

Check valve with ball:



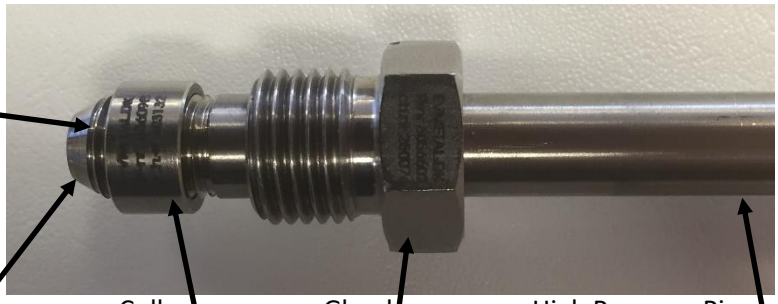
Pos.	Designation	Material
1	Valve body	AISI 316L
2	Valve part	AISI 316L
3	Valve seat	AISI 316L
4	Valve Cone	AISI 316L
5	Spring	AISI 316
6	Ball	AISI 316/420
7	Collar	AISI 316L
8	Gland	AISI 316L

Note; low flow rates through check valves can result in fluttering of the valve cone/ball.

<u>Connection of media piping using the cone/thread connection:</u>

- Slide the gland over the connecting high pressure pipe.
- Screw the collar on the connecting high pressure pipe. Note – Left hand thread!
  Minimum 1 thread should be left exposed between the sealing cone and the collar.

Note:
Minimum 1 thread should be left exposed between the sealing cone and the collar.



- Screw the collar in to the connection on the valve/fitting and tighten with the torque specified in the table below.

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  Suitable lubricants for threads and sealing cones can be used if the high-pressure fluid allows it.

1500 bars cone/thread connections		
Tube connection	**Gland wrench size**	**Tightening torque**
1/4”	NV14	25Nm
3/8”	NV17	40Nm
9/16”	NV24	75Nm
¾”	NV30	120 Nm

8. Maintenance:

Warning:

Make sure the system and components have been depressurized before any maintenance or service work is made on the components.

Note

- Only trained personnel may maintain the fittings and check valves.
- Only use original spare parts. Use of wrong or faulty spare parts might result in damages, malfunction or total failure.
- No modifications may be made to the fittings and check valves without the written permission from EV Metalværk A/S.

Maintenance activities:

- Visually check the fittings and check valves for external corrosion and erosion.
- Check marking is legible.
- Check tightness of in- and outlet connections.
- Check check valves seals for reverse flow. Note; Bubble tight shut-off cannot be guaranteed for reverse flow through Ball Check Valves.

The frequency of the maintenance activities depends on the service conditions.

Dis-assembly and Assembly of valve:

Warning:

Do not dis-assemble check valves.

9. Disposal:

Make sure the system and components have been depressurized before dismantling.

At the end of is service life the fittings and check valves should be disposed in accordance with national legislation.

Metallic and plastic parts can be re-cycled.

10. Compliance with directives:

The fittings and check valves comply with;

- Pressure equipment Directive 2014/68/EC.