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**1. ERIKS operating companies**

ECON safety relief valves are being delivered by several ERIKS operating companies on a worldwide basis. In this manual these will be referred to as 'ERIKS', the individual terms of delivery of the ERIKS operating company having executed the order are applicable.

**2. Product description**

The ECON safety relief valves have very precise fabricated sealing surfaces and conductivity, to guaranty a good function. For this reason, safety relief valves have to be handled very careful. The marking makes the identification of the valve easier and contains:

- size
- set pressure
- maximum temperature Tmax
- heat number
- ECON logo + figure number
- year of fabrication
- CE marking and identification number of the inspection authority

**3. Requirements for maintenance staff**

The staff assigned to assembly, operating and maintenance tasks should be qualified to carry out such jobs and in any circumstance, ensure personal safety

**4. Transport and storage**

Transport and storage should always be carried out with the disc complete closed and the safety relief valve should be protected against external forces, influence and destruction. The safety relief valve should be stored in an unpolluted space and should also be protected against all atmospheric circumstances. There should be taken care of the temperature and humidity in the room, in order to prevent condensate formation.

**5. Function**

ECON safety relief valves have as function to protect the system against excessive pressure. At a safety relief valve, the following pressures can occur:

- Working pressure, the pressure in the system
- set pressure, the adjusted pressure at which the safety relief valve under normal use circumstances is opening. The forces on the disc are in balance.
- colt test pressure, the adjusted static inlet pressure, at which the safety relief valve on the test bench starts to open.
- back pressure, the sum of pressure built up in the vent line when relief and the pressure in the vent line when this is part of a system with a higher pressure than the ambient pressure.

Measured pressures are barg pressures.

For a correct working of the safety relief valve, the outlet of the system may certainly not give any back pressure (OPEN outlet).

Rules for the pressure relief valves under pressure.

	Fig.1514	Fig.1515	Fig.1516	
Max./min. allowable Pressure P (bar)	20/0	42/0	130/0	200/0
Max./min. allowable Temperature T (°C)	160/0	200/0	200/0	20/0

**6. Application**

ECON safety relief valves with threaded connection are mainly applied in the process industry as a relief valve for thermal expansion. Suitable for gasses and liquids. This type of safety valve is also suitable as an overflow for the use of extreme conditions e.g. aggressive or abrasive media, it is recommended to mention this at the ordering stage, to verify whether the valve is suitable. The installation designer is responsible for the safety relief valve selection, suitable for the working conditions. The valves are unsuitable, without written permission of an ERIKS company, to apply for hazardous media as referred into Regulation (EC) No 1272/2008.

**7. Installation**

During the assembly of the ECON safety relief valves, the following rules should be observed:

- make sure before an assembly that the safety relief valves were not damaged during the transport or storage.
- make sure that the applied safety relief valves are suitable for the working conditions, medium used in the plant and the right system connections, according to pressure and temperature limits as per the tag plate.
- before plant startup, especially after repairs carried out, flash out the pipeline, before installing the safety relief valves.
- de safety relief valves should always be mounted side up, as mentioned by the vertical flow direction (pressure under the disc).
- the body part which contains the spring and the adjustable bolt, may not be isolated, because otherwise the spring gets to warm.
- the interior of the safety relief valve and pipeline must be free from foreign particles.
- the vent line should be for liquids mounted sloped. For gasses and damps the vent line should be mounted slightly rising.
- the relief opening must be so located, that there cannot be any danger, because of the blow-off pressure.
- install pipelines so that damaging transverse, excessive vibrations, bending and tensional forces are avoided.
- the joints on the pipeline must not cause additional stress resulted from excessive tightening, user shall select proper gaskets according the working temperature, working pressure and medium.
- the safety relief valves can't be operated, because they are working on the overpressure of the medium.

**8. Maintenance**

Before starting any service jobs, make sure that the medium supply to the pipeline is cut off, pressure was decreased to ambient pressure, the pipeline is completely cleaned and ventilated and the plant is cooled down. Always keep safety instructions in mind and take all personal safety precautions.

During maintenance, the following rules should be observed:

- always keep personal safety precautions in mind and always use appropriate protection e.g. clothing, masks, gloves etc.
- be alert that the temperature still can be very high or low and can cause burns.
- check the safety relief valve on all possible leaking possibilities.

- check if all bolts and nuts, are still fastened.
- check if the disc still opens and closes in a proper manner.
- the thickness of the body must be checked to ensure safety operation at an interval of at least three months.

### 9. Service and repair

All service and repair jobs should be carried out by authorized staff, using suitable tools and user shall use valve parts, bolt and nut of the same size and material as the original one.

- weld repair and drilling of the valve is forbidden.
- it is forbidden to replace the bolt, nut or packing when the valve is under pressure.
- after replacement, service or blow-off pressure adjustment, it is necessary to check the safety relief valve on good functioning and tightness of all connections.
- after installation, the safety relief valve should be checked and maintained periodically at least every 3 months, depending on the medium.

### 10. Assembly

The assembly of the spring according drawing D31761 goes as follows:

- take care that the pin pos.7 is fitted in the bush pos.3 and the spring plate pos.8 is mounted on the pin of pos.7
- mount the right spring pos.9 on the spring plate pos.8
- place the spring plate pos.10 on the spring
- screw the adjustable bolt pos.11 with the nut pos.12 in the body pos.1 Now we can tension the spring
- after adjustment on the right pressure, the adjusting bolt has to be fixed by the nut. This happens when we turn/fixe the nut against the body.
- after adjustment, when required, the safety relief valve can be sealed by ERIKS or by another approval authority.

The springs are classified according the pressure range. The choice of the spring depends on the set pressure. After disassemble one should take care that the right spring and other parts stick together with the safety relief valve.

### 11. Possible dangers

Leakage can cause danger of the safety and health of persons, animals and goods. Even when the safety relief valve is functioning well, there can occur dangers which one must take into account.

Following dangers can occur:

- the safety relief valve blows off and abrasive, poisoned, colt or hot medium can escape. This can be prevented by making a shield or to move the outlet. One can also collect the medium in a tank.
- the safety relief valve leaks and abrasive, poisoned, colt or hot medium can escape. This can be prevented by making a shield or to move the outlet. One can also collect the medium in a tank.
- the safety relief valve is wrong calculated or is not working alright and because of cracking abrasive, poisoned, colt or hot medium can escape
- injury by hot, colt or sharp parts. This can be avoid by shielding or isolation.
- the medium can freeze, at the start-up of the safety relief valve and blocking the disc. Thinking is particular of the temperature fall, which occurs when gasses expand.
- a dangerous noise level, when the medium blows off.
- medium that escapes very fast out of the outlet
- chemical burns, injury or poisoning because of left behind medium in the valve. This can be avoid by flushing the installation, before assembly.

**12. Troubleshooting**

It is essential that the safety regulations are observed when identifying the fault.

<b>Problem</b>	<b>Possible cause</b>	<b>Corrective measures</b>
Safety relief valve doesn't work	The safety relief valve is wrong calculated, for example the blow-off pressure is wrong	New calculation and adjustment of the safety relief valve is necessary
	The safety relief valve is cracked because of overload	Replace the safety relief valve, new calculation and adjustment of the safety relief valve is necessary
	Piping system clogged	Check piping system
Leakage across valve seat	Disc not properly closed	Check disc opening function
	Seat damaged by foreign particles	Replace the valve
	Medium contaminated	Clean the valve and install a dirt screen
Leakage at the connection	Thread connection not right	Check the connection

**13. Removal**

All dismantled and rejected valves cannot be disposed with household waste. The valves are made of materials which can be re-used and should be delivered to designated recycling centers.

**ECON SAFETY VALVE OF STEEL**

LOW LIFT TYPE, SPRING LOADED

POS	NAME	MATERIAL
1	BODY	S355J2+N (1.0577+N)
2	OUTLET CHAMBER	S355J2+N (1.0577+N)
3	GUIDE	X10CrNi18 9 / 1.4305
4	DISC	X20Cr13 / 1.4021
4.1	DISC RING	FPM (VITON)
5	SCREWED END	X20CrNi17 2 / 1.4057
6	O-RING	FPM (VITON)
7	PIN	X20CrNi17 2 / 1.4057
8	SPRING RETAINER	9SMnPb28 / 1.0718
9	SPRING	SPRINGSSTEEL / 1.1200
10	SPRING RETAINER	9SMnPb28 / 1.0718
11	ADJUSTING BOLT	S355J2+N (1.0577+N)
12	LOCK NUT	9SMnPb28 / 1.0718

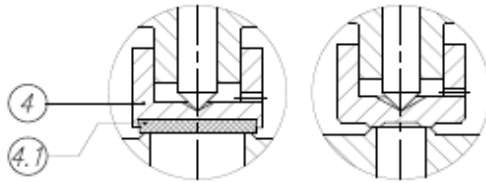
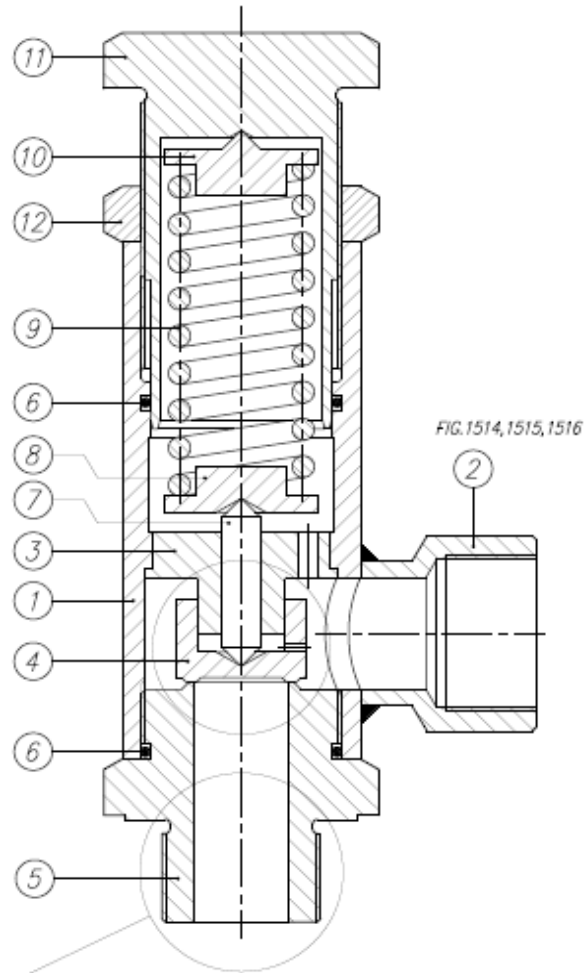


FIG.1514

FIG.1516

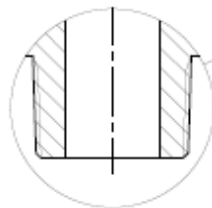


FIG. ....NPT

MAX. WORKING PRESSURE AND TEMPERATURE:

Fig.	1514	1515	1516
p (bar)	20	42	200
T (°C)	160	200	200

SET PRESSURE, DEPENDS ON SPRING:

Fig.	1514	1515	1516
p (bar)	0.5-5	0.5-5	—
	5-10	5-10	25-50
	10-20	10-20	50-100
	—	20-42	100-200

	Scale: /	Date: 23-08-2001	Drawn: R. de Kieffe	Checked:	
	ISSUE DATE: 01-09-2015 DESCOR.: FIG.1512 INVALID MATERIAL CHANGE	FIG No.: 1514 1515 1516 1514NPT 1515NPT 1516NPT	DN: Size: 3/8"-2"	DWG. No.: D 31761	