U2008

TLV®

BALANCED PRESSURE STEAM TRAPS

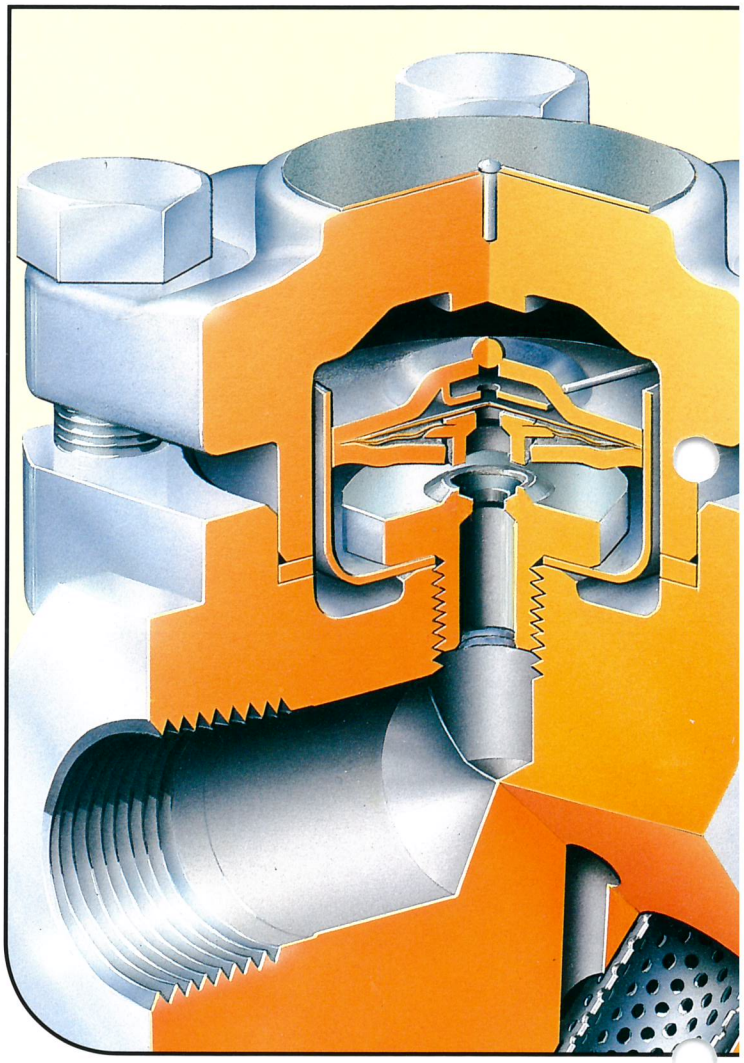
L21S
L32S
LV21

X-ELEMENT

Extremely str

Pressure resistant capsule

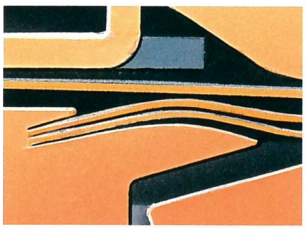
The X-Element responds alternately to internal pressure (pressure of evaporated fill) and external pressure (primary steam pressure). The internal pressure builds up according to the steam or condensate temperature. The temperature can be very high as a result of superheated steam (50 bar and higher) or the external pressure may decrease suddenly (e.g. when steam is blown off during batch operation) while the internal pressure remains high, resulting in sudden and high stress to the element. To withstand such harsh conditions the element is built of sufficiently thick, high-tensile stainless steel plate.



Diaphragm support 1

Shape of valve supports element

The design of the valve matches the shape of the diaphragm so that the latter is well supported and the danger of deformation or rupture of the element is eliminated.



SAFETY - "FAIL OPEN" FEATURE

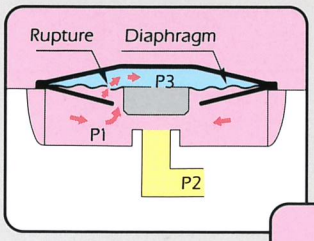
What does "fail open" mean?...

The "Fail open" feature means that the valve will open even if the diaphragm (the most delicate part of a thermostatic capsule element) should break. This is an advantage because a valve closed in case of failure allows condensate to accumulate and pose the following problems and hazards:

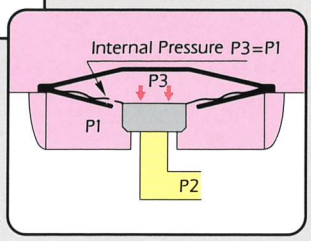
1. Temperature drop in process equipment.
2. Interruption of production or deterioration of product quality.
3. Waterhammer.

... the "fail open" feature minimizes the danger of production losses and safely avoids waterhammer in the event of trap failure.

Failure of capsule elements with only one diaphragm (including some bellows elements):



1. When the diaphragm breaks, its fill escapes and the primary pressure P1 builds up in the element above the diaphragm.

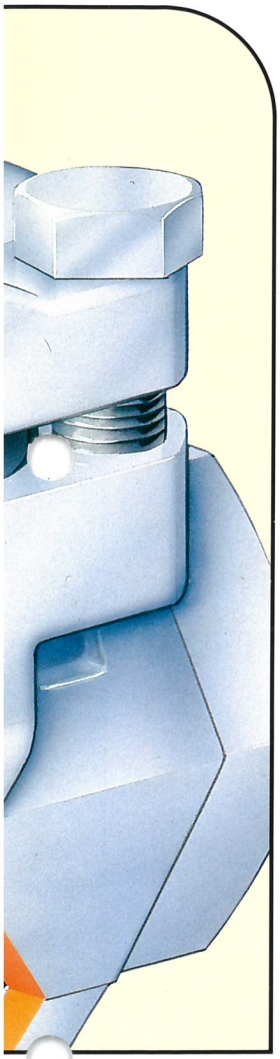


2. The internal pressure of the capsule P3 becomes equal to P1 so that the valve closes.

P1=P3>P2

The closed valve causes condensate to accumulate.

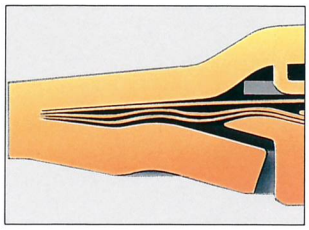
ng capsule element for reliability and safety.



Diaphragm support 2

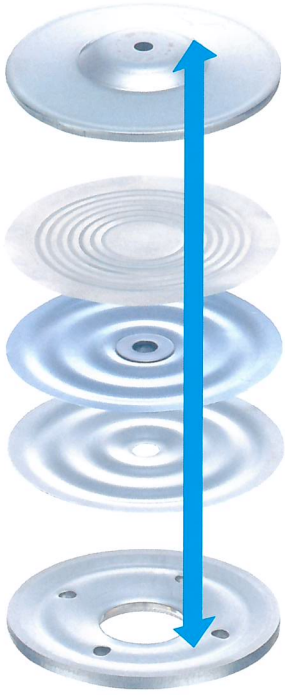
Case supports diaphragm

The case is designed to completely match the shape of the diaphragm. Therefore, even with excessive internal pressure, the diaphragm is effectively protected from damage.



Safety - "fail open" feature

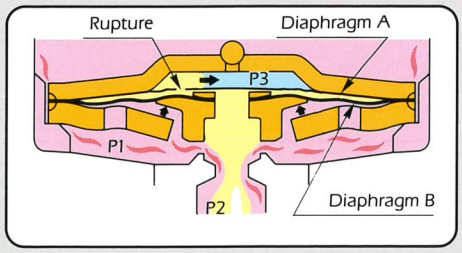
The unique configuration of two diaphragms and a valve with a hole through the center of its plug results in a "fail open" valve position should these parts fail. Condensate will be discharged even after damage to the X-element occurs. Consequently, the process will not be disturbed or interrupted, nor will there be a danger of waterhammer due to condensate build-up.



Unit construction

Maintenance is easy
Because the valve sections of L-Series steam traps are of unit construction, their replacement is easy; only the cover bolts and cover need to be removed for access to the valve unit.

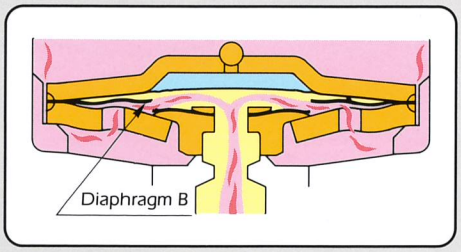
Rupture of Diaphragm A in the X-Element



The pressure P3 approaches P2 and the valve plug is pushed up by the primary pressure P1 to open the valve.

As long as the primary pressure is maintained, the valve remains in the upper position and the "FAIL OPEN" feature works.

Rupture of Diaphragm B in the X-Element

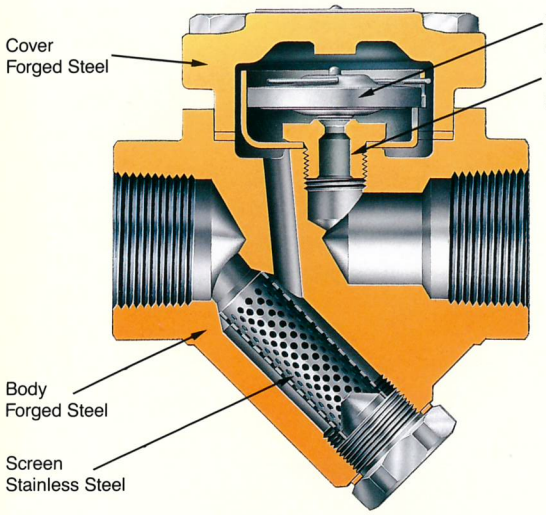


Even in an extreme case, where the valve plug is severed completely from the lower diaphragm, the condensate can drain through the hole in the valve plug center.

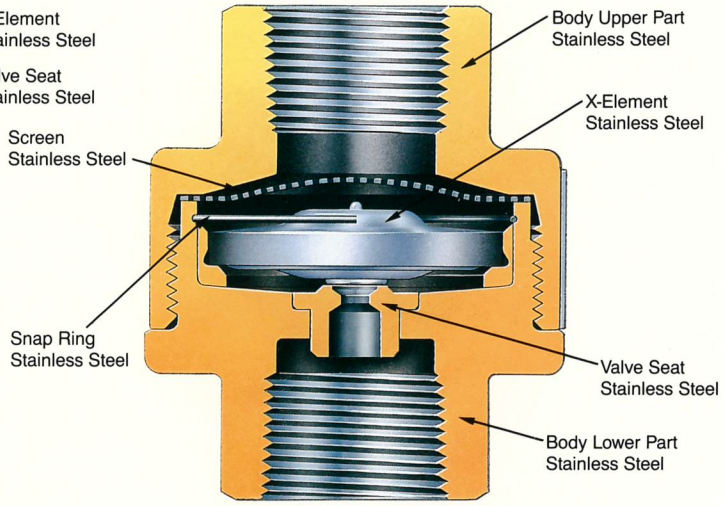
In this "OPEN" failure, the condensate discharge rate is approximately 60% of the maximum discharge rate of the steam trap.
When the diaphragm B suffers only a slight rupture and the valve plug is not severed, the valve stays 100% open for maximum discharge.

Specifications

L21S·L32S

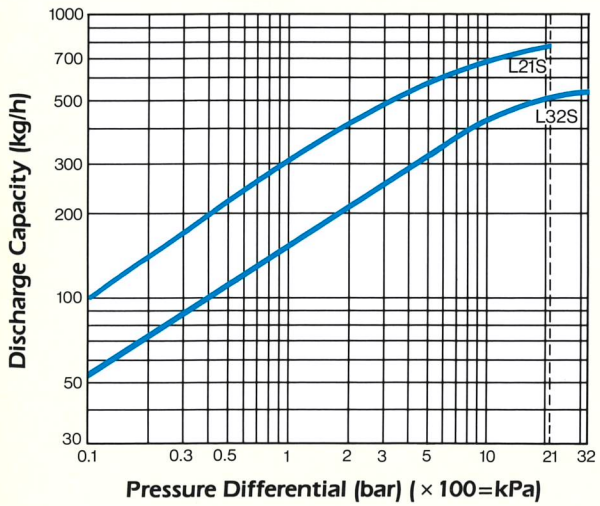


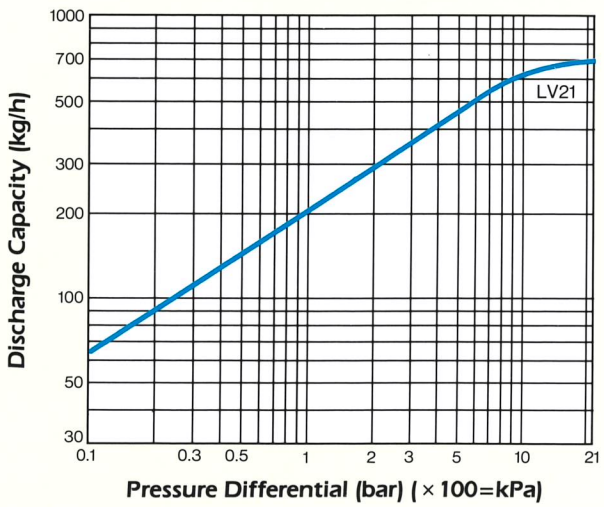
LV21



Model	Size, DN	Body Material	Maximum Working Pressure (barg)	Maximum Working Temperature (°C)	Connection
L21S	1/2″, 3/4″, 1″ DN 15, 20, 25	Forged Steel	21	300	Screwed DIN2999 Flanged PN40 DIN2501
L32S	1/2″, 3/4″, 1″ DN 15, 20, 25	Forged Steel	32	300	Screwed DIN2999 Flanged PN40 DIN2501
LV21	1/4″, 3/8″, 1/2″	Stainless Steel	21	300	Screwed DIN2999

Discharge Capacity





1. Pressure differential is the difference between the inlet and outlet pressures of the trap.
2. Recommended safety factor: 2.

Specifications subject to change without notice.

TLV®

Manufacturer

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