www.tlv.com

TLV. THE STEAM EXPERT.

Steam and Condensate Technology

Components // Systems // Service // Consultancy

1 STEAM TRAPS ENERGY EFFICIENT, RAPID START-UP AND LONG SERVICE LIFE. ALL YOU NEED FROM A STEAM TRAP.

TLV Steam Traps reliably discharge condensate, air and inert gases from steam plants and close off steam tight. Our wide range of products offers the best choice of steam trap with the highest energy efficiency and durability, easy to maintain for your applications. To protect the valve sets against dirt and scale there are always strainer screens or even complete strainers with access from outside integrated in the design. Reusable PTFE body gaskets are used up to operating temperatures of 220°C.

PRESSURES
up to 260 bar

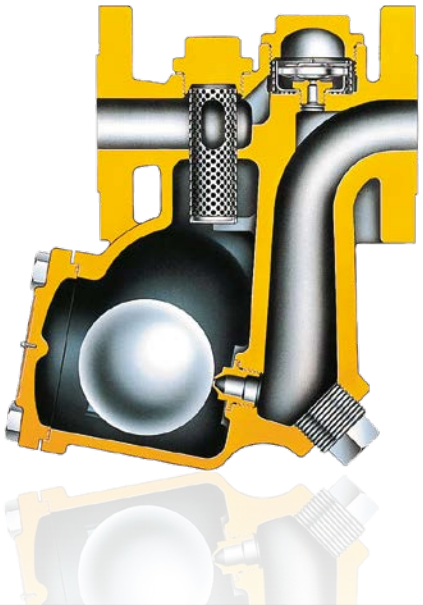
TEMPERATURES
up to 550 °C

CAPACITIES
up to 180 t/h

APPLICATIONS
Process
Line drainage
Tracer

"FREE FLOAT" STEAM TRAPS

➔ This unique design, brilliant in its simplicity, is typical of TLV-products. The only moving part in this type of steam trap is the stainless steel float which is free to rotate in any plane. This gives an infinite number of seating positions, reducing wear to a minimum. There are no complicated mechanical linkages. Condensate is discharged immediately as it reaches the trap (no back-up). An inbuilt thermal high capacity air vent ensures the quick start-up of processes.



01 Free Float Steam Traps Series SJ and J

For processes, also at high pressure, with body materials made of ductile cast iron, cast steel and stainless steel. Wide pressure and capacity ranges, for horizontal or vertical installation.

- No Condensate Back-up
- Rapid Start-up
- Thermal Air Vent
- Long Service Life
- Built-in Strainer
- Easy Maintenance
- Up to 120 bar / 530 °C

02 Free Float Steam Traps Series JL

For high capacity processes, for up to 60 t/h condensate load. Body material cast iron or cast steel.

- No Condensate Back-up
- Thermal Air Vent
- Stainless Steel Internals
- Long Service Life

03 Free Float Steam Traps Series SS

For drip and tracer, small processes, all stainless, for horizontal or vertical installation.

- Can be used on superheated steam
- Long Service Life
- All Stainless
- Compact and Light
- Air Venting for Start-up

01 Thermostatic Steam Traps Series L

The L-Series traps are equipped with a fast reacting, highpressure-resistant capsule element (X-Element) with a safety "fail open" feature.

- > Robust Capsule Element
- > Superior Air Venting Capability
- > Safety Fail Open Feature
- > Compact and Light

02 Thermodynamic Steam Traps Series P and HR

Extremely strong and popular for high pressure applications. With lapped disc surfaces and bimetallic air vent. Air jacketing prevents steam losses due to ambient conditions.

- > Extremely Robust
- > Automatic Air Venting for Start-up
- > Air Jackets
- > Inline-Replaceable Seat Module
- > Up to 260 bar / 550 °C

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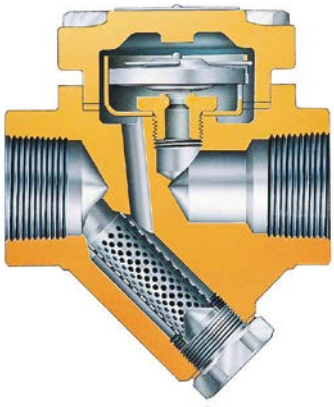
BALANCED PRESSURE THERMOSTATIC STEAM TRAPS

➔ The capsule element contains a liquid whose saturation temperature is slightly lower than the saturation temperature of water. With rising temperature in the trap the fill evaporates and the resulting internal pressure expands the diaphragm to close the valve before steam reaches the trap. When the temperature decreases the fill condenses, the valve opens again and condensate is discharged again. Special merits of the TLV X-Element are the case support of the diaphragm over the full diameter protecting it effectively from damage, and the safety "fail open" feature.



THERMODYNAMIC STEAM TRAPS

➔ Thermodyne Steam Traps are equipped with a bimetal air vent ring which holds the disc away from its seat during start-up until air and cold condensate have been discharged. Hot condensate expands the bimetal and frees the disc for normal operation. The trap closes when flash steam forms under the disc and creates a low pressure region there which sucks it on to the seat. Air or steam jackets insulating the pressure chamber reduce the radiant heat losses to the environment. This prevents no-load actuation and ensures steam tight operation and durability.

03

03 Clean Steam Traps

Designed for Bio and Clean Steam Applications.

- All Stainless (316L)
- Self-draining
- Crevice-free Interior
- Easy Disassembly and Cleaning

04

05

04 Condensate Manifold CM
05 Trap Station V2

Forged steel manifolds and stations in all-in-one packages for condensate collection on tracing applications or for small equipment piping.

- Modular Packages CM4/CM8/CM12
- Space Saving
- Built-in Bellows Sealed Valves
- Built-in Strainers
- Built-in Blowdown Valves
- Robust and Durable
- QuickTrap 2-bolt Universal Connectors permit trap unit replacement in minutes

2 PROCESS STEAM CONTROL

PRECISE PRESSURE / TEMPERATURE CONTROL AND EFFECTIVE CONDENSATE SEPARATION FOR INCREASED PRODUCTIVITY AND RELIABILITY.

TLV Process Steam Controls and Systems have been developed especially for the heat carrier steam. The COS-Series design takes into account that process steam for heating is in reality generally not available as 100% saturated steam, but is to a greater or lesser degree supplied as wet steam. Our self-acting controls and control valves are distinguished by compact, robust design and the ease of maintenance. In combination with special multi-purpose controllers and actuators even the most demanding applications are precisely controlled.

PRESSURES
up to 30 bar

TEMPERATURES
up to 260 °C

CAPACITIES
up to 40 t/h

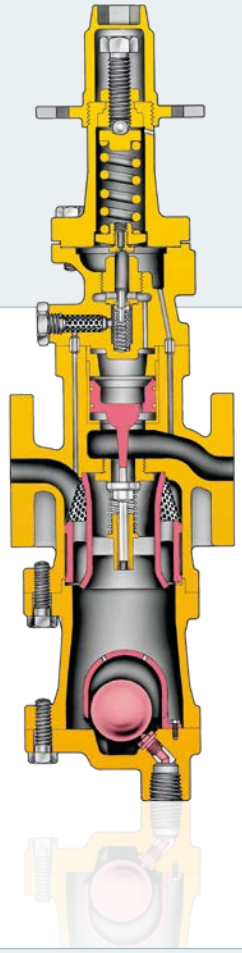
APPLICATIONS
Pressure Regulation
Temperature Control
Capacity Control
Automation

HIGHEST STEAM QUALITY FOR INCREASED PRODUCTIVITY

➔ By precise pressure/temperature control and effective condensate separation.

Condensate particles are automatically removed – therefore:

> No seat erosion problems
> Heat exchanger efficiency increased by up to 10%



01 Compact Reducing Station COSPECT

Special features of the Compact Pressure Reducing Station Cospect are ease of maintenance, internal sensing line, wide pressure adjustment range and compact design. Special components:

- > Specially designed shockabsorbing spherical piston accurately maintains the set pressure and reacts quickly to primary pressure or flow flucations
- > Super cyclonical effects separator for dry steam: separation efficiency as high as 98 %
- > "Free Float" steam trap for continuous, smooth condensate discharge

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02 Compact Reducing Valve DR20

For the smaller processes.

- > High Accuracy
- > Reduction Ratio up to 30:1
- > All Stainless
- > Compact and light
- > Easy Maintenance

03 Control Valve for Steam CV-COS

Control valve with pneumatic actuation developed especially for process steam applications.

- > For Pressure / Temperature / Flow Control
- > Built-in I-P Positioner
- > Control Valve with built-in Cyclone Separator and Steam Trap

04 Pressure / Temperature Control MC-COS

This specialised control system is based on the Cospect control valve series with motorized actucator, programmable multi-purpose controllers and pressure/ temperature transducers.

- > Precise Control
- > No Overshooting
- > Control Valve with integrated Cyclone Separator and Steam Trap

3 SEPARATORS AND FILTERS FOR STEAM AND GASES.HIGH EFFICIENCY CONDENSATE SEPARATION AND DRAINAGE. FILTER FOR STERILE AND CULINARY STEAM.

TLV Separators and Filters provide highest steam quality. Condensate, dirt and scale entrained in steam or air flow is eliminated and discharged continuously (no back-up). The high quality, dry steam generated improves heating efficiency and product quality (direct heating), reduces seat erosion in control valves, as well as corrosion damage in compressed air tools. The sintered wire mesh filters are easy to clean and reuse.

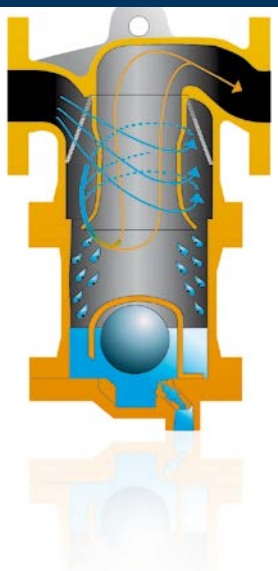
PRESSURES
up to 25 bar

TEMPERATURES
up to 300 °C

APPLICATIONS
Steam heated processes
Pharmaceutical Production
Food Production
Sterilisation
Compressed Air Systems

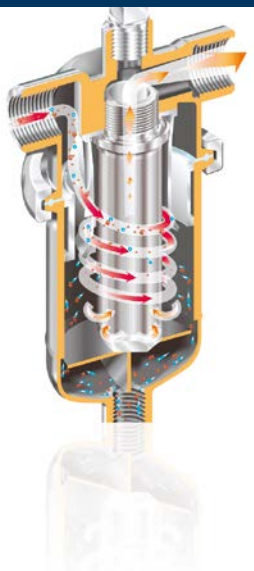
HIGH EFFICIENCY SEPARATOR

➔ Steam or air flow through the separator turns into a high speed cyclone flow. The developing centrifugal force provides the separation of entrained condensate particles with an efficiency as high as 98%. Dirt and scale is at the same time thoroughly removed from the flow. Large dirt and scale particles are already removed by a strainer screen before entering the cyclone. The built-in free float steam trap discharges condensate continuously as it is separated.



SEPARATOR FILTER UNIT

➔ The separator filter unit contains in the first stage a cyclone (see description left hand side) which eliminates condensate as well as dirt and scale. Thus the filter is protected which does the fine filtration to generate sterile or culinary steam in the second stage. Filter grades down to 0.5 µm are available. Significantly enlarged cleaning intervals reduce maintenance time/cost considerably.



01

01 Separator Filter SF1

- Built-in cyclone separator eliminates condensate as well as dirt and scale before filtering, reducing filter clogging
- 5-layer sintered wire mesh filter traps small dirt and scale particles (filter grades down to 0.5 µm available)
- Reduced maintenance time / cost due to significantly enlarged cleaning intervalls and excellent durability

02

02 High Efficiency Separator DC3

- Provides condensate separation efficiency as high as 98 %
- Built-in free float steam trap discharges condensate continuously as it is separated and provides a tight seal to steam

4 CONDENSATE DRAINAGE / RECOVERY

COMPLETE CONDENSATE DRAINAGE AND RECOVERY WITHOUT ANY BACK-UP UNDER ALL OPERATING CONDITIONS. PERFECT CONDENSATE HANDLING.

TLV Pump Traps and Condensate Return Pumps for complete condensate drainage and recovery preventing "stalling" heat exchangers, temperature swings, waterhammer and corrosion. Pump Traps and "Steam driven" Condensate Return Pumps are ideal for hazardous areas (operates purely mechanically, no electricity needed). They ensure a safe and economical operation of steam plants.

PRESSURES
up to 21 bar

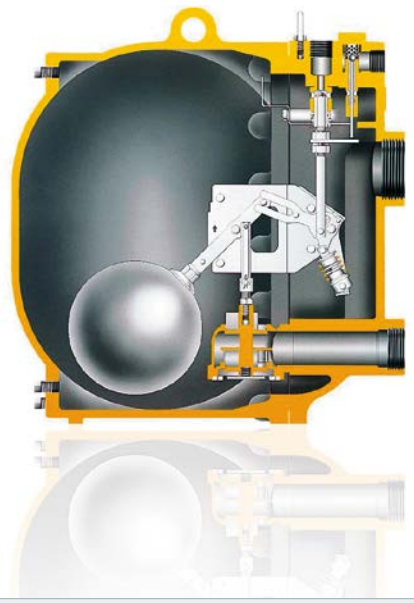
TEMPERATURES
up to 220°C

CAPACITIES
up to 9 t/h

APPLICATIONS
Condensate recovery from receivers or all kind of steam using equipment

PUMP TRAPS AND CONDENSATE RETURN PUMPS

→ With positive differential pressure the GT-Series works like a mechanical float trap – basically like a level control. When the differential pressure becomes negative (back pressure > upstream pressure) the body of the pump trap fills with condensate causing the float to rise. In the highest position of the float a snap action mechanism is actuated and opens the motive medium (commonly steam) intake valve. Exactly at the same time the exhaust valve or vent valve is closed. The motive medium pressure forces out the condensate and the float falls. When the float reaches the lower switching point of the snap action mechanism again the intake valve closes and the exhaust valve opens. The cycle then repeats.



01
GP 10 F

01 Condensate Return Pump GP-Series

- Straight-Through Connection for Easy Installation
- High Capacity
- Low Filling Head
- No Cavitation
- No Electricity
- Starts and Stops Automatically
- Space Saving
- Easy to Maintain: All internal parts are suspended from trap cover and can be removed upward in one piece

02
GT 10

02
GT 10 L

02
GT 5 C

02 Pump Traps GT-Series

- Low Filling Head
- No Cavitation
- No Electricity
- Starts and Stops Automatically
- Space Saving
- Easy to Maintain
- From smallest (GT5C) to highest (GT10) capacities

5 SYSTEM SOLUTIONS PACKAGED SOLUTIONS
READY FOR CONNECTION – INDIVIDUALLY DESIGNED.

TLV Packaged Solutions for Steam Applications are individually designed in direct communication with the engineering consultant / constructor or user of the steam plant. By optimizing the design of your steam and condensate system together we assist in the reduction of production costs, increased automation and improvement of product quality. In our ready to install packages we utilize innovative controls especially designed for steam heated processes.

HEATPACK
Heat Exchanger Packages

VACUUMIZER
Vacuum Steam Heating and Cooling System

CLEAN STEAM GENERATORS

STEAM CONTROL STATIONS

CONDENSATE RETURN / PACKAGED PUMP SYSTEMS

HEAT RECOVERY SYSTEMS

STEAM COMPRESSORS

TLV VACUUMIZER DEMONSTRATION RIG

➔ A 100-liter-reactor vessel in our showroom is heated up to temperatures between 30 and 110°C alternatively with hot water or vacuum steam. For comparison of the two heating systems the temperatures in the vessel are recorded over the time.

01 VACUUMIZER – Vacuum Steam Heating and Cooling System

- > Drastically reduced warm-up times when compared to hot water systems
- > Even heating of the product in the range between 30 and 110°C without any overshooting
- > Precise temperature control (± 1°C)
- > Space and energy saving package

01

02

03

02 Condensate Return Systems / Packaged Pump Systems

- > Condensate recovery by steam or compressed air
- > Compact and energy saving solution
- > Ready for connection, easy to install
- > Individually designed and sized

03 HEATPACK Heat Exchanger Packages

- > Robust and compact stainless steel heat exchangers with straight tubes (easy to clean)
- > Increased productivity due to the use of specialised controls for process steam
- > Complete condensate drainage and recovery by pumping traps
- > Reduced floor space requirements and ready for connection

6 TLV SERVICE STEAM TRAP INSPECTION SERVICE AND MAINTENANCE OF STEAM CONTROLS. COMMISSIONING SUPPORT AND TROUBLE SHOOTING.

TLV Steam Trap Inspection Services maximise the energy efficiency of steam plants. Faulty steam traps are causing either steam losses when leaking or problems due to the backup of condensate when blocked. By regular inspections of your trap population we help you to reduce energy costs, to increase productivity and product quality, and to ensure plant safety and availability. Alongside the steam trap inspection we also provide you with recommendations for plant optimisation.

Save energy costs

Reduce CO_2-emmission

Increase productivity, quality, plant safety

Optimise your condensate system

TLV TRAPMAN®

➔ TLV´s TrapMan is the only inspection system which is able to accurately diagnose all types of steam trap failures based on the results of laboratory examinations on all commonly used steam traps in the world, to classify failed traps and to quantify steam losses. This enables the TLV Inspection Service to determine reliably the amount of energy losses and to judge the efficiency of steam plants.

7 TLV – THE STEAM EXPERT

FOCUSSING DELIBERATELY ON THE MEDIUM PROCESS STEAM. FIRST-CLASS DESIGN AND CONSULTANCY SERVICE, CONTROLS AND CONTROL SYSTEMS DEVELOPED ESPECIALLY FOR STEAM.

TLV Training Courses

TLV offer a wide range of Seminars and Training Courses at our extensive facilities located in Germany. The seminars cover numerous subjects including the generation and distribution of steam, process control and condensate recovery.
Many aspects of design, safe-operation and plant maintenance are also dealt with. In addition the facility includes an excellent "Working" steam system with boiler, distribution system, process control systems, steam traps and condensate return system.
This provides an opportunity for practical testing and demonstration on live steam.

➔ Please contact us for our seminar flyer.

The Company

TLV (TroubleLess Valve) – the name of our company could not have been better chosen even now, after more than 50 years of company history. It was the fundamental idea to develop exceptionally precise and long lasting Process Steam Controls which inspired Mr. Katsuji Fujiwara to found the company. Even now, this idea still encourages our people to do their best in finding perfect and at the same time, simple solutions in the field of process steam regulation and condensate recovery. The consequent application of quality standards of the highest grade (ISO Certificate 9001) is still at the very center of the company's goals. We are also proud to offer TLV Consulting Engineering Services equal in quality to TLV Products to Plant Owners, Engineering Companies and Plant Builders.

We offer first class quality in Application-oriented Technical Advice at site, Special Service, and Training and Development of your personnel, as well. Last but not least, we guarantee fast delivery through our international sales and service representatives and branches.

TLV EURO ENGINEERING GMBH
Daimler-Benz-Strasse 16–18
74915 Waibstadt
Germany
T +49 07263.9150-0
F +49 07263.9150-50
info@tlv-euro.de
www.tlv.com

TLV EURO ENGINEERING UK LTD
Unit 7 & 8 Furlong Business Park
Bishops Cleeve, Cheltenham
GL52 8TW, UK
T +44 12 42.22 72 23
F +44 12 42.22 30 77
sales@tlv.co.uk
www.tlv.com

TLV EURO ENGINEERING FRANCE SARL
Parc d'Ariane 2, bât. C,
290 rue Ferdinand Perrier
69800 Saint Priest, France
T +33 472.48 22 22
F +33 472.48 22 20
tlv@tlv-france.com
www.tlv.com

Overview TLV-Products

- Pressure/Temperature Controls
- Steam Flow Meters
- Vacuum Steam Heating System
- Reducing Valves, Reducing Stations
- Separators/Filters
- Steam Traps – All Types
- Steam Manifolds, Trap Stations, Condensate Manifolds
- Pump Traps/Condensate Pumps
- Compact Heat Exchangers
- Packaged Units
- Flash Vessels
- Steam/Water Mixing Valves
- Diagnostic Equipment for Steam Traps and Valves
- Safety Valves, Stop Valves, Ball Valves
- Strainers, Sight Glasses
- System Solutions

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