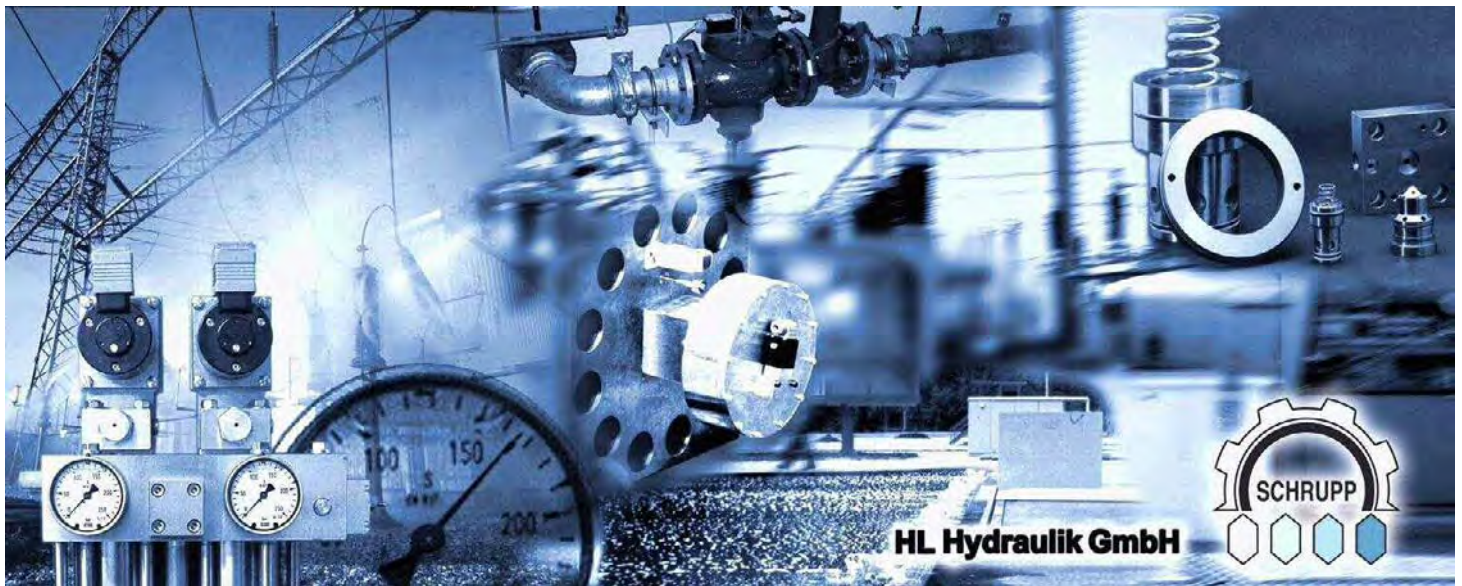




System Solution for Industry

HP Pneumatics

Water- and Special- Fluid Hydraulics

Equipment for Road Safety Training Centres

Fire Fighting Systems for Transformers

Live Line Washing Systems for Insulators

HL-Hydraulik GmbH

Kupferhütte 5C

D-57562 Herdorf

Tel: **+49 (0)2744-9324-0**

web: **www.hl-hydraulik.de**

e-mail: **info@hl-hydraulik.de**

E FEB22



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Kupferhütte 5c
57562 Herdorf

Telefon: +49 (0) 27 44 - 93 24 - 0

E-Mail: info@hl-hydraulik.de

www.hl-hydraulik.de

HP Pneumatic (Drucklufttechnik)

VDEW empfohlene Druckluftsysteme und Komponenten bis 350 bar

HP Pneumatic

Electrical Industry (VDEW) recommended systems and components up to 350 bar



Wasser- und Sonderhydraulik

Edelstahl-Cartridgeventile und Vorsteuerungen bis 350 bar (800 bar), Nennweiten 2 bis 250 mm Entzunderungsventile, Druck- und Wegeventile, Sprühventile zur partiellen Walzenkühlung.



Water- and Special-Fluid Hydraulics

Stainless steel cartridges and pilot valves up to 350 bar (optional 800 bar), size 2 to 250 mm (08-10 inch).

Descaling valves, directional, check, flow and pressure control functions, spray valves for roll coolant systems.



Technik für Fahrsicherheitszentren

Innovative Technik zur Simulation kritischer Situationen im Straßenverkehr: Schleuderplatten, Fahrbahnbewässerungen, Wasserhindernissysteme

Equipment for Road Safety Training Centers

To simulate critical traffic situations.
Vehicle skidding devices, water film systems, water obstacles

Feuerlöschsysteme für Transformatoren

Fremdenergie-unabhängige Wassersprühsysteme

Fire Fighting Systems for Transformers

Water spraying systems for operation independent from an external power supply



Isolatorenreinigungssysteme

Stationäre Wassersprühsysteme zur Reinigung unter Spannung

Insulator Cleaning Systems

Water spraying systems for stationary live electrical line cleaning



HP – PNEUMATICS

System Solutions for Industry

HP Pneumatics

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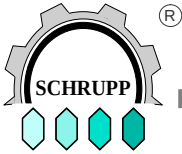
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HP – PNEUMATICS

System Solutions for Industry



HP Pneumatics

Water- and Special- Fluid Hydraulics

Equipment for Road Safety Training Centres

Fire Fighting Systems for Transformers

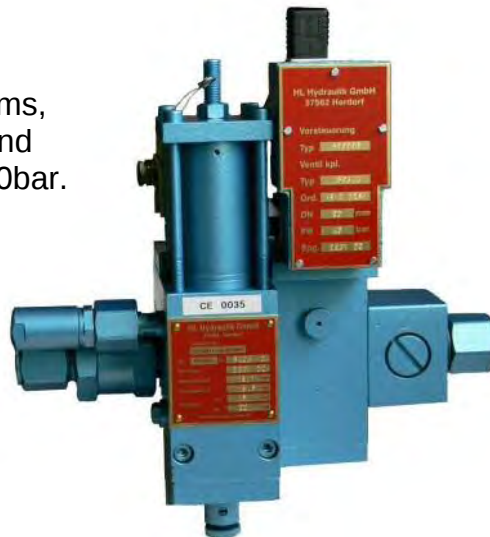
Live Line Washing Systems for Insulators

HP – PNEUMATICS

System Solutions for Industry

Traditional Valves

For high voltage breaker systems,
accumulator safety functions and
industrial applications up to 350bar.



Valves and Systems

Modular designed components and manifolds in cartridge-technology for industrial applications. Pressures up to 500bar, sizes from 4 to 100mm.

High flexibility, compact design

Reduction of
maintenance and
interruption time



HP – PNEUMATICS

System Solutions for Industry

Gas Dryer Stations

For laboratories and industrial productions with a need for continuous high quality in the compressed air supply.

For high pressure breathing air in diving and rescue systems.

For high voltage breaker systems to prevent corrosion and icing.

Pressures up to 350bar and dew points below -50°C can be realized.



Compressor Stations

Individual compressor units for in- or outdoor use, complete assembled including necessary valves and electrically control systems.





HP-PNEUMATICS

Traditional Valves



Manual Shut-Off and Check Valves

PN 64 - DN 15, 25

PN 350 - DN 8

Type

HAV 15, HAV 25

HAV 08



Pressure Maintaining and Pressure Maintaining Check Valves

PN 60/350 - DN 16

PN 400 - DN 5

Type

DHV 16/12

DHV 05, DRV 05



Safety Valves

PN 350 - DN 6

PN 40 - DN 30/15

Type

SVE 06

SVE 30/15



Safety Devices

PN 64 – DN 20

PN 200 – DN 10

Type

SHE 06

SHE 20

Pressure Reducing Valves

PN 200 – DN 8

PN 40 – DN20

Type

DMV 08

DMV 20

Systems and Cartridge Technology



Cartridge Program Directional, Sluice Valves

PN 400 – DN 6

PN 250 – DN16

Type

WEV 06

WEV 16



Gas Dryer

PN 350bar

Q 1000L/min /1400L/min

Q 1100-3300L/min

Type

GTR 10, GTR 14

GTF

CARTRIDGE PROGRAM



Stainless Steel Cartridge valves according to DIN24342

The valves are designed for use with water, water and oil emulsions, oil and gases. Their robust construction and compact design provide long life, ease of maintenance, and high performance.

These slip in cartridge type valves can be combined in many different ways to satisfy the requirements of a wide variety of applications. The sealed poppet design provides drop tight, leak free shut off.

Product range:

Cartridges for directional functions

Soft seated ND10 to 100 for compressed air and gases according to Group 2, 27/93/EG up to 350bar

Functional description

These valves are designed for use with special fluids:

No metal to metal contact at the sliding surfaces.

- the use of non-lubricating mediums is possible.

All pressurized areas are separated by soft seals

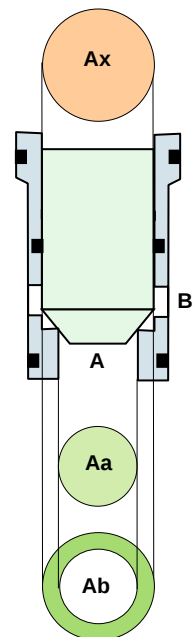
- for thin fluids and gases under high pressure.

Special geometry and non-corroding material

- for gases with an high humidity.

An important dimension for the function of cartridge valves is the surface ratio of the seat area A_a and the annulus area A_b to the pilot area P_x . Schrupp soft seated cartridge valves with metal support do have an ratio of 1:2 and can be used for flow in either direction.

Soft-seated valves are suitable for use in shut-off and directional functions. These valves are absolutely leak-free even for long-term operation in gas or high-pressure circuits.

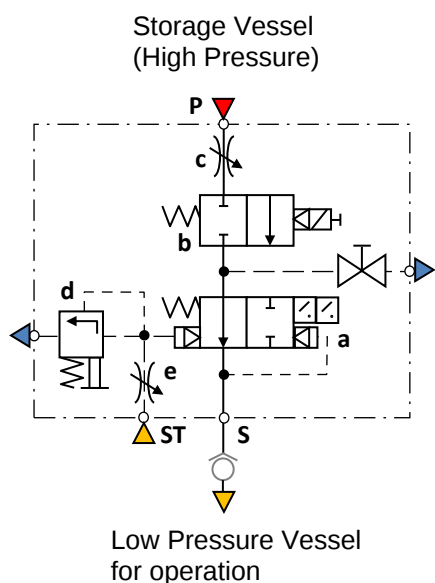
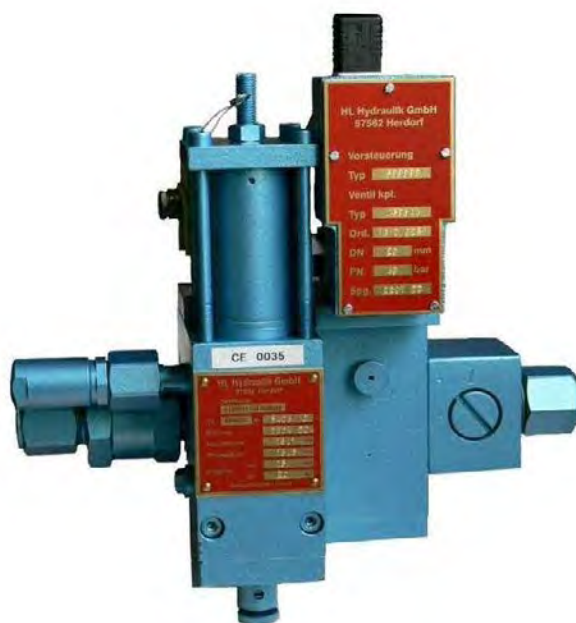


SAFETY DEVICES TYPE SHE

Safety devices of the type SHE are used to protect downstream storage vessels which are being fed by a higher operating pressure, against over pressurization. As opposed to the function of a typical safety valve, the Schrupp SHE valve protects the lower rated pressure vessel by closing the interconnection between the two vessels once the set pressure has been reached. In this way, the operational (low pressure) vessel is protected, while at the same time, maintaining the stored pressurized air necessary to ensure operation of the selected component, such as electrical switch gear.

The Schrupp SHE safety device includes the following elements:

- Locking valve with electrical position indication switch.
- Solenoid actuated, pilot operated, 2/2 way sluice valve.
- Throttling Device.
- Pressure Relief Valve
- Pilot Throttle.
- Bleed Valve.



For safety reasons a check valve has to be installed at the S line.
Optional the safety device can be ordered with an integrated non return valve also.

Technical Data

TYPE	SHE MP	SHE HP	
Nominal size	20	10	mm
Primary pressure	64	64 - 200	bar
Secondary pressure	5 – 40	15 – 40	bar
Max flow rate	56,000	56,000	l/min
Mass	ca. 320	ca. 320	N
Nominal size of pressure relief valve	6	6	mm
Port P	M36 x 2	G 3/8"	
Port T	M36 x 2	M36 x 2	
Port ST connection for pipes with outside dimension:	10	10	mm
According to 2014/68/EU, Group 2, Category IV			

GAS DRYER STATIONS

SCHRUPP GAS DRYER STATIONS

Optional with Bypass

For compressed Air and other
non- aggressive gaseous media:

- drying
- de-oiling
- filtering

this means

- less corrosion
- less wear and
- no icing
- depressurized standby function

and therefore

- greater service life
- lower maintenance costs and
- fail safe operation

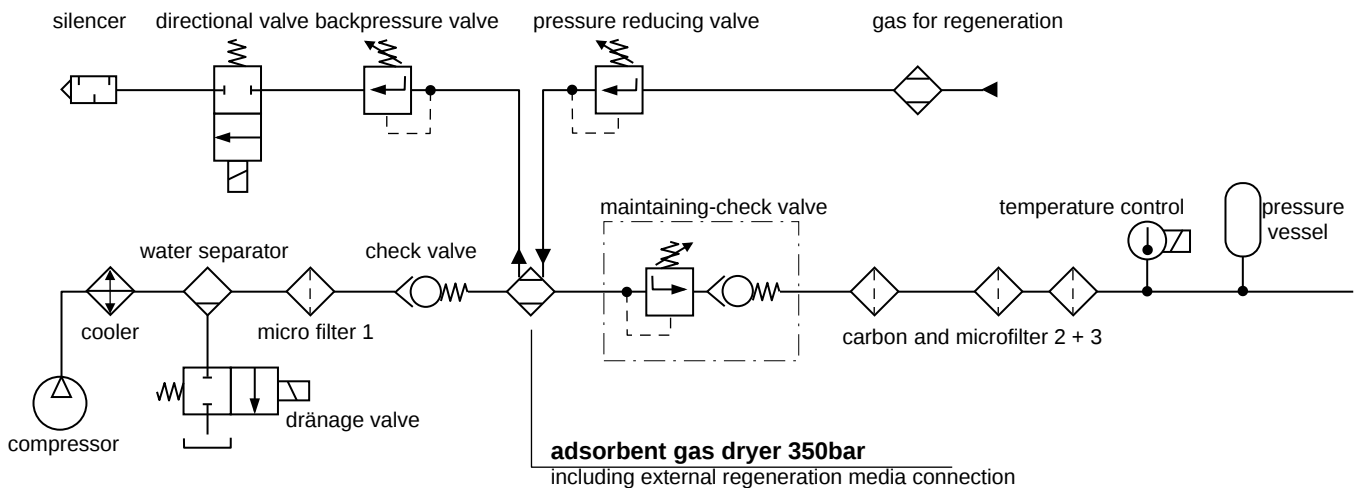


GAS DRYER STATIONS

Gas Processing Systems

Efficient Solutions for processing breathing air or industrial atmosphere.

- designed for continuous production of compressed air or class 2 gases
- excellent efficiency by use of an external regeneration media
- dew points below -50°C
- temperature compensated processing
- drying process independent from inlet temperature
- no thermal regeneration necessary
- operation pressures up to 350bar



GAS DRYER STATIONS

For high pressure air and
non aggressive Medium for:

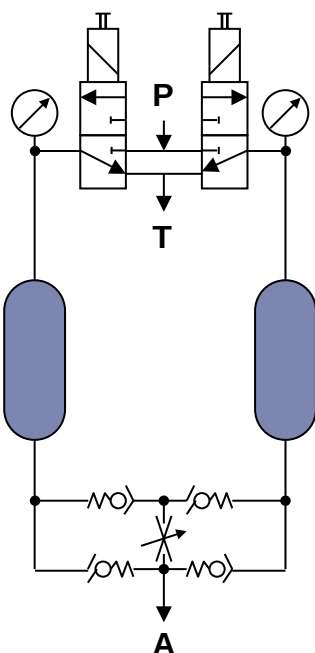
- drying
- de-oiling
- filtering

- Benefits

- less corrosion
- less wear
- no icing

and consequently

- longer service life
- lower maintenance costs
- fail-safe operation



Orderno. and example

GTR 10

HP 335

024

Voltage

024 24V DC

240 220-240V/50Hz

Oper. pressure

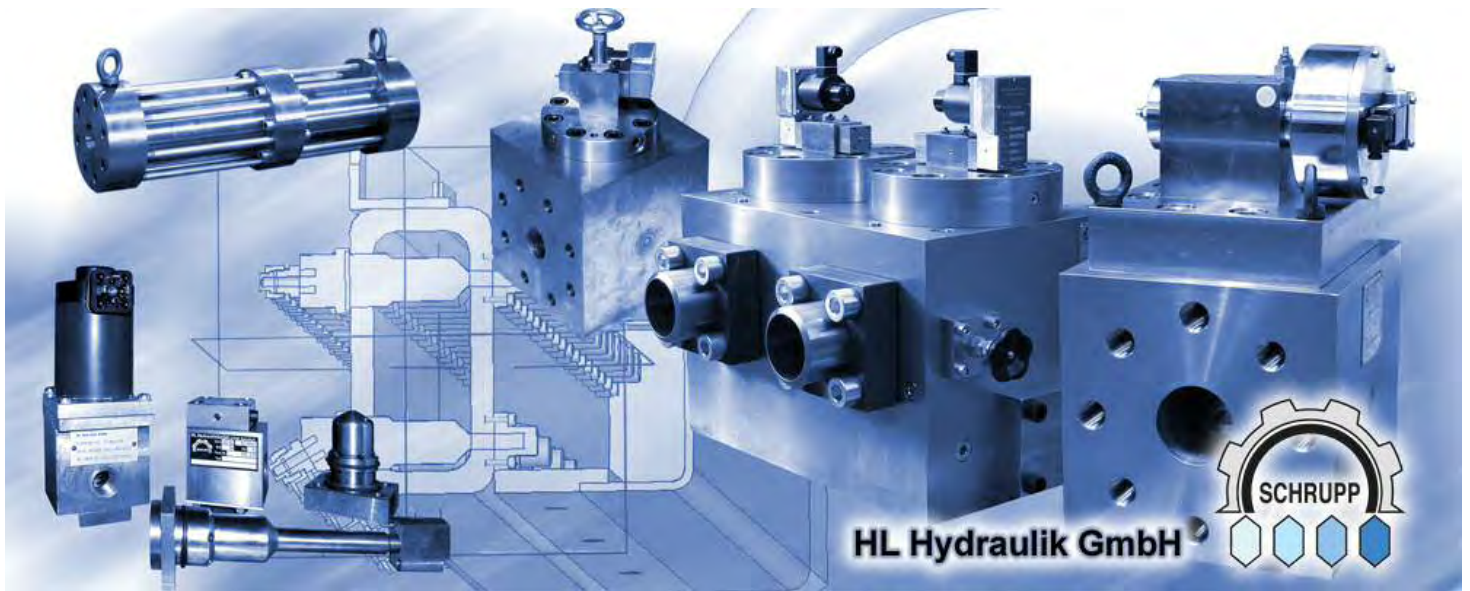
MP 30-250bar

HP 250-350bar

Type

GTR 10 Q max 1000L/min

GTR14 Q max 1400L/min



WATER- AND SPECIAL FLUID HYDRAULICS

System solutions for industry

HP Pneumatics

Water- and Special- Fluid Hydraulics

Equipment for Road Safety Training Centres

Fire Fighting Systems for Transformers

Live Line Washing Systems for Insulators

HL-Hydraulik GmbH

Kupferhütte 5C

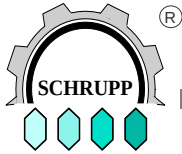
D-57562 Herdorf

Tel: **+49 (0)2744-9324-0**

web: **www.hl-hydraulik.de**

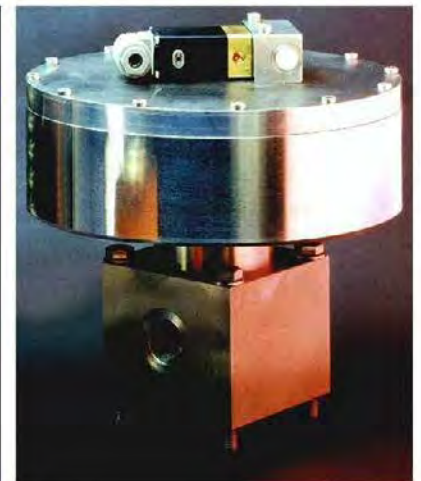
e-mail: **schrupp@hl-hydraulik.de**

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WATER AND SPECIAL HYDRAULICS

System Solutions for Industry



HP Pneumatic

Water- and Special- fluid Hydraulics

Equipment for Road Safety Training Centres

Fire Fighting Systems for Transformers

Insulator Cleaning Systems

0



WATER – AND SPECIAL- FLUID HYDRAULICS

System Solutions for Industry

CARTRIDGE PROGRAM

Hard seat cartridges DN16 to 32, 350bar, pressure and throttle functions for clean water applications

Soft seat cartridges DN10 to 250, 350bar, directional and shut-off functions for clean and descaling water applications

Soft seat cartridges DN10 to 40, 800bar, directional functions for clean water applications

Individual designs for special fluids and gases possible

Dimensions acc. to ISO/DIN

Material stainless steel

Cartridge covers



PILOTVALVES

2 and 3 directional pilot valves solenoid, pneumatically or manually operated, pressure pilot valves. DN4 to DN25, up to PN350, special designs up to 800bar.



SPECIAL VALVES

Individual designed valves

Sea water resistant for Off Shore and Sub Sea applications

Pulsation Technology

Special cartridge valves with additional functions

Leak free valves for oil hydraulic applications



COMPLETE VALVES

Directional, pressure and throttling functions for water, emulsions, oil and special fluids.



DESCALING TECHNOLOGY

Complete Valves for descaling applications up to 350bar and DN250mm, including 2 and 3 directional pilot valves, solenoid, pneumatically oilhydraulically or manually operated.

Multistage breakdown orifices and accessories.

SPRAY VALVES

For roller cooling systems at steel or aluminium rolling mills

Size 6 to 25mm.

Valves, pilots, complete spray barns and accessoires



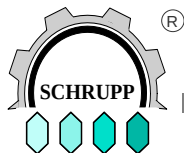


TABLE OF CONTENTS

Since 1934 valves and components for fluids and gases have been manufactured under the trade name SCHRUPP for the international market.

HL Hydraulik GmbH now owns all rights to the Schrupp[®] program. Continuous development allows improvements to this program to follow the requirements of the market.

The valves are designed for use with water, water and oil emulsions, oil and gases. Their robust construction and compact design provide long life, ease of maintenance, and high performance. The sealed poppet design provides drop tight, leak free shut off.

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2/2, 3/2 Directional Valves ND65, 80, 100mm NP40

E2.8 SPRAY VALVES

We reserve the right to make technical modifications without prior notification

CARTRIDGE PROGRAM



Stainless Steel Cartridge valves according to DIN24342

The valves are designed for use with water, water and oil emulsions, oil and gases. Their robust construction and compact design provide long life, ease of maintenance, and high performance.

These slip in cartridge type valves can be combined in many different ways to satisfy the requirements of a wide variety of applications. The sealed poppet design provides drop tight, leak free shut off.

Product range:

Cartridges for directional functions

Soft seated ND10 to 100 for water, oil and pneumatic applications up to 350bar

Soft seated ND10 to 250 for water, descaling water and oil up to 350bar

Soft seated ND10 to 40 for water, oil and pneumatic applications up to 800bar

Hard seated ND 16 to 32 water and oil up to 350bar

Cartridges for pressure relief functions

Hard seated ND 16 to 32 for water and oil up to 350bar

Cartridges for pressure reducing functions

Hard seated ND 16 to 32 for water and oil up to 350bar

CARTRIDGE PROGRAM

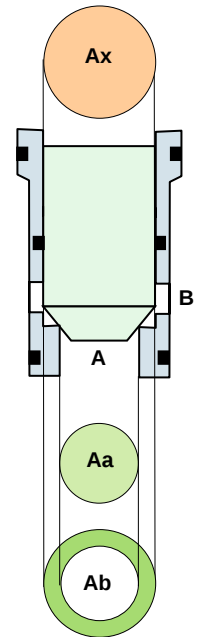
Functional description

These valves are designed for use with special fluids:

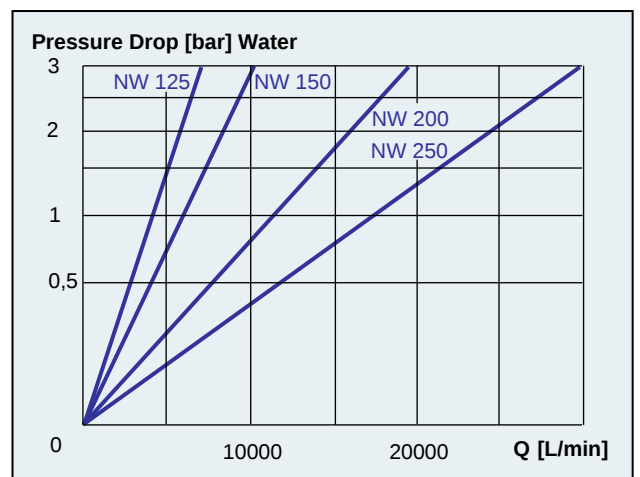
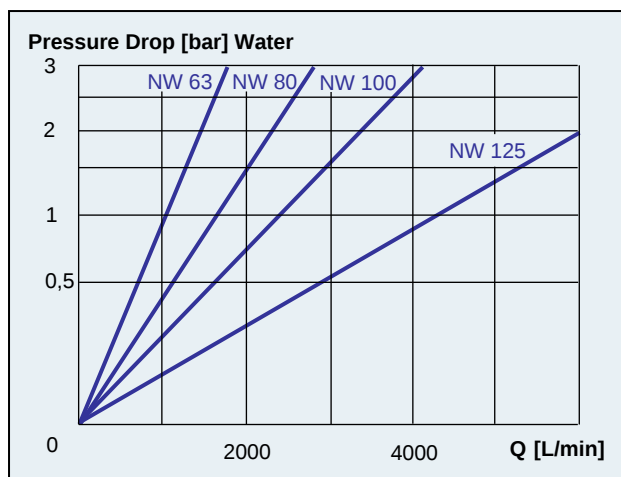
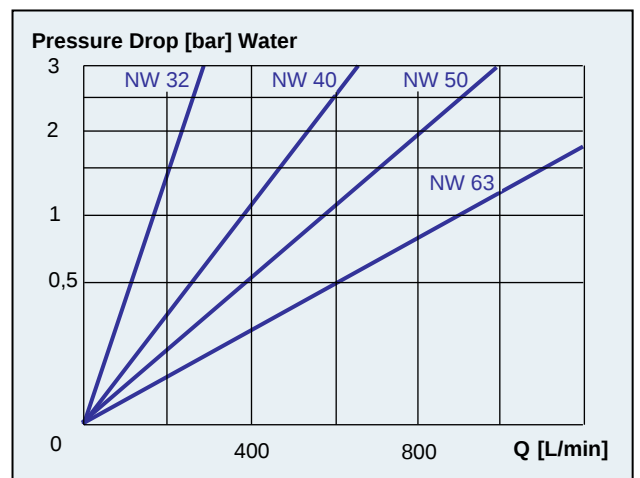
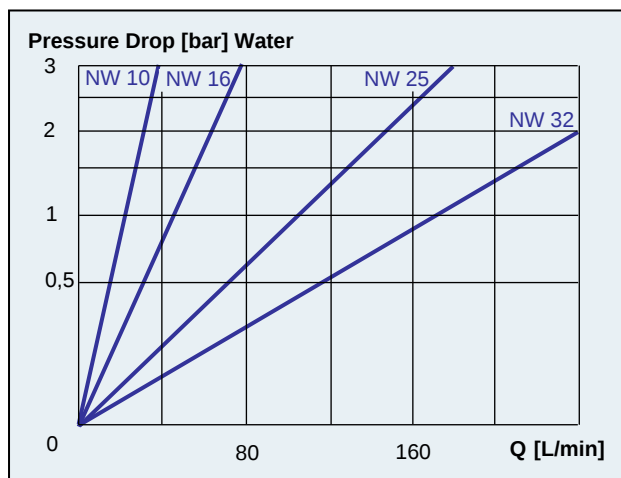
- No metal to metal contact at the sliding surfaces.
 - the use of non-lubricating mediums is possible.
- All pressurized areas are separated by soft seals
 - for thin fluids and gases under high pressure.
- Special geometry and non-corroding material
 - for water and descaling applications.

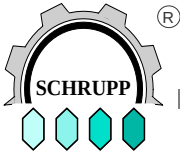
An important dimension for the function of cartridge valves is the surface ratio of the seat area A_a and the annulus area A_b to the pilot area P_x . By using a surface ratio of 1:1 the valve can be operated only in one direction. By using a surface ratio of 1:1.6 or 1:2 the valve can be operated in both directions, but cannot be used for pressure functions because of the pressure ratio which creates pre-opening of the pilot valve.

Soft-seated valves are suitable for use in shut-off and directional functions. These valves are absolutely leak-free even for long-term operation in gas or high-pressure circuits. Hard seated valves are suitable for use in pressure control functions. Because of their robust seats they can be used also in high pressure water hydraulic circuits.

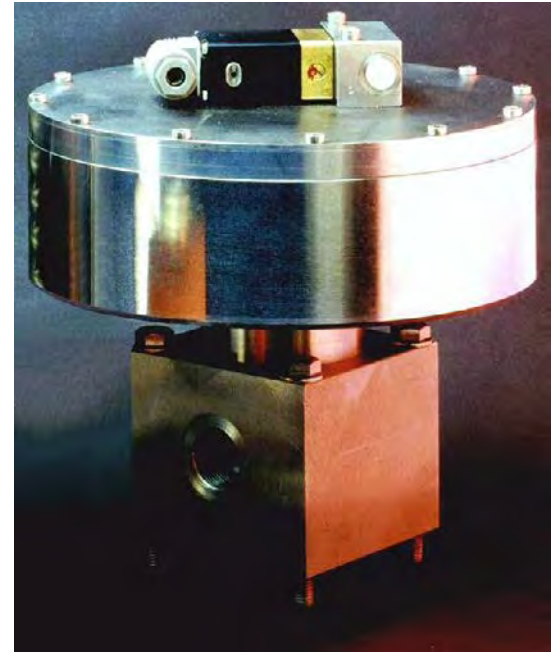
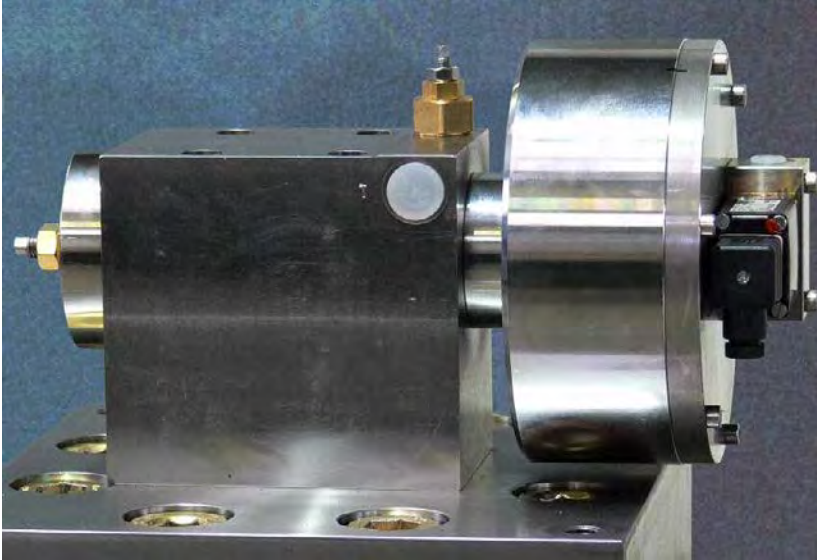


Diagrams





PILOT VALVES



Valves for water hydraulic and descaling applications

These pilot valves can be used to operate cartridge valves from size 10 to 250mm.

The robust construction and compact design provide direct operation in circuits.
Available as pressure and directional control valves up to 350bar.

2/2 and 3/2 way directional control valves ND 2 to 32mm

Pressure relief and reducing valves ND 2mm

Please also see our catalogues:

Cartridge program up to 350bar/pressure valves ND16 to 3/2 directional valves ND10 to 250

Complete Valves

Descaling Valves

High Pressure Valves up to 800bar

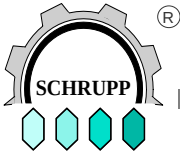


COMPLETE VALVES

Cartridge type valves can be combined in many different ways. This selection gives an overview of the most popular valves. Special designs on request.

Pos	Type	Medium	Pilot	Press. max	Size	Symbol	Page
KV 12	Directional valve	Water, Air, Oil	Electro-hydraulic operated x,y internal or external ND6 Type WEV06	350bar	25 mm 40,50 mm		2 3,4
KV 2	Directional valve	Water, Air, Oil	Electro-hydraulic ND6 Type WEV06	350bar	10-40mm		5
KV 3	Directional Valve	Water, Air, Oil	Electro-hydraulic ND6 Type WEV06	350bar	16-32mm		6
KV 4	Directional Valve with mainstream filter	Water, Air, Oil	Electro-hydraulic ND6 Type WEV06	350bar	16mm		7
KV 7	Pressure relief valve	Water	Pressure relief NDG2 Type DBP2	350bar	16-32mm		10
KV 8	Pressure reducing valve	Water	Pressure relief NDG2 Type DBP2	350bar	16-32mm		11
KV 9	Medium operated valves, non-return valves, stroke limiter,	Water, Air, Oil	Medium operated	350bar	10-40mm		12
KV 13	Throttle Valves	Water Emulsion Oil	Manual operated with servo-hydraulic assistance	350bar	25-200mm		13
KV 10	Directional valve	Water, Air, Oil	Electro-pneumatic-hydraulic	800bar	10-25mm		14
KV 11	Directional valve	Water, Air, Oil	Electro-hydraulic	800bar	10-40mm		15

Valve Type KV6 and KV7 according to produkt data sheet E2.4.8 and D2.4.9 are not available anymore

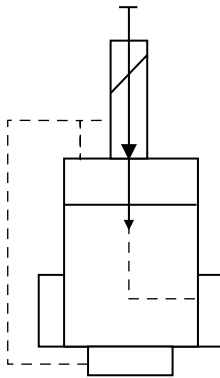


COMPLETE VALVES

Servo Cartridges

Servo assisted throttle and shut off Valves

This robust and leak-free closing valve with patented servo assistance allows an easy operation with very low manual force even after a long period of non-use. For accumulator shut off functions the valve can be operated in combination together with an electrically operated pilot valve. Without electrical power the valve will close automatically (fail safe). It is always possible to close it manually or in case of maintaining the system to secure it in closed position even if the pilot valve will be energized.

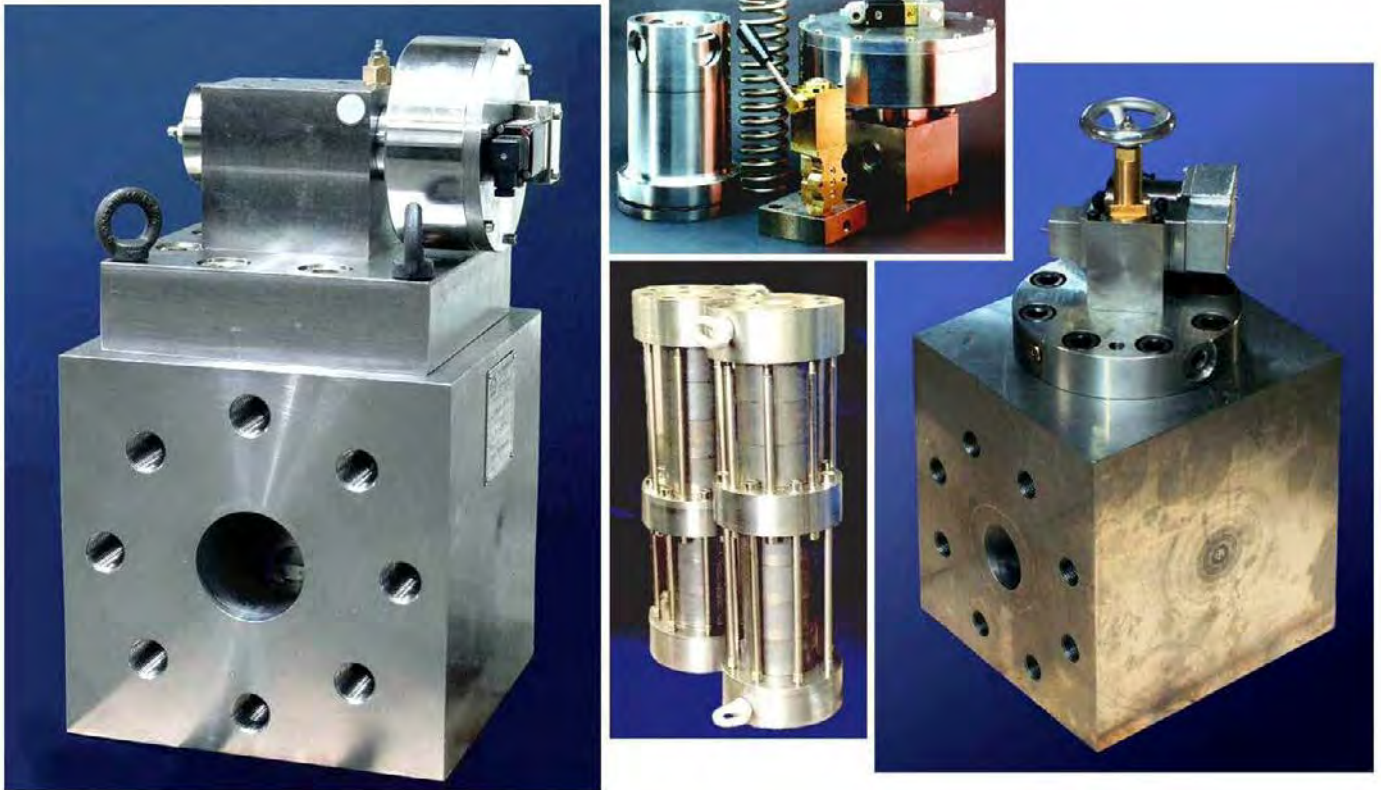


Technical Data:

Operating Pressure:	up to 350bar
Sizes:	25 – 200mm
Media:	Water, Oil
Material:	Stainless Steel, Buna, Viton, Teflon
Temperature:	0-50°C



ENTZUNDERUNGSTECHNIK DESCALING TECHNOLOGY



Entzunderungssysteme werden in Stahlwerken benötigt, um nach jedem Walzvorgang die Zunderschicht von der Materialoberfläche zu entfernen. Ohne ein effektives Entzunderungssystem können die heutigen Qualitätsanforderungen an Stahlprodukte nicht mehr erfüllt werden. HL Hydraulik GmbH fertigt und vertreibt unter dem Handelsnamen Schrupp die hierzu erforderlichen Ventile sowie mehrstufige Bypass Düsen.

Das Produktprogramm umfasst

- Absperrventile
- Rückschlagventile
- Magnetbetätigte Ventile
- Ventilkombinationen
- Düsenpakete
- 2- und 3- Wege Vorsteuerungen

Die Ventile sind einsetzbar bis zu Drücken von 350bar (Sonderanwendungen bis 800bar) und Volumenströmen bis 30.000 l/min

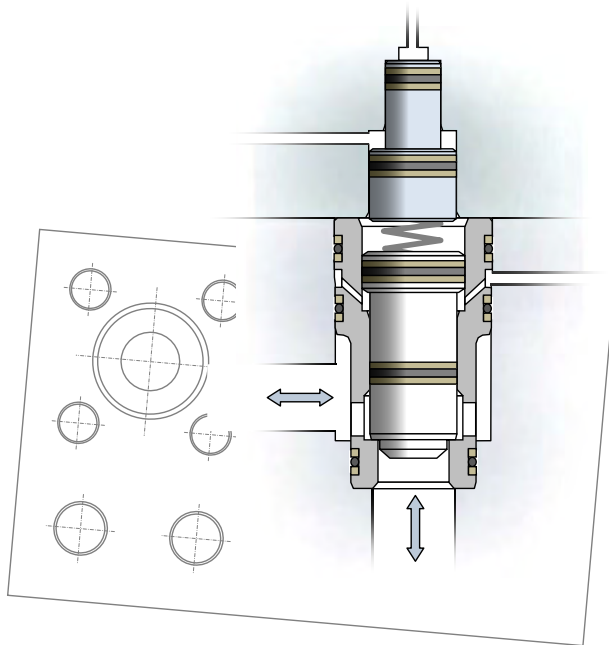
Descaling systems are used in steel rolling mills to remove the scale after each rolling procedure. Without a modern descaling system it is not possible to produce a high quality steel product. HL Hydraulik GmbH manufactures all kinds of valves and multistage break down orifices under the trade name Schrupp for this application.

The product range includes:

- On Off valves (Descaling Valves)
- Non Return Valves (Check Valves)
- Automatic Valves (Accumulator Safety Shut Off Valves)
- Valve Combinations
- Multistage Break Down Orifices
- 2 and 3 Way Pilot Valves

The valves are suitable for pressures up to 350bar (special applications up to 800bar) and flow rates up to 30.000 l/min

SPECIAL VALVES



Customised Design

Individual development or design for single or serial applications.

Our main focus is on cartridges and pilot valves from 40 to 800bar with sizes of 2 to 250mm.

Depending on the design the valves can be used with water, seawater, oil media, special fluids and gases.

Off Shore and Sub Sea Valves

Valves are coated or can be produced from seawater resistant stainless steel material.

Pulsation Valves

Fast responding valves with separate pilot fluid supply and materials conforming to the application.

Replacement Valves for existing Systems

Valves to optimise the function of an existing system or to replace original valves which cannot be produced anymore.

New Application

New valve development in close cooperation with the customer, optimised to the project.

SPRÜHVENTILE SPRAY VALVES



Leckagefreies Sitzventil

Beständig gegen übliche Medien zur
Walzenkühlung

Sprühdüse kann integriert werden

Zum direkten An- oder Einbau in Sprühbalken

Geringe Abmessungen

Kurze Schaltzeiten

Lange Lebensdauer

Non-leak valve with soft seat

Resistant to cooling media

Spray nozzle can be integrated

Assembly in or onto spray
beams

Small size

Short actuating time

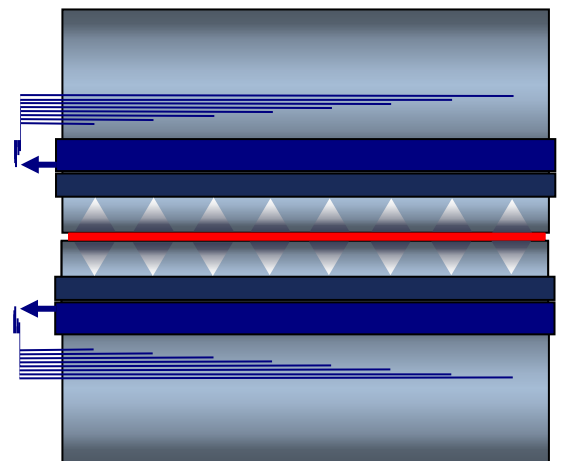
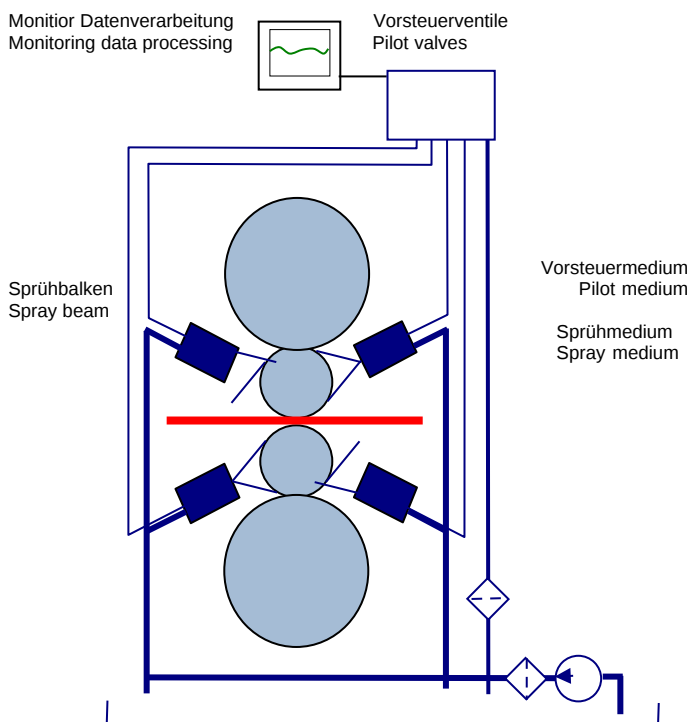
Long expected lifetime

SPRÜHVENTILE SPRAY VALVES

ANWENDUNG / APPLICATION

Moderne Walzverfahren zur Herstellung von Feinblech aus Aluminium oder Stahl erfordern eine schnell ansprechende partielle Walzenkühlung eng aneinander liegender Walzzonen. Schrupp Sprühventile lassen sich direkt in oder auf den Sprühbalken montieren. Die Sprühdüse kann in das Ventil integriert werden. Eine einfacher und robuster Konstruktion ermöglicht den Aufbau einer kompakten und schnell reagierenden Walzenkühlung.

Modern rolling processes for the production of aluminium or steel sheets require a quick acting valve to provide partial cooling of roller areas situated close to each other. Schrupp spray valves can be assembled in or onto the spray beam. The spray nozzle can be integrated into the valve. With their ease of maintenance and robust design the valves can be used in rapidly responding compact roller cooling systems.

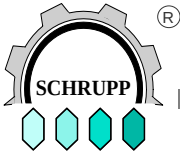


Zu unserem Lieferprogramm gehören:

Sprühventile
Sprühbalken
Vorsteuer- und Ventilstände
Verbindungstechnik

Our manufacturing program includes:

Spray Valves
Spray Beams (Headers)
Pilot Valves and Valve Stands
Piping and connections



SPRÜHVENTILE SPRAY VALVES

EINBAUVENTILE / CARTRIDGE TYPE

FUNKTION / FUNCTION

Die Funktionsweise entspricht der eines normalen 2/2 Wegeventils. Wird der Kolben über die Steuerbohrung (Anschluss Px) entlastet, öffnet der an der Differenzfläche anstehende Betriebsdruck P den Kolben entgegen der Federkraft.

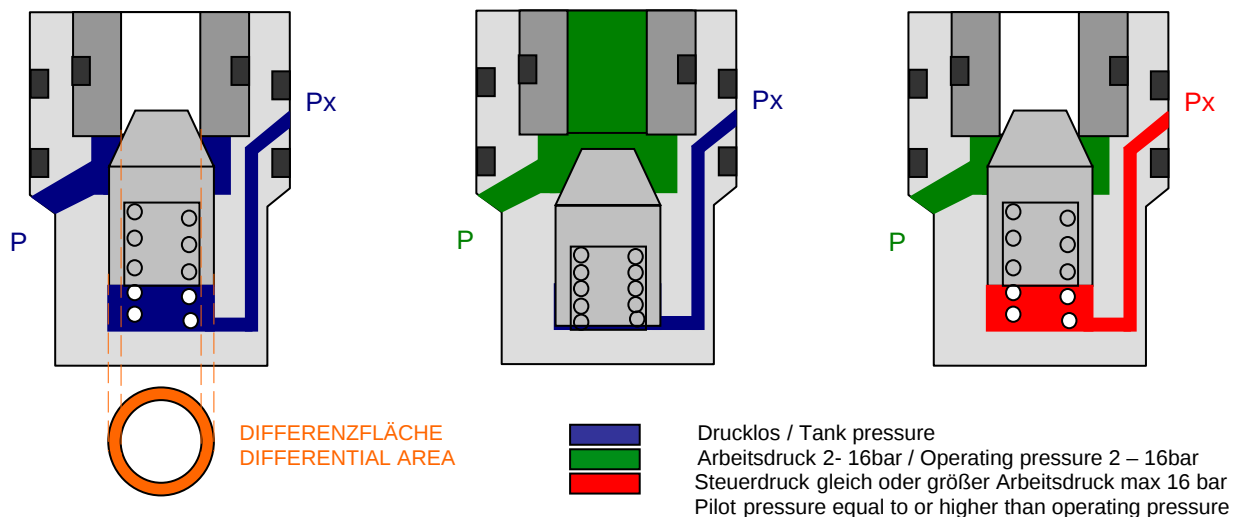
Steht an der Steuerbohrung ein Druck gleich oder größer dem Betriebsdruckes an, schließt das Ventil.

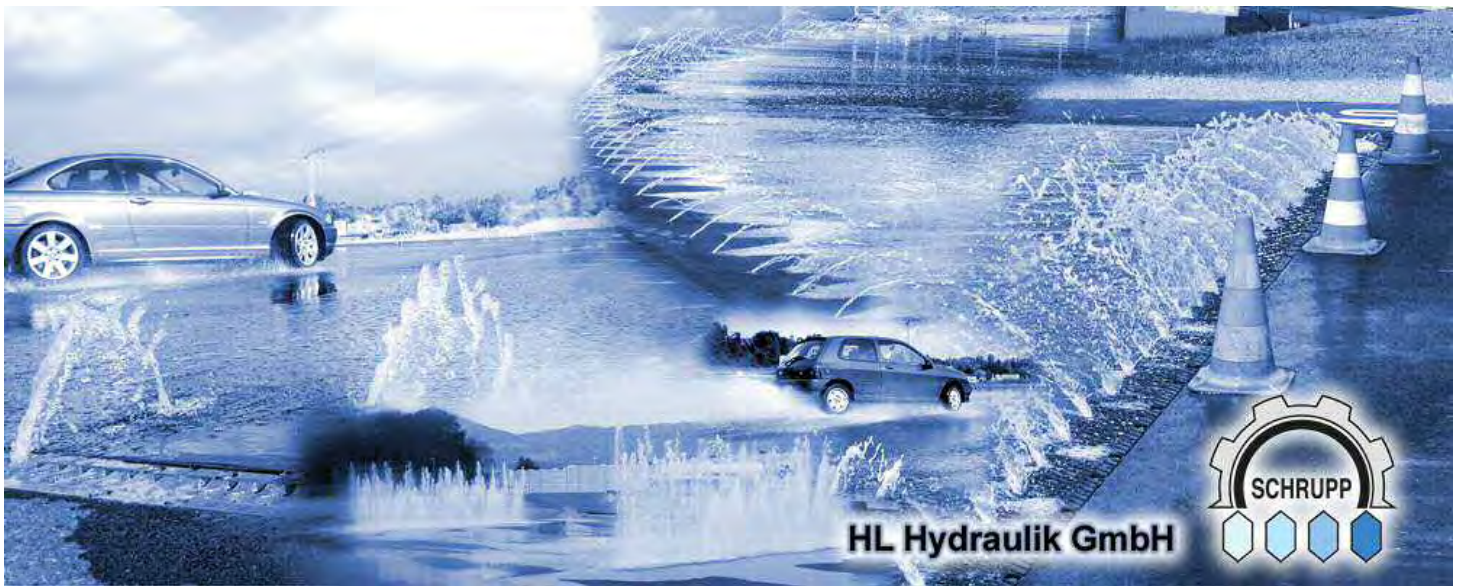
Die erforderlichen Pilotventile können außerhalb des Walzgerüsts installiert und mittels Rohren oder Schläuchen mit den Sprühventilen verbunden werden. Grundsätzlich können die Ventile mit Eigen- oder Fremdmedium vorgesteuert werden. Voraussetzung ist jedoch immer, dass der Vorsteuerdruck am Ventil gleich oder größer dem momentan anstehenden Betriebsdruck ist.

The function of the valve is identical to the function of a 2/2 way directional control valve. If the piston is unloaded via the control bore (port Px), the operating pressure P at the differential area opens the valve against the spring force.

A pressure at Px equal or higher than the operating pressure will close the valve.

The pilot valves can be located separately and outside of the roller stand and can be connected with pipes or hoses to the spray valves. The valves can be piloted by using the spraying media or compressed air or fluids. It is important, that the pilot pressure is always equal to or higher than the operating pressure.





EQUIPMENT FOR ROAD SAFETY TRAINING CENTRES

System Solutions for Industry

HP Pneumatics

Water- and Special- Fluid Hydraulics

Equipment for Road Safety Training Centres

Fire Fighting Systems for Transformers

Live Line Washing Systems for Insulators

HL-Hydraulik GmbH

Kupferhütte 5C

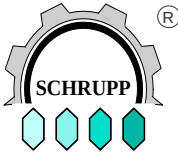
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DRIVING CENTER EQUIPMENT



The HL Hydraulik water technology enables road safety training centers to simulate critical situations encountered by drivers during various realistic street and weather conditions. The training helps teach the driver to handle these situations.

A combination of event center and safety driving center have the flexibility to test and demonstrate the newest functions of assistance systems, to familiarize the driver with the car's technology, learn safety and have fun testing and driving a car like you have no chance on a normal road.

We supply individual components for planners and operators, that can be combined as needed for the requirements and size of the exercise area.

We assist in planning of water technology and advise on the design of the training surface.

Some aspects of our water technology suit especially small applications because the products can also be installed by the operator or a local company.

During product development special attention has been placed on high reliability at low operational costs.

The entire water technology is designed for use in a closed water cycle.

Since large volumes of water are distributed into the air (water obstacles) or onto the road surface (roadway irrigation), this approach is in most cases the more economic option for future operating costs.

Our delivery program contains:

WATER OBSTACLES

ROADWAY IRRIGATION SYSTEMS

VEHICLE SKIDDING DEVICES





DRIVING CENTER EQUIPMENT

CONTENT

1.	Water obstacles	E3.03
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DRIVING CENTER EQUIPMENT

2. Roadway irrigation

2.1 General advantages of low-pressure technique

- Running water will not freeze – winter usage is supported that way
- The flexibility to choose between different irrigation directions.
- cross irrigation
water is applied crossways the driving direction and is flowing along or against direction of drive
- longitudinal irrigation
water is applied parallel to the driving direction, at the edge of the road or near the dynamic surface, and crosses the dynamic surface at a 90° angle.
- The irrigation outlets can be driven over without any driving disturbances.
- Insensitive against dirt, due to large (8mm) irrigation outlets.
- With consideration of a required down-grade the irrigation can be settled at each point of the track. (outskirts, in the asphalt, curved, alongside, etc.)
- Expandable, if the center “grows“
- Winterproofed without trace heating system or other technical utilities.
- Working pressure of the irrigations: 0.2 - 0.5 bar
- Insensitive to de-icing salt.
- Easy to clean.
- Resistent to breakdown (except total electric blackout)
- Easy to operate and maintain.



DRIVING CENTER EQUIPMENT

2.3 Irrigation out of Water Obstacles

The water supply is carried out by our own pump, directly out of the water obstacle case..

The desired water amount is adjusted by a flow restrictor.



Mounted roadway irrigation – distinct stream only



The water distribution gets optimized continuously



DRIVING CENTER EQUIPMENT

2.3.1 Operation of Post-Irrigation

A clear waterstream is generated by nozzles. This stream enables a very thorough roadway irrigation. The water is distributed to the complete road surface (if desired and needed) by nozzles divided in approx. 25 cm gaps.

2.4 Road-circle irrigation

The aim was to irrigate a circle from the outside inwards.
Robust, efficient and without visual disability.

Installed warm-, or cold-grouted
in the bearing layer until 2005

Since 2006 installed under the asphalt with
a homogeneous asphalt surface.



Since 2006 the irrigation-system may be installed in segments, which can be controlled individually (1/4-, 1/2- or full-circle-irrigation).

Inner- and outer-lane-irrigation enables a diverse usage, in that motorcycles can use the dry outer-lane e.g. for curve exercises, even though cars had practiced braking in wet and slippery curves in the inner-lane shortly before.

The subdivision into segments also enables the system to alternate between wet and dry surfaces in the inner- or outer-lane circle.

The asphalt covered technique enables a road-circle irrigation, which is winterproofed and insensitive against the driving operation. Inspection chambers allow the cleaning of the irrigation system.

DRIVING CENTER EQUIPMENT

3. Skidding devices for every application and claim

We offer vehicle skidding devices for passenger cars, middle size trucks and heavy trucks. We entered a cooperation, to provide this technique as mature and professional as our other products. Our partner has built up a good reputation over several years in the automotive industry. He has introduced his experience in the production of inspection and testing devices into the development of skidding devices.

4 sizes of skidding devices are available

- Car - skidding device, axel load 3.0 to (metric), active dim. 2.96 x 3.75m.
- Car(+) - skidding device, axel load 8.0 to (metric), active dim. 3.56 x 4.50m.
- Truck 1 - skidding device, axel load 10.0 to (metric), active dim. 4.42 x 5.20m.
- Truck 2 - skidding device, axel load 30.0 to (metric), active dim. 4.76 x 5.70m.
- External speed indicator, 2 digits, 25cm height

Depending of the model frame, plate and hydraulics are delivered completely assembled. The switch box and the speed indicator are assembled separately at site. The installation requires one day. The initiation after the pit-filling requires only a few hours.

Installation of the device



The sensors and the lateral coverage

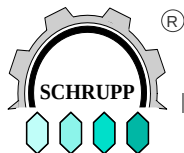


Complete hydraulics under the plate



Operator panel





DRIVING CENTER EQUIPMENT





SPRÜHFLUTSYSTEME FIREFIGHTING AND CLEANING SYSTEMS

**Systemlösungen für die Industrie
System solutions for industry**

HP Pneumatik

Wasser und Sonderhydraulik

Technik für Fahrsicherheitszentren

Feuerlöschsysteme für Transformatoren

Isolatorenreinigungssysteme

HP Pneumatics

Water- and Special- Fluid Hydraulics

Equipment for Road Safety Training Centres

Fire Fighting Systems for Transformers

Live Line Washing Systems for Insulators

HL-Hydraulik GmbH

Kupferhütte 5C

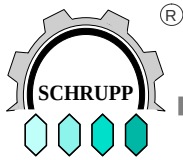
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**SPRÜHTECHNIK
SPRAYING SYSTEMS**

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Isolatoren Reinigungssysteme

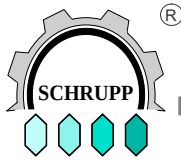
**Live Line Insulator Cleaning
Systems**

**Feuerlöschsysteme für
Transformatoren**

**Fire Fighting Systems for
Transformers**



Systemlösungen für die Industrie - System Solutions for Industry



Isolatoren-Reinigungsanlagen / Insulator hot line washing systems

Wir liefern komplette Systeme für die Energieversorgung, z.B. für Umspannwerke und Kraftwerke. Während des Reinigungsvorgangs kann der elektrische Strom fließen. Unsere Anlagen können automatisch oder manuell betrieben werden, wobei Wasserleitfähigkeit, Verschmutzung sowie Windgeschwindigkeit und Richtung regelungstechnisch berücksichtigt werden.

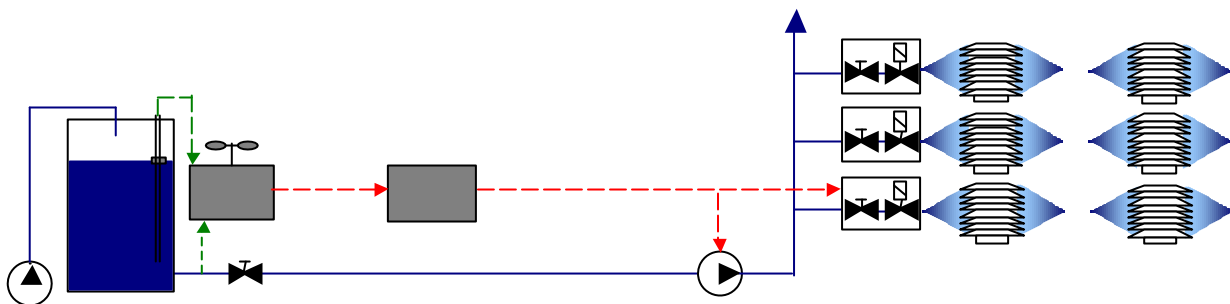
We are manufacturing live line washing systems for power stations and substations to secure energy supply. Our live line washing plants can be operated automatically or manually. Essential parameters like water conductivity, dirt contermination, windvelocity and direction can be monitored by our automatic control system.

Betriebsdruck	8 bis 15bar
Medium	Wasser, max 150 uS
Pumpe	Je nach Düsenanzahl
Behälterinhalt	Ausreichend für eine Waschdauer von 1-5min
Düsen	Flachstrahldüsen 30°-120° 18-25l/min
Werkstoffe	Rohre und Zubehör - Stahl, feuerverzinkt; Düsen -Messing; Tank 400 um Innenanstrich, 200 um Grundierung außen.

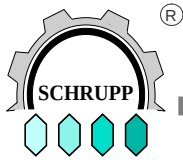
Operating pressure	8 to 15bar
Medium	Water, max 150 uS
Pump capacity	Depending on number of nozzles
Tank capacity	Sufficient for a washing period of 1-5min
Nozzles	Flat discharge nozzle 30°-120°, 18-25l/min
Material	Piping – hot galvanized carbon steel; nozzles – brass; Reservoir 400 um inside coating, 200 um outside primer.

Für die Ausarbeitung eines Angebotes erbitten wir Zeichnungen des Waschobjektes mit einem Lageplan der Anlage und Angaben über die Art der Wasserversorgung.

In order to submit a quotation we require drawings of the object to be washed, a site plan and information about the water supply system.



Tankanlage	Meßstationen	Steuerstation	Pumpenstation	Ventilstände	Abspritzgruppen
Reservoir group	Monitoring systems	Automatic control cabinet	Pumping Station	Valvestands	Washing groups



SPRÜHTECHNIK SPRAYING SYSTEMS

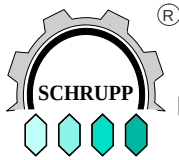
Isolatorenreinigungsanlagen können für nahezu alle Isolatorentypen eingesetzt werden. Speziell angepaßte Rahmen mit individuell einstell- und austauschbaren Düsen ermöglichen einfache Montage. Anders als bei mobilen Systemen ist eine allseitige Reinigung des Isolators bei geringstmöglichen Wasserverbrauch unter Spannung möglich. In Abhängigkeit von Länge und Durchmesser der jeweiligen Isolatoren werden daher zwischen 3 und 8 Düsen mit verschiedenen Sprühwinkeln eingesetzt.

Insulator Live Line Cleaning Systems can be used for nearly each insulator type. Special cleaning frames with individual adjustable and interchangeable nozzles allow a comfortable installation. In difference to mobile systems it is possible to clean the insulators from all sides with a minimum of water consumption. Depending on the length and dimension of the Insulator the cleaning frame includes between 3 and 8 for nozzles with different spraying angles.



Das demineralisierte Wasser kann in Hoch- oder Erdtanks zentral bevorratet werden. Pumpen, Mess- und Regeleinrichtungen sind in einem Gebäude untergebracht, um sie vor Umwelteinflüssen zu schützen. Die elektrisch betätigten Absperrventile befinden sich in separaten Ventilschränken in der Nähe der jeweiligen Waschgruppen.

The demineralized water can be stored in a central reservoir in or above ground. Pumping unit and electrically controls are located in a separate building, to protect the equipment against environmental conditions. The electrically operated shut-off valves are located in separate cabinets close to the individual washing group.



Feuerlöschanlagen / Fire fighting systems

Wir liefern komplette Systeme für den Transformatorenschutz, wobei die Energie zur schnellen Versorgung der Löschkäfige in Druckbehältern gespeichert wird. Dadurch kann das System im Gefahrenfall vollkommen unabhängig von Fremdenergie betrieben werden. Die Auslösung des Systems kann mittels Schmelzdüsen, elektrisch oder manuell erfolgen. Die Löschkäfige sind freitragend und mit Kupplungen versehen, so dass ein eventuell notwendiger Austausch der Transformatoren möglich ist.

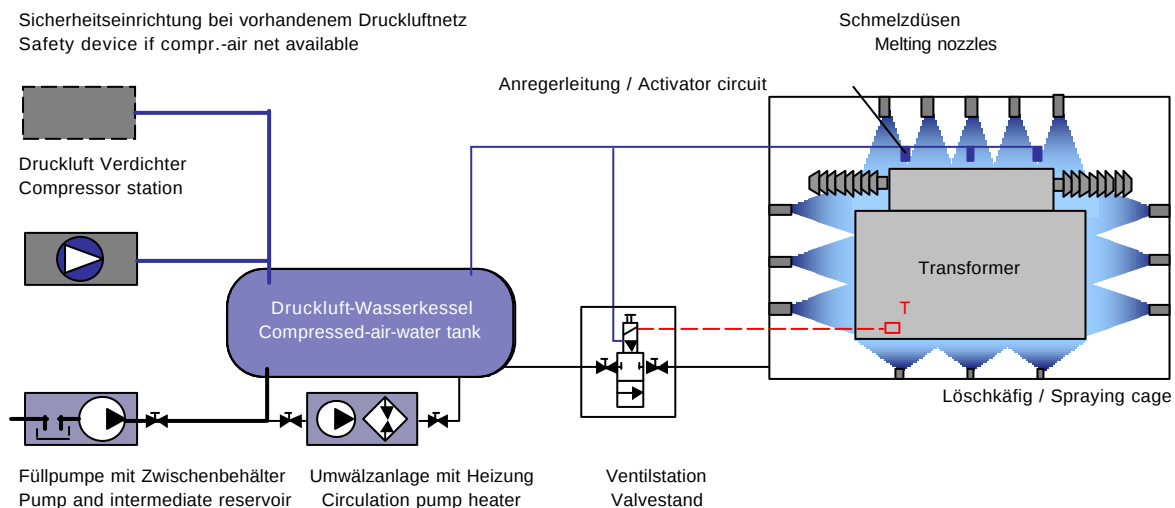
We are manufacturing complete systems for transformer protection. The energy for quick supply of the fire fighting apparatus will be stored in pressure tanks so that in case of an emergency no external power input is required to operate the system. The spraying cage is cantilever and assembled with particular couplings ready for a quick change of the transformer if necessary. The start up of the extinguishing process will be effected by either melting nozzles, an electrical signal or manually.

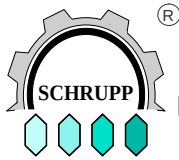
Betriebsdruck	10bar	Operating pressure	10bar
Verdichter	275l/min; 10,5bar; 2,5KW	Compressor	275l/min; 10,5bar; 2,5KW
Füllpumpe	6m³/h; 10,5bar; 4KW	Refilling pump	6m³/h; 10,5bar; 4KW
Behälterinhalt	Ausreichend für min 5min Löschdauer	Tank capacity	Sufficient for min 5min operation
Heizungsanlage	Umlaufheizung nach Bedarf	Heater	Circular heating system if required
Düsen	Vollkegeldüsen ca. 50l/min; Pralldüsen ca. 80l/min	Nozzles	Full-cone type apr. 50l/min; Impact type apr. 80l/min
Werkstoffe	Rohre und Zubehör Stahl feuerverzinkt, Halterungen Aluminium; Düsen Messing; Druckluftleitungen Kupfer; Erdleitungen dukt. Gussrohr mit Verankerungsschellen (Beton Wiederlager bauseits); Druckwasserkessel innen 400 um Anstrich außen Grundanstrich gegf. Isolierung.	Material	Water piping carbon steel hot galvanized; claps aluminium; nozzles brass; air piping copper; Underground piping cast steel with anchoring brackets (foundation not included); Pressure vessel inside coating 400 um outside primer 200 um optional isolated.

Für die Ausarbeitung eines Angebotes erbitten wir Zeichnungen des Transformators mit einem Lageplan der Anlage und Angaben über die Art der Wasserversorgung.

In order to submit a quotation we require drawings of the transformer, a site plan and information about the water supply system.

Sicherheitseinrichtung bei vorhandenem Druckluftnetz
Safety device if compr.-air net available





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Druckwasser - Feuerlöschanlagen kühlen den Transformator und verhindern den Sauerstoffaustausch im Gefahrenfall bevor ein Brand entsteht und vermeiden im Gegensatz zu Schaumlöschanlagen die Zerstörung des teuren Equipments.

Water operated Fire Fighting Systems are cooling the transformator down and will stop the air circulation. The difference to an traditional foam fire fighting system is that the Schrupp system will prevent fire an helps to protect the expensive equipment.

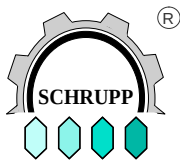
Druckwasser - Feuerlöschanlagen für den Innenbereich verhindern Brände ohne dabei die im Raum befindlichen Personen, wie bei Gaslöschanlagen, zu gefährden.

Water operated Fire Fighting Systems prevent fire without any danger for the personal in the room, like gas operated fire fighting systems.



Die pneumatisch vorgesteuerte Ventile öffnen selbständig ohne Fremdenergie und schließen im Gegensatz zu Klappenventilen automatisch nach Beendigung des Löschvorganges, so das die noch im Druckbehälter vorhandene Luft nicht austreten kann. Mit Hilfe des vorgeschalteten Handschiebers können jederzeit Funktionsprüfung oder Wartungsarbeiten am Sytem durchgeführt werden ohne das Wasser versprüht oder der Druckbehälter entleert werden muß.

The pneumatically controlled valves are opening without any external energy and will close - in diffrence to standard flap valves - automatically after the fire fighting cycle to keep the compressed air in the pressure vessel. An additional manual gate valve allows system "dry" testing and maintenace without loosing water.



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