



HAMMELMANN®

Industrial high pressure application systems

Over 60 years of innovative technology

Surface preparation

Tank cleaning

Pipe cleaning

Cutting

Valves and accessories

Hammelmann

Table of contents

Table of contents

Page

General

Table of contents

2

General

3

Surface preparation

High pressure water blasting guns

6 – 7

Ergoblast, handrail cleaner

8

Radio remote control, swivelling connections

9

Jetmate

10

Jetboy

11

Aquablast

12 – 13

Aquablast PLUS

14 – 15

Aquablast Drive

16

Aquadozer

17

Rotor jets

18 – 20

Rotary joints

21

Process integrated application systems

22 – 23

Spiderjet 3000

24

Dockboy

25

Dockmate

26 – 27

Tank cleaning

Aquamat tank cleaning units

30 – 31

Aquamat Select for large vessels

32

Nozzle holder arms for tank cleaning units

33

Aquarex tank cleaning devices

34 – 37

Table of contents

Page

Pipe cleaning

Turbo jets

40 – 41

Flexible and rigid lances

42

Push and pull nozzles

43

Rotor jets for pipe cleaning

44 – 45

Trolleys for rotor jets

46

Guide sledge for rotor jets

47

Nozzle holders for pipe cleaning

48 – 49

3D pipe cleaners

49

Electric hose reel

50

Pipemaster hose rotating system

51

Catching device for heat exchanger cleaning

52

Foot switch and foot valve

53

Cutting

Cutting systems

55

Cutting systems, cutting nozzles, accessories

56

Valves and accessories

Systems for pressure and impulse testing

58

Metal forming

59

Valves

60 – 62

High pressure hoses

63

Nozzle inserts

64

Personal Protective equipment

65

Hammelmann

Technology Centre

66

Service

67

Overview of high pressure pumps and units

68



Energy-saving

Tools with optimised flow characteristics reduce energy consumption and make full use of the operating pressure. Result: the total energy used is reduced.



Reliable

Hammelmann cleaning systems are reliable modules for integration into production processes and machinery. Famous companies rely on our technology.



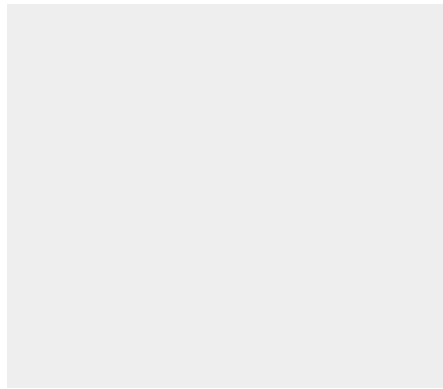
Optimised

The number, arrangement and angle of nozzles on surface blasting and nozzle holder systems are worked out using the latest simulation programs. This ensures a highly effective use of energy.



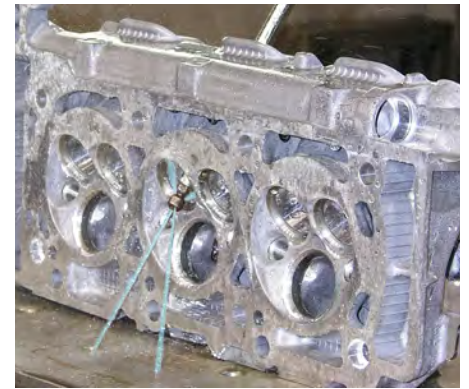
Safe

User-friendly water blasting tools increase safety when working and allow the operator to work for longer periods of time and with greater concentration.



Flexible

Hammelmann application systems can be adapted to individual cleaning requirements. The RD Flex rotor jet for example can be adjusted to work at different rotation speeds without the need for tools.



Precise

Precision tools are required for cleaning and de-burring very small bores and intercepting bores. Automobile manufacturers worldwide rely on Hammelmann's high pressure technology.



Environmentally friendly

Cleaning systems with direct vacuuming of removed waste material and water plus filtering have long been Hammelmann's hallmark for "green competence".



Innovative

Turning new ideas into practical water blasting tools is what our applications engineers do every day, whether on the customer's site or in our flexible and efficient technology centre.

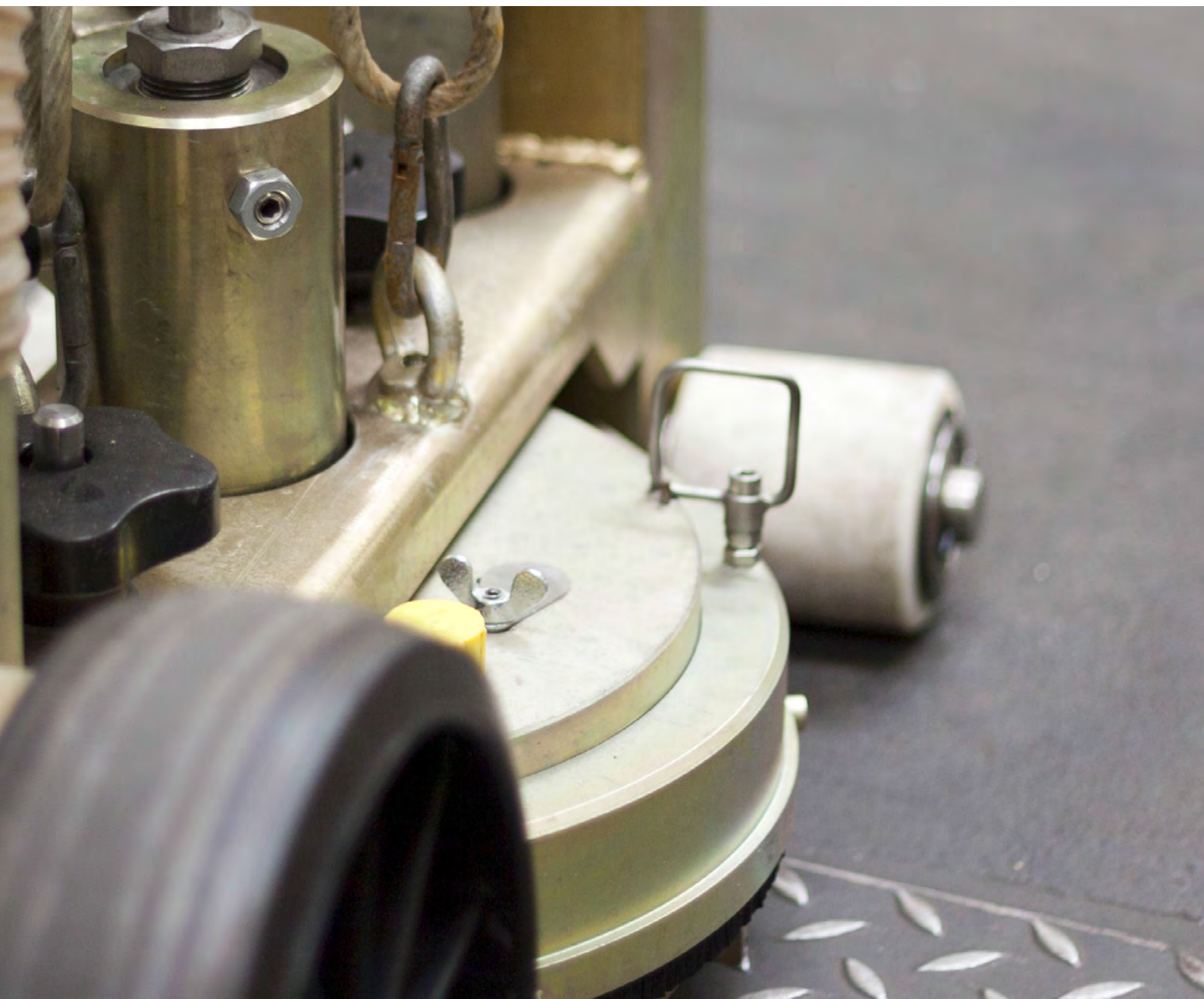


Economical

Take Hammelmann's ship cleaning systems for example. These can be used following just a short set-up time and quickly remove a large amount of coating from metal surfaces.



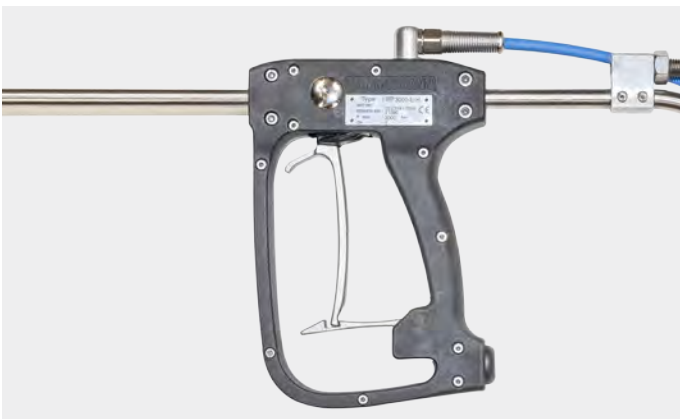
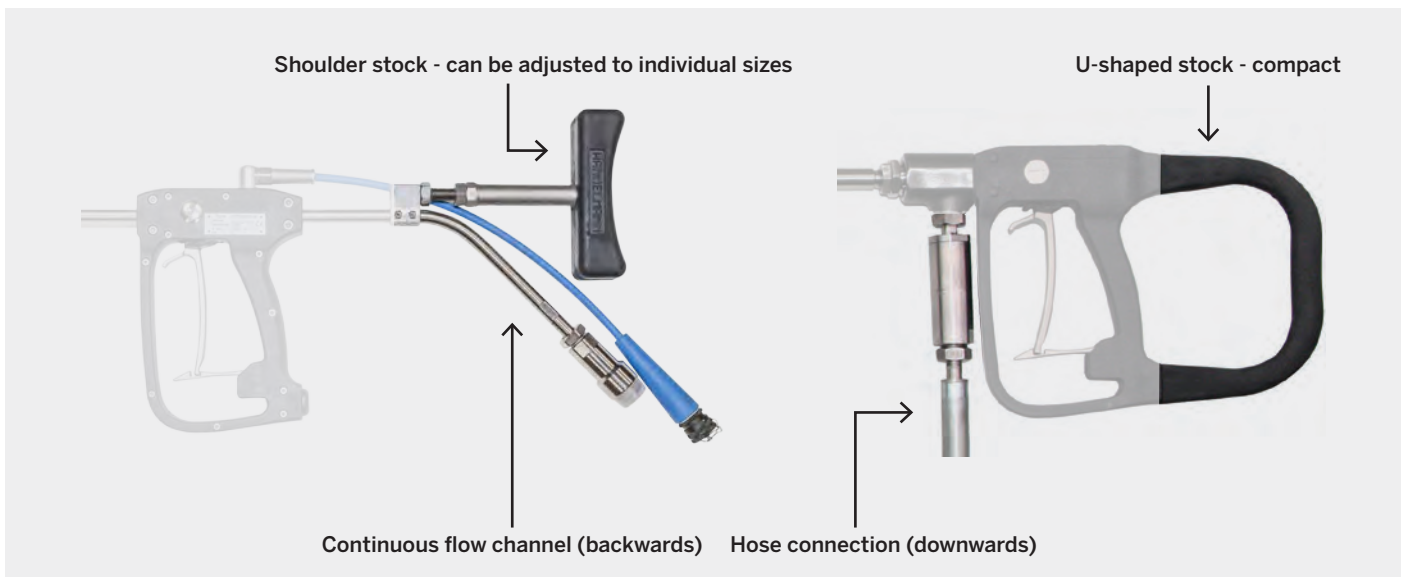
SURFACE PREPARATION



Surface preparation

High pressure water blasting guns	6 – 7	Aquadozer	17
Ergoblast, handrail cleaner	8	Rotor jets	18 – 20
Radio remote control, swivelling connections	9	Rotary joints	21
Jetmate	10	Process integrated application systems	22 – 23
Jetboy	11	Spiderjet 3000	24
Aquablast	12 – 13	Dockboy	25
Aquablast PLUS	14 – 15	Dockmate	26 – 27
Aquablast Drive	16		

High pressure water blasting guns up to 3000 bar



Ergonomics

An ergonomically formed handle and various extensions can be easily attached. This means individual working postures can be adapted to. Each operator can find the working posture that best suits him, saving him effort and increasing workplace health and safety.

A small lever but with a great effect

A simple lever mechanism makes the trigger of our new blasting guns child's play to operate. The operator can use the gun without feeling strain and physical stress which enables longer, more concentrated working periods.

Mechanical / Electric



Blasting gun Technology

Operating pressure (Up to 30 l/min)

Weight

SP 400 M
SP 1000 M

Mechanical dry shut off

up to 400 bar
up to 1000 bar

3.2 kg
3.8 kg

SP 1000 ME

Mechanical dry shut off /
Electric

up to 1000 bar

4.4 kg

SP 3000 E

Electric

up to 3000 bar

3.5 kg

SP 3000 E H

Electric

**with continuous
flow channel**

up to 3000 bar

4.9 kg

Bypass



SP 3000 MB

Mechanical bypass

up to 3000 bar

3.7 kg

SP 3000 MBE

Mechanical bypass /
Electric

up to 3000 bar

4.4 kg

For two-hand operation



SP 3000 MB – 2H

Mechanical bypass for
two-hand operation

up to 3000 bar

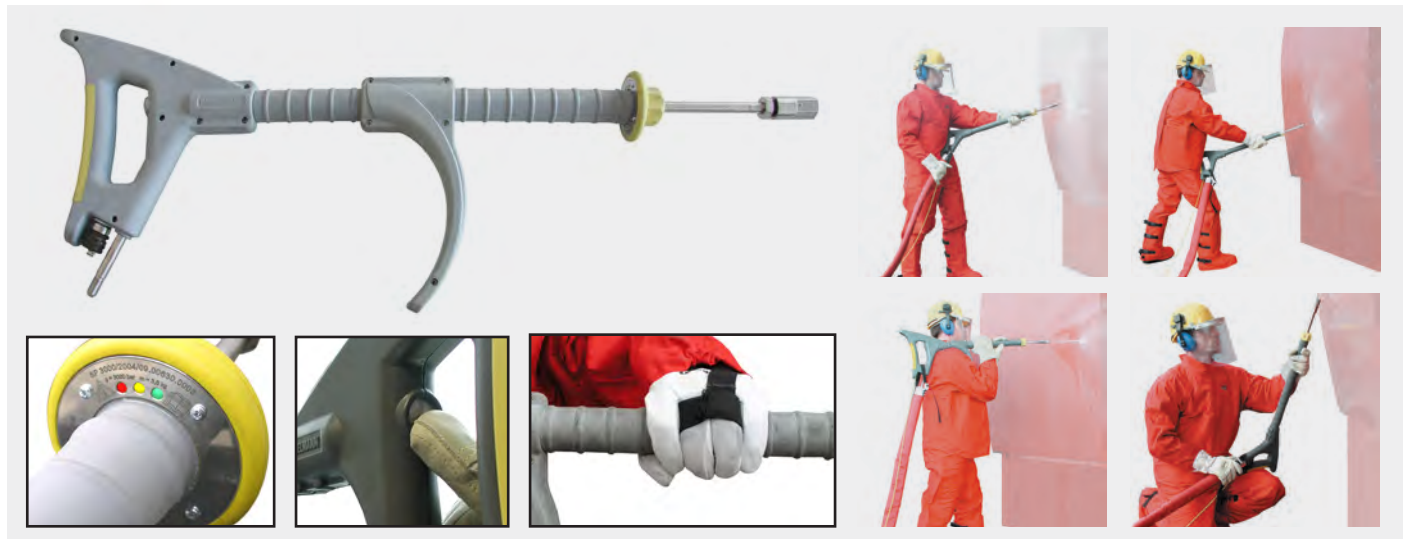
6.2 kg

SP 3000 E – 2H

Electric for
two-hand operation

up to 3000 bar

6.2 kg



SP 3000 Ergoblast

- The continuous lance (from inlet to nozzle) has no sharp bends or restrictions. This design reduces pressure loss and eliminates turbulence.
- A smooth flow which results in a more efficient water jet emitting from the nozzle.
- The operator no longer has to 'fight' the trigger pressure.
- Integrated body support for reaction forces of more than 150 N
- The transponder actuated switching surface extends over the whole length and circumference of the front hand grip.
- Many different working postures are possible

Economical operation - high reliability

- The ergonomic design puts much less physical strain on the operator which means less fatigue so there is increased utilisation
- Robust design and no moving parts means no maintenance costs
- Versatile modular construction enables many applications.
- Robust, fully encapsulated electronics
- No moving parts
- Contactless switching thanks to robust hand-worn encapsulated transponder, eliminating mechanical wear.
- No seals or housing orifices
- Manufactured from wear-resistant, long-life materials

Handrail cleaner

The "Handrail cleaner" has been especially developed for cleaning, rust removal and paint stripping operations on hand rails and pipes up to 50 mm in diameter.

- Manual cleaning unit guided along the pipe
- Housing made of aluminium and synthetic materials
- Parts subjected to high pressure are made of high-strength corrosion-resistant stainless steel
- A series of roller guides provide consistent standoff distance
- 6 fan jets for optimal all-round cleaning
- Special design for minimal weight

Technical data

- Suitable for pipes with outside diameters from 25 to 50 mm
- 6 nozzle inserts Type "R"
- Fan jets 20°, 30° or 45° can be used

Op. pressure:	up to 3000 bar
Flow rate:	up to 30 l/min
Weight:	6.5 kg
Height:	242 mm
Width:	380 mm incl. handgrip
Length:	560 mm



Radio remote control - RRC



RRC Basic

- Transmitter ON/OFF
- High pressure ON/OFF
- 4 pole ITT socket with 1.5 m connecting cable
- Green LED: transmitter ON
- Red LED: battery is empty

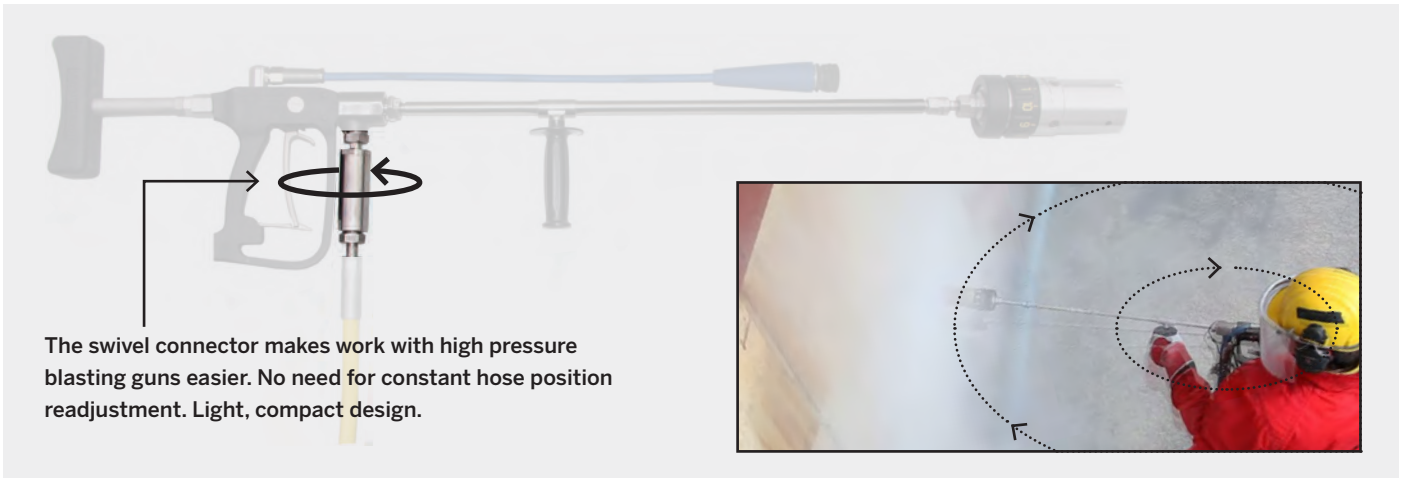


RRC Plus

- Transmitter ON/OFF
- High pressure ON/OFF
- 4 pole ITT socket with 1.5 m connecting cable
- Green LED: transmitter ON
- Red LED: battery is empty
- **Emergency stop switch**
- **Rocker switch, high pressure On/Off**
- **Rocker switch, set value +/-**

Wireless connection between the high pressure pump unit and electrically actuated guns and other blasting accessories

Swivelling connections



The swivel connector makes work with high pressure blasting guns easier. No need for constant hose position readjustment. Light, compact design.

Swivelling connection for blasting guns

Swivelling connections are available up to an operating pressure of 3000 bar. They are available for the blasting guns SP 400, 1000 and 3000. Tare weight: approx. 600 g.



Swivelling connection for high pressure hoses

Swivelling connection DN 14 is available for operating pressures of up to 1600 bar. M36 x 2 DKO threads serve as connections on both sides.



Safe and ergonomic work with high pressure water

JETMATE



The reaction forces are absorbed by the holding device.

The JETMATE enables reaction force free working during the cleaning process, is easy to handle and provides increased safety.

Simple handling and increased safety at work, these are the demands in the modern working environment. To meet these requirements it is our policy to continuously develop our high pressure systems.

- Blasting tool can be easily moved and swivelled in all directions
- Weight relief by pneumatic cylinder compensation
- Suitable for standard gun barrels
- Pneumatic deployment module to advance and retract during blasting
- Flange for the attachment to load-bearing devices



Manual blasting gun work



Reaction force free working with JETMATE

JETBOY

Working with the JETBOY is virtually effortless, enabling the operator to get much more done in less time.

Mechanical assistance for manual gun work with single or rotor jets and Aquablast surface cleaner on:

- Ceilings, supports (bridges, multi-storey car parks)
- Floor surfaces (removal of expansion joints and markings)
- Blasting of edges and corners with accuracy and ease

Working on ceilings and undersides



Manual blasting gun work

Reaction force free working with JETBOY device.
The reaction force is taken by the selected water tool holding device.

Working on floors



Manual blasting gun work

1 Single/rotor jet

2 Aquablast surface cleaner

Aquablast® surface cleaners



Description

Easy handling and high power performance make the Aquablast surface cleaners more than just cleaners. They can be used for a wide range of applications.

(Optional: wear protection for spray bar.)

Typical applications

- Paint booth grid cleaning
- Floor and paving cleaning
- Stripping and removal of paint and rust etc.
- Cleaning fuel, oil and grease deposits / stains
- Removal of coatings, mastics, laitance, adhesion inhibitors, mortar rendering etc.
- Roughening concrete and asphalt





Aquablast FR 1500

- Spray bar driven by reaction force of the water jets
- Wear-resistant rotary action with labyrinth seal
- Pressure on/off control options: Mechanical bypass valve or electric in 4-pole system signal to pump. Special controls available upon request.
- On/Off control by twin trigger action
- Four-wheel carriage
- Optional: wear protection for spray bar



Aquablast FR 3000 HD

- Spray bar driven by reaction force of the water jets
- Height-adjustable spray bar
- Pressure on/off control options: Mechanical bypass valve or electric in 4-pole system signal to pump. Special controls available upon request.
- On/Off control by twin trigger action
- The Aquablast's all-steel chassis means it can be cleaned using high pressure water



Aquablast FR 3000

- Spray bar driven by reaction force of the water jets
- Height-adjustable spray bar
- Spray bar housing with special seal
- Electrical pressure on/off control in 4-pole system. Special controls available upon request.
- On/Off control by twin trigger action
- Increased stability thanks to four wheel carriage

Surface cleaner	Working width	Op. pressure	Flow rate	Rotation speed	Weight
FR 1000	500 mm	up to 1000 bar	160 l/min	1500 r.p.m.	~ 120 kg
FR 1500	400 mm	up to 1500 bar	150 l/min	1000 r.p.m.	~ 90 kg
FR 3000	215 mm	up to 3000 bar	40 l/min	3000 r.p.m.	~ 76 kg
FR 3000 HD	275 mm	up to 3000 bar	40 l/min	3000 r.p.m.	~ 95 kg

Aquablast® PLUS surface cleaner

Description

The removed waste and waste water can be directly vacuumed away to a combined vacuum/filter unit where they are separated for further disposal.

Typical applications

- Removal of coatings, paint and rust from metal surfaces, e.g. a ship's outer surfaces, storage tanks
- Cleaning storage spaces, flooring, machine shops, façades
- Roughening concrete and asphalt
- Removal of markings on roads, parking and storage spaces in production halls



Aquablast FRV 3000

Working width:

215 mm

Operating pressure:

up to 3000 bar

Flow rate:

up to 40 l/min

Rotation speed:

up to 2500 r.p.m.

Direct vacuuming allows the use of high pressure water blasting in factories and machine shops without halting production or on roads, upper storeys of buildings etc. without the need for closure.



Aquablast (example: Twin)

Working width:

595 mm

Op. pressure:

up to 3000 bar

Flow rate:

up to 56 l/min

Rotation speed:

up to 3000 r.p.m.



Aquablast FRWV 3000

Working width:

140 mm

Operating pressure:

up to 3000 bar

Flow rate:

up to 19 l/min

Rotation speed:

2500 r.p.m.

Ergonomic handheld cleaning and stripping unit for vertical surfaces.



Vacuum system

For use with the Aquablast PLUS units. The waste water and solids are separated within the system for further disposal.

Capacity:

2 x 230 l

Power required:

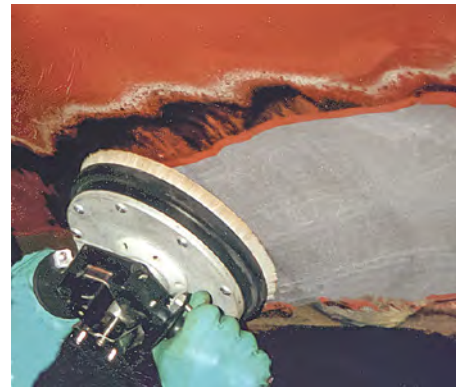
5.5 kW

Vacuum:

200 mbar

Suction power:

200 m³/h



Aquablast® Drive

- Suctions off removed waste material and waste water
- Spray bar driven by reaction force of the water jets
- Optimised with 2 x 4 nozzle arms i.e. a total of up to 8 nozzles
- Modular Aquablast system

Working width:	up to 1000 mm
Op. pressure :	up to 3000 bar
Flow rate:	up to 100 l/min
Average working speed:	50 m/min
Total weight:	890 kg



Applications

Cleaning large surfaces such as runways and industrial sites



Vacuum system



Vacuum system for suctioning off and pre-filtering waste water.

Dual chamber system

Prefractionator: 630 Liter

Fine separator: 430 Liter

Weight: 1.5 t

Engine: 3-cylinder diesel engine

Suction power: 650 m³/h

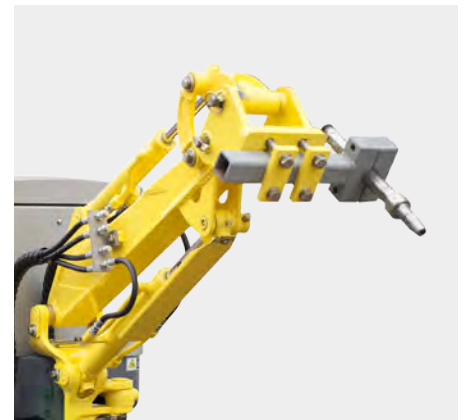
Vacuum: 240 mbar

Aquadozer



The Hammelmann Aquadozer is a remote-controlled carrier system for heavy-duty industrial cleaning. The system is suitable for reaction forces of from power ratings of the HDP 380 to HDP 800 high pressure pumps.

- Robust chassis
- Tier 4 Final engine
- Radio remote control
- Working arm with universal connection for various water blasting tools
- Hydraulic connection allowing water blasting tool to be quickly connected to the system



Lance system



Hydraulically powered rotor jet

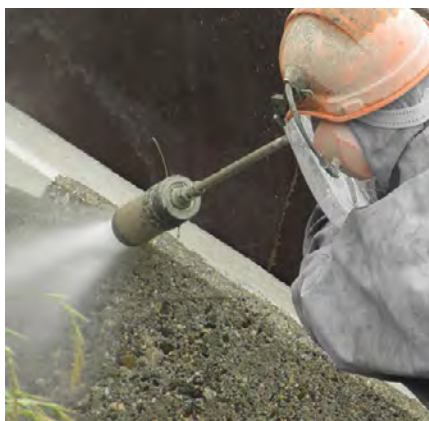


Rotor jet, heavy-duty version,
driven by reaction force



Rotor jet, medium-duty version,
driven by reaction force

Rotor jets



Rotor jets

Rotor jets employ the high efficiency of round jets to blast more surface in less time. Thanks to varying nozzle heads and controlled rotation speed adjustment, there are a great number of possibilities when it comes to blasting surfaces. The light and compact design enables the operator to reach areas with limited access.

Typical applications

Surface preparation:

- Cleaning
- Roughening
- Removing paint etc.
- Stripping





RD Flex 3000

Rotor jets with adjustable rotation speed. The rotation speed is adjusted by turning the dial.

Nozzle heads

- 1** Standard version with 3 nozzles
- 2** Spot blasting
- 3** Profile cleaning
- 4** Universal head for 2, 4 or 6 nozzles



RD Flex 3000 MONO

Single-jet rotor nozzle with adjustable rotation speed. The working nozzle is arranged in such a way as to keep vibrations to a minimum. No tools needed to set the rotation speed



RD 400 / 1000 / 1600

For use with blasting guns series 400, 1000, 3000 and high pressure lances.



RD 3000 PR (pneumatic)

Pneumatically powered rotor jet for use with blasting guns series 3000, high pressure lances and the Ergoblast.

Nozzle holders

Rotor jets	Op. pressure	Flow rate	Rotation speed	Connection thread	Weight
RD Flex 3000	up to 3000 bar	8.5 – 30 l/min	1000 – 4000 r.p.m.	M 14 x 1,5 LH" Adapter 9/16 "-18 UNF	1.8 kg
RD Flex 3000 MONO	up to 3000 bar	8.5 – 30 l/min	1000 – 4000 r.p.m.	M 14 x 1,5 LH" Adapter 9/16 "-18 UNF	2.0 kg
RD 400	up to 400 bar	up to 80 l/min	1000 – 2000 r.p.m.	G 3/8 "	1.2 kg
RD 1000	up to 1000 bar	up to 60 l/min	1000 – 2000 r.p.m.	G 3/8 "	1.2 kg
RD 1600	up to 1600 bar	up to 50 l/min	800 – 2000 r.p.m.	MH 14 x 1,5 LH Adapter 9/16 "-18 UNF	1.6 kg
RD 3000 PR	up to 3000 bar	up to 30 l/min	100 – 3000 r.p.m.	MH 14 x 1,5 LH Adapter 9/16 "-18 UNF	2.6 kg

Rotor jets

Mechanically deployed rotor jets handle high pump power inputs and are generally built into cleaning machines or systems. The rotation is effected by the reaction force of the water jets. Can be configured with axial or radial jetting heads.



Rotor jets	Operating pressure	Flow rate	Rotation speed	Weight
RDM 200	up to 1000 bar	up to 160 l/min	100 – 1500 r.p.m.	8.0 kg
RDM 250	up to 1500 bar	up to 120 l/min	100 – 1500 r.p.m.	8.0 kg
RDM 300	up to 1000 bar	up to 180 l/min	50 – 250 r.p.m.	8.2 kg
RDM 400	up to 1400 bar	up to 200 l/min	50 – 250 r.p.m.	28 kg
RDM 400 R	up to 2500 bar	up to 100 l/min	50 – 250 r.p.m.	28 kg
RDM 750	up to 1600 bar	up to 400 l/min	100 – 1000 r.p.m.	72 kg

Powered rotary joints

Powered rotor jets are a combination of motor and water blasting tool. The motors are electric, pneumatic or hydraulic and are available in various power ratings. Here are a few examples:



Hydraulically powered rotary joints

Versions with the following parameters:

Op. pressure: up to 3000 bar
Rotation speed: up to 3000 r.p.m.
Flow rate: up to 250 l/min



Pneumatically powered rotary joints

Versions with the following parameters:

Op. pressure: up to 3000 bar
Rotation speed: up to 3000 r.p.m.
Flow rate: up to 40 l/min



Electrically powered rotary joints

Versions with the following parameters:

Op. pressure: up to 3000 bar
Rotation speed: up to 2850 r.p.m.
Flow rate: up to 100 l/min

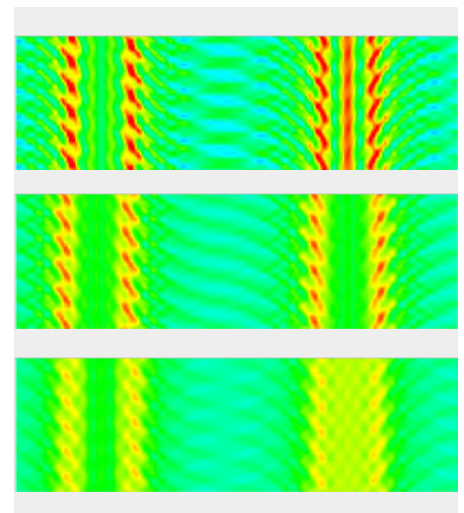
Possible combinations of powered rotary joints and nozzles holders



Rotor jet with spray bar and wear protection, hydraulically powered
 (Working width: 400 mm)



Centrally powered nozzle bar system,
 3 rotary joints (working width: 1518 mm)



Modular combinations of powered rotary joints and nozzle holders are possible.
 There are further nozzle holder versions available.

The number of nozzles and their arrangement on surface cleaning systems are optimised using the latest simulation programs.



(Working width: 350 mm)



(Working width: 170 mm)

Process integrated application systems

Typical applications

- Deburring and washing engine and gearbox components
- Removal of coatings, paint etc.
- Robot-assisted high pressure applications such as car body skid cleaning and decorating
- Roughening of metallic surfaces
- Internal blasting and decorating of castings



Rotor jet, electrically powered



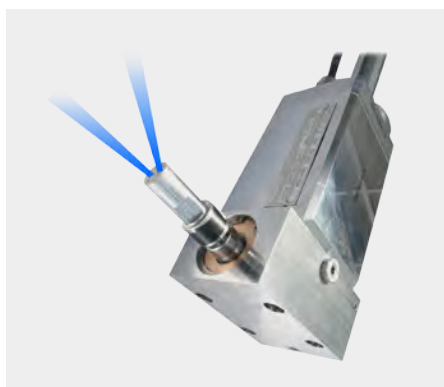
Nozzle lance, electrically powered



Multiple rotor jets, electrically powered



Internal blasting system, electrically powered



Electrically driven angled rotary joints



Electrically driven multiple rotary joints (oscillating)



Spray bars



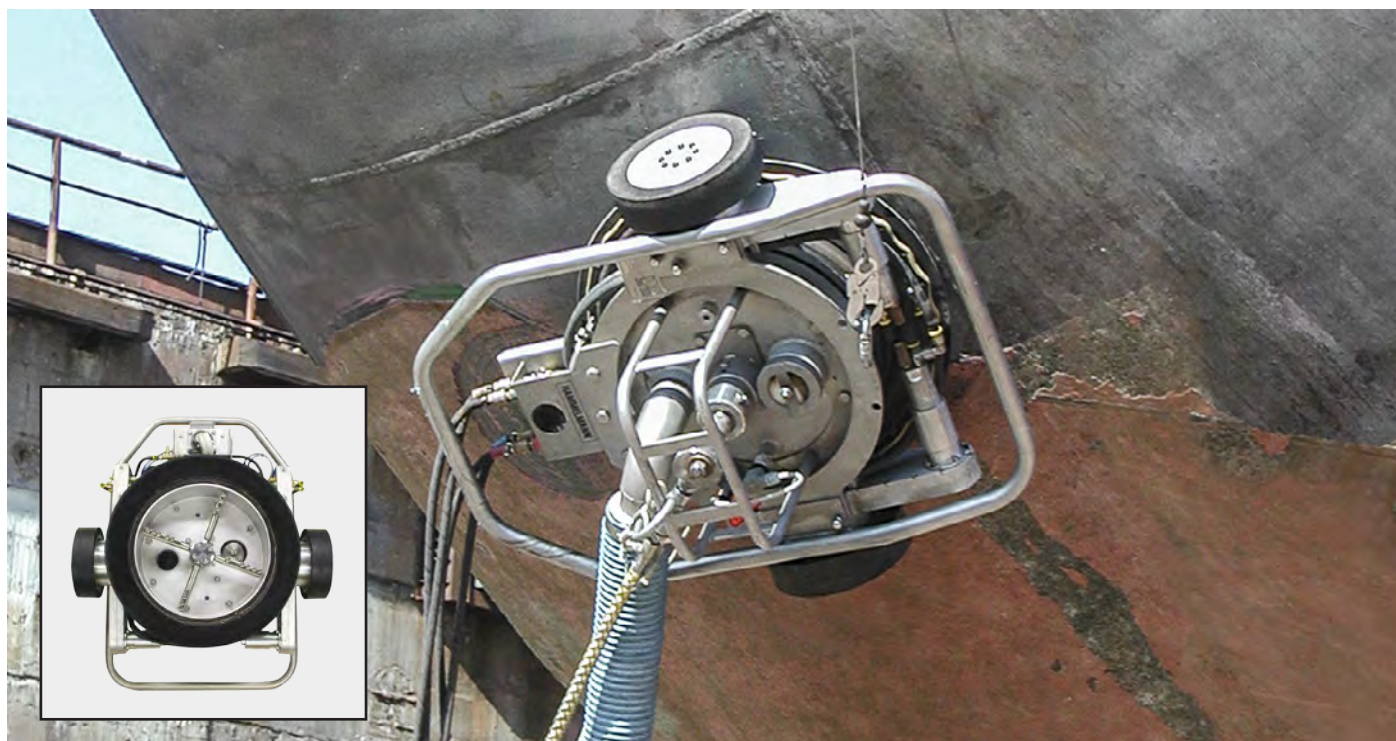
Electrically powered multiple rotary joints for external drive (Length: 260 mm)



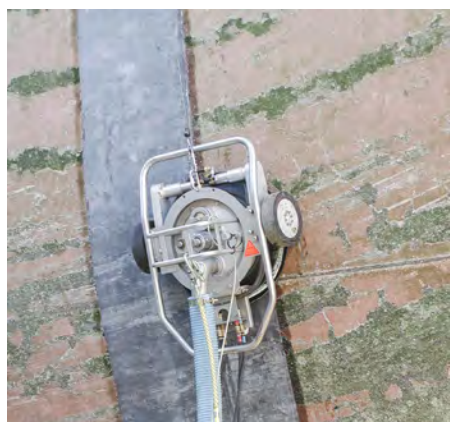
Nozzle arm, hydraulically powered



Spiderjet® 3000



The Spiderjet 3000 is held on the work surface by a vacuum, which at the same time suctions off the removed waste material and waste water.



Ship cleaning



External cleaning of large vessels



Concrete preparation

Typical applications

Cleaning plus coating and paint removal of:

- Storage tanks
- Outer surfaces of ships
- Concrete
- Loading bunkers

Technical data

Working width: 374 mm

Op. pressure: up to 3000 bar

Flow rate: up to 50 l/min

Vacuum:

Approx. 0.5 bar depending on the surface

Suction connection: DN 100



Pneumatic control cabinet
(optional: with radio remote control)

Dockboy



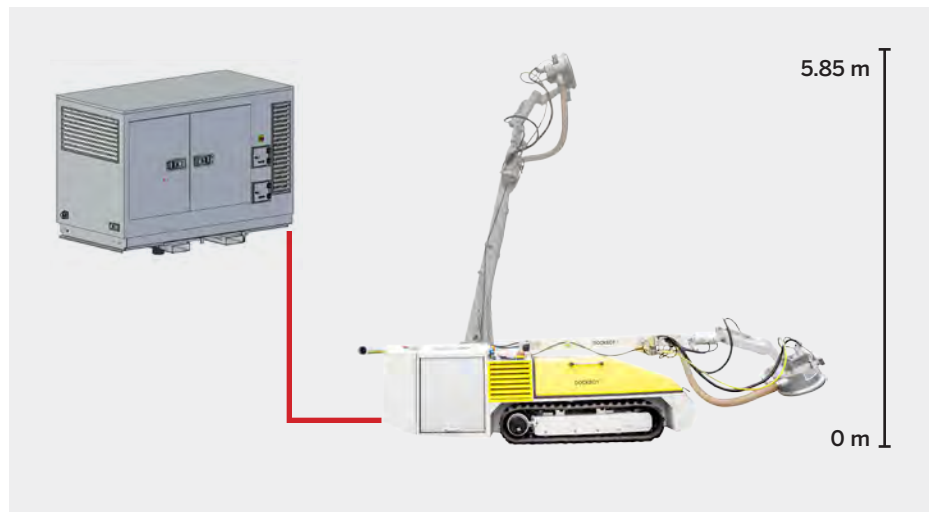
The Dockboy is a modern tracked vehicle primarily for working on ship hull bottoms or similar surfaces.



In combination with direct vacuuming, it ensures eco-friendly rust removal and old coating removal with waste and waste water collection. An Aquablast surface cleaner is attached to the end of the jib. The rotor is hydraulically powered.

The jib is designed to allow multifunctional work to be carried out on flat or rounded surfaces as well as on ground and overhead surfaces.

Working width: 370 mm, (optional 506 mm)
Op. pressure: 3000 bar
Working height: 0 – 5.85 m
Vehicle height: 1.23 m
Arc width: 4.00 m

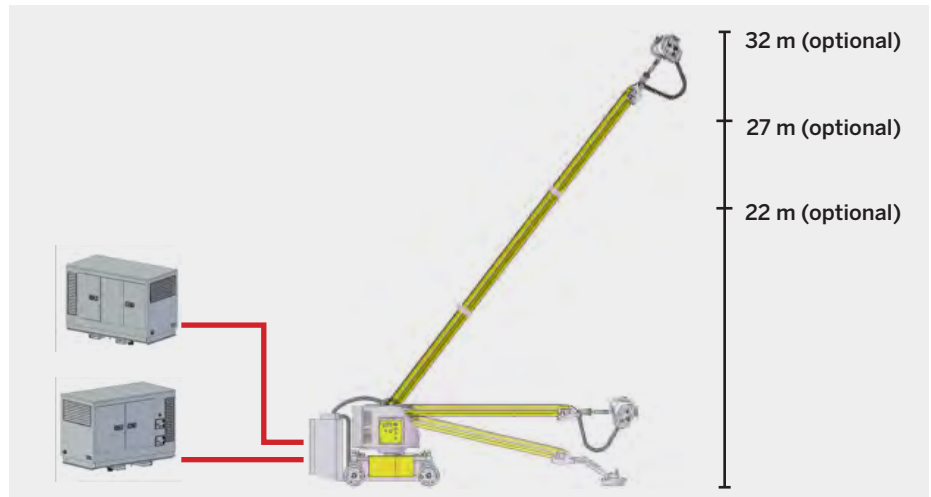


Dockmate

The Dockmate is a completely dust-free, eco-friendly alternative to dry open abrasive blasting capable of preparing hull surfaces to the most exacting standards applicable today.

Using pressures varying between 2500 and 3000 bar, up to 150 sq. metres per hour of surface can be prepared to NACE/SSPC standards WJ1/SC-2.

- The **ultra high pressure unit** is attached separately
- Telescopic jib: heights of 22 m, 27 m and 32 m (optional)



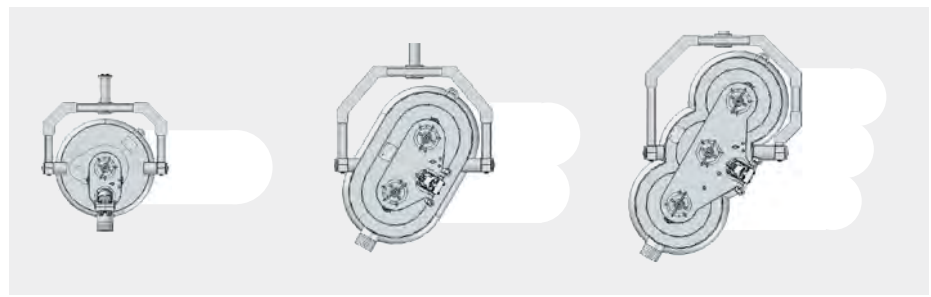
Different Aquablast versions

- Working widths of 375 mm – 860 mm
- 3000 bar possible with output of 28 – 92 l/min.



Spot blasting

Individual areas of damage or corrosion can be quickly removed without having to switch off the high pressure pump.



Working width
375 mm (optional)

Aquajet 17
28 l/min – 3000 bar

Aquajet 25
46 l/min – 3000 bar

Working width
600 mm (optional)

2 x Aquajet 17
56 l/min – 3000 bar

Aquajet 25
46 l/min – 3000 bar

Working width
860 mm (optional)

3 x Aquajet 17
84 l/min – 3000 bar

2 x Aquajet 25
92 l/min – 3000 bar

Training software

All work steps and functions can be learned using a simulation software combined with a modified Dockmate remote control.

Errors made when using this remote control are displayed and suggestions given as to their rectification.

No matter where the operator is, he can teach himself the individual functions and procedures using this software.





Filter / recovery module

The waste water and the removed solids are separated in the filter recovery module and the solids are collected in a "big bag".



Portable remote control

The Dockmate is operated by portable radio remote control.

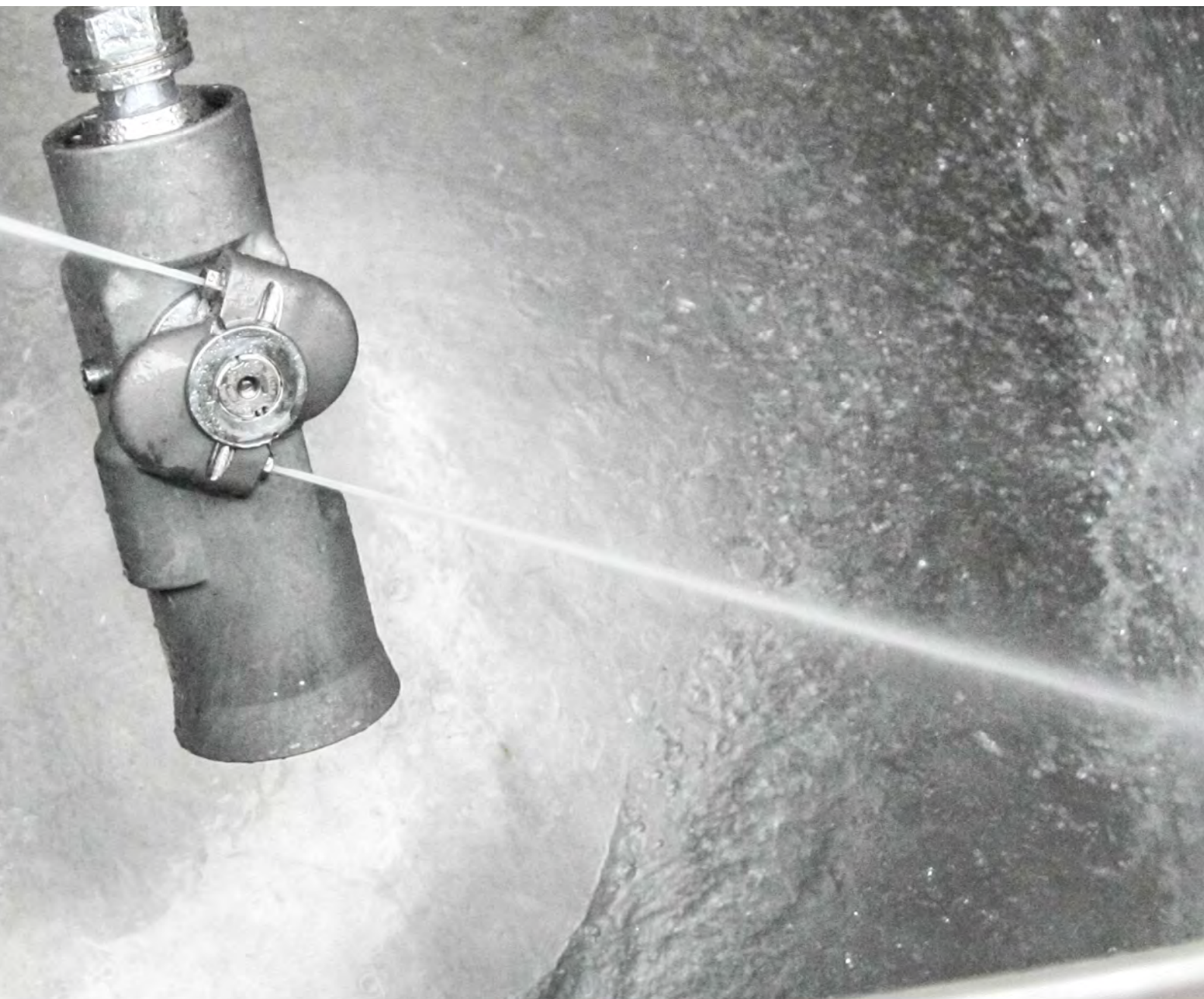


Applications

Blasting of metal surfaces, e.g. outer surfaces of ships and storage tanks. Cleaning of storage spaces, runways, flooring, roughening of concrete and asphalt.



TANK CLEANING



Tank cleaning

Aquamat tank cleaning units	30 – 31
Aquamat Select for large vessels	32
Nozzle holder arms for tank cleaning units	33
Aquarex tank cleaning devices	34 – 37

Aquamat® tank cleaning units

Description

Hammelmann automatic tank cleaners remove deposits including hardened materials from tank internal walls at pressures of up to 1800 bar.

The units operate solely with the power of high pressure water. The wide range of Hammelmann nozzle holder arms achieve the cleaning standard required at the specified performance parameters. Units can be fitted with one or two arms.

Typical applications

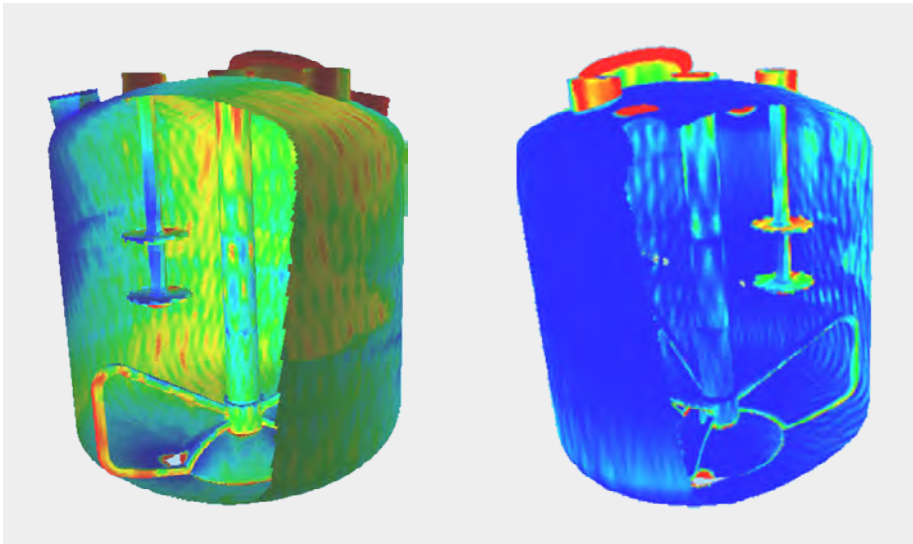
- Internal cleaning of autoclaves, vessels, Euro containers, reactors, agitator vessels, holding tanks, drying towers etc.
- Decontamination
- Disinfection (with chemical additives)
- Cleaning the interior of large diameter pipework with deployment sledge

Design features

- Minimum pressure losses result in a high energy saving
- Concentrated jet has a strong cutting action and long throw
- Wear-resistant, smoothly adjustable braking system. The adjusting mechanism is dirt-protected.
- Compact and corrosion-resistant housing
- High reliability thanks to simple and low-maintenance design
- Freely suspended operation possible

Simulation of tank cleaning

Homogenous and thorough cleaning is ensured by an optimal interaction of rotational movements combined with an adjustable speed.



Before

After



The cleaning action covers a wide area thanks to the rotating motion of the axes **1 + 2**.



Chemical industry design



Chemical industry design, gastight



Hot water
(85 °C)

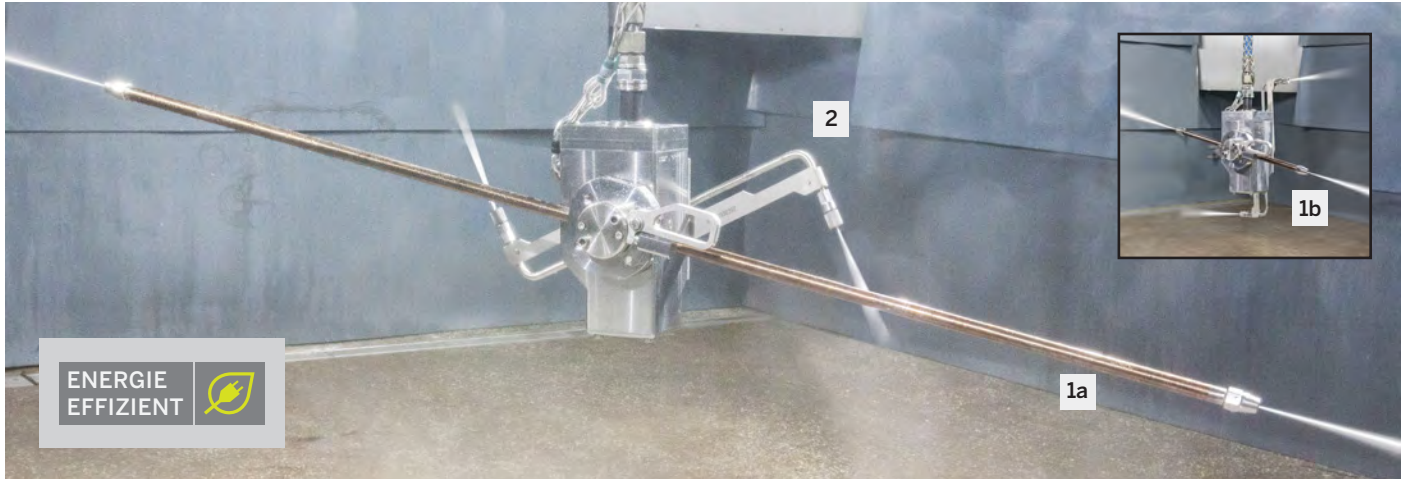


Pressure-resistant



Tank cleaning units	Operating pressure	Flow rate	Min. tank access	Weight
L 1400-2	up to 1400 bar	150 l/min	min. 140 mm	7.8 kg
L 1800-2	up to 1800 bar	150 l/min	min. 190 mm	10.3 kg
XL 500-2	up to 500 bar	400 l/min	min. 170 mm	14.8 kg
XI 1600-2	up to 1600 bar	250 l/min	min. 190 mm	14.8 kg
XL 1600-2 Chemical industry design	up to 1600 bar	250 l/min	min. 190 mm	14.8 kg
XL 1600-2 Chemical industry design gastight	up to 1600 bar	250 l/min	min. 205 mm	38.5 kg
XXL 1600-2	up to 1600 bar	500 l/min	min. 300 mm	93.0 kg

Aquamat® Select cleaning system for very large vessels



The cleaning time is reduced by an oscillating movement of the nozzle arm. The oscillation angle of the surface of the length (A) can be limited to 35 ° or 83 °. The rotation around the vertical axis of the apparatus for the surface length (B) is preselected at 36 ° or 81 °. When used in large containers (Fig. 1) the tank cleaning head is positioned at the vessel wall and cleans section by section.

1a Long blasting arm,
oscillating motion

1b Short blasting arm,
oscillating motion

2 Drive arm, powered by the
jet reaction force

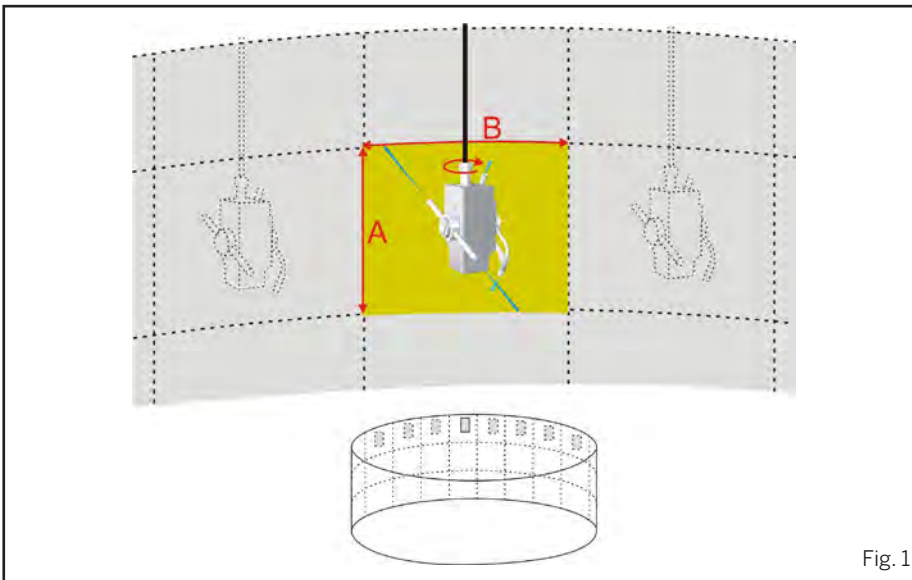


Fig. 1

Fig. 1 - Very large diameter vessel

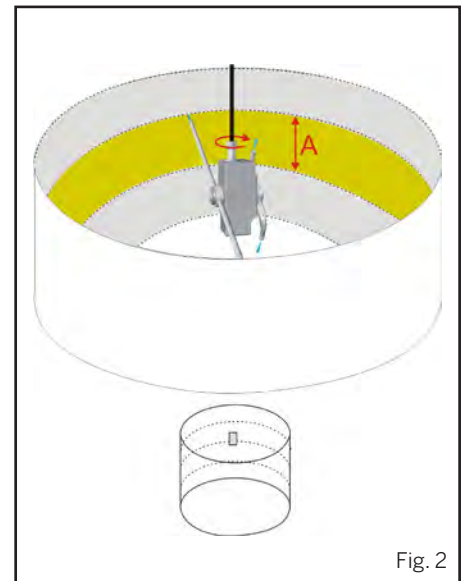


Fig. 2

Fig. 2 - Large cylindrical vessel

Other variants to enable changes in the cleaning position (vessel top, bottom) are possible.

The drive of the Aquamat Select is provided by a second, reaction force powered nozzle arm. For the permanent rotation mode, various nozzle insert diameters are used depending on the operating pressure. This allows the optimal power requirement for the drive to be selected.

In smaller diameter large cylindrical vessels (Fig. 2), the tank cleaning head is positioned centrally. The limits on the rotational motion around the vertical axis of the apparatus (B) are removed to enable the full 360°.

Nozzle holder arms for tank cleaning units

Hammelmann can supply nozzle holder arms in various designs, lever actions and arm lengths to achieve the cleaning standard required at the specified performance parameters.

Particularly compact designs make cleaning through small openings possible.



Nozzle holder Type "L" arm for TCH "XL"



Nozzle holder Type "V" arm for TCH "L"



Nozzle holder Type "V" arm for TCH "XL"



Nozzle holder Type "S" arm for TCH "L"



Nozzle holder Type "S" arm for TCH "XL"



Special version for smokestack cleaning



Extension arm from 110 mm to 1100 mm

Accessories for tank cleaning units



Deployment pipes

To stabilise the tank cleaning unit. Recommended for use when the unit is freely suspended by the hose with the unit brake adjusted to maximum (1000 bar).



Protective covers

Impact-resistant plastic covers for tank cleaning units and nozzle holder arms.



Protective cage

Manufactured from rust and acid resistant stainless steel with rubber-coated frame sections. Offers all-round protection when fitted with type "Z" or "S" nozzle holder arms in conjunction with an impact-resistant cover for the arm.



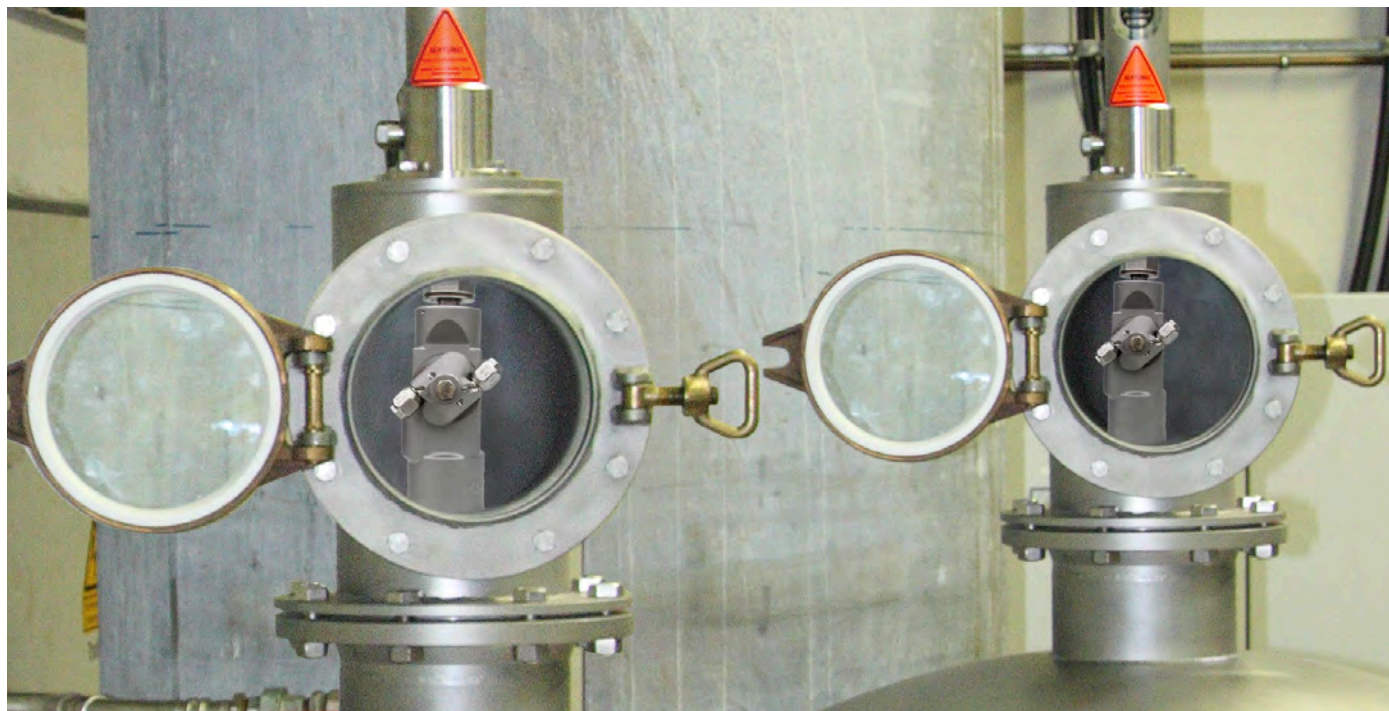
Sledge type guides

Guides to enable tank cleaning units to be used for pipe cleaning. The unit is mounted in the centre and a swivelling pulling eye is provided. Optional "kick plate" available so that the assembly self-propels through the pipe.

Aquarex® tank cleaning devices

Hammelmann custom-build special devices for cleaning the insides of various different tank and vessel designs.

Here are a few examples:



Lance system

With integrated ball valve for permanent installation. The automatic tank cleaning unit remains in the vessel during production



Lance system

Manually extendable, tilting lances. The nozzle standoff distance is adjusted by a crank drive and chain.



Telescopic lance system,

The lance is attached onto a manhole. It can be manually rotated, swivelled, retracted and extended. It is pulled out by its own weight.



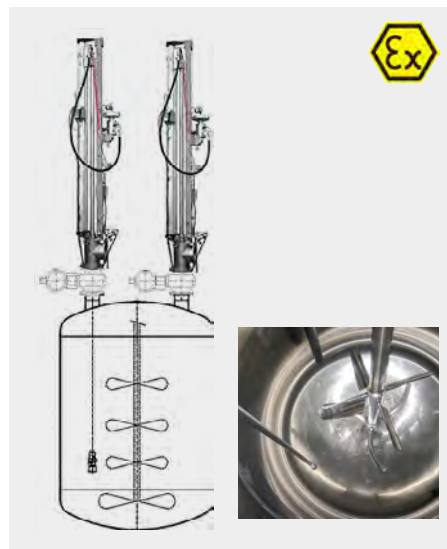
Lance hose system

The lance is rotatable, swivellable and extendable and is attached onto a manhole. The tank cleaning device is lifted and lowered using a crank.



Lance hose system

The lance is positioned on the manhole by the mobile chassis. The lance can be manually rotated, swivelled, retracted and extended.



Twin lance system

The entire cleaning device is powered by high pressure water and oil-free compressed air. (With chain drive as an alternative for standoff distances of 4.5 m or more)



Gastight lance system

Four-stage telescopic lance driven by high pressure water. The cleaning device is controlled and monitored by a freely programmable PLC.



Hose reel system with weatherproof cabinet

The cleaning positions are freely programmable and controlled by the process plant controller.



Hose reel system in standing or suspended design

The cleaning positions are freely programmable and controlled by the process plant controller.

Aquarex® tank cleaning devices



Hose reel system with jib

Electrically driven hose reels. The jib is manually positioned above the opening and lowered onto the cleaning port by handheld control. The cleaning positions are freely programmable and controlled by the process plant controller.



Hose reel system with jib

Electrically driven hose reel. Can be manually rotated and swivelled at the flange. Available with various different jibs.



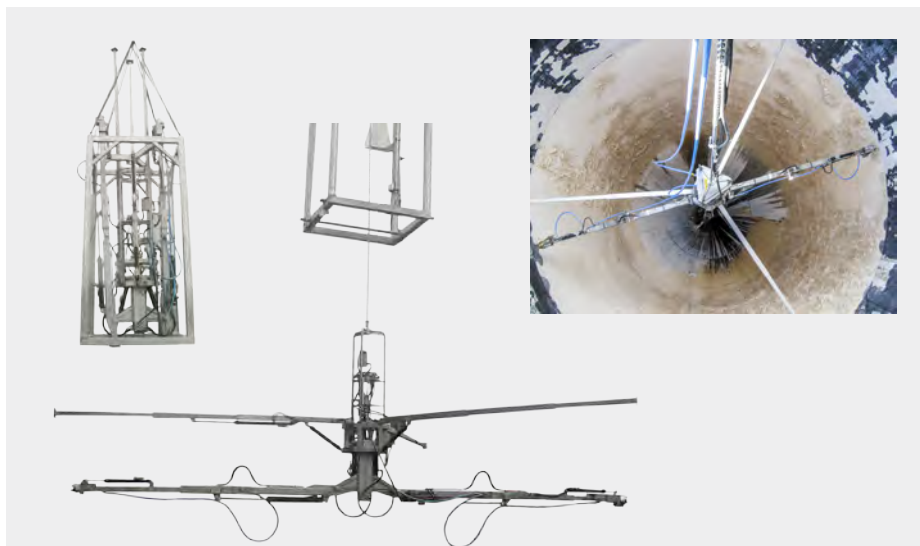
Gastight hose reel system

The control of the operation of the system is by PLC with a frequency converter for the reel electric motor.



Swivellable telescopic cylinder

The four-stage telescopic cylinder can be turned up to 180 degrees, swivelled 90° max and can be extended up to 4 metres.



Cleaning system for very large vessels

The system is designed for cleaning vessels up to 20 m in diameter. It is lowered into the vessel and fixed in position by three extendable support arms. The two hydraulic blasting heads are positioned on the work surface by hydraulically extended work arms mounted on a turntable



Gastight hose reel system



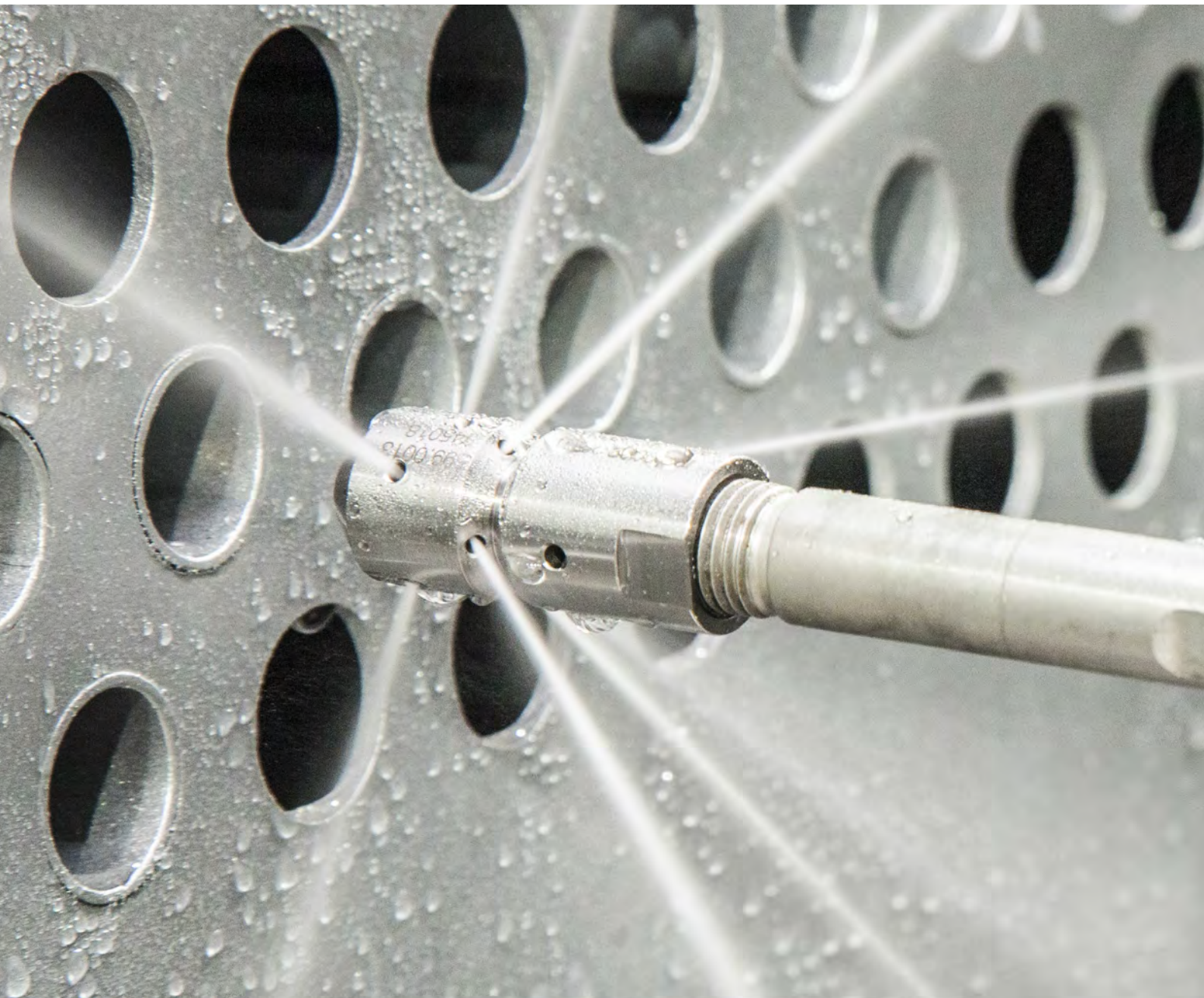
Hose reel system



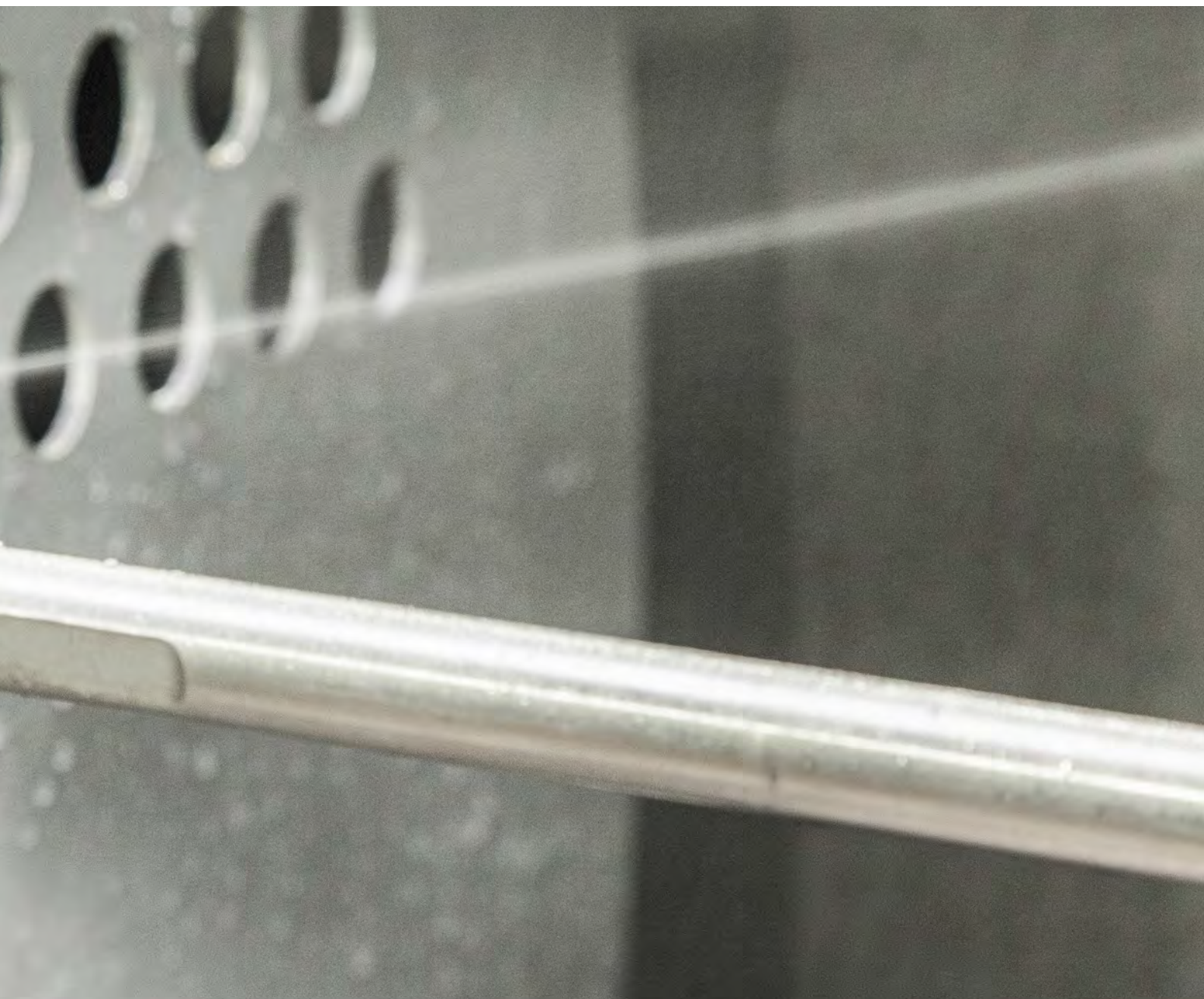
Lance system - moved hydraulically/pneumatically actuated



Lance system - moved pneumatically actuated



PIPE CLEANING

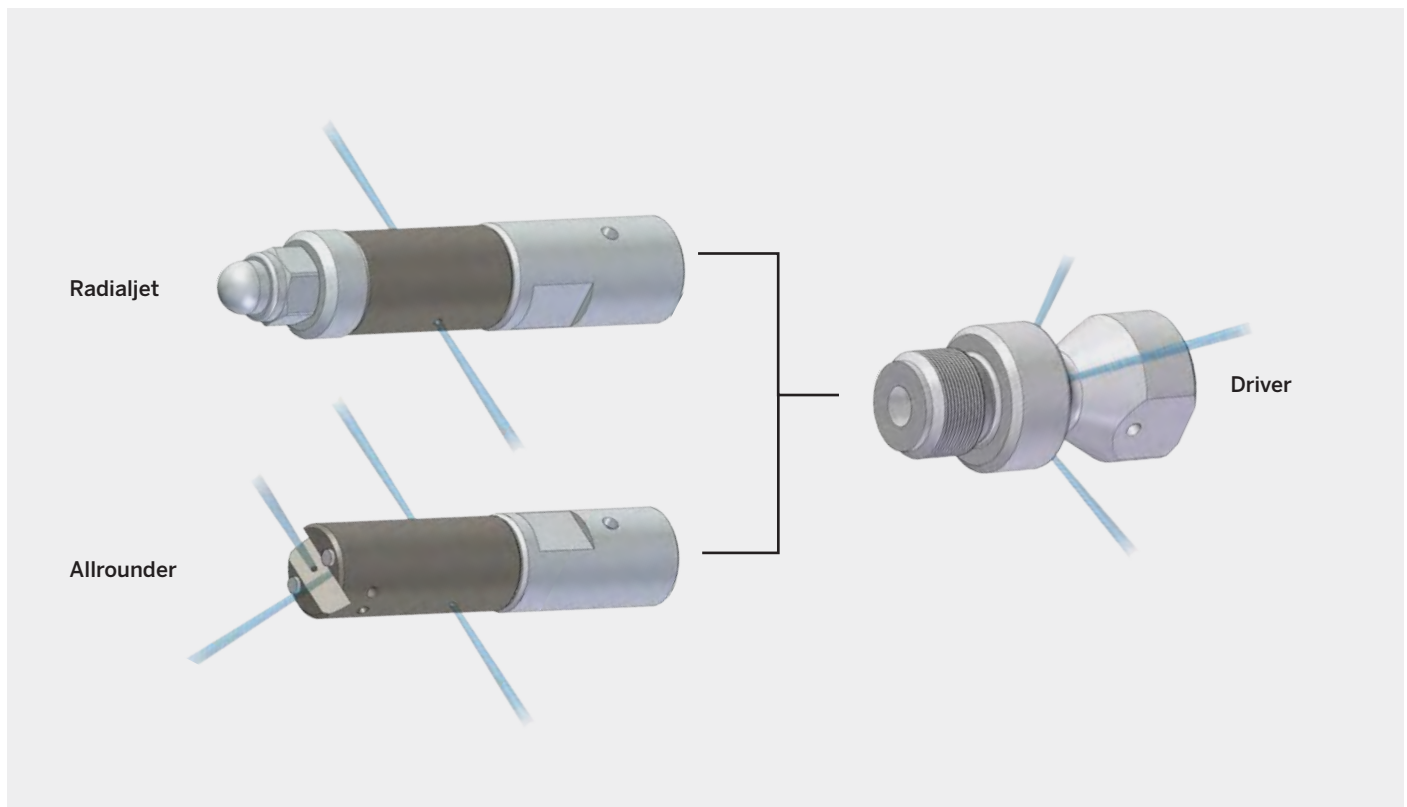


Pipe cleaning

Turbo jets	40 – 41	Nozzle holders for pipe cleaning	48 – 49
Flexible and rigid lances	42	3D pipe cleaners	49
Push and pull nozzles	43	Electric hose reel	50
Rotor jets for pipe cleaning	44 – 45	Pipemaster hose rotating system	51
Trolleys for rotor jets	46	Catching device for heat exchanger cleaning	52
Guide sledge for rotor jets	47	Foot switch and foot valve	53

Turbojet

Turbo jets have a high speed rotating nozzle body which prevents "striping" inside the pipe. The rotation of up to 20,000 r.p.m. is effected by the reaction force of the water jets.



Radialjet

Radialjet have axially arranged 90° bores ensuring maximum removal of pipe wall deposits.

Typical applications

- Partially blocked pipes
- Removing heavy deposits from pipe walls

Allrounder

Allrounder have, in addition to the efficiency of the Radialjet bores, front facing bores. These have a cleaning effect in front of the nozzle.

Typical applications

- Blocked pipes
- Very hard deposits

Driver

The driver is installed as an adapter between the high pressure lance or hose and the Radialjet/Allrounder. The driver has 3 angled rear facing bores and moves the nozzle into the pipe using the reaction force of the water jets.

Up to 1500 bar – unbraked



Turbojet Ø	Connection thread	Tube diameter (mm)		Nozzles (mm)	Max. flow rate l/min at 1500 bar (incl. leakage)
		min.	max.		
12 mm	M 7	15	30	2 x Ø 0.9 radial	approx. 30 l/min
14 mm	G 1/8"	17	35	2 x Ø 1.0 radial	approx. 38 l/min
18 mm	G 1/4"	20	40	2 x Ø 1.1 radial	approx. 45 l/min
22 mm	G 1/4"	25	50	2 x Ø 1.0 radial	approx. 50 l/min
28 mm	G 1/4"	33	60	2 x Ø 1.1 radial	approx. w62 l/min



Turbojet Ø	Connection thread	Tube diameter (mm)		Nozzles (mm)	Max. flow rate l/min at 1500 bar (incl. leakage)
		min.	max.		
18 mm	G 1/4"	20	40	2 x Ø 0.6 axial 2 x Ø 0.6 radial	approx. 40 l/min
22 mm	G 1/4"	25	50	2 x Ø 0.6 axial 2 x Ø 0.6 radial	approx. 40 l/min

Up to 2500 bar – unbraked



Turbojet Ø	Connection thread	Tube diameter (mm)		Nozzles (mm)	Max. flow rate l/min at 2500 bar (incl. leakage)
		min.	max.		
15 mm	G 3/8" - 24 UNF LH	18	35	2 x Ø 0.6 radial	approx. 25 l/min
16 mm	G 3/8" - 24 UNF LH	19	35	2 x Ø 0.6 radial	approx. 25 l/min
18 mm	G 3/8" - 24 UNF LH	20	40	2 x Ø 0.7 radial	approx. 32 l/min
20 mm	M 14 x 1.5 LH	23	45	2 x Ø 0.7 radial	approx. 32 l/min

Up to 2800 bar – magnetically braked



Turbojet Ø	Connection thread	Tube diameter (mm)		Nozzles (mm)	Max. flow rate l/min at 2800 bar (incl. leakage)
		min.	max.		
18 mm	M 14 x 1.5 LH	20	40	2 x 0.4 radial	approx. 21.5 l/min
18 mm	9/16" - 24 UNF LH	20	40	2 x 0.4 radial	approx. 21.5 l/min



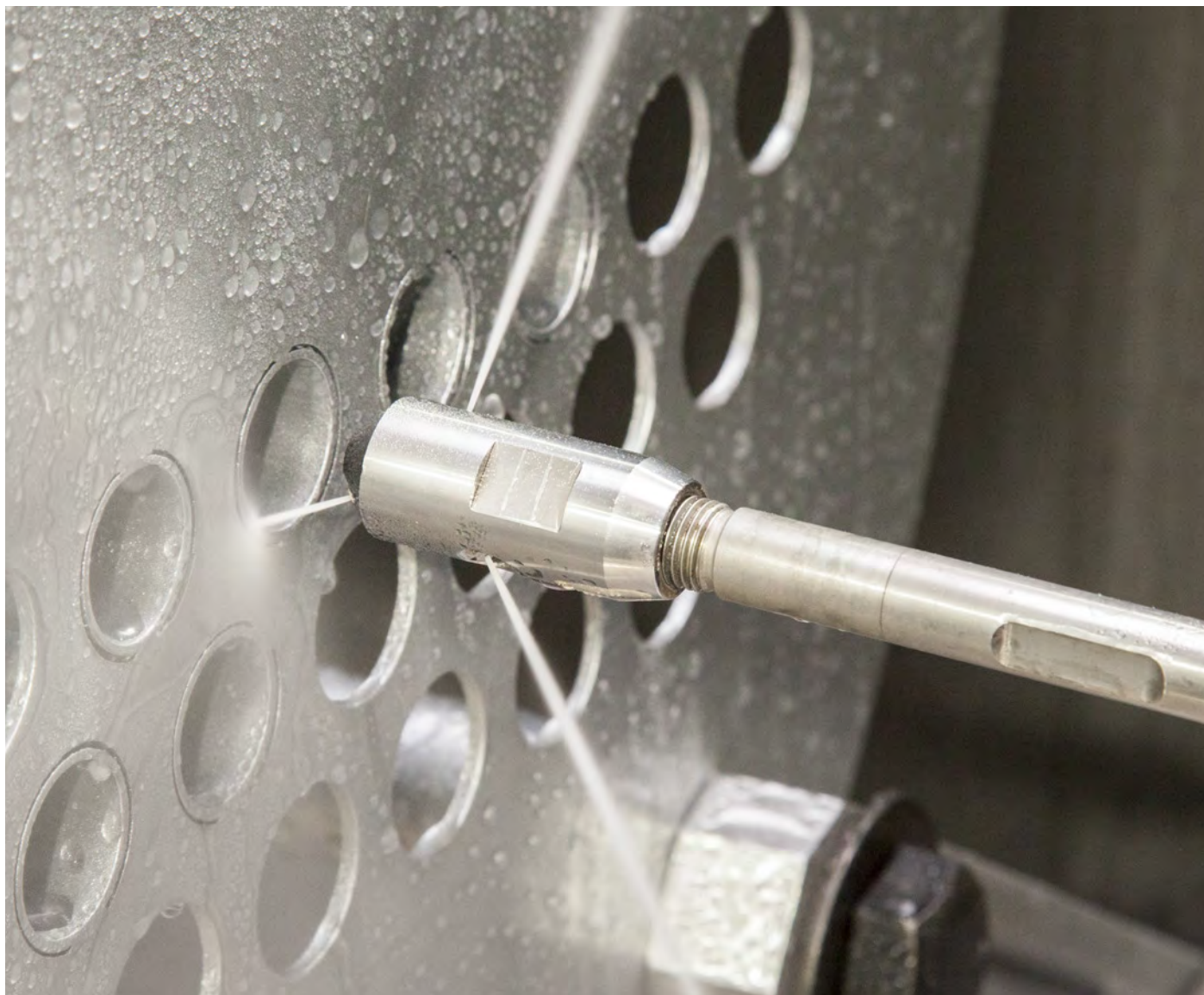
Turbojet Ø	Connection thread	Tube diameter (mm)		Nozzles (mm)	Max. flow rate l/min at 2800 bar (incl. leakage)
		min.	max.		
18 mm	M 14 x 1.5 LH	20	40	2 x 0.35 radial 2 x 0.30 axial	approx. 25 l/min
18 mm	9/16" - 24 UNF LH	20	40	2 x 0.35 radial 2 x 0.30 axial	approx. 25 l/min

Driver



Max. diameter of drive nozzle	Qmax l/min up to 1000 bar	Connection thread (inside / outside)	Hose nominal i/d mm
13 mm	approx. 6 / 13 / 23 / 35	G 1/8"	DN4
13 mm	approx. 9 / 13 / 23 / 35	G 1/8"	DN6
18 mm	approx. 6 / 23 / 35 / 51	G 1/4"	DN4
18 mm	approx. 13/23/35/43/51	G 1/4"	DN6
up to 3000 bar			
19	6 – 51	M14 x 1.5 LH (i/a)	DN5

Flexible and rigid lances / Push and pull nozzles



Lances

High and ultra high pressure lances as gun barrel extensions or for cleaning heat exchanger tubes.

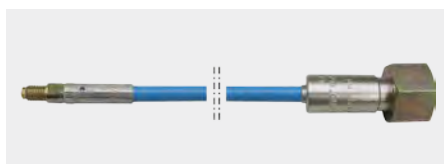
For use with a blasting gun or foot valve

Operating pressure: 1000; 1200 bar

Length: 6; 10; 15; 20 m

Nominal i/d: 4; 6 mm

Flexible lances



For use with a hose or foot valve

Operating pressure: up to 3000 bar

Length: 6, 10, 15, 20 m

Nominal i/d: 4, 5, 6 mm

Rigid lances



For use with a blasting gun or foot valve

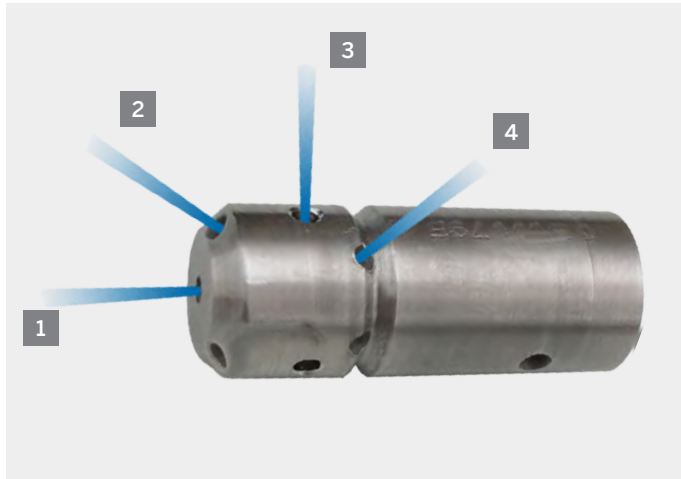
Operating pressure: up to 3000 bar

Length: 6, 10, 15, 20 m

Nominal i/d: 2.5; 5; 8; 10; 13; 16 mm

OD: 6.35; 10; 14; 18.5 mm

Push and pull nozzles



1
Cleaning completely blocked tube in axial direction.







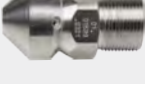
2
Push jets remove material from in front of the nozzle. When using flexible lances only employ in conjunction with pull jets.

3
90° axial jets ensure that the pipe wall is completely cleaned.

4
Pull jets remove any material behind the nozzle while pulling the lance and nozzle into the pipe.

Flexible Lances

Rigid Lances

	Minimum pipe inner diameter	Operating pressure Internal thread	Operating pressure External thread
	12 mm Ø	up to 1200 bar M8	up to 2500 bar M6 x 0.75
	17 mm Ø	up to 1000 bar M10 x 1	up to 3000 bar M10 LH
	20 mm Ø	up to 1640 bar M14 x 1.5 LH	up to 2500 bar M14 x 1.5 LH
	26 mm Ø	up to 3000 bar M14 x 1.5 LH	up to 3000 bar M14 x 1.5 LH
	33 mm Ø	up to 500 bar M22x1.5 DKO-S	–
	40 mm Ø	up to 1800 bar M22x1.5 (DKO-S)	–
	55 mm Ø	up to 1400 bar M36x2 DKO-S	–

Rotor jets for pipe cleaning








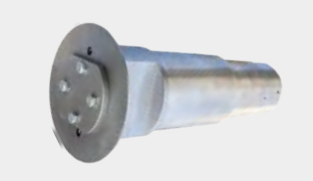
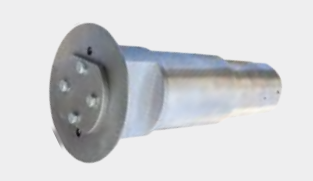
Rotor jets for pipe cleaning

- For use with mechanically deployed cleaning devices
- Stainless steel housing
- Built-in eddy current brake and cooling jacket in dustproof enclosure

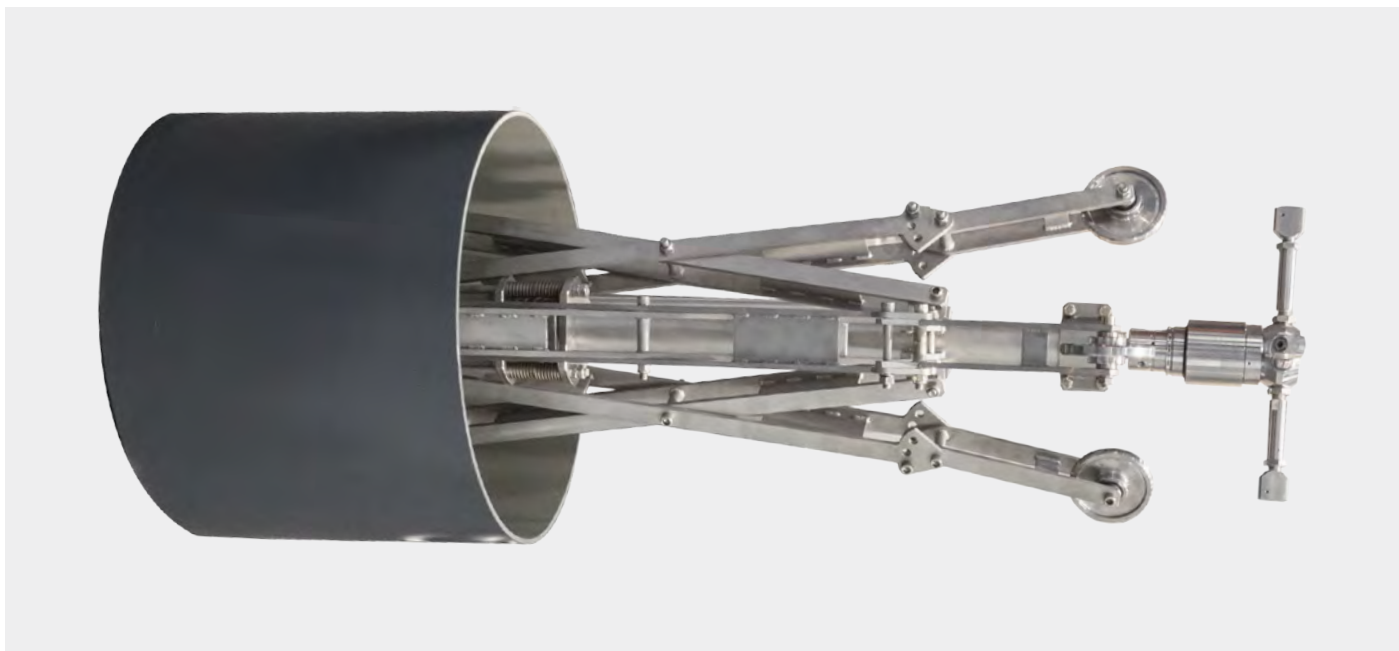
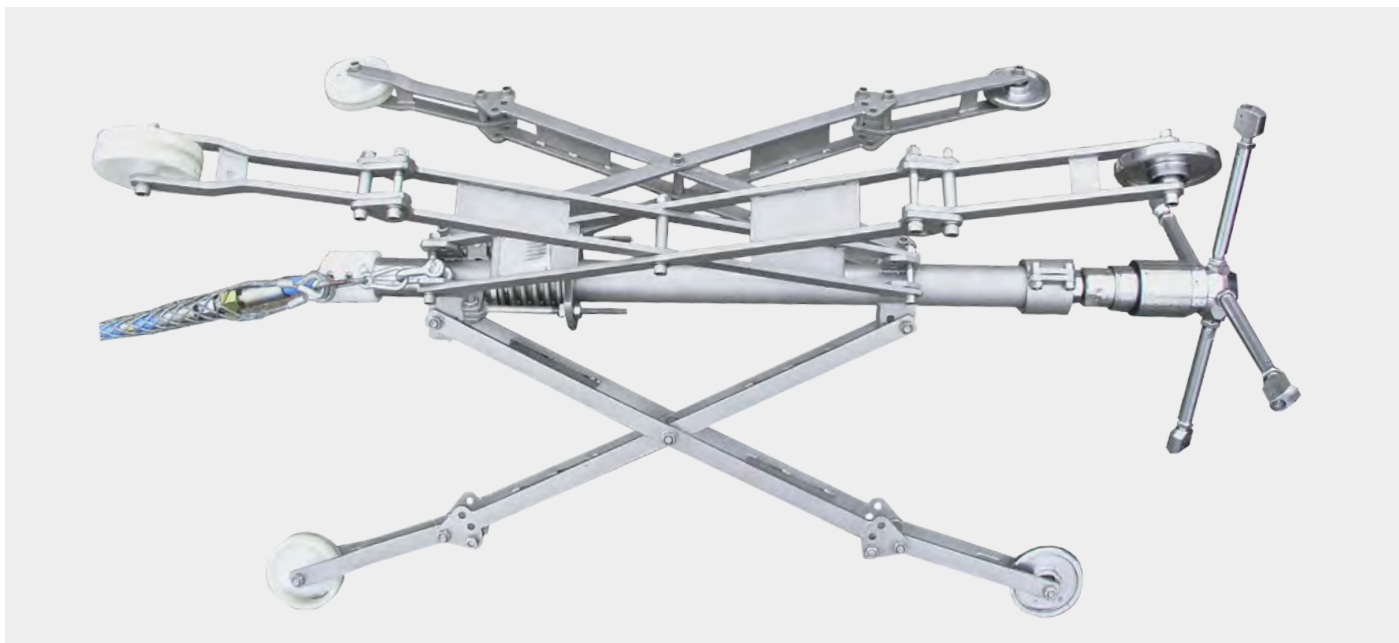
- Wear-resistant rotary joint with labyrinth seal
- Axial nozzle assembly. A radial nozzle arrangement especially for cleaning tubes is possible
- With protective cover as an option

Typical applications

- Roughening of concrete
- Paint removal
- Pipe, boiler and smokestack cleaning
- Cleaning of partially blocked pipes, boilers and smokestacks

	Rotor jet diameter	Length	max. Op. pressure	Flow rate		Nozzles	Connection thread
				min.	max.		
	53 mm	186 mm	1000 bar	30 l/min	– 60 l/min	4 x radial	G 3/8 inside
	58 mm	238 mm	1600 bar	100 l/min	– 200 l/min	2 x radial 2 x push 2 x pull	M36 x 2 DKO outside
	78 mm	170 mm	1600 bar	25 l/min	– 50 l/min	2 x radial 2 x push 2 x pull	M14 x 1.5 LH inside
		170 mm	2500 bar	16 l/min	– 32 l/min		
	90 mm	327 mm	1000 bar	90 l/min	– 180 l/min	4 x radial	M36 x 2
	128 mm	303 mm	1500 bar	60 l/min	– 120 l/min	2 x radial 2 x push 2 x pull	M24 x 1.5 DKO outside
		247 mm	3000 bar	30 l/min	– 60 l/min		M30 x 2 inside
	130	418 mm	1500 bar	100 l/min	– 200 l/min	4 x radial	M36 x 2
	166	635 mm	1600 bar	200 l/min	– 400 l/min	2 x push	M36 x 2

Trolley for rotor jets



Trolley for rotorjets

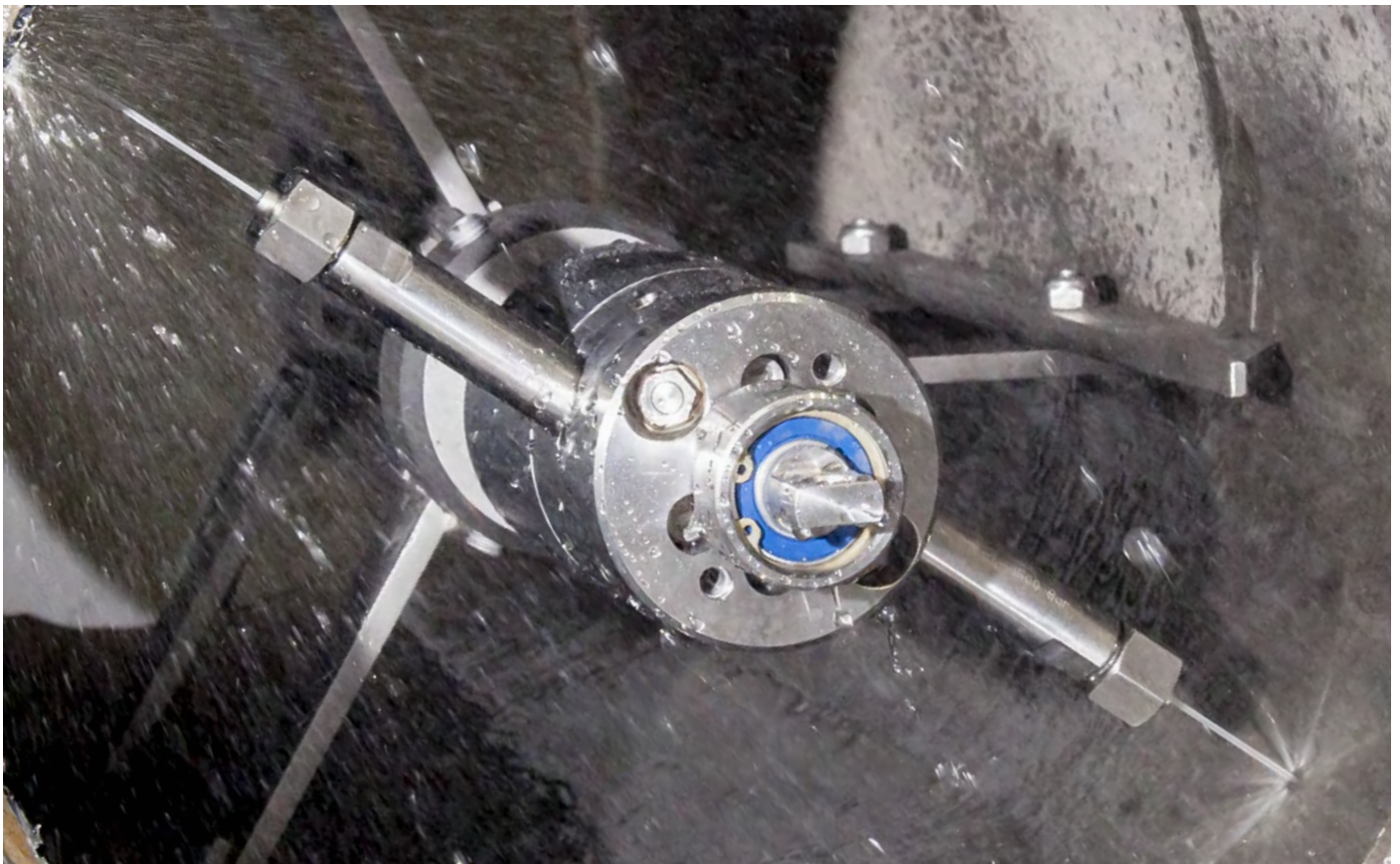
The trolley enables rotor jets to be deployed absolutely centrally in a pipe. The scissor-like action of the trolley allows pipes and sewers of between 0.40 and 1.40 m in diameter to be intensively high pressure cleaned via selected length nozzle arm extensions.

It comprises the following main components:

- Guide pipe with mounting for rotor jet and hose
- Adjustable to different pipe diameters
- 3 scissor arms with moving joints and wheels.

The complete trolley is made from rust-resistant materials. Rotary joint, spray pipes and extension blasting arms selected separately.

Guide sledge for rotor jet



The sledge can be adjusted to fit various diameters of pipe.
A swivelling pulling eye is fitted to the rotor jet

For pipe-Ø : 125 – 2800 mm

Nozzle holder for pipe cleaning

For use together with a hose rotating system to remove heavy soiling and hard deposits from pipes



1 Axial nozzle

2 Push nozzles

3 Radial nozzles

4 Pull nozzles







Nozzle holder

We produce a wide variety of nozzle holders for use with the rotating hose reel.

Typical applications


- Partially and fully blocked pipes
- Deposits on the inner wall
- Hard materials

	Nozzle holder diameter	max. Operating pressure	Nozzles		Connection thread
			Quantity	Adjustment	
	55 mm	1800 bar	7	2 x pull 2 x radial 2 x push 1 x axial	M 24 x 1.5 [DKO-S] or M 36 x 2 [DKO-S]
	65 mm	1800 bar	5	2 x pull 2 x radial 1 x axial	M 24 x 1.5 [DKO-S] or M 36 x 2 [DKO-S]
			7	2 x pull 2x push 2x radial 1 x axial	
	80 mm	1800 bar	7	2 x pull 2x push 2 x radial 1 x axial	M 24 x 1.5 [DKO-S] or M 36 x 2 [DKO-S]
	90 mm	1600 bar	19	6 x pull 6 x push 6 x radial 1 x axial	M 36 x 2 [DKO-S]

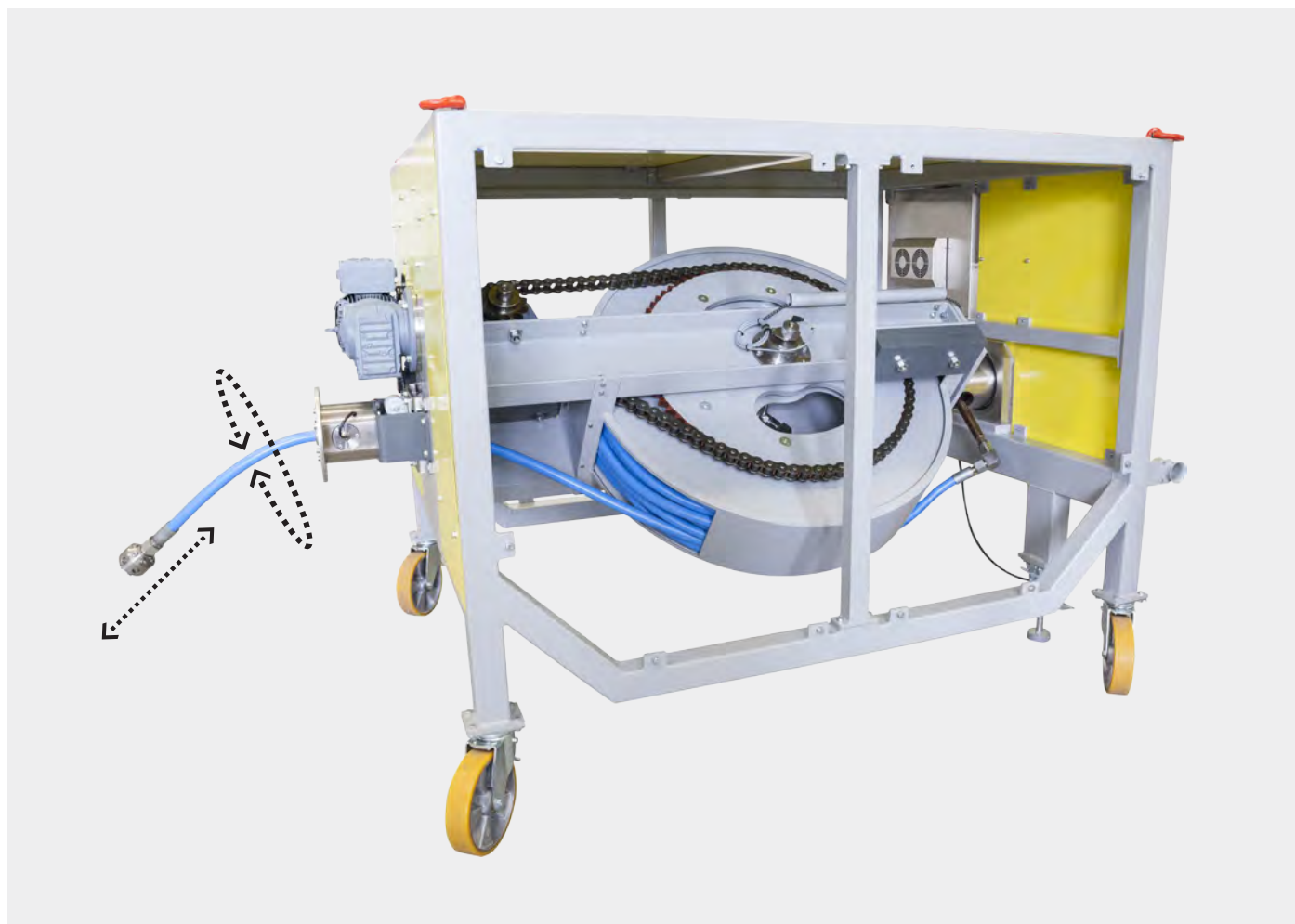
3D pipe cleaners

3D pipe cleaners are basically tank cleaning units mounted in sledge type guides for pipe cleaning. They are used for removing particularly hard scale deposits. Operating on two axes with a "kick plate" they automatically move through the pipe as the scale is blasted loose. Alternatively where access is available they can be pulled through the pipe.



	Type	nozzle arm	Operating pressure	Flow rate	Minimum pipe i/d:
	Type L 1200-2	18 mm S arm, 2 nozzles	max. 1400 bar	150 l/min	200 mm
	Type XL 1500-2	35 mm S arm, 2 nozzles	max. 1600 bar	250 l/min	320 mm
	Typ XXL 1600-2	13 mm S arm, 2 nozzles	max. 1600 bar	500 l/min	470 mm

Electric hose reel



The unit cleans tubes with a diameter ≥ 70 mm. It is the ideal powered drive and rotating system for use where limited access prevents the use of a rigid lance system.

The mobile unit comprises a hose reel with powered deployment and retraction as well as a rotational drive.

The flexible hose is rotated and pushed into the tube by the powered hose reel.

All movements are electrically powered. The unit is controlled from a portable remote control panel.

A hydraulic version is optional.

Op. pressure: 1600 bar
(optional 3000 bar)

Hose nominal i/d: 5, 12, 20 mm

Hose length: 100 m

Rotation speed: 0 – 20 r.p.m.
adjustable

Drive speed: 0 – 25 r.p.m.
adjustable

Pipemaster hose rotating system

The Pipemaster is a manually operated, high pressure hose rotating system. It is used to remove both soft and very hard deposits from the insides of pipes and pipelines including those with bends and vertical sections.

As an alternative to self-rotating nozzles, the rotary action is achieved by rotating the high pressure hose.

The low rotation speeds of the high pressure hose mean that especially hard deposits can be removed. The device is easy to operate.

Hose internal diameter 8 and 12 mm

Op. pressure: up to 3000 bar

Hose internal diameter 20 mm

Op. pressure: up to 1600 bar



1 Hose rotating unit

A high pressure supply hose line is fixed between the pump and the rotary joint on the hose rotating unit.

A second hose connected to the rotary joint runs via the deployment unit into a protective hose leading to the positioning device at the workpiece. The rotation of the second high pressure hose around its longitudinal axis is effected by a chain drive from a pneumatic motor to the rotary joint. The rotation speed can be smoothly adjusted by throttle check valves.

The rotating unit is driven by 120 Nm³ / hr. of compressed air at 4 bar and comprises a pneumatic motor with a gearbox, a pneumatic maintenance unit, the high pressure rotary joint and a pneumatic control system.

2 Hose deployment unit

Actuating the control lever of the unit causes the hose to start rotating which produces the forward and backward movement.

The deployment speed is a maximum of 1.6m/min. and it is smoothly adjustable by means of the control lever.

3 Moving direction

Changing the angle of the three wheels that press onto the hose will cause the hose to move forward (deploy) or backward (retract). The hose deployment unit is mounted on a sturdy base plate and comprises the height-adjustable control lever to deploy or retract the hose as well as the remote control to operate the hose rotating unit.

4 Positioning device

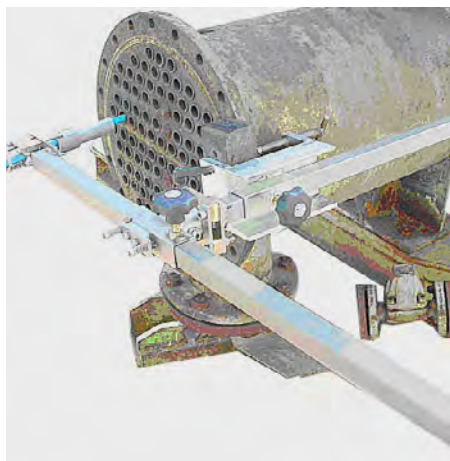
A non-rotating protective hose is fitted between the hose deployment unit and the positioning device. This enables operation in pipes that are difficult to access.

The positioning device enables easy and secure insertion of the hose into the pipe.

The blasting guard prevents a pressurised nozzle from being accidentally pulled out of the pipe.

The positioning device shown here is for use with pipes up to 40 mm i/d.

Catching device for heat exchanger cleaning



Clamp

The device is used to position the lance nozzle in the heat exchanger bundle tube and to prevent accidental retraction.

The device is clamped to the tube bundle flange. Swivel joints and a telescopic arm enable the lance within the protective sleeve to be positioned at each individual tube of the bundle.



Telescopic arm with protective sleeve

When the operator retracts the lance a suitable sized stop within the protective sleeve prevents jetting to atmosphere.

For bundle diameters: up to 2.0 m

For lance i/d's: DN 4, 6 und 8

Flange thickness: 140 mm max.

BG test certificate



X-Y deployment unit on heat exchanger for rotating and swivelling hose reel

Description

- For attaching to the heat exchanger flange, complete with guide frame, hydraulically driven traverse bars, hydraulically driven carriage with connection for positioning tube.
- The controls and hydraulic supply are provided by the hydraulic power pack and the hose reel's portable control panel.



Catching device for pipe cleaning

Mainly for horizontal pipes.

For pipe-Ø of 100 – 300 mm

Foot switch and foot valve (as per PL "e" in accordance with safety standard EN 13849)



Varianten

- Foot valve, mechanical check valve
- Electrical foot switch for switching the high pressure* on and off
- Foot valve combined with electrical foot switch*

***Connection:** 4-pole plug with dust cap
Protection class: IP 67 in accordance with DIN 40050

- Switch mechanism with safety latch
- Corrosion-resistant materials
- Robust housing to ensure a non-slip operating position, and increase stability

Height: 267 mm
Width: 258 mm
Length: 448 mm
Weight: 11 kg

Foot switch



Electrical foot switch to activate and deactivate the high pressure.

Housing and protective hood in Gd-Al alloy

- Connection: 4-pole plug with dust cap
- Protection class: IP 67 in accordance with DIN 40050
- Extra-stable base for increased stability
- Rubber feet

Height: 145 mm
Width: 160 mm
Length: 240 mm
Weight: 2.8 kg



CUTTING

Cutting

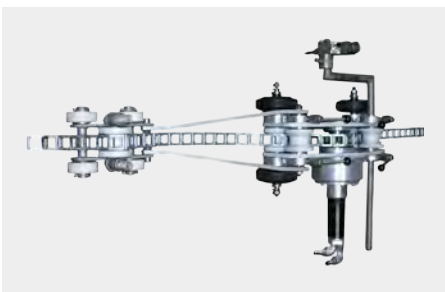
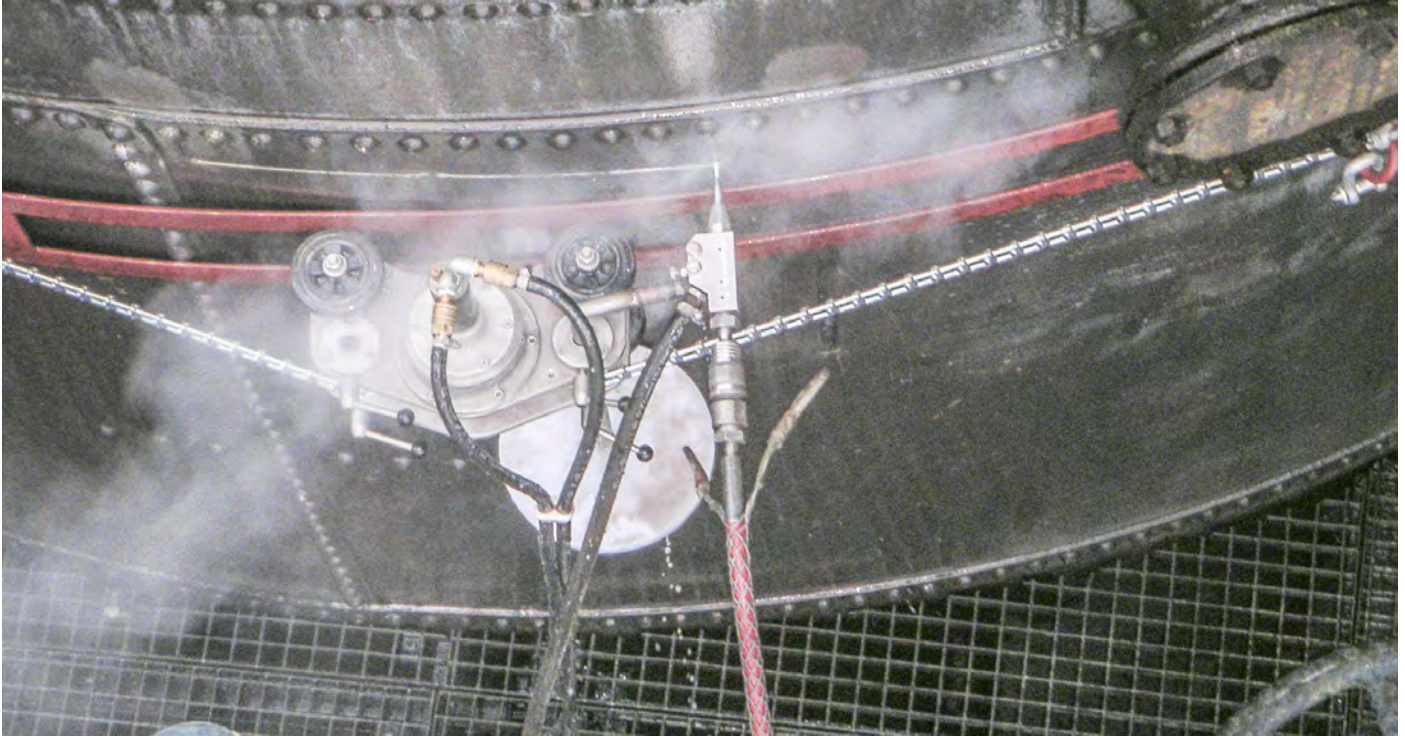
Cutting systems	55
Cutting systems, cutting nozzles, accessories	56

Cutting devices and nozzles

Materials that are difficult to cut require the use of a water jetting nozzle with an abrasive entrainment chamber.

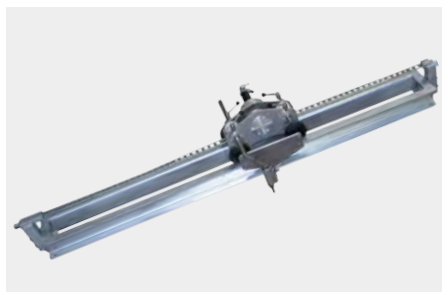
A high pressure water nozzle inside the assembly creates a water jet. This pressurised water jet travels through the entrainment chamber at high speed to a focusing nozzle dragging the air in the chamber

with it and creating a vacuum. Abrasive material is fed into the side of the chamber under air pressure. The abrasive particles are sucked into the air around the water jet and accelerated into the water stream to emit from the focusing nozzle.



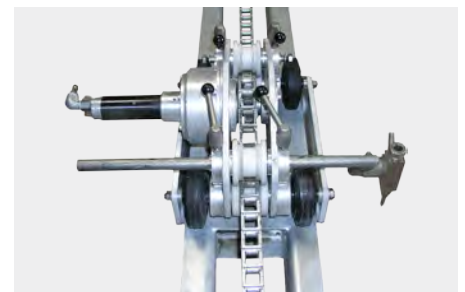
Carrier trolley

The carrier trolley speed is manually controlled by a pneumatic system. Cutting speed and positioning speed are individually controlled.



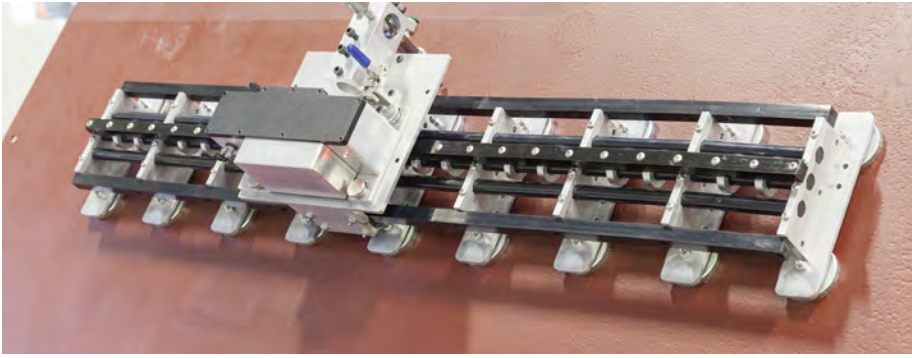
Guide rail

To make straight cuts the guide chain is attached to a 2m long guide rail.



Nozzle carrier mounted on a rail

The abrasive entrainment nozzle assembly is mounted on a pneumatically driven carrier trolley which runs on a tensioned guide chain allowing a constant traverse speed to be achieved.



Versatile cutting device with remote control

- Flexible and modular rail system
- Linear and lateral flexibility
- Attached by magnets (optional: vacuum)
- Carriage electrically driven by 12V DC battery. Optional: pneumatic drive
- Flexible cutting head attachment system
- For use with pipe diameters from approx. 600 mm onwards
- Standard length of rail approx. 1200 mm, modularly extendable



Remote-controlled via tablet

- Bluetooth connection to cutting system
- Dead man's control on touch screen
- Acceleration and position sensor on carriage detects problems
- Deployment speed infinitely adjustable, deployment forward/back
- Records cutting parameters and times

Nozzle inserts und accessories



Typ B 1500

Op. pressure: 1500 bar
Flow rate: 25 – 40 l/min
 Designed to be mounted on a nozzle carrier.

Applications:
 Concrete cutting & steelwork cutting



Typ B 4000

Op. pressure: 4000 bar
Flow rate: 10 – 25 l/min
 For attachment to carriage.

Applications:
 Concrete cutting & steelwork cutting



Type S 4000 (with collimation tube)

Op. pressure: 4000 bar
Flow rate: up to 10 l/min

Applications:
 Especially for use with a cutting table, i.e. cutting shapes in metals, glass, plastics, ceramics etc.



Focusing nozzles, guide piece, nozzle insert



Abrasive material: garnet sand and garnet in a grain size of 0.1 – 0.2 mm



Abrasive hopper with pneumatic controller for the nozzle carrier



VALVES AND ACCESSORIES

Valves and accessories

Systems for pressure and impulse testing
Metal forming
Valves

58
59
60 – 62

High pressure hoses
Nozzle inserts
Protective gear

63
64
65

Systems for pressure and impulse testing



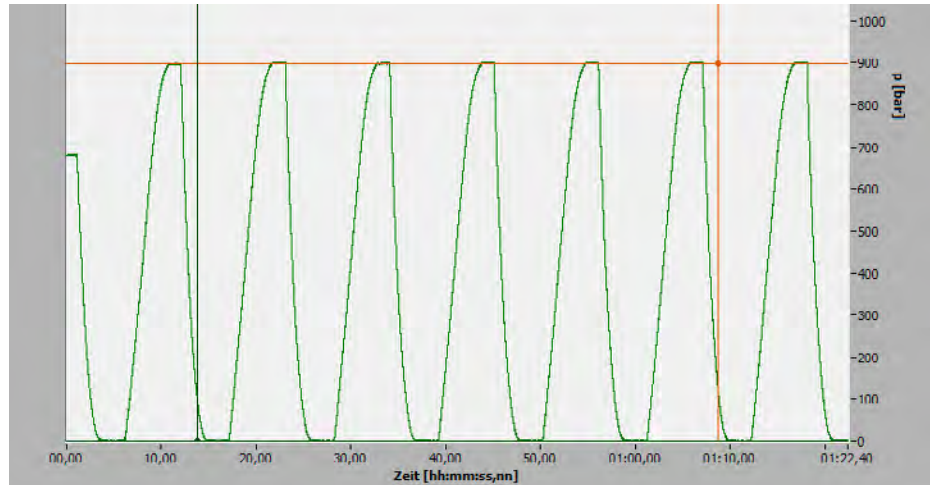
Ultramodern HP pump based systems with fine-tuned valve and control technology enable pressure and impulse testing to be carried out for a wide range of applications.

Hammelmann provides special solutions to meet individual requirements. These testing systems are rounded off by recordings of measurements and their documentation.

Pressure tests up to 600 bar can be performed for large boilers and piping systems in the power plant industry.



Pressure and impulse testing for containers and fixtures in the petrochemical industry



Impulse testing for common rail components

Metal forming



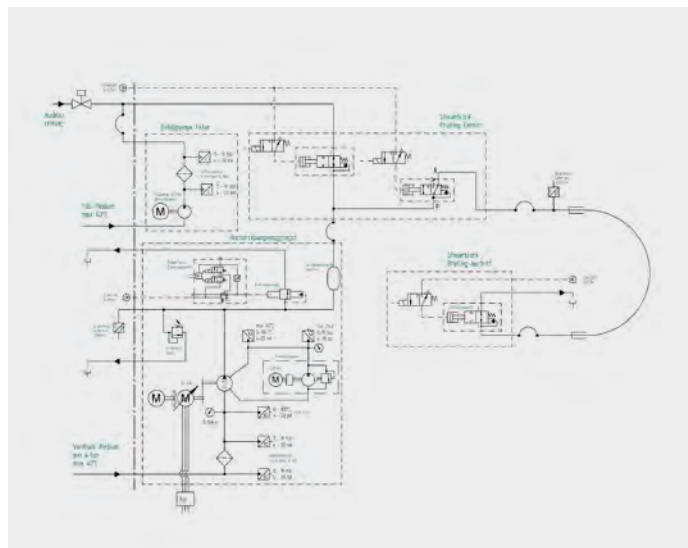
Precise and robust valves enable system providers to fit out their machines with advanced equipment in terms of metal forming. Hammelmann provides directional valves, overflow valves, pressure limitation valves and safety valves as well as a variety of combinations allowing for forming pressures of up to 3000 bar.



Control block for high flow rates



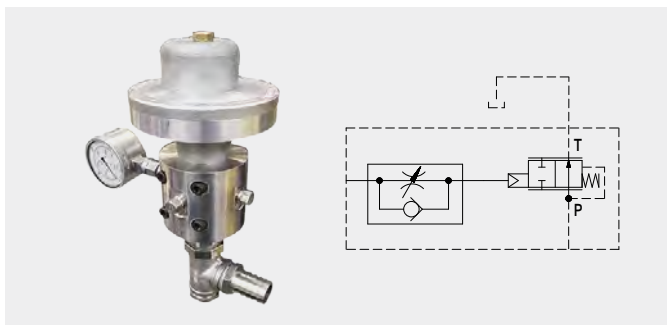
Pressure regulating valve with servo control



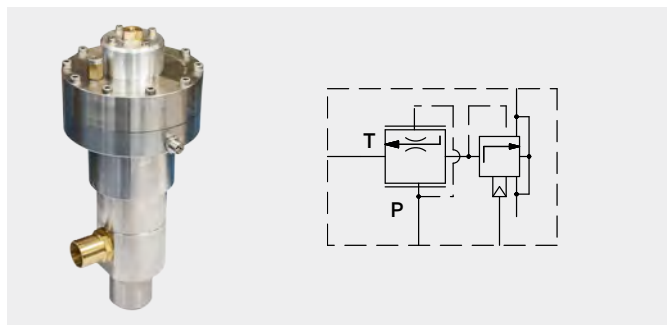
Layout for metal forming systems

Valves

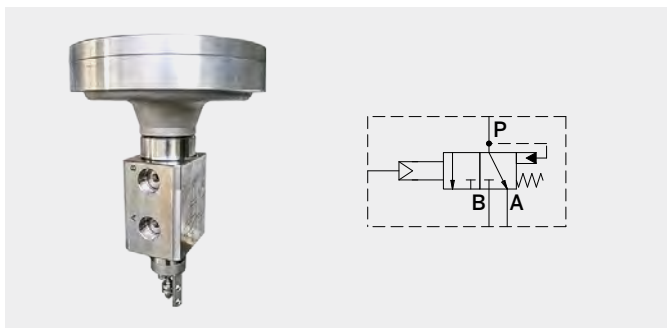
Hammelmann provides a wide range of different high pressure valves, which stand out for their high reliability and modern technology. Use of the latest materials ensures a high level of safety and quality.



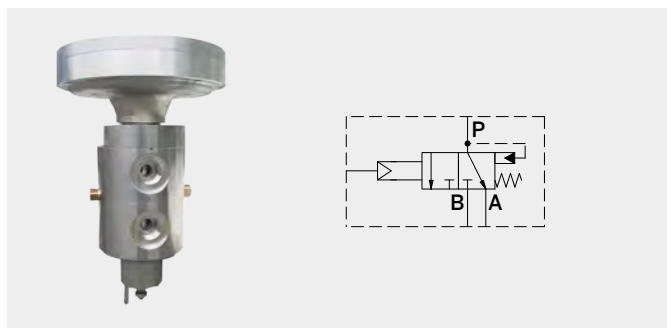
Pressure regulating valves 1800 bar



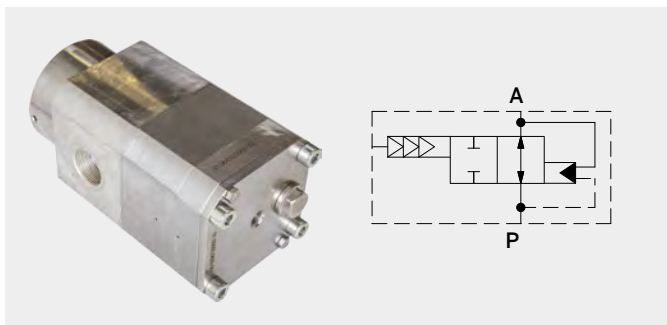
Pressure regulating valves 4000 bar



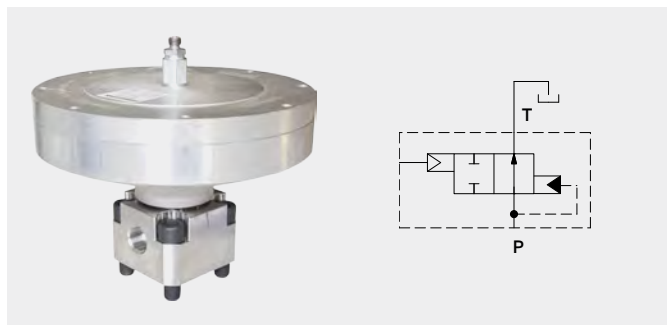
3/2 way valve 3000 bar



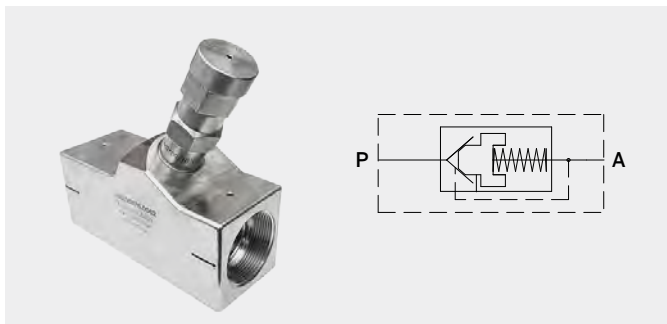
3/2 way valve 1500 bar



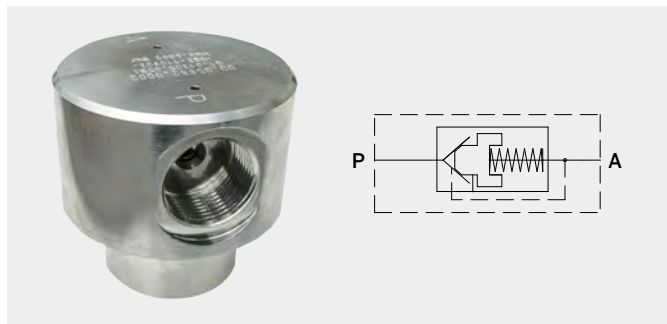
2/2 way valve 4000 bar



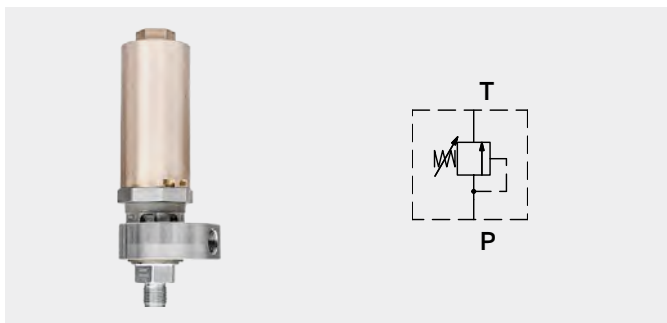
Bypass valve 4000 bar



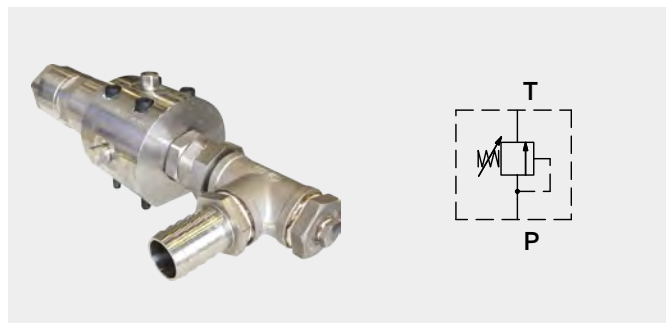
Pressure maintaining valves 1800 bar



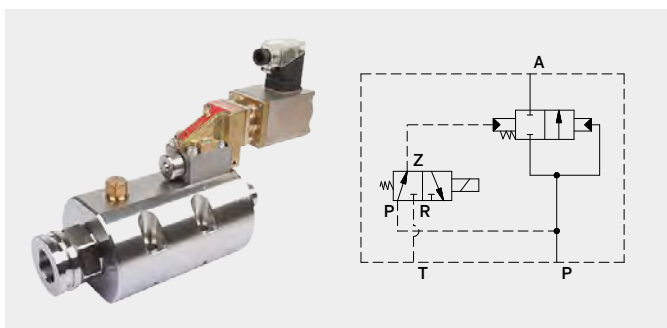
Pressure maintaining valves 4000 bar



Safety valves 3000 bar



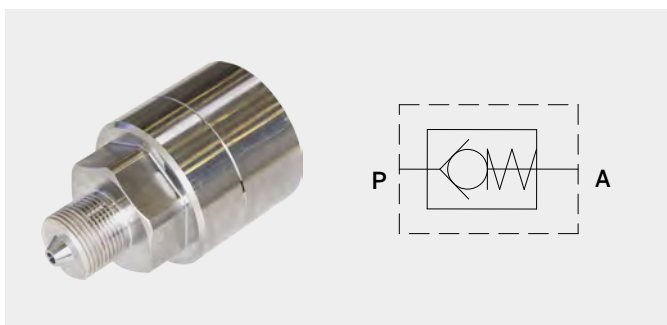
Safety valves 1800 bar



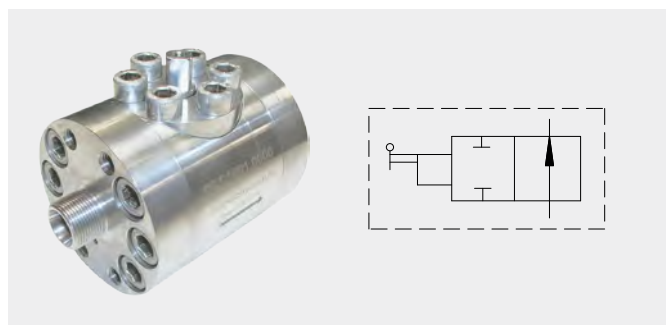
2/2 way solenoid actuated valves 800 bar



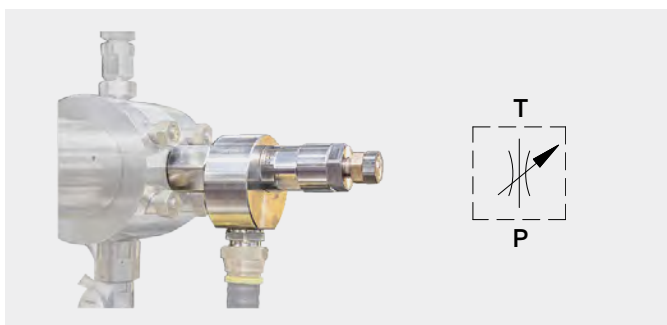
High pressure filter 1200 bar



Non-return valves up to 4000 bar



High pressure ball valve 1800 bar



Splitter nozzle 1800 bar



Splitter nozzle 3000 bar

Valves

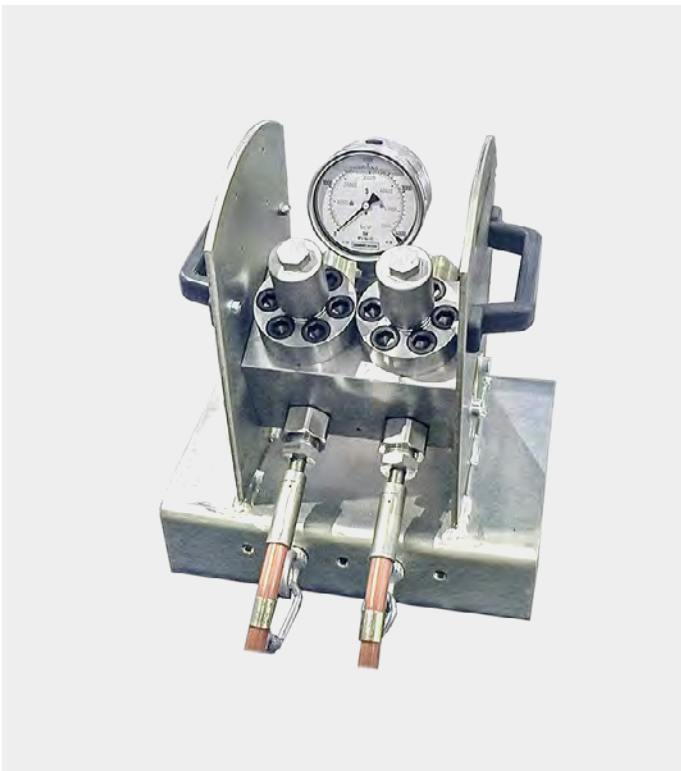
Hammelmann combines high pressure valves for various system requirements. This leads to a high efficiency of the high pressure pumps used together with the cleaning systems. Key emphasis is placed on safety, functionality and high utilisation.



Control block with six 2/2 way solenoid actuated valves



Changeover valve for two blasting guns



Pressure-controlled switching valve



Switching control block for four high pressure intakes

High pressure hoses

Nominal i/d: DN 5 – 25 mm

Operating pressure: 150 – 3200 bar

Hose length: 0.6 – 40 m

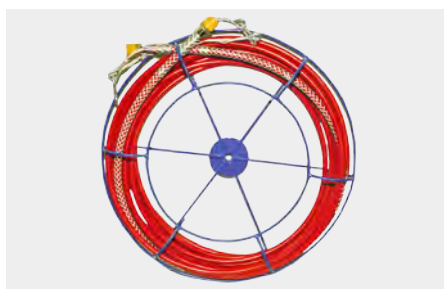
To enable us to offer the high standard of Hammelmann quality, we cut ultra high pressure hose in our workshop and assemble it together with fittings to produce certified individual hose lengths.

Accessories for hoses

- Hose arresters
- Hose protectors
- Hose wheels
- Snap connectors
- Swivel connectors
- Hose fittings
- Suction hose couplings
- Hose bridges



Wide selection of high pressure hoses



Hose wheel



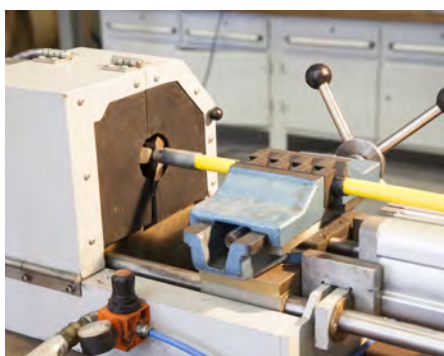
Snap couplings



Precise compaction of hose fitting.



Every hose length required is cut and assembled to measure. By producing our hoses in-house, we can offer very flexible delivery times.



Assembly of the hose fitting.



The final pressure test is carried out in accordance with DIN EN 10204-23. The maximum test pressure is currently 4800 bar.

Nozzle inserts



TYPE: A ROUND JET

Op. pressure: up to 2000 bar
Efficiency factor: 0.95
Material: Steel
Nozzle: 0.4 – 4.9 mm



TYPE: B FAN JET

Op. pressure: up to 2000 bar
Efficiency factor: 0.67
Material: Steel
Nozzles: 0.8 – 3.0 mm



TYPE: C ROUND JET

Op. pressure: up to 400 bar
Efficiency factor: 0.92
Material: Steel
Nozzles: 0.4 – 4.6 mm



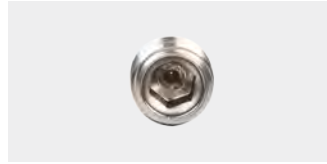
TYPE: D FAN JET

Op. pressure: up to 400 bar
Efficiency factor: 0.67
Material: Steel
Nozzles: 0.4 – 4.6 mm



TYPE: E ROUND JET

Op. pressure: up to 2500 bar
Efficiency factor: 0.92
Material: Steel
Nozzles: 0.25 – 1.2 mm



TYPE: G ROUND JET

Op. pressure: up to 2500 bar
Efficiency factor: 0.92
Material: Steel
Nozzles: 0.25 – 1.2 mm



TYPE: H ROUND JET

Op. pressure: up to 2500 bar
Efficiency factor: 0.75
Material: Steel/sapphire
Nozzles: 0.25 – 1.0 mm



TYPE: I ROUND JET

Op. pressure: up to 3000 bar
Efficiency factor: 0.7
Material: Steel/sapphire
Nozzles: 0.4 – 1.1 mm



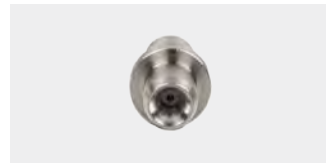
TYPE: K ROUND JET

Op. pressure: up to 2500 bar
Efficiency factor: 0.75
Material: Steel/sapphire
Nozzles: 0.3 – 1.0 mm



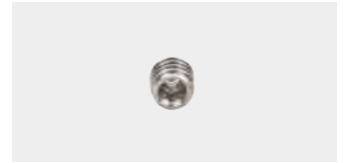
TYPE: L ROUND JET

Op. pressure: up to 1200 bar
Efficiency factor: 0.95
Material: Steel
Nozzles: 1.0 – 3.9 mm



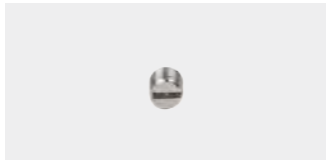
TYPE: M ROUND JET

Op. pressure: up to 2500 bar
Efficiency factor: 0.95
Material: Steel/ceramic
Nozzles: 1.0 – 3.9 mm



TYPE: N ROUND JET

Op. pressure: up to 2500 bar
Efficiency factor: 0.63
Material: Steel/sapphire
Nozzles: 0.2 – 1.0 mm



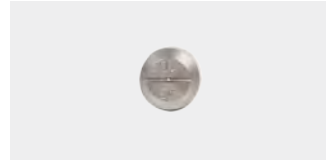
TYPE: O ROUND JET

Op. pressure: up to 2500 bar
Efficiency factor: 0.63
Material: Steel/sapphire
Nozzles: 0.3 – 1.05 mm



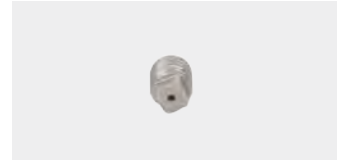
TYPE: P ROUND JET

Op. pressure: up to 3000 bar
Efficiency factor: 0.71
Material: Steel/sapphire
Nozzles: 0.15 – 1.5 mm



TYPE: R FAN JET

Op. pressure: up to 3000 bar
Efficiency factor: 0.67
Material: Steel
Nozzles: 0.3 – 1.2 mm



TYPE: S ROUND JET

Op. pressure: up to 3000 bar
Efficiency factor: 0.95
Material: Steel
Nozzles: 1.0 – 1.8 mm



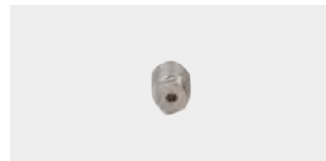
TYPE: T ROUND JET

Op. pressure: up to 3500 bar
Efficiency factor: 0.72 - 0.92
Material: Steel/diamond
Nozzle : 0.15 – 1.00 mm



TYPE: U ROUND JET

Op. pressure: up to 4000 bar
Efficiency factor: 0.7
Material: Steel/sapphire
Nozzles: 0.4 – 4.9 mm



TYPE: W ROUND JET

Op. pressure: up to 3000 bar
Efficiency factor: 0.95
Material: Steel
Nozzles: 0.25 – 0.5 mm

Personal protective equipment



1 Protective suit made of robust polyester with polyurethane coating in accordance with standard EN 343

2 Safety helmet

3 Safety boots

4 Hose protection, attached to the connection to the lance/blasting gun

Protective clothing for water jets up to 3000 bar operating pressure



1 Jacket with hand protection

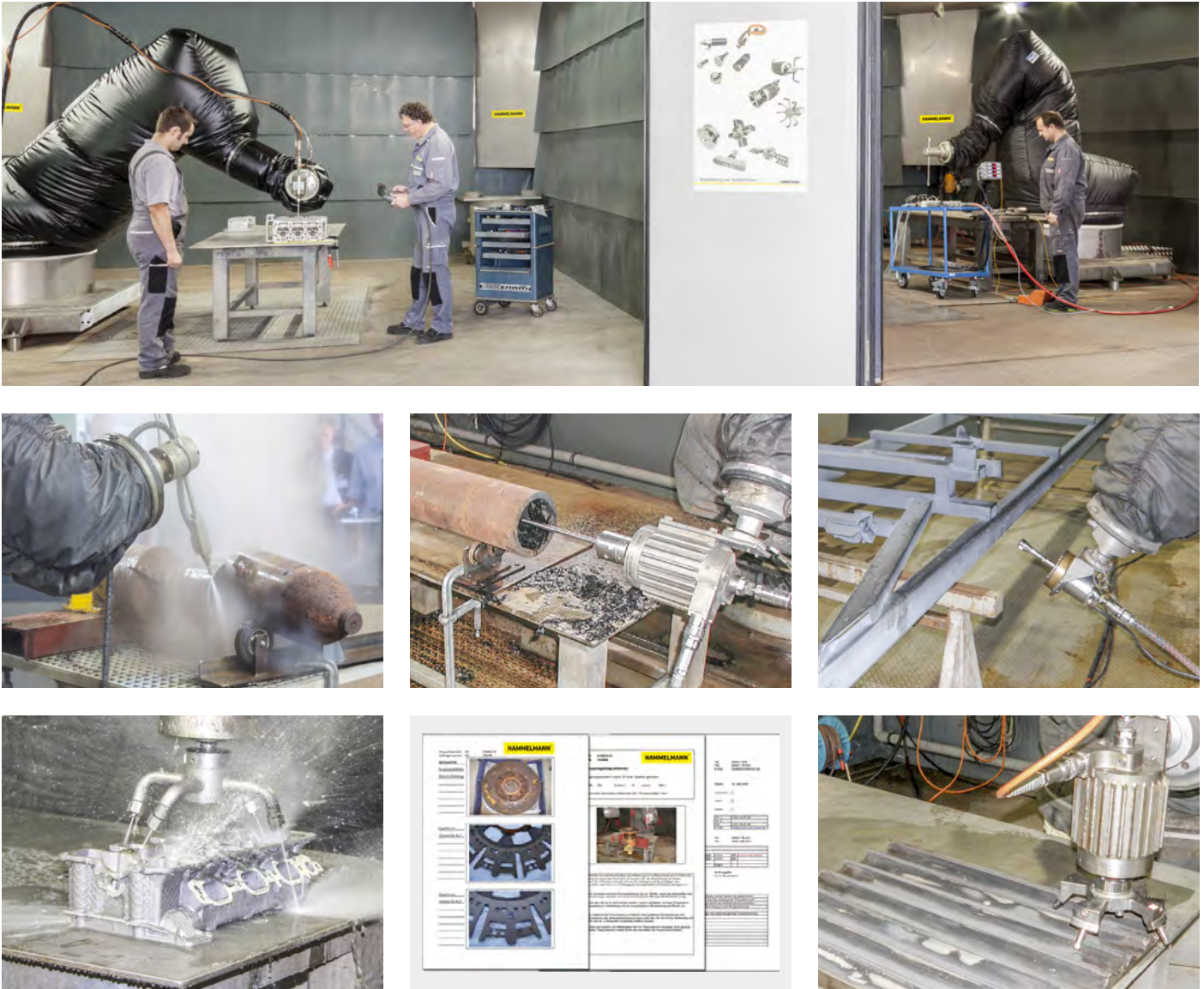
2 Trousers

3 Apron

4 Hand and forearm protection

5 Gaiters

Technology Centre



In our state-of-the-art Technology Centre, we test whether you can profit from using water blasting tools and if so, how.

Theoretical support for practical trials is provided by a CFD program. This software enables flow characteristics within nozzles and bores to be calculated.

Analysis equipment is available to examine the test samples. Thanks to the precise results obtained from the various test phases, actual working procedures can be optimised.

For a fixed day rate, the Technology Centre can be at your disposal. This offer includes

- a high pressure pump
- an array of water blasting tools
- inspection instruments
- a choice of rotary joints and special nozzles
- a robot

You will be assisted by an applications engineer and a technician. A detailed test report will be provided upon completion.

Typical services

- Planning and carrying out test programmes
- Simulation of production processes
- Report preparation and evaluation of the results
- Defining the necessary design performance parameters and data
- Assessing the viability of new application ideas
- Design and manufacture of water tools

Service



A product is only as good as the service that supports it. With our logistics centre, we offer a first-class parts service.

participants

With 18,000 storage slots for plastic bins and 900 spaces for euro-pallets, we ensure very speedy delivery. Orders for parts placed with us by 14:00 hrs will normally be dispatched the same day.

The completing of individual water jetting tools, i.e. the assembly complete with nozzle inserts, is associated with our logistics centre service.

Retrieval of parts from stores and assembly go hand in hand resulting in a short delivery time.

The flexible and experienced staff of our service department can carry out all maintenance and repair works.

Training courses based on the participants' needs and existing knowledge provide practical and theoretical training for proper operating procedures, maintenance and repair of water tools and high pressure pumps.

High pressure pumps and units

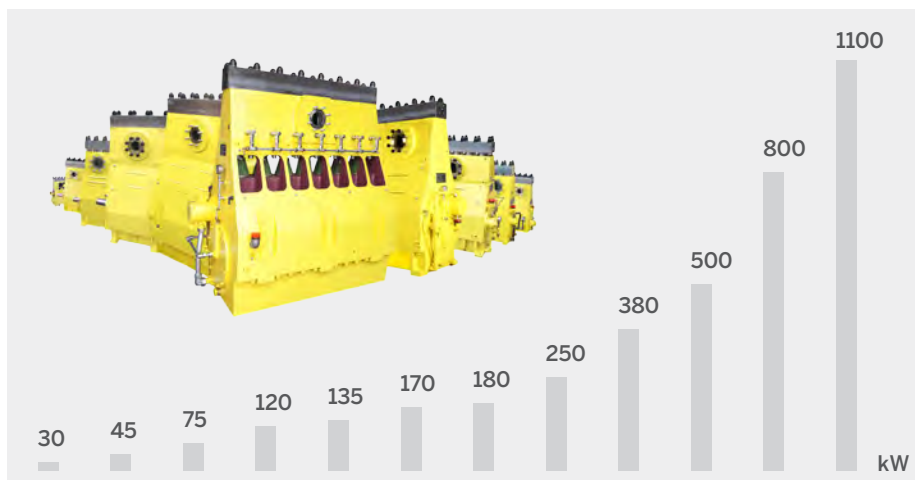
All high pressure water to the cleaning systems is provided by Hammelmann's own high pressure pumps. This means we offer a full high pressure technology package, where knowledge and experience from both areas come together and complement one another.

Power ratings:

Operating pressures: 25 up to 4000 bar

Flow rates: 2.2 up to 3000 l/min

Drive powers: 5.5 up to 1100 kW



Hammelmann Oelde



CALDER

Calder Ltd
Prescott Drive
Warndon
Worcester
WR4 9NE
United Kingdom

web: www.calderltd.com
email: sales@calder.co.uk
tel: +44 (0) 1905 759090

HAMMELMANN®