

Ultra High Pressure Technology



Hoses
Fittings
Nozzles
Adapters and Connectors
Waterjet Protection

... up to 4000 bar



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Entry into the commercial register

Registration court: Amtsgericht Düsseldorf
Registration number: HRB 45421

Tax ID number

According to §27a UStG
DE 121 387 379



Hugo Frauenthor





Dear business partner,

welcome to the product universe of the Hugo Frauenhof GmbH!

We are a family-run enterprise with a tradition of more than 130 years, selling products for technical wholesale and industrial needs worldwide. Our core business is characterized by environmental technology and, in particular, hose technology.

There is a good reason to focus on two directions:

The past and the future.

Since the beginning of our journey in 1887, we have been moving on with both a sense of tradition and a love for innovation. Once started as a family business in Hilden, Germany, we achieved scale and have become a flexible, growing, and global company with the highest quality standards for our products and ourselves. This is what we have internalized in our DNA and codified in our mission statement. Feel free to take a look at it!

Our success is based upon a formula that combines entrepreneurial foresight and experience over several generations: The ability to change, the willingness to take risks, continuity and commercial discretion. We are proud of our achievements!

However, this success neither had been possible in the past nor will be possible in the future without the intensive and long-term cooperation with our trusty and loyal customers, suppliers and employees.

We look forward to maintaining our long-standing relationships with commercial partners and establishing new ones in the future!

Thank you very much for your trust!


Petra Osten-Laschet


Walter Laschet


Sascha-Dominique Laschet


Fabio-Yannick Laschet



Introducing ourselves

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Introducing ourselves...



HUGO FRAUENHOF

For more than 130 years, family-run Hugo Frauenhof GmbH is characterized by quality, service, and customer orientation and is your reliable partner for industrial supplies and environmental technology. Thanks to our philosophy to offer the highest level of quality in terms of both our product portfolio and our services, we have managed to become one of the leading technical wholesalers for industrial supplies and environmental

technology in Europe.

With our 50 employees and our present-day technological environment in our facilities, we are one of the best-positioned companies in the industry. This is the reason why we supply not only our home market in Germany and Europe but also markets in Asia, North America, and South America.

Our portfolio has continuously expanded and become more differentiated over the



ENHOF

course of time. Sewer cleaning technology, hose technology and ultra high pressure technology define the core of our services. These services are moreover enriched by sewer rehabilitation, air handling systems accessories and occupational safety. With our highly diversified assortment and our upmost focus on quality, it is our motivation to work out customer-specific solutions for your problems and, in doing so, providing you

with a competitive advantage. Along the whole process, our highly qualified and well trained team is happy to be at your side and support you with your needs and wishes.

Our portfolio includes...

Sewer and pipe cleaning technology

Sewer cleaning hoses
Cassette boom hoses
Nozzles
Sewer cleaning equipment

Hose and coupling technology

Suction and pressure
Tank wagon and
chemical hoses
Flat hoses
Air conveyor system
hoses
Couplings

Ultra high pressure technology

Thermoplastic UHP hoses
Rubber UHP hoses
Adapters and connectors
Protective clothing
Occupational safety
Accessories

Our location in Hilden is close to the German Autobahn A3 and A46 and characterized by its comprehensive warehouse. With a storage area of more than 2,600 m², a fast delivery is guaranteed, enabling us to support you even in short-term cases of need, so that you can continue your activities without a major loss of downtime.



Sewer rehabilitation and testing

Sewer Rehabilitation
Resins
Fiberglass material
Inversion lining systems
and sites
Rehabilitation packers
Test pipe sealing
cushions
Sewer testing systems
Equipment

Air Conveyor System Technology

Rubber hoses
PVC hoses
PU hoses
Blowing hoses
Coupling systems

Personal protective equipment (PPE)

Protective clothing
Occupational safety
Barriers/Job site safety
Respiratory Protective
Equipment
Gas Measurement Techno-
logy / Self Protection
Entry Protection Devices
Lamps



As a family-run enterprise with a flat hierarchical structure, we are able to respond to your questions and requests quickly and with great flexibility. The ongoing dialogue and exchange with our customers, suppliers and business partners provides both you and us with a strong foundation of future success and progress. In order to ensure sustainable success and progress, investments in the most recent and particularly resource-saving technologies are indispensable. Hence, we do not only invest in continuously advancing our technical equipment and facilities, but also cover most of our energy supply with renewable energies, such as photovoltaic systems.

Highest quality



Mr. Theodor Hugo Frauenhof founds the company, by name "Feingeberei und Schäftefabrik"



Mr. Gottfried Osten joins the company

With Susanne Frauenhof as general partner and Mr. Gottfried Osten as limited partner, the company operates as Frauenhof KG

1887

1945

The company expands into technical wholesale and industrial supplies

1957

1958

The company expands into environmental technology, including the sale of hoses, armatures, and assembly of hose lines

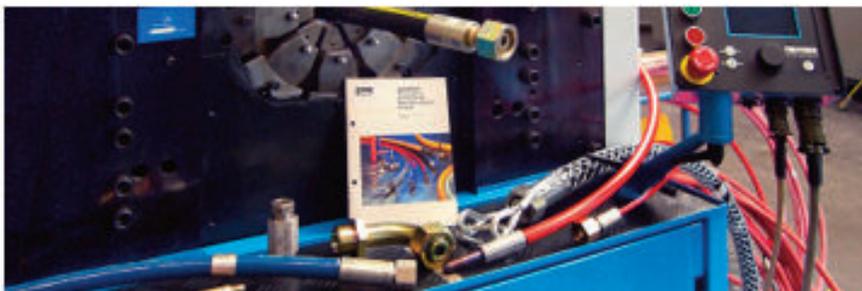
1965

Sole takeover of the owner's shares by Mr. Osten

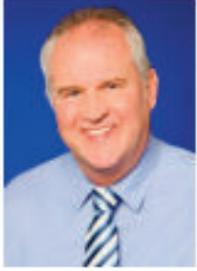
1992

1995

Construction of a new office and warehouse building with a storage area of 1000m² in Hilden, the company's current location



since 1887



Ms. Ingrid Osten and Mr. Walter Laschet become part of the company's management

1998



2001

Construction of a second warehouse, adding 1100m² of storage area



Today's majority shareholder Ms. Petra Osten-Laschet becomes part of the company's management. With the construction of a third warehouse, an additional 420m² of storage space is added.

2007



Ms. Petra Osten-Laschet becomes the majority shareholder; termination of our business activities in the area of shoemaker supplies (2013)

2013



Expansion of the photovoltaic system, including an industrial storage system and expansion of the storage area

2012

At its 125th anniversary, the company changes its appearance and returns to the roots "red / black becomes blue / silver again"

2014

Completion and initial operation of a photovoltaic system meeting the company's whole energy demand



2018

Our mission statement

Customer

“Customers are the focal point of all our actions. To satisfy our customers’ needs and wishes, we provide them with a maximum of **product quality** as well as **safety, responsibility** and services. It is our ambition to understand our customers better than the competition does. This is the only way to guarantee our exceptional **service**.”

Quality leadership

“It is our ambition to provide our customers with a maximum of **quality**. Our definition of quality requests to exceed our customers’ expectations and hence goes beyond merely satisfying their needs, expectations, and requests. Our objective is to assume the role of the **quality leader** in the market. Quality is what we are known for.”

Being exceptional is our benchmark

“We are not satisfied with standard solutions. We are strongly committed to adjust our products to our customers’ needs. Providing our customers with **individual** and **customized** solutions is the only way to satisfy their needs. There is no customer request that is too **special** for us to deal with.”

Flexibility and agility

“Due to our flat hierarchical structure, we are able to make decisions and find solutions **quickly**. Being able to react to new problems and requirements with great **flexibility**, we achieve the optimal solutions for our customers.”

Individualism and Team Mentality

“Our employees stand out due to their **professional competencies, qualification** and **motivation**. Yet, they can provide our customers with an optimal service level if and only if they work together as a **team**. Hence, our success is based on a strong team characterized by **individual** personalities.”

Trust and Responsibility

“We **value, challenge** and **develop** our employees. We treat one another with **dignity, respect** and **trust**. To secure the success of our company, we expect each employee to act responsibly and show a strong commitment.”

Passion and Pride

“Every day, our employees show strong **dedication** and **passion** to ensure the well-being of our customers. Our employees are characterized by a strong commitment and motivation. They represent our company with **pride** and **pleasure**.”

A Tradition of Being Innovative

“Stagnancy has no place in our company, as it a step backwards. Our tradition of more than 125 years has always been characterized by an orientation towards the future. Always focused on **innovation** and application of the most **recent technologies**, we want to provide our customers with optimal solutions. Hence, we invest in new technical systems and operational structures.”

Sustainability

“We are committed to using natural and financial resources responsibly in order to ensure the company’s **future** success. We establish sustainable solutions in the areas of **environmental protection** and **finance**. Our environment is highly important to us. To protect the environment, we invest in sustainable and energy-saving technologies.”

Ethics and Integrity

“We commit ourselves to actions that are **morally** right and curate our **values**. **Integrity** is focal to our understanding of morality and ethics. **Respect, tolerance** and **acceptance** of human beings, irrespective of gender, origin, and religion is a matter of course for us and defines the foundation of our actions. For this reason, we are highly committed to create **social** value.”

Suppliers

“We choose our **suppliers** based on our understanding of honesty, fairness, partnership and integrity. This is the only way to adhere to our strong **quality standards** to a high degree.”

Data protection

“**Protecting** and handling your personal data in a responsible and confidential way is our duty that we conform to without restriction. We apply the guidelines of the **General Data Protection Regulation** (GDPR) to the full extent.”

Our services for you

As one of our customers at Hugo Frauenhof GmbH, you enjoy our services to the full extent. Thanks to our extensive storage capacity and huge workforce, we respond to your needs and wishes as quickly as possible.

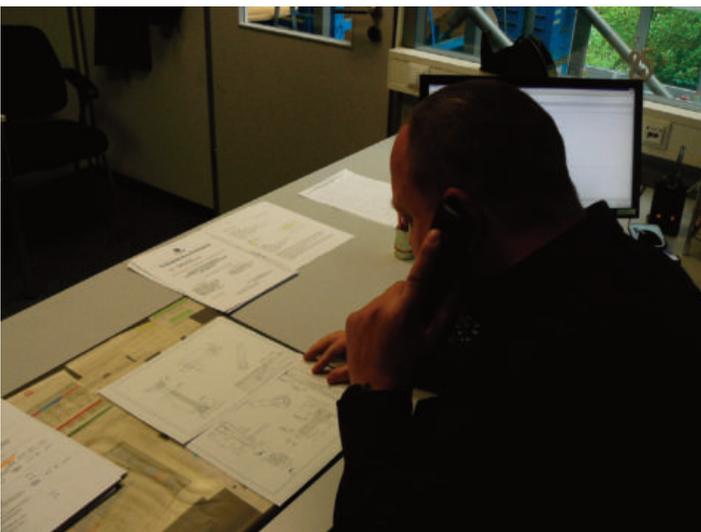
Readiness for Delivery

Due to our logistic partners and own delivery vehicles, we are capable of delivering in less than 24 hours and respond to cases of need immediately. If you are interested, you also have the option to pick up your goods at our location. On request, we send your order to your customers immediately. In case of deliveries abroad, we are happy to handle customs clearance for you at no additional cost.



Sales

Always happy to answer your questions and support you with offers and requests, our internal sales staff is available for you from Monday to Thursday (8:00 a.m. - 5:00 p.m.) and on Fridays (8:00 a.m. to 2:30 p.m.). In case you need personal advice on site, our field staff will be happy to assist you.



Service in the Area of Ultra High Pressure

Thanks to our three ultra-high-pressure test stands, we are able to inspect ultra-high-pressure lines up to 6,000 bar and issue you a test certificate. Certificates about all HFH-manufactured hoses are saved in-house and can be made available to you at a later date upon request. At your request, our in-house laser furthermore allows us to engrave ultra-high-pressure lines.

Moreover, our highly-skilled and experienced staff is happy to offer training in the area of ultra-high-pressure solutions.



Advisory & Problem Solving

With more than 130 years of experience, we are happy to be by your side as a competent partner. As accepting every challenge is part of our long-standing tradition, we are happy and look forward to managing individual problems together with you and providing you with custom-made solutions.





Ultra high pressure technology



When working with a pressure of up to 4,000 bar, the use of mediocre working materials can be a major hazard. Therefore, using high-quality products and materials is essential to ensure that users are protected as effectively as possible.

With our own assortment in our state-of-the-art manufacturing plant offering test capacities up to 6,000 bar and printed certificates with a plotted pressure curve, we guarantee both maximum flexibility and quick delivery.

All the products in our assortment are sourced from reliable suppliers only. Those suppliers use the strictest quality assurance procedures in their manufacturing processes.

We keep our countenance even in cases of 4,000 bar!

Legend



Outside diameter



Inside diameter



Bursting pressure



Weight



Working pressure



Screw thread



Bend radius



Length



Flow rate



Minimum collapse load

Hose

Hose portfolio

My process walktrough at HFH

Appilcation notes



Polyflex 2240D

- high flexibility
- low weight
- inner tube: polyoxymethylene
- pressure carrier: two layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C
- color: light blue



Description						
2240D-02V32	3,0 mm	7,0 mm	1100 bar	2750 bar	60 mm	0,07 kg/m
2240D-025V32	4,0 mm	7,7 mm	1200 bar	3000 bar	75 mm	0,10 kg/m
2240D-03V32	4,7 mm	9,5 mm	1000 bar	2500 bar	95 mm	0,13 kg/m
2240D-04V32	6,3 mm	11,5 mm	1100 bar	2750 bar	110 mm	0,20 kg/m
2240D-05V32	8,0 mm	13,3 mm	900 bar	2250 bar	120 mm	0,25 kg/m

Suitable fittings

Fittings	2240D-02	2240D-025	2240D-03	2240D-04	2240D-05
DK05 M24 x 1,5	X	X	X	X	X
DKR 1/4"	X	X	X	X	
DKR 3/8"					X
AG M5	X	X			
AG M7	X	X	X		
AG M8		X	X		
AG M10 x1		X		X	X
AGR 1/16" mit NPT	X	X			
AGR 1/8"		X	X	X	
AGR 1/8" mit NPT	X	X	X		
AGR 3/8" mit NPT					X
AGR 1/4"		X	X	X	X
AGR 1/4" mit NPT		X	X	X	X
Press gland 3 x RS, 1 x VS	X	X			
Press gland 2 x RS, 2 x 90°	X	X			
1/4"-28 UNF LH		X			
3/8"-24 UNF LH			X	X	

Polyflex 2248 - TC

- particularly resistant to abrasion thanks to the tough cover
- high flexibility
- low weight
- inner tube: polyoxymethylene
- pressure carrier: two layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C



Description						
2248D-025V32-TC	4,0 mm	7,9 mm	1500 bar	3750 bar	75 mm	0,10 kg/m
2248D-03V32-TC	4,9 mm	9,5 mm	1400 bar	3500 bar	95 mm	0,14 kg/m
2248D-05V32-TC	8,1 mm	13,4 mm	1000 bar	2500 bar	120 mm	0,25 kg/m

Suitable fittings

Fittings	2248D-02	2248D-025	2248D-03	2248D-05
DKOS M 24 x 1,5	X	X	X	X
DKR 1/4"		X	X	
DKR 3/8"				X
Press gland		X		
AG M5	X	X		
AG M7	X	X		
AG M8		X	X	
AG M10 x 1		X		
AGR 1/4"		X	X	X
AGR 1/8"	X	X	X	
AGR 1/8" NPT	X	X		
AGR 1/16" NPT	X			
AGR 3/8"				X
AGR 3/8" NPT				X
1/4"-28 UNF LH		X		
3/8"-24 UNF LH			X	X

Polyflex 2440D

- inner tube: polyoxymethylene
- pressure carrier: four layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C



Except for the 2440D-02V32, all the other hoses are available with an additional tough cover, which can protect the hose from abrasion to a particularly high degree.

Description						
2440D-02V32	3,0 mm	7,9 mm	2070 bar	5180 bar	100 mm	0,12 kg/m
2440D-025V32	4,0 mm	10,4 mm	2200 bar	5500 bar	100 mm	0,21 kg/m
2440D-03V32	4,8 mm	11,5 mm	1800 bar	4500 bar	130 mm	0,28 kg/m
2440D-04V32	6,4 mm	12,5 mm	1640 bar	4100 bar	155 mm	0,33 kg/m
2440D-05V32	8,1 mm	15,1 mm	1500 bar	3750 bar	175 mm	0,44 kg/m

Suitable fittings

Fittings	2440D-02	2440D-025	2440D-03	2440D-04	2440D-05
DKOS M16 x 1,5	X	X			
DKOS M18 x 1,5				X	
DKOS M20 x 1,5					X
DKOS M22 x 1,5			X		X
DKOS M24 x 1,5			X	X	X
DKR 1/4"			X	X	
DKR 3/8"					X
UM 9/16" - 18 UNF	X	X	X		
AGR 1/4"		X		X	X
AG 1/4"-28 UNF LH	X	X	X		
AG 1/4" - 28 UNF short		X	X		
AG 3/8"-24 UNF LH		X	X	X	X
AG 3/8" - kurz			X	X	
AG 9/16"-18 UNF LH			X	X	X
AG M 14 x 1,5 LH		X			X
1/4"-28 UNF RE		X			

Polyflex 2440N

- inner tube: polyamide
- pressure carrier: four layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C
- color: black



Description						
2440N-06V30	9,7 mm	19,4 mm	1400 bar	3500 bar	190 mm	0,73 kg/m
2440N-08V30	12,8 mm	22,5 mm	1400 bar	3250 bar	200 mm	0,94 kg/m
2440N-12V30	19,6 mm	30,0 mm	1000 bar	2500 bar	250 mm	1,39 kg/m
2440N-16V30	25,0 mm	37,0 mm	900 bar	2250 bar	300 mm	2,00 kg/m

Suitable fittings

Fittings	2440N-06	2440N-08	2440N-12	2440N-16
DKOS M20 x 1,5	X			
DKOS M22 x 1,5	X			
DKOS M24 x 1,5	X	X		
DKOS M36 x 2 -			X	
DKOS M42 x 2				X
AG 9/16" - 18 UNF LH	X	X		
AG M18 x 1,5 LH		X	X	
AGR 1"			X	X

Polyflex 2448D-TC

- inner tube: polyoxymethylene
- pressure carrier: four layers of steel wire
- cover: polyamide
- tough-cover upper ceiling



Description						
2448D-025V32-TC	4,0 mm	9,9 mm	3010 bar	6500 bar	100 mm	0,21 kg/m

Suitable fittings

Fittings	2448D-TC
AG 1/4" – 28 UNF LH	X
AG 1/4" – 28 UNF LH Prolance	X
AG 1/4" – 28 UNF RE	X
AG 3/8" – 24 UNF LH	X
AG 3/8" – 24 UNF LH Prolance	X

Polyflex 2640D

- inner tube: polyoxymethylene
- pressure carrier: six layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C
- color: light blue



Description						
2640D-025V32	3,9 mm	12,0 mm	2800 bar	7000 bar	140 mm	0,29 kg/m
2640D-03V32	4,8 mm	13,0 mm	2500 bar	6250 bar	175 mm	0,41 kg/m
2640D-05V32	8,0 mm	16,9 mm	2100 bar	5250 bar	225 mm	0,68 kg/m

Suitable fittings

Fittings	2640D-025	2640D-03	2640D-05
AG 1/4" - 28 UNF LH	X	X	
AG 3/8" - 24 UNF LH	X	X	X
AG 9/16" - 18 UNF		X	X
AG M14 x 1,5 LH	X	X	X
ÜM 3/4" -16 UNF			X
ÜM 9/16" - 18 UNF	X	X	
LOK-System DN 5-8		X	X

Polyflex 2640N

- inner tube: polyamide
- pressure carrier: six layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C
- color: light blue



Description						
2640N-08V32	12,8 mm	24,5 mm	1800 bar	4500 bar	290 mm	1,36 kg/m
2640N-12V32	19,6 mm	33,0 mm	1400 bar	3500 bar	350 mm	2,10 kg/m
2640N-16V32	25,0 mm	40,0 mm	1200 bar	3000 bar	400 mm	2,90 kg/m

Suitable fitting

Fittings	2640N-08V32	2640N-12V32	2640N-16V32
DKOS M24 x 2		X	
DKOS M36 x 2			X
ÜM 3/4" – 16 UNF	X		
AG M14 x 1,5	X		
AG M18 x 1,5	X		
AG M30 x 1,5	X		
AG 9/16" – 18 UNF	X		
AG 1" – 14 UNF LH		X	X
ÜM 1" – 12 UNF	X		
ÜM 1 5/16" – 12 UNF			X
LOK DN 8	X		

Polyflex 2648N

- inner tube: polyamide
- pressure carrier: six layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C
- color: light blue



Description						
2648N-12V32	19,8 mm	33,7 mm	1600 bar	4000 bar	350 mm	2,28 kg/m
2648N-16V32	25,0 mm	40,0 mm	1500 bar	3750 bar	400 mm	3,10 kg/m

Suitable fittings

Fittings	2648N-12V32	2648N-16V32
DKOS M36 x 2	X	
DKOS M42 x 2		X
ÜM 1 5/16" - 12 UNF	X	X
AG 1" - 14 UNF LH		X

Polyflex 2740D

- inner tube: polyoxymethylene
- pressure carrier: six layers of steel wire
- cover: polyurethane (DN4), polyamide (DN5, DN8, DN12)
- temperature: -10°C to +70°C
- color: yellow (DN4, DN8 with PU-ceiling), red (DN5, DN8), black (DN12)



Description						
2740D-025V16	3,9 mm	12,0 mm	3000 bar	7800 bar	120 mm	0,40 kg/m
2740D-03V34	4,8 mm	13,2 mm	2800 bar	7000 bar	200 mm	0,47 kg/m
2740D-05V34	7,8 mm	17,2 mm	2500 bar	6250 bar	200 mm	0,83 kg/m
2740D-08V30	12,7 mm	27,0 mm	2000 bar	5000 bar	300 mm	1,85 kg/m

Suitable fittings

Fittings	2740D-025	2740D-03	2740D-05	2740D-08
AG 9/16 – 18 UNF		X	X	
AG M14 x 1,5 LH	X	X	X	
AG 3/8 - 24 UNF LH	X	X	X	
UM 9/16 – 18 UNF Type M	X	X		
UM 3/4 – 16 UNF			X	
ÜM G1/4"		X		
M24 x 1,5				X
LOK DN5/DN8		X	X	
AG 1/4 – 24 UNF LH	X	X		

Polyflex 2741D

- inner tube: polyoxymethylene
- pressure carrier: six layers of steel wire
- cover: polyamide & polyurethane
- temperature: -10°C to +70°C
- color: yellow
- abrasion-resistant



Description						
2741D-05V16	7,7 mm	21,2 mm	2500 bar	6250 bar	200 mm	0,95 kg/m

Suitable fittings

Fittings	2741D-05
AG 9/16-18 UNF-LH	X
AG M14x1,5 LH	X
AG 3/8-24 UNF-LH	X
UM 3/4 -16 UNF	X
LOK DN8	X

Polyflex 2748D

- inner tube: polyoxymethylene
- pressure carrier: six layers of steel wire
- cover: polyamide, respectively option to add polyurethane
- temperature: -10°C to +70°C
- color: red, yellow (including PU-ceiling)
- abrasion-resistant



Description						
2748D-05V34	7,8 mm	17,3 mm	2800 bar	7000 bar	230 mm	0,83 kg/m

Suitable fittings

Fittings	2748D-05
AG 3/8-24 UNF-LH	X
AG 9/16-18 UNF-LH	X
AG M14 x 1,5 LH	X
LOK DN 8	X
ÜM 3/4 -16 UNF	X

Polyflex 2749D

- inner tube: polyoxymethylene
- pressure carrier: six layers of steel wire
- cover: polyamide, respectively option to add polyurethane
- temperature: -10°C to +70°C
- color: red, yellow (including PU-ceiling)



Description						
2749D-03V34	4,8 mm	13,3 mm	3010 bar	7000 bar	200 mm	0,47 kg/m
2749D-05V34	7,8 mm	17,3 mm	3010 bar	7000 bar	230 mm	0,83 kg/m

Suitable fittings

Fittings	2749D-03	2749D-05
AG 9/16 – 18 UNF	X	X
AG M14 x 1,5	X	X
AG 3/8 - 24 UNF LH	X	X
UM 9/16 - 18 UNF	X	
ÜM G1/4"		
AG 1/4 – 24 UNF LH	X	
LOK DN5/DN8	X	X

Polyflex 2840D

- inner tube: polyoxymethylene
- pressure carrier: eight layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C
- color: red (DN5, DN8), black (DN12)



Description						
2840D-03V34	4,6 mm	15,0 mm	4000 bar	8000 bar	200 mm	0,66 kg/m
2840D-05V34	7,8 mm	19,5 mm	3000 bar	7000 bar	250 mm	1,10 kg/m
2840D-08V30	12,7 mm	29,8 mm	2500 bar	6250 bar	350 mm	2,50 kg/m

Suitable fittings

Fittings	2840D-03	2840D-05	2840D-08
AG 3/8-24 UNF-LH	X	X	
AG 9/16-18 UNF-LH	X	X	
AG 1/4-28 UNF-LH	X		
AG 1 - 14 UNF-LH			X
AG M14 x 1,5-LH	X	X	
AG M18 x 1,5 LH			X
AG M20 x 1,5 LH			X
UM 9/16-18 UNF	X		
UM 3/4 -16 UNF		X	
LOK DN5	X		
LOK DN8		X	
LOK DN12			X

Polyflex 2848D

- inner tube: polyoxymethylene
- pressure carrier: eight layers of steel wire
- cover: polyamide
- temperature: -10°C to +70°C
- color: red (DN8), black (DN12), yellow (DN8 with PU-ceiling)



Description						
2848D-05V34	7,8 mm	19,6 mm	3200 bar	8000 bar	280 mm	1,10 kg/m
2848D-08V30	13,0 mm	29,9 mm	3000 bar	6250 bar	350 mm	2,50 kg/m

Suitable fittings

Fittings	2848D-05	2848D-08
AG M14 x 1,5 LH	X	
AG M20 x 1,5 LH		X
AG 3/8 - 24 UNF LH	X	
AG 9/16 - 18 UNF LH	X	
LOK DN 8	X	

Polyflex PFX25

- inner tube: POM
- pressure carrier: six layers of steel wire with maximum tensile strength
- cover: polyamide (optionally with a second cover layer of Tough Jacket material)
- temperature: -10°C to +70°C



DN						
8	7,8 mm	18,0 mm	2500 bar	6250 bar	200 mm	0,85 kg/m
8-TJ*	7,8 mm	22,0 mm	2500 bar	6250 bar	200 mm	1,00 kg/m

*with Tough Jacket cover

Polyflex PFX30

- inner tube: POM
- pressure carrier: six layers of steel wire with maximum tensile strength
- cover: polyamide (optionally with a second cover layer of Tough Jacket material)
- temperature: -10°C to +70°C
- color: orange



DN						
8	7,8 mm	18,7 mm	3010 bar	7000 bar	230 mm	0,96 kg/m
8-TJ*	7,8 mm	22,7 mm	3010 bar	7000 bar	230 mm	1,12 kg/m
10	9,85 mm	22,7 mm	3010 bar	6250 bar	250 mm	1,38 kg/m
10-TJ*	9,85 mm	26,7 mm	3010 bar	6250 bar	250 mm	1,53 kg/m

*with Tough Jacket cover

PowerJet

- high flexibility
- robustness
- inner tube: synthetic rubber compound
- pressure carrier: 4 (BWB2 / WB15), 4+1 (WB20) or 6 (WB3) layers, high-strength rubber compound (particularly abrasion-resistant and resistant to external influences)
- temperature: -40°C to +80°C (WB2)
-40°C to +70°C (WB15)



	DN	Article no.	 	 		
WB2	10	282374-08	9,5-10,5/20,8 mm	1250/3125 bar	230 mm	0,85-0,90 kg/m
WB15	10	282374-08-H	9,5-10,5/21,4 mm	1250/3125 bar	230 mm	0,85-0,90 kg/m
WB2	12	282367	12,5-13,5/24,6 mm	1100/2750 bar	230 mm	1,24-1,26 kg/m
WB15	12	282367-H	12,5-13,5/25,4 mm	1100/2750 bar	230 mm	1,24-1,26 kg/m
WB2	20	282369	18,5-20,5/32,0 mm	1000/2500 bar	250 mm	1,78-1,87 kg/m
WB15	20	282369-H	18,5-20,5/31,8 mm	1000/2500 bar	250 mm	1,78-1,87 kg/m
WB3	10	282375	9,5-10,5/22,2 mm	1350/3500 bar	150 mm	1,10 kg/m
WB3	12	280810	12,5-13,5/29,0 mm	1400/3625 bar	250 mm	1,75-1,87 kg/m
WB20	12	280810-H	12,5-13,5/29,5 mm	1400/3625 bar	250 mm	1,75-1,87 kg/m
WB3	20	282380	18,5-20,5/34,0 mm	1450/3375 bar	300 mm	2,14 kg/m

Suitable fittings

Fittings	DN10	DN12	DN20
DKOS M24 x 1,5	X	X	
DKOS M36 x 2			X

BlueLine 2388N

- inner tube: polyamide
- pressure carrier: two layers of steel wire and two open layers of steel wire
- cover: polyurethane
- temperature: -10°C to +70°C
- color: blue



Description						
2388N-08V12W	12,7 mm	23,0 mm	1100 bar	2750 bar	100 mm	0,80 kg/m

Suitable fittings

Fittings	2388N-08
DKOS M24 x 1,5	X
DKR 1/2" galvanized	X
DKR 1/2" VA	X
AG 1/2 ST galvanized	X

BlueLine 2580N

- inner tube: polyamide
- pressure carrier: four layers of steel wires and two open layers of steel wire
- cover: polyurethane
- temperature: -10°C to +70°C
- color: dark blue



Description						
2580N-06V12	9,8 mm	21,6 mm	1600 bar	4000 bar	95 mm	0,94 kg/m
2580N-08V12	12,9 mm	25,0 mm	1400 bar	3500 bar	110 mm	1,19 kg/m
2580N-12V12	19,8 mm	32,6 mm	1200 bar	3000 bar	170 mm	1,76 kg/m

Suitable fittings

Fittings	2580N-06	2580N-08	2580N-12
DKOS M24 x 1,5	X	X	
DKOS M22 x 1,5	X	X	
DKR 1/2"	X	X	
DKOS M36 x 2			X
AG 3/8" NPT	X		
AG 1/2" NPT		X	
AG 1/2" NPT VA		X	
AG 3/4" NPT			X
DKR 3/8"	X		
DKR 1/2" VA		X	

Hot water hoses

We can now offer you an even larger assortment of hoses for cleaning purposes with high temperatures.

Due to the introduction of hot water hoses with an inner tube of polyoxymethylene (POM), the baseline pressure rises to 2,000 bar with temperatures up to 100°C.

We are happy to continue offering hot water hoses with a PA inner tube and a working pressure of up to 1,250 bar.

Product highlights

Greater efficiency due to the usage of highly tempered water, leading to better and faster cleaning.

Previously used standard armatures can still be used.

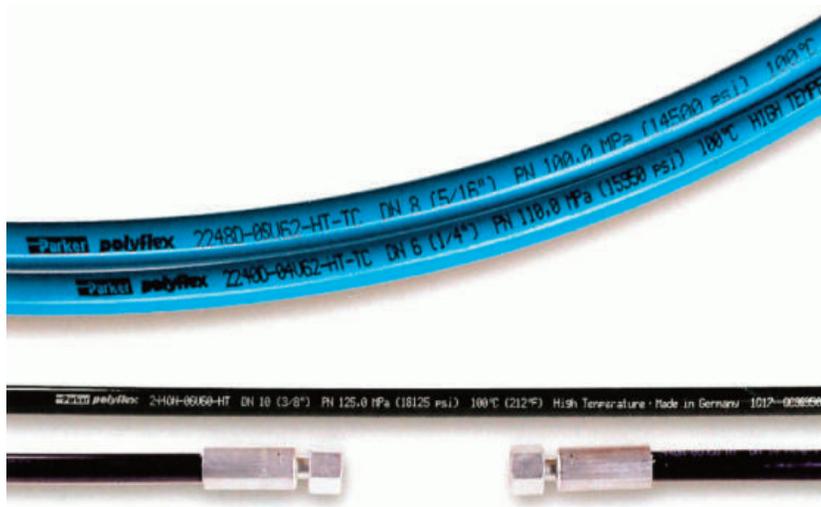
Our POM assortment encompasses:

2248D in DN4, DN5 and DN8

2240D in DN3, DN4, DN5 and DN6

2440D in DN3, DN5, DN6 and DN8

2448D in DN4



Our PA assortment encompasses:

2380N in DN10

2440N in DN10

2580N (BlueLine) in DN12

2640N in DN20

HFH hot water hoses Jet Cleaner

- inner core smooth
- cover textile structured black
- synthetic rubber SBR
- complete with end-fittings:
both sides female special jetcleaner
connection WGA M22x1,5 stainless steel
with bending protection sleeve
- temperature: -40°C to +150°C



Article no.	DN		
282381-10	10	600 bar	10 m
282381-15	10	600 bar	15 m
282381-20	10	600 bar	20 m
282381-25	10	600 bar	25 m
282381-30	10	600 bar	30 m

We can also offer you the HFH hot water hose JetCleaner with DKOS M20x1,5 fittings.

My process walkthrough at HFH

In the following, I am going to tell you about my life at Fraunhofer until I am ready for delivery and actual usage at your site.

After being manufactured at one of our trusted and quality-conscious suppliers, I am delivered to Fraunhofer by truck or by plane. Upon arrival, Fraunhofer immediately monitors whether I have survived the journey well and without damage.



In case I withstood the monitoring process without any objections, a winch places me into storage next to my innumerable number of fellows. I will stay at this place until a customer needs me. For every customer, respectively every order, I am consecutively numbered in order to ensure that I am recognizable again and again.



Suitable fittings are provided with all the data required to identify me later on in the process. This is implemented using a laser that is extremely precise.



In this process, I am pulled through a measuring device. At the right length, I am attached with a small stripe for identification purposes. Now, let's move on to the uncomfortable path.



On the opposite side of the measurement device is the saw, which will cut me through at the part that was pasted on me beforehand. As it gets particularly warm in the sawing process, an ice sprax is used to cool me down. In addition to the lasered armatures, I moreover receive a lasered embossing sleeve that contains all the important information about me, too.



Next, my armatures are grouted with up to 500 tons and corresponding die stocks to ensure that they cannot glide off anymore.



If my fitting does not show a relief well at the factory, it will receive one from Fraunhofer. Now, I am almost ready for usage.



Before I will be sent to the customer, I must go outside my envelopes and withstand a pressure test in the test bench developed by Fraunhofer.

To confirm my productive capacity to the customer, a certificate is issued about me. After this examination, I will be blown completely dry as there is still some water residing in my body. Additionally, dust caps are installed to protect my fittings from dust.

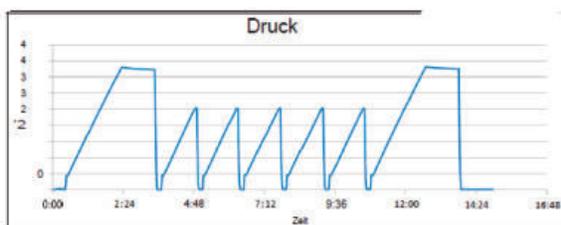


Fraunhofer
Abnahmeprüfzeugnis 3.1
EN 10204

ZUBEHÖR FÜR DRUCK- WASSERSTRAHLANLAGEN

Zertifiziertes Objekt:	Druckschlauch		
ALLGEMEINE DATEN	OBJEKT	6108 STW-PU (2741D-05V34/16)	
Eigentümer / Auftraggeber	Hersteller		
Postleitzahl / Ort	Typ		
Kundennummer	Seitennummer	98348	
Auftragsnummer	Baujahr		
	Innen-Durchmesser	8 mm	
	Länge	50000 mm	
	Anschlüsse	es. AG 9/16-18 UNF LH es. AG 9/16-18 UNF LH	
Temperaturbereich	STATUS	DRUCKPRÜFUNG	
Betriebsdruck	2500 Bar	gut	gut
Prüfdruck	3700 Bar	gut	gut
Berstdruck		gut	
Sichtprüfung		gut	
Gewindeprüfung		gut	
Verriegelung	n.	gut	
Steuersignal	n.	gut	
Einzelheiten/Bemerkungen			

PRÜFERESULTAT	Complete	Water	
Prüfdatum	04.07.2018	Gültig bis	04.07.2019
Beurteilt durch	Werkssachverständiger	Unterschrift	
Zertifikatsnummer		Druckdatum	04.07.2018



HUGO FRAUENHOF GMBH - HILDEN

Now, I am ready for delivery and just need to be packaged in a box and shipped. Once arrived at the customer's site, I can give proof of my capabilities.

Please use the instructions that are made available to you to ensure that we can have the most successful relationship possible.

General application notes

What to pay attention to...

Handle instructions about ultra-high-pressure hoses with extreme caution!

Inspection

I should be checked regularly for abrasion, rust, breaks or other damages. If my upper cover is threadbare or I am damaged otherwise, phase me out and do not use me anymore. You should moreover check the thread of my coupling for abrasion. We are also happy to do this check for you!

Working pressure

My manufacturer provides information about my maximum working pressure that must not be exceeded. Although I am tested with greater certainty, one must not assume that I can withstand this pressure in the long term.

Bend radius

My minimum bend radius must not be undercut as doing so can lead to a stress whitening in my inner tube or other damage. Under no circumstances should I be used if I have accidentally been cracked or twisted.

Temperatures

To ensure safe operation, the temperature range I was designed for should be taken into account.

Damages

If you recognize a water leak, I must be put out of operation immediately and checked for damage.

Please always use filtered flow media to ensure my longevity.

Please do not use me if I have bubbles, pin holes, or kinks.

Please make sure that there is no high tensile or torsional load on me. To prevent any damages, you should always clean, dry and wind me up after using me.

Use only those hose lines that have been assembled by an experienced and authorized dealer!!!

All our recommendations conform to the requirements of EN1829-2.

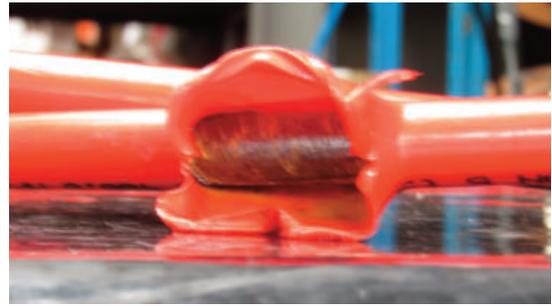
In case you have any questions, please feel free to contact our team at any time!

Complaints

We view ourselves as a service provider. As such, it is our job to provide you with greatest possible value through our services.

As a dealer with integrated assembly, we are part of a network of manufacturers and other service providers. At all those intersections, there are people taking care of your requests and needs.

In case there is any objection or complaint, please do not hesitate to contact us. In the ongoing dialogue with all the partners involved and you as our customer, we use our experience to give you the feeling that you are in good hands with us.



Fittings



Polyflex LOK-System



Polyflex LOK adapters are characterized by their simple, quick, and convenient assembly. Irrespective of their simple assembly, that is also feasible without any tools, they are approved up to a working pressure of 3,200 bar with a safety coefficient of 2.5.

Simple plugging allows to prevent assembly errors and prevents hoses from twisting during usage.

The LOK-System is available in the following sizes:

- DN5
- DN8
- DN12



Your advantages:

- simple, quick and convenient assembly
- high safety in operation
- assembly without any tools
- reduction of assembly errors
- tear-off protected
- great time savings

Further fittings



AG 1/4" - 28 UNF LH
Prolance and normal



AG 3/8" short



AG 1/4" - 28 UNF
short



AG 9/16-18 UNF LH



AG 3/8" - 24 UNF LH
Prolance and normal



AG M14 x 1,5 LH



AG M10



AG M20 x 1,5



AG M5



AG M7



AG M8



AGR 1/4"



AGR 1/8"



DKOS M22 x 1,5



DKOS M24 x 1,5



DKOS M36 x 2



DKOS M42 x 2



DKR 1/2" galvanized
and VA



DKR 1/4"



DKR 3/8"



ÜM 9/16"-18 UNF

UHP swivle fitting

The new Parker Polyflex UHP swivle fitting ensures a high degree of flexibility – even during application! During the fitting's rotation, the hose remains unaffected by those rotations and is not twisted.

Available for DN5 and DN8 with a working pressure of up to 4,000 bar.



We are happy to offer you further armatures on request!



Nozzles

- Fixed nozzles
- Rotating nozzles
- Lance nozzles

Fixed nozzles

Description	Article no.			
Quattro nozzle	120389	18mm	<u>1/4" IG</u> 1x ZS 3x 45° VS 4x 45° RS	1000bar
Pyramid nozzle LDP 03	120431	17mm	<u>1/4" IG</u> 2x 45° VS 3x 80° RS 4x 45° RS	1000bar
Pyramid nozzle PDH 02	121318	17mm	<u>1/4" IG</u> 1x ZS 2x 35° RS 4x 55° RS	1000bar
Pyramid nozzle PDH 01	121349	14mm	<u>1/8" IG</u> 1x ZS 2x 35° RS 2x 55° RS	1000bar
Quattro nozzle	120388	17mm	<u>1/8" IG</u> 1x ZS 3x 45° VS 4x 45° RS	1000bar
Pyramid nozzle LDP 02	120430	13mm	<u>1/8" IG</u> 2x 45° VS 3x 80° RS 4x 45° RS	1000bar
High pressure nozzle	120755	13mm	<u>M24x1,5 AG</u> 1x ZS 8x 45° RS	1250bar
High pressure nozzle	120756	40mm	<u>M24x1,5 AG</u> 1x ZS 5x 90° VS/RS 5x 90° RS	1100bar
High pressure nozzle with cross beam upfront	120313	40mm	<u>M24x1,5 AG</u> 4x 45° VS (gekreuzt) 2x 90° VS/RS 2x 75° RS 4x 45° RS	1000bar
High pressure nozzle made of stainless steel	120774	36mm	<u>M24x1,5 AG</u> 3x 40° VS 3x 70° RS	1000bar
High pressure A nozzle	120295	30mm	<u>M24x1,5 AG</u> 6x 90° VS/RS 6x 45° RS	1000bar
High pressure A nozzle	120296	30mm	<u>M24x1,5 AG</u> 6x 90° VS/RS 6x 45° RS	1000bar
High pressure A nozzle	120290	30mm	<u>M24x1,5 AG</u> 4x 45° RS (ZS möglich)	1000bar
High pressure A nozzle	120293	30mm	<u>M24x1,5 AG</u> 8x 45° RS (ZS möglich)	1000bar
High pressure nozzle made of stainless steel	120754	30mm	<u>M24x1,5 AG</u> 1x ZS 2x VS (gekreuzt) 8x RS	1000bar

Description	Article no.			
High pressure A nozzle	120291	30mm	<u>M24x1,5 AG</u> 6x 45° RS (ZS möglich)	1000bar
High pressure nozzle made of stainless steel	120769	8mm	<u>M5 IG</u> 1x ZS 4x 45° RS	1200bar
High pressure nozzle made of stainless steel	120770	8mm	<u>M5 IG</u> 2x 30° VS 4x 45° RS	1200bar
Pyramid nozzle PDH 00	121317	11mm	<u>M7 IG</u> 1x ZS 2x 35° RS 2x 55° RS	1000bar
Pyramid nozzle LDP 01	120429	10mm	<u>M7 IG</u> 2x 45° VS 3x 80° RS 4x 45° RS	1000bar



120389



120431



121318



121349



120388



120430



120755



120756



120313



120774



120295



120296



120290



120293



120754



120291



120769



120770



121317



120429

Rotating nozzles

Description	Article no.			
HD Rotating nozzle RTH 28	120188	28mm	<u>1/4" IG</u> 4x 40° RS	1000bar
Special Vortex-Jet nozzle F/R	121331	22mm	<u>1/4" IG</u> 2x 45° VS 2x 90° VS/RS	1000bar
Special Vortex-Jet nozzle F/R	121345	18mm	<u>1/4" IG</u> 2x 45° VS 2x 90° VS/RS	1000bar
Vortex-Jet nozzle R18	120449	18mm	<u>1/4" IG</u> 2x 90° VS/RS	1000bar
Vortex-Jet nozzle R22	120679	22mm	<u>1/4" IG</u> 2x 90° VS/RS	1000bar
HD Rotating nozzle RTKH 16	120712	16mm	<u>1/4" IG</u> 2x 40° RS 2x 70° RS	1000bar
HD Rotating nozzle RTKH 22	120714	22mm	<u>1/4" IG</u> 2x 70° RS 2x 40° RS	1000bar
HD Rotating nozzle RTS 35	120678	35mm	<u>1/4" IG</u> 4x 85° RS	1000bar
HD Rotating nozzle RTKH 16	120187	16mm	<u>1/8" IG</u> 2x 70° RS 2x 40° RS	1000bar
Special Vortex-Jet nozzle F/R	121383	12mm	<u>1/8" IG</u> 2x 45° VS 2x 90° VS/RS	1000bar
Vortex-Jet nozzle R12	121033	12mm	<u>1/8" IG</u> 2x 90° VS/RS	1000bar
HD Rotating nozzle RTKH 22	120713	22mm	<u>1/8" IG</u> 2x 70° RS 2x 40° RS	1000bar
Special Vortex-Jet nozzle F/R	121346	31mm	<u>M22x1,5 IG</u> 2x 45° VS 2x 90° VS/RS	1000bar
Vortex-Jet nozzle R31	120680	31mm	<u>M22x1,5 IG</u> 2x 90° VS/RS	1000bar
Vortex-Jet nozzle R47	121031	47mm	<u>M22x1,5 IG</u> 2x 90° VS/RS	1000bar
Front cross beam nozzle R47	121322	47mm	<u>M24x1,5 AG</u> 2x 45° VS 2x 90° VS/RS	1000bar
Vortex-Jet nozzle R10	121032	10mm	<u>M7 IG</u> 2x 90° VS/RS	1000bar
HD Rotating nozzle RTKH 11	120168	11mm	<u>M7 IG</u> 2x 70° RS 2x 40° RS	1000bar



120188



121331



121345



120449



120679



120712



120714



120678



120187



121383



121033



120713



121346



120680



121031



121322



121032



120168

Rotating nozzles by ENZ®

Description	Article no.	∅		
UHP Rotating nozzle KBR	120797	40 mm	M24x1,5	1000 bar
UHP Rotating nozzle KBR	121422	11 mm	M7	1000 bar
UHP Rotating nozzle	120645	28 mm	R 1/4"	1000 bar
UHP Rotating nozzle KBR	120794	16 mm	R 1/4"	1000 bar
UHP Rotating nozzle KBR	120796	28 mm	R 1/4"	1000 bar
UHP Rotating nozzle	120091	22 mm	R 1/4"	1000 bar
UHP Rotating nozzle KBR	120793	12 mm	R 1/8"	1000 bar
UHP Rotating nozzle KBR	120447	16 mm	R 1/8"	1000 bar



120797



121422



120645



120794



120796



120091



120793



120447

Lance nozzles

Article no.	Bore				
120374	6x RS	<u>1/4" IG</u>	1000 bar	31 mm	17 mm
120374-V0	1x ZS 6x RS	<u>1/4" IG</u>	1000 bar	31 mm	17 mm
120375	1x ZS 6x 90° VS/RS	<u>1/4" IG</u>	1000 bar	31 mm	17 mm
120376	3x RS 5x VS 6x RS	<u>1/4" IG</u>	1000 bar	30 mm	17 mm
121152	9x 90° VS/RS (staggered in reverse order)	<u>1/4" IG</u>	1000 bar	40 mm	16 mm
121192	9x 90° VS/RS (staggered in reverse order)	<u>1/4" IG</u>	1000 bar	40 mm	22 mm
121194	1x ZS 3x 45° VS 6x 45° RS	<u>1/4" IG</u>	1000 bar	62 mm	18 mm
121348	9x 90° VS/RS (staggered in reverse order)	<u>1/4" IG</u>	1000 bar	40 mm	16 mm
120371	6x RS	<u>1/8" IG</u>	1000 bar	30 mm	13 mm
120371-V0	1x ZS 6x RS	<u>1/8" IG</u>	1000 bar	30 mm	13 mm
120372	3x 45° VS 8x 45° RS	<u>1/8" IG</u>	1000 bar	30 mm	13 mm
120412	1x ZS 4x 45° RS	<u>1/8" IG</u>	1000 bar	30 mm	13 mm
121013	1x ZS 8x 15° VS	<u>1/8" IG</u>	1000 bar	30 mm	13 mm
121350	9x 90° VS/RS	<u>1/8" IG</u>	1000 bar	40 mm	13 mm
121351	1x ZS 8x 45° RS	<u>1/8" IG</u>	1000 bar	30 mm	13 mm
200154	-	<u>1/8" IG & AG</u>	1200 bar	350 mm	12 mm
120365	6x 45° RS	<u>M7 IG</u>	1000 bar	26 mm	10 mm
120769	4x 45° RS 1x VS	<u>M5</u>	1200 bar		
120770	4x 45° RS 2x 30° VS	<u>M5</u>	1200 bar		
120365-V0	1x ZS 6x 45° RS	<u>M7 IG</u>	1000 bar	26 mm	10 mm
120366	1x ZS 2x 60° VS 6x 45° RS	<u>M7 IG</u>	1000 bar	26 mm	10 mm
120367	1x ZS 4x 60° VS 6x 45° RS	<u>M7 IG</u>	1000	26 mm	10 mm
120410	1x ZS 4x 45° RS	<u>M7 IG</u>	1000	26 mm	10 mm
120686	2x 20° VS 4x 45° RS	<u>M7 IG</u>	1000	26 mm	10 mm
200153	-	<u>M7 IG</u>	1200	300 mm	9,5 mm



120374



120374-V0



120375



120376



121152



121192



121194



121348



120371



120371-V0



120372



120412



121013



121350



121351



120365



120365-V0



120366



120367



120410



120686



200153



200154

UC-Nozzles by ENZ®

ENZ® UC Nozzles (with decelerating jet) are applied in industrial cleaning of heat exchangers and blocked pipes. The forward-directed cross beam cuts the material inside the pipe out like a milling tool.

In addition to that, two radial emitters clean at an angle of 60° to 90° to the pipe wall. Simultaneously, the worn out material is swept away. Due to the recoil caused by the front cross beam, the nozzle is often deployed on a lance. This is why the UC nozzle becomes a tool that is ubiquitously applicable.

UC Nozzles are available with or without thrust.

Description	Article no.			
UC 12	120684	12 mm	R 1/8"	1000 bar
UC 18 (60 ltr.)	120789	18 mm	R 1/4"	1000 bar
UC 18 (90 ltr.)	120760	18 mm	R 1/4"	1000 bar



120684



120789



120760

UHP driving peace by ENZ®

Description	Article no.		Bore
UHP - driving peace (60 ltr.)	120790	R 1/4"	3x30°
UHP - driving peace (20>30 ltr.)	120792	R 1/4" M24 x 1,5	3x120° (staggered in Reverse order)
UHP - driving peace (20 ltr.)	120799	R 1/8"	-

Adapters & connectors



Adapter

Article no.	 (from)	 (to)	
120 421	M10 x 1,5 (EXT)	3/8" fs. (EXT)	1000 bar
120 420	M12 x 1,5 (EXT)	3/8" fs. (EXT)	1000 bar
120 419	M14 x 1,5 (EXT)	3/8" fs. (EXT)	1000 bar
100 229	M22 x 1,5 (EXT)	1/4" (EXT)	1000 bar
102 094	M22 x 1,5 (EXT)	1/2" (EXT)	1800 bar
160 396	M24 x 1,5 (EXT)	1" (EXT)	1000 bar
160 395	M24 x 1,5 (EXT)	1/2" fs. (INT)	1000 bar
160 394	M24 x 1,5 (EXT)	M24 x 1,5 fs. (INT)	1000 bar
160 321	M24 x 1,5 (EXT)	M22 x 1,5 fs. (EXT)	1000 bar
120 407	M24 x 1,5 (EXT)	1/2" (EXT)	1000 bar
102 093	M24 x 1,5 (EXT)	1/2" fs. (EXT)	1000 bar
120 771	M24 x 1,5 (EXT)	M42 x 2 (EXT)	1200 bar
121 328	M24 x 1,5 (EXT)	M36 x 2 fs. (EXT)	1400 bar
102 089	M24 x 1,5 (EXT)	M22 x 1,5 (INT)	1400 bar
100 230	M24 x 1,5 (EXT)	1/4" (EXT)	1400 bar
290 032	M24 x 1,5 (EXT)	M22 x 1,5 (EXT)	1500 bar
102 095	M24 x 1,5 (EXT)	9/16"-18 UNF-LH (INT)	2500 bar
102 088	M24 x 1,5 fs. (EXT)	1/4" (INT)	1400 bar
120 623	M36 x 2 (EXT)	1" (EXT)	1000 bar
120 624	M42 x 2 (EXT)	1" (EXT)	1000 bar

Unless otherwise specified, adapters have an external thread with a 24° cone .

fs.: flat sealing

INT: internal thread

EXT: external thread

On request, we are happy to offer you further adapters!



120 421



120 420



100 229



102 094



160 396



160 394



160 321



120 407



102 093



120 771



121 328



102 089



100 230



290 032



102 095



102 088



120 624

Connectors

We are happy to offer you our ultra-high-pressure connectors that are made of special material. Ultra-high-pressure-connectors exhibit a relief well, a thrust screw and a thrust ring. A thread with a female 60 cone seat is used.

Article no.	Description			DN	
		Main body	complete		
283940	for EXT M14x1,5 left and 2 thrust screws M26x1,5	46,0 mm	73,0 mm	5	4000 bar
282446	incorporation of thrust ring at the bottom thrust ring M20x1,5 LH	83,0 mm	121,0 mm	9	4000 bar
283931	M14x1,5 LH and 2 thrust screws M26x1,5	50,0 mm	64,0 mm	9	4000 bar
283932	T-piece M14x1,5 LH and 3 thrust screws M26x1,5	50,0 mm	77,0 x 64,0 mm	9	4000 bar
283938	for 3/8 - 24 UNF LH with 2 thrust rings and screws for M14 x 1,5	42,0 mm	70,0 mm	9	4000 bar
282442	thrust screws M30 x 2 thrust rings M14 x 1,5 LH big	47,0 mm	83,0 mm	9	4000 bar



283 940



282 446



283 931



283 932



283 938

Double nipples

Article no.	 (from)	 (to)	
121 371	1/4" (EXT)	1/4" (EXT)	500 bar
120 638	M22 x 1,5 (EXT)	M22 x 1,5 (EXT)	1500 bar
120 669	M24 x 1,5 (EXT)	M24 x 1,5 fs. (EXT)	1100 bar
121 335	M24 x 1,5 (EXT)	M24 x 1,5 fs. (EXT)	1400 bar
102 091	M24 x 1,5 (EXT)	M24 x 1,5 fs. (EXT)	1800 bar
120 217	M24 x 1,5 (EXT)	M24 x 1,5 (EXT)	1800 bar
120 405	M36 x 2 (EXT)	M24 x 1,5 (EXT)	1600 bar
121 522	M30 x 2 (EXT)	M30 x 2 (EXT)	2000 bar
121 329	M36 x 2 (EXT)	M36 x 2 fs. (EXT)	1400 bar
120 218	M36 x 2 (EXT)	M36 x 2 (EXT)	1600 bar

Unless specified, double nipples have an external thread with a 24° cone.

fs.: flat sealing

INT: internal thread

EXT: external thread

On request, we are happy to offer you further double nipples!



120 638



120 669



121 335



102 091



120 217



120 217



121 522



121 329



120 218



Waterjet Protection

Hose lock

Protective clothing

HFH-Hose Securing Bands

Our hose securing straps represent an alternative to the hose securing grips and, accordingly, are also useful to prevent water-jet hoses from swinging around in an uncontrolled manner. They moreover prevent the hoses from whipping in case of a detached or torn off armature.

They are made of special synthetic and highly tear-resistant textile fabric with two reversing loop. Besides the standard version, they are moreover available with an additional assembled stainless steel spring.

Both version are characterized by an application that is particularly simple:



Simply pull it onto the hose...

...position behind the armature and fix it with the rubber ring.



Artikel-Nr.:	Beschreibung	Länge	Breite	Mindestbruchlast
271 115	Ohne Feder	700 mm	25 mm	1500 daN
270 776	Mit Feder	650 mm	25 mm	1500 daN

Hose Securing Grips

Not only investigations and tests but also practical experiences have shown that in the area of ultra high pressure technology, there is great hazard potential resulting from whipping hose ends when the hose line is torn apart, particularly at the connection points. As a pre-emptive measure, the usage of appropriate safety measures is prescribed in the relevant guidelines. In principle, both the local conditions and the installation situation at the respective construction site must be given special consideration and taken into account.

Hose securing grips in (un)separated format are an important auxiliary material that can be used to secure the hoses not only to one another but also the environment, for example on the vehicle.

In the separated format, connector hooks VE 01209 – 3.5t are used (875kg in case of fourfold security / collapse load 3,500kg).



270074



270741

Article no.	Description	Rope diameter	Length	Minimum collapse load	Length of pressure spring	Suitable for
270 741	Geteilt	5,0 mm	1,0 m	25 kN	0,25 m	DN 8 bis 25
270 074	Ungeteilt	5,0 mm	0,75 m	16 kN	0,235 m	DN 6 bis 20



Retention Device for Ultra High Pressure Water Hoses for Cleaning Pipes

Higher safety requirements and the analysis of fatal accidents in the area of working with ultra high pressure water jets have initiated a change in requirements for the protective measures for those carrying out the work. As an example, mechanical safety gears for returning nozzles respectively pipe cleaning lances represent the state of the art and are therefore considered a mandatory safety measure.

The retention device can be used by lance- and spiral hose workers mainly for cleaning in a broad variety of applications. Depending on pipe diameter and local conditions, the appropriate Fangkopf for the hoses DN 4 to 10, respectively DN 12 to 20 is positioned in front of the pipe with various clamping brackets and telescopic arms.

As proper clamping is a necessity, the pair of rollers must correspond to the respective hose diameter.

Due to the safety gear, nozzles and hoses remain fixed in work flow direction in case of a sudden aperture and can hence not endanger workers by whipping around or hitting them with an uncontrolled water jet.

The system was successfully presented to the work group "Flüssigkeitsstrahler" in the "Construction" professional association.

The basic model includes several clamping devices, and for DN4-10 respectively DN12-20 one telescopic arm each with roller holder.

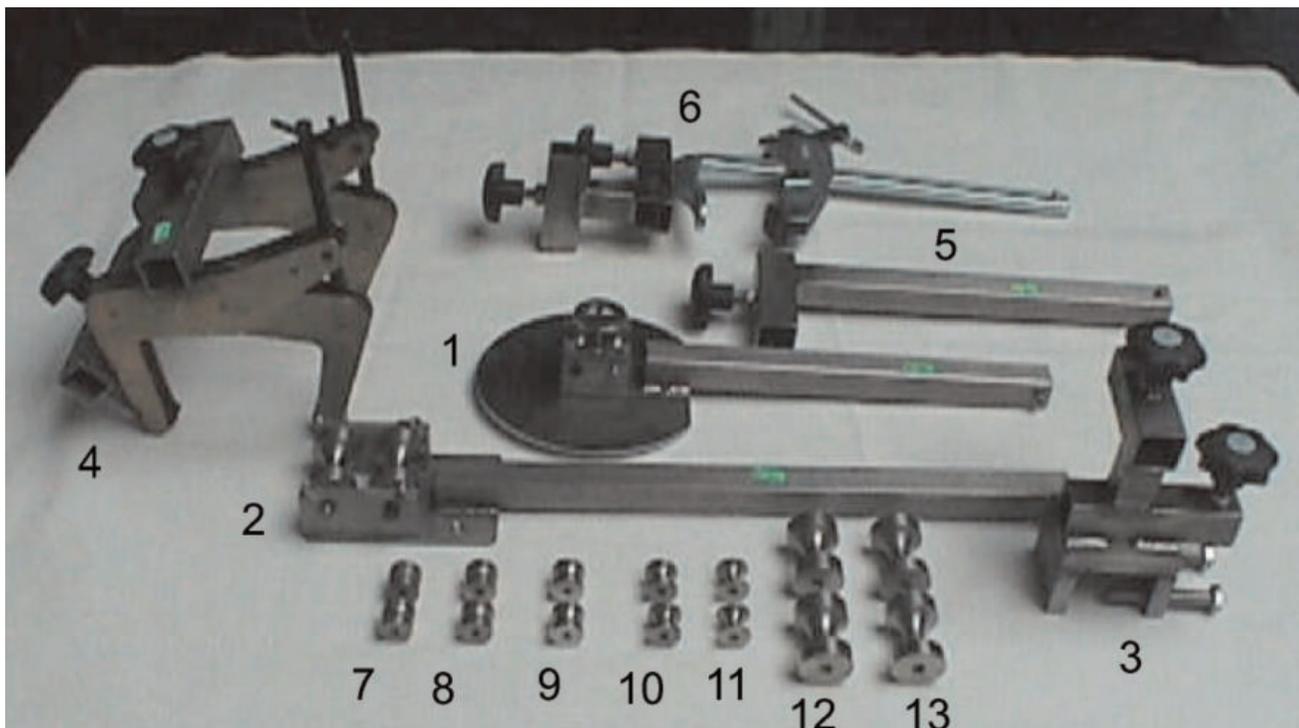
The basic model does not contain a pair rollers. These must be ordered separately depending on the nominal hose size used.

All components are also available as individual parts, as replacements or repairs or for expansion.

Article no. 261005



Article No.	Description	Image No.
261039	Telescopic arm 1 for DN4-10 without pair rollers	1
261040	Telescopic arm 2 for DN12-20 without pair of rollers	2
261041	Connector for pipes (diameter 52 mm at the outside)	3
261042	Double clamp for pipes (diameter 155 mm at the outside)	4
261043	90° rectangular pipe angular arm	5
261044	Special clamp „screw clamp“ (not part of the basic model)	6
261006	Pair of rollers DN4	7
261007	Pair of rollers DN5	8
261008	Pair of rollers DN6	9
261009	Pair of rollers DN8	10
261010	Pair of rollers DN10	11
261011	Pair of rollers DN12	12
261012	Pair of rollers DN20	13



Retention Device “Spiral Guide Arm” for Cleaning Heat Exchangers

The “Spiral Guide Arm” is a safety restraint device involved in the work with lance and spiral hoses and is primarily used for cleaning heat exchangers. Due to its broad range of clamping options, this restraint device can be used for other purposes, too. With its nozzle swivel and various telescopic arms, the junk basket can be brought into the desired positions easily, precisely and without great effort. Due to the safety gear, nozzles and hoses remain fixed in work flow direction in case of a sudden aperture and can hence not endanger workers by whipping around or hitting them with an uncontrolled water jet.

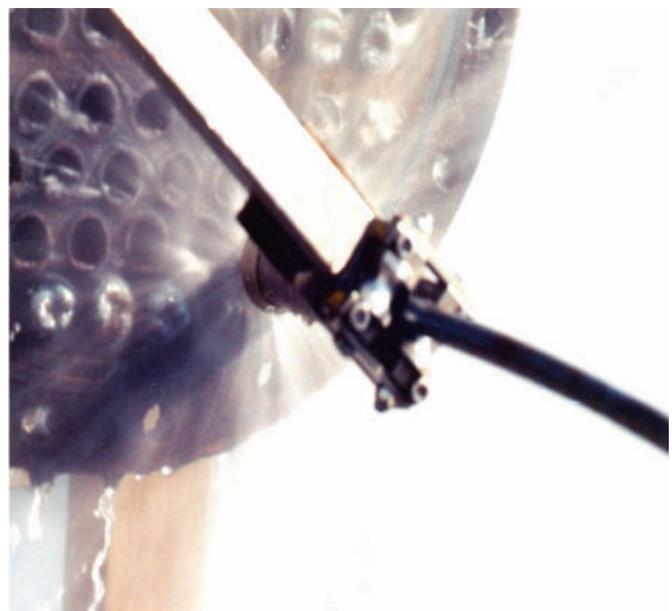
The application makes sense for heat exchangers with up to 2m in diameter and ultra high pressure water hoses DN 4-10 in particular.

For particular purposes, modified parts and special brackets can be ordered on request, for example for heat exchangers without a muff. Yet, these are not included in the basic model.

The basic model furthermore does not contain a pair of rollers. These must be ordered separately depending on the nominal hose size used. In case of repair or completion after loss, all the parts are moreover available as individual components.

As proper clamping is a necessity, the pair of rollers must correspond to the respective hose diameter.

Article-No.: 261004



JetProtect Radiation Protection Suit

This water-resistant combination is used for high pressure work with water in particular. It is water- and particle-proof, as all the seams are additionally taped in a watertight way. The zipper at the front moreover has a hook-and-loop sealing. The inner bib can be adjusted with snap fasteners to seal the front section.

Furthermore, additional safety is ensured due to an integrated hood, a double cuff as well as wedge-shaped legs with two hook-and-loop seals and reflective stripes. The legs are lined halfway up.

Materials: 100% polyester (PES) or polyamide (PA); hydrophilic; breathable PU-coating
Weight: 160 g/m²
Reflective stripes according to policies

JetProtect fulfills the norms EN 343, EN 13034 Type 6, EN-IOS 13982-1 Type 5, EN-IOS 20471 Type 4, 5, 6.

The suit is available in the following sizes: M, L, XL, XXL, XXXL

Article no.	Description	Size
220058-M	JetProtect Radiation Protection Suit yellow/navy	M
220058-L	JetProtect Radiation Protection Suit yellow/navy	L
220058-XL	JetProtect Radiation Protection Suit yellow/navy	XL
220058-XXL	JetProtect Radiation Protection Suit yellow/navy	XXL
220058-XXXL	JetProtect Radiation Protection Suit yellow/navy	XXXL



UHP Safety Boots Primo 800

Conditions of use:

Under the following conditions, the boots can be used up to a pressure of 800 bar:

- force of lance recoil 117 N
- Nozzle diameter 1.0 mm
- Heading speed 0.2 m/s
- Flow rate 17.7 l/min
- tested and approved according to BGR 191
- available at us in sizes 39-48



Article no.	Description	Size
160244-39	UHP Safety Boots Primo 800	39
160244-40	UHP Safety Boots Primo 800	40
160244-41	UHP Safety Boots Primo 800	41
160244-42	UHP Safety Boots Primo 800	42
160244-43	UHP Safety Boots Primo 800	43
160244-44	UHP Safety Boots Primo 800	44
160244-45	UHP Safety Boots Primo 800	45
160244-46	UHP Safety Boots Primo 800	46
160244-47	UHP Safety Boots Primo 800	47
160244-48	UHP Safety Boots Primo 800	48

UHP Safety Boots Ultra 12

Technical details:

- Boots for radiation protection
- Protection up to a pressure 1200 bar
- Colour: black-yellow
- Resistant to animal fats, oils, soda lye, acids
- Antistatic
- EN ISO 20345:2011 SRC 55



Article no.	Description	Size
160379-41	UHP Safety Boots Ultra 12	41
160379-42	UHP Safety Boots Ultra 12	42
160379-43	UHP Safety Boots Ultra 12	43
160379-44	UHP Safety Boots Ultra 12	44
160379-45	UHP Safety Boots Ultra 12	45
160379-46	UHP Safety Boots Ultra 12	46
160379-47	UHP Safety Boots Ultra 12	47

UHP Emitter Protection Gaiters Type HFH

Technical details:

- Made of special waterproof synthetic material with fabric lining
- Aluminium sheet that is perfectly tailored to the shape of the foot respectively boot
- Workmanship that is riveted and sewn in a highly resistant way
- Double hook-and-loop fastener
- Tested with a working pressure of 2,800 +/- 150 bar

Additional information:

- conforms to the requirements according to BGR 191 (ZH 1/702) and BGV D 15 (UW/VBG87)
- CE model certificate number: 53912071/OD
- Recommended according to BGI 5063-1
- According to German patent DE 100 57 301 C1
- Can be worn above safety boots according to EN ISO 20345

Article-No.: 150069



Labels provide information about the level of protection.

Yellow: Level of protection for up to 1,000 bar (Single nozzle) and 2,800 bar (Rotating nozzle)

Orange: Level of protection for up to 2,000 bar (Single nozzle) and 3,000 bar (Rotating nozzle)

TST Sigma-Set

The Sigma set consists of a waistcoat with and an overall with integrated hand guard.

The structure of the sigma set is geared toward functionality, comfort, and optimal protection.



TST Gamma-Set

The Delta set comprises dungarees and a jacket with integrated hand guard. Hence, the set offers excellent comfort.



TST Delta-Set

The Delta set comprises trousers, a waistcoat and gloves, hence offering an excellent comfort.



TST Overall with Hand Guard

The overall protects against water-jet injuries on the front of the legs, forearms and hands of the wearer. A neoprene collar tightens the neck, while maintaining maximum mobility. Additionally, the overall can be equipped with air ventilation.

Provides an ideal combination with a waistcoat, for upper body protection, gaiters or boots 3,000 for feet or balaclava protection, for better comfort.



TST Jacke with Hand Guard

The jacket offers an effective protection of the front, neck and shoulders. Additionally, it is equipped with a hand guard. To guarantee an optimal protection, the jacket can be combined with trousers and HFH gaiters.



TST Waistcoat

The waistcoat offers both an effective protection and optimal comfort. With hook-and-loop fasteners at waist and back, various sizes can be used..



TST Dungarees

Dungarees are provided with a protective fabric on the front face up to the waist. Zip fasteners on the exterior of the legs are protected by a cover equipped with hook-and-loop fasteners.

To ensure maximum comfort and an optimal fit, dungarees have wide, adjustable carrying straps with an elastic band on the back, an elastic part in the backmost of the waist area and adjustable straps on the sides.

For activities, such as climbing and crawling, high mobility is ensured.

TST Dungarees are often used in combination with the waistcoat or jacket, hand guards, gaiters or boots 3,000.



TST Protective Apron

The apron's entire surface is provided with a woven range of protection .

Putting on and taking off the apron is simple. Due to the adjustable shoulder strap, the apron's position can be adjusted to individual needs. Furthermore, there is an adjustable strap in the waist area increasing comfort by relieving weight of the shoulder section.

TST Protective Apron is often used in combination with hand guards, gaiters or boots 3,000.



TST Hand Guards

The hand guards protect both hand and forearm. A thumb strap ensures that protection is at the right place. Hand guards are easy to take on and are available for both left hand and right hand.

TST hand guards are often used in conjunction with the waistcoat or protective apron.



TST Protective Gloves Prooperator

Protective gloves prooperator are characterized by not only their impermeability but also their granulated surface.

They are made of high-tensile Dyneema fabric that is soaked in nitrile rubber. tigt.



TST Gaiters

Gaiters are worn on top of safety shoes. In order to prevent them from slipping out of position, they possess an adjustable sole strap in addition to three clips and a hook-and-loop fastener on the back. The gaiters are characterized by a high level of comfort and convenience.



TST Head Protection

The head protection consists of a helmet with a vizor and ear protection. All the components are tested and certified for water-jet protection with a pressure of up to 3,000 bar (according to 89/686/EEC). The helmet additionally fulfills requirements according to EN 397:2012 for industrial safety helmets.



In the following, you can take notice of our TST products:

Article No.	Description	Level of protection	Sizes available
290053	Sigma-Set: Overall, waistcoat, integrated hand guards	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	S, M, L, XL, XXL, XXXL
290054	Delta-Set: Waistcoat, trousers, hand guards	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	S, M, L, XL, XXL, XXXL
290055	Jacket with integrated hand guards	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	S, M, L, XL, XXL, XXXL
290056	Waistcoat	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	M, XXL, XXXL
290059	Dungarees type A	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	S, M, L, XL, XXL, XXXL
290060	Overall with hand guards	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	S, M, L, XL, XXL, XXXL
290061 (62)	Hand guards left (right)	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	One size (fits all)
290087	Protective apron	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	One size (fits all)
290090	Protective gloves prooperator	500 bar	One size (fits all) (11)
290094	Gamma Kit: Dungarees type A, jacket with integrated hand guards)	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	XXL, XXXL
150290	Gaiters	2,000 bar in case of single nozzle, 3,000 bar in case of rotating nozzle	One size (fits all)

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Our General Terms and Conditions

Our General Terms and Conditions

§ 1 Application of conditions

Our deliveries, services and offerings are carried out on the basis of these terms and conditions only. Therefore, they also apply to all future business relationships, even if they are not expressly declared again. These terms and conditions are considered as being accepted at latest at the moment goods and services are received. Confirmations to the contrary on the part of the buyer with reference to his business and purchasing conditions respectively are hereby rejected. Deviating from these terms and conditions is valid if and only if we confirm them in written form.

§ 2 Offer and contract conclusion

1. Our offers are nonobligatory and nonbinding. To be legally valid, declarations of acceptance as well as all the orders require our written or telex confirmation. The same applies to appendices, modifications, or additional agreements.
2. Drafts, illustrations, measurements, weights or other performance characteristics are valid if and only if expressly agreed on in written form.

§ 3 Prices

1. Unless stated otherwise, we commit ourselves to the prices specified in our offers for 30 days beginning with the quotation date. The prices explicitly stated in our order confirmation plus value-added tax are determinative of our pricing decision. Additional deliveries and services will be charged separately.
2. Unless otherwise agreed upon, our prices are calculated ex works Hilden, excluding packaging.
3. In the event of significant, unforeseeable increases in raw material, energy or production costs, we are entitled to adjust sales prices accordingly up to the delivery date. This includes unforeseeable price increases (Pre)suppliers included.

§ 4 Delivery time and time of performance

1. Whether agreed upon bindingly or nonbindingly, term of delivery and date of delivery need to be made in writing.
2. We do not assume responsibility for delivery delays or delayed service provision due to force majeure and due to events that make delivery significantly more difficult or impossible for us – these include, in particular, strikes, lockouts, regulatory actions etc., irrespective of whether they occur with us, our suppliers, or our sub-suppliers – even if we agreed on deadlines and dates bindingly. In these cases, we are authorized to either (i) defer delivery or service provision by the number of days the obstruction took place plus a reasonable starting period or (ii) withdraw from the contract in whole or in part due to the part of delivery or service provision that has yet not been fulfilled.
3. If the obstruction lasts longer than three months, the buyer is entitled to withdraw from the part of the contract that has yet not been fulfilled after setting an adequate grace period. However, the buyer cannot derive any claims for damages if delivery time is extended or we are released from our obligation. We can appeal to these circumstances mentioned if and only if we give notice to the buyer immediately.
4. If we are responsible for a failure to comply with deadlines or dates we bindingly agreed upon or if we are in default, the buyer is entitled to insist upon compensation for delayed completion in the amount of 0.5% for each week completed after default, but in total up to 5% of the effective invoice amount of those deliveries and services that are affected by the default. Any further claims are ruled out, unless the default is based on at least gross negligence.
5. We are entitled to make partial delivery at any time.

§ 5 Passing of risk

The risk demises to the buyer as soon as the shipment has been handed over to the person responsible for carrying out the transport or has left our warehouse for the purpose of shipment. If shipping is impossible independent of negligence on behalf of our side, the risk is demised to the buyer with the notice of readiness for shipment.

§ 6 Implied warranty

1. We ensure that our products are not subject to manufacturing and material defects; warranty period is three months.
2. The warranty period begins with the date of delivery.
3. In case of defects, the buyer needs to inform us in written form immediately or, at the latest, one week after receiving the delivery item. Defects that are undetectable within this period, even in case of careful inspection, must be reported to us in written form immediately after they have been detected.
4. If the buyer communicates to us that our products do not comply with the warranty, then after having made a decision, we request that
 - a) defective pieces be sent to us for remedy and subsequent return or
 - b) the buyer keep ready the defective pieces for the purpose of inspection and, where appropriate, remedy by ourselves or a third party commissioned by us.
5. If the remedy fails after a reasonable period, the buyer has the choice to demand either rescission of pay or cancellation of the contract.
6. Liability for usual wear and tear is excluded.
7. Warranty claims against us are entitled to the direct buyer only and are not transferable.
8. The preceding paragraphs conclusively contain the warranty for our products and exclude other warranty claims of any kind. This applies in particular to the restitution of consequential harms caused by a defective product.

§ 7 Reservation of proprietary rights

1. Till conformance to all the accounts receivable (including all the current account balance claims), that are entitled to us against the buyer for any legal reason now or in the future, the following securities are available to us and will release upon request at our discretion, insofar as their value exceeds the claims by more than 20%.
2. The goods remain our property. Processing or transformation is carried out for us as the manufacturer, but without any obligation on our part. If our (joint) property expires as a result of combination, it is already stipulated that the buyer's (joint) property of the homogenous good demises to us in proportion to its invoice value. The buyer stores our (joint) property without valuable consideration. Goods to which we have (joint) ownership are referred to below as goods subject to retention of title.
3. The buyer is entitled to process and sell the goods subject to retention of title in the ordinary course of business, as long as the buyer is not in default. Pledging or chattel mortgage are prohibited. As a precaution, the buyer assigns to us the accounts receivable resulting from the resale or any other legal reason (insurance, tortious act) with regards to the goods subject to retention of title (including all the current balance claims) to their full extent. We precariously authorize the buyer to collect the receivables assigned to us for our account in their own name. This direct debit authority can be revoked if and only if the buyer does not meet their payment obligations in proper form.

4. If third parties access goods subject to retention of title, the buyer will point at our ownership and notify us immediately.
5. If the buyer acts contrary to contract – in particular default of payment – we are entitled to take back the goods subject to retention of title or, if necessary, call for assignment of the buyer's claims for restitution against third parties. Revoking or seizing the goods subject to retention of title by us does not constitute a withdrawal from the contract, unless the Abzahlungsgesetz applies.

§ 8 Payment

1. In spite of contrary provisions of the buyer, we are entitled to initially offset payments against the buyer's older debts. If costs and interests have already accrued, we are entitled to offset the payment against the costs first, then against the interest and finally against the main service.
2. A payment is considered to have been made when we can dispose of the amount. In case of checks, the payment is considered to have been made when the check is cashed.
3. If the buyer is in default, we are entitled to charge interest at the rate calculated by the commercial banks for open overdrafts from the point of time the buyer is in default. They are to be set lower if the buyer can prove a lower burden.
4. If the buyer does not meet their payment obligations, in particular does not cash a check or suspends their payments, or if we become aware of other circumstances that call the buyer's creditworthiness into question, we are entitled to accelerate the entire remaining debt, even if we accepted checks. In this case, we are moreover entitled to request advance payment or a surety.
5. The buyer is entitled to offset, withhold, or reduce the price, even if notifications of defects or counterclaims are asserted, if and only if the counterclaims are legally binding or undisputed.

§ 9 Sales return

1. We charge a handling fee of 15% of the net value of the goods for the expenses in connection with a return delivery, which cannot be attributed to a fault on our part (e.g. wrong delivery, delivery of faulty or defective goods etc.). Expenses in connection with a return delivery include incoming goods inspection and testing, re-storage and return to the supplier.
2. Moreover, we charge any transport, freight and packaging costs associated with a return delivery in accordance with paragraph 1.
3. Costs associated with damages during goods' return transport must be borne by the buyer.

§ 10 Limitation of liability

Claims for damages based on impossibility of performance, positive violation of a contractual duty, culpa in contrahendo and tortious act are excluded both against us and against vicarious agents, unless intentional or grossly negligent conduct is involved.

§ 11 Applicable law, court of jurisdiction, partial nullity

1. These terms and conditions and the entire legal relationship between the buyer and us are subject to the law of the Federal Republic of Germany. The applicability of the Uniform Law on the International Sale of Goods is excluded.
2. If the buyer is a registered trader within the meaning of the German Commercial Code, a corporate body under public law or public separate estate, Langenfeld is the exclusive place of jurisdiction for all the disputes arising from the contractual relationship directly or indirectly.
3. If a provision in these terms and conditions or a provision in the context of other agreements is or becomes ineffective, the validity of the other provisions or agreements is not affected.

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Frauenthor

Gegründet 1887