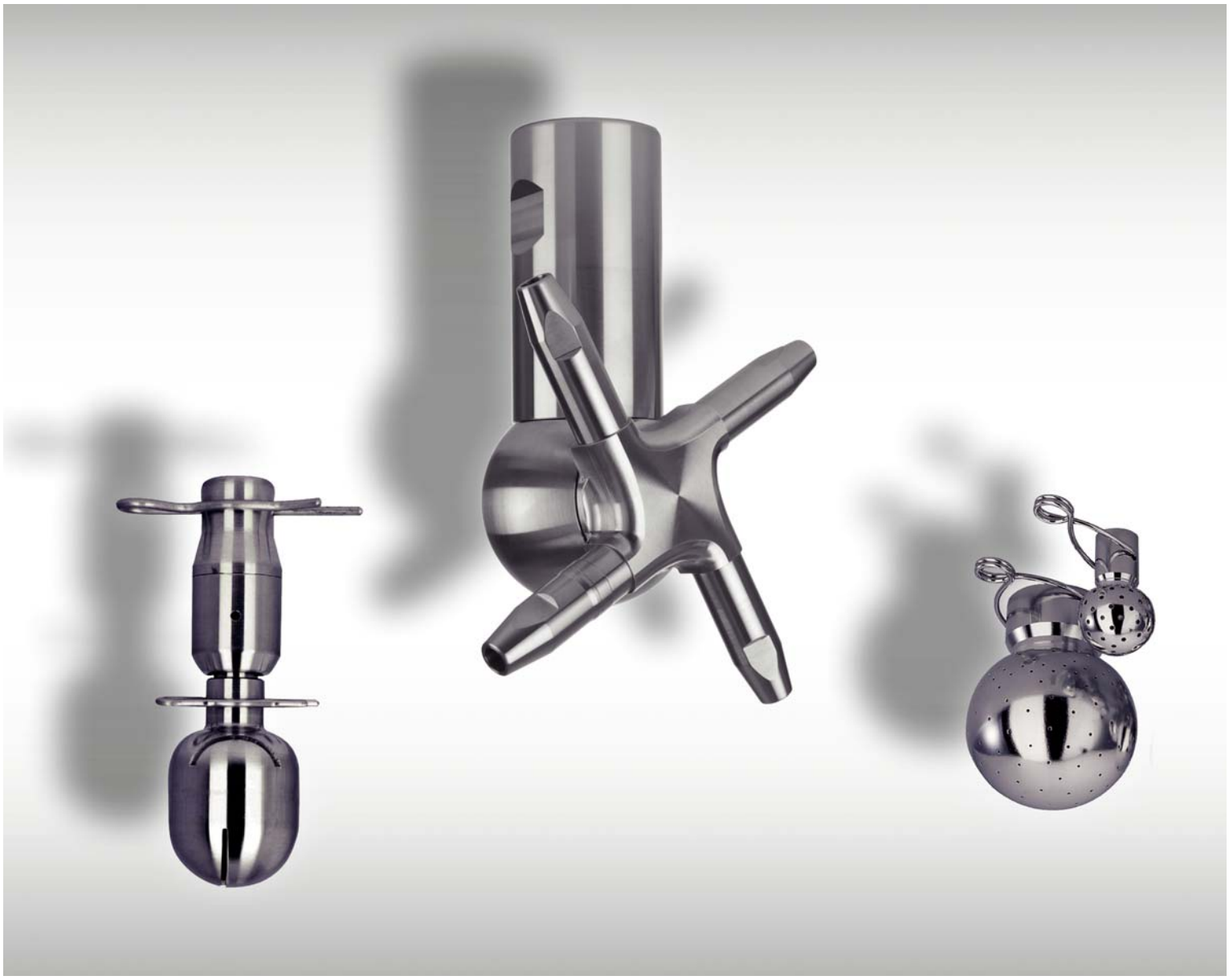


GEA Cleaning Technology

Business Line Cleaning Technology

GEA cleaning technology – the solution for every cleaning process

Our cleaning equipment has been developed for sustainable practice, with special emphasis on saving valuable resources in the cleaning process.

Whether using orbital, rotary or static, our cleaners achieve the best cleaning results in multiple industry sectors.

Incorporating our systems into your production can help you to reduce production downtime, waste disposal costs, and water and detergent consumption.

We offer economical, flexible and service-oriented solutions:

Economical	Flexible	Service-oriented
• Reduction in consumption of energy, water, and cleaning agents • Time and labor required for cleaning is minimized	• Diverse range of orbital, rotating, and static cleaners • Customized cleaning solutions for many different kinds of applications and tank sizes • Various different spray patterns • ATEX-exempt and FDA-compliant • Different cleaning times possible	• Tailored Engineering Support • Digital tools (e.g. 3D models) • Easy-to-maintain • Onsite cleaning tests

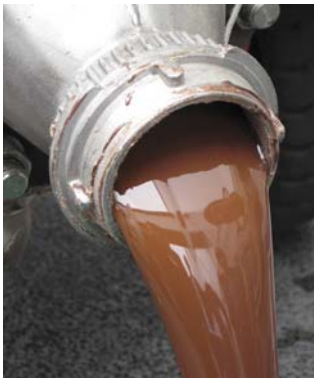
Examples of applications and industries:

Applications:

- Process vessels
- Storage tanks
- Lauter tuns
- Milk tanks
- Spray dryers
- Fermenters
- Silos
- Mixers
- Batch blenders
- Shipping containers
- Tanker trucks
- IBCs
- Container wash tunnels
- etc.

Industries:

- Brewing and beverage industries
- Dairy and food industries
- Cosmetics industry
- Pharmaceuticals industry
- Fine chemicals industry
- Biotechnology industry
- Chemicals industry
- Paint industry
- etc.



Powerful cleaning in tanks up to 33 meter diameter

Orbital cleaners

Orbital cleaners work on the basis of two rotating axes, one horizontal and one vertical, as shown in the illustration.

- Hygienic design
- Ball bearing free (exception TMC)
- Slim, compact design
- Intensive cleaning with targeted jets
- Long life
- Easy-to-maintain
- Driven by the cleaning medium (exception TMC)
- Low number of components (orbital cleaners Typhoon, Tempest, Tornado all use the same spare parts)
- Reproducible cleaning by monitoring of the rotation with sensor SMW 100 or Veri-Clean (optional)

1st cycle

2nd cycle

3rd cycle

4th cycle

Rotating jet cleaner

The proven cleaning method of the jet cleaner achieves optimum cleaning results with powerful, slowly rotating fan-spray jets.

- Operates with minimal drive pressure
- Driven using fluid transmission
- Functionally robust
- Easy to maintain
- Integrated cleaning lance
- Various possible spray patterns using different nozzle arrangements on the spray head
- Long life due to wear-resistant components
- For reproducible cleaning, the rotation monitoring option is recommended

Efficient cleaning of tanks up to 8.5 meter diameter

Rotating cleaners

The optimum cleaning effect of the rotating cleaners is produced by targeted flat jets or fast moving high impact droplets

- Hygienic design
- Ball bearing free
- Low number of components

Spray balls

Spray balls as static cleaners are designed for flush cleaning with a high flow rate, thus providing powerful flushing at low pressure.

- Low capital outlay
- No wearing parts
- Various possible spray patterns, materials, and surfaces
- High flow rates

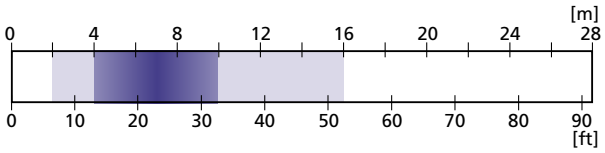
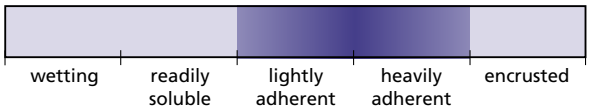
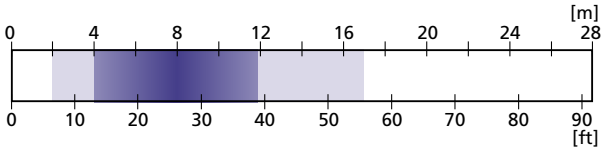
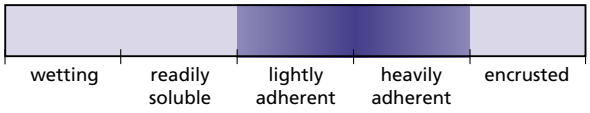
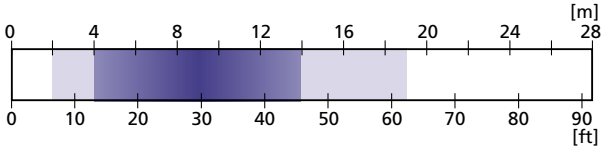
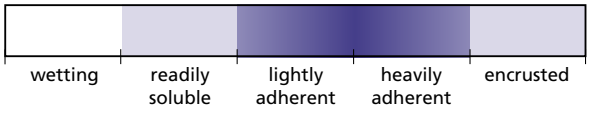
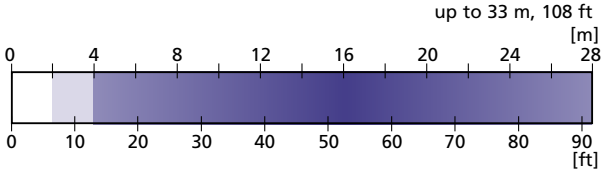
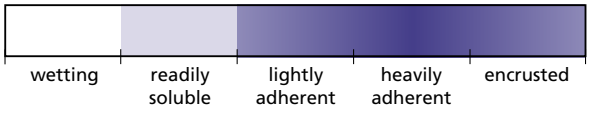
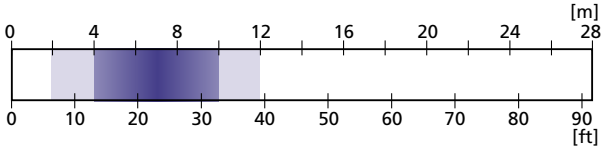
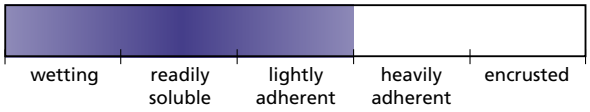
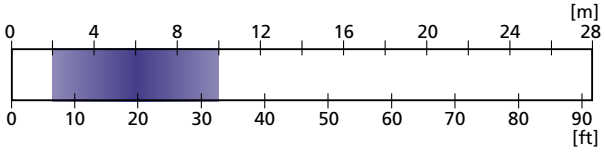
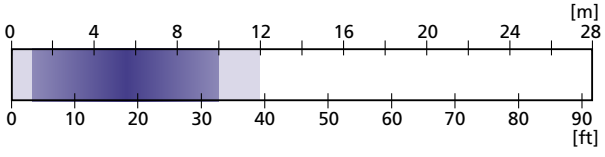
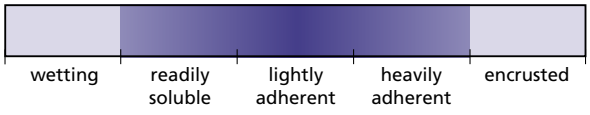
Retractors In-Line Sprayer / MR1/MR2

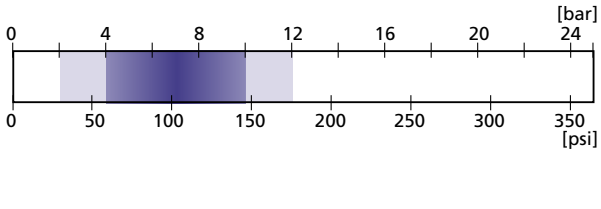
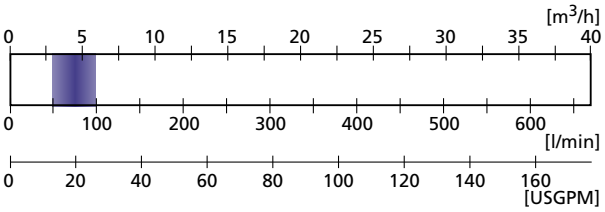
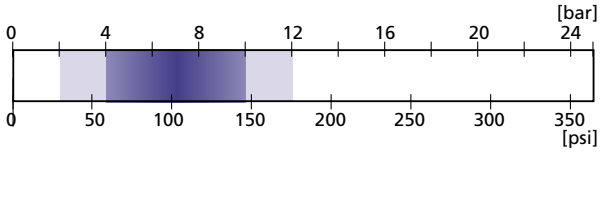
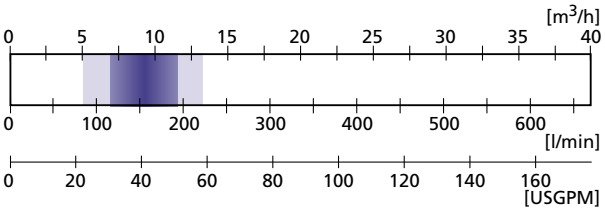
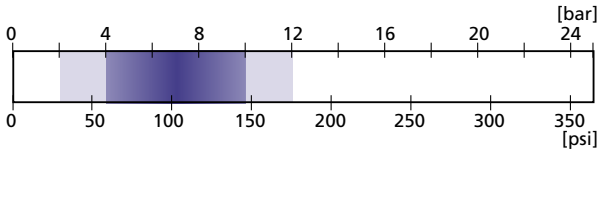
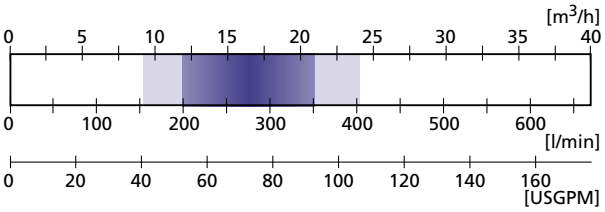
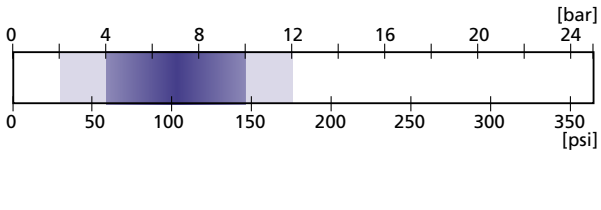
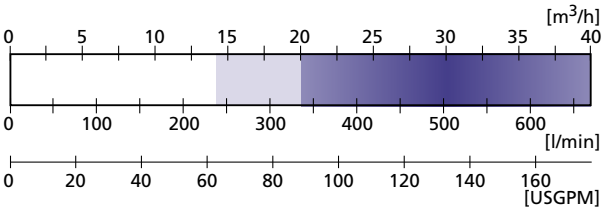
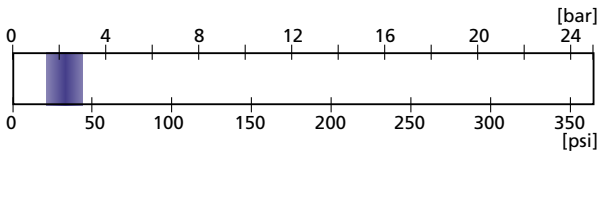
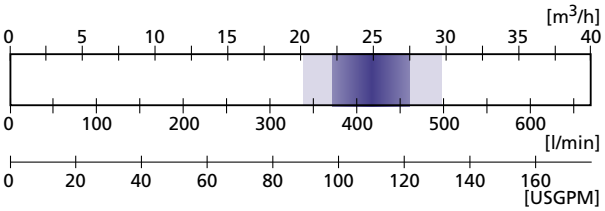
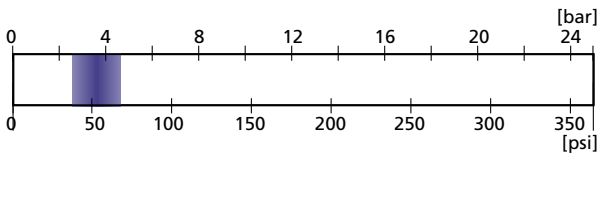
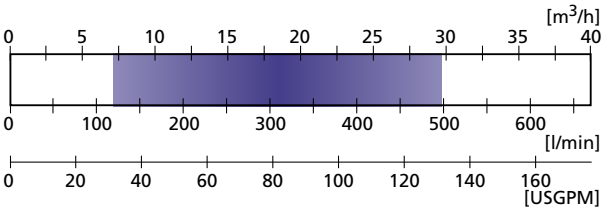
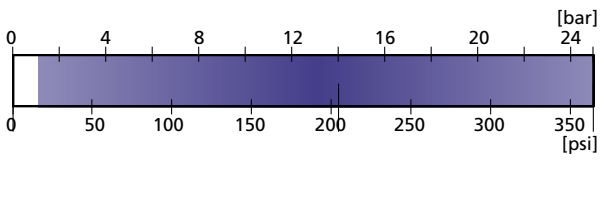
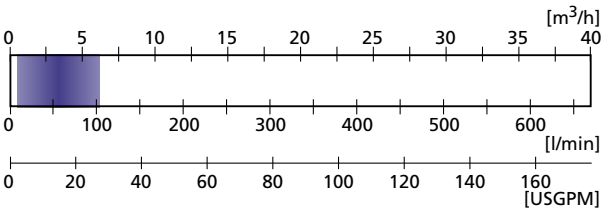
The In-Line Sprayer has an extendable spray head that only extends into the product space during cleaning – which is especially useful for cleaning tanks with moving fixtures (such as agitators, scrapers, etc.) and for large pipes. After cleaning, the spray head retracts into its inoperative position.

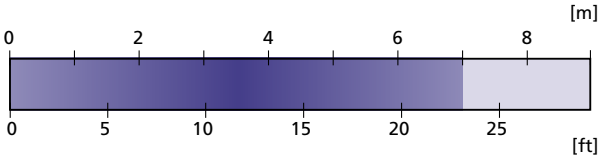
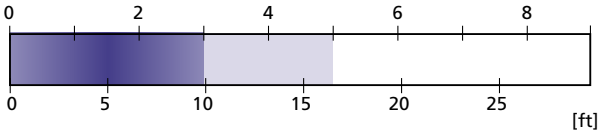
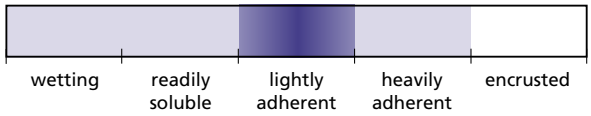
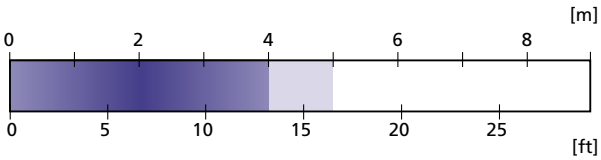
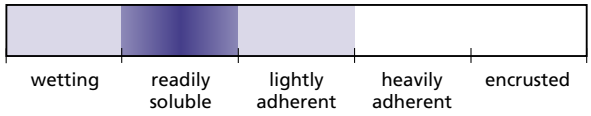
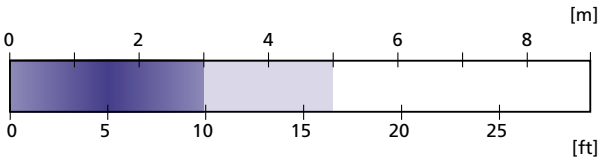
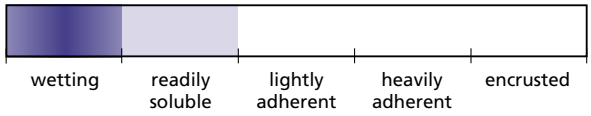
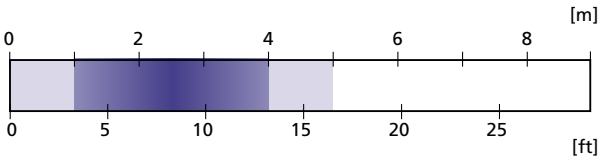
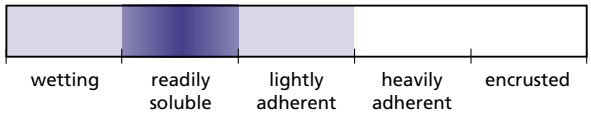
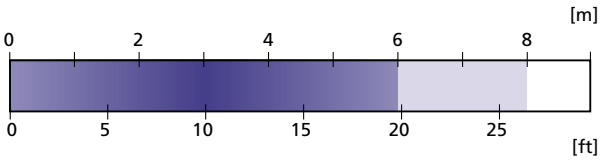
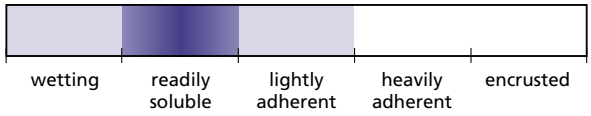
- Savings on cleaning agents due to targeted cleaning
- Demonstrable process reliability and functional reliability
- Range of seal materials

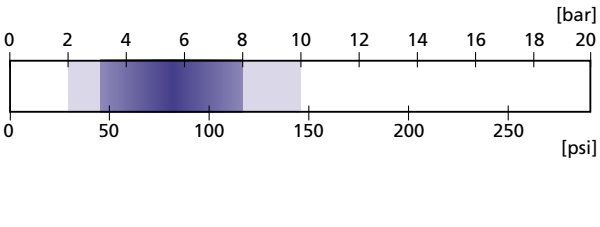
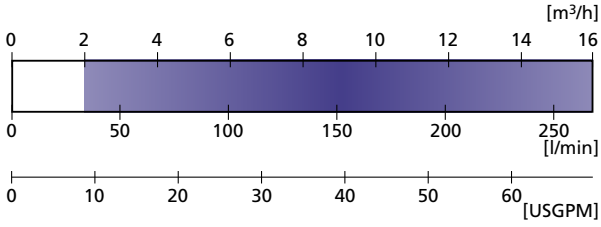
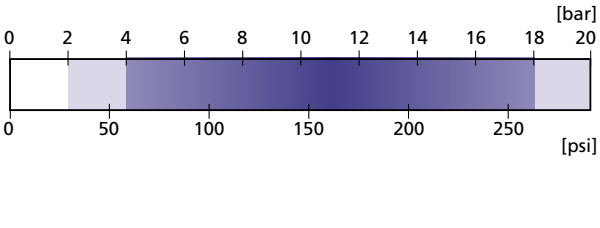
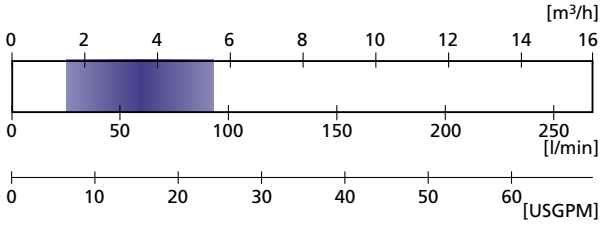
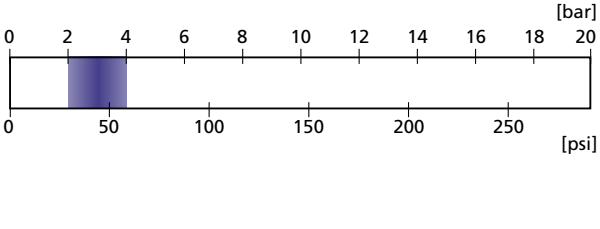
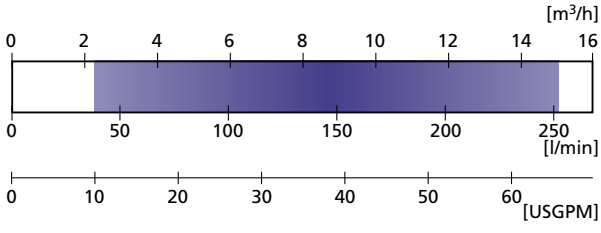
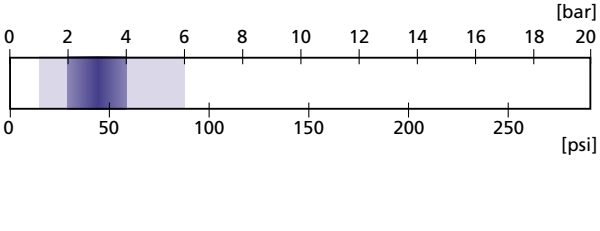
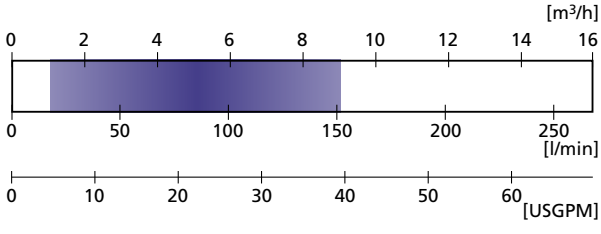
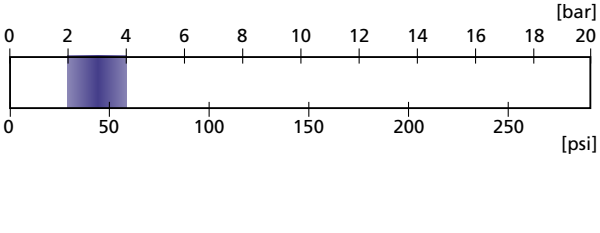
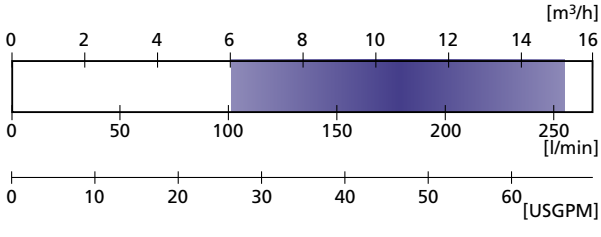
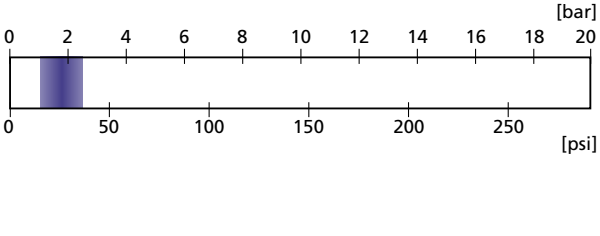
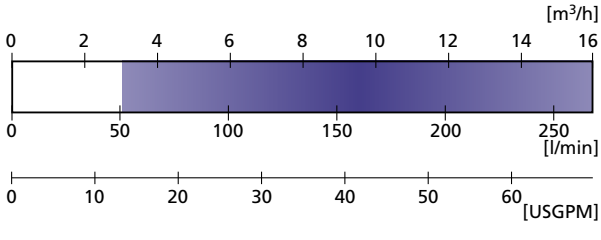
In-Line Sprayer

Retractor MR 2

	Recommended cleaning diameter	Level of soiling
 Twister / Cyclone		
 Typhoon		
 Tempest		
 Tornado / 4		
 Torrent		
 Jet cleaners		
 TMC 45/85		

Recommended working pressure	Flow rate	
		 Twister / Cyclone
		 Typhoon
		 Tempest
	up to 47.4 m³/h, 790 l/min, 209 USGPM 	 Tornado / 4
		 Torrent
		 Jet cleaners
		 TMC 45/85

	Recommended cleaning diameter	Wet of soiling
 Turbo SSB		
 Sanitor		
 Turbodisc/ Chemidisc		
 Torus/ Chemitorus		
 Clipdisc		
 Spray ball		

Recommended working pressure	Flow rate	
	up to 24.5 m³/h 	 Turbo SSB
		 Sanitor
		 Turbodisc/ Chemidisc
		 Torus/ Chemitorus
		 Clipdisc
	up to 67 m³/h 	 Spray ball

Whether it's dairy, beer, viscous foodstuffs or fine-chemical products – product quality and profitability are what counts in the end. This is precisely what the GEA Flow Components business unit stands for – it's a specialist with many years of experience for everything that flows.

The GEA Group

The GEA Group, with operations worldwide, is divided into six segments. One of these is GEA Mechanical Equipment, which consists of the three business units: GEA Flow Components, GEA Homogenizers and GEA Mechanical Separation.

The GEA Flow Components business unit

As a technology leader, the GEA Flow Components business unit develops and produces well-engineered process components and services for smooth production processes in the treatment of liquid products.

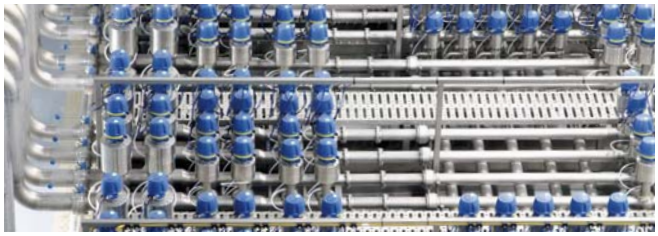
Four business lines – for everything that flows

The product range of the GEA Flow Components business unit includes hygienic and aseptic valve technology, hygienic pumps and cleaning technology, particularly for the brewing, beverages, dairy and food industries, as well as for the pharmaceutical, health care, biotechnology and fine chemicals industries.

Hygienic valves and components from GEA Tuchenhagen form the core component of matrix-piped process plants. For aseptic processes, which require components with the highest levels of sterility, GEA Aseptomag produces aseptic valves and systems that also meet specific requirements.

The hygienic pump range from GEA Tuchenhagen also belongs to the business unit's range of solutions. This includes non-self priming and self-priming centrifugal pumps, as well as rotary piston pumps. Rounding off this range of solutions, GEA off ers cleaning technology especially developedfor the sustainable conservation of valuable resources.

The GEA Flow Components business unit focuses on major process solutions for the food processing, pharmaceutical and biotechnology manufacturing industries with leading hygienic and aseptic valve technology, pumps and cleaning technology.



Hygienic Valve Technology

Hygienic Pump Technology

Cleaning Technology

Aseptic Valve Technology

We live our values.

Excellence • Passion • Integrity • Responsibility • GEA-versity

GEA Group is a global engineering company with multi-billion euro sales and operations in more than 50 countries. Founded in 1881, the company is one of the largest providers of innovative equipment and process technology. GEA Group is listed in the STOXX® Europe 600 Index.

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