

## Meets the Highest Standards in Hygienic Cleaning

### Alfa Laval TJ SaniJet 20 Rotary Jet Head

**Application**

The device is designed for use in pharmaceutical, biotechnological, food and dairy processing applications and is suitable for tanks and vessels between 0.5 and 30 m<sup>3</sup>. It is especially well-suited to processing highly viscous, foaming or thixotropic products and to chemical processing applications where product cross-contamination is unacceptable.

**Working principle**

The Toftejorg SaniJet 20 is a hygienic, rotary jet head device that cleans in a 3D indexed "Golden Section" pattern. It has an integrated self-cleaning (patent pending) and self-draining downpipe. The drive mechanism is located outside the tank, leaving a minimum of parts inside the vessel or to be submerged into the product. The distance between the tracks of the jets ensures efficient removal of residual product from the tank surface, from the start of the cleaning sequence, allowing for quick jet effective cleaning.



**TECHNICAL DATA**

Lubricant: . . . . . Machine: Self-lubricating with the cleaning fluid  
 Air motor: Can operate non-lubricated

Surface finish:  
 Product contact parts: . . . . . Ra 0.8µm  
 Impact throw length: . . . . . 1.5 - 4 m  
 Min. tank opening: . . . . . 4" Clamp w. rotacheck  
 3" clamp - rotacheck N/A

**Pressure**

CIP media working pressure: . . . . . 3-13 bar  
 CIP media recommended pressure: . . . 5-8 bar

**Air driven**

Air quality:  
 Clean, filtered max. . . . . 40µm  
 Dry, dew point max.: . . . . . 5°C Non-lubricated possible  
 Air supply pressure: . . . . . max. 7 bar  
 Free air consumption: . . . . . Max. 2 l/sec. (8 m<sup>3</sup>/h)  
 Adjustable speed: . . . . . 5 - 16 RPM  
 Cleaning time: . . . . . 3 - 10 min

**Certificates**

2.2 material certificate, Q-doc, Q-doc incl. FAT & SAT and ATEX.



**PHYSICAL DATA**

**Materials**

316L (UNS S31603), PEEK\*,  
 Sealing: EPDM\* (standard), FPM\* FFKM\*  
 \* FDA compliance 21CFR§177

**Temperature**

Max. working temperature: . . . . . 90°C  
 Max. ambient temperature: . . . . . 140°C

**Weight**

Media-driven machine: . . . . . 11 - 18 kg  
 Air-driven machine: . . . . . 11.7 - 19.2 kg

**Connections**

Inlet connection: . . . . . Clamp: 1" ISO 2852  
 Tank connection: . . . . . Clamp: 4" ISO 2852  
 Tank connection: . . . . . Clamp: 3" ISO 2852

**Note:** 3" Tank connection has no possibility of integrated rotacheck.

**Options**

- A. Electronic rotation sensor to verify 3D coverage
- B. Improved surface finish
- C. 3.1 certification for metallic parts by request
- D. With FFKM or FPM seal ring
- E. ATEX

**Caution**

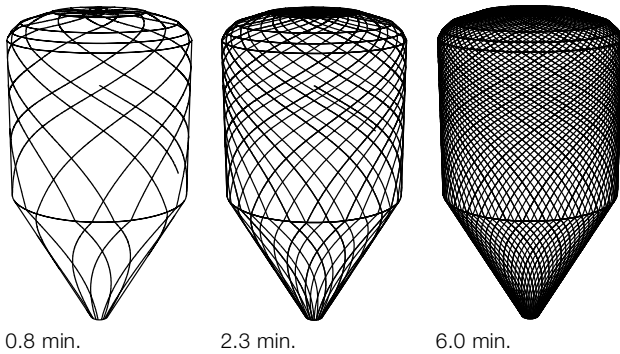
Avoid hard and abrasive particles in the cleaning liquid, as this can cause increased wear and/or damage of internal mechanisms. In general, it is recommended to place a filter in the supply line.

**Standard Design**

The Toftejorg SaniJet 20 is available in media-driven or air-driven version. Air-driven versions are equipped with a magnetic clutch for leakage-proof transmission. The air motor provides an effective drive for low flow machines in rough environments and for use in explosive hazard zones, provided it is installed according to safety instructions. The air motor has variable speed to adjust cleaning intensity. The hygienic construction of the Toftejorg SaniJet 20 is designed, with the aim to meet regulations, such as EHEDG, etc. As standard documentation, it can be supplied with a "Declaration of Conformity" for material specifications. ATEX approved, Category 1 for installation in zone 0/20.

**Cleaning Pattern**

Example - 2xø3.8LS



**Qualification Documentation (Q-doc)**

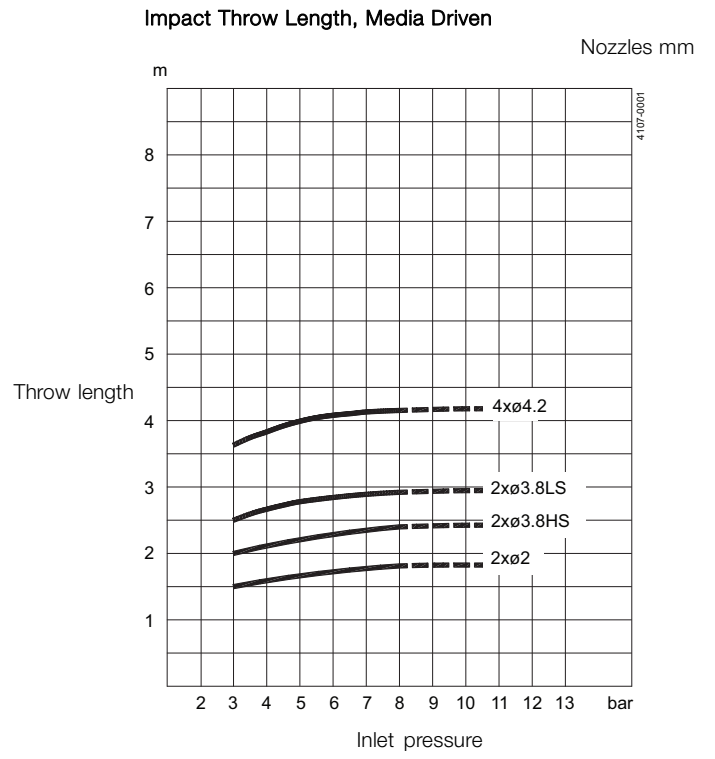
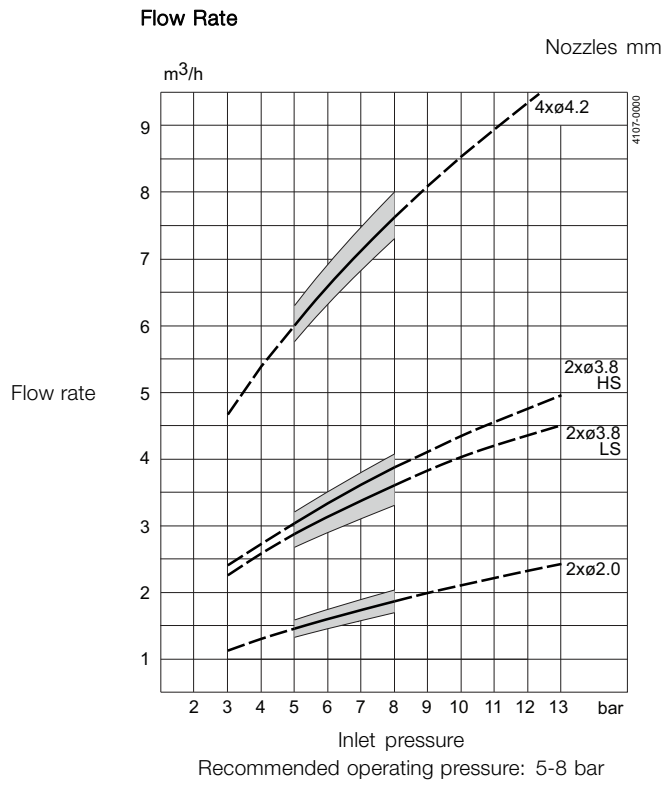
Designed for the BioPharm and Personal Care industry for qualification of hygienic Tank Cleaning Machines. Developed in accordance to the ISPE V-model and GDP, Good Documentation Practice, and includes: RS (Requirement Specification); DS (Design Specification incl. Traceability Matrix); FAT (Factory Acceptance Test incl. IQ & OQ); 3.1 and USP Class VI Certificates; FDA Declaration of Conformity; TSE Declaration; QC Declaration of Conformity; SAT (Site Acceptance Test Protocol incl. IQ & OQ) for End-User Execution.

**Documentation specification**

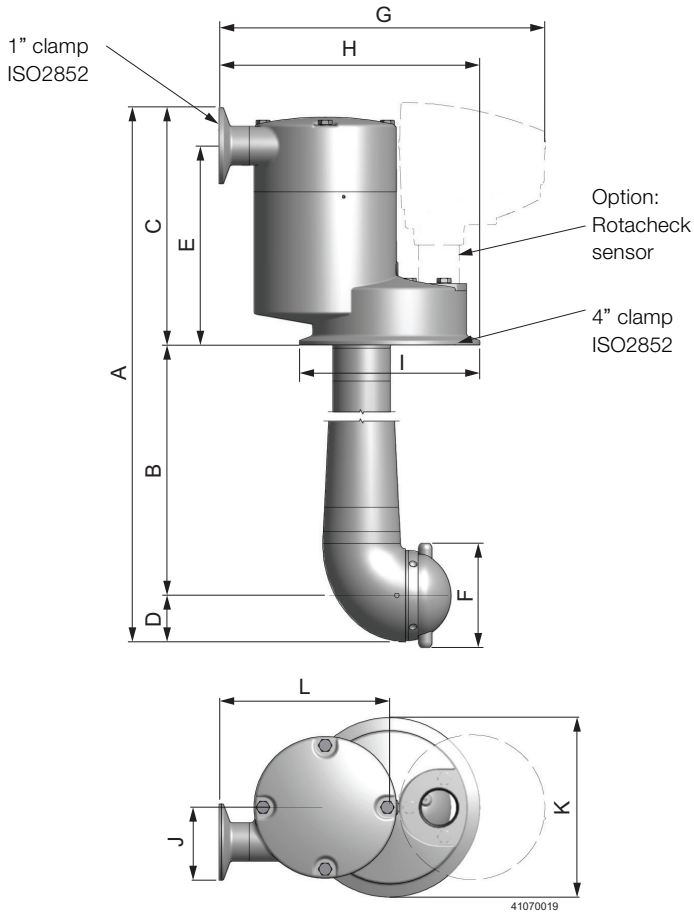
	Equipment Documentation includes:
	- EN 10204 type 3.1 Material Inspection certificate
	- USP Class VI certificate
Q-doc	- FDA Declaration of Conformity
	- TSE Declaration
	- QC Declaration of Conformity
	ATEX approved machine for use in explosive atmospheres.
	Media driven version:
	Category 1 for installation in zone 0/20 in accordance to Ex II 1 GD c T 140°C.
	Air driven version:
ATEX	Category 1 for installation in zone 0/20 in accordance to Ex II 1 GD c T140°C.
	Air driven unit:
	Category 2 for installation in zone 1/21 in accordance to Ex II 2 GD c IIC T4 Tamb -20°C to +40°C
	Qualification Documentation includes:
	- Q-doc: 3.1 , USP Class VI, FDA, TSE and QC Declaration of Conformity
Q-doc +	- RS, Requirement Specification
FAT-SAT	- DS, Design specification incl. Traceability Matrix
	- FAT, Factory acceptance Test incl. IQ and OQ
	- SAT, Site Acceptance Test protocol incl. IQ and OQ for End-User Execution

5.3

Flow Rate (Media & Air driven)



Dimensions (mm), Media Driven

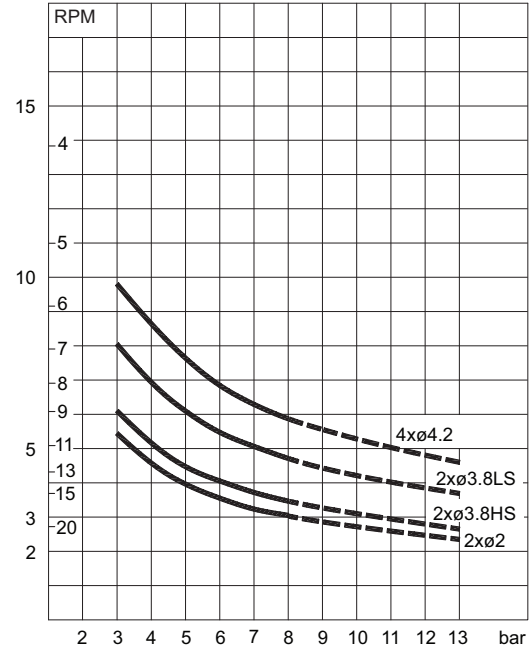


Cleaning Time, Complete Pattern, Media driven

Min. RPM of machine body

Nozzles mm

PTM (Pattern time minutes)



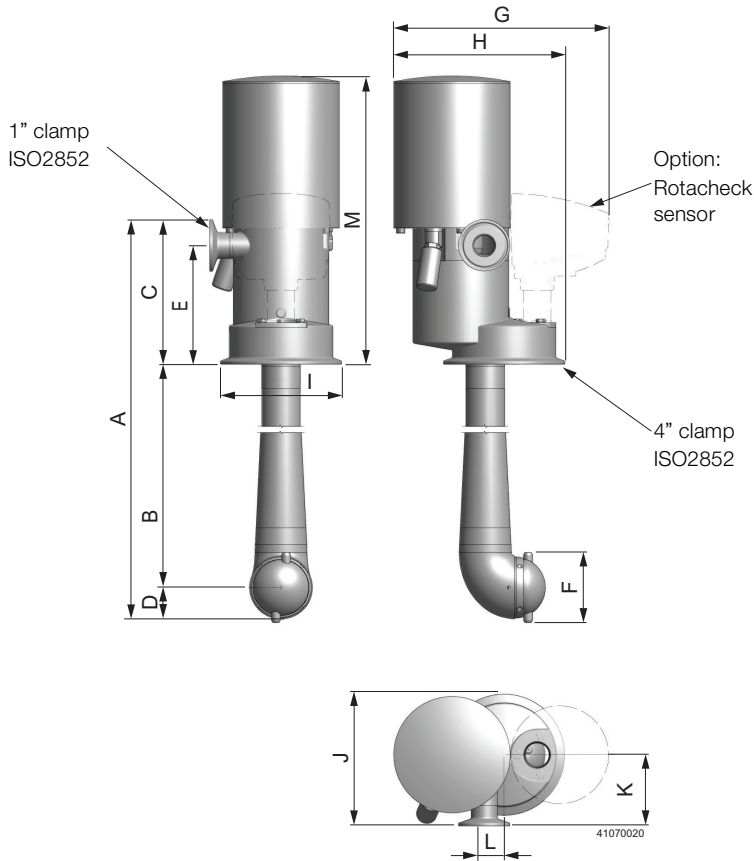
Inlet pressure

A	B	C	D	E	F	G	H	I	J	K	L
537 - 687 - 887 - 1187 - 1387 - 1687	350, 500, 700, 1000, 1200, 1500	157	31	132	ø69	215	172	ø119	23	ø119	113

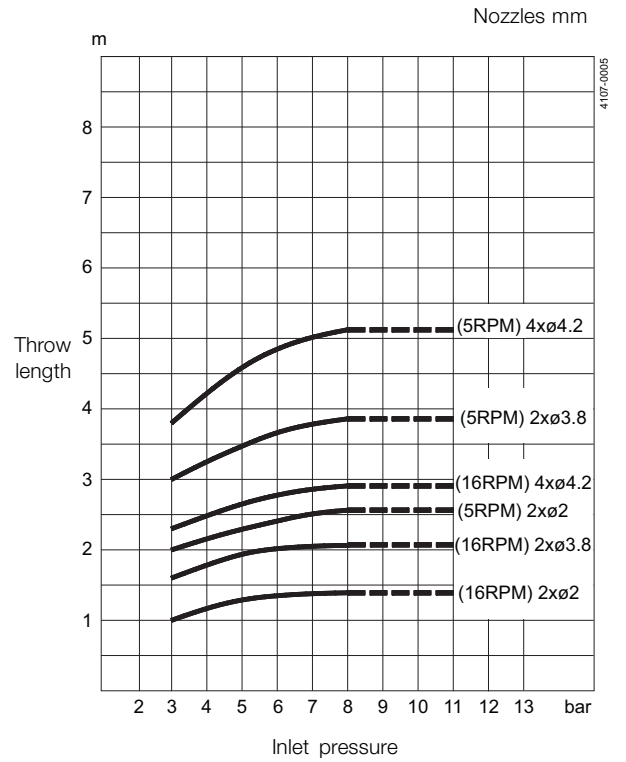
A	B	C	D	E	F	G	H	J	K	L	M
667, 867, 1187, 1387, 1667	350, 500, 700, 1000, 1200, 1500	30	157	132	160.3	ø90.9	ø68	115	23	ø96	1" Clamp ISO2852

A	B	C	D	E	F	G	H	J	K	L	M
27.05, 34.92, 47.73, 54.61, 66.42	13.77, 19.68, 27.55, 39.37, 47.24, 59.05	1.18	6.18	5.20	6.31	ø3.58	ø2.68	4.53	0.91	ø3.78	1" Clamp ISO2852

Dimensions (mm), Air Driven



Impact Throw Length, Air Driven

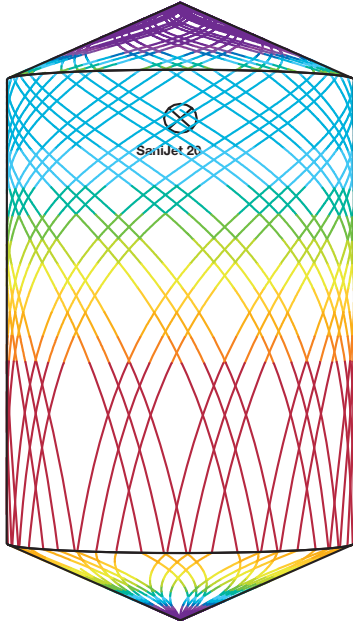
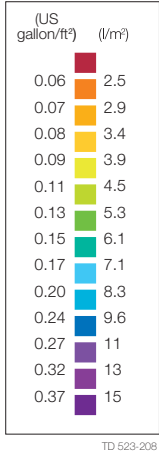


A	B	C	D	E	F	G	H	I	J	K	L
523 - 673 - 873 -	350 - 500 - 700 -	142	31	117	ø69	211	168	ø119	130	70	19.5
1173 - 1376 - 1673	1000 - 1200 - 1500										

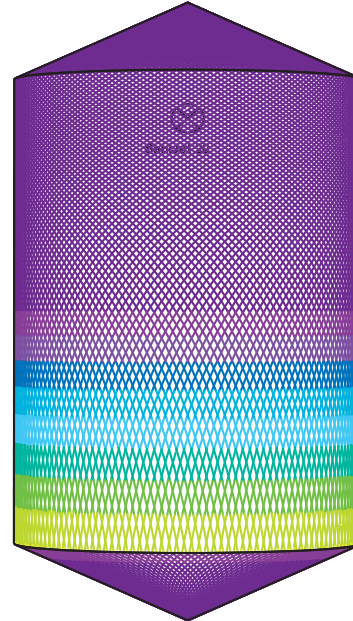
**TRAX simulation tool**

TRAX is a unique software that simulates how the Toftejorg SaniJet 20 performs in a specific tank or vessel. The simulation gives information on wetting intensity, pattern mesh width and cleaning jet velocity. This information is used to determine the best location of the tank cleaning machine and the correct combination of flow, time and pressure to implement. A TRAX demo containing different cleaning simulations covering a variety of applications can be used as reference and documentation for tank cleaning applications. A TRAX simulation is free and available upon request.

**Wetting Intensity**



D2m H3m, Toftejorg SaniJet 20, 4 x ø4.2 mm, Time = 1.7 min., Water consumption = 171 l



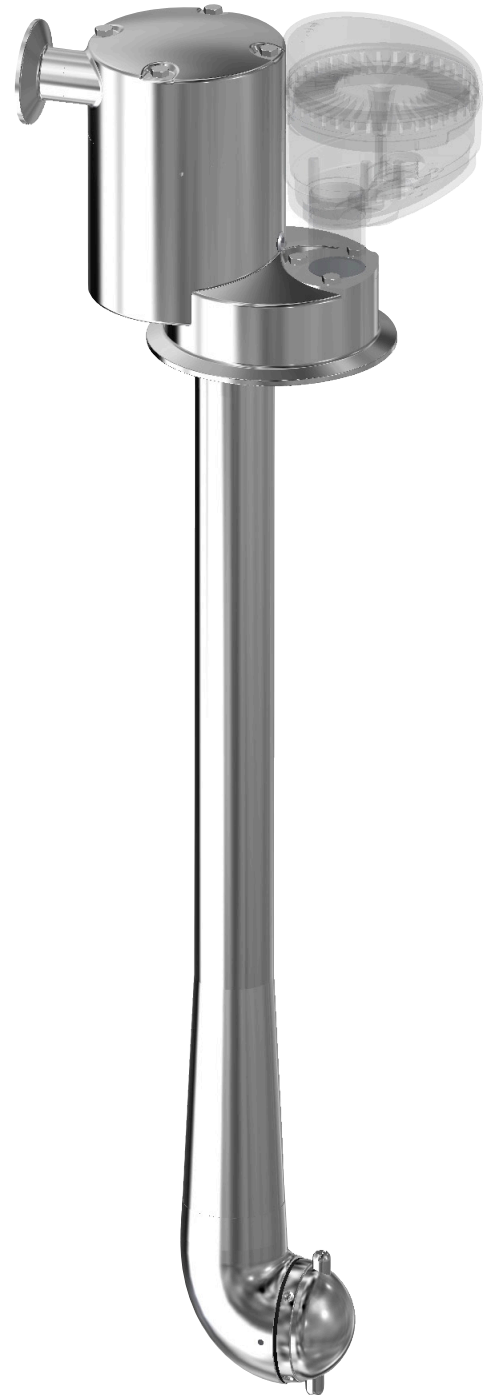
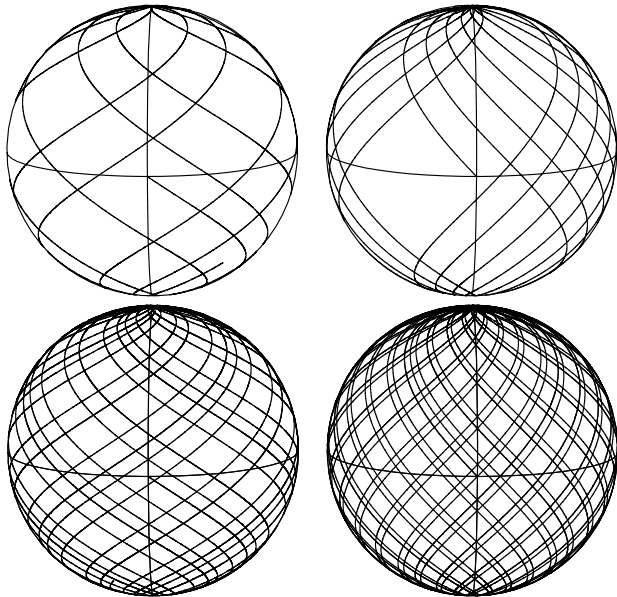
D2m H3m, Toftejorg SaniJet 20, 4 x ø4.2 mm, Time = 7.6 min., Water consumption = 763 l

5.3

**Cleaning Pattern, the Golden Section**

Toftejorg SaniJet 20 operates according to the patented Golden Section cleaning pattern (EP-Patent No.: 0495883, US-Patent No.: 5,279,675), which is unique in building up a uniform pattern. The pattern starts very coarse and refines itself in a step-less way by laying out the tracks approximately in the middle of the two most distant tracks already made. This means that the jets always clean the areas containing the most remaining product, and thereby remove as much deposit as possible in the shortest possible time. In some instances, this method of cleaning can even render a complete cleaning pattern unnecessary. The Golden Section is the most suitable cleaning pattern for an effective pre-rinse.

Golden Section Cleaning Pattern    Traditional Cleaning Pattern



## First ever EHEDG certified Tank Cleaning Machine

### Alfa Laval TJ SaniJet 25 Rotary Jet Head

**Application**

The Toftejorg SaniJet 25 rotary jet head provides 3D indexed impact cleaning over a defined time period. It is automatic and represents a guaranteed means of achieving quality assurance in tank cleaning. Used in food and dairy processes, pharmaceutical and biotechnology industries, the device is suitable for processing, mixing and storage tanks/vessels between 15 and 150 m<sup>3</sup>. The design is particularly suitable for ultra-hygienic industries that follow European Hygienic Engineering & Design Group Guidelines.

**Working principle**

The flow of the cleaning fluid makes the nozzles perform a geared rotation around the vertical and horizontal axes. In the first cycle, the nozzles lay out a coarse pattern on the tank surface. The subsequent cycles gradually make the pattern more dense, until a full pattern is reached after 8 cycles.



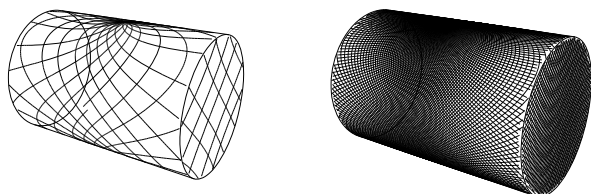
**TECHNICAL DATA**

Lubricant: . . . . . Self-lubricating with the cleaning fluid  
 Standard Surface finish: . . . . . Ra 0.5µm exterior / Ra 0.8µm internal  
 Max throw length: . . . . . 12.5- 17 m  
 Impact throw length: . . . . . 5.5- 10m

**Pressure**

Working pressure: . . . . . 3 - 8 bar  
 Recommended pressure: . . . . . 5 - 6.5 bar

**Cleaning Pattern**



First cycle

Full pattern

The above drawings show the cleaning pattern achieved on a cylindrical horizontal vessel. The difference between the first cycle and the full pattern represents the number of additional cycles available to increase the density of the cleaning.

**Certificates**

2.2 material certificate, Q-doc, Q-doc incl. FAT & SAT, ATEX and EHEDG.



**PHYSICAL DATA**

**Materials**

316L (UNS S31603), Duplex steel (UNS N31803), Duplex steel (UNS S21800), PEEK\*, PFA\* and EPDM\*

\* FDA compliance 21CFR§177

**Welding connection**

1" ISO, 1" ANSI/Sch40, 1½" BPE US/SWG, 1½"Dairy, 1½"ANSI/Sch40 or NW40.

**Temperature**

Max. working temperature: . . . . . 95°C  
 Max. ambient temperature: . . . . . 140°C

**Weight:** . . . . . 6.3 kg

**Options**

Electronic rotation sensor to verify 3D coverage.  
 Declaration of Conformity with ATEX approved, Category 1 for installation in zone 0/20.

**Caution**

Avoid hard and abrasive particles in the cleaning liquid, as this will cause increased wear and/or damage of internal mechanisms. It is recommended to install a filter in the supply line.

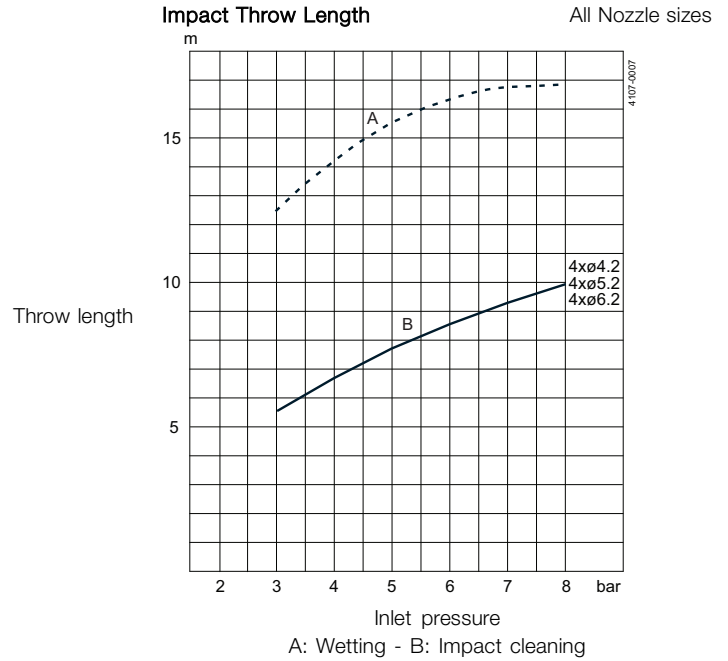
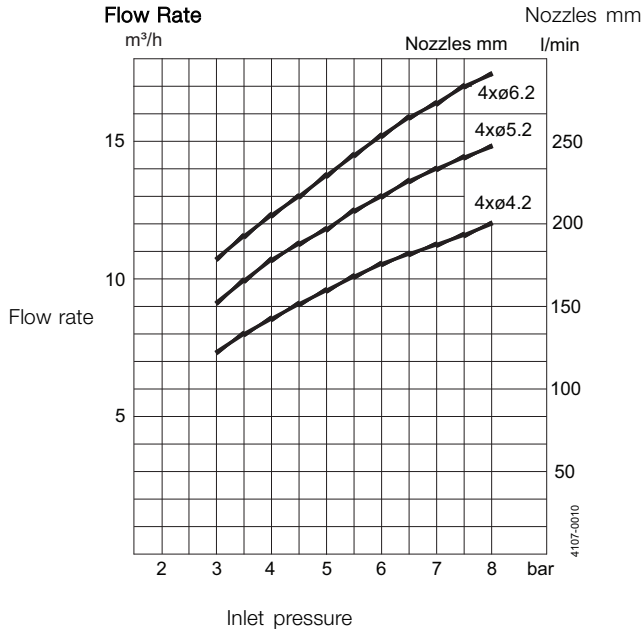


**Standard Design**

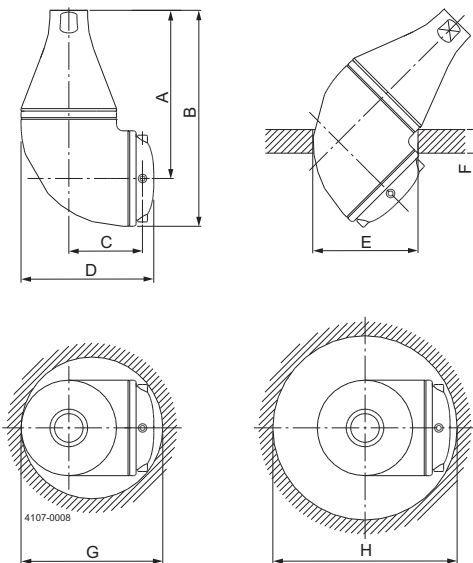
The choice of nozzle diameters can optimize jet impact length and flow rate at the desired pressure. To maintain the hygienic state of the machine a welding adaptor matching a specific pipe size comes with the machine together with the necessary gaskets. The Toftejorg SaniJet 25 is designed, tested and approved according to EHEDG guidelines on design (guidelines 8), cleanability (guidelines 2) and in-line steam sterilisability (guidelines 5). As standard documentation, it is supplied with a "Declaration of Conformity" for material specifications and surface roughness according to EN 10204 type 2.1 and 2.2.

**Qualification Documentation (Q-doc)**

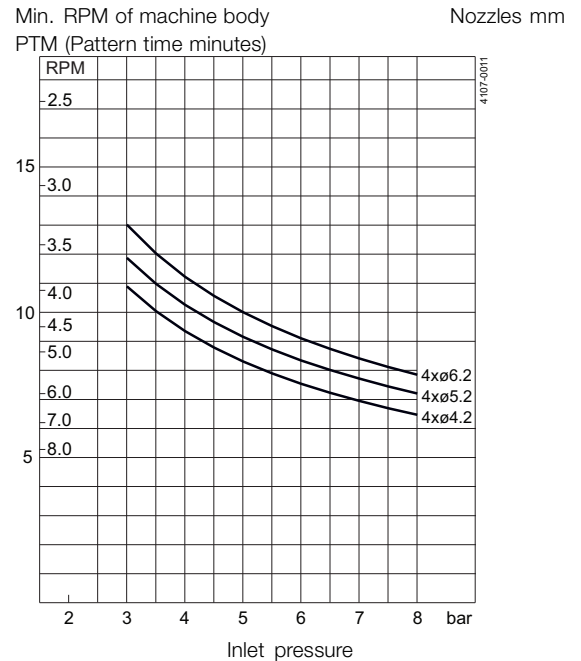
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**Dimensions (mm)**



**Cleaning Time, Complete Pattern**



A	B	C	D	E	F	G	H
178	228.5	80	140	ø110	max. 25	ø150	ø195