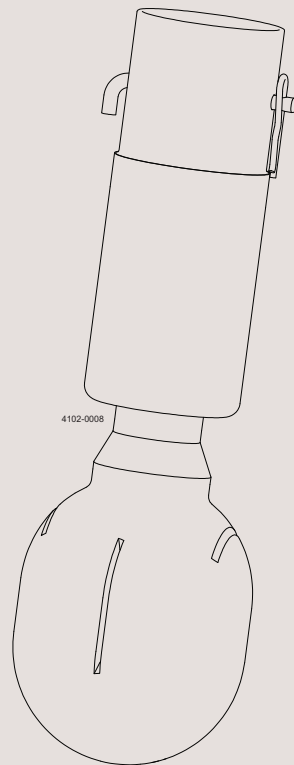




# Instruction Manual

## Alfa Laval Toftejorg™ Rotary Spray Heads MultiMidget & MultiMagnum



Covering: Standard versions  
First published: 2014-04

ESE02830-EN6      2020-11

Original manual



The information herein is correct at the time of issue but may be subject to change without prior notice

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# 1 EC Declaration of Conformity

The Designated Company

Alfa Laval Kolding A/S

Company Name

Albuen 31, DK-6000 Kolding, Denmark

Address

+45 79 32 22 00

Phone No.

hereby declare that

Tank Cleaning Machine

Designation

Alfa Laval Toftejorg MultiMidget & MultiMagnum

Type

From serial number 2015-0001 to 2030-99999

is in conformity with the following directive with amendments:

**Machinery Directive 2006/42/EC**

- *DS/EN ISO 12100:2010*

**The Pressure Directive 97/23/EC**

- *According to its own volume and the rated pressure range, the product is regarded an Article 3, paragraph 3 Equipment*

The person authorised to compile the technical file is the signer of this document

Global Product Quality Manager  
Pumps, Valves, Fittings and Tank Equipment

Title

Lars Kruse Andersen

Name

Signature

Kolding

Place

2016-02-01

Date

(This Declaration of Conformity replaces Declaration of Conformity dated 2016-01-01)



*Unsafe practices and other important information are emphasized in this manual.  
Warnings are emphasized by means of special signs.  
Always read the manual before using the tank cleaning machine!*

---

### 2.1 Important information

---

#### **WARNING**

Indicates that special procedures must be followed to avoid serious personal injury.

#### **CAUTION**

Indicates that special procedures must be followed to avoid damage to the tank cleaning machine

#### **NOTE**

Indicates important information to simplify or clarify procedures.

---

### 2.2 Warning signs

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General warning:



## 3 Introduction

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### 3.1 Introduction

---

This manual has been prepared as a guide for installing, operating and maintaining your Alfa Laval Toftejorg Rotary Spray Head tank cleaning machine. Should you require further assistance, our Technical Sales Support department and worldwide net of sales offices will be pleased to help you. Please quote the type, article and serial numbers with all of your enquiries; this helps us to help you.

**Important information:** Before installing the machine and setting it into operation, carefully read the General Installation Instructions (page 9) and the Safety Precautions (page 9) and take all necessary precautions according to your application and local regulations.



#### NOTE

The illustrations and specifications contained in this manual were effective at the date of printing. However, as continuous improvements are our policy, we reserve the right to alter or modify any unit specification on any product without prior notice or any obligation

The English version of the instruction manual is the original manual. We make reservations in regard to possible mistranslations in language versions of the instruction manual. In case of doubt, the English version of the instruction manual applies.

### 3.2 Intended Use

---

The end-user should verify:

- that the tank cleaning machine is in conformity with respect to tank, vessel or container size in which it is used.
- that the construction materials (both metallic and non-metallic) are compatibility with product, flushing media, cleaning media, temperatures and pressure under the intended use.

**Important information:** **Liquid inlet pressure:** Max 3 bar.  
**Steam cleaning:** If steam cleaning is done through the machine, the steam pressure must not cause the machine to rotate.



See General Installation Instructions on page 9 of this manual for information on recommended installation position.

---

### 3.3 Patents and Trademarks

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This Instruction Manual is published by Alfa Laval Kolding A/S without any warranty. Improvements and changes to this Instruction Manual may at any time be made by Alfa Laval Kolding A/S without prior notice. Such changes will, however, be incorporated in new editions of this Instruction Manual.

Alfa Laval, Kolding A/S. All rights reserved.

The Alfa Laval logotype is a trademark or a registered trademark of Alfa Laval Corporate AB. "Toftejorg" is a trademark or registered trademark of Alfa Laval Kolding A/S. Other products or company names mentioned herein may be the trademarks of their respective owners. Any rights not expressly granted herein are reserved.

### 3.4 Quality System

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The Alfa Laval Toftejorg Rotary Spray Head is produced according to Alfa Laval Kolding's ISO-9001 international Standard certified quality system. All parts are made from certified material.

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## 4 Installation

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### 4.1 Functioning

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The Alfa Laval Toftejorg Rotary Spray Heads are tank cleaning machines intended for industrial use in tanks, vessels and containers under typical CIP procedures. They have a broad range of application areas within food and chemical industries.

The Alfa Laval Toftejorg Rotary Spray Head is a sanitary cleaning device of the rotating fan spray type for permanent installation that provides a cleaning pattern from 180° - 360°. The machine is completely self-cleaning when installed in its self-draining position (see page 9). All product contact surfaces are AISI 316 stainless steel (or better corrosion vice).

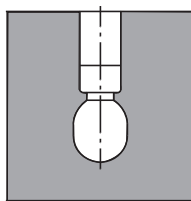
The cleaning device is lubricated by the cleaning media. No oil, grease or other lubricants are used.

The Alfa Laval Toftejorg Rotary Spray Head is designed for use in food and dairy processing applications. It may be used in reactors, mixing/processing tanks, spray dryers and other process equipment with a volume from 0.1 – 50 m<sup>3</sup> (22 - 10,998 US gallons) and storage tanks up to 125 m<sup>3</sup> (27496 US gallons). For larger volumes, multiple Alfa Laval Toftejorg Rotary Spray Heads may be applied.

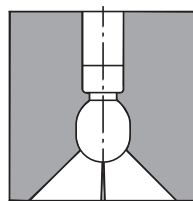
Application assistance and optimal position recommendation is available.

The flow of the cleaning media causes the spray head of the Alfa Laval Toftejorg Rotary Spray Head to rotate, with fans laying out a swirling pattern throughout the vessel. This generates a vibrating impact and cascading flow that covers all internal surfaces of the tank or reactor. The device's self-cleaning feature is achieved by directing the cleaning media through the rotating bearing and onto the neck of the elongated spray head. With its double ball race design, the Alfa Laval Toftejorg MultiMidget og MultiMagnum can be installed in any angle.

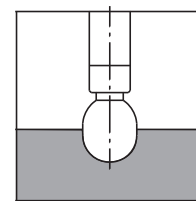
#### Spray Pattern



360°



270°

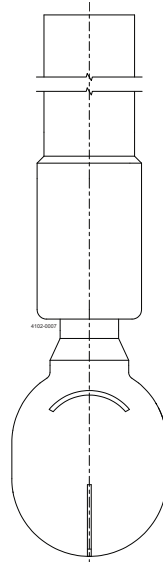


180°D



### 4.2 General Installation Instructions

---



Self draining position

**Warning:**



Recommended installation position:

Due to the double ball bearing, the Alfa Laval Toftejorg MultiMidget and MutiMagnum can be installed in any angle. The unit is self-drainable when positioned vertical (upright or upside down).

It is recommended to install a filter with mesh size 250  $\mu\text{m}$  (0.01") in the supply line to avoid particles, scale etc from clogging the inside of the Alfa Laval Toftejorg Rotary Spray Head.

**Before installation, all supply lines and valves must be thoroughly flushed** to remove remains from welding, grinding dust, scale and other foreign matter. During handling and installation treat the machine with care in order not to damage the fine surface of the machine.

**Note:** The machine shall be installed in accordance with national regulations for safety and other relevant regulations and standards. In EU-countries the complete system must fulfill the EU-Machine Directive and depending of application, the EU-Pressure Equipment Directive and other relevant Directives and shall be CE-marked before it is set into operation.

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### 4.3 General Safety Precautions

---

The Alfa Laval Toftejorg Rotary Spray Head is intended for use inside a tank only, and must not be operated in open air or when the tank is open.

**Warning:**



Precautions shall be made to prevent starting the cleaning operation, while personnel are inside the tank or otherwise can be hit by water jets from the cleaner head.

## 5 Operation

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### 5.1 Normal Operation

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#### Cleaning Media

Use only media compatible with Stainless Steel AISI 316/316L and SAF 2205. Normal detergents, moderate solutions of acids and alkalis are acceptable. Aggressive chemicals, excessive concentrations of chemicals at elevated temperatures, as well as certain solvents hydrochlorides should be avoided. If in doubt contact your local Alfa Laval sales office.

#### Pressure

Please make sure that the connections are correctly mounted before opening of the washing valve. Apply pressure gradually to avoid hydraulic shocks, which might stress mechanical parts in the Alfa Laval Toftejorg Rotary Spray Head cleaner. Max pressure difference is 3.0 bar.

#### Draining using compressed air

If the machine is drained using compressed air, then the compressed air pressure must not cause the machine to rotate. Draining should always be done inside the tank.

#### Steam cleaning

If steam cleaning is done through the machine, the steam pressure must not cause the machine to rotate.

#### Temperature

The maximum recommended cleaning fluid temperature is 95°C. The maximum recommended steam temperature is 140°C. The maximum ambient temperature is 140°C.

#### After use cleaning

After use flush the machine with fresh water. Cleaning media should never be allowed to dry or settle in the system.

### 5.2 Safety precautions

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The Alfa Laval Toftejorg Rotary Spray Head is intended for use inside a tank only, and must not be operated in open air or when the tank is open.

**Warning:**



Hot chemicals and steam under pressure may be used for cleaning and sterilizing. Protect against scalding and burning. Never tamper with or try to open clamps or other connections while system is in operation. Make sure that system is depressurized and drained before disassembly.

The cleaning jets impinging the tank surface are a source of noise. Depending on pressure and distance to the tank walls, noise level may reach up to 85 dB.

**Warning:**



Tanks may contain poisonous/hazardous products or products which represent an environmental or safety risk. Never open tank and dismount the machine without checking previous tank contents and necessary precautions.

*In case of extensive machine wear, the machine is to be replaced, as it is not possible to repair Alfa Laval Toftejorg Rotary Spray Head machines.*

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### 6.1 Service - Recommended Service Intervals

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Inspection every 500 working hours. After 2000 working hours: inspection every 200 hours.

A service consists of:

0. At a pressure of 0.3 bar open a hatch in the tank to verify rotation and liquid fans are emerging from all slots. ATTENTION: Use only pure water at normal temperature for safety reasons.

If needed proceed to 1).

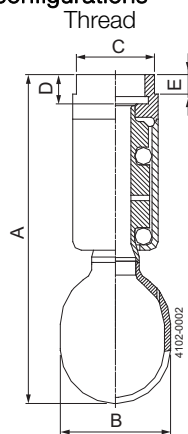
1. Uninstall the machine.
  2. Visual inspection for foreign objects. Remove any objects and clean before rotation verification.
  3. Rotation verification by hand for free rotation.
  4. Reinstall machine.
  5. Fill in the Service Log.
-

## 7 Technical Data

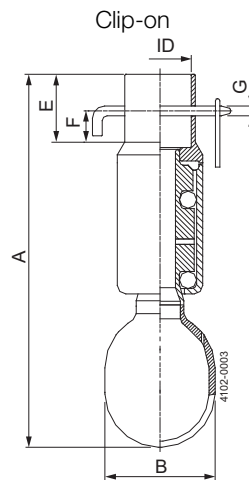
### 7.1 Alfa Laval Toftejorg MultiMidget

|                             |  |                     |
|-----------------------------|--|---------------------|
| Weight of machine:          | Thread and clip-on: 0.50 kg. Weld-on: 0.90kg |                     |
| Working pressure:           | 1-3 bar                                      |                     |
| Recommended inlet pressure: | 2 bar  |                     |
| Working temperature max.:   | 95°C (200°F)                                 |                     |
| Ambient temperature max.:   | 140°C (284°F)                                |                     |
| Wetting radius:             | Max 3 m                                      |                     |
| Impact cleaning radius:     | Max effective 1.4 m                          |                     |
| Materials:                  | inlet connections:                           | 1.4401 (316)        |
|                             | bearing race parts:                          | SAF 2205 (UNS31803) |
|                             | balls:                                       | AISI 316            |
|                             | head:  | 1.4404 (AISI 316L)  |
| Lubricant:                  | Self-lubricating with the cleaning fluid     |                     |
| Connections:                | 1/2" or 3/4" Rp (BSP) or NPT thread          |                     |
|                             | Clip-on: 1" ISO2037                          |                     |
|                             | Weld-on: 1" ISO2037 or DN25 DIN11850-R2      |                     |

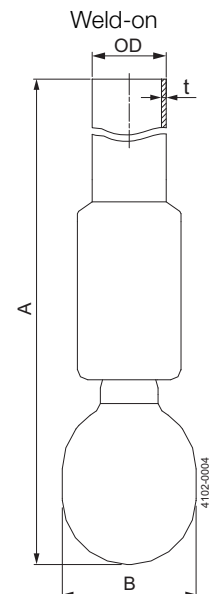
#### Standard configurations



TH  
1/2" Rp (BSP)  
3/4" Rp (BSP)  
1/2" NPT  
3/4" NPT



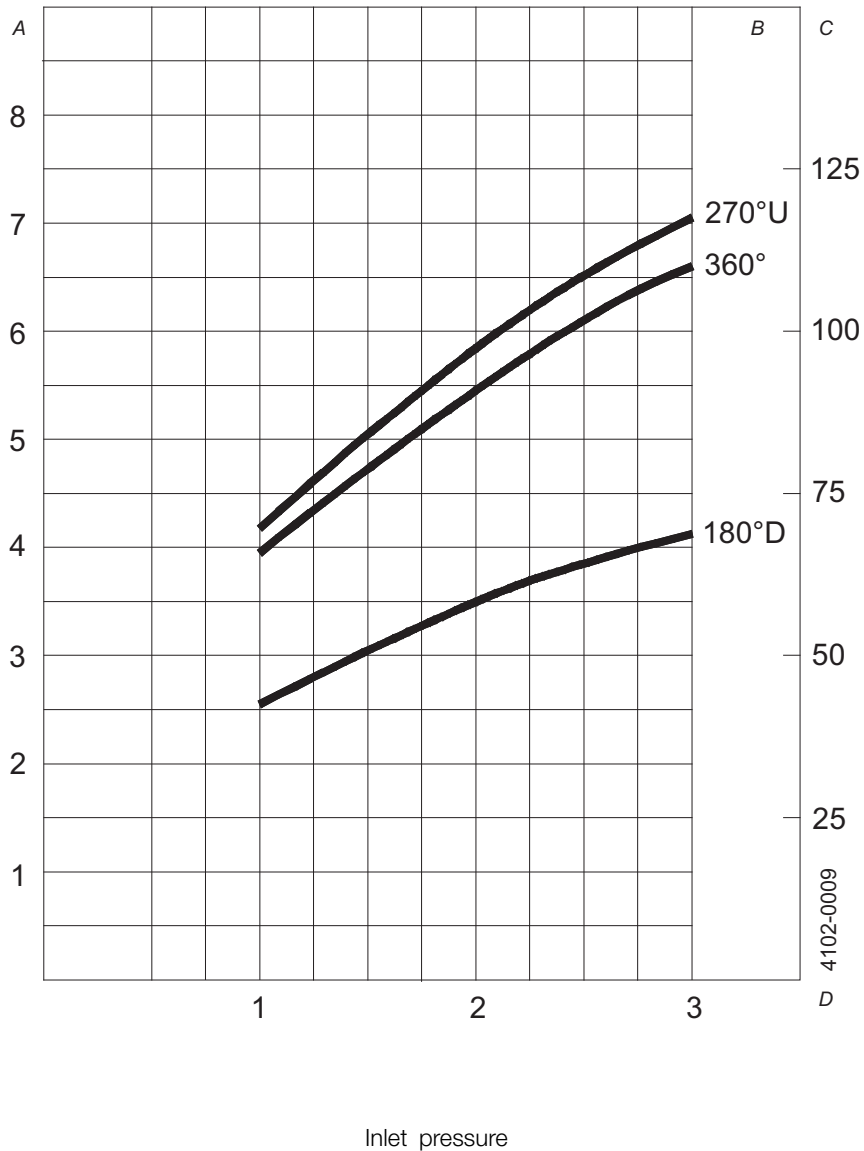
ID  
ISO: ø25.3



OD x t  
ISO: ø25 x 1.6 mm  
DIN Range 2: ø29 x 1.5 mm

| Type    | A                     | B   | C  | D                   | E                   | F  | G    |
|---------|-----------------------|-----|----|---------------------|---------------------|----|------|
| Thread  | 137(BSP),<br>150(NPT) | ø45 | 32 | 12(BSP),<br>25(NPT) | 9(BSP)<br>22.5(NPT) |    |      |
| Clip-on | 155                   | ø45 |    |                     |                     | 15 | ø4.2 |
| Weld-on | 500                   | ø45 |    |                     |                     |    |      |

Flow rate)



A: m<sup>3</sup>/h

B: machine configuration

C: l/min

D: bar

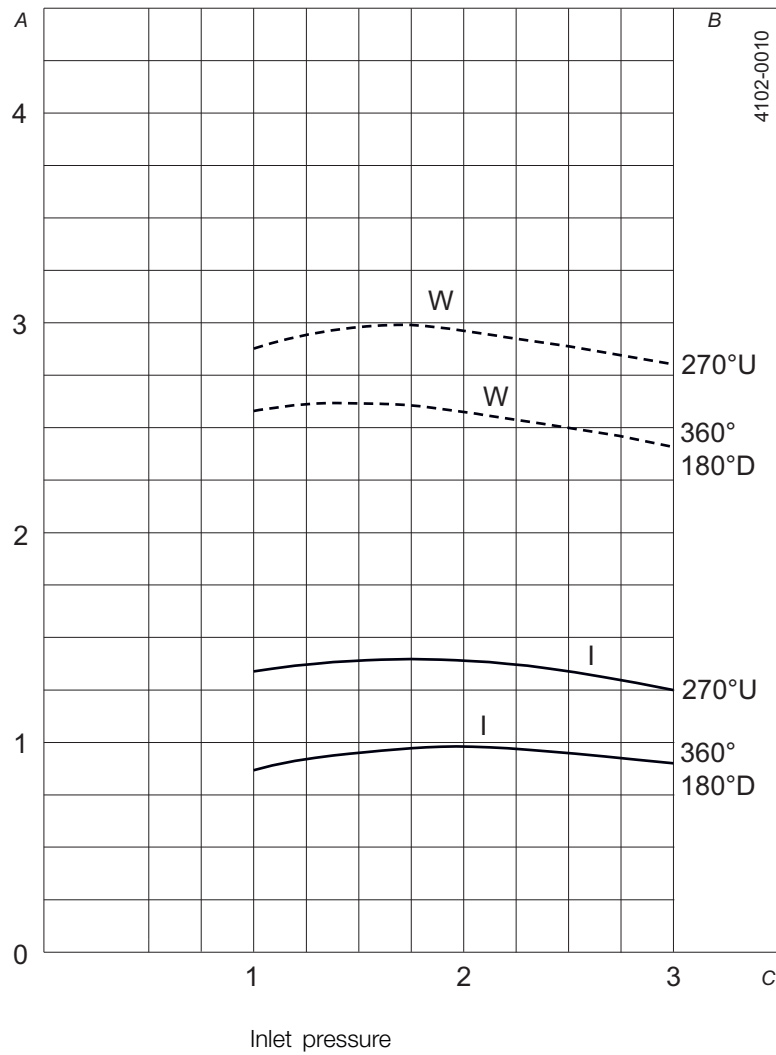
For Clip-on models, the flow rate is approximately 0.5 m<sup>3</sup>/h higher.

**Note:** The inlet pressure is measured immediately before the machine inlet. To achieve the performance indicated in the curves, the pressure drop in the supply lines between pump and machine must be considered.

## 7 Technical Data

### Throw length

W: Wetting  
I: Impact cleaning



A: m

B: machine configuration

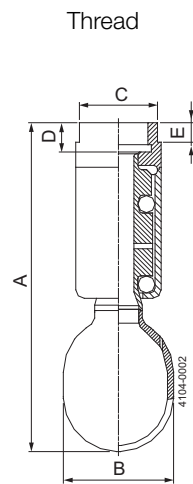
C: bar

**Note:** The inlet pressure is measured immediately before the machine inlet. To achieve the performance indicated in the curves, the pressure drop in the supply lines between pump and machine must be considered.

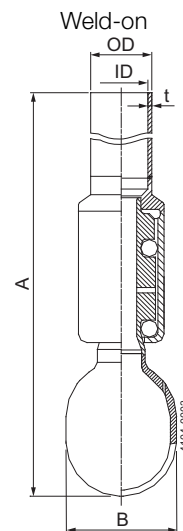
7.2 Alfa Laval Toftejorg MultiMagnum

|                             |  |                     |
|-----------------------------|--|---------------------|
| Weight of machine:          | Thread and clip-on: 0.90 kg. Weld-on: 2.5 kg |                     |
| Working pressure:           | 1-3 bar                                      |                     |
| Recommended inlet pressure: | 2 bar  |                     |
| Working temperature max.:   | 95°C (200°F)                                 |                     |
| Ambient temperature max.:   | 140°C (284°F)                                |                     |
| Wetting radius:             | Max 3 m                                      |                     |
| Impact cleaning radius:     | Max effective 2 m                            |                     |
| Materials:                  | Inlet connections:                           | 1.4401 (316)        |
|                             | bearing race parts:                          | SAF 2205 (UNS31803) |
|                             | balls:                                       | AISI 316            |
|                             | head:  | 1.4404 (AISI 316L)  |
| Lubricant:                  | Self-lubricating with the cleaning fluid     |                     |
| Connections:                | 1 1/4" Rp (BSP) or NPT thread                |                     |
|                             | Weld-on: 1 1/2" ISO2037 or DN40 DIN11850-R2  |                     |

Standard Configurations



TH  
1 1/4" Rp (BSP)  
1 1/4" npt



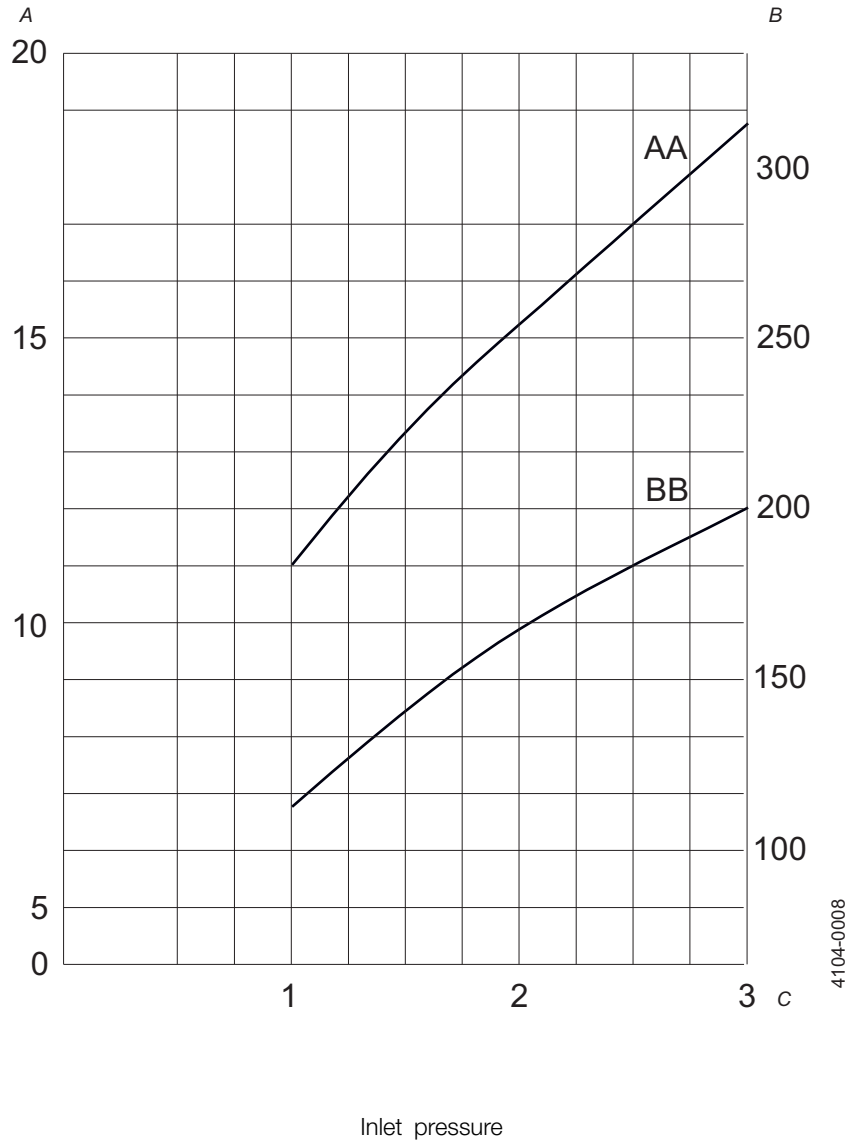
OD x t  
ISO: ø38 x 1.6 mm  
DIN Range 2: ø41 x 1.5 mm

| Type    | A    | B   | C  | D  | E  |
|---------|------|-----|----|----|----|
| Thread  | 183  | ø65 | 46 | 16 | 15 |
| Weld-on | 1000 | ø65 |    |    |    |

# 7 Technical Data

Flow rate)

AA: 360° 270°UP  
BB: 180°



A: m³/h

B: l/min

C: bar

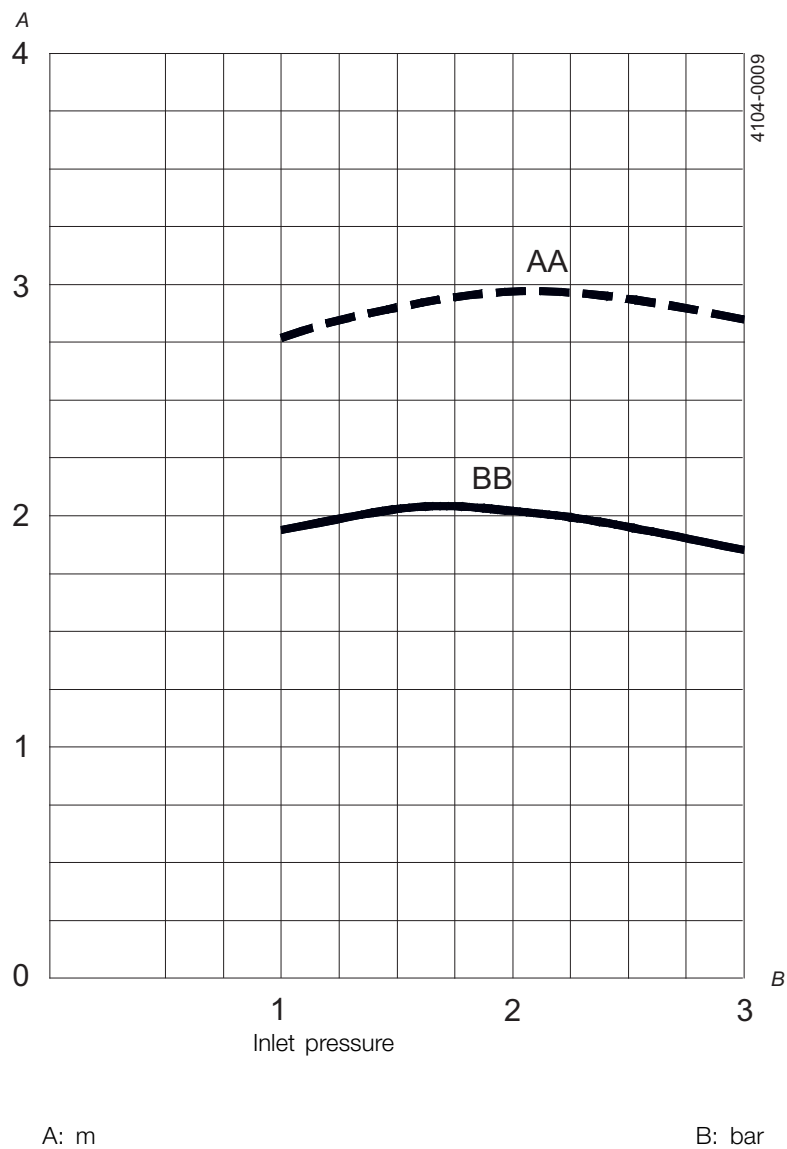
For Clip-on models, the flow rate is approximately 0.5 m³/h higher.

**Note:** The inlet pressure is measured immediately before the machine inlet. To achieve the performance indicated in the curves, the pressure drop in the supply lines between pump and machine must be considered.



Throw length

AA = Wetting. BB = Impact cleaning  
 A: 360°, 270° UP, 180° Down  
 B: 360°, 270° UP, 180° Down



**Note:** The inlet pressure is measured immediately before the machine inlet. To achieve the performance indicated in the curves, the pressure drop in the supply lines between pump and machine must be considered.

## 8 Product Programme

This manual covers the product programme for Alfa Laval Toftejorg MultiMidget and MultiMagnum.  
For the different types of Alfa Laval Toftejorg MultiMidgets and MultiMagnums available, please see the following pages.

### 8.1 Product Programme

#### Alfa Laval Toftejorg MultiMidget, Clip-on

Surface finish: Semi bright

|                  | Clip-on<br>OD25, 1" ISO2037 |  |  |  |  |
|------------------|-----------------------------|--|--|--|--|
| Spray pattern    | Stainless steel             |  |  |  |  |
|                  |                             |  |  |  |  |
| 360°             | TE10M106                    |  |  |  |  |
| 180° Down        |                             |  |  |  |  |
| 270° Up          | TE10B136                    |  |  |  |  |
| 220° up low flow |                             |  |  |  |  |

#### Alfa Laval Toftejorg MultiMidget, Weld-on

Surface finish: Semi bright

|               |                | Weld-on<br>OD25, 1" ISO2037 | Weld-on<br>DN25, DIN 11850-R2 |  |  |  |  |
|---------------|----------------|-----------------------------|-------------------------------|--|--|--|--|
| Spray pattern | Height<br>(mm) | Stainless steel             | Stainless steel               |  |  |  |  |
|               |                |                             |                               |  |  |  |  |
| 360°          | 500            | TE10M200                    | TE10M201                      |  |  |  |  |
| 180° Down     | 500            | TE10M220                    | TE10M221                      |  |  |  |  |
| 270° Up       | 500            | TE10M230                    | TE10M231                      |  |  |  |  |

#### Alfa Laval Toftejorg MultiMidget, Thread

Surface finish: Semi bright

|               | Thread-on<br>½" BSP | Thread-on<br>½" NPT | Thread-on<br>½" BSP | Thread-on<br>½" NPT |
|---------------|---------------------|---------------------|---------------------|---------------------|
| Spray pattern | Stainless steel     | Stainless steel     | Stainless steel     | Stainless steel     |
|               |                     |                     |                     |                     |
| 360°          | TE10M000            | TE10M002            | TE10M001            | TE10M003            |
| 180° Down     | TE10M020            | TE10M022            | TE10M021            | TE10M023            |
| 270° Up       | TE10M030            | TE10M032            | TE10M031            | TE10M033            |

## 8 Product Programme

This manual covers the product programme for Alfa Laval Toftejorg MultiMidget and MultiMagnum.  
For the different types of Alfa Laval Toftejorg MultiMidgets and MultiMagnums available, please see the following pages.

### Alfa Laval Toftejorg MultiMagnum, Weld-on

Surface finish: Semi bright

|               |                | Weld-on<br>OD38, 1½" ISO2037 | Weld-on<br>DN40, DIN 11850-R2 |  |  |  |  |
|---------------|----------------|------------------------------|-------------------------------|--|--|--|--|
| Spray pattern | Height<br>(mm) | Stainless steel              | Stainless steel               |  |  |  |  |
|               |                |                              |                               |  |  |  |  |
| 360°          | 1000           | TE11M200                     | TE11M201                      |  |  |  |  |
| 180° Down     | 1000           | TE11M220                     | TE11M221                      |  |  |  |  |
| 270° Up       | 1000           | TE11M230                     | TE11M231                      |  |  |  |  |

### Alfa Laval Toftejorg MultiMagnum, Thread

Surface finish: Semi bright

|               | Thread-on<br>1 1/4" BSP | Thread-on<br>1 1/4" NPT |  |  |  |  |
|---------------|-------------------------|-------------------------|--|--|--|--|
| Spray pattern | Stainless steel         | Stainless steel         |  |  |  |  |
|               |                         |                         |  |  |  |  |
| 360°          | TE11M000                | TE11M002                |  |  |  |  |
| 180° Down     | TE11M020                | TE11M022                |  |  |  |  |
| 270° Up       | TE11M030                | TE11M032                |  |  |  |  |

## 9 General Information

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### 9.1 Service & Repair

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Upon every return of a product, no matter if for modifications or repair, it is necessary to contact your local Alfa Laval office to guarantee a quick execution of your request.

You will receive instructions regarding the return procedure from your local Alfa Laval office. Be sure to follow the instructions closely.

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### 9.2 How to contact Alfa Laval Kolding A/S

---

For further information please feel free to contact:

**Alfa Laval Kolding A/S**

31, Albuen - DK 6000 Kolding - Denmark

Registration number: 30938011

Tel switchboard: +45 79 32 22 00 - Fax switchboard: +45 79 32 25 80

[www.toftejorg.com](http://www.toftejorg.com), [www.alfalaval.dk](http://www.alfalaval.dk) - [info.dk@alfalaval.com](mailto:info.dk@alfalaval.com)

Contact details for all countries are continually updated on our websites

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**How to contact Alfa Laval**

Contact details for all countries are continually updated on our website.

Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information directly.

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