

# Product Range

Company Profile

Sales Brochures

Technical Specifications

**WILA**

INNOVATION - DRIVEN BY PEOPLE

## Company Profile

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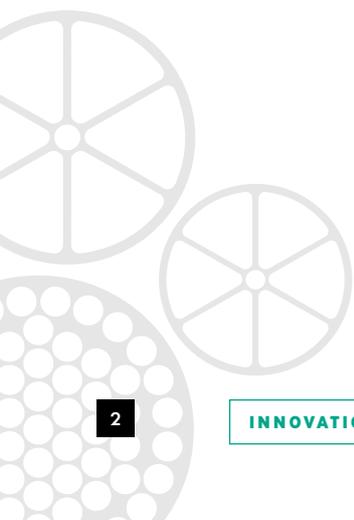
## Sales Brochures

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## Technical Specifications

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# Process equipment for the food industry

INNOVATION - DRIVEN BY PEOPLE

**WILA**

# Wila contributes to better food production

Wila is guided and inspired by our mission: to contribute to better food production. We strive to make better food production accessible for a larger population by producing more suitable, more innovative, and more sustainable components and units for the food and beverage industry.

## Building upon a heritage of innovation

In 1998, Wila was founded by Jette and Lars, and since then Wila has expanded year by year by meeting the customers at eye level. Wila is today recognised as a proud producer of tubular heat exchangers, tanks, complete units for the food processing industry and as one of the world's leading producers of membrane housings.

Innovation is solidly rooted in our company DNA – based on years and years of steady craftsmanship, product development and industry competences and the belief, that only continuous improvement and innovation can enable us to stay at the forefront of our industry and help us create competitive advantages for our customers. Innovation is embedded in our culture. We nurture, motivate, and appreciate innovative behaviour. Our brand promise encapsulates this very nicely – it's all about "innovation driven by people".

We have an entire team of experienced people waiting for an opportunity to help your business.

For more information about how we can help your business, please use our contact form here or contact:



**Steen Nordmark**  
CCO

Phone: +45 4041 5402  
Mail: nordmark@wila.dk

# WILA

**WILA A/S**  
Mads Clausens Vej 14  
DK-8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
[www.wila.dk](http://www.wila.dk)



## Creating value

Today, Wila is recognised as being a key supplier and partner within the food and beverage industry. Our customer base consists of the global leaders within this industry. We know their pains and gains, and the increasingly demanding challenges they face. And we create value by helping them overcome these challenges.

We know that there is no room for delays or errors. That's why we focus on ensuring our customers' competitiveness through industry benchmark lead times, delivery accuracy and highest quality standards.

We know that our customers need to get it right the first time. That is why we continuously spar and challenge our customers when co-creating products or discussing product design and product application.

We know that all projects are unique. That's why we make it easy for our customers to make tailor-made solutions in cooperation with us.

Ultimately, we deliver stainless steel components and equipment, but we also provide security. The security, that we will keep our promise and that you can sleep comfortably, knowing we will meet your needs.



## Products and services

With our mission: to contribute to better food production, Wila develops and manufactures technical solutions for the food and beverage industry. We are well-known for our solutions, all of which have been developed for specific cases and requirements. We always apply best practice and advanced expertise, and our standards are very high. Our strength is to enter into partnerships with our customers to ensure the most unique, innovative and optimum solutions.

We are experts in the field of membrane housings, tubular heat exchangers, tanks, and complete units. We supply these products for major parts of the food and beverage industry, and we develop solutions for some of the most advanced lines of business. We use state-of-the-art techniques and technologies in our production and are at the cutting edge of innovation and new thinking in terms of the market as well as in terms of our knowledge of products. We have some great facilities at our disposal, and we can match your technical and quality-related requirements when it comes to hygiene and production safety.



***“We take pride in every delivery and task. From development and construction to delivery safety and punctuality.”***

Steen Nordmark, CCO

# Industries

**Constantly focusing on innovation, Wila plays an important role in the production of a large range of foods and beverage products. We supply equipment, tanks, or components in stainless steel. We have standard solution, but as mentioned earlier, we also provide tailormade solutions to fit your needs.**

Every day we cooperate with the food industry regarding strong and efficient solutions for day-to-day production. That's why we have innovated and developed solutions based on our unique knowledge and know-how about the specific areas in which we operate like:

- Dairy
- Beverage
- Confectionery
- Brewery
- Savory

#### **Ready to be a part of your tasks and solutions**

We are experts in complete units for the majority of the food industry and our solutions have been created in close collaboration with some of the most prominent players in the market. We can do so because we have some of the best facilities at our disposal and we can match your technical and quality-oriented demands to hygiene, quality, and production safety.

Our solutions have been tested and are ready to be incorporated in your production. We are more than happy to assist you with your specifications, adjustments, and project design.

***“Our solutions have been tested and are ready to be incorporated in your production. We are more than happy to assist you with your specifications, adjustments, and project design.”***



***“We produce process equipment for the global food and beverage industry. We base our business on local workplaces and networking.”***

Steen Nordmark, CCO



# Products and solutions

**Stainless steel is the starting point for all our products and is included everywhere at Wila. We have a continuous production of finished and semi-finished products in all shapes and sizes, which we mainly supply to the food industry. Wila's machine park ranges from the completely modern, advanced, and highly automated systems to machines that are operated manually and thus require high-quality craftsmanship.**

## Tubular heat exchangers

Tubular heat exchangers are highly used in the food and beverage industry and in connection with many applications such as CIP units. In the food and beverage industry tubular heat exchangers are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. A tubular heat exchanger may also be used to heat or cool products prior to filling, drying, concentration or other processes.

Wila's focus on our customers' needs and on optimisation has resulted in a range of heat exchangers in two shell diameters and two pressure ratings under a main category named "THE" (Tubular Heat Exchanger). These heat exchangers are the optimum ones for most projects, but other types of exchangers and exchangers in other sizes are available from us as well.

### **Wila tubular heat exchangers benefits:**

- Top quality and hygienic design
- Flexible customer-specific designs available

The choice of tubular heat exchanger relates to the particular product for which it is going to be used, and this may revolve around particle size or viscosity. Complex and demanding products require tubular heat exchangers with a more complex design to achieve the correct heat transfer.

Connections are as standard for heavy duty SSH clamp rings or stronger, though other types and sizes are available as well.

### **The following constitutes the various main types:**

- THE Concentric product connections with dairy surface finish.
- THEA Concentric product connections with 3A-compliant surface finish.
- THEX Eccentric product connections with dairy surface finish.
- THEXA Eccentric product connections with 3A-compliant surface finish.



## Membrane housing

In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

### Wila membrane housings benefits:

- Top quality and hygienic design
- Flexible customer-specific designs available

Our base range membrane housings are designed for 4", 6" and 8" membranes, 1 to 6 elements, with pressure rating up to 64 bar. The 4" and 6" housings' blind and permeate ends consist of standard dairy clamp ferrule connections while a slightly modified aseptic clamp assembly is used for the 8" low pressure housing. Both higher pressure 8" housing versions have O-ring sealed dished ends with a special circlip-like locking ring for easy membrane replacement and cleaning.

The membrane housings' feed and retentate side ports are made by collaring the housing shell, which gives smooth and easy to clean openings. All materials, welds, grinding and other finish is of the highest dairy standards. Optionally, due to their design, optimised manufacturing processes and high quality, the membrane housings can be delivered with a 3A approval.

*"Wila has proven to be flexible and capable of delivering in the projects we have had together and will therefore always be a relevant supplier in the future."*

ARLA FOODS amba



## ATD – Anti Telescopic Device

In membrane filtration systems wheel-like discs with built-in connections are normally used between spiral membrane elements, both to connect the permeate tubes and to prevent membrane-telescopic movement potentially caused by the hydraulic forces exerted on the feed end.

### Wila ATDs benefits:

- Strong design to prevent membrane-telescoping
- Maximum flow area to maximise the membrane surface area available for production
- Maximum opening around permeate pipe for effective membrane cleaning

In recent years we have optimised the design of our stainless steel ATDs and we have eliminated any need for welding, thus making the ATDs more uniform and, most importantly, more hygienic and easier to clean. Additionally, a more rounded and open design of the connection tube makes camera inspections, if needed, much easier than on other models on the market.



*“Our relationship with Wila has grown steadily over the years. Wila has a design department and production facilities that several of our suppliers do not have, and that makes a big difference for us. At the same time, they also take responsibility for their products.”*

FF Engineering

## Wila's capabilities

Wila's design and engineering services range from complete projects to assisting our customers in achieving their goals. In the last 20 plus years we have been successful in working closely with food manufacturers and leading suppliers of process equipment for the very demanding food industry, which has resulted in highly competitive quality products and solutions with added value for our customers. Our extensive in-house expertise includes innovative manufacturing processes and design deeply rooted in solid engineering.

Contact our sales and construction team  
on email: [sales@wila.dk](mailto:sales@wila.dk)



If you involve us early on in your process, we will act as a focused, innovative and solution-oriented sounding board for your ideas. Through a systematic and analytical approach, we will make a value-adding contribution to your project.

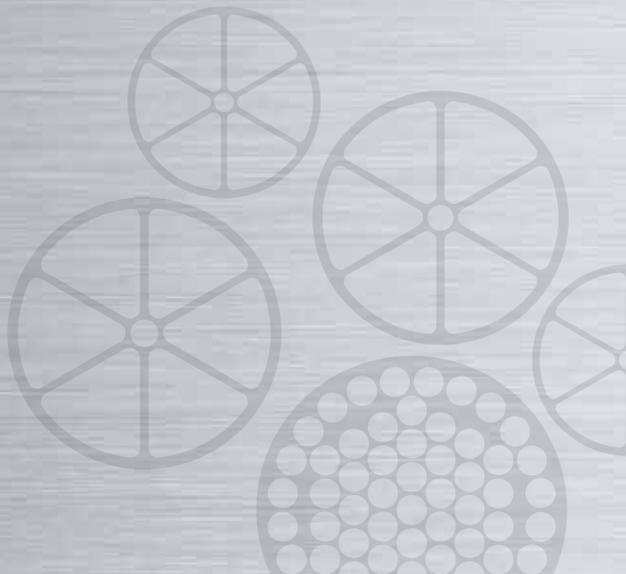
# WILA

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

[mail@wila.dk](mailto:mail@wila.dk)  
[www.wila.dk](http://www.wila.dk)

VAT number: 27230350







# Sales Brochure

Tubular Heat Exchangers

INNOVATION – DRIVEN BY PEOPLE



# TUBULAR HEAT EXCHANGERS

MEDIUM AND HIGH PRESSURE



*Approved for food production  
- Hygienic design - CIP (Clean in Place) - High quality*

## About Wila

Wila develops and manufactures technical solutions for the food and beverage industry. We are well known for our solutions, all of which have been developed for specific cases and requirements. We always apply best practice and advanced expertise, and our standards are very high. Our strength is to enter into partnerships with our customers to ensure the most unique, innovative and optimum solutions.



We are experts in the field of membrane housings, tubular heat exchangers, tanks and complete units. We supply these products for major parts of the food industry, and we develop solutions for some of the most advanced lines of business. We use state-of-the-art techniques and technologies in our production and are at the cutting edge of innovation and new thinking in terms of the market as well as in terms of our knowledge of products. We live up to these things because we have some great facilities at our disposal, and we can match your technical and quality-related requirements when it comes to hygiene and production safety.

## Ready to work with your production line

We have the facilities, the know-how and the quality assurance systems to develop and manufacture stainless steel products, equipment's and plants that meet your requirements. And we have the right people to handle the job for you from its implementation to the finished delivery.

*Our series of products and components have been tested and are ready to be incorporated into your production. We will be pleased to assist you with your specifications, adjustments and project design.*



## Tubular heat exchangers

Tubular heat exchangers are highly used in the food and beverage industry and in connection with many applications such as CIP units. In the food and beverage industry tubular heat exchangers are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. A tubular heat exchanger may also be used to heat or cool products prior to filling, drying, concentration or other processes.

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Wila tubular heat exchangers benefits:

- Top quality and hygienic design
- Flexible customer-specific designs available

The choice of tubular heat exchanger relates to the particular product for which it is going to be used, and this may revolve around particle size or viscosity. Complex and demanding products require tubular heat exchangers with a complex design to achieve the correct heat transfer. Our engineering team are ready to support you with your requirements.

## Base shell size data

| Shell | Max pressure | Max flow              | Max effect | Service connections | Product connections |
|-------|--------------|-----------------------|------------|---------------------|---------------------|
| Ø129  | 40 bar(g)    | 80 m <sup>3</sup> /h  | 800 kW     | From 1.5" to DN50   | From 2.5" to DN125  |
| Ø209  | 40 bar(g)    | 200 m <sup>3</sup> /h | 2000 kW    | From 1.5" to DN50   | From 4" to DN150    |
| Ø133  | 60 bar(g)    | 70 m <sup>3</sup> /h  | 750 kW     | From 1.5" to DN50   | From 2.5" to DN100  |
| Ø209  | 60 bar(g)    | 140 m <sup>3</sup> /h | 1400 kW    | From 1.5" to DN50   | From 3" to DN100    |

*Connections are as standard for heavy duty SSH clamp rings or stronger, though other types and sizes are available as well.*

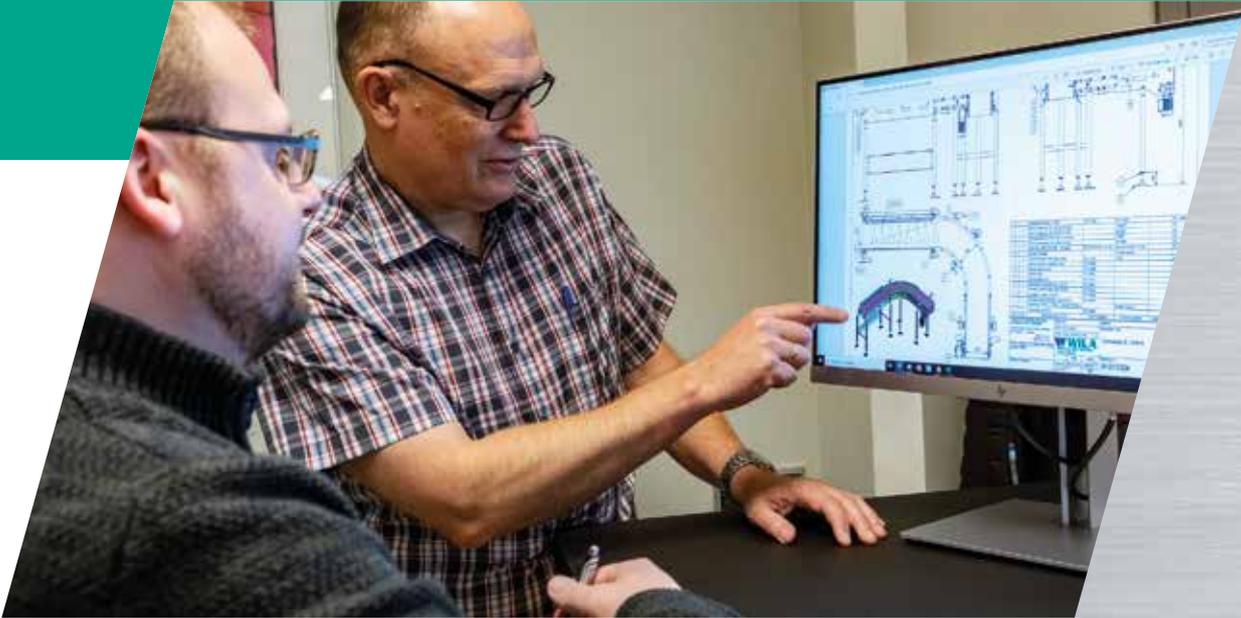
The following constitutes the various main types:

- THE Concentric product connections with dairy surface finish
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## Wila's capabilities

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If you involve us early on in your process, we will act as a focused, innovative and solution-oriented sounding board for your ideas. Through a systematic and analytical approach, we will make a value-adding contribution to your project.

# Technical Specifications

Tubular Heat Exchangers - THE - 40 bar  
Tubular Heat Exchangers - THEX - 40 bar



# TUBULAR HEAT EXCHANGER

## DETAILED OVERVIEW FOR TYPE 'THE' MEDIUM PRESSURE - 40 BAR



*Dimensions overview for type Ø129 & Ø209 - 40 bar[g]*

Tubular heat exchangers are highly used in the food and beverage industry and in connection with many applications such as CIP units. In the food and beverage industry tubular heat exchangers are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. A tubular heat exchanger may also be used to heat or cool products prior to filling, drying, concentration or other processes.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Tubular Heat Exchangers manufactured by Wila A/S under the category "THE" hereinafter referred to as "Heat Exchanger". A Tubular Heat Exchanger is by design, two Pressure chambers in a combined housing.

The inner chamber consists of both ends and the insides of all tubes in the tube bundle, hereinafter referred to as "Tube side" or "Product side".

The outer pressure chamber consists of the outside of the tube bundle, and the inside of the exchangers outer shell, hereinafter referred to as "Shell side" or "Service side".

The Heat Exchanger is intended for a fluid to fluid heat transfer, **either** cooling or heating and is made from EN.1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The tube side is suitable for food stuff fluids, such as dairy products and juices. The outside surface roughness is  $\leq 1,6\mu\text{m}$  and the internal tube side surface roughness is  $\leq 0,8\mu\text{m}$ . **All fluid media in use with the Heat exchanger, must be compatible with EN.1.4404 (AISI 316L) Stainless Steel.**

The 40 BAR (580 PSI), maximum product side pressure, heat exchanger design is based on either a  $\varnothing 129 \times 2\text{mm}$  shell or a  $\varnothing 209 \times 3\text{mm}$  shell. Other sizes and pressure ratings are also available.

## Regulations and Directives

The heat exchanger is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The Heat Exchanger is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. Pressure test certificate
4. User Manual

As Supplement the following can be provided:

5. 3.1 material certificates according to EN 10204
6. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## THE group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with model codes and main dimensions can be found on the following pages.

THE-xx-xxx-40                      Concentric heat exchanger for up to 40 bar tube side pressure  
 -xx-                      indicates the heat transfer surface area      0.5\*\* - 1 - 2 - 3 - 4\* - 6\* - 8\* m<sup>2</sup>  
 -xxx-                      indicates the outer diameter of the shell      Ø129 mm or 209 mm  
 \*Only Ø209 mm shell size      \*\*Only Ø129 mm shell size

### Tube side (P1 and P2) connections for the groups are:

| Shell size's | Tube side connection size's             |                                |
|--------------|---|--------------------------------|
| Ø129mm       | DN125 - DN100 - DN80 - DN65             | in accordance with DIN 32676-A |
| Ø129mm       | 4" (Ø101.6) - 3" (Ø76.1) - 2.5" (Ø63.5) | in accordance with ISO 2852-2  |
| Ø209mm       | DN150 - DN125 - DN100                   | in accordance with DIN 32676-A |
| Ø209mm       | 4" (Ø101.6)                             | in accordance with ISO 2852-2  |

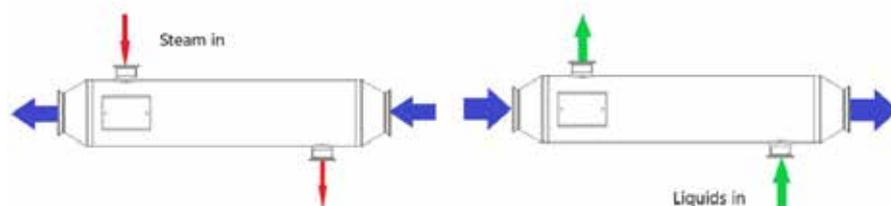
### Shell side (S1 and S2) connections, both Ø129 and Ø209, for the groups are:

DN50 - DN40    in accordance with DIN 32676-A  
 2" (Ø51) - 1.5" (Ø38)                                      in accordance with ISO 2852-2

For both tube and shell sides other connection types and sizes are available.

## Connections

Always follow your fitting supplier guidelines and local legislations. Depending on the connection size either SH or SSH strong clamp rings (or similar) are recommended. For steam connections the outlet should always be at the lowest point. For liquids, the outlet should be at the highest point for better air venting.



## Steam pressure limits

The heat exchanger's shell side maximum pressure and temperature are respectively 20 bar[g] and 70°C for all regular fluids such as cold and hot water. However, these limits vary for steam:

1. For Heat Exchanger sizes 0.5m<sup>2</sup> to 3m<sup>2</sup> these limits are respectively 6 bar[g] and 165°C
2. For Heat Exchanger sizes 4m<sup>2</sup> to 6m<sup>2</sup> these limits are respectively 3 bar[g] and 144°C
3. For Heat Exchanger sizes 8m<sup>2</sup> these limits are respectively 2.3 bar[g] and 136°C

**Temperature and pressure limits must be respected at all times !**

## Data table and nameplate

The following data can be found on the customer drawing for each Heat Exchanger:  
 Connection sizes, weight and total length can also be found on the drawing.

| Design data table      |    | Tube side           | Shell side | Unit   |
|------------------------|----|---------------------|------------|--------|
| Max. Pressure          | PS |                     |            | bar(g) |
| Max. steam pressure    |    |                     |            | bar(g) |
| Max. steam temperature |    |                     |            | °C     |
| Max. Temperature       | TS |                     |            | °C     |
| Volume (approx.)       | V  |                     |            | Liter  |
| Test pressure          | PT |                     |            | bar(g) |
| Fluid group            | 2  | Non-dangerous fluid |            |        |

**Each unit must only be used for cooling or heating, never both !**

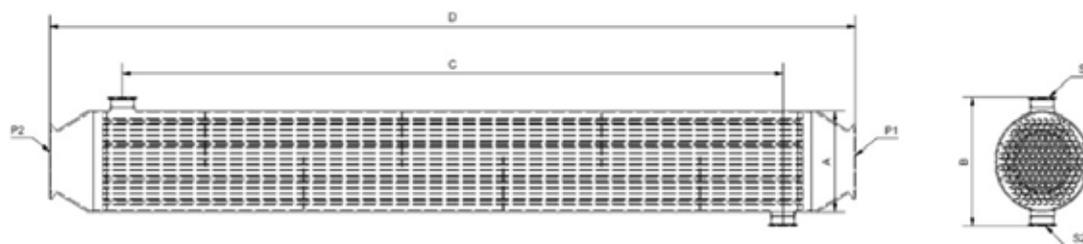
This pressure vessel is manufactured in accordance with the EUROPEAN PARLIAMENT AND THE COUNCILS DIRECTIVE - PED:2014/68 - article 4.3 OF 15/5 2014.

The following data can be found on the nameplate for each Heat Exchanger:

|  |  |   |
|--|--|---|
|  |  | Date:   |
| Serial No.:                              |  | Fluid group:                                  |
| Drawing No.:                             |  | Type:   |
| Customer No.:                            |  |   |
| Shell - if steam max ____ barg           | Tube   |   |
| / Temp. min/max [°C]                     | /  |   |
| Max. pressure [barg]                     |  |   |
| Mads Clausensvej 14<br>DK-8600 Silkeborg | Tel. +45 86 80 08 44<br>Fax. +45 86 80 08 43 | Homepage: www.wila.dk<br>E-mail: mail@wila.dk |

**Note:**

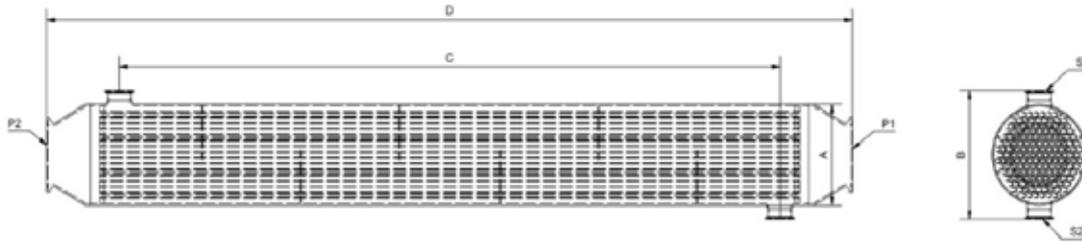
*In the following group tables 'Number of pipes' is for all the pipes running parallel inside the shell.*



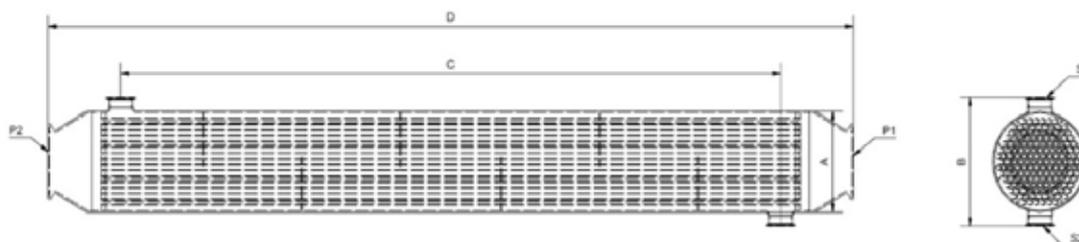
| THE-.5-129-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|-------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-.5-129-125-51 | W-015485       | DN125                                  | Ø51   | Ø129  | 186 | 130 | 316 | 61              |
| THE-.5-129-100-51 | W-015484       | DN100                                  | Ø51   | Ø129  | 186 | 130 | 354 | 61              |
| THE-.5-129-101-51 | W-015483       | Ø101.6                                 | Ø51   | Ø129  | 186 | 130 | 350 | 61              |
| THE-.5-129-080-51 | W-015482       | DN80                                   | Ø51   | Ø129  | 186 | 130 | 372 | 61              |
| THE-.5-129-076-51 | W-015481       | Ø76.1                                  | Ø51   | Ø129  | 186 | 130 | 396 | 61              |
| THE-.5-129-065-51 | W-015480       | DN65                                   | Ø51   | Ø129  | 186 | 130 | 400 | 61              |
| THE-.5-129-063-51 | W-015479       | Ø63.5                                  | Ø51   | Ø129  | 186 | 130 | 418 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-.5-129-125-38 | W-021158       | DN125                                  | Ø38   | Ø129  | 186 | 130 | 316 | 61              |
| THE-.5-129-100-38 | W-021157       | DN100                                  | Ø38   | Ø129  | 186 | 130 | 354 | 61              |
| THE-.5-129-101-38 | W-021156       | Ø101.6                                 | Ø38   | Ø129  | 186 | 130 | 350 | 61              |
| THE-.5-129-080-38 | W-021155       | DN80                                   | Ø38   | Ø129  | 186 | 130 | 372 | 61              |
| THE-.5-129-076-38 | W-021154       | Ø76.1                                  | Ø38   | Ø129  | 186 | 130 | 396 | 61              |
| THE-.5-129-065-38 | W-021153       | DN65                                   | Ø38   | Ø129  | 186 | 130 | 400 | 61              |
| THE-.5-129-063-38 | W-021152       | Ø63.5                                  | Ø38   | Ø129  | 186 | 130 | 418 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-.5-129-125-50 | W-021151       | DN125                                  | DN50  | Ø129  | 186 | 130 | 316 | 61              |
| THE-.5-129-100-50 | W-021150       | DN100                                  | DN50  | Ø129  | 186 | 130 | 354 | 61              |
| THE-.5-129-101-50 | W-021149       | Ø101.6                                 | DN50  | Ø129  | 186 | 130 | 350 | 61              |
| THE-.5-129-080-50 | W-021148       | DN80                                   | DN50  | Ø129  | 186 | 130 | 372 | 61              |
| THE-.5-129-076-50 | W-021147       | Ø76.1                                  | DN50  | Ø129  | 186 | 130 | 396 | 61              |
| THE-.5-129-065-50 | W-021146       | DN65                                   | DN50  | Ø129  | 186 | 130 | 400 | 61              |
| THE-.5-129-063-50 | W-021145       | Ø63.5                                  | DN50  | Ø129  | 186 | 130 | 418 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-.5-129-125-40 | W-021144       | DN125                                  | DN40  | Ø129  | 186 | 130 | 316 | 61              |
| THE-.5-129-100-40 | W-021143       | DN100                                  | DN40  | Ø129  | 186 | 130 | 354 | 61              |
| THE-.5-129-101-40 | W-021142       | Ø101.6                                 | DN40  | Ø129  | 186 | 130 | 350 | 61              |
| THE-.5-129-080-40 | W-021141       | DN80                                   | DN40  | Ø129  | 186 | 130 | 372 | 61              |
| THE-.5-129-076-40 | W-021140       | Ø76.1                                  | DN40  | Ø129  | 186 | 130 | 396 | 61              |
| THE-.5-129-065-40 | W-021139       | DN65                                   | DN40  | Ø129  | 186 | 130 | 400 | 61              |
| THE-.5-129-063-40 | W-021138       | Ø63.5                                  | DN40  | Ø129  | 186 | 130 | 418 | 61              |



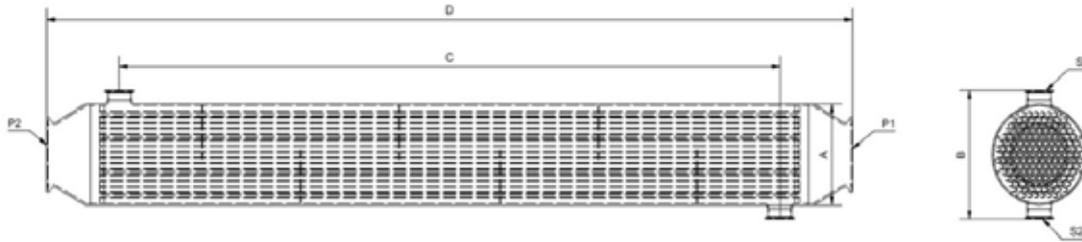
| THE-01-129-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|-------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-01-129-125-51 | W-015492       | DN125                                  | Ø51   | Ø129  | 186 | 380 | 566 | 61              |
| THE-01-129-100-51 | W-015491       | DN100                                  | Ø51   | Ø129  | 186 | 380 | 604 | 61              |
| THE-01-129-101-51 | W-015490       | Ø101.6                                 | Ø51   | Ø129  | 186 | 380 | 600 | 61              |
| THE-01-129-080-51 | W-015489       | DN80                                   | Ø51   | Ø129  | 186 | 380 | 622 | 61              |
| THE-01-129-076-51 | W-015488       | Ø76.1                                  | Ø51   | Ø129  | 186 | 380 | 646 | 61              |
| THE-01-129-065-51 | W-015487       | DN65                                   | Ø51   | Ø129  | 186 | 380 | 650 | 61              |
| THE-01-129-063-51 | W-015486       | Ø63.5                                  | Ø51   | Ø129  | 186 | 380 | 668 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-01-129-125-38 | W-021137       | DN125                                  | Ø38   | Ø129  | 186 | 380 | 566 | 61              |
| THE-01-129-100-38 | W-021136       | DN100                                  | Ø38   | Ø129  | 186 | 380 | 604 | 61              |
| THE-01-129-101-38 | W-021135       | Ø101.6                                 | Ø38   | Ø129  | 186 | 380 | 600 | 61              |
| THE-01-129-080-38 | W-021134       | DN80                                   | Ø38   | Ø129  | 186 | 380 | 622 | 61              |
| THE-01-129-076-38 | W-015841       | Ø76.1                                  | Ø38   | Ø129  | 186 | 380 | 646 | 61              |
| THE-01-129-065-38 | W-021132       | DN65                                   | Ø38   | Ø129  | 186 | 380 | 650 | 61              |
| THE-01-129-063-38 | W-021131       | Ø63.5                                  | Ø38   | Ø129  | 186 | 380 | 668 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-01-129-125-50 | W-021130       | DN125                                  | DN50  | Ø129  | 186 | 380 | 566 | 61              |
| THE-01-129-100-50 | W-016839       | DN100                                  | DN50  | Ø129  | 186 | 380 | 604 | 61              |
| THE-01-129-101-50 | W-021128       | Ø101.6                                 | DN50  | Ø129  | 186 | 380 | 600 | 61              |
| THE-01-129-080-50 | W-021127       | DN80                                   | DN50  | Ø129  | 186 | 380 | 622 | 61              |
| THE-01-129-076-50 | W-021126       | Ø76.1                                  | DN50  | Ø129  | 186 | 380 | 646 | 61              |
| THE-01-129-065-50 | W-018074       | DN65                                   | DN50  | Ø129  | 186 | 380 | 650 | 61              |
| THE-01-129-063-50 | W-021124       | Ø63.5                                  | DN50  | Ø129  | 186 | 380 | 668 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-01-129-125-40 | W-021123       | DN125                                  | DN40  | Ø129  | 186 | 380 | 566 | 61              |
| THE-01-129-100-40 | W-021122       | DN100                                  | DN40  | Ø129  | 186 | 380 | 604 | 61              |
| THE-01-129-101-40 | W-021121       | Ø101.6                                 | DN40  | Ø129  | 186 | 380 | 600 | 61              |
| THE-01-129-080-40 | W-021120       | DN80                                   | DN40  | Ø129  | 186 | 380 | 622 | 61              |
| THE-01-129-076-40 | W-021119       | Ø76.1                                  | DN40  | Ø129  | 186 | 380 | 646 | 61              |
| THE-01-129-065-40 | W-021118       | DN65                                   | DN40  | Ø129  | 186 | 380 | 650 | 61              |
| THE-01-129-063-40 | W-021117       | Ø63.5                                  | DN40  | Ø129  | 186 | 380 | 668 | 61              |



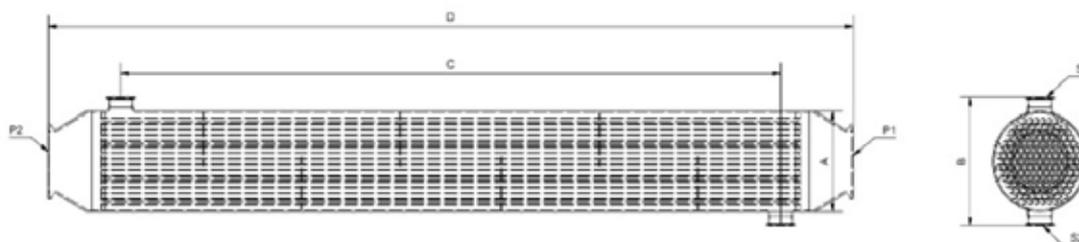
| THE-02-129-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |      |                 |
|-------------------|----------------|--|-------|---|-----|-----|------|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |      |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THE-02-129-125-51 | W-015535       | DN125                                  | Ø51   | Ø129  | 186 | 870 | 1046 | 61              |
| THE-02-129-100-51 | W-015534       | DN100                                  | Ø51   | Ø129  | 186 | 870 | 1084 | 61              |
| THE-02-129-101-51 | W-014115       | Ø101.6                                 | Ø51   | Ø129  | 186 | 870 | 1080 | 61              |
| THE-02-129-080-51 | W-015627       | DN80                                   | Ø51   | Ø129  | 186 | 870 | 1102 | 61              |
| THE-02-129-076-51 | W-015626       | Ø76.1                                  | Ø51   | Ø129  | 186 | 870 | 1126 | 61              |
| THE-02-129-065-51 | W-015625       | DN65                                   | Ø51   | Ø129  | 186 | 870 | 1130 | 61              |
| THE-02-129-063-51 | W-015624       | Ø63.5                                  | Ø51   | Ø129  | 186 | 870 | 1148 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THE-02-129-125-38 | W-021116       | DN125                                  | Ø38   | Ø129  | 186 | 870 | 1046 | 61              |
| THE-02-129-100-38 | W-021115       | DN100                                  | Ø38   | Ø129  | 186 | 870 | 1084 | 61              |
| THE-02-129-101-38 | W-021114       | Ø101.6                                 | Ø38   | Ø129  | 186 | 870 | 1080 | 61              |
| THE-02-129-080-38 | W-021113       | DN80                                   | Ø38   | Ø129  | 186 | 870 | 1102 | 61              |
| THE-02-129-076-38 | W-019448       | Ø76.1                                  | Ø38   | Ø129  | 186 | 870 | 1126 | 61              |
| THE-02-129-065-38 | W-021111       | DN65                                   | Ø38   | Ø129  | 186 | 870 | 1130 | 61              |
| THE-02-129-063-38 | W-021110       | Ø63.5                                  | Ø38   | Ø129  | 186 | 870 | 1148 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THE-02-129-125-50 | W-021018       | DN125                                  | DN50  | Ø129  | 186 | 870 | 1046 | 61              |
| THE-02-129-100-50 | W-015963       | DN100                                  | DN50  | Ø129  | 186 | 870 | 1084 | 61              |
| THE-02-129-101-50 | W-021107       | Ø101.6                                 | DN50  | Ø129  | 186 | 870 | 1080 | 61              |
| THE-02-129-080-50 | W-021106       | DN80                                   | DN50  | Ø129  | 186 | 870 | 1102 | 61              |
| THE-02-129-076-50 | W-021105       | Ø76.1                                  | DN50  | Ø129  | 186 | 870 | 1126 | 61              |
| THE-02-129-065-50 | W-018366       | DN65                                   | DN50  | Ø129  | 186 | 870 | 1130 | 61              |
| THE-02-129-063-50 | W-021103       | Ø63.5                                  | DN50  | Ø129  | 186 | 870 | 1148 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THE-02-129-125-40 | W-021102       | DN125                                  | DN40  | Ø129  | 186 | 870 | 1046 | 61              |
| THE-02-129-100-40 | W-021101       | DN100                                  | DN40  | Ø129  | 186 | 870 | 1084 | 61              |
| THE-02-129-101-40 | W-021100       | Ø101.6                                 | DN40  | Ø129  | 186 | 870 | 1080 | 61              |
| THE-02-129-080-40 | W-021099       | DN80                                   | DN40  | Ø129  | 186 | 870 | 1102 | 61              |
| THE-02-129-076-40 | W-021098       | Ø76.1                                  | DN40  | Ø129  | 186 | 870 | 1126 | 61              |
| THE-02-129-065-40 | W-021097       | DN65                                   | DN40  | Ø129  | 186 | 870 | 1130 | 61              |
| THE-02-129-063-40 | W-021096       | Ø63.5                                  | DN40  | Ø129  | 186 | 870 | 1148 | 61              |



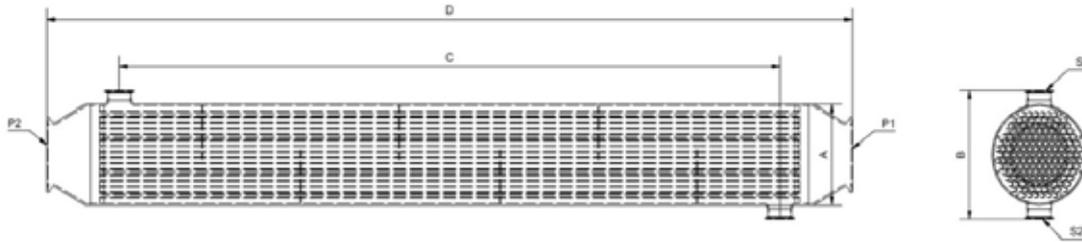
| THE-03-129-40     |                | Maximum pressure / Maximum temperature |       |   |     |      |      |                 |
|-------------------|----------------|--|-------|---|-----|------|------|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |      |      |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-03-129-125-51 | W-015496       | DN125                                  | Ø51   | Ø129  | 186 | 1360 | 1546 | 61              |
| THE-03-129-100-51 | W-015495       | DN100                                  | Ø51   | Ø129  | 186 | 1360 | 1584 | 61              |
| THE-03-129-101-51 | W-015494       | Ø101.6                                 | Ø51   | Ø129  | 186 | 1360 | 1580 | 61              |
| THE-03-129-080-51 | W-015493       | DN80                                   | Ø51   | Ø129  | 186 | 1360 | 1602 | 61              |
| THE-03-129-076-51 | W-014165       | Ø76.1                                  | Ø51   | Ø129  | 186 | 1360 | 1626 | 61              |
| THE-03-129-065-51 | W-015537       | DN65                                   | Ø51   | Ø129  | 186 | 1360 | 1630 | 61              |
| THE-03-129-063-51 | W-015536       | Ø63.5                                  | Ø51   | Ø129  | 186 | 1360 | 1648 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-03-129-125-38 | W-021095       | DN125                                  | Ø38   | Ø129  | 186 | 1360 | 1546 | 61              |
| THE-03-129-100-38 | W-021094       | DN100                                  | Ø38   | Ø129  | 186 | 1360 | 1584 | 61              |
| THE-03-129-101-38 | W-021093       | Ø101.6                                 | Ø38   | Ø129  | 186 | 1360 | 1580 | 61              |
| THE-03-129-080-38 | W-021092       | DN80                                   | Ø38   | Ø129  | 186 | 1360 | 1602 | 61              |
| THE-03-129-076-38 | W-021091       | Ø76.1                                  | Ø38   | Ø129  | 186 | 1360 | 1626 | 61              |
| THE-03-129-065-38 | W-021090       | DN65                                   | Ø38   | Ø129  | 186 | 1360 | 1630 | 61              |
| THE-03-129-063-38 | W-021089       | Ø63.5                                  | Ø38   | Ø129  | 186 | 1360 | 1648 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-03-129-125-50 | W-021088       | DN125                                  | DN50  | Ø129  | 186 | 1360 | 1546 | 61              |
| THE-03-129-100-50 | W-015968       | DN100                                  | DN50  | Ø129  | 186 | 1360 | 1584 | 61              |
| THE-03-129-101-50 | W-021086       | Ø101.6                                 | DN50  | Ø129  | 186 | 1360 | 1580 | 61              |
| THE-03-129-080-50 | W-021085       | DN80                                   | DN50  | Ø129  | 186 | 1360 | 1602 | 61              |
| THE-03-129-076-50 | W-021084       | Ø76.1                                  | DN50  | Ø129  | 186 | 1360 | 1626 | 61              |
| THE-03-129-065-50 | W-015024       | DN65                                   | DN50  | Ø129  | 186 | 1360 | 1630 | 61              |
| THE-03-129-063-50 | W-021082       | Ø63.5                                  | DN50  | Ø129  | 186 | 1360 | 1648 | 61              |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-03-129-125-40 | W-021081       | DN125                                  | DN40  | Ø129  | 186 | 1360 | 1546 | 61              |
| THE-03-129-100-40 | W-021080       | DN100                                  | DN40  | Ø129  | 186 | 1360 | 1584 | 61              |
| THE-03-129-101-40 | W-021079       | Ø101.6                                 | DN40  | Ø129  | 186 | 1360 | 1580 | 61              |
| THE-03-129-080-40 | W-021078       | DN80                                   | DN40  | Ø129  | 186 | 1360 | 1602 | 61              |
| THE-03-129-076-40 | W-021077       | Ø76.1                                  | DN40  | Ø129  | 186 | 1360 | 1626 | 61              |
| THE-03-129-065-40 | W-021076       | DN65                                   | DN40  | Ø129  | 186 | 1360 | 1630 | 61              |
| THE-03-129-063-40 | W-021072       | Ø63.5                                  | DN40  | Ø129  | 186 | 1360 | 1648 | 61              |



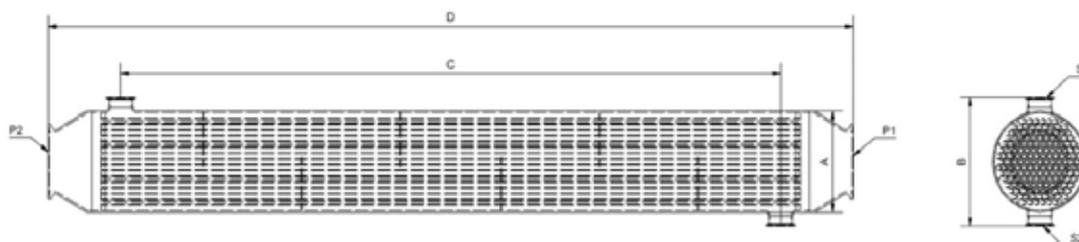
| THE-01-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|-------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-01-209-150-51 | W-015500       | DN150                                  | Ø51   | Ø209  | 266 | 100 | 383 | 163             |
| THE-01-209-125-51 | W-015499       | DN125                                  | Ø51   | Ø209  | 266 | 100 | 427 | 163             |
| THE-01-209-100-51 | W-015498       | DN100                                  | Ø51   | Ø209  | 266 | 100 | 467 | 163             |
| THE-01-209-101-51 | W-015497       | Ø101.6                                 | Ø51   | Ø209  | 266 | 100 | 467 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-01-209-150-38 | W-021236       | DN150                                  | Ø38   | Ø209  | 266 | 100 | 383 | 163             |
| THE-01-209-125-38 | W-021235       | DN125                                  | Ø38   | Ø209  | 266 | 100 | 427 | 163             |
| THE-01-209-100-38 | W-021234       | DN100                                  | Ø38   | Ø209  | 266 | 100 | 467 | 163             |
| THE-01-209-101-38 | W-021233       | Ø101.6                                 | Ø38   | Ø209  | 266 | 100 | 467 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-01-209-150-50 | W-021232       | DN150                                  | DN50  | Ø209  | 266 | 100 | 383 | 163             |
| THE-01-209-125-50 | W-021231       | DN125                                  | DN50  | Ø209  | 266 | 100 | 427 | 163             |
| THE-01-209-100-50 | W-018608       | DN100                                  | DN50  | Ø209  | 266 | 100 | 467 | 163             |
| THE-01-209-101-50 | W-021229       | Ø101.6                                 | DN50  | Ø209  | 266 | 100 | 467 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-01-209-150-40 | W-021228       | DN150                                  | DN40  | Ø209  | 266 | 100 | 383 | 163             |
| THE-01-209-125-40 | W-021227       | DN125                                  | DN40  | Ø209  | 266 | 100 | 427 | 163             |
| THE-01-209-100-40 | W-021226       | DN100                                  | DN40  | Ø209  | 266 | 100 | 467 | 163             |
| THE-01-209-101-40 | W-021225       | Ø101.6                                 | DN40  | Ø209  | 266 | 100 | 467 | 163             |



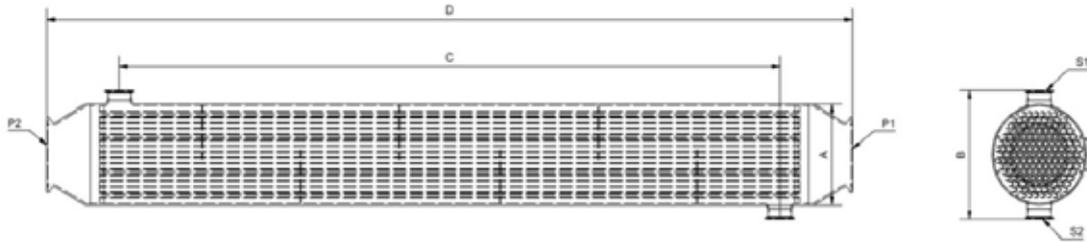
| THE-02-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|-------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-02-209-150-51 | W-015504       | DN150                                  | Ø51   | Ø209  | 266 | 290 | 568 | 163             |
| THE-02-209-125-51 | W-015503       | DN125                                  | Ø51   | Ø209  | 266 | 290 | 612 | 163             |
| THE-02-209-100-51 | W-015502       | DN100                                  | Ø51   | Ø209  | 266 | 290 | 652 | 163             |
| THE-02-209-101-51 | W-015501       | Ø101.6                                 | Ø51   | Ø209  | 266 | 290 | 652 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-02-209-150-38 | W-021224       | DN150                                  | Ø38   | Ø209  | 266 | 290 | 568 | 163             |
| THE-02-209-125-38 | W-021223       | DN125                                  | Ø38   | Ø209  | 266 | 290 | 612 | 163             |
| THE-02-209-100-38 | W-021222       | DN100                                  | Ø38   | Ø209  | 266 | 290 | 652 | 163             |
| THE-02-209-101-38 | W-021221       | Ø101.6                                 | Ø38   | Ø209  | 266 | 290 | 652 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-02-209-150-50 | W-021220       | DN150                                  | DN50  | Ø209  | 266 | 290 | 568 | 163             |
| THE-02-209-125-50 | W-021219       | DN125                                  | DN50  | Ø209  | 266 | 290 | 612 | 163             |
| THE-02-209-100-50 | W-021218       | DN100                                  | DN50  | Ø209  | 266 | 290 | 652 | 163             |
| THE-02-209-101-50 | W-021217       | Ø101.6                                 | DN50  | Ø209  | 266 | 290 | 652 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-02-209-150-40 | W-021216       | DN150                                  | DN40  | Ø209  | 266 | 290 | 568 | 163             |
| THE-02-209-125-40 | W-021215       | DN125                                  | DN40  | Ø209  | 266 | 290 | 612 | 163             |
| THE-02-209-100-40 | W-021214       | DN100                                  | DN40  | Ø209  | 266 | 290 | 652 | 163             |
| THE-02-209-101-40 | W-021213       | Ø101.6                                 | DN40  | Ø209  | 266 | 290 | 652 | 163             |



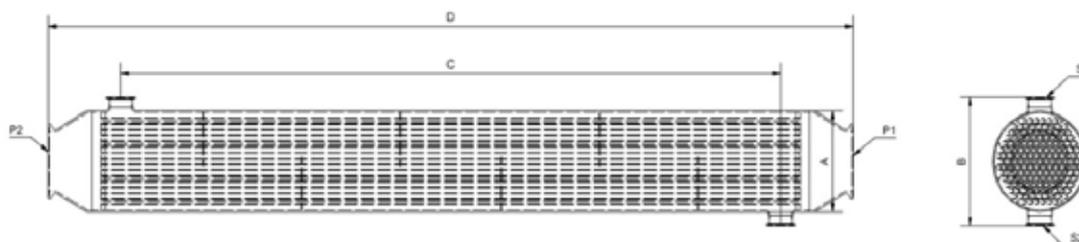
| THE-03-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|-------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-03-209-150-51 | W-015508       | DN150                                  | Ø51   | Ø209  | 266 | 510 | 788 | 163             |
| THE-03-209-125-51 | W-015507       | DN125                                  | Ø51   | Ø209  | 266 | 510 | 832 | 163             |
| THE-03-209-100-51 | W-015506       | DN100                                  | Ø51   | Ø209  | 266 | 510 | 872 | 163             |
| THE-03-209-101-51 | W-015505       | Ø101.6                                 | Ø51   | Ø209  | 266 | 510 | 872 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-03-209-150-38 | W-021212       | DN150                                  | Ø38   | Ø209  | 266 | 510 | 788 | 163             |
| THE-03-209-125-38 | W-021211       | DN125                                  | Ø38   | Ø209  | 266 | 510 | 832 | 163             |
| THE-03-209-100-38 | W-021210       | DN100                                  | Ø38   | Ø209  | 266 | 510 | 872 | 163             |
| THE-03-209-101-38 | W-015633       | Ø101.6                                 | Ø38   | Ø209  | 266 | 510 | 872 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-03-209-150-50 | W-021208       | DN150                                  | DN50  | Ø209  | 266 | 510 | 788 | 163             |
| THE-03-209-125-50 | W-021207       | DN125                                  | DN50  | Ø209  | 266 | 510 | 832 | 163             |
| THE-03-209-100-50 | W-021206       | DN100                                  | DN50  | Ø209  | 266 | 510 | 872 | 163             |
| THE-03-209-101-50 | W-021205       | Ø101.6                                 | DN50  | Ø209  | 266 | 510 | 872 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THE-03-209-150-40 | W-021204       | DN150                                  | DN40  | Ø209  | 266 | 510 | 788 | 163             |
| THE-03-209-125-40 | W-021203       | DN125                                  | DN40  | Ø209  | 266 | 510 | 832 | 163             |
| THE-03-209-100-40 | W-021202       | DN100                                  | DN40  | Ø209  | 266 | 510 | 872 | 163             |
| THE-03-209-101-40 | W-021201       | Ø101.6                                 | DN40  | Ø209  | 266 | 510 | 872 | 163             |



| THE-04-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |      |                 |
|-------------------|----------------|--|-------|---|-----|-----|------|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 3 barg / 144°C |     |     |      |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THE-04-209-150-51 | W-015511       | DN150                                  | Ø51   | Ø209  | 266 | 650 | 935  | 163             |
| THE-04-209-125-51 | W-015510       | DN125                                  | Ø51   | Ø209  | 266 | 650 | 979  | 163             |
| THE-04-209-100-51 | W-015509       | DN100                                  | Ø51   | Ø209  | 266 | 650 | 1019 | 163             |
| THE-04-209-101-51 | W-013662       | Ø101.6                                 | Ø51   | Ø209  | 266 | 650 | 1019 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THE-04-209-150-38 | W-018791       | DN150                                  | Ø38   | Ø209  | 266 | 650 | 935  | 163             |
| THE-04-209-125-38 | W-021199       | DN125                                  | Ø38   | Ø209  | 266 | 650 | 979  | 163             |
| THE-04-209-100-38 | W-021198       | DN100                                  | Ø38   | Ø209  | 266 | 650 | 1019 | 163             |
| THE-04-209-101-38 | W-021197       | Ø101.6                                 | Ø38   | Ø209  | 266 | 650 | 1019 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THE-04-209-150-50 | W-021196       | DN150                                  | DN50  | Ø209  | 266 | 650 | 935  | 163             |
| THE-04-209-125-50 | W-021195       | DN125                                  | DN50  | Ø209  | 266 | 650 | 979  | 163             |
| THE-04-209-100-50 | W-015969       | DN100                                  | DN50  | Ø209  | 266 | 650 | 1019 | 163             |
| THE-04-209-101-50 | W-021193       | Ø101.6                                 | DN50  | Ø209  | 266 | 650 | 1019 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THE-04-209-150-40 | W-021192       | DN150                                  | DN40  | Ø209  | 266 | 650 | 935  | 163             |
| THE-04-209-125-40 | W-021191       | DN125                                  | DN40  | Ø209  | 266 | 650 | 979  | 163             |
| THE-04-209-100-40 | W-021190       | DN100                                  | DN40  | Ø209  | 266 | 650 | 1019 | 163             |
| THE-04-209-101-40 | W-021189       | Ø101.6                                 | DN40  | Ø209  | 266 | 650 | 1019 | 163             |



| THE-06-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |      |      |                 |
|-------------------|----------------|--|-------|---|-----|------|------|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 3 barg / 144°C |     |      |      |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-06-209-150-51 | W-015514       | DN150                                  | Ø51   | Ø209  | 266 | 1030 | 1315 | 163             |
| THE-06-209-125-51 | W-015247       | DN125                                  | Ø51   | Ø209  | 266 | 1030 | 1359 | 163             |
| THE-06-209-100-51 | W-015513       | DN100                                  | Ø51   | Ø209  | 266 | 1030 | 1399 | 163             |
| THE-06-209-101-51 | W-015512       | Ø101.6                                 | Ø51   | Ø209  | 266 | 1030 | 1399 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-06-209-150-38 | W-021188       | DN150                                  | Ø38   | Ø209  | 266 | 1030 | 1315 | 163             |
| THE-06-209-125-38 | W-021187       | DN125                                  | Ø38   | Ø209  | 266 | 1030 | 1359 | 163             |
| THE-06-209-100-38 | W-021186       | DN100                                  | Ø38   | Ø209  | 266 | 1030 | 1399 | 163             |
| THE-06-209-101-38 | W-021185       | Ø101.6                                 | Ø38   | Ø209  | 266 | 1030 | 1399 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-06-209-150-50 | W-021184       | DN150                                  | DN50  | Ø209  | 266 | 1030 | 1315 | 163             |
| THE-06-209-125-50 | W-021183       | DN125                                  | DN50  | Ø209  | 266 | 1030 | 1359 | 163             |
| THE-06-209-100-50 | W-016969       | DN100                                  | DN50  | Ø209  | 266 | 1030 | 1399 | 163             |
| THE-06-209-101-50 | W-021181       | Ø101.6                                 | DN50  | Ø209  | 266 | 1030 | 1399 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-06-209-150-40 | W-021180       | DN150                                  | DN40  | Ø209  | 266 | 1030 | 1315 | 163             |
| THE-06-209-125-40 | W-021179       | DN125                                  | DN40  | Ø209  | 266 | 1030 | 1359 | 163             |
| THE-06-209-100-40 | W-021178       | DN100                                  | DN40  | Ø209  | 266 | 1030 | 1399 | 163             |
| THE-06-209-101-40 | W-021177       | Ø101.6                                 | DN40  | Ø209  | 266 | 1030 | 1399 | 163             |



| THE-08-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |      |      |                 |
|-------------------|----------------|--|-------|---|-----|------|------|-----------------|
|                   |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 2.3 barg / 136°C |     |      |      |                 |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-08-209-150-51 | W-015517       | DN150                                  | Ø51   | Ø209  | 266 | 1450 | 1730 | 163             |
| THE-08-209-125-51 | W-014075       | DN125                                  | Ø51   | Ø209  | 266 | 1450 | 1774 | 163             |
| THE-08-209-100-51 | W-015516       | DN100                                  | Ø51   | Ø209  | 266 | 1450 | 1814 | 163             |
| THE-08-209-101-51 | W-015515       | Ø101.6                                 | Ø51   | Ø209  | 266 | 1450 | 1814 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-08-209-150-38 | W-021176       | DN150                                  | Ø38   | Ø209  | 266 | 1450 | 1730 | 163             |
| THE-08-209-125-38 | W-021175       | DN125                                  | Ø38   | Ø209  | 266 | 1450 | 1774 | 163             |
| THE-08-209-100-38 | W-021174       | DN100                                  | Ø38   | Ø209  | 266 | 1450 | 1814 | 163             |
| THE-08-209-101-38 | W-021173       | Ø101.6                                 | Ø38   | Ø209  | 266 | 1450 | 1814 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-08-209-150-50 | W-021172       | DN150                                  | DN50  | Ø209  | 266 | 1450 | 1730 | 163             |
| THE-08-209-125-50 | W-021171       | DN125                                  | DN50  | Ø209  | 266 | 1450 | 1774 | 163             |
| THE-08-209-100-50 | W-018079       | DN100                                  | DN50  | Ø209  | 266 | 1450 | 1814 | 163             |
| THE-08-209-101-50 | W-021169       | Ø101.6                                 | DN50  | Ø209  | 266 | 1450 | 1814 | 163             |
| Stock number      | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THE-08-209-150-40 | W-021168       | DN150                                  | DN40  | Ø209  | 266 | 1450 | 1730 | 163             |
| THE-08-209-125-40 | W-021167       | DN125                                  | DN40  | Ø209  | 266 | 1450 | 1774 | 163             |
| THE-08-209-100-40 | W-021166       | DN100                                  | DN40  | Ø209  | 266 | 1450 | 1814 | 163             |
| THE-08-209-101-40 | W-021165       | Ø101.6                                 | DN40  | Ø209  | 266 | 1450 | 1814 | 163             |



# TUBULAR HEAT EXCHANGER

## DETAILED OVERVIEW FOR TYPE 'THEX' MEDIUM PRESSURE - 40 BAR



*Dimensions overview for type  $\varnothing 129$  &  $\varnothing 209$  - 40 bar[g]*

Tubular heat exchangers are highly used in the food and beverage industry and in connection with many applications such as CIP units. In the food and beverage industry tubular heat exchangers are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. A tubular heat exchanger may also be used to heat or cool products prior to filling, drying, concentration or other processes.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Tubular Heat Exchangers manufactured by Wila A/S under the category "THEX" hereinafter referred to as "Heat Exchanger". A Tubular Heat Exchanger is by design, two Pressure chambers in a combined housing.

The inner chamber consists of both ends and the insides of all tubes in the tube bundle, hereinafter referred to as "Tube side" or "Product side".

The outer pressure chamber consists of the outside of the tube bundle, and the inside of the exchangers outer shell, hereinafter referred to as "Shell side" or "Service side".

The Heat Exchanger is intended for a fluid to fluid heat transfer, **either** cooling or heating and is made from EN.1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The tube side is suitable for food stuff fluids, such as dairy products and juices. The outside surface roughness is  $\leq 1,6\mu\text{m}$  and the internal tube side surface roughness is  $\leq 0,8\mu\text{m}$ . **All fluid media in use with the Heat exchanger, must be compatible with EN.1.4404 (AISI 316L) Stainless Steel.**

The 40 BAR (580 PSI), maximum product side pressure, heat exchanger design is based on either a  $\varnothing 129 \times 2\text{mm}$  shell or a  $\varnothing 209 \times 3\text{mm}$  shell. Other sizes and pressure ratings are also available.

## Regulations and Directives

The heat exchanger is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The Heat Exchanger is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. Pressure test certificate
4. User Manual

As Supplement the following can be provided:

5. 3.1 material certificates according to EN 10204
6. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## THEX group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with model codes and main dimensions can be found on the following pages.

THEX-xx-xxx-40                      Eccentric heat exchanger for up to 40 bar tube side pressure  
 -xx-                      indicates the heat transfer surface area      0.5\*\* - 1 - 2 - 3 - 4\* - 6\* - 8\* m<sup>2</sup>  
 -xxx-                      indicates the outer diameter of the shell      Ø129 mm or 209 mm  
 \*Only Ø209 mm shell size      \*\*Only Ø129 mm shell size

### Tube side (P1 and P2) connections for the groups are:

| Shell size's | Tube side connection size's |                                |
|--------------|-----------------------------|--------------------------------|
| Ø129mm       | DN100 – DN80                | in accordance with DIN 32676-A |
| Ø129mm       | 4" (Ø101.6) – 3" (Ø76.1)    | in accordance with ISO 2852-2  |
| Ø209mm       | DN150 – DN125 – DN100       | in accordance with DIN 32676-A |
| Ø209mm       | 4" (Ø101.6)                 | in accordance with ISO 2852-2  |

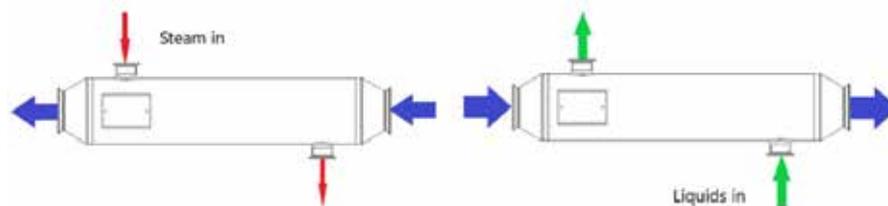
### Shell side (S1 and S2) connections, both Ø129 and Ø209, for the groups are:

|                       |                                |
|-----------------------|--------------------------------|
| DN50 – DN40           | in accordance with DIN 32676-A |
| 2" (Ø51) – 1.5" (Ø38) | in accordance with ISO 2852-2  |

For both tube and shell sides other connection types and sizes are available.

## Connections

Always follow your fitting supplier guidelines and local legislations. Depending on the connection size either SH or SSH strong clamp rings (or similar) are recommended. For steam connections the outlet should always be at the lowest point. For liquids, the outlet should be at the highest point for better air venting.



## Steam pressure limits

The heat exchanger's shell side maximum pressure and temperature are respectively 20 bar[g] and 70°C for all regular fluids such as cold and hot water. However, these limits vary for steam:

1. For Heat Exchanger sizes 0.5m<sup>2</sup> to 3m<sup>2</sup> these limits are respectively 6 bar[g] and 165°C
2. For Heat Exchanger sizes 4m<sup>2</sup> to 6m<sup>2</sup> these limits are respectively 3 bar[g] and 144°C
3. For Heat Exchanger sizes 8m<sup>2</sup> these limits are respectively 2.3 bar[g] and 136°C

**Temperature and pressure limits must be respected at all times !**

## Data table and nameplate

The following data can be found on the customer drawing for each Heat Exchanger:

Connection sizes, weight and total length can also be found on the drawing.

| Design data table   |    | Tube side           | Shell side | Unit   |
|---|----|---------------------|------------|--------|
| Max. Pressure   | PS |                     |            | bar(g) |
| Max. steam pressure   |    |                     |            | bar(g) |
| Max. steam temperature  |    |                     |            | °C     |
| Max. Temperature  | TS |                     |            | °C     |
| Volume (approx.)  | V  |                     |            | Liter  |
| Test pressure   | PT |                     |            | bar(g) |
| Fluid group   | 2  | Non-dangerous fluid |            |        |
| <b>Each unit must only be used for cooling or heating, never both !</b> |    |                     |            |        |

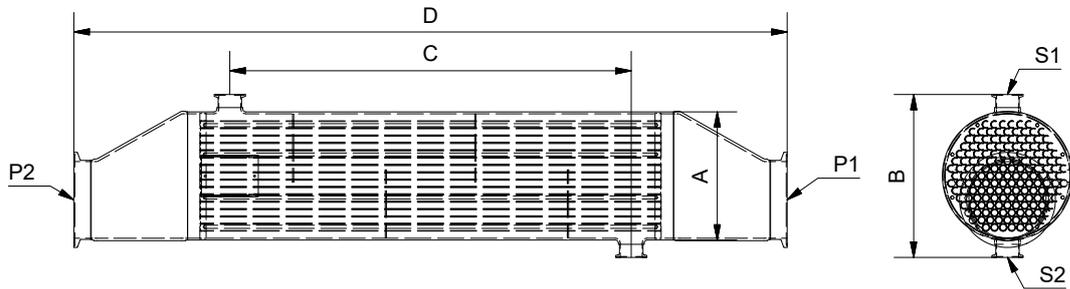
This pressure vessel is manufactured in accordance with the EUROPEAN PARLIAMENT AND THE COUNCILS DIRECTIVE - PED:2014/68 - article 4.3 OF 15/5 2014.

The following data can be found on the nameplate for each Heat Exchanger:

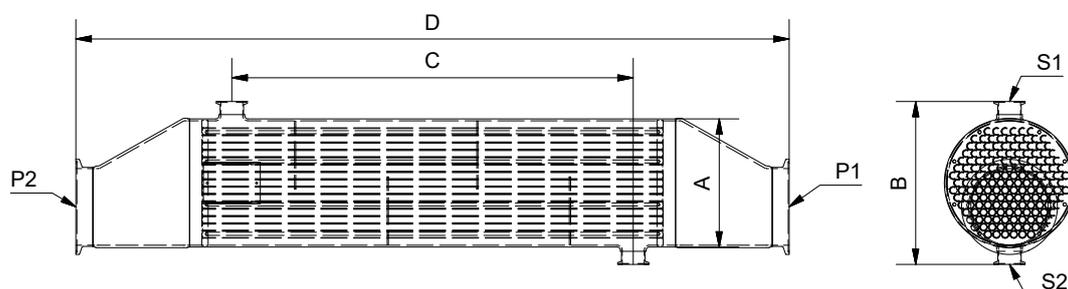
|  |  |   |
|--|--|---|
| <b>WILA</b>                              |  | Date:   |
| Serial No.:                              |  | Fluid group:                                  |
| Drawing No.:                             |  | Type:   |
| Customer No.:                            |  |   |
| Shell - if steam max ____ barg           | Tube   |   |
| / Temp. min/max [°C]                     | /  |   |
| Max. pressure [barg]                     |  |   |
| Mads Clausensvej 14<br>DK-8600 Silkeborg | Tel. +45 86 80 08 44<br>Fax. +45 86 80 08 43 | Homepage: www.wila.dk<br>E-mail: mail@wila.dk |

**Note:**

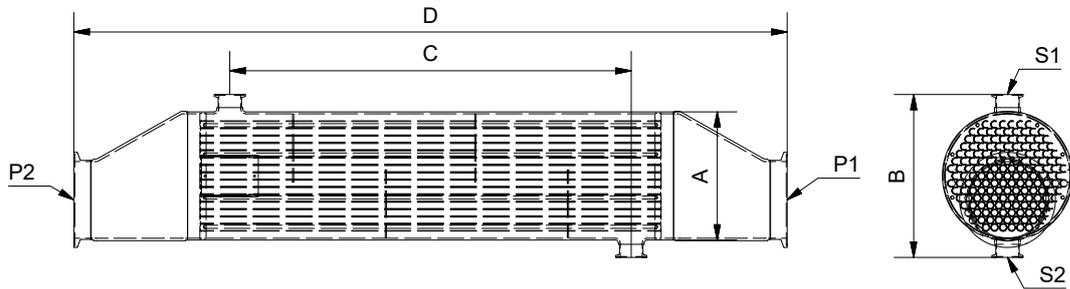
In the following group tables 'Number of pipes' is for all the pipes running parallel inside the shell.



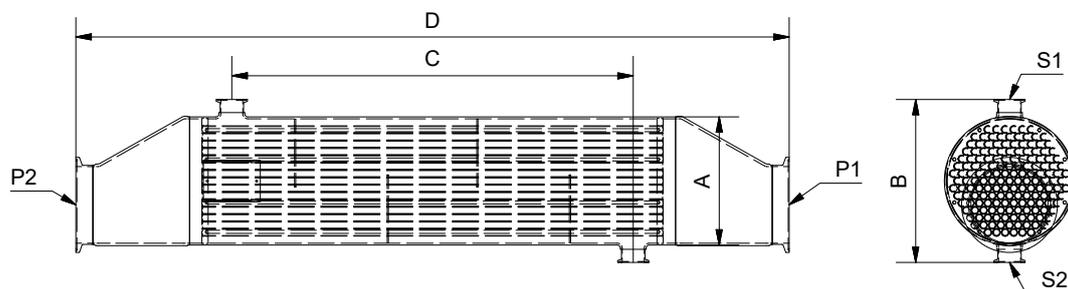
| THEX-.5-129-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|--------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-.5-129-100-51 | W-015891       | DN100                                  | Ø51   | Ø129  | 186 | 130 | 538 | 61              |
| THEX-.5-129-101-51 | W-015890       | Ø101.6                                 | Ø51   | Ø129  | 186 | 130 | 525 | 61              |
| THEX-.5-129-080-51 | W-015889       | DN80                                   | Ø51   | Ø129  | 186 | 130 | 538 | 61              |
| THEX-.5-129-076-51 | W-015888       | Ø76.1                                  | Ø51   | Ø129  | 186 | 130 | 525 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-.5-129-100-38 | W-021448       | DN100                                  | Ø38   | Ø129  | 186 | 130 | 538 | 61              |
| THEX-.5-129-101-38 | W-021447       | Ø101.6                                 | Ø38   | Ø129  | 186 | 130 | 525 | 61              |
| THEX-.5-129-080-38 | W-021446       | DN80                                   | Ø38   | Ø129  | 186 | 130 | 538 | 61              |
| THEX-.5-129-076-38 | W-021445       | Ø76.1                                  | Ø38   | Ø129  | 186 | 130 | 525 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-.5-129-100-50 | W-021444       | DN100                                  | DN50  | Ø129  | 186 | 130 | 538 | 61              |
| THEX-.5-129-101-50 | W-021443       | Ø101.6                                 | DN50  | Ø129  | 186 | 130 | 525 | 61              |
| THEX-.5-129-080-50 | W-021442       | DN80                                   | DN50  | Ø129  | 186 | 130 | 538 | 61              |
| THEX-.5-129-076-50 | W-021441       | Ø76.1                                  | DN50  | Ø129  | 186 | 130 | 525 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-.5-129-100-40 | W-021440       | DN100                                  | DN40  | Ø129  | 186 | 130 | 538 | 61              |
| THEX-.5-129-101-40 | W-021439       | Ø101.6                                 | DN40  | Ø129  | 186 | 130 | 525 | 61              |
| THEX-.5-129-080-40 | W-021438       | DN80                                   | DN40  | Ø129  | 186 | 130 | 538 | 61              |
| THEX-.5-129-076-40 | W-021437       | Ø76.1                                  | DN40  | Ø129  | 186 | 130 | 525 | 61              |



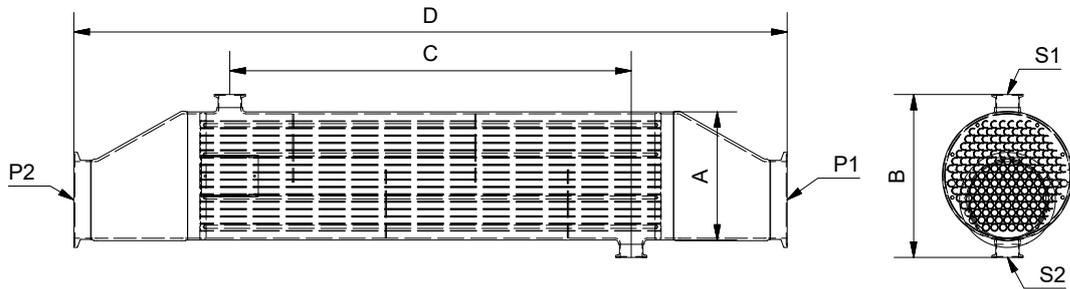
| THEX-01-129-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|--------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-01-129-100-51 | W-015895       | DN100                                  | Ø51   | Ø129  | 186 | 380 | 788 | 61              |
| THEX-01-129-101-51 | W-015894       | Ø101.6                                 | Ø51   | Ø129  | 186 | 380 | 775 | 61              |
| THEX-01-129-080-51 | W-015893       | DN80                                   | Ø51   | Ø129  | 186 | 380 | 788 | 61              |
| THEX-01-129-076-51 | W-015892       | Ø76.1                                  | Ø51   | Ø129  | 186 | 380 | 775 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-01-129-100-38 | W-021436       | DN100                                  | Ø38   | Ø129  | 186 | 380 | 788 | 61              |
| THEX-01-129-101-38 | W-021435       | Ø101.6                                 | Ø38   | Ø129  | 186 | 380 | 775 | 61              |
| THEX-01-129-080-38 | W-021434       | DN80                                   | Ø38   | Ø129  | 186 | 380 | 788 | 61              |
| THEX-01-129-076-38 | W-021433       | Ø76.1                                  | Ø38   | Ø129  | 186 | 380 | 775 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-01-129-100-50 | W-021432       | DN100                                  | DN50  | Ø129  | 186 | 380 | 788 | 61              |
| THEX-01-129-101-50 | W-021431       | Ø101.6                                 | DN50  | Ø129  | 186 | 380 | 775 | 61              |
| THEX-01-129-080-50 | W-021430       | DN80                                   | DN50  | Ø129  | 186 | 380 | 788 | 61              |
| THEX-01-129-076-50 | W-021429       | Ø76.1                                  | DN50  | Ø129  | 186 | 380 | 775 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-01-129-100-40 | W-021428       | DN100                                  | DN40  | Ø129  | 186 | 380 | 788 | 61              |
| THEX-01-129-101-40 | W-021427       | Ø101.6                                 | DN40  | Ø129  | 186 | 380 | 775 | 61              |
| THEX-01-129-080-40 | W-021426       | DN80                                   | DN40  | Ø129  | 186 | 380 | 788 | 61              |
| THEX-01-129-076-40 | W-021425       | Ø76.1                                  | DN40  | Ø129  | 186 | 380 | 775 | 61              |



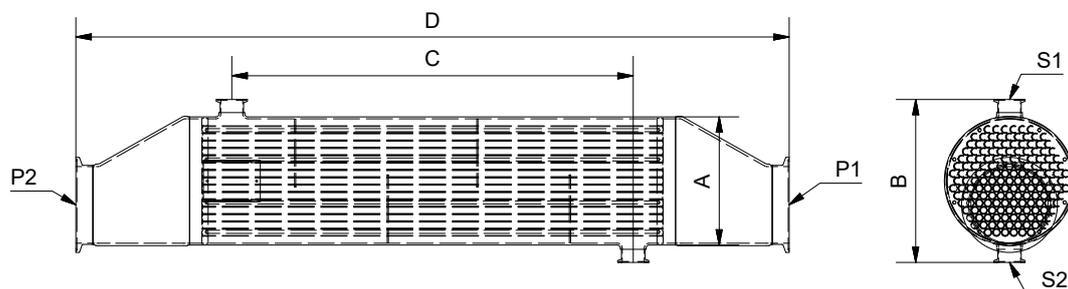
| THEX-02-129-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |      |                 |
|--------------------|----------------|--|-------|---|-----|-----|------|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |      |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-02-129-100-51 | W-015899       | DN100                                  | Ø51   | Ø129  | 186 | 870 | 1268 | 61              |
| THEX-02-129-101-51 | W-015898       | Ø101.6                                 | Ø51   | Ø129  | 186 | 870 | 1255 | 61              |
| THEX-02-129-080-51 | W-015897       | DN80                                   | Ø51   | Ø129  | 186 | 870 | 1268 | 61              |
| THEX-02-129-076-51 | W-015896       | Ø76.1                                  | Ø51   | Ø129  | 186 | 870 | 1255 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-02-129-100-38 | W-021424       | DN100                                  | Ø38   | Ø129  | 186 | 870 | 1268 | 61              |
| THEX-02-129-101-38 | W-018635       | Ø101.6                                 | Ø38   | Ø129  | 186 | 870 | 1255 | 61              |
| THEX-02-129-080-38 | W-021422       | DN80                                   | Ø38   | Ø129  | 186 | 870 | 1268 | 61              |
| THEX-02-129-076-38 | W-018335       | Ø76.1                                  | Ø38   | Ø129  | 186 | 870 | 1255 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-02-129-100-50 | W-021420       | DN100                                  | DN50  | Ø129  | 186 | 870 | 1268 | 61              |
| THEX-02-129-101-50 | W-021419       | Ø101.6                                 | DN50  | Ø129  | 186 | 870 | 1255 | 61              |
| THEX-02-129-080-50 | W-021418       | DN80                                   | DN50  | Ø129  | 186 | 870 | 1268 | 61              |
| THEX-02-129-076-50 | W-021417       | Ø76.1                                  | DN50  | Ø129  | 186 | 870 | 1255 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-02-129-100-40 | W-021416       | DN100                                  | DN40  | Ø129  | 186 | 870 | 1268 | 61              |
| THEX-02-129-101-40 | W-021415       | Ø101.6                                 | DN40  | Ø129  | 186 | 870 | 1255 | 61              |
| THEX-02-129-080-40 | W-021414       | DN80                                   | DN40  | Ø129  | 186 | 870 | 1268 | 61              |
| THEX-02-129-076-40 | W-021413       | Ø76.1                                  | DN40  | Ø129  | 186 | 870 | 1255 | 61              |



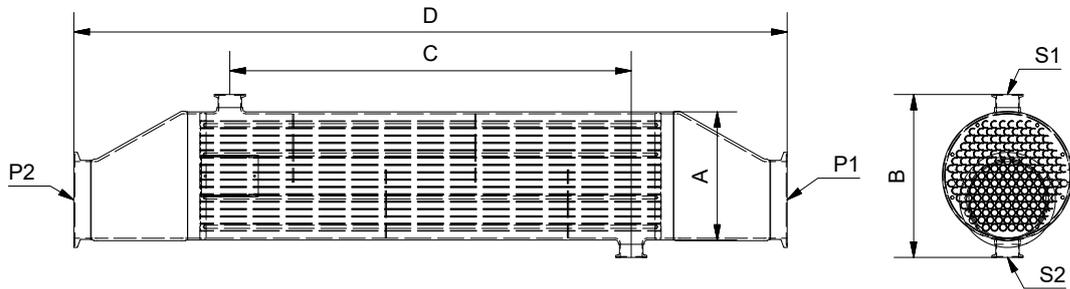
| THEX-03-129-40     |                | Maximum pressure / Maximum temperature |       |   |     |      |      |                 |
|--------------------|----------------|--|-------|---|-----|------|------|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |      |      |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-03-129-100-51 | W-015903       | DN100                                  | Ø51   | Ø129  | 186 | 1360 | 1768 | 61              |
| THEX-03-129-101-51 | W-015902       | Ø101.6                                 | Ø51   | Ø129  | 186 | 1360 | 1755 | 61              |
| THEX-03-129-080-51 | W-015901       | DN80                                   | Ø51   | Ø129  | 186 | 1360 | 1768 | 61              |
| THEX-03-129-076-51 | W-015900       | Ø76.1                                  | Ø51   | Ø129  | 186 | 1360 | 1755 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-03-129-100-38 | W-021412       | DN100                                  | Ø38   | Ø129  | 186 | 1360 | 1768 | 61              |
| THEX-03-129-101-38 | W-021411       | Ø101.6                                 | Ø38   | Ø129  | 186 | 1360 | 1755 | 61              |
| THEX-03-129-080-38 | W-021410       | DN80                                   | Ø38   | Ø129  | 186 | 1360 | 1768 | 61              |
| THEX-03-129-076-38 | W-021409       | Ø76.1                                  | Ø38   | Ø129  | 186 | 1360 | 1755 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-03-129-100-50 | W-021408       | DN100                                  | DN50  | Ø129  | 186 | 1360 | 1768 | 61              |
| THEX-03-129-101-50 | W-021407       | Ø101.6                                 | DN50  | Ø129  | 186 | 1360 | 1755 | 61              |
| THEX-03-129-080-50 | W-021406       | DN80                                   | DN50  | Ø129  | 186 | 1360 | 1768 | 61              |
| THEX-03-129-076-50 | W-021405       | Ø76.1                                  | DN50  | Ø129  | 186 | 1360 | 1755 | 61              |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-03-129-100-40 | W-021404       | DN100                                  | DN40  | Ø129  | 186 | 1360 | 1768 | 61              |
| THEX-03-129-101-40 | W-021403       | Ø101.6                                 | DN40  | Ø129  | 186 | 1360 | 1755 | 61              |
| THEX-03-129-080-40 | W-021402       | DN80                                   | DN40  | Ø129  | 186 | 1360 | 1768 | 61              |
| THEX-03-129-076-40 | W-021401       | Ø76.1                                  | DN40  | Ø129  | 186 | 1360 | 1755 | 61              |



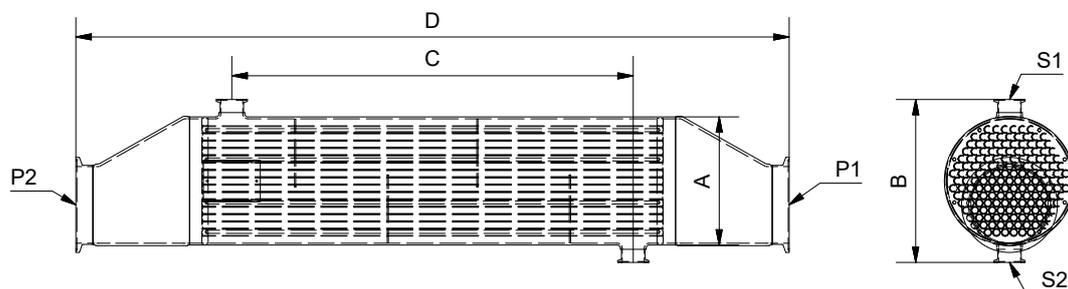
| THEX-01-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|--------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-01-209-150-51 | W-015907       | DN150                                  | Ø51   | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-125-51 | W-015906       | DN125                                  | Ø51   | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-100-51 | W-015905       | DN100                                  | Ø51   | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-101-51 | W-015904       | Ø101.6                                 | Ø51   | Ø209  | 266 | 100 | 590 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-01-209-150-38 | W-021520       | DN150                                  | Ø38   | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-125-38 | W-021519       | DN125                                  | Ø38   | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-100-38 | W-021518       | DN100                                  | Ø38   | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-101-38 | W-019184       | Ø101.6                                 | Ø38   | Ø209  | 266 | 100 | 590 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-01-209-150-50 | W-021516       | DN150                                  | DN50  | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-125-50 | W-021515       | DN125                                  | DN50  | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-100-50 | W-021514       | DN100                                  | DN50  | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-101-50 | W-021513       | Ø101.6                                 | DN50  | Ø209  | 266 | 100 | 590 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-01-209-150-40 | W-021512       | DN150                                  | DN40  | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-125-40 | W-021511       | DN125                                  | DN40  | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-100-40 | W-021510       | DN100                                  | DN40  | Ø209  | 266 | 100 | 603 | 163             |
| THEX-01-209-101-40 | W-021509       | Ø101.6                                 | DN40  | Ø209  | 266 | 100 | 590 | 163             |



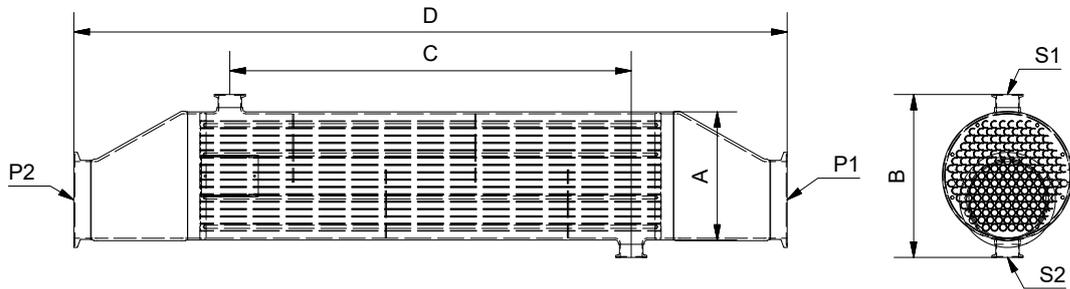
| THEX-02-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |     |                 |
|--------------------|----------------|--|-------|---|-----|-----|-----|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |     |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-02-209-150-51 | W-015911       | DN150                                  | Ø51   | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-125-51 | W-015910       | DN125                                  | Ø51   | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-100-51 | W-015909       | DN100                                  | Ø51   | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-101-51 | W-015908       | Ø101.6                                 | Ø51   | Ø209  | 266 | 290 | 775 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-02-209-150-38 | W-021508       | DN150                                  | Ø38   | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-125-38 | W-021507       | DN125                                  | Ø38   | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-100-38 | W-021506       | DN100                                  | Ø38   | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-101-38 | W-021505       | Ø101.6                                 | Ø38   | Ø209  | 266 | 290 | 775 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-02-209-150-50 | W-021504       | DN150                                  | DN50  | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-125-50 | W-021503       | DN125                                  | DN50  | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-100-50 | W-021502       | DN100                                  | DN50  | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-101-50 | W-021501       | Ø101.6                                 | DN50  | Ø209  | 266 | 290 | 775 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D   | Number of pipes |
| THEX-02-209-150-40 | W-021500       | DN150                                  | DN40  | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-125-40 | W-021499       | DN125                                  | DN40  | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-100-40 | W-021498       | DN100                                  | DN40  | Ø209  | 266 | 290 | 788 | 163             |
| THEX-02-209-101-40 | W-021497       | Ø101.6                                 | DN40  | Ø209  | 266 | 290 | 775 | 163             |



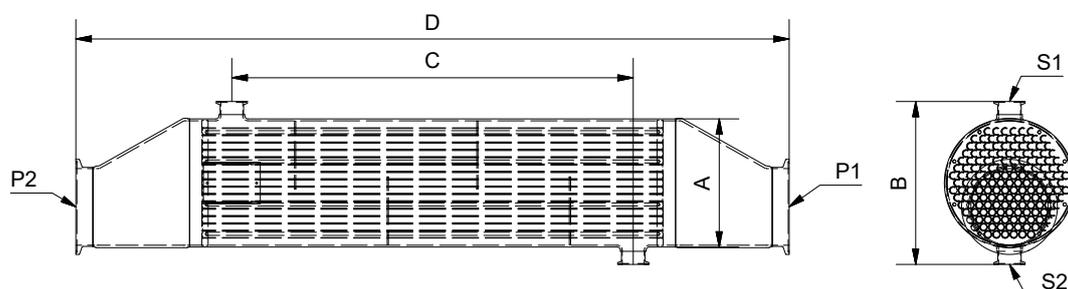
| THEX-03-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |      |                 |
|--------------------|----------------|--|-------|---|-----|-----|------|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 6 barg / 165°C |     |     |      |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-03-209-150-51 | W-015915       | DN150                                  | Ø51   | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-125-51 | W-015914       | DN125                                  | Ø51   | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-100-51 | W-015913       | DN100                                  | Ø51   | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-101-51 | W-015912       | Ø101.6                                 | Ø51   | Ø209  | 266 | 510 | 995  | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-03-209-150-38 | W-021496       | DN150                                  | Ø38   | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-125-38 | W-021495       | DN125                                  | Ø38   | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-100-38 | W-021494       | DN100                                  | Ø38   | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-101-38 | W-019194       | Ø101.6                                 | Ø38   | Ø209  | 266 | 510 | 995  | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-03-209-150-50 | W-021492       | DN150                                  | DN50  | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-125-50 | W-021491       | DN125                                  | DN50  | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-100-50 | W-021490       | DN100                                  | DN50  | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-101-50 | W-021489       | Ø101.6                                 | DN50  | Ø209  | 266 | 510 | 995  | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-03-209-150-40 | W-021488       | DN150                                  | DN40  | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-125-40 | W-021487       | DN125                                  | DN40  | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-100-40 | W-021486       | DN100                                  | DN40  | Ø209  | 266 | 510 | 1008 | 163             |
| THEX-03-209-101-40 | W-021485       | Ø101.6                                 | DN40  | Ø209  | 266 | 510 | 995  | 163             |



| THEX-04-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |     |      |                 |
|--------------------|----------------|--|-------|---|-----|-----|------|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 3 barg / 144°C |     |     |      |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-04-209-150-51 | W-015919       | DN150                                  | Ø51   | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-125-51 | W-015918       | DN125                                  | Ø51   | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-100-51 | W-015917       | DN100                                  | Ø51   | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-101-51 | W-015916       | Ø101.6                                 | Ø51   | Ø209  | 266 | 650 | 1142 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-04-209-150-38 | W-021484       | DN150                                  | Ø38   | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-125-38 | W-019642       | DN125                                  | Ø38   | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-100-38 | W-021482       | DN100                                  | Ø38   | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-101-38 | W-021481       | Ø101.6                                 | Ø38   | Ø209  | 266 | 650 | 1142 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-04-209-150-50 | W-021480       | DN150                                  | DN50  | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-125-50 | W-021479       | DN125                                  | DN50  | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-100-50 | W-021478       | DN100                                  | DN50  | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-101-50 | W-021477       | Ø101.6                                 | DN50  | Ø209  | 266 | 650 | 1142 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C   | D    | Number of pipes |
| THEX-04-209-150-40 | W-021476       | DN150                                  | DN40  | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-125-40 | W-021475       | DN125                                  | DN40  | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-100-40 | W-021474       | DN100                                  | DN40  | Ø209  | 266 | 650 | 1155 | 163             |
| THEX-04-209-101-40 | W-021473       | Ø101.6                                 | DN40  | Ø209  | 266 | 650 | 1142 | 163             |



| THEX-06-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |      |      |                 |
|--------------------|----------------|--|-------|---|-----|------|------|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 3 barg / 144°C |     |      |      |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-06-209-150-51 | W-015923       | DN150                                  | Ø51   | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-125-51 | W-015922       | DN125                                  | Ø51   | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-100-51 | W-015921       | DN100                                  | Ø51   | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-101-51 | W-015920       | Ø101.6                                 | Ø51   | Ø209  | 266 | 1030 | 1522 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-06-209-150-38 | W-021472       | DN150                                  | Ø38   | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-125-38 | W-021471       | DN125                                  | Ø38   | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-100-38 | W-021470       | DN100                                  | Ø38   | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-101-38 | W-021469       | Ø101.6                                 | Ø38   | Ø209  | 266 | 1030 | 1522 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-06-209-150-50 | W-021468       | DN150                                  | DN50  | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-125-50 | W-021467       | DN125                                  | DN50  | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-100-50 | W-021466       | DN100                                  | DN50  | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-101-50 | W-021465       | Ø101.6                                 | DN50  | Ø209  | 266 | 1030 | 1522 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-06-209-150-40 | W-021464       | DN150                                  | DN40  | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-125-40 | W-021463       | DN125                                  | DN40  | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-100-40 | W-021462       | DN100                                  | DN40  | Ø209  | 266 | 1030 | 1535 | 163             |
| THEX-06-209-101-40 | W-021461       | Ø101.6                                 | DN40  | Ø209  | 266 | 1030 | 1522 | 163             |



| THEX-08-209-40     |                | Maximum pressure / Maximum temperature |       |   |     |      |      |                 |
|--------------------|----------------|--|-------|---|-----|------|------|-----------------|
|                    |                | 40 barg / 85°C                         |       | 20 barg / 70°C For steam inside shell; 2.3 barg / 136°C |     |      |      |                 |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-08-209-150-51 | W-015927       | DN150                                  | Ø51   | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-125-51 | W-015926       | DN125                                  | Ø51   | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-100-51 | W-015925       | DN100                                  | Ø51   | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-101-51 | W-015924       | Ø101.6                                 | Ø51   | Ø209  | 266 | 1450 | 1937 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-08-209-150-38 | W-021460       | DN150                                  | Ø38   | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-125-38 | W-021459       | DN125                                  | Ø38   | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-100-38 | W-021458       | DN100                                  | Ø38   | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-101-38 | W-018954       | Ø101.6                                 | Ø38   | Ø209  | 266 | 1450 | 1937 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-08-209-150-50 | W-021456       | DN150                                  | DN50  | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-125-50 | W-021455       | DN125                                  | DN50  | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-100-50 | W-021454       | DN100                                  | DN50  | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-101-50 | W-021453       | Ø101.6                                 | DN50  | Ø209  | 266 | 1450 | 1937 | 163             |
| Stock number       | Drawing number | P1/P2                                  | S1/S2 | A   | B   | C    | D    | Number of pipes |
| THEX-08-209-150-40 | W-021452       | DN150                                  | DN40  | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-125-40 | W-021451       | DN125                                  | DN40  | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-100-40 | W-021450       | DN100                                  | DN40  | Ø209  | 266 | 1450 | 1950 | 163             |
| THEX-08-209-101-40 | W-021449       | Ø101.6                                 | DN40  | Ø209  | 266 | 1450 | 1937 | 163             |



# Sales Brochure

Membrane Housing

INNOVATION - DRIVEN BY PEOPLE



# MEMBRANE HOUSINGS

FOR MF, UF, NF AND RO FILTRATION



*Approved for food production  
- Hygienic design - CIP (Clean in Place) - High quality*

## About Wila

Wila develops and manufactures technical solutions for the food and beverage industry. We are well known for our solutions, all of which have been developed for specific cases and requirements. We always apply best practice and advanced expertise, and our standards are very high. Our strength is to enter into partnerships with our customers to ensure the most unique, innovative and optimum solutions.



We are experts in the field of membrane housings, tubular heat exchangers, tanks and complete units. We supply these products for major parts of the food industry, and we develop solutions for some of the most advanced lines of business. We use state-of-the-art techniques and technologies in our production and are at the cutting edge of innovation and new thinking in terms of the market as well as in terms of our knowledge of products. We live up to these things because we have some great facilities at our disposal, and we can match your technical and quality-related requirements when it comes to hygiene and production safety.

## Ready to work with your production line

We have the facilities, the know-how and the quality assurance systems to develop and manufacture stainless steel products, equipment's and plants that meet your requirements. And we have the right people to handle the job for you from its implementation to the finished delivery.

*Our series of products and components have been tested and are ready to be incorporated into your production. We will be pleased to assist you with your specifications, adjustments and project design.*



# Membrane housings

In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

Wila membrane housings benefits:

- Top quality and hygienic design
- Flexible customer-specific designs available

Our base range membrane housings are designed for 4", 6" and 8" membranes, 1 to 6 elements, with pressure rating up to 64 bar. The 4" and 6" housings' blind and permeate ends consist of standard dairy clamp ferrule connections while a slightly modified aseptic clamp assembly is used for the 8" low pressure housing. Both higher pressure 8" housing versions have O-ring sealed dished ends with a special circlip-like locking ring for easy membrane replacement and cleaning.

| 8 Inch (7.9") housings for 8038 or similar membranes |                        |   |
|--|------------------------|---|
| MHC-8-12bar  | PNI2 Aseptic clamp end | Designed for both MF filtration and UF filtration |
| MHC-8-40bar  | PN40 Locking ring end  | Designed for both NF filtration and RO filtration |
| MHC-8-64bar  | PN64 Locking ring end  | Designed for 60 bar RO filtration                 |
| 6 Inch (6.3") housings for 6338 or similar membranes |                        |   |
| MHC-6-16bar  | PNI6 Dairy clamp end   | Designed for MF, UF and lower NF filtration       |
| 4 Inch (3.8") housings for 3838 or similar membranes |                        |   |
| MHC-4-40bar  | PN40 Dairy clamp end   | Designed for MF, UF, NF and RO filtration         |

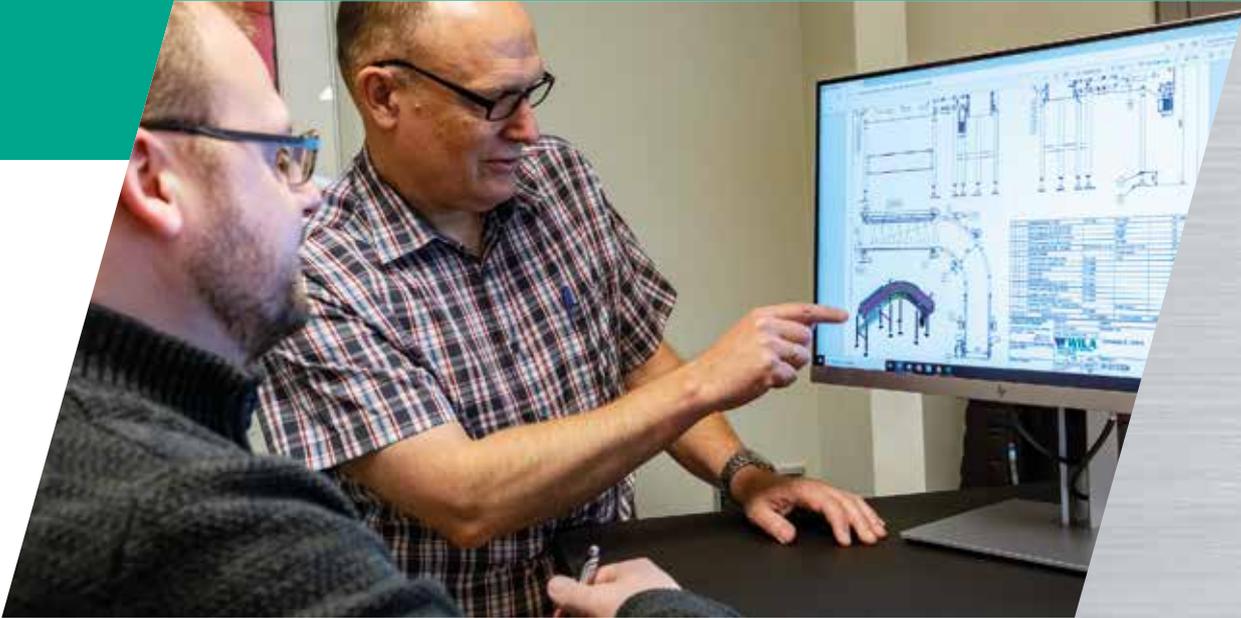
*MF = Micro Filtration, UF = Ultra Filtration, NF = Nano Filtration, RO = Reverse Osmosis*

The membrane housings' feed and retentate side ports are made by collaring the housing shell, which gives smooth and easy to clean openings. All materials, welds, grinding and other finish is of the highest dairy standards. Optionally, due to their design, optimised manufacturing processes and high quality, the membrane housings can be delivered with a 3A qualification certificate. A special tool is available for easy installation.



## Wila's capabilities

Wila's design and engineering services range from complete projects to assisting our customers in achieving their goals. In the last 20 plus years we have been successful in working closely with food manufacturers and leading suppliers of process equipment for the very demanding food industry, which has resulted in highly competitive quality products and solutions with added value for our customers. Our extensive in-house expertise includes innovative manufacturing processes and design deeply rooted in solid engineering.



If you involve us early on in your process, we will act as a focused, innovative and solution-oriented sounding board for your ideas. Through a systematic and analytical approach, we will make a value-adding contribution to your project.

# Technical Specifications

Membrane Housing - MH-8-40

Membrane Housing - MH-8-64

Membrane Housing - MH-8-12

Membrane Housing - MH-6-16

Membrane Housing - MH-4-40

Membrane Housing - MHC-8-40

Membrane Housing - MHC-8-12

Membrane Housing - MHC-4-40

Membrane Housing - MHC-8-64

Membrane Housing - MHC-6-16



# MEMBRANE HOUSING

## DETAILED OVERVIEW FOR TYPE 'MH-8-40' MEDIUM PRESSURE - 40 BAR

FOR NF AND RO FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with collaring connections manufactured by Wila A/S under the category "MH" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with EN 1.4404 (AISI 316L) Stainless steel.**

The Membrane Housing is designed for pressures up to 40 bar and temperatures up to 70°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MH-8-40bar-X-element - Model \_

|       |   |  |
|-------|---|--|
| MH    | <b>Membrane Housing</b> with collaring connections for Feed and Retentate.              |  |
| 8     | The membrane housing is designed for 7.9" x 38" (8038) membranes.                       |  |
| 40bar | The Membrane Housing is designed for pressures up to 40 bar and temperatures up to 70°C |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MH-8-40-X-YY-ZZ-\_

|    |                      |  |
|----|----------------------|--|
| X  | From 1 to 6 elements | Indicates the number of elements that can be fitted. |
| YY | 63 - 51 - 50***      | Indicates Feed and Retentate collaring connections.  |
| ZZ | 38 - 25 - 40 - 26**  | Indicates Permeate end clamp ferrule connection.     |
| _  | Either A or C *      | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

\*\*Clamp ferrule connections sizes - Other types and sizes are available

|         |  |                                |
|---------|--|--------------------------------|
| 38 - 25 | translates respectively to Ø38 - Ø25   | in accordance with ISO 2852-2  |
| 40 - 26 | translates respectively to DN40 - DN25 | in accordance with DIN 32676-A |

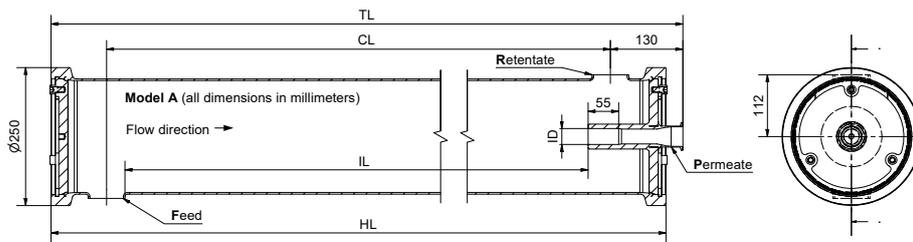
\*\*\*Collaring connections sizes - Other sizes are available

|         |  |
|---------|--|
| 63 - 51 | translates respectively to Ø63.5 - Ø51 |
| 50      | translates respectively to DN50        |

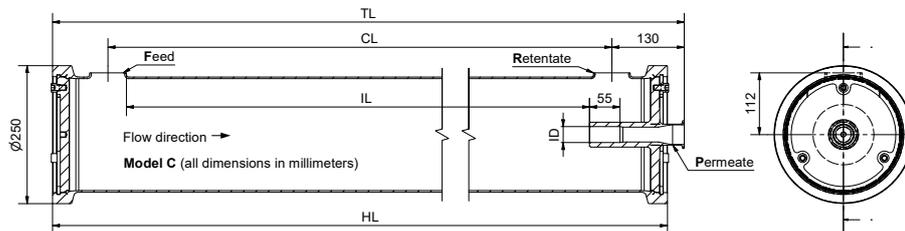
## Connections

For Feed and Retentate only use weld ends with a minimum 6 mm wall thickness. For the Permeate connection an SH clamp is recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

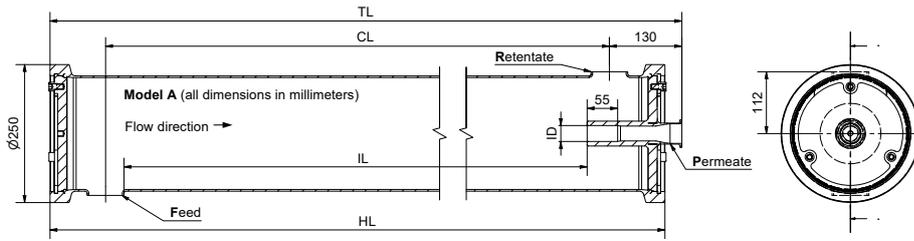
**Temperature and pressure limits must be respected at all times !**



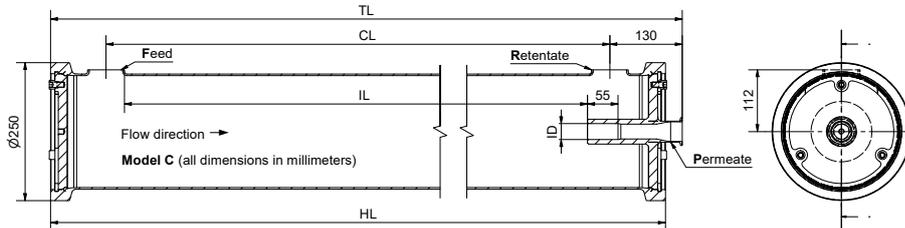
| MH-8-40bar-1-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 40 liters |      | Dry weight 42 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-40-1-63-38-A              | W-024563       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1310             | 1280 | 1080             | 1007 |
| MH-8-40-1-51-38-A              | W-024569       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1310             | 1280 | 1080             | 1013 |
| MH-8-40-1-50-38-A              | W-024575       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1310             | 1280 | 1080             | 1012 |
| MH-8-40-1-63-25-A              | W-024581       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1310             | 1280 | 1080             | 1007 |
| MH-8-40-1-51-25-A              | W-024587       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1310             | 1280 | 1080             | 1013 |
| MH-8-40-1-50-25-A              | W-024593       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1310             | 1280 | 1080             | 1012 |
| MH-8-40-1-63-40-A              | W-024599       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1310             | 1280 | 1080             | 1007 |
| MH-8-40-1-51-40-A              | W-024605       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1310             | 1280 | 1080             | 1013 |
| MH-8-40-1-50-40-A              | W-024611       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1310             | 1280 | 1080             | 1012 |
| MH-8-40-1-63-26-A              | W-024617       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1310             | 1280 | 1080             | 1007 |
| MH-8-40-1-51-26-A              | W-024623       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1310             | 1280 | 1080             | 1013 |
| MH-8-40-1-50-26-A              | W-024629       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1310             | 1280 | 1080             | 1012 |



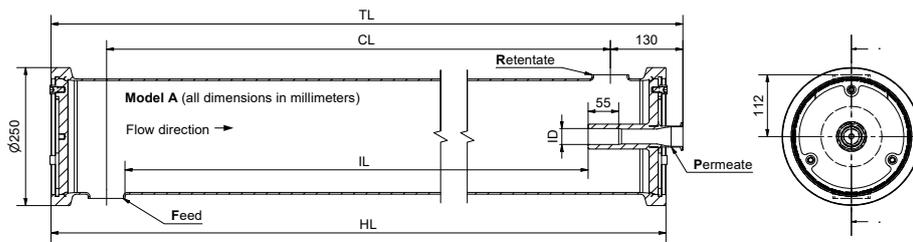
| MH-8-40bar-1-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 40 liters |      | Dry weight 42 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-40-1-63-38-C              | W-024635       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1310             | 1280 | 1080             | 1007 |
| MH-8-40-1-51-38-C              | W-024641       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1310             | 1280 | 1080             | 1013 |
| MH-8-40-1-50-38-C              | W-024647       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1310             | 1280 | 1080             | 1012 |
| MH-8-40-1-63-25-C              | W-024653       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1310             | 1280 | 1080             | 1007 |
| MH-8-40-1-51-25-C              | W-024659       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1310             | 1280 | 1080             | 1013 |
| MH-8-40-1-50-25-C              | W-024665       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1310             | 1280 | 1080             | 1012 |
| MH-8-40-1-63-40-C              | W-024671       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1310             | 1280 | 1080             | 1007 |
| MH-8-40-1-51-40-C              | W-024677       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1310             | 1280 | 1080             | 1013 |
| MH-8-40-1-50-40-C              | W-024683       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1310             | 1280 | 1080             | 1012 |
| MH-8-40-1-63-26-C              | W-024689       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1310             | 1280 | 1080             | 1007 |
| MH-8-40-1-51-26-C              | W-024695       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1310             | 1280 | 1080             | 1013 |
| MH-8-40-1-50-26-C              | W-024701       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1310             | 1280 | 1080             | 1012 |



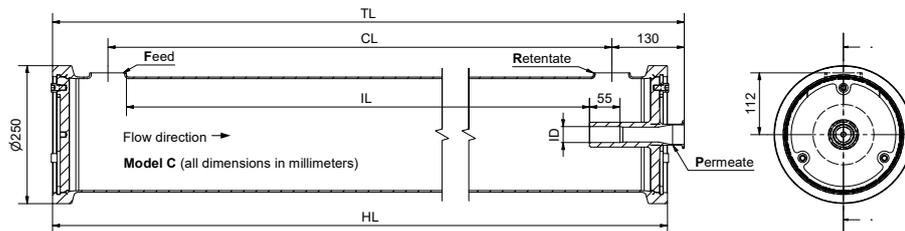
| MH-8-40bar-2-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 71 liters |      | Dry weight 58 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-40-2-63-38-A              | W-024564       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2290             | 2260 | 2060             | 1987 |
| MH-8-40-2-51-38-A              | W-024570       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2290             | 2260 | 2060             | 1993 |
| MH-8-40-2-50-38-A              | W-024576       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2290             | 2260 | 2060             | 1992 |
| MH-8-40-2-63-25-A              | W-024582       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2290             | 2260 | 2060             | 1987 |
| MH-8-40-2-51-25-A              | W-024588       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2290             | 2260 | 2060             | 1993 |
| MH-8-40-2-50-25-A              | W-024594       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2290             | 2260 | 2060             | 1992 |
| MH-8-40-2-63-40-A              | W-024600       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2290             | 2260 | 2060             | 1987 |
| MH-8-40-2-51-40-A              | W-024606       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2290             | 2260 | 2060             | 1993 |
| MH-8-40-2-50-40-A              | W-024612       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2290             | 2260 | 2060             | 1992 |
| MH-8-40-2-63-26-A              | W-024618       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2290             | 2260 | 2060             | 1987 |
| MH-8-40-2-51-26-A              | W-024624       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2290             | 2260 | 2060             | 1993 |
| MH-8-40-2-50-26-A              | W-024630       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2290             | 2260 | 2060             | 1992 |



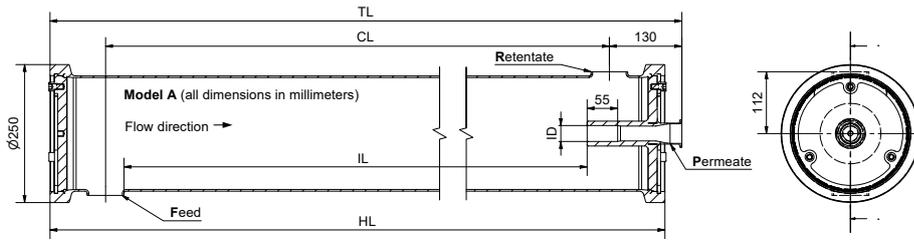
| MH-8-40bar-2-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 71 liters |      | Dry weight 58 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-40-2-63-38-C              | W-024636       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2290             | 2260 | 2060             | 1987 |
| MH-8-40-2-51-38-C              | W-024642       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2290             | 2260 | 2060             | 1993 |
| MH-8-40-2-50-38-C              | W-024648       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2290             | 2260 | 2060             | 1992 |
| MH-8-40-2-63-25-C              | W-024654       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2290             | 2260 | 2060             | 1987 |
| MH-8-40-2-51-25-C              | W-024660       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2290             | 2260 | 2060             | 1993 |
| MH-8-40-2-50-25-C              | W-024666       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2290             | 2260 | 2060             | 1992 |
| MH-8-40-2-63-40-C              | W-024672       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2290             | 2260 | 2060             | 1987 |
| MH-8-40-2-51-40-C              | W-024678       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2290             | 2260 | 2060             | 1993 |
| MH-8-40-2-50-40-C              | W-024684       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2290             | 2260 | 2060             | 1992 |
| MH-8-40-2-63-26-C              | W-024690       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2290             | 2260 | 2060             | 1987 |
| MH-8-40-2-51-26-C              | W-024696       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2290             | 2260 | 2060             | 1993 |
| MH-8-40-2-50-26-C              | W-024702       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2290             | 2260 | 2060             | 1992 |



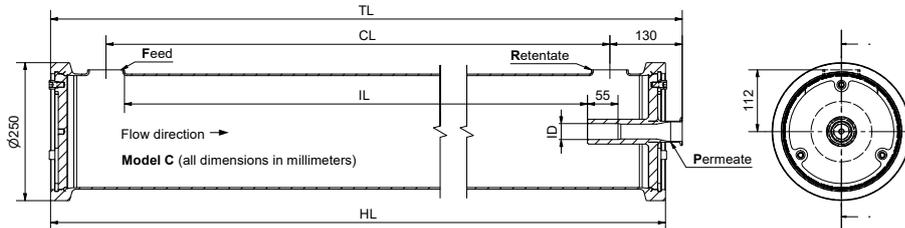
| MH-8-40bar-3-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 103 liters |      | Dry weight 74 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-40-3-63-38-A              | W-024565       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3275              | 3245 | 3045             | 2972 |
| MH-8-40-3-51-38-A              | W-024571       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3275              | 3245 | 3045             | 2978 |
| MH-8-40-3-50-38-A              | W-024577       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3275              | 3245 | 3045             | 2977 |
| MH-8-40-3-63-25-A              | W-024583       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3275              | 3245 | 3045             | 2972 |
| MH-8-40-3-51-25-A              | W-024589       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3275              | 3245 | 3045             | 2978 |
| MH-8-40-3-50-25-A              | W-024595       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3275              | 3245 | 3045             | 2977 |
| MH-8-40-3-63-40-A              | W-024601       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3275              | 3245 | 3045             | 2972 |
| MH-8-40-3-51-40-A              | W-024607       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3275              | 3245 | 3045             | 2978 |
| MH-8-40-3-50-40-A              | W-024613       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3275              | 3245 | 3045             | 2977 |
| MH-8-40-3-63-26-A              | W-024619       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3275              | 3245 | 3045             | 2972 |
| MH-8-40-3-51-26-A              | W-024625       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3275              | 3245 | 3045             | 2978 |
| MH-8-40-3-50-26-A              | W-024631       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3275              | 3245 | 3045             | 2977 |



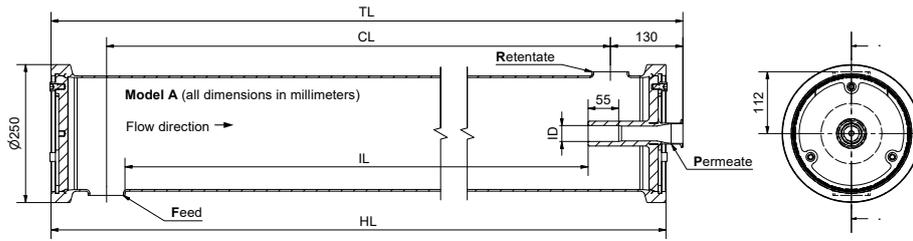
| MH-8-40bar-3-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 103 liters |      | Dry weight 74 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-40-3-63-38-C              | W-024637       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3275              | 3245 | 3045             | 2972 |
| MH-8-40-3-51-38-C              | W-024643       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3275              | 3245 | 3045             | 2978 |
| MH-8-40-3-50-38-C              | W-024649       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3275              | 3245 | 3045             | 2977 |
| MH-8-40-3-63-25-C              | W-024655       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3275              | 3245 | 3045             | 2972 |
| MH-8-40-3-51-25-C              | W-024661       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3275              | 3245 | 3045             | 2978 |
| MH-8-40-3-50-25-C              | W-024667       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3275              | 3245 | 3045             | 2977 |
| MH-8-40-3-63-40-C              | W-024673       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3275              | 3245 | 3045             | 2972 |
| MH-8-40-3-51-40-C              | W-024679       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3275              | 3245 | 3045             | 2978 |
| MH-8-40-3-50-40-C              | W-024685       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3275              | 3245 | 3045             | 2977 |
| MH-8-40-3-63-26-C              | W-024691       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3275              | 3245 | 3045             | 2972 |
| MH-8-40-3-51-26-C              | W-024697       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3275              | 3245 | 3045             | 2978 |
| MH-8-40-3-50-26-C              | W-024703       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3275              | 3245 | 3045             | 2977 |



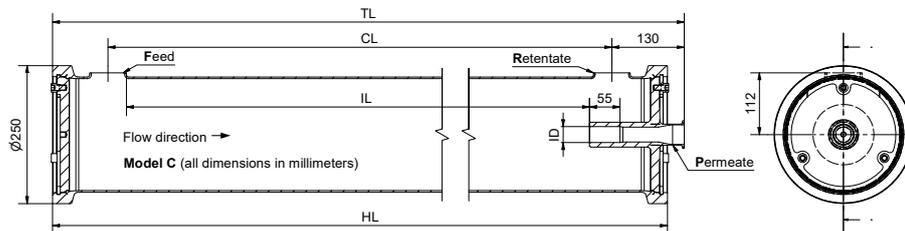
| MH-8-40bar-4-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 135 liters |      | Dry weight 90 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-40-4-63-38-A              | W-024566       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4255              | 4225 | 4025             | 3952 |
| MH-8-40-4-51-38-A              | W-024572       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4255              | 4225 | 4025             | 3958 |
| MH-8-40-4-50-38-A              | W-024578       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4255              | 4225 | 4025             | 3957 |
| MH-8-40-4-63-25-A              | W-024584       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4255              | 4225 | 4025             | 3952 |
| MH-8-40-4-51-25-A              | W-024590       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4255              | 4225 | 4025             | 3958 |
| MH-8-40-4-50-25-A              | W-024596       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4255              | 4225 | 4025             | 3957 |
| MH-8-40-4-63-40-A              | W-024602       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4255              | 4225 | 4025             | 3952 |
| MH-8-40-4-51-40-A              | W-024608       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4255              | 4225 | 4025             | 3958 |
| MH-8-40-4-50-40-A              | W-024614       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4255              | 4225 | 4025             | 3957 |
| MH-8-40-4-63-26-A              | W-024620       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4255              | 4225 | 4025             | 3952 |
| MH-8-40-4-51-26-A              | W-024626       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4255              | 4225 | 4025             | 3958 |
| MH-8-40-4-50-26-A              | W-024632       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4255              | 4225 | 4025             | 3957 |



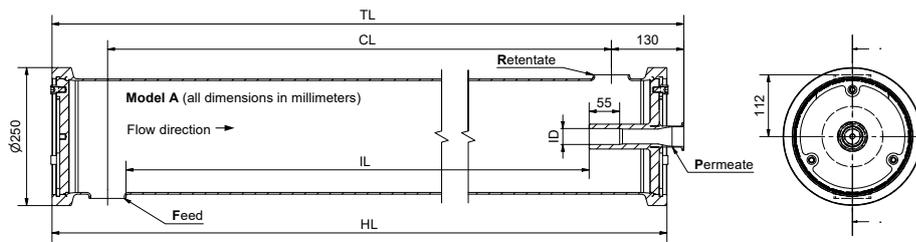
| MH-8-40bar-4-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 135 liters |      | Dry weight 90 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-40-4-63-38-C              | W-024638       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4255              | 4225 | 4025             | 3952 |
| MH-8-40-4-51-38-C              | W-024644       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4255              | 4225 | 4025             | 3958 |
| MH-8-40-4-50-38-C              | W-024650       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4255              | 4225 | 4025             | 3957 |
| MH-8-40-4-63-25-C              | W-024656       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4255              | 4225 | 4025             | 3952 |
| MH-8-40-4-51-25-C              | W-024662       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4255              | 4225 | 4025             | 3958 |
| MH-8-40-4-50-25-C              | W-024668       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4255              | 4225 | 4025             | 3957 |
| MH-8-40-4-63-40-C              | W-024674       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4255              | 4225 | 4025             | 3952 |
| MH-8-40-4-51-40-C              | W-024680       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4255              | 4225 | 4025             | 3958 |
| MH-8-40-4-50-40-C              | W-024686       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4255              | 4225 | 4025             | 3957 |
| MH-8-40-4-63-26-C              | W-024692       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4255              | 4225 | 4025             | 3952 |
| MH-8-40-4-51-26-C              | W-024698       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4255              | 4225 | 4025             | 3958 |
| MH-8-40-4-50-26-C              | W-024704       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4255              | 4225 | 4025             | 3957 |



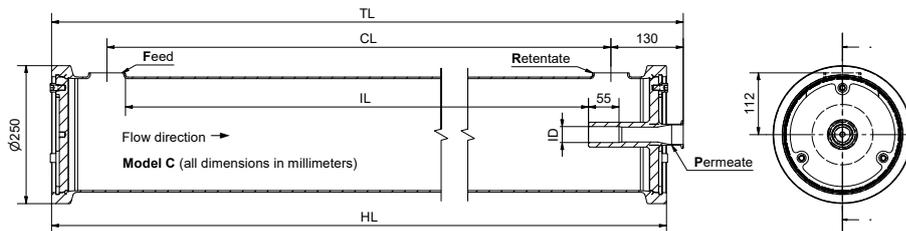
| MH-8-40bar-5-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 167 liters |      | Dry weight 106 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MH-8-40-5-63-38-A              | W-024567       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5240              | 5210 | 5010              | 4937 |
| MH-8-40-5-51-38-A              | W-024573       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5240              | 5210 | 5010              | 4943 |
| MH-8-40-5-50-38-A              | W-024579       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5240              | 5210 | 5010              | 4942 |
| MH-8-40-5-63-25-A              | W-024585       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5240              | 5210 | 5010              | 4937 |
| MH-8-40-5-51-25-A              | W-024591       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5240              | 5210 | 5010              | 4943 |
| MH-8-40-5-50-25-A              | W-024597       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5240              | 5210 | 5010              | 4942 |
| MH-8-40-5-63-40-A              | W-024603       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5240              | 5210 | 5010              | 4937 |
| MH-8-40-5-51-40-A              | W-024609       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5240              | 5210 | 5010              | 4943 |
| MH-8-40-5-50-40-A              | W-024615       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5240              | 5210 | 5010              | 4942 |
| MH-8-40-5-63-26-A              | W-024621       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5240              | 5210 | 5010              | 4937 |
| MH-8-40-5-51-26-A              | W-024627       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5240              | 5210 | 5010              | 4943 |
| MH-8-40-5-50-26-A              | W-024633       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5240              | 5210 | 5010              | 4942 |



| MH-8-40bar-5-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 167 liters |      | Dry weight 106 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MH-8-40-5-63-38-C              | W-024639       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5240              | 5210 | 5010              | 4937 |
| MH-8-40-5-51-38-C              | W-024645       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5240              | 5210 | 5010              | 4943 |
| MH-8-40-5-50-38-C              | W-024651       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5240              | 5210 | 5010              | 4942 |
| MH-8-40-5-63-25-C              | W-024657       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5240              | 5210 | 5010              | 4937 |
| MH-8-40-5-51-25-C              | W-024663       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5240              | 5210 | 5010              | 4943 |
| MH-8-40-5-50-25-C              | W-024669       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5240              | 5210 | 5010              | 4942 |
| MH-8-40-5-63-40-C              | W-024675       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5240              | 5210 | 5010              | 4937 |
| MH-8-40-5-51-40-C              | W-024681       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5240              | 5210 | 5010              | 4943 |
| MH-8-40-5-50-40-C              | W-024687       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5240              | 5210 | 5010              | 4942 |
| MH-8-40-5-63-26-C              | W-024693       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5240              | 5210 | 5010              | 4937 |
| MH-8-40-5-51-26-C              | W-024699       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5240              | 5210 | 5010              | 4943 |
| MH-8-40-5-50-26-C              | W-024705       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5240              | 5210 | 5010              | 4942 |



| MH-8-40bar-6-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 199 liters |      | Dry weight 122 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MH-8-40-6-63-38-A              | W-024568       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6220              | 6190 | 5990              | 5917 |
| MH-8-40-6-51-38-A              | W-024574       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6220              | 6190 | 5990              | 5923 |
| MH-8-40-6-50-38-A              | W-024580       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6220              | 6190 | 5990              | 5922 |
| MH-8-40-6-63-25-A              | W-024586       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6220              | 6190 | 5990              | 5917 |
| MH-8-40-6-51-25-A              | W-024592       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6220              | 6190 | 5990              | 5923 |
| MH-8-40-6-50-25-A              | W-024598       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6220              | 6190 | 5990              | 5922 |
| MH-8-40-6-63-40-A              | W-024604       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6220              | 6190 | 5990              | 5917 |
| MH-8-40-6-51-40-A              | W-024610       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6220              | 6190 | 5990              | 5923 |
| MH-8-40-6-50-40-A              | W-024616       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6220              | 6190 | 5990              | 5922 |
| MH-8-40-6-63-26-A              | W-024622       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6220              | 6190 | 5990              | 5917 |
| MH-8-40-6-51-26-A              | W-024628       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6220              | 6190 | 5990              | 5923 |
| MH-8-40-6-50-26-A              | W-024634       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6220              | 6190 | 5990              | 5922 |



| MH-8-40bar-6-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 199 liters |      | Dry weight 122 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MH-8-40-6-63-38-C              | W-024640       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6220              | 6190 | 5990              | 5917 |
| MH-8-40-6-51-38-C              | W-024646       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6220              | 6190 | 5990              | 5923 |
| MH-8-40-6-50-38-C              | W-024652       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6220              | 6190 | 5990              | 5922 |
| MH-8-40-6-63-25-C              | W-024658       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6220              | 6190 | 5990              | 5917 |
| MH-8-40-6-51-25-C              | W-024664       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6220              | 6190 | 5990              | 5923 |
| MH-8-40-6-50-25-C              | W-024670       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6220              | 6190 | 5990              | 5922 |
| MH-8-40-6-63-40-C              | W-024676       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6220              | 6190 | 5990              | 5917 |
| MH-8-40-6-51-40-C              | W-024682       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6220              | 6190 | 5990              | 5923 |
| MH-8-40-6-50-40-C              | W-024688       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6220              | 6190 | 5990              | 5922 |
| MH-8-40-6-63-26-C              | W-024694       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6220              | 6190 | 5990              | 5917 |
| MH-8-40-6-51-26-C              | W-024700       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6220              | 6190 | 5990              | 5923 |
| MH-8-40-6-50-26-C              | W-024706       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6220              | 6190 | 5990              | 5922 |





# MEMBRANE HOUSING

DETAILED OVERVIEW FOR TYPE 'MH-8-64'  
HIGH PRESSURE - 64 BAR

FOR RO FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with collaring connections manufactured by Wila A/S under the category "MH" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with both EN 1.4404 and EN 1.4462 Stainless steel.**

The Membrane Housing is designed for pressures up to 64 bar and temperatures up to 85°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).
- PED - Category I and EN 13445 for both 5 and 6 element housings.

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MH-8-64bar-X-element – Model \_

|       |   |  |
|-------|---|--|
| MH    | <b>Membrane Housing</b> with collaring connections for Feed and Retentate.              |  |
| 8     | The membrane housing is designed for 7.9" x 38" (8038) membranes.                       |  |
| 64bar | The Membrane Housing is designed for pressures up to 64 bar and temperatures up to 85°C |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MH-8-64-X-YY-ZZ- \_

|    |                           |  |
|----|---------------------------|--|
| X  | From 1 to 6 elements      | Indicates the number of elements that can be fitted. |
| YY | 76 - 65 - 63 - 51 - 50*** | Indicates Feed and Retentate collaring connections.  |
| ZZ | 38 - 25 - 40 - 26**       | Indicates Permeate end clamp ferrule connection.     |
| _  | Either A or C *           | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

\*\*Clamp ferrule connections sizes - Other types and sizes are available

|         |  |                                |
|---------|--|--------------------------------|
| 38 - 25 | translates respectively to Ø38 - Ø25   | in accordance with ISO 2852-2  |
| 40 - 26 | translates respectively to DN40 - DN25 | in accordance with DIN 32676-A |

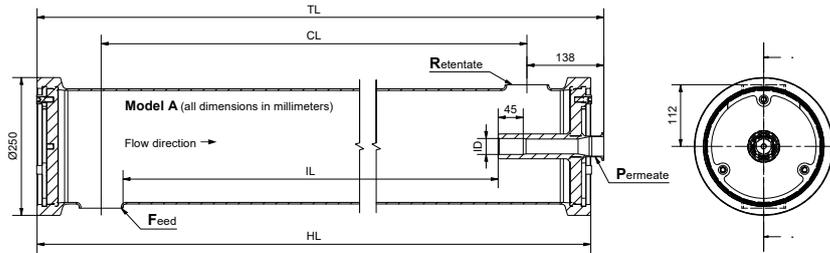
\*\*\*Collaring connections sizes - Other sizes are available

|              |  |
|--------------|--|
| 76 - 63 - 51 | translates respectively to Ø76 - Ø63.5 - Ø51 |
| 65 - 50      | translates respectively to DN65 - DN50       |

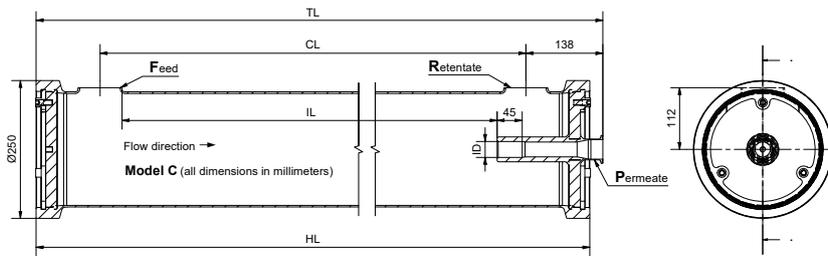
## Connections

For Feed and Retentate only use EN 1.4462 weld ends with a minimum 6 mm wall thickness. For the Permeate connection an SSH clamp is recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

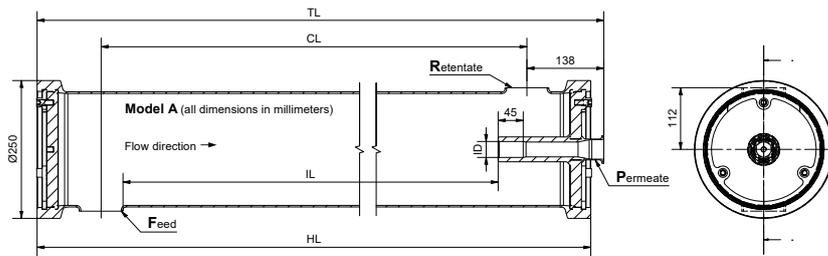
**Temperature and pressure limits must be respected at all times !**



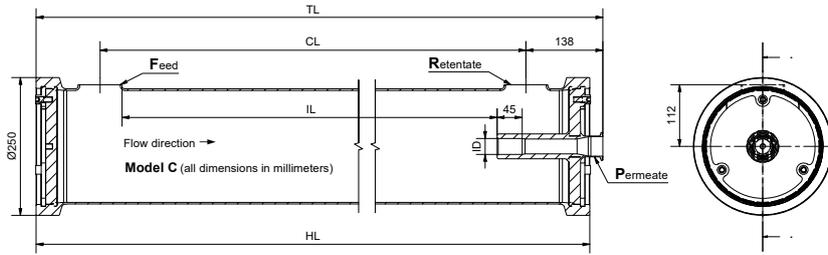
| MH-8-64bar-1-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 4l liters |      | Dry weight 43 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-64-1-76-38-A              | W-024707       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1348             | 1325 | 1095             | 1007 |
| MH-8-64-1-63-38-A              | W-024713       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1348             | 1325 | 1095             | 1013 |
| MH-8-64-1-51-38-A              | W-024719       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1348             | 1325 | 1095             | 1019 |
| MH-8-64-1-65-38-A              | W-024725       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1348             | 1325 | 1095             | 1010 |
| MH-8-64-1-50-38-A              | W-024731       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1348             | 1325 | 1095             | 1018 |
| MH-8-64-1-76-25-A              | W-024737       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1348             | 1325 | 1095             | 1007 |
| MH-8-64-1-63-25-A              | W-024743       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1348             | 1325 | 1095             | 1013 |
| MH-8-64-1-51-25-A              | W-024749       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1348             | 1325 | 1095             | 1019 |
| MH-8-64-1-65-25-A              | W-024755       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1348             | 1325 | 1095             | 1010 |
| MH-8-64-1-50-25-A              | W-024761       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1348             | 1325 | 1095             | 1018 |
| MH-8-64-1-76-40-A              | W-024767       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1348             | 1325 | 1095             | 1007 |
| MH-8-64-1-63-40-A              | W-024773       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1348             | 1325 | 1095             | 1013 |
| MH-8-64-1-51-40-A              | W-024779       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1348             | 1325 | 1095             | 1019 |
| MH-8-64-1-65-40-A              | W-024785       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1348             | 1325 | 1095             | 1010 |
| MH-8-64-1-50-40-A              | W-024791       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1348             | 1325 | 1095             | 1018 |
| MH-8-64-1-76-26-A              | W-024797       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1348             | 1325 | 1095             | 1007 |
| MH-8-64-1-63-26-A              | W-024803       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1348             | 1325 | 1095             | 1013 |
| MH-8-64-1-51-26-A              | W-024809       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1348             | 1325 | 1095             | 1019 |
| MH-8-64-1-65-26-A              | W-024815       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1348             | 1325 | 1095             | 1010 |
| MH-8-64-1-50-26-A              | W-024821       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1348             | 1325 | 1095             | 1018 |



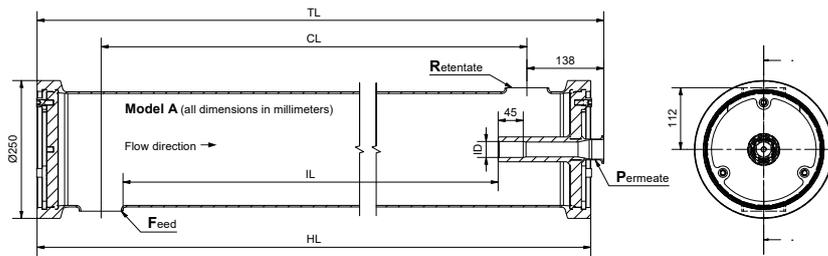
| MH-8-64bar-1-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 4l liters |      | Dry weight 43 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-64-1-76-38-C              | W-024827       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1348             | 1325 | 1095             | 1007 |
| MH-8-64-1-63-38-C              | W-024833       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1348             | 1325 | 1095             | 1013 |
| MH-8-64-1-51-38-C              | W-024839       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1348             | 1325 | 1095             | 1019 |
| MH-8-64-1-65-38-C              | W-024845       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1348             | 1325 | 1095             | 1010 |
| MH-8-64-1-50-38-C              | W-024851       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1348             | 1325 | 1095             | 1018 |
| MH-8-64-1-76-25-C              | W-024857       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1348             | 1325 | 1095             | 1007 |
| MH-8-64-1-63-25-C              | W-024863       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1348             | 1325 | 1095             | 1013 |
| MH-8-64-1-51-25-C              | W-024869       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1348             | 1325 | 1095             | 1019 |
| MH-8-64-1-65-25-C              | W-024875       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1348             | 1325 | 1095             | 1010 |
| MH-8-64-1-50-25-C              | W-024881       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1348             | 1325 | 1095             | 1018 |
| MH-8-64-1-76-40-C              | W-024887       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1348             | 1325 | 1095             | 1007 |
| MH-8-64-1-63-40-C              | W-024893       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1348             | 1325 | 1095             | 1013 |
| MH-8-64-1-51-40-C              | W-024899       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1348             | 1325 | 1095             | 1019 |
| MH-8-64-1-65-40-C              | W-024905       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1348             | 1325 | 1095             | 1010 |
| MH-8-64-1-50-40-C              | W-024911       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1348             | 1325 | 1095             | 1018 |
| MH-8-64-1-76-26-C              | W-024917       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1348             | 1325 | 1095             | 1007 |
| MH-8-64-1-63-26-C              | W-024923       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1348             | 1325 | 1095             | 1013 |
| MH-8-64-1-51-26-C              | W-024929       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1348             | 1325 | 1095             | 1019 |
| MH-8-64-1-65-26-C              | W-024935       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1348             | 1325 | 1095             | 1010 |
| MH-8-64-1-50-26-C              | W-024941       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1348             | 1325 | 1095             | 1018 |



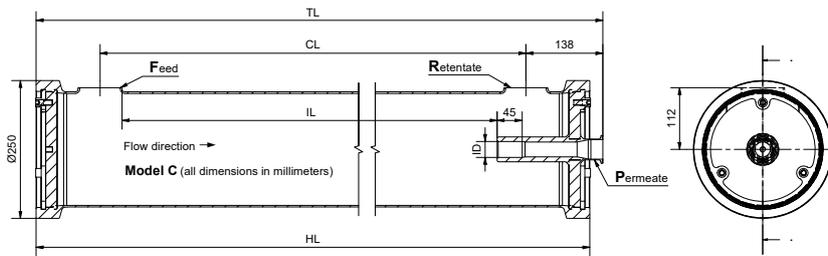
| MH-8-64bar-2-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 72 liters |      | Dry weight 62 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-64-2-76-38-A              | W-024708       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2328             | 2305 | 2075             | 1984 |
| MH-8-64-2-63-38-A              | W-024714       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2328             | 2305 | 2075             | 1990 |
| MH-8-64-2-51-38-A              | W-024720       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2328             | 2305 | 2075             | 1996 |
| MH-8-64-2-65-38-A              | W-024726       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2328             | 2305 | 2075             | 1987 |
| MH-8-64-2-50-38-A              | W-024732       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2328             | 2305 | 2075             | 1995 |
| MH-8-64-2-76-25-A              | W-024738       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2328             | 2305 | 2075             | 1984 |
| MH-8-64-2-63-25-A              | W-024744       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2328             | 2305 | 2075             | 1990 |
| MH-8-64-2-51-25-A              | W-024750       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2328             | 2305 | 2075             | 1996 |
| MH-8-64-2-65-25-A              | W-024756       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2328             | 2305 | 2075             | 1987 |
| MH-8-64-2-50-25-A              | W-024762       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2328             | 2305 | 2075             | 1995 |
| MH-8-64-2-76-40-A              | W-024768       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2328             | 2305 | 2075             | 1984 |
| MH-8-64-2-63-40-A              | W-024774       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2328             | 2305 | 2075             | 1990 |
| MH-8-64-2-51-40-A              | W-024780       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2328             | 2305 | 2075             | 1996 |
| MH-8-64-2-65-40-A              | W-024786       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2328             | 2305 | 2075             | 1987 |
| MH-8-64-2-50-40-A              | W-024792       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2328             | 2305 | 2075             | 1995 |
| MH-8-64-2-76-26-A              | W-024798       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2328             | 2305 | 2075             | 1984 |
| MH-8-64-2-63-26-A              | W-024804       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2328             | 2305 | 2075             | 1990 |
| MH-8-64-2-51-26-A              | W-024810       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2328             | 2305 | 2075             | 1996 |
| MH-8-64-2-65-26-A              | W-024816       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2328             | 2305 | 2075             | 1987 |
| MH-8-64-2-50-26-A              | W-024822       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2328             | 2305 | 2075             | 1995 |



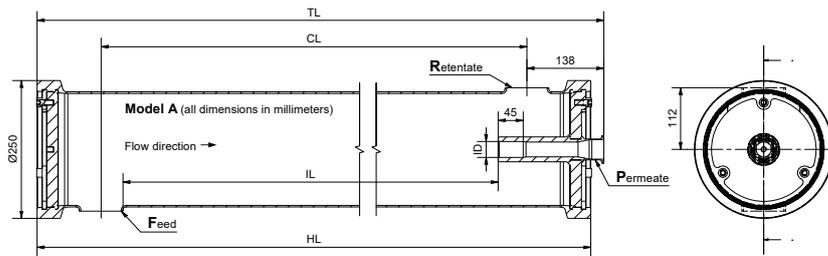
| MH-8-64bar-2-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 72 liters |      | Dry weight 62 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-64-2-76-38-C              | W-024828       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2328             | 2305 | 2075             | 1984 |
| MH-8-64-2-63-38-C              | W-024834       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2328             | 2305 | 2075             | 1990 |
| MH-8-64-2-51-38-C              | W-024840       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2328             | 2305 | 2075             | 1996 |
| MH-8-64-2-65-38-C              | W-024846       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2328             | 2305 | 2075             | 1987 |
| MH-8-64-2-50-38-C              | W-024852       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2328             | 2305 | 2075             | 1995 |
| MH-8-64-2-76-25-C              | W-024858       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2328             | 2305 | 2075             | 1984 |
| MH-8-64-2-63-25-C              | W-024864       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2328             | 2305 | 2075             | 1990 |
| MH-8-64-2-51-25-C              | W-024870       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2328             | 2305 | 2075             | 1996 |
| MH-8-64-2-65-25-C              | W-024876       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2328             | 2305 | 2075             | 1987 |
| MH-8-64-2-50-25-C              | W-024882       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2328             | 2305 | 2075             | 1995 |
| MH-8-64-2-76-40-C              | W-024888       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2328             | 2305 | 2075             | 1984 |
| MH-8-64-2-63-40-C              | W-024894       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2328             | 2305 | 2075             | 1990 |
| MH-8-64-2-51-40-C              | W-024900       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2328             | 2305 | 2075             | 1996 |
| MH-8-64-2-65-40-C              | W-024906       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2328             | 2305 | 2075             | 1987 |
| MH-8-64-2-50-40-C              | W-024912       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2328             | 2305 | 2075             | 1995 |
| MH-8-64-2-76-26-C              | W-024918       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2328             | 2305 | 2075             | 1984 |
| MH-8-64-2-63-26-C              | W-024924       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2328             | 2305 | 2075             | 1990 |
| MH-8-64-2-51-26-C              | W-024930       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2328             | 2305 | 2075             | 1996 |
| MH-8-64-2-65-26-C              | W-024936       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2328             | 2305 | 2075             | 1987 |
| MH-8-64-2-50-26-C              | W-024942       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2328             | 2305 | 2075             | 1995 |



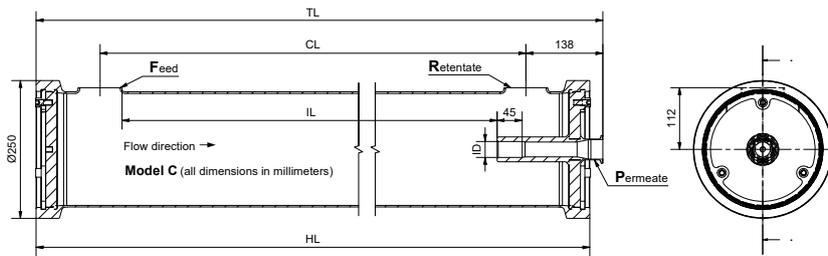
| MH-8-64bar-3-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 104 liters |      | Dry weight 78 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-64-3-76-38-A              | W-024709       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3313              | 3290 | 3060             | 2969 |
| MH-8-64-3-63-38-A              | W-024715       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3313              | 3290 | 3060             | 2975 |
| MH-8-64-3-51-38-A              | W-024721       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3313              | 3290 | 3060             | 2981 |
| MH-8-64-3-65-38-A              | W-024727       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3313              | 3290 | 3060             | 2972 |
| MH-8-64-3-50-38-A              | W-024733       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3313              | 3290 | 3060             | 2980 |
| MH-8-64-3-76-25-A              | W-024739       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3313              | 3290 | 3060             | 2969 |
| MH-8-64-3-63-25-A              | W-024745       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3313              | 3290 | 3060             | 2975 |
| MH-8-64-3-51-25-A              | W-024751       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3313              | 3290 | 3060             | 2981 |
| MH-8-64-3-65-25-A              | W-024757       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3313              | 3290 | 3060             | 2972 |
| MH-8-64-3-50-25-A              | W-024763       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3313              | 3290 | 3060             | 2980 |
| MH-8-64-3-76-40-A              | W-024769       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3313              | 3290 | 3060             | 2969 |
| MH-8-64-3-63-40-A              | W-024775       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3313              | 3290 | 3060             | 2975 |
| MH-8-64-3-51-40-A              | W-024781       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3313              | 3290 | 3060             | 2981 |
| MH-8-64-3-65-40-A              | W-024787       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3313              | 3290 | 3060             | 2972 |
| MH-8-64-3-50-40-A              | W-024793       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3313              | 3290 | 3060             | 2980 |
| MH-8-64-3-76-26-A              | W-024799       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3313              | 3290 | 3060             | 2969 |
| MH-8-64-3-63-26-A              | W-024805       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3313              | 3290 | 3060             | 2975 |
| MH-8-64-3-51-26-A              | W-024811       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3313              | 3290 | 3060             | 2981 |
| MH-8-64-3-65-26-A              | W-024817       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3313              | 3290 | 3060             | 2972 |
| MH-8-64-3-50-26-A              | W-024823       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3313              | 3290 | 3060             | 2980 |



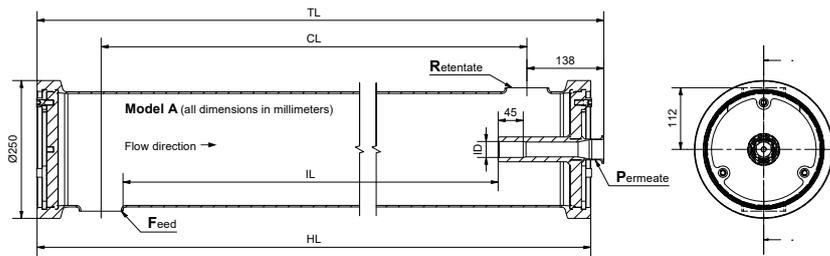
| MH-8-64bar-3-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 104 liters |      | Dry weight 78 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-64-3-76-38-C              | W-024829       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3313              | 3290 | 3060             | 2969 |
| MH-8-64-3-63-38-C              | W-024835       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3313              | 3290 | 3060             | 2975 |
| MH-8-64-3-51-38-C              | W-024841       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3313              | 3290 | 3060             | 2981 |
| MH-8-64-3-65-38-C              | W-024847       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3313              | 3290 | 3060             | 2972 |
| MH-8-64-3-50-38-C              | W-024853       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3313              | 3290 | 3060             | 2980 |
| MH-8-64-3-76-25-C              | W-024859       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3313              | 3290 | 3060             | 2969 |
| MH-8-64-3-63-25-C              | W-024865       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3313              | 3290 | 3060             | 2975 |
| MH-8-64-3-51-25-C              | W-024871       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3313              | 3290 | 3060             | 2981 |
| MH-8-64-3-65-25-C              | W-024877       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3313              | 3290 | 3060             | 2972 |
| MH-8-64-3-50-25-C              | W-024883       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3313              | 3290 | 3060             | 2980 |
| MH-8-64-3-76-40-C              | W-024889       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3313              | 3290 | 3060             | 2969 |
| MH-8-64-3-63-40-C              | W-024895       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3313              | 3290 | 3060             | 2975 |
| MH-8-64-3-51-40-C              | W-024901       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3313              | 3290 | 3060             | 2981 |
| MH-8-64-3-65-40-C              | W-024907       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3313              | 3290 | 3060             | 2972 |
| MH-8-64-3-50-40-C              | W-024913       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3313              | 3290 | 3060             | 2980 |
| MH-8-64-3-76-26-C              | W-024919       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3313              | 3290 | 3060             | 2969 |
| MH-8-64-3-63-26-C              | W-024925       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3313              | 3290 | 3060             | 2975 |
| MH-8-64-3-51-26-C              | W-024931       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3313              | 3290 | 3060             | 2981 |
| MH-8-64-3-65-26-C              | W-024937       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3313              | 3290 | 3060             | 2972 |
| MH-8-64-3-50-26-C              | W-024943       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3313              | 3290 | 3060             | 2980 |



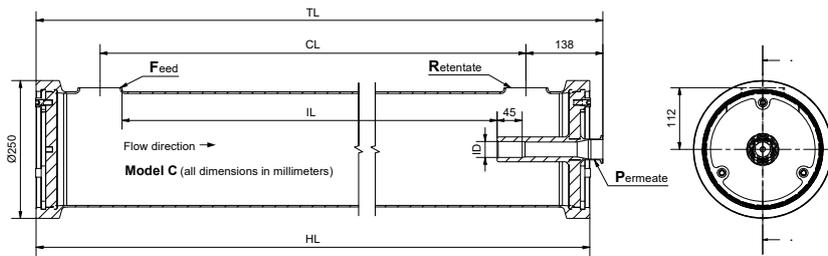
| MH-8-64bar-4-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 136 liters |      | Dry weight 94 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-64-4-76-38-A              | W-024710       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4293              | 4270 | 4040             | 3949 |
| MH-8-64-4-63-38-A              | W-024716       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4293              | 4270 | 4040             | 3955 |
| MH-8-64-4-51-38-A              | W-024722       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4293              | 4270 | 4040             | 3961 |
| MH-8-64-4-65-38-A              | W-024728       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4293              | 4270 | 4040             | 3952 |
| MH-8-64-4-50-38-A              | W-024734       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4293              | 4270 | 4040             | 3960 |
| MH-8-64-4-76-25-A              | W-024740       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4293              | 4270 | 4040             | 3949 |
| MH-8-64-4-63-25-A              | W-024746       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4293              | 4270 | 4040             | 3955 |
| MH-8-64-4-51-25-A              | W-024752       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4293              | 4270 | 4040             | 3961 |
| MH-8-64-4-65-25-A              | W-024758       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4293              | 4270 | 4040             | 3952 |
| MH-8-64-4-50-25-A              | W-024764       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4293              | 4270 | 4040             | 3960 |
| MH-8-64-4-76-40-A              | W-024770       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4293              | 4270 | 4040             | 3949 |
| MH-8-64-4-63-40-A              | W-024776       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4293              | 4270 | 4040             | 3955 |
| MH-8-64-4-51-40-A              | W-024782       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4293              | 4270 | 4040             | 3961 |
| MH-8-64-4-65-40-A              | W-024788       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4293              | 4270 | 4040             | 3952 |
| MH-8-64-4-50-40-A              | W-024794       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4293              | 4270 | 4040             | 3960 |
| MH-8-64-4-76-26-A              | W-024800       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4293              | 4270 | 4040             | 3949 |
| MH-8-64-4-63-26-A              | W-024806       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4293              | 4270 | 4040             | 3955 |
| MH-8-64-4-51-26-A              | W-024812       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4293              | 4270 | 4040             | 3961 |
| MH-8-64-4-65-26-A              | W-024818       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4293              | 4270 | 4040             | 3952 |
| MH-8-64-4-50-26-A              | W-024824       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4293              | 4270 | 4040             | 3960 |



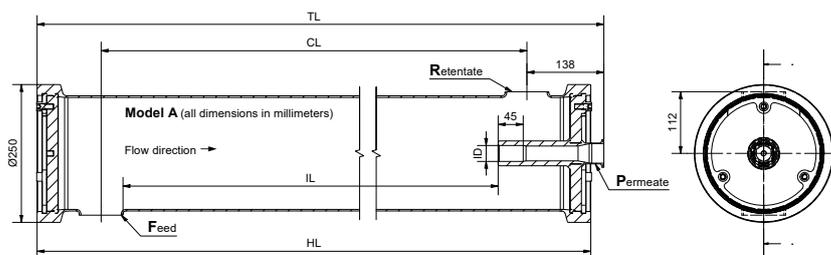
| MH-8-64bar-4-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 136 liters |      | Dry weight 94 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-64-4-76-38-C              | W-024830       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4293              | 4270 | 4040             | 3949 |
| MH-8-64-4-63-38-C              | W-024836       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4293              | 4270 | 4040             | 3955 |
| MH-8-64-4-51-38-C              | W-024842       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4293              | 4270 | 4040             | 3961 |
| MH-8-64-4-65-38-C              | W-024848       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4293              | 4270 | 4040             | 3952 |
| MH-8-64-4-50-38-C              | W-024854       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4293              | 4270 | 4040             | 3960 |
| MH-8-64-4-76-25-C              | W-024860       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4293              | 4270 | 4040             | 3949 |
| MH-8-64-4-63-25-C              | W-024866       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4293              | 4270 | 4040             | 3955 |
| MH-8-64-4-51-25-C              | W-024872       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4293              | 4270 | 4040             | 3961 |
| MH-8-64-4-65-25-C              | W-024878       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4293              | 4270 | 4040             | 3952 |
| MH-8-64-4-50-25-C              | W-024884       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4293              | 4270 | 4040             | 3960 |
| MH-8-64-4-76-40-C              | W-024890       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4293              | 4270 | 4040             | 3949 |
| MH-8-64-4-63-40-C              | W-024896       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4293              | 4270 | 4040             | 3955 |
| MH-8-64-4-51-40-C              | W-024902       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4293              | 4270 | 4040             | 3961 |
| MH-8-64-4-65-40-C              | W-024908       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4293              | 4270 | 4040             | 3952 |
| MH-8-64-4-50-40-C              | W-024914       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4293              | 4270 | 4040             | 3960 |
| MH-8-64-4-76-26-C              | W-024920       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4293              | 4270 | 4040             | 3949 |
| MH-8-64-4-63-26-C              | W-024926       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4293              | 4270 | 4040             | 3955 |
| MH-8-64-4-51-26-C              | W-024932       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4293              | 4270 | 4040             | 3961 |
| MH-8-64-4-65-26-C              | W-024938       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4293              | 4270 | 4040             | 3952 |
| MH-8-64-4-50-26-C              | W-024944       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4293              | 4270 | 4040             | 3960 |



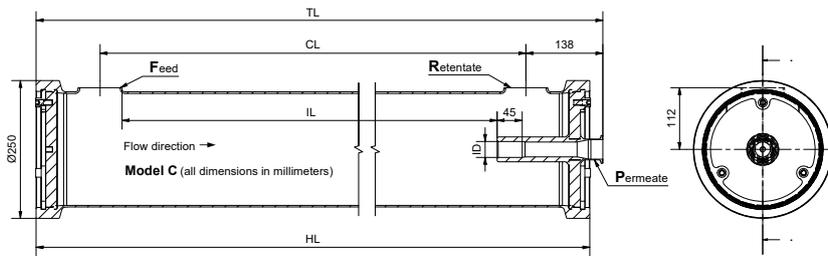
| MH-8-64bar-5-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 168 liters |      | Dry weight 110 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MH-8-64-5-76-38-A              | W-024711       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5278              | 5255 | 5025              | 4934 |
| MH-8-64-5-63-38-A              | W-024717       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5278              | 5255 | 5025              | 4940 |
| MH-8-64-5-51-38-A              | W-024723       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5278              | 5255 | 5025              | 4946 |
| MH-8-64-5-65-38-A              | W-024729       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5278              | 5255 | 5025              | 4937 |
| MH-8-64-5-50-38-A              | W-024735       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5278              | 5255 | 5025              | 4945 |
| MH-8-64-5-76-25-A              | W-024741       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5278              | 5255 | 5025              | 4934 |
| MH-8-64-5-63-25-A              | W-024747       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5278              | 5255 | 5025              | 4940 |
| MH-8-64-5-51-25-A              | W-024753       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5278              | 5255 | 5025              | 4946 |
| MH-8-64-5-65-25-A              | W-024759       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5278              | 5255 | 5025              | 4937 |
| MH-8-64-5-50-25-A              | W-024765       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5278              | 5255 | 5025              | 4945 |
| MH-8-64-5-76-40-A              | W-024771       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5278              | 5255 | 5025              | 4934 |
| MH-8-64-5-63-40-A              | W-024777       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5278              | 5255 | 5025              | 4940 |
| MH-8-64-5-51-40-A              | W-024783       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5278              | 5255 | 5025              | 4946 |
| MH-8-64-5-65-40-A              | W-024789       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5278              | 5255 | 5025              | 4937 |
| MH-8-64-5-50-40-A              | W-024795       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5278              | 5255 | 5025              | 4945 |
| MH-8-64-5-76-26-A              | W-024801       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5278              | 5255 | 5025              | 4934 |
| MH-8-64-5-63-26-A              | W-024807       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5278              | 5255 | 5025              | 4940 |
| MH-8-64-5-51-26-A              | W-024813       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5278              | 5255 | 5025              | 4946 |
| MH-8-64-5-65-26-A              | W-024819       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5278              | 5255 | 5025              | 4937 |
| MH-8-64-5-50-26-A              | W-024825       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5278              | 5255 | 5025              | 4945 |



| MH-8-64bar-5-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 168 liters |      | Dry weight 110 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MH-8-64-5-76-38-C              | W-024831       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5278              | 5255 | 5025              | 4934 |
| MH-8-64-5-63-38-C              | W-024837       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5278              | 5255 | 5025              | 4940 |
| MH-8-64-5-51-38-C              | W-024843       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5278              | 5255 | 5025              | 4946 |
| MH-8-64-5-65-38-C              | W-024849       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5278              | 5255 | 5025              | 4937 |
| MH-8-64-5-50-38-C              | W-024855       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5278              | 5255 | 5025              | 4945 |
| MH-8-64-5-76-25-C              | W-024861       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5278              | 5255 | 5025              | 4934 |
| MH-8-64-5-63-25-C              | W-024867       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5278              | 5255 | 5025              | 4940 |
| MH-8-64-5-51-25-C              | W-024873       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5278              | 5255 | 5025              | 4946 |
| MH-8-64-5-65-25-C              | W-024879       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5278              | 5255 | 5025              | 4937 |
| MH-8-64-5-50-25-C              | W-024885       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5278              | 5255 | 5025              | 4945 |
| MH-8-64-5-76-40-C              | W-024891       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5278              | 5255 | 5025              | 4934 |
| MH-8-64-5-63-40-C              | W-024897       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5278              | 5255 | 5025              | 4940 |
| MH-8-64-5-51-40-C              | W-024903       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5278              | 5255 | 5025              | 4946 |
| MH-8-64-5-65-40-C              | W-024909       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5278              | 5255 | 5025              | 4937 |
| MH-8-64-5-50-40-C              | W-024915       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5278              | 5255 | 5025              | 4945 |
| MH-8-64-5-76-26-C              | W-024921       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5278              | 5255 | 5025              | 4934 |
| MH-8-64-5-63-26-C              | W-024927       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5278              | 5255 | 5025              | 4940 |
| MH-8-64-5-51-26-C              | W-024933       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5278              | 5255 | 5025              | 4946 |
| MH-8-64-5-65-26-C              | W-024939       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5278              | 5255 | 5025              | 4937 |
| MH-8-64-5-50-26-C              | W-024945       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5278              | 5255 | 5025              | 4945 |



| MH-8-64bar-6-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 200 liters |      | Dry weight 126 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MH-8-64-6-76-38-A              | W-024712       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6258              | 6235 | 6005              | 5914 |
| MH-8-64-6-63-38-A              | W-024718       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6258              | 6235 | 6005              | 5920 |
| MH-8-64-6-51-38-A              | W-024724       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6258              | 6235 | 6005              | 5926 |
| MH-8-64-6-65-38-A              | W-024730       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6258              | 6235 | 6005              | 5917 |
| MH-8-64-6-50-38-A              | W-024736       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6258              | 6235 | 6005              | 5925 |
| MH-8-64-6-76-25-A              | W-024742       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6258              | 6235 | 6005              | 5914 |
| MH-8-64-6-63-25-A              | W-024748       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6258              | 6235 | 6005              | 5920 |
| MH-8-64-6-51-25-A              | W-024754       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6258              | 6235 | 6005              | 5926 |
| MH-8-64-6-65-25-A              | W-024760       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6258              | 6235 | 6005              | 5917 |
| MH-8-64-6-50-25-A              | W-024766       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6258              | 6235 | 6005              | 5925 |
| MH-8-64-6-76-40-A              | W-024772       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6258              | 6235 | 6005              | 5914 |
| MH-8-64-6-63-40-A              | W-024778       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6258              | 6235 | 6005              | 5920 |
| MH-8-64-6-51-40-A              | W-024784       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6258              | 6235 | 6005              | 5926 |
| MH-8-64-6-65-40-A              | W-024790       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6258              | 6235 | 6005              | 5917 |
| MH-8-64-6-50-40-A              | W-024796       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6258              | 6235 | 6005              | 5925 |
| MH-8-64-6-76-26-A              | W-024802       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6258              | 6235 | 6005              | 5914 |
| MH-8-64-6-63-26-A              | W-024808       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6258              | 6235 | 6005              | 5920 |
| MH-8-64-6-51-26-A              | W-024814       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6258              | 6235 | 6005              | 5926 |
| MH-8-64-6-65-26-A              | W-024820       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6258              | 6235 | 6005              | 5917 |
| MH-8-64-6-50-26-A              | W-024826       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6258              | 6235 | 6005              | 5925 |



| MH-8-64bar-6-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 200 liters |      | Dry weight 126 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MH-8-64-6-76-38-C              | W-024832       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6258              | 6235 | 6005              | 5914 |
| MH-8-64-6-63-38-C              | W-024838       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6258              | 6235 | 6005              | 5920 |
| MH-8-64-6-51-38-C              | W-024844       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6258              | 6235 | 6005              | 5926 |
| MH-8-64-6-65-38-C              | W-024850       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6258              | 6235 | 6005              | 5917 |
| MH-8-64-6-50-38-C              | W-024856       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6258              | 6235 | 6005              | 5925 |
| MH-8-64-6-76-25-C              | W-024862       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6258              | 6235 | 6005              | 5914 |
| MH-8-64-6-63-25-C              | W-024868       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6258              | 6235 | 6005              | 5920 |
| MH-8-64-6-51-25-C              | W-024874       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6258              | 6235 | 6005              | 5926 |
| MH-8-64-6-65-25-C              | W-024880       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6258              | 6235 | 6005              | 5917 |
| MH-8-64-6-50-25-C              | W-024886       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6258              | 6235 | 6005              | 5925 |
| MH-8-64-6-76-40-C              | W-024892       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6258              | 6235 | 6005              | 5914 |
| MH-8-64-6-63-40-C              | W-024898       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6258              | 6235 | 6005              | 5920 |
| MH-8-64-6-51-40-C              | W-024904       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6258              | 6235 | 6005              | 5926 |
| MH-8-64-6-65-40-C              | W-024910       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6258              | 6235 | 6005              | 5917 |
| MH-8-64-6-50-40-C              | W-024916       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6258              | 6235 | 6005              | 5925 |
| MH-8-64-6-76-26-C              | W-024922       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6258              | 6235 | 6005              | 5914 |
| MH-8-64-6-63-26-C              | W-024928       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6258              | 6235 | 6005              | 5920 |
| MH-8-64-6-51-26-C              | W-024934       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6258              | 6235 | 6005              | 5926 |
| MH-8-64-6-65-26-C              | W-024940       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6258              | 6235 | 6005              | 5917 |
| MH-8-64-6-50-26-C              | W-024946       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6258              | 6235 | 6005              | 5925 |





# MEMBRANE HOUSING

## DETAILED OVERVIEW FOR TYPE 'MH-8-12' LOW PRESSURE - 12 BAR

FOR NF AND RO FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with collaring connections manufactured by Wila A/S under the category "MH" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with EN 1.4404 (AISI 316L) Stainless steel.**

The Membrane Housing is designed for pressures up to 12 bar and temperatures up to 70°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MH-8-12bar-X-element - Model \_

|       |   |  |
|-------|---|--|
| MH    | <b>Membrane Housing</b> with collaring connections for Feed and Retentate.              |  |
| 8     | The membrane housing is designed for 7.9" x 38" (8038) membranes.                       |  |
| 12bar | The Membrane Housing is designed for pressures up to 12 bar and temperatures up to 70°C |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MH-8-12-X-YY-ZZ-\_

|    |                           |  |
|----|---------------------------|--|
| X  | From 1 to 6 elements      | Indicates the number of elements that can be fitted. |
| YY | 76 - 65 - 63 - 51 - 50*** | Indicates Feed and Retentate collaring connections.  |
| ZZ | 38 - 25 - 40 - 26**       | Indicates Permeate end clamp ferrule connection.     |
| _  | Either A or C *           | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

\*\*Clamp ferrule connections sizes - Other types and sizes are available

|         |  |                                |
|---------|--|--------------------------------|
| 38 - 25 | translates respectively to Ø38 - Ø25   | in accordance with ISO 2852-2  |
| 40 - 26 | translates respectively to DN40 - DN25 | in accordance with DIN 32676-A |

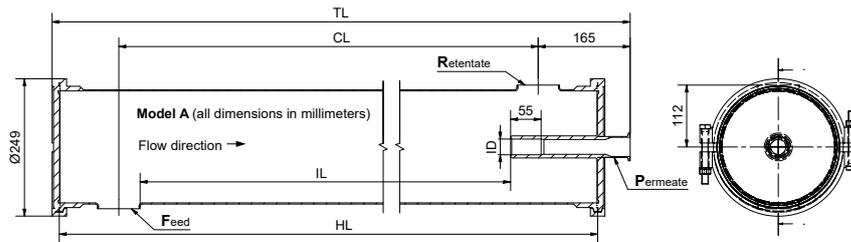
\*\*\*Collaring connections sizes - Other sizes are available

|              |  |
|--------------|--|
| 76 - 63 - 51 | translates respectively to Ø76 - Ø63.5 - Ø51 |
| 65 - 50      | translates respectively to DN65 - DN50       |

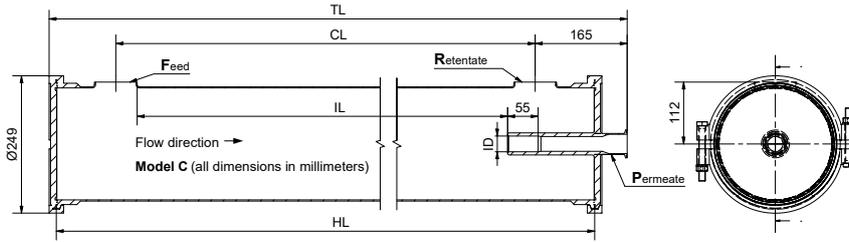
## Connections

For Feed and Retentate only use weld ends with a minimum 2 mm wall thickness. For the Permeate connection an SH clamp is recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

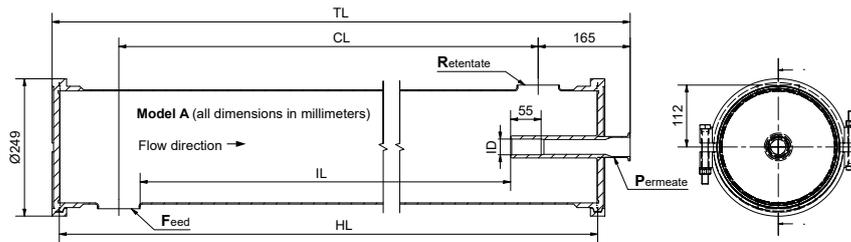
**Temperature and pressure limits must be respected at all times !**



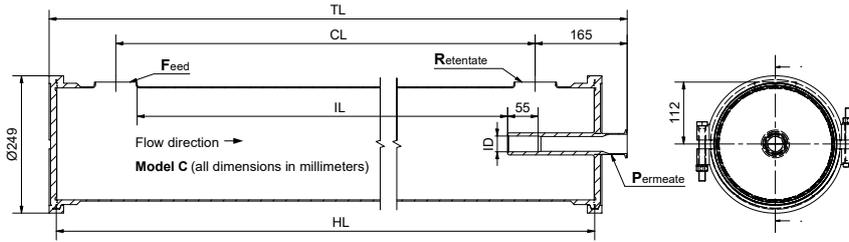
| MH-8-12bar-1-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 41 liters |      | Dry weight 30 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-12-1-76-38-A              | W-022792       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1380             | 1309 | 1095             | 1007 |
| MH-8-12-1-63-38-A              | W-023993       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1380             | 1309 | 1095             | 1013 |
| MH-8-12-1-51-38-A              | W-023999       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1380             | 1309 | 1095             | 1019 |
| MH-8-12-1-65-38-A              | W-024005       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1380             | 1309 | 1095             | 1010 |
| MH-8-12-1-50-38-A              | W-024011       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1380             | 1309 | 1095             | 1018 |
| MH-8-12-1-76-25-A              | W-024017       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1380             | 1309 | 1095             | 1007 |
| MH-8-12-1-63-25-A              | W-024023       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1380             | 1309 | 1095             | 1013 |
| MH-8-12-1-51-25-A              | W-024029       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1380             | 1309 | 1095             | 1019 |
| MH-8-12-1-65-25-A              | W-024035       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1380             | 1309 | 1095             | 1010 |
| MH-8-12-1-50-25-A              | W-024041       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1380             | 1309 | 1095             | 1018 |
| MH-8-12-1-76-40-A              | W-024047       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1380             | 1309 | 1095             | 1007 |
| MH-8-12-1-63-40-A              | W-024053       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1380             | 1309 | 1095             | 1013 |
| MH-8-12-1-51-40-A              | W-024059       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1380             | 1309 | 1095             | 1019 |
| MH-8-12-1-65-40-A              | W-024065       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1380             | 1309 | 1095             | 1010 |
| MH-8-12-1-50-40-A              | W-024071       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1380             | 1309 | 1095             | 1018 |
| MH-8-12-1-76-26-A              | W-024077       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1380             | 1309 | 1095             | 1007 |
| MH-8-12-1-63-26-A              | W-024083       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1380             | 1309 | 1095             | 1013 |
| MH-8-12-1-51-26-A              | W-024089       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1380             | 1309 | 1095             | 1019 |
| MH-8-12-1-65-26-A              | W-024095       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1380             | 1309 | 1095             | 1010 |
| MH-8-12-1-50-26-A              | W-024101       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1380             | 1309 | 1095             | 1018 |



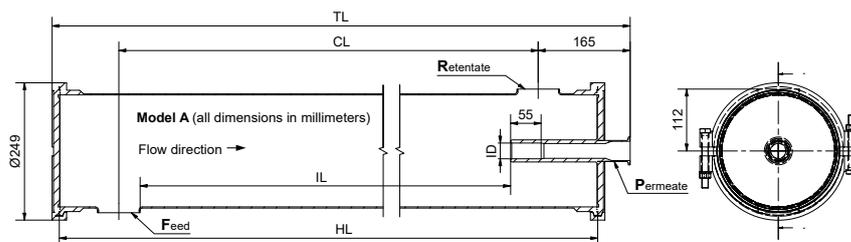
| MH-8-12bar-1-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 41 liters |      | Dry weight 30 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-12-1-76-38-C              | W-024107       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1380             | 1309 | 1095             | 1007 |
| MH-8-12-1-63-38-C              | W-024113       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1380             | 1309 | 1095             | 1013 |
| MH-8-12-1-51-38-C              | W-024119       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1380             | 1309 | 1095             | 1019 |
| MH-8-12-1-65-38-C              | W-024125       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1380             | 1309 | 1095             | 1010 |
| MH-8-12-1-50-38-C              | W-024131       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1380             | 1309 | 1095             | 1018 |
| MH-8-12-1-76-25-C              | W-024137       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1380             | 1309 | 1095             | 1007 |
| MH-8-12-1-63-25-C              | W-024143       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1380             | 1309 | 1095             | 1013 |
| MH-8-12-1-51-25-C              | W-024149       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1380             | 1309 | 1095             | 1019 |
| MH-8-12-1-65-25-C              | W-024155       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1380             | 1309 | 1095             | 1010 |
| MH-8-12-1-50-25-C              | W-024161       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1380             | 1309 | 1095             | 1018 |
| MH-8-12-1-76-40-C              | W-024167       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1380             | 1309 | 1095             | 1007 |
| MH-8-12-1-63-40-C              | W-024173       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1380             | 1309 | 1095             | 1013 |
| MH-8-12-1-51-40-C              | W-024179       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1380             | 1309 | 1095             | 1019 |
| MH-8-12-1-65-40-C              | W-024185       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1380             | 1309 | 1095             | 1010 |
| MH-8-12-1-50-40-C              | W-024191       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1380             | 1309 | 1095             | 1018 |
| MH-8-12-1-76-26-C              | W-024197       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1380             | 1309 | 1095             | 1007 |
| MH-8-12-1-63-26-C              | W-024203       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1380             | 1309 | 1095             | 1013 |
| MH-8-12-1-51-26-C              | W-024209       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1380             | 1309 | 1095             | 1019 |
| MH-8-12-1-65-26-C              | W-024215       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1380             | 1309 | 1095             | 1010 |
| MH-8-12-1-50-26-C              | W-024221       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1380             | 1309 | 1095             | 1018 |



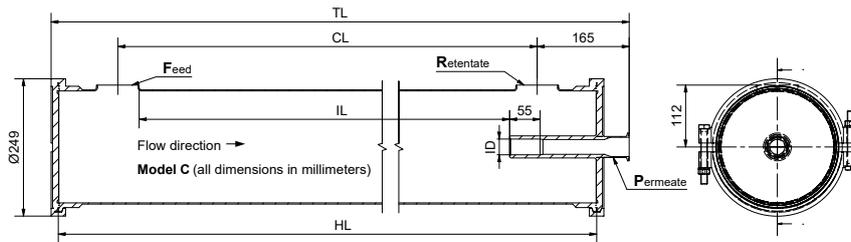
| MH-8-12bar-2-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 72 liters |      | Dry weight 42 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-12-2-76-38-A              | W-022793       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2360             | 2289 | 2075             | 1987 |
| MH-8-12-2-63-38-A              | W-023994       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2360             | 2289 | 2075             | 1993 |
| MH-8-12-2-51-38-A              | W-024000       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2360             | 2289 | 2075             | 1999 |
| MH-8-12-2-65-38-A              | W-024006       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2360             | 2289 | 2075             | 1990 |
| MH-8-12-2-50-38-A              | W-024012       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2360             | 2289 | 2075             | 1998 |
| MH-8-12-2-76-25-A              | W-024018       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2360             | 2289 | 2075             | 1987 |
| MH-8-12-2-63-25-A              | W-024024       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2360             | 2289 | 2075             | 1993 |
| MH-8-12-2-51-25-A              | W-024030       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2360             | 2289 | 2075             | 1999 |
| MH-8-12-2-65-25-A              | W-024036       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2360             | 2289 | 2075             | 1990 |
| MH-8-12-2-50-25-A              | W-024042       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2360             | 2289 | 2075             | 1998 |
| MH-8-12-2-76-40-A              | W-024048       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2360             | 2289 | 2075             | 1987 |
| MH-8-12-2-63-40-A              | W-024054       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2360             | 2289 | 2075             | 1993 |
| MH-8-12-2-51-40-A              | W-024060       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2360             | 2289 | 2075             | 1999 |
| MH-8-12-2-65-40-A              | W-024066       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2360             | 2289 | 2075             | 1990 |
| MH-8-12-2-50-40-A              | W-024072       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2360             | 2289 | 2075             | 1998 |
| MH-8-12-2-76-26-A              | W-024078       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2360             | 2289 | 2075             | 1987 |
| MH-8-12-2-63-26-A              | W-024084       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2360             | 2289 | 2075             | 1993 |
| MH-8-12-2-51-26-A              | W-024090       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2360             | 2289 | 2075             | 1999 |
| MH-8-12-2-65-26-A              | W-024096       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2360             | 2289 | 2075             | 1990 |
| MH-8-12-2-50-26-A              | W-024102       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2360             | 2289 | 2075             | 1998 |



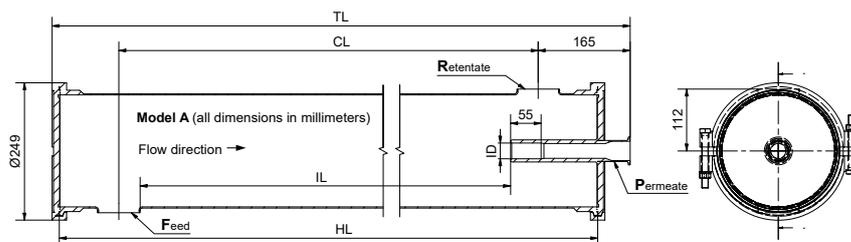
| MH-8-12bar-2-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 72 liters |      | Dry weight 42 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-8-12-2-76-38-C              | W-024108       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2360             | 2289 | 2075             | 1987 |
| MH-8-12-2-63-38-C              | W-024114       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2360             | 2289 | 2075             | 1993 |
| MH-8-12-2-51-38-C              | W-024120       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2360             | 2289 | 2075             | 1999 |
| MH-8-12-2-65-38-C              | W-024126       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2360             | 2289 | 2075             | 1990 |
| MH-8-12-2-50-38-C              | W-024132       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2360             | 2289 | 2075             | 1998 |
| MH-8-12-2-76-25-C              | W-024138       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2360             | 2289 | 2075             | 1987 |
| MH-8-12-2-63-25-C              | W-024144       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2360             | 2289 | 2075             | 1993 |
| MH-8-12-2-51-25-C              | W-024150       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2360             | 2289 | 2075             | 1999 |
| MH-8-12-2-65-25-C              | W-024156       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2360             | 2289 | 2075             | 1990 |
| MH-8-12-2-50-25-C              | W-024162       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2360             | 2289 | 2075             | 1998 |
| MH-8-12-2-76-40-C              | W-024168       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2360             | 2289 | 2075             | 1987 |
| MH-8-12-2-63-40-C              | W-024174       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2360             | 2289 | 2075             | 1993 |
| MH-8-12-2-51-40-C              | W-024180       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2360             | 2289 | 2075             | 1999 |
| MH-8-12-2-65-40-C              | W-024186       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2360             | 2289 | 2075             | 1990 |
| MH-8-12-2-50-40-C              | W-024192       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2360             | 2289 | 2075             | 1998 |
| MH-8-12-2-76-26-C              | W-024198       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2360             | 2289 | 2075             | 1987 |
| MH-8-12-2-63-26-C              | W-024204       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2360             | 2289 | 2075             | 1993 |
| MH-8-12-2-51-26-C              | W-024210       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2360             | 2289 | 2075             | 1999 |
| MH-8-12-2-65-26-C              | W-024216       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2360             | 2289 | 2075             | 1990 |
| MH-8-12-2-50-26-C              | W-024222       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2360             | 2289 | 2075             | 1998 |



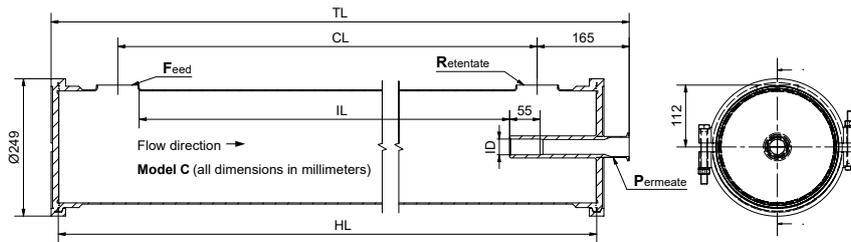
| MH-8-12bar-3-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 104 liters |      | Dry weight 53 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-12-3-76-38-A              | W-022794       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3345              | 3274 | 3060             | 2972 |
| MH-8-12-3-63-38-A              | W-023995       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3345              | 3274 | 3060             | 2978 |
| MH-8-12-3-51-38-A              | W-024001       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3345              | 3274 | 3060             | 2984 |
| MH-8-12-3-65-38-A              | W-024007       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3345              | 3274 | 3060             | 2975 |
| MH-8-12-3-50-38-A              | W-024013       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3345              | 3274 | 3060             | 2983 |
| MH-8-12-3-76-25-A              | W-024019       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3345              | 3274 | 3060             | 2972 |
| MH-8-12-3-63-25-A              | W-024025       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3345              | 3274 | 3060             | 2978 |
| MH-8-12-3-51-25-A              | W-024031       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3345              | 3274 | 3060             | 2984 |
| MH-8-12-3-65-25-A              | W-024037       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3345              | 3274 | 3060             | 2975 |
| MH-8-12-3-50-25-A              | W-024043       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3345              | 3274 | 3060             | 2983 |
| MH-8-12-3-76-40-A              | W-024049       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3345              | 3274 | 3060             | 2972 |
| MH-8-12-3-63-40-A              | W-024055       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3345              | 3274 | 3060             | 2978 |
| MH-8-12-3-51-40-A              | W-024061       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3345              | 3274 | 3060             | 2984 |
| MH-8-12-3-65-40-A              | W-024067       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3345              | 3274 | 3060             | 2975 |
| MH-8-12-3-50-40-A              | W-024073       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3345              | 3274 | 3060             | 2983 |
| MH-8-12-3-76-26-A              | W-024079       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3345              | 3274 | 3060             | 2972 |
| MH-8-12-3-63-26-A              | W-024085       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3345              | 3274 | 3060             | 2978 |
| MH-8-12-3-51-26-A              | W-024091       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3345              | 3274 | 3060             | 2984 |
| MH-8-12-3-65-26-A              | W-024097       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3345              | 3274 | 3060             | 2975 |
| MH-8-12-3-50-26-A              | W-024103       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3345              | 3274 | 3060             | 2983 |



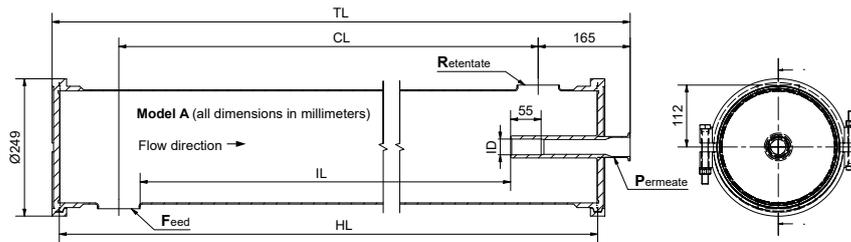
| MH-8-12bar-3-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 104 liters |      | Dry weight 53 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-12-3-76-38-C              | W-024109       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3345              | 3274 | 3060             | 2972 |
| MH-8-12-3-63-38-C              | W-024115       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3345              | 3274 | 3060             | 2978 |
| MH-8-12-3-51-38-C              | W-024121       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3345              | 3274 | 3060             | 2984 |
| MH-8-12-3-65-38-C              | W-024127       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3345              | 3274 | 3060             | 2975 |
| MH-8-12-3-50-38-C              | W-024133       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3345              | 3274 | 3060             | 2983 |
| MH-8-12-3-76-25-C              | W-024139       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3345              | 3274 | 3060             | 2972 |
| MH-8-12-3-63-25-C              | W-024145       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3345              | 3274 | 3060             | 2978 |
| MH-8-12-3-51-25-C              | W-024151       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3345              | 3274 | 3060             | 2984 |
| MH-8-12-3-65-25-C              | W-024157       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3345              | 3274 | 3060             | 2975 |
| MH-8-12-3-50-25-C              | W-024163       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3345              | 3274 | 3060             | 2983 |
| MH-8-12-3-76-40-C              | W-024169       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3345              | 3274 | 3060             | 2972 |
| MH-8-12-3-63-40-C              | W-024175       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3345              | 3274 | 3060             | 2978 |
| MH-8-12-3-51-40-C              | W-024181       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3345              | 3274 | 3060             | 2984 |
| MH-8-12-3-65-40-C              | W-024187       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3345              | 3274 | 3060             | 2975 |
| MH-8-12-3-50-40-C              | W-024193       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3345              | 3274 | 3060             | 2983 |
| MH-8-12-3-76-26-C              | W-024199       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3345              | 3274 | 3060             | 2972 |
| MH-8-12-3-63-26-C              | W-024205       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3345              | 3274 | 3060             | 2978 |
| MH-8-12-3-51-26-C              | W-024211       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3345              | 3274 | 3060             | 2984 |
| MH-8-12-3-65-26-C              | W-024217       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3345              | 3274 | 3060             | 2975 |
| MH-8-12-3-50-26-C              | W-024223       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3345              | 3274 | 3060             | 2983 |



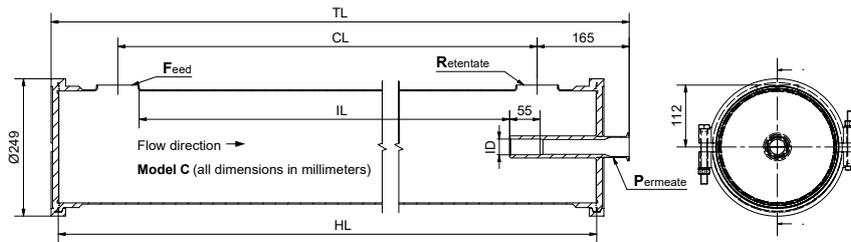
| MH-8-12bar-4-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 136 liters |      | Dry weight 64 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-12-4-76-38-A              | W-022795       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4325              | 4254 | 4040             | 3952 |
| MH-8-12-4-63-38-A              | W-023996       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4325              | 4254 | 4040             | 3958 |
| MH-8-12-4-51-38-A              | W-024002       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4325              | 4254 | 4040             | 3964 |
| MH-8-12-4-65-38-A              | W-024008       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4325              | 4254 | 4040             | 3955 |
| MH-8-12-4-50-38-A              | W-024014       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4325              | 4254 | 4040             | 3963 |
| MH-8-12-4-76-25-A              | W-024020       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4325              | 4254 | 4040             | 3952 |
| MH-8-12-4-63-25-A              | W-024026       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4325              | 4254 | 4040             | 3958 |
| MH-8-12-4-51-25-A              | W-024032       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4325              | 4254 | 4040             | 3964 |
| MH-8-12-4-65-25-A              | W-024038       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4325              | 4254 | 4040             | 3955 |
| MH-8-12-4-50-25-A              | W-024044       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4325              | 4254 | 4040             | 3963 |
| MH-8-12-4-76-40-A              | W-024050       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4325              | 4254 | 4040             | 3952 |
| MH-8-12-4-63-40-A              | W-024056       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4325              | 4254 | 4040             | 3958 |
| MH-8-12-4-51-40-A              | W-024062       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4325              | 4254 | 4040             | 3964 |
| MH-8-12-4-65-40-A              | W-024068       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4325              | 4254 | 4040             | 3955 |
| MH-8-12-4-50-40-A              | W-024074       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4325              | 4254 | 4040             | 3963 |
| MH-8-12-4-76-26-A              | W-024080       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4325              | 4254 | 4040             | 3952 |
| MH-8-12-4-63-26-A              | W-024086       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4325              | 4254 | 4040             | 3958 |
| MH-8-12-4-51-26-A              | W-024092       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4325              | 4254 | 4040             | 3964 |
| MH-8-12-4-65-26-A              | W-024098       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4325              | 4254 | 4040             | 3955 |
| MH-8-12-4-50-26-A              | W-024104       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4325              | 4254 | 4040             | 3963 |



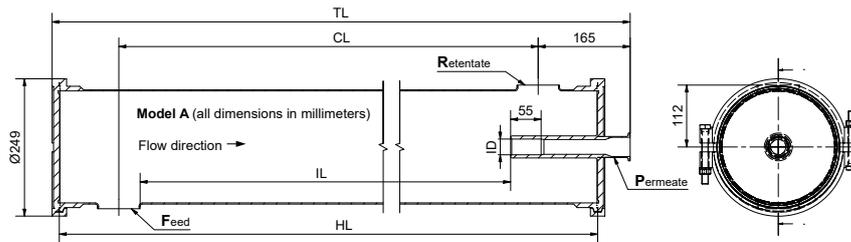
| MH-8-12bar-4-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 136 liters |      | Dry weight 64 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-12-4-76-38-C              | W-024110       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4325              | 4254 | 4040             | 3952 |
| MH-8-12-4-63-38-C              | W-024116       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4325              | 4254 | 4040             | 3958 |
| MH-8-12-4-51-38-C              | W-024122       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4325              | 4254 | 4040             | 3964 |
| MH-8-12-4-65-38-C              | W-024128       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4325              | 4254 | 4040             | 3955 |
| MH-8-12-4-50-38-C              | W-024134       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4325              | 4254 | 4040             | 3963 |
| MH-8-12-4-76-25-C              | W-024140       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4325              | 4254 | 4040             | 3952 |
| MH-8-12-4-63-25-C              | W-024146       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4325              | 4254 | 4040             | 3958 |
| MH-8-12-4-51-25-C              | W-024152       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4325              | 4254 | 4040             | 3964 |
| MH-8-12-4-65-25-C              | W-024158       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4325              | 4254 | 4040             | 3955 |
| MH-8-12-4-50-25-C              | W-024164       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4325              | 4254 | 4040             | 3963 |
| MH-8-12-4-76-40-C              | W-024170       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4325              | 4254 | 4040             | 3952 |
| MH-8-12-4-63-40-C              | W-024176       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4325              | 4254 | 4040             | 3958 |
| MH-8-12-4-51-40-C              | W-024182       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4325              | 4254 | 4040             | 3964 |
| MH-8-12-4-65-40-C              | W-024188       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4325              | 4254 | 4040             | 3955 |
| MH-8-12-4-50-40-C              | W-024194       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4325              | 4254 | 4040             | 3963 |
| MH-8-12-4-76-26-C              | W-024200       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4325              | 4254 | 4040             | 3952 |
| MH-8-12-4-63-26-C              | W-024206       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4325              | 4254 | 4040             | 3958 |
| MH-8-12-4-51-26-C              | W-024212       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4325              | 4254 | 4040             | 3964 |
| MH-8-12-4-65-26-C              | W-024218       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4325              | 4254 | 4040             | 3955 |
| MH-8-12-4-50-26-C              | W-024224       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4325              | 4254 | 4040             | 3963 |



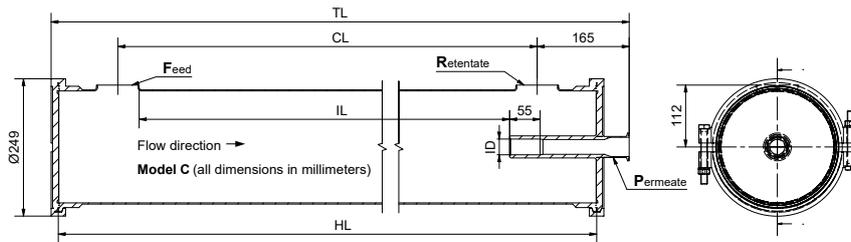
| MH-8-12bar-5-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 168 liters |      | Dry weight 76 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-12-5-76-38-A              | W-022796       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5310              | 5239 | 5025             | 4937 |
| MH-8-12-5-63-38-A              | W-023997       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5310              | 5239 | 5025             | 4943 |
| MH-8-12-5-51-38-A              | W-024003       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5310              | 5239 | 5025             | 4949 |
| MH-8-12-5-65-38-A              | W-024009       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5310              | 5239 | 5025             | 4940 |
| MH-8-12-5-50-38-A              | W-024015       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5310              | 5239 | 5025             | 4948 |
| MH-8-12-5-76-25-A              | W-024021       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5310              | 5239 | 5025             | 4937 |
| MH-8-12-5-63-25-A              | W-024027       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5310              | 5239 | 5025             | 4943 |
| MH-8-12-5-51-25-A              | W-024033       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5310              | 5239 | 5025             | 4949 |
| MH-8-12-5-65-25-A              | W-024039       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5310              | 5239 | 5025             | 4940 |
| MH-8-12-5-50-25-A              | W-024045       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5310              | 5239 | 5025             | 4948 |
| MH-8-12-5-76-40-A              | W-024051       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5310              | 5239 | 5025             | 4937 |
| MH-8-12-5-63-40-A              | W-024057       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5310              | 5239 | 5025             | 4943 |
| MH-8-12-5-51-40-A              | W-024063       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5310              | 5239 | 5025             | 4949 |
| MH-8-12-5-65-40-A              | W-024069       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5310              | 5239 | 5025             | 4940 |
| MH-8-12-5-50-40-A              | W-024075       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5310              | 5239 | 5025             | 4948 |
| MH-8-12-5-76-26-A              | W-024081       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5310              | 5239 | 5025             | 4937 |
| MH-8-12-5-63-26-A              | W-024087       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5310              | 5239 | 5025             | 4943 |
| MH-8-12-5-51-26-A              | W-024093       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5310              | 5239 | 5025             | 4949 |
| MH-8-12-5-65-26-A              | W-024099       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5310              | 5239 | 5025             | 4940 |
| MH-8-12-5-50-26-A              | W-024105       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5310              | 5239 | 5025             | 4948 |



| MH-8-12bar-5-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 168 liters |      | Dry weight 76 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-12-5-76-38-C              | W-024111       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5310              | 5239 | 5025             | 4937 |
| MH-8-12-5-63-38-C              | W-024117       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5310              | 5239 | 5025             | 4943 |
| MH-8-12-5-51-38-C              | W-024123       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5310              | 5239 | 5025             | 4949 |
| MH-8-12-5-65-38-C              | W-024129       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5310              | 5239 | 5025             | 4940 |
| MH-8-12-5-50-38-C              | W-024135       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5310              | 5239 | 5025             | 4948 |
| MH-8-12-5-76-25-C              | W-024141       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5310              | 5239 | 5025             | 4937 |
| MH-8-12-5-63-25-C              | W-024147       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5310              | 5239 | 5025             | 4943 |
| MH-8-12-5-51-25-C              | W-024153       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5310              | 5239 | 5025             | 4949 |
| MH-8-12-5-65-25-C              | W-024159       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5310              | 5239 | 5025             | 4940 |
| MH-8-12-5-50-25-C              | W-024165       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5310              | 5239 | 5025             | 4948 |
| MH-8-12-5-76-40-C              | W-024171       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5310              | 5239 | 5025             | 4937 |
| MH-8-12-5-63-40-C              | W-024177       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5310              | 5239 | 5025             | 4943 |
| MH-8-12-5-51-40-C              | W-024183       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5310              | 5239 | 5025             | 4949 |
| MH-8-12-5-65-40-C              | W-024189       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5310              | 5239 | 5025             | 4940 |
| MH-8-12-5-50-40-C              | W-024195       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5310              | 5239 | 5025             | 4948 |
| MH-8-12-5-76-26-C              | W-024201       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5310              | 5239 | 5025             | 4937 |
| MH-8-12-5-63-26-C              | W-024207       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5310              | 5239 | 5025             | 4943 |
| MH-8-12-5-51-26-C              | W-024213       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5310              | 5239 | 5025             | 4949 |
| MH-8-12-5-65-26-C              | W-024219       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5310              | 5239 | 5025             | 4940 |
| MH-8-12-5-50-26-C              | W-024225       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5310              | 5239 | 5025             | 4948 |



| MH-8-12bar-6-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 200 liters |      | Dry weight 88 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-12-6-76-38-A              | W-022797       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6290              | 6219 | 6005             | 5917 |
| MH-8-12-6-63-38-A              | W-023998       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6290              | 6219 | 6005             | 5923 |
| MH-8-12-6-51-38-A              | W-024004       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6290              | 6219 | 6005             | 5929 |
| MH-8-12-6-65-38-A              | W-024010       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6290              | 6219 | 6005             | 5920 |
| MH-8-12-6-50-38-A              | W-024016       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6290              | 6219 | 6005             | 5928 |
| MH-8-12-6-76-25-A              | W-024022       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6290              | 6219 | 6005             | 5917 |
| MH-8-12-6-63-25-A              | W-024028       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6290              | 6219 | 6005             | 5923 |
| MH-8-12-6-51-25-A              | W-024034       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6290              | 6219 | 6005             | 5929 |
| MH-8-12-6-65-25-A              | W-024040       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6290              | 6219 | 6005             | 5920 |
| MH-8-12-6-50-25-A              | W-024046       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6290              | 6219 | 6005             | 5928 |
| MH-8-12-6-76-40-A              | W-024052       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6290              | 6219 | 6005             | 5917 |
| MH-8-12-6-63-40-A              | W-024058       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6290              | 6219 | 6005             | 5923 |
| MH-8-12-6-51-40-A              | W-024064       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6290              | 6219 | 6005             | 5929 |
| MH-8-12-6-65-40-A              | W-024070       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6290              | 6219 | 6005             | 5920 |
| MH-8-12-6-50-40-A              | W-024076       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6290              | 6219 | 6005             | 5928 |
| MH-8-12-6-76-26-A              | W-024082       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6290              | 6219 | 6005             | 5917 |
| MH-8-12-6-63-26-A              | W-024088       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6290              | 6219 | 6005             | 5923 |
| MH-8-12-6-51-26-A              | W-024094       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6290              | 6219 | 6005             | 5929 |
| MH-8-12-6-65-26-A              | W-024100       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6290              | 6219 | 6005             | 5920 |
| MH-8-12-6-50-26-A              | W-024106       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6290              | 6219 | 6005             | 5928 |



| MH-8-12bar-6-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 200 liters |      | Dry weight 88 kg |      |
| Stock number                   | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-8-12-6-76-38-C              | W-024112       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6290              | 6219 | 6005             | 5917 |
| MH-8-12-6-63-38-C              | W-024118       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6290              | 6219 | 6005             | 5923 |
| MH-8-12-6-51-38-C              | W-024124       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6290              | 6219 | 6005             | 5929 |
| MH-8-12-6-65-38-C              | W-024130       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6290              | 6219 | 6005             | 5920 |
| MH-8-12-6-50-38-C              | W-024136       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6290              | 6219 | 6005             | 5928 |
| MH-8-12-6-76-25-C              | W-024142       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6290              | 6219 | 6005             | 5917 |
| MH-8-12-6-63-25-C              | W-024148       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6290              | 6219 | 6005             | 5923 |
| MH-8-12-6-51-25-C              | W-024154       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6290              | 6219 | 6005             | 5929 |
| MH-8-12-6-65-25-C              | W-024160       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6290              | 6219 | 6005             | 5920 |
| MH-8-12-6-50-25-C              | W-024166       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6290              | 6219 | 6005             | 5928 |
| MH-8-12-6-76-40-C              | W-024172       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6290              | 6219 | 6005             | 5917 |
| MH-8-12-6-63-40-C              | W-024178       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6290              | 6219 | 6005             | 5923 |
| MH-8-12-6-51-40-C              | W-024184       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6290              | 6219 | 6005             | 5929 |
| MH-8-12-6-65-40-C              | W-024190       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6290              | 6219 | 6005             | 5920 |
| MH-8-12-6-50-40-C              | W-024196       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6290              | 6219 | 6005             | 5928 |
| MH-8-12-6-76-26-C              | W-024202       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6290              | 6219 | 6005             | 5917 |
| MH-8-12-6-63-26-C              | W-024208       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6290              | 6219 | 6005             | 5923 |
| MH-8-12-6-51-26-C              | W-024214       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6290              | 6219 | 6005             | 5929 |
| MH-8-12-6-65-26-C              | W-024220       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6290              | 6219 | 6005             | 5920 |
| MH-8-12-6-50-26-C              | W-024226       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6290              | 6219 | 6005             | 5928 |





# MEMBRANE HOUSING

DETAILED OVERVIEW FOR TYPE 'MH-6-16'  
LOW PRESSURE - 16 BAR

FOR MF AND UF FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with collaring connections manufactured by Wila A/S under the category "MH" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with EN 1.4404 (AISI 316L) Stainless steel.**

The Membrane Housing is designed for pressures up to 16 bar and temperatures up to 70°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MH-6-16bar-X-element - Model \_

|       |   |  |
|-------|---|--|
| MH    | <b>Membrane Housing</b> with collaring connections for Feed and Retentate.              |  |
| 6     | The membrane housing is designed for 6.3" x 38" (6338) membranes.                       |  |
| 16bar | The Membrane Housing is designed for pressures up to 16 bar and temperatures up to 70°C |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MH-6-16-X-YY-ZZ-\_

|    |                           |  |
|----|---------------------------|--|
| X  | From 1 to 6 elements      | Indicates the number of elements that can be fitted. |
| YY | 76 - 65 - 63 - 51 - 50*** | Indicates Feed and Retentate collaring connections.  |
| ZZ | 38 - 25 - 40 - 26**       | Indicates Permeate end clamp ferrule connection.     |
| _  | Either A or C *           | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

\*\*Clamp ferrule connections sizes - Other types and sizes are available

|         |  |                                |
|---------|--|--------------------------------|
| 38 - 25 | translates respectively to Ø38 - Ø25   | in accordance with ISO 2852-2  |
| 40 - 26 | translates respectively to DN40 - DN25 | in accordance with DIN 32676-A |

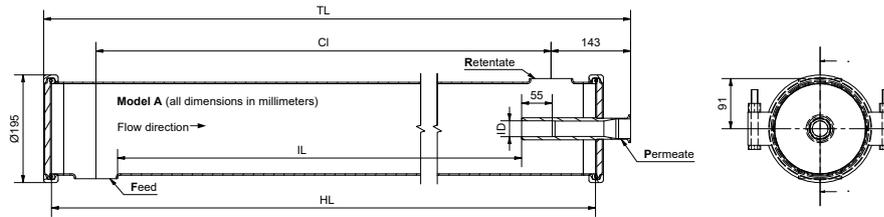
\*\*\*Collaring connections sizes - Other sizes are available

|              |  |
|--------------|--|
| 76 - 63 - 51 | translates respectively to Ø76 - Ø63.5 - Ø51 |
| 65 - 50      | translates respectively to DN65 - DN50       |

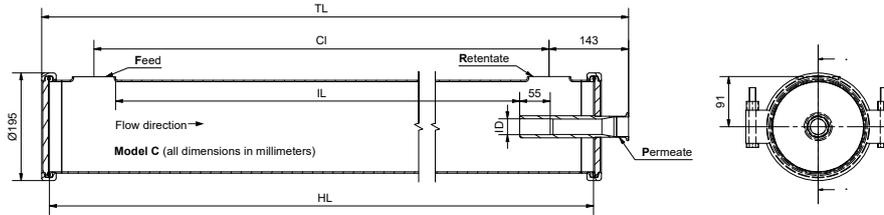
## Connections

For Feed and Retentate only use weld ends with a minimum 2 mm wall thickness. For the Permeate connection an SH clamp is recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

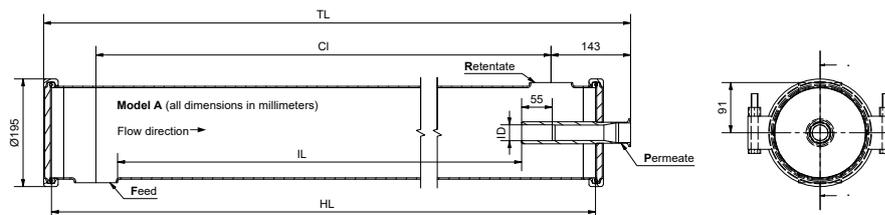
**Temperature and pressure limits must be respected at all times !**



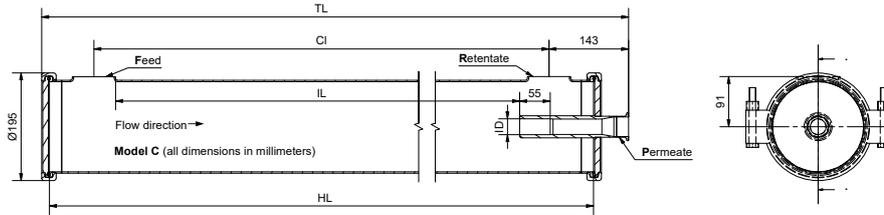
| MH-6-16bar-1-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 27 liters |      | Dry weight 25 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-6-16-1-76-38-A              | W-021803       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1342             | 1265 | 1105             | 1013 |
| MH-6-16-1-63-38-A              | W-024329       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1342             | 1265 | 1105             | 1019 |
| MH-6-16-1-51-38-A              | W-024335       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1342             | 1265 | 1105             | 1025 |
| MH-6-16-1-65-38-A              | W-024341       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1342             | 1265 | 1105             | 1016 |
| MH-6-16-1-50-38-A              | W-024347       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1342             | 1265 | 1105             | 1024 |
| MH-6-16-1-76-25-A              | W-024353       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1342             | 1265 | 1105             | 1013 |
| MH-6-16-1-63-25-A              | W-024359       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1342             | 1265 | 1105             | 1019 |
| MH-6-16-1-51-25-A              | W-024365       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1342             | 1265 | 1105             | 1025 |
| MH-6-16-1-65-25-A              | W-024371       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1342             | 1265 | 1105             | 1016 |
| MH-6-16-1-50-25-A              | W-024377       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1342             | 1265 | 1105             | 1024 |
| MH-6-16-1-76-40-A              | W-024383       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1342             | 1265 | 1105             | 1013 |
| MH-6-16-1-63-40-A              | W-024389       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1342             | 1265 | 1105             | 1019 |
| MH-6-16-1-51-40-A              | W-024395       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1342             | 1265 | 1105             | 1025 |
| MH-6-16-1-65-40-A              | W-024401       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1342             | 1265 | 1105             | 1016 |
| MH-6-16-1-50-40-A              | W-024407       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1342             | 1265 | 1105             | 1024 |
| MH-6-16-1-76-26-A              | W-024413       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1342             | 1265 | 1105             | 1013 |
| MH-6-16-1-63-26-A              | W-024419       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1342             | 1265 | 1105             | 1019 |
| MH-6-16-1-51-26-A              | W-024425       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1342             | 1265 | 1105             | 1025 |
| MH-6-16-1-65-26-A              | W-024431       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1342             | 1265 | 1105             | 1016 |
| MH-6-16-1-50-26-A              | W-024437       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1342             | 1265 | 1105             | 1024 |



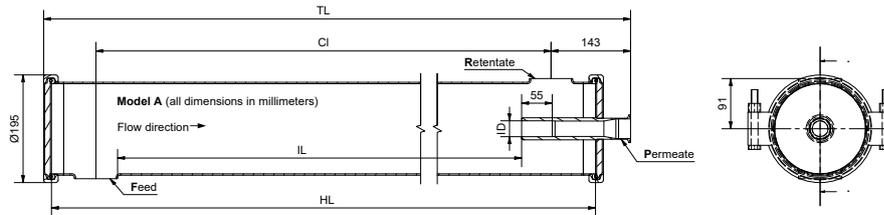
| MH-6-16bar-1-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 27 liters |      | Dry weight 25 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-6-16-1-76-38-C              | W-024443       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1342             | 1265 | 1105             | 1013 |
| MH-6-16-1-63-38-C              | W-024449       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1342             | 1265 | 1105             | 1019 |
| MH-6-16-1-51-38-C              | W-024455       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1342             | 1265 | 1105             | 1025 |
| MH-6-16-1-65-38-C              | W-024461       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1342             | 1265 | 1105             | 1016 |
| MH-6-16-1-50-38-C              | W-024467       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1342             | 1265 | 1105             | 1024 |
| MH-6-16-1-76-25-C              | W-024473       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1342             | 1265 | 1105             | 1013 |
| MH-6-16-1-63-25-C              | W-024479       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1342             | 1265 | 1105             | 1019 |
| MH-6-16-1-51-25-C              | W-024485       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1342             | 1265 | 1105             | 1025 |
| MH-6-16-1-65-25-C              | W-024491       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1342             | 1265 | 1105             | 1016 |
| MH-6-16-1-50-25-C              | W-024497       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1342             | 1265 | 1105             | 1024 |
| MH-6-16-1-76-40-C              | W-024503       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1342             | 1265 | 1105             | 1013 |
| MH-6-16-1-63-40-C              | W-024509       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1342             | 1265 | 1105             | 1019 |
| MH-6-16-1-51-40-C              | W-024515       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1342             | 1265 | 1105             | 1025 |
| MH-6-16-1-65-40-C              | W-024521       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1342             | 1265 | 1105             | 1016 |
| MH-6-16-1-50-40-C              | W-024527       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1342             | 1265 | 1105             | 1024 |
| MH-6-16-1-76-26-C              | W-024533       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1342             | 1265 | 1105             | 1013 |
| MH-6-16-1-63-26-C              | W-024539       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1342             | 1265 | 1105             | 1019 |
| MH-6-16-1-51-26-C              | W-024545       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1342             | 1265 | 1105             | 1025 |
| MH-6-16-1-65-26-C              | W-024551       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1342             | 1265 | 1105             | 1016 |
| MH-6-16-1-50-26-C              | W-024557       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1342             | 1265 | 1105             | 1024 |



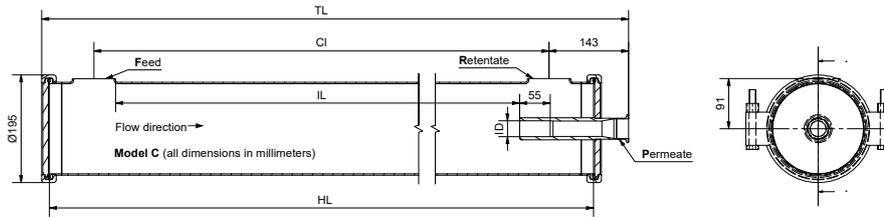
| MH-6-16bar-2-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 47 liters |      | Dry weight 35 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-6-16-2-76-38-A              | W-021804       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2322             | 2245 | 2085             | 1993 |
| MH-6-16-2-63-38-A              | W-024330       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2322             | 2245 | 2085             | 1999 |
| MH-6-16-2-51-38-A              | W-024336       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2322             | 2245 | 2085             | 2005 |
| MH-6-16-2-65-38-A              | W-024342       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2322             | 2245 | 2085             | 1996 |
| MH-6-16-2-50-38-A              | W-024348       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2322             | 2245 | 2085             | 2004 |
| MH-6-16-2-76-25-A              | W-024354       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2322             | 2245 | 2085             | 1993 |
| MH-6-16-2-63-25-A              | W-024360       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2322             | 2245 | 2085             | 1999 |
| MH-6-16-2-51-25-A              | W-024366       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2322             | 2245 | 2085             | 2005 |
| MH-6-16-2-65-25-A              | W-024372       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2322             | 2245 | 2085             | 1996 |
| MH-6-16-2-50-25-A              | W-024378       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2322             | 2245 | 2085             | 2004 |
| MH-6-16-2-76-40-A              | W-024384       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2322             | 2245 | 2085             | 1993 |
| MH-6-16-2-63-40-A              | W-024390       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2322             | 2245 | 2085             | 1999 |
| MH-6-16-2-51-40-A              | W-024396       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2322             | 2245 | 2085             | 2005 |
| MH-6-16-2-65-40-A              | W-024402       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2322             | 2245 | 2085             | 1996 |
| MH-6-16-2-50-40-A              | W-024408       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2322             | 2245 | 2085             | 2004 |
| MH-6-16-2-76-26-A              | W-024414       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2322             | 2245 | 2085             | 1993 |
| MH-6-16-2-63-26-A              | W-024420       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2322             | 2245 | 2085             | 1999 |
| MH-6-16-2-51-26-A              | W-024426       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2322             | 2245 | 2085             | 2005 |
| MH-6-16-2-65-26-A              | W-024432       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2322             | 2245 | 2085             | 1996 |
| MH-6-16-2-50-26-A              | W-024438       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2322             | 2245 | 2085             | 2004 |



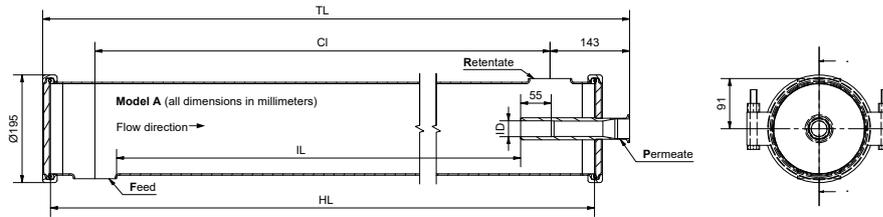
| MH-6-16bar-2-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 47 liters |      | Dry weight 35 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-6-16-2-76-38-C              | W-024444       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2322             | 2245 | 2085             | 1993 |
| MH-6-16-2-63-38-C              | W-024450       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2322             | 2245 | 2085             | 1999 |
| MH-6-16-2-51-38-C              | W-024456       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2322             | 2245 | 2085             | 2005 |
| MH-6-16-2-65-38-C              | W-024462       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2322             | 2245 | 2085             | 1996 |
| MH-6-16-2-50-38-C              | W-024468       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2322             | 2245 | 2085             | 2004 |
| MH-6-16-2-76-25-C              | W-024474       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2322             | 2245 | 2085             | 1993 |
| MH-6-16-2-63-25-C              | W-024480       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2322             | 2245 | 2085             | 1999 |
| MH-6-16-2-51-25-C              | W-024486       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2322             | 2245 | 2085             | 2005 |
| MH-6-16-2-65-25-C              | W-024492       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2322             | 2245 | 2085             | 1996 |
| MH-6-16-2-50-25-C              | W-024498       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2322             | 2245 | 2085             | 2004 |
| MH-6-16-2-76-40-C              | W-024504       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2322             | 2245 | 2085             | 1993 |
| MH-6-16-2-63-40-C              | W-024510       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2322             | 2245 | 2085             | 1999 |
| MH-6-16-2-51-40-C              | W-024516       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2322             | 2245 | 2085             | 2005 |
| MH-6-16-2-65-40-C              | W-024522       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2322             | 2245 | 2085             | 1996 |
| MH-6-16-2-50-40-C              | W-024528       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2322             | 2245 | 2085             | 2004 |
| MH-6-16-2-76-26-C              | W-024534       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2322             | 2245 | 2085             | 1993 |
| MH-6-16-2-63-26-C              | W-024540       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2322             | 2245 | 2085             | 1999 |
| MH-6-16-2-51-26-C              | W-024546       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2322             | 2245 | 2085             | 2005 |
| MH-6-16-2-65-26-C              | W-024552       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2322             | 2245 | 2085             | 1996 |
| MH-6-16-2-50-26-C              | W-024558       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2322             | 2245 | 2085             | 2004 |



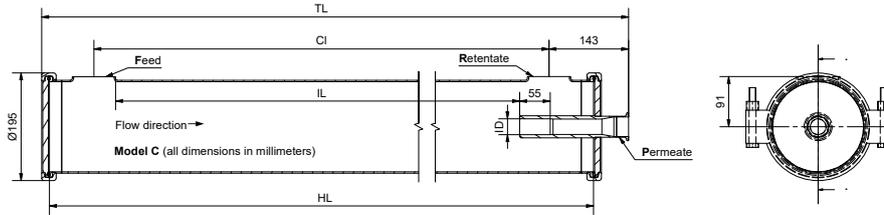
| MH-6-16bar-3-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 68 liters |      | Dry weight 45 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-6-16-3-76-38-A              | W-021805       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3307             | 3230 | 3070             | 2978 |
| MH-6-16-3-63-38-A              | W-024331       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3307             | 3230 | 3070             | 2984 |
| MH-6-16-3-51-38-A              | W-024337       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3307             | 3230 | 3070             | 2990 |
| MH-6-16-3-65-38-A              | W-024343       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3307             | 3230 | 3070             | 2981 |
| MH-6-16-3-50-38-A              | W-024349       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3307             | 3230 | 3070             | 2989 |
| MH-6-16-3-76-25-A              | W-024355       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3307             | 3230 | 3070             | 2978 |
| MH-6-16-3-63-25-A              | W-024361       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3307             | 3230 | 3070             | 2984 |
| MH-6-16-3-51-25-A              | W-024367       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3307             | 3230 | 3070             | 2990 |
| MH-6-16-3-65-25-A              | W-024373       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3307             | 3230 | 3070             | 2981 |
| MH-6-16-3-50-25-A              | W-024379       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3307             | 3230 | 3070             | 2989 |
| MH-6-16-3-76-40-A              | W-024385       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3307             | 3230 | 3070             | 2978 |
| MH-6-16-3-63-40-A              | W-024391       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3307             | 3230 | 3070             | 2984 |
| MH-6-16-3-51-40-A              | W-024397       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3307             | 3230 | 3070             | 2990 |
| MH-6-16-3-65-40-A              | W-024403       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3307             | 3230 | 3070             | 2981 |
| MH-6-16-3-50-40-A              | W-024409       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3307             | 3230 | 3070             | 2989 |
| MH-6-16-3-76-26-A              | W-024415       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3307             | 3230 | 3070             | 2978 |
| MH-6-16-3-63-26-A              | W-024421       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3307             | 3230 | 3070             | 2984 |
| MH-6-16-3-51-26-A              | W-024427       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3307             | 3230 | 3070             | 2990 |
| MH-6-16-3-65-26-A              | W-024433       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3307             | 3230 | 3070             | 2981 |
| MH-6-16-3-50-26-A              | W-024439       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3307             | 3230 | 3070             | 2989 |



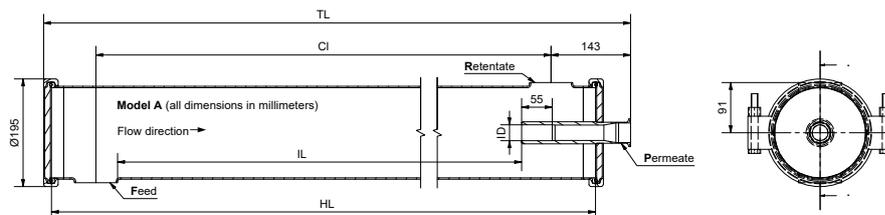
| MH-6-16bar-3-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 68 liters |      | Dry weight 45 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-6-16-3-76-38-C              | W-024445       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3307             | 3230 | 3070             | 2978 |
| MH-6-16-3-63-38-C              | W-024451       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3307             | 3230 | 3070             | 2984 |
| MH-6-16-3-51-38-C              | W-024457       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3307             | 3230 | 3070             | 2990 |
| MH-6-16-3-65-38-C              | W-024463       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3307             | 3230 | 3070             | 2981 |
| MH-6-16-3-50-38-C              | W-024469       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3307             | 3230 | 3070             | 2989 |
| MH-6-16-3-76-25-C              | W-024475       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3307             | 3230 | 3070             | 2978 |
| MH-6-16-3-63-25-C              | W-024481       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3307             | 3230 | 3070             | 2984 |
| MH-6-16-3-51-25-C              | W-024487       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3307             | 3230 | 3070             | 2990 |
| MH-6-16-3-65-25-C              | W-024493       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3307             | 3230 | 3070             | 2981 |
| MH-6-16-3-50-25-C              | W-024499       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3307             | 3230 | 3070             | 2989 |
| MH-6-16-3-76-40-C              | W-024505       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3307             | 3230 | 3070             | 2978 |
| MH-6-16-3-63-40-C              | W-024511       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3307             | 3230 | 3070             | 2984 |
| MH-6-16-3-51-40-C              | W-024517       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3307             | 3230 | 3070             | 2990 |
| MH-6-16-3-65-40-C              | W-024523       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3307             | 3230 | 3070             | 2981 |
| MH-6-16-3-50-40-C              | W-024529       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3307             | 3230 | 3070             | 2989 |
| MH-6-16-3-76-26-C              | W-024535       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3307             | 3230 | 3070             | 2978 |
| MH-6-16-3-63-26-C              | W-024541       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3307             | 3230 | 3070             | 2984 |
| MH-6-16-3-51-26-C              | W-024547       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3307             | 3230 | 3070             | 2990 |
| MH-6-16-3-65-26-C              | W-024553       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3307             | 3230 | 3070             | 2981 |
| MH-6-16-3-50-26-C              | W-024559       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3307             | 3230 | 3070             | 2989 |



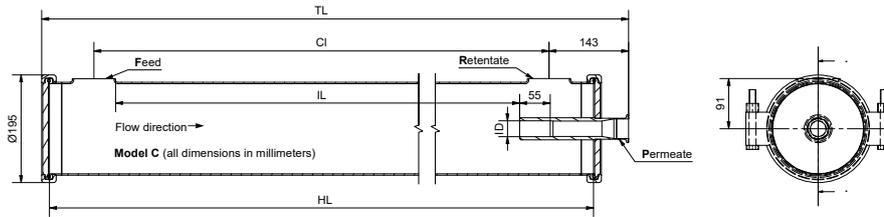
| MH-6-16bar-4-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 88 liters |      | Dry weight 55 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-6-16-4-76-38-A              | W-021806       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4287             | 4210 | 4050             | 3958 |
| MH-6-16-4-63-38-A              | W-024332       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4287             | 4210 | 4050             | 3964 |
| MH-6-16-4-51-38-A              | W-024338       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4287             | 4210 | 4050             | 3970 |
| MH-6-16-4-65-38-A              | W-024344       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4287             | 4210 | 4050             | 3961 |
| MH-6-16-4-50-38-A              | W-024350       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4287             | 4210 | 4050             | 3969 |
| MH-6-16-4-76-25-A              | W-024356       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4287             | 4210 | 4050             | 3958 |
| MH-6-16-4-63-25-A              | W-024362       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4287             | 4210 | 4050             | 3964 |
| MH-6-16-4-51-25-A              | W-024368       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4287             | 4210 | 4050             | 3970 |
| MH-6-16-4-65-25-A              | W-024374       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4287             | 4210 | 4050             | 3961 |
| MH-6-16-4-50-25-A              | W-024380       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4287             | 4210 | 4050             | 3969 |
| MH-6-16-4-76-40-A              | W-024386       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4287             | 4210 | 4050             | 3958 |
| MH-6-16-4-63-40-A              | W-024392       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4287             | 4210 | 4050             | 3964 |
| MH-6-16-4-51-40-A              | W-024398       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4287             | 4210 | 4050             | 3970 |
| MH-6-16-4-65-40-A              | W-024404       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4287             | 4210 | 4050             | 3961 |
| MH-6-16-4-50-40-A              | W-024410       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4287             | 4210 | 4050             | 3969 |
| MH-6-16-4-76-26-A              | W-024416       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4287             | 4210 | 4050             | 3958 |
| MH-6-16-4-63-26-A              | W-024422       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4287             | 4210 | 4050             | 3964 |
| MH-6-16-4-51-26-A              | W-024428       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4287             | 4210 | 4050             | 3970 |
| MH-6-16-4-65-26-A              | W-024434       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4287             | 4210 | 4050             | 3961 |
| MH-6-16-4-50-26-A              | W-024440       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4287             | 4210 | 4050             | 3969 |



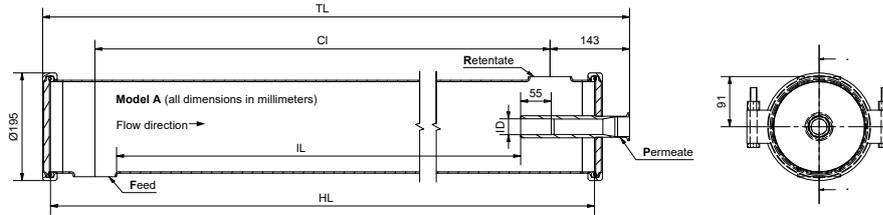
| MH-6-16bar-4-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 88 liters |      | Dry weight 55 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-6-16-4-76-38-C              | W-024446       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4287             | 4210 | 4050             | 3958 |
| MH-6-16-4-63-38-C              | W-024452       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4287             | 4210 | 4050             | 3964 |
| MH-6-16-4-51-38-C              | W-024458       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4287             | 4210 | 4050             | 3970 |
| MH-6-16-4-65-38-C              | W-024464       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4287             | 4210 | 4050             | 3961 |
| MH-6-16-4-50-38-C              | W-024470       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4287             | 4210 | 4050             | 3969 |
| MH-6-16-4-76-25-C              | W-024476       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4287             | 4210 | 4050             | 3958 |
| MH-6-16-4-63-25-C              | W-024482       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4287             | 4210 | 4050             | 3964 |
| MH-6-16-4-51-25-C              | W-024488       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4287             | 4210 | 4050             | 3970 |
| MH-6-16-4-65-25-C              | W-024494       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4287             | 4210 | 4050             | 3961 |
| MH-6-16-4-50-25-C              | W-024500       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4287             | 4210 | 4050             | 3969 |
| MH-6-16-4-76-40-C              | W-024506       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4287             | 4210 | 4050             | 3958 |
| MH-6-16-4-63-40-C              | W-024512       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4287             | 4210 | 4050             | 3964 |
| MH-6-16-4-51-40-C              | W-024518       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4287             | 4210 | 4050             | 3970 |
| MH-6-16-4-65-40-C              | W-024524       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4287             | 4210 | 4050             | 3961 |
| MH-6-16-4-50-40-C              | W-024530       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4287             | 4210 | 4050             | 3969 |
| MH-6-16-4-76-26-C              | W-024536       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4287             | 4210 | 4050             | 3958 |
| MH-6-16-4-63-26-C              | W-024542       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4287             | 4210 | 4050             | 3964 |
| MH-6-16-4-51-26-C              | W-024548       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4287             | 4210 | 4050             | 3970 |
| MH-6-16-4-65-26-C              | W-024554       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4287             | 4210 | 4050             | 3961 |
| MH-6-16-4-50-26-C              | W-024560       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4287             | 4210 | 4050             | 3969 |



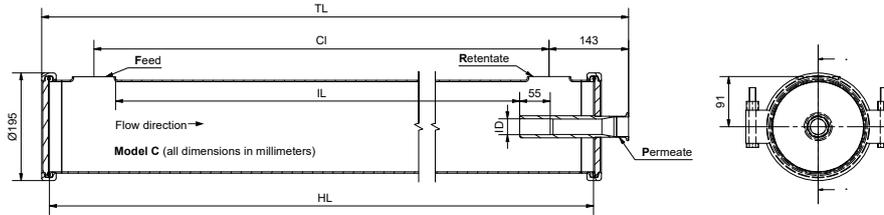
| MH-6-16bar-5-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 109 liters |      | Dry weight 65 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-6-16-5-76-38-A              | W-021807       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5272              | 5195 | 5035             | 4943 |
| MH-6-16-5-63-38-A              | W-024333       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5272              | 5195 | 5035             | 4949 |
| MH-6-16-5-51-38-A              | W-024339       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5272              | 5195 | 5035             | 4955 |
| MH-6-16-5-65-38-A              | W-024345       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5272              | 5195 | 5035             | 4946 |
| MH-6-16-5-50-38-A              | W-024351       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5272              | 5195 | 5035             | 4954 |
| MH-6-16-5-76-25-A              | W-024357       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5272              | 5195 | 5035             | 4943 |
| MH-6-16-5-63-25-A              | W-024363       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5272              | 5195 | 5035             | 4949 |
| MH-6-16-5-51-25-A              | W-024369       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5272              | 5195 | 5035             | 4955 |
| MH-6-16-5-65-25-A              | W-024375       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5272              | 5195 | 5035             | 4946 |
| MH-6-16-5-50-25-A              | W-024381       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5272              | 5195 | 5035             | 4954 |
| MH-6-16-5-76-40-A              | W-024387       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5272              | 5195 | 5035             | 4943 |
| MH-6-16-5-63-40-A              | W-024393       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5272              | 5195 | 5035             | 4949 |
| MH-6-16-5-51-40-A              | W-024399       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5272              | 5195 | 5035             | 4955 |
| MH-6-16-5-65-40-A              | W-024405       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5272              | 5195 | 5035             | 4946 |
| MH-6-16-5-50-40-A              | W-024411       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5272              | 5195 | 5035             | 4954 |
| MH-6-16-5-76-26-A              | W-024417       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5272              | 5195 | 5035             | 4943 |
| MH-6-16-5-63-26-A              | W-024423       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5272              | 5195 | 5035             | 4949 |
| MH-6-16-5-51-26-A              | W-024429       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5272              | 5195 | 5035             | 4955 |
| MH-6-16-5-65-26-A              | W-024435       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5272              | 5195 | 5035             | 4946 |
| MH-6-16-5-50-26-A              | W-024441       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5272              | 5195 | 5035             | 4954 |



| MH-6-16bar-5-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 109 liters |      | Dry weight 65 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-6-16-5-76-38-C              | W-024447       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5272              | 5195 | 5035             | 4943 |
| MH-6-16-5-63-38-C              | W-024453       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5272              | 5195 | 5035             | 4949 |
| MH-6-16-5-51-38-C              | W-024459       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5272              | 5195 | 5035             | 4955 |
| MH-6-16-5-65-38-C              | W-024465       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5272              | 5195 | 5035             | 4946 |
| MH-6-16-5-50-38-C              | W-024471       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5272              | 5195 | 5035             | 4954 |
| MH-6-16-5-76-25-C              | W-024477       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5272              | 5195 | 5035             | 4943 |
| MH-6-16-5-63-25-C              | W-024483       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5272              | 5195 | 5035             | 4949 |
| MH-6-16-5-51-25-C              | W-024489       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5272              | 5195 | 5035             | 4955 |
| MH-6-16-5-65-25-C              | W-024495       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5272              | 5195 | 5035             | 4946 |
| MH-6-16-5-50-25-C              | W-024501       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5272              | 5195 | 5035             | 4954 |
| MH-6-16-5-76-40-C              | W-024507       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5272              | 5195 | 5035             | 4943 |
| MH-6-16-5-63-40-C              | W-024513       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5272              | 5195 | 5035             | 4949 |
| MH-6-16-5-51-40-C              | W-024519       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5272              | 5195 | 5035             | 4955 |
| MH-6-16-5-65-40-C              | W-024525       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5272              | 5195 | 5035             | 4946 |
| MH-6-16-5-50-40-C              | W-024531       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5272              | 5195 | 5035             | 4954 |
| MH-6-16-5-76-26-C              | W-024537       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5272              | 5195 | 5035             | 4943 |
| MH-6-16-5-63-26-C              | W-024543       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5272              | 5195 | 5035             | 4949 |
| MH-6-16-5-51-26-C              | W-024549       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5272              | 5195 | 5035             | 4955 |
| MH-6-16-5-65-26-C              | W-024555       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5272              | 5195 | 5035             | 4946 |
| MH-6-16-5-50-26-C              | W-024561       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5272              | 5195 | 5035             | 4954 |



| MH-6-16bar-6-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 130 liters |      | Dry weight 75 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-6-16-6-76-38-A              | W-021808       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6252              | 6175 | 6015             | 5928 |
| MH-6-16-6-63-38-A              | W-024334       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6252              | 6175 | 6015             | 5934 |
| MH-6-16-6-51-38-A              | W-024340       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6252              | 6175 | 6015             | 5940 |
| MH-6-16-6-65-38-A              | W-024346       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6252              | 6175 | 6015             | 5931 |
| MH-6-16-6-50-38-A              | W-024352       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6252              | 6175 | 6015             | 5939 |
| MH-6-16-6-76-25-A              | W-024358       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6252              | 6175 | 6015             | 5928 |
| MH-6-16-6-63-25-A              | W-024364       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6252              | 6175 | 6015             | 5934 |
| MH-6-16-6-51-25-A              | W-024370       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6252              | 6175 | 6015             | 5940 |
| MH-6-16-6-65-25-A              | W-024376       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6252              | 6175 | 6015             | 5931 |
| MH-6-16-6-50-25-A              | W-024382       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6252              | 6175 | 6015             | 5939 |
| MH-6-16-6-76-40-A              | W-024388       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6252              | 6175 | 6015             | 5928 |
| MH-6-16-6-63-40-A              | W-024394       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6252              | 6175 | 6015             | 5934 |
| MH-6-16-6-51-40-A              | W-024400       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6252              | 6175 | 6015             | 5940 |
| MH-6-16-6-65-40-A              | W-024406       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6252              | 6175 | 6015             | 5931 |
| MH-6-16-6-50-40-A              | W-024412       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6252              | 6175 | 6015             | 5939 |
| MH-6-16-6-76-26-A              | W-024418       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6252              | 6175 | 6015             | 5928 |
| MH-6-16-6-63-26-A              | W-024424       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6252              | 6175 | 6015             | 5934 |
| MH-6-16-6-51-26-A              | W-024430       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6252              | 6175 | 6015             | 5940 |
| MH-6-16-6-65-26-A              | W-024436       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6252              | 6175 | 6015             | 5931 |
| MH-6-16-6-50-26-A              | W-024442       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6252              | 6175 | 6015             | 5939 |



| MH-6-16bar-6-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 130 liters |      | Dry weight 75 kg |      |
| Stock number                   | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MH-6-16-6-76-38-C              | W-024448       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6252              | 6175 | 6015             | 5928 |
| MH-6-16-6-63-38-C              | W-024454       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6252              | 6175 | 6015             | 5934 |
| MH-6-16-6-51-38-C              | W-024460       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6252              | 6175 | 6015             | 5940 |
| MH-6-16-6-65-38-C              | W-024466       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6252              | 6175 | 6015             | 5931 |
| MH-6-16-6-50-38-C              | W-024472       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6252              | 6175 | 6015             | 5939 |
| MH-6-16-6-76-25-C              | W-024478       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6252              | 6175 | 6015             | 5928 |
| MH-6-16-6-63-25-C              | W-024484       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6252              | 6175 | 6015             | 5934 |
| MH-6-16-6-51-25-C              | W-024490       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6252              | 6175 | 6015             | 5940 |
| MH-6-16-6-65-25-C              | W-024496       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6252              | 6175 | 6015             | 5931 |
| MH-6-16-6-50-25-C              | W-024502       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6252              | 6175 | 6015             | 5939 |
| MH-6-16-6-76-40-C              | W-024508       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6252              | 6175 | 6015             | 5928 |
| MH-6-16-6-63-40-C              | W-024514       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6252              | 6175 | 6015             | 5934 |
| MH-6-16-6-51-40-C              | W-024520       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6252              | 6175 | 6015             | 5940 |
| MH-6-16-6-65-40-C              | W-024526       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6252              | 6175 | 6015             | 5931 |
| MH-6-16-6-50-40-C              | W-024532       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6252              | 6175 | 6015             | 5939 |
| MH-6-16-6-76-26-C              | W-024538       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6252              | 6175 | 6015             | 5928 |
| MH-6-16-6-63-26-C              | W-024544       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6252              | 6175 | 6015             | 5934 |
| MH-6-16-6-51-26-C              | W-024550       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6252              | 6175 | 6015             | 5940 |
| MH-6-16-6-65-26-C              | W-024556       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6252              | 6175 | 6015             | 5931 |
| MH-6-16-6-50-26-C              | W-024562       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6252              | 6175 | 6015             | 5939 |





# MEMBRANE HOUSING

## DETAILED OVERVIEW FOR TYPE 'MH-4-40' MEDIUM PRESSURE - 40 BAR

FOR MF, UF, NF AND RO FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with collaring connections manufactured by Wila A/S under the category "MH" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with EN 1.4404 (AISI 316L) Stainless steel.**

The Membrane Housing is designed for pressures up to 40 bar and temperatures up to 70°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MH-4-40bar-X-element – Model \_

|       |   |  |
|-------|---|--|
| MH    | <b>Membrane Housing</b> with collaring connections for Feed and Retentate.              |  |
| 4     | The membrane housing is designed for 3.8 x 38" (3838) membranes.                        |  |
| 40bar | The Membrane Housing is designed for pressures up to 40 bar and temperatures up to 70°C |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MH-4-40-X-YY-ZZ- \_

|    |                      |  |
|----|----------------------|--|
| X  | From 1 to 6 elements | Indicates the number of elements that can be fitted. |
| YY | 51 - 50 - 40 - 38*** | Indicates Feed and Retentate collaring connections.  |
| ZZ | 26 - 25**            | Indicates Permeate end clamp ferrule connection.     |
| _  | Either A or C *      | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

\*\*Clamp ferrule connections sizes - Other types and sizes are available

|    |                    |                                |
|----|--------------------|--------------------------------|
| 25 | translates to Ø25  | in accordance with ISO 2852-2  |
| 26 | translates to DN25 | in accordance with DIN 32676-A |

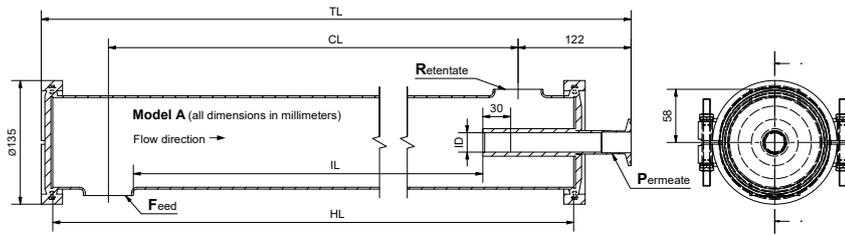
\*\*\*Collaring connections sizes - Other sizes are available

|         |  |
|---------|--|
| 51 - 38 | translates respectively to Ø51 - Ø38   |
| 50 - 40 | translates respectively to DN50 - DN40 |

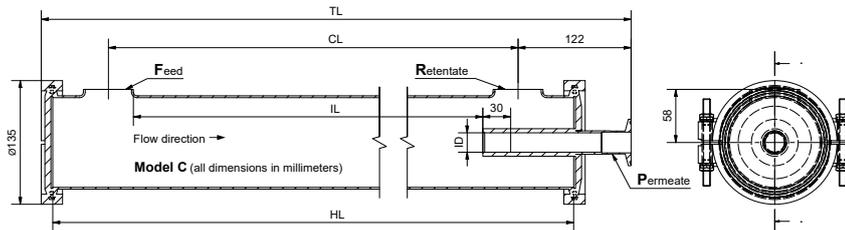
## Connections

For Feed and Retentate only use weld ends with a minimum 3 mm wall thickness. For the Permeate connection an SH clamp is recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

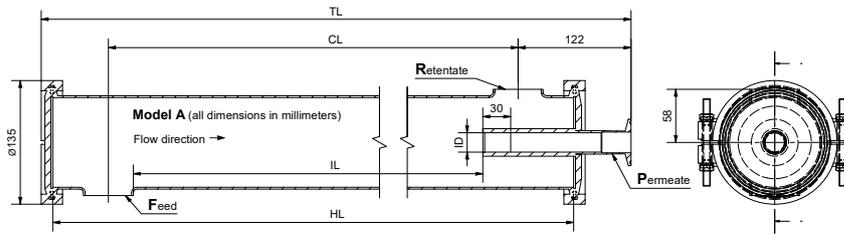
**Temperature and pressure limits must be respected at all times !**



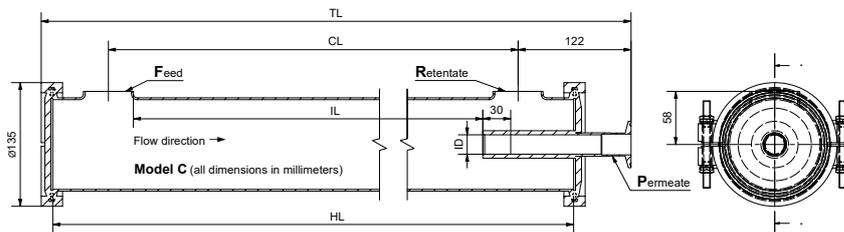
| MH-4-40bar-1-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                 |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-----------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 9 liters |      | Dry weight 10 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL              | HL   | CL               | IL   |
| MH-4-40-1-51-25-A              | W-024227       | 1 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 1270            | 1195 | 1075             | 1010 |
| MH-4-40-1-38-25-A              | W-024233       | 1 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 1270            | 1195 | 1075             | 1016 |
| MH-4-40-1-50-25-A              | W-024239       | 1 x 38"           | Ø21.1    | DN50                                   | Ø25  | 1270            | 1195 | 1075             | 1009 |
| MH-4-40-1-40-25-A              | W-024245       | 1 x 38"           | Ø21.1    | DN40                                   | Ø25  | 1270            | 1195 | 1075             | 1015 |
| MH-4-40-1-51-26-A              | W-024251       | 1 x 38"           | Ø21.1    | Ø51                                    | DN25 | 1270            | 1195 | 1075             | 1010 |
| MH-4-40-1-38-26-A              | W-024257       | 1 x 38"           | Ø21.1    | Ø38                                    | DN25 | 1270            | 1195 | 1075             | 1016 |
| MH-4-40-1-50-26-A              | W-024263       | 1 x 38"           | Ø21.1    | DN50                                   | DN25 | 1270            | 1195 | 1075             | 1009 |
| MH-4-40-1-40-26-A              | W-024269       | 1 x 38"           | Ø21.1    | DN40                                   | DN25 | 1270            | 1195 | 1075             | 1015 |



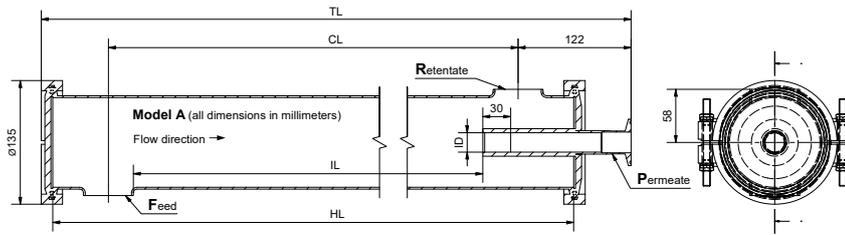
| MH-4-40bar-1-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                 |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|-----------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 9 liters |      | Dry weight 10 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL              | HL   | CL               | IL   |
| MH-4-40-1-51-25-C              | W-024275       | 1 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 1270            | 1195 | 1075             | 1010 |
| MH-4-40-1-38-25-C              | W-024281       | 1 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 1270            | 1195 | 1075             | 1016 |
| MH-4-40-1-50-25-C              | W-024287       | 1 x 38"           | Ø21.1    | DN50                                   | Ø25  | 1270            | 1195 | 1075             | 1009 |
| MH-4-40-1-40-25-C              | W-024293       | 1 x 38"           | Ø21.1    | DN40                                   | Ø25  | 1270            | 1195 | 1075             | 1015 |
| MH-4-40-1-51-26-C              | W-024299       | 1 x 38"           | Ø21.1    | Ø51                                    | DN25 | 1270            | 1195 | 1075             | 1010 |
| MH-4-40-1-38-26-C              | W-024305       | 1 x 38"           | Ø21.1    | Ø38                                    | DN25 | 1270            | 1195 | 1075             | 1016 |
| MH-4-40-1-50-26-C              | W-024311       | 1 x 38"           | Ø21.1    | DN50                                   | DN25 | 1270            | 1195 | 1075             | 1009 |
| MH-4-40-1-40-26-C              | W-024317       | 1 x 38"           | Ø21.1    | DN40                                   | DN25 | 1270            | 1195 | 1075             | 1015 |



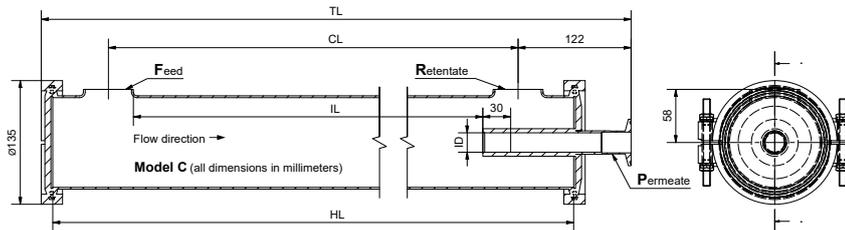
| MH-4-40bar-2-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                    |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|--------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 16.5 liters |      | Dry weight 15 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL                 | HL   | CL               | IL   |
| MH-4-40-2-51-25-A              | W-024228       | 2 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 2255               | 2180 | 2060             | 1995 |
| MH-4-40-2-38-25-A              | W-024234       | 2 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 2255               | 2180 | 2060             | 2001 |
| MH-4-40-2-50-25-A              | W-024240       | 2 x 38"           | Ø21.1    | DN50                                   | Ø25  | 2255               | 2180 | 2060             | 1994 |
| MH-4-40-2-40-25-A              | W-024246       | 2 x 38"           | Ø21.1    | DN40                                   | Ø25  | 2255               | 2180 | 2060             | 2000 |
| MH-4-40-2-51-26-A              | W-024252       | 2 x 38"           | Ø21.1    | Ø51                                    | DN25 | 2255               | 2180 | 2060             | 1995 |
| MH-4-40-2-38-26-A              | W-024258       | 2 x 38"           | Ø21.1    | Ø38                                    | DN25 | 2255               | 2180 | 2060             | 2001 |
| MH-4-40-2-50-26-A              | W-024264       | 2 x 38"           | Ø21.1    | DN50                                   | DN25 | 2255               | 2180 | 2060             | 1994 |
| MH-4-40-2-40-26-A              | W-024270       | 2 x 38"           | Ø21.1    | DN40                                   | DN25 | 2255               | 2180 | 2060             | 2000 |



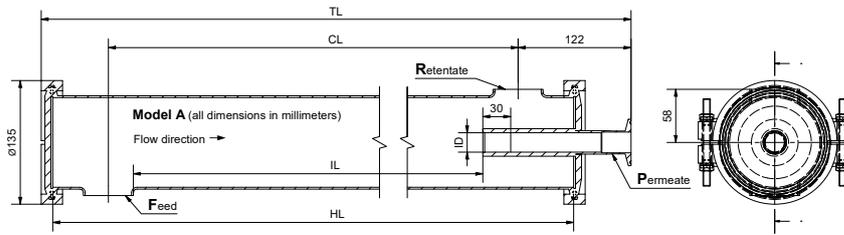
| MH-4-40bar-2-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                    |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|--------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 16.5 liters |      | Dry weight 15 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL                 | HL   | CL               | IL   |
| MH-4-40-2-51-25-C              | W-024276       | 2 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 2255               | 2180 | 2060             | 1995 |
| MH-4-40-2-38-25-C              | W-024282       | 2 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 2255               | 2180 | 2060             | 2001 |
| MH-4-40-2-50-25-C              | W-024288       | 2 x 38"           | Ø21.1    | DN50                                   | Ø25  | 2255               | 2180 | 2060             | 1994 |
| MH-4-40-2-40-25-C              | W-024294       | 2 x 38"           | Ø21.1    | DN40                                   | Ø25  | 2255               | 2180 | 2060             | 2000 |
| MH-4-40-2-51-26-C              | W-024300       | 2 x 38"           | Ø21.1    | Ø51                                    | DN25 | 2255               | 2180 | 2060             | 1995 |
| MH-4-40-2-38-26-C              | W-024306       | 2 x 38"           | Ø21.1    | Ø38                                    | DN25 | 2255               | 2180 | 2060             | 2001 |
| MH-4-40-2-50-26-C              | W-024312       | 2 x 38"           | Ø21.1    | DN50                                   | DN25 | 2255               | 2180 | 2060             | 1994 |
| MH-4-40-2-40-26-C              | W-024318       | 2 x 38"           | Ø21.1    | DN40                                   | DN25 | 2255               | 2180 | 2060             | 2000 |



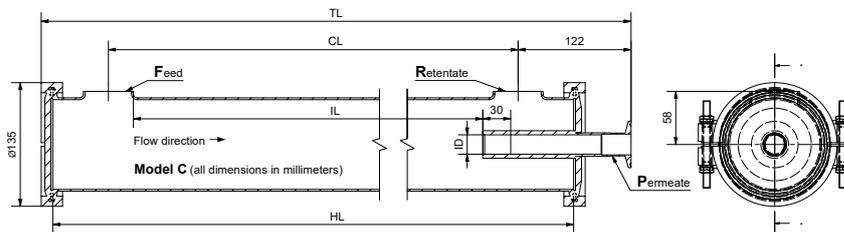
| MH-4-40bar-3-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 24 liters |      | Dry weight 20 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-4-40-3-51-25-A              | W-024229       | 3 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 3235             | 3160 | 3040             | 2975 |
| MH-4-40-3-38-25-A              | W-024235       | 3 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 3235             | 3160 | 3040             | 2981 |
| MH-4-40-3-50-25-A              | W-024241       | 3 x 38"           | Ø21.1    | DN50                                   | Ø25  | 3235             | 3160 | 3040             | 2974 |
| MH-4-40-3-40-25-A              | W-024247       | 3 x 38"           | Ø21.1    | DN40                                   | Ø25  | 3235             | 3160 | 3040             | 2980 |
| MH-4-40-3-51-26-A              | W-024253       | 3 x 38"           | Ø21.1    | Ø51                                    | DN25 | 3235             | 3160 | 3040             | 2975 |
| MH-4-40-3-38-26-A              | W-024259       | 3 x 38"           | Ø21.1    | Ø38                                    | DN25 | 3235             | 3160 | 3040             | 2981 |
| MH-4-40-3-50-26-A              | W-024265       | 3 x 38"           | Ø21.1    | DN50                                   | DN25 | 3235             | 3160 | 3040             | 2974 |
| MH-4-40-3-40-26-A              | W-024271       | 3 x 38"           | Ø21.1    | DN40                                   | DN25 | 3235             | 3160 | 3040             | 2980 |



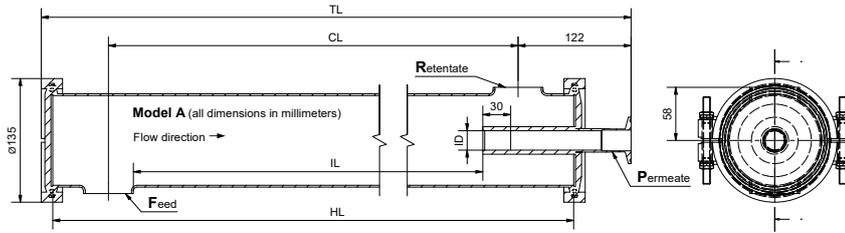
| MH-4-40bar-3-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 24 liters |      | Dry weight 20 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-4-40-3-51-25-C              | W-024277       | 3 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 3235             | 3160 | 3040             | 2975 |
| MH-4-40-3-38-25-C              | W-024283       | 3 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 3235             | 3160 | 3040             | 2981 |
| MH-4-40-3-50-25-C              | W-024289       | 3 x 38"           | Ø21.1    | DN50                                   | Ø25  | 3235             | 3160 | 3040             | 2974 |
| MH-4-40-3-40-25-C              | W-024295       | 3 x 38"           | Ø21.1    | DN40                                   | Ø25  | 3235             | 3160 | 3040             | 2980 |
| MH-4-40-3-51-26-C              | W-024301       | 3 x 38"           | Ø21.1    | Ø51                                    | DN25 | 3235             | 3160 | 3040             | 2975 |
| MH-4-40-3-38-26-C              | W-024307       | 3 x 38"           | Ø21.1    | Ø38                                    | DN25 | 3235             | 3160 | 3040             | 2981 |
| MH-4-40-3-50-26-C              | W-024313       | 3 x 38"           | Ø21.1    | DN50                                   | DN25 | 3235             | 3160 | 3040             | 2974 |
| MH-4-40-3-40-26-C              | W-024319       | 3 x 38"           | Ø21.1    | DN40                                   | DN25 | 3235             | 3160 | 3040             | 2980 |



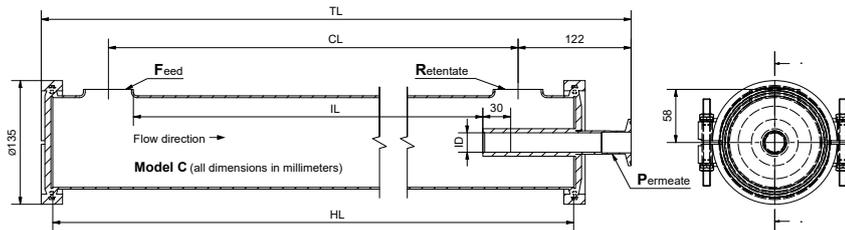
| MH-4-40bar-4-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 31 liters |      | Dry weight 25 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-4-40-4-51-25-A              | W-024230       | 4 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 4215             | 4140 | 4020             | 3955 |
| MH-4-40-4-38-25-A              | W-024236       | 4 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 4215             | 4140 | 4020             | 3961 |
| MH-4-40-4-50-25-A              | W-024242       | 4 x 38"           | Ø21.1    | DN50                                   | Ø25  | 4215             | 4140 | 4020             | 3954 |
| MH-4-40-4-40-25-A              | W-024248       | 4 x 38"           | Ø21.1    | DN40                                   | Ø25  | 4215             | 4140 | 4020             | 3960 |
| MH-4-40-4-51-26-A              | W-024254       | 4 x 38"           | Ø21.1    | Ø51                                    | DN25 | 4215             | 4140 | 4020             | 3955 |
| MH-4-40-4-38-26-A              | W-024260       | 4 x 38"           | Ø21.1    | Ø38                                    | DN25 | 4215             | 4140 | 4020             | 3961 |
| MH-4-40-4-50-26-A              | W-024266       | 4 x 38"           | Ø21.1    | DN50                                   | DN25 | 4215             | 4140 | 4020             | 3954 |
| MH-4-40-4-40-26-A              | W-024272       | 4 x 38"           | Ø21.1    | DN40                                   | DN25 | 4215             | 4140 | 4020             | 3960 |



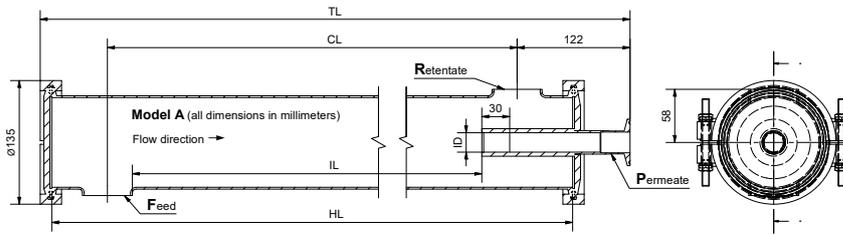
| MH-4-40bar-4-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 31 liters |      | Dry weight 25 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-4-40-4-51-25-C              | W-024278       | 4 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 4215             | 4140 | 4020             | 3955 |
| MH-4-40-4-38-25-C              | W-024284       | 4 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 4215             | 4140 | 4020             | 3961 |
| MH-4-40-4-50-25-C              | W-024290       | 4 x 38"           | Ø21.1    | DN50                                   | Ø25  | 4215             | 4140 | 4020             | 3954 |
| MH-4-40-4-40-25-C              | W-024296       | 4 x 38"           | Ø21.1    | DN40                                   | Ø25  | 4215             | 4140 | 4020             | 3960 |
| MH-4-40-4-51-26-C              | W-024302       | 4 x 38"           | Ø21.1    | Ø51                                    | DN25 | 4215             | 4140 | 4020             | 3955 |
| MH-4-40-4-38-26-C              | W-024308       | 4 x 38"           | Ø21.1    | Ø38                                    | DN25 | 4215             | 4140 | 4020             | 3961 |
| MH-4-40-4-50-26-C              | W-024314       | 4 x 38"           | Ø21.1    | DN50                                   | DN25 | 4215             | 4140 | 4020             | 3954 |
| MH-4-40-4-40-26-C              | W-024320       | 4 x 38"           | Ø21.1    | DN40                                   | DN25 | 4215             | 4140 | 4020             | 3960 |



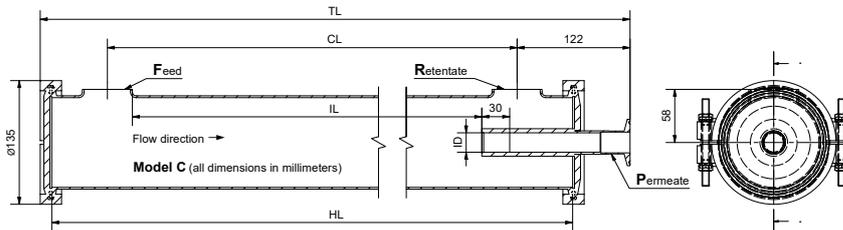
| MH-4-40bar-5-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                    |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|--------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 38.5 liters |      | Dry weight 29 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL                 | HL   | CL               | IL   |
| MH-4-40-5-51-25-A              | W-024231       | 5 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 5195               | 5120 | 5000             | 4935 |
| MH-4-40-5-38-25-A              | W-024237       | 5 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 5195               | 5120 | 5000             | 4941 |
| MH-4-40-5-50-25-A              | W-024243       | 5 x 38"           | Ø21.1    | DN50                                   | Ø25  | 5195               | 5120 | 5000             | 4934 |
| MH-4-40-5-40-25-A              | W-024249       | 5 x 38"           | Ø21.1    | DN40                                   | Ø25  | 5195               | 5120 | 5000             | 4940 |
| MH-4-40-5-51-26-A              | W-024255       | 5 x 38"           | Ø21.1    | Ø51                                    | DN25 | 5195               | 5120 | 5000             | 4935 |
| MH-4-40-5-38-26-A              | W-024261       | 5 x 38"           | Ø21.1    | Ø38                                    | DN25 | 5195               | 5120 | 5000             | 4941 |
| MH-4-40-5-50-26-A              | W-024267       | 5 x 38"           | Ø21.1    | DN50                                   | DN25 | 5195               | 5120 | 5000             | 4934 |
| MH-4-40-5-40-26-A              | W-024273       | 5 x 38"           | Ø21.1    | DN40                                   | DN25 | 5195               | 5120 | 5000             | 4940 |



| MH-4-40bar-5-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                    |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|--------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 38.5 liters |      | Dry weight 29 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL                 | HL   | CL               | IL   |
| MH-4-40-5-51-25-C              | W-024279       | 5 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 5195               | 5120 | 5000             | 4935 |
| MH-4-40-5-38-25-C              | W-024285       | 5 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 5195               | 5120 | 5000             | 4941 |
| MH-4-40-5-50-25-C              | W-024291       | 5 x 38"           | Ø21.1    | DN50                                   | Ø25  | 5195               | 5120 | 5000             | 4934 |
| MH-4-40-5-40-25-C              | W-024297       | 5 x 38"           | Ø21.1    | DN40                                   | Ø25  | 5195               | 5120 | 5000             | 4940 |
| MH-4-40-5-51-26-C              | W-024303       | 5 x 38"           | Ø21.1    | Ø51                                    | DN25 | 5195               | 5120 | 5000             | 4935 |
| MH-4-40-5-38-26-C              | W-024309       | 5 x 38"           | Ø21.1    | Ø38                                    | DN25 | 5195               | 5120 | 5000             | 4941 |
| MH-4-40-5-50-26-C              | W-024315       | 5 x 38"           | Ø21.1    | DN50                                   | DN25 | 5195               | 5120 | 5000             | 4934 |
| MH-4-40-5-40-26-C              | W-024321       | 5 x 38"           | Ø21.1    | DN40                                   | DN25 | 5195               | 5120 | 5000             | 4940 |



| MH-4-40bar-6-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 46 liters |      | Dry weight 34 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-4-40-6-51-25-A              | W-024232       | 6 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 6175             | 6100 | 5980             | 5915 |
| MH-4-40-6-38-25-A              | W-024238       | 6 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 6175             | 6100 | 5980             | 5921 |
| MH-4-40-6-50-25-A              | W-024244       | 6 x 38"           | Ø21.1    | DN50                                   | Ø25  | 6175             | 6100 | 5980             | 5914 |
| MH-4-40-6-40-25-A              | W-024250       | 6 x 38"           | Ø21.1    | DN40                                   | Ø25  | 6175             | 6100 | 5980             | 5920 |
| MH-4-40-6-51-26-A              | W-024256       | 6 x 38"           | Ø21.1    | Ø51                                    | DN25 | 6175             | 6100 | 5980             | 5915 |
| MH-4-40-6-38-26-A              | W-024262       | 6 x 38"           | Ø21.1    | Ø38                                    | DN25 | 6175             | 6100 | 5980             | 5921 |
| MH-4-40-6-50-26-A              | W-024268       | 6 x 38"           | Ø21.1    | DN50                                   | DN25 | 6175             | 6100 | 5980             | 5914 |
| MH-4-40-6-40-26-A              | W-024274       | 6 x 38"           | Ø21.1    | DN40                                   | DN25 | 6175             | 6100 | 5980             | 5920 |



| MH-4-40bar-6-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|--------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 46 liters |      | Dry weight 34 kg |      |
| Stock number                   | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MH-4-40-6-51-25-C              | W-024280       | 6 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 6175             | 6100 | 5980             | 5915 |
| MH-4-40-6-38-25-C              | W-024286       | 6 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 6175             | 6100 | 5980             | 5921 |
| MH-4-40-6-50-25-C              | W-024292       | 6 x 38"           | Ø21.1    | DN50                                   | Ø25  | 6175             | 6100 | 5980             | 5914 |
| MH-4-40-6-40-25-C              | W-024298       | 6 x 38"           | Ø21.1    | DN40                                   | Ø25  | 6175             | 6100 | 5980             | 5920 |
| MH-4-40-6-51-26-C              | W-024304       | 6 x 38"           | Ø21.1    | Ø51                                    | DN25 | 6175             | 6100 | 5980             | 5915 |
| MH-4-40-6-38-26-C              | W-024310       | 6 x 38"           | Ø21.1    | Ø38                                    | DN25 | 6175             | 6100 | 5980             | 5921 |
| MH-4-40-6-50-26-C              | W-024316       | 6 x 38"           | Ø21.1    | DN50                                   | DN25 | 6175             | 6100 | 5980             | 5914 |
| MH-4-40-6-40-26-C              | W-024322       | 6 x 38"           | Ø21.1    | DN40                                   | DN25 | 6175             | 6100 | 5980             | 5920 |





# MEMBRANE HOUSING

## DETAILED OVERVIEW FOR TYPE 'MHC-8-40' MEDIUM PRESSURE - 40 BAR

FOR NF AND RO FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with Clamp ferrule connections manufactured by Wila A/S under the category "MHC" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with EN 1.4404 (AISI 316L) Stainless steel.**

The Membrane Housing is designed for pressures up to 40 bar and temperatures up to 70°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MHC-8-40bar-X-element – Model \_

|       |   |  |
|-------|---|--|
| MHC   | <b>M</b> embrane <b>H</b> ousing with <b>C</b> lamp ferrule connections for Feed and Retentate. |  |
| 8     | The membrane housing is designed for 7.9" x 38" (8038) membranes.                               |  |
| 40bar | The Membrane Housing is designed for pressures up to 40 bar and temperatures up to 70°C         |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MHC-8-40-X-YY-ZZ- \_

|    |                      |  |
|----|----------------------|--|
| X  | From 1 to 6 elements | Indicates the number of elements that can be fitted.     |
| YY | 63 – 51 – 50**       | Indicates Feed and Retentate clamp ferrules connections. |
| ZZ | 38 – 25 – 40 – 26**  | Indicates Permeate end clamp ferrule connection.         |
| _  | Either A or C *      | Indicates Feed and Retentate connection arrangement.     |

\*Other connection arrangements are available

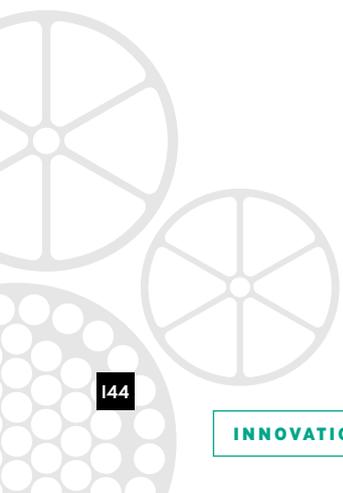
\*\*Clamp ferrule connections sizes - Other types and sizes are available

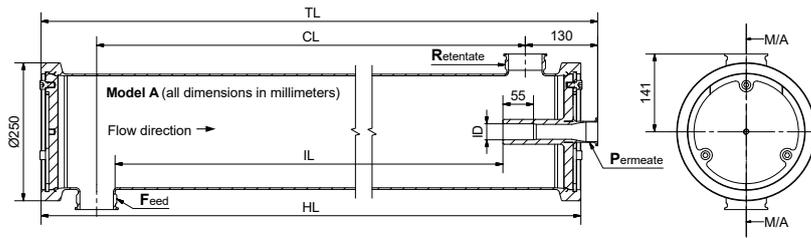
63 – 51 – 38 – 25 translates respectively to Ø63.5 – Ø51 – Ø38 – Ø25 in accordance with ISO 2852-2  
 50 – 40 – 26 translates respectively to DN50 – DN40 – DN25 in accordance with DIN 32676-A

## Connections

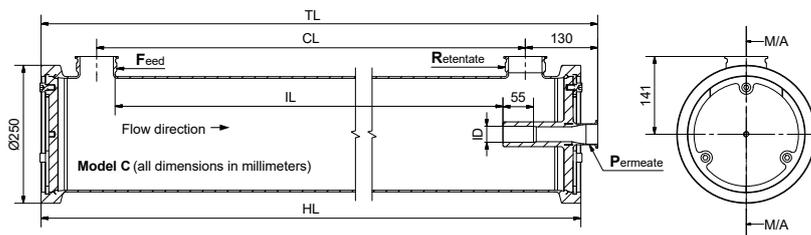
Tri-clamp connections for Feed, Retentate and Permeate. For 40 bar pressure rating SH or SSH clamps are recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

**Temperature and pressure limits must be respected at all times !**

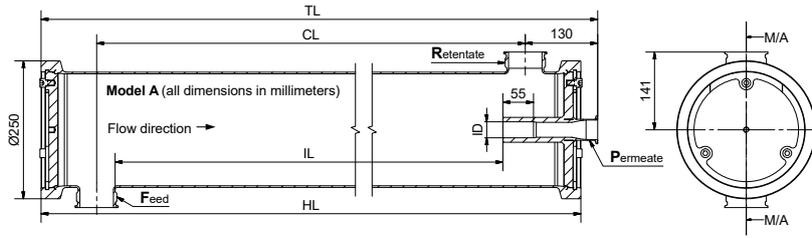




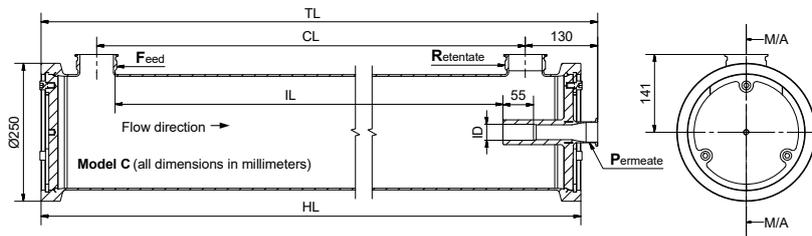
| MHC-8-40bar-I-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 40 liters |      | Dry weight 42 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-40-1-63-38-A              | W-022262       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1310             | 1280 | 1080             | 1007 |
| MHC-8-40-1-51-38-A              | W-021790       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1310             | 1280 | 1080             | 1013 |
| MHC-8-40-1-50-38-A              | W-022268       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1310             | 1280 | 1080             | 1012 |
| MHC-8-40-1-63-25-A              | W-022274       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1310             | 1280 | 1080             | 1007 |
| MHC-8-40-1-51-25-A              | W-022280       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1310             | 1280 | 1080             | 1013 |
| MHC-8-40-1-50-25-A              | W-022286       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1310             | 1280 | 1080             | 1012 |
| MHC-8-40-1-63-40-A              | W-022292       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1310             | 1280 | 1080             | 1007 |
| MHC-8-40-1-51-40-A              | W-022298       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1310             | 1280 | 1080             | 1013 |
| MHC-8-40-1-50-40-A              | W-022304       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1310             | 1280 | 1080             | 1012 |
| MHC-8-40-1-63-26-A              | W-022310       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1310             | 1280 | 1080             | 1007 |
| MHC-8-40-1-51-26-A              | W-022316       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1310             | 1280 | 1080             | 1013 |
| MHC-8-40-1-50-26-A              | W-022322       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1310             | 1280 | 1080             | 1012 |



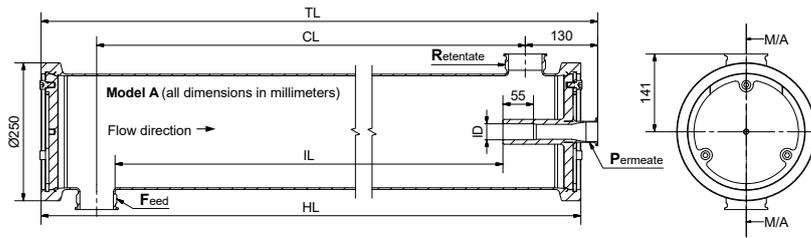
| MHC-8-40bar-I-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 40 liters |      | Dry weight 42 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-40-1-63-38-C              | W-022328       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1310             | 1280 | 1080             | 1007 |
| MHC-8-40-1-51-38-C              | W-022334       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1310             | 1280 | 1080             | 1013 |
| MHC-8-40-1-50-38-C              | W-022340       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1310             | 1280 | 1080             | 1012 |
| MHC-8-40-1-63-25-C              | W-022346       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1310             | 1280 | 1080             | 1007 |
| MHC-8-40-1-51-25-C              | W-022352       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1310             | 1280 | 1080             | 1013 |
| MHC-8-40-1-50-25-C              | W-022358       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1310             | 1280 | 1080             | 1012 |
| MHC-8-40-1-63-40-C              | W-022364       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1310             | 1280 | 1080             | 1007 |
| MHC-8-40-1-51-40-C              | W-022370       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1310             | 1280 | 1080             | 1013 |
| MHC-8-40-1-50-40-C              | W-022376       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1310             | 1280 | 1080             | 1012 |
| MHC-8-40-1-63-26-C              | W-022382       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1310             | 1280 | 1080             | 1007 |
| MHC-8-40-1-51-26-C              | W-022388       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1310             | 1280 | 1080             | 1013 |
| MHC-8-40-1-50-26-C              | W-022394       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1310             | 1280 | 1080             | 1012 |



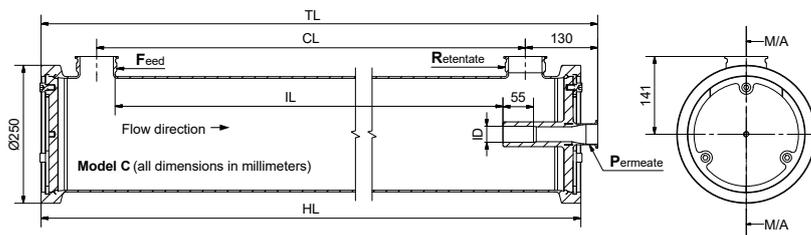
| MHC-8-40bar-2-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 7l liters |      | Dry weight 58 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-40-2-63-38-A              | W-022263       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2290             | 2260 | 2060             | 1987 |
| MHC-8-40-2-51-38-A              | W-021791       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2290             | 2260 | 2060             | 1993 |
| MHC-8-40-2-50-38-A              | W-022269       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2290             | 2260 | 2060             | 1992 |
| MHC-8-40-2-63-25-A              | W-022275       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2290             | 2260 | 2060             | 1987 |
| MHC-8-40-2-51-25-A              | W-022281       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2290             | 2260 | 2060             | 1993 |
| MHC-8-40-2-50-25-A              | W-022287       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2290             | 2260 | 2060             | 1992 |
| MHC-8-40-2-63-40-A              | W-022293       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2290             | 2260 | 2060             | 1987 |
| MHC-8-40-2-51-40-A              | W-022299       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2290             | 2260 | 2060             | 1993 |
| MHC-8-40-2-50-40-A              | W-022305       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2290             | 2260 | 2060             | 1992 |
| MHC-8-40-2-63-26-A              | W-022311       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2290             | 2260 | 2060             | 1987 |
| MHC-8-40-2-51-26-A              | W-022317       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2290             | 2260 | 2060             | 1993 |
| MHC-8-40-2-50-26-A              | W-022323       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2290             | 2260 | 2060             | 1992 |



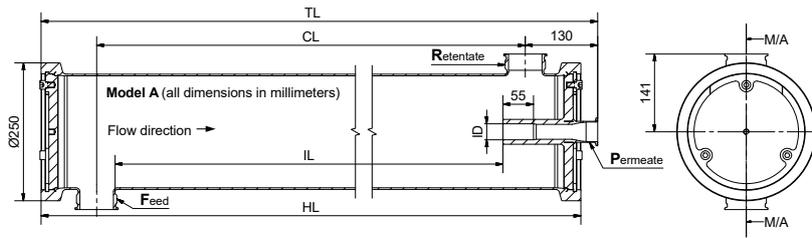
| MHC-8-40bar-2-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 7l liters |      | Dry weight 58 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-40-2-63-38-C              | W-022329       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2290             | 2260 | 2060             | 1987 |
| MHC-8-40-2-51-38-C              | W-022335       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2290             | 2260 | 2060             | 1993 |
| MHC-8-40-2-50-38-C              | W-022341       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2290             | 2260 | 2060             | 1992 |
| MHC-8-40-2-63-25-C              | W-022347       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2290             | 2260 | 2060             | 1987 |
| MHC-8-40-2-51-25-C              | W-022353       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2290             | 2260 | 2060             | 1993 |
| MHC-8-40-2-50-25-C              | W-022359       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2290             | 2260 | 2060             | 1992 |
| MHC-8-40-2-63-40-C              | W-022365       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2290             | 2260 | 2060             | 1987 |
| MHC-8-40-2-51-40-C              | W-022371       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2290             | 2260 | 2060             | 1993 |
| MHC-8-40-2-50-40-C              | W-022377       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2290             | 2260 | 2060             | 1992 |
| MHC-8-40-2-63-26-C              | W-022383       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2290             | 2260 | 2060             | 1987 |
| MHC-8-40-2-51-26-C              | W-022389       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2290             | 2260 | 2060             | 1993 |
| MHC-8-40-2-50-26-C              | W-022395       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2290             | 2260 | 2060             | 1992 |



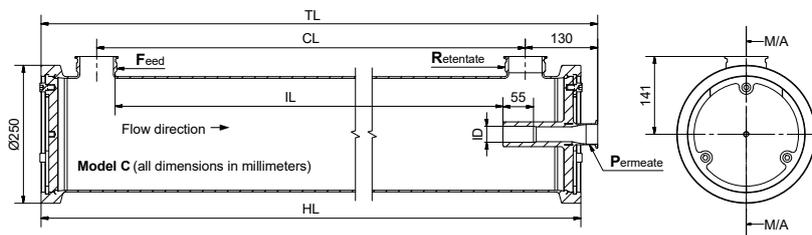
| MHC-8-40bar-3-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 103 liters |      | Dry weight 74 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-40-3-63-38-A              | W-022264       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3275              | 3245 | 3045             | 2972 |
| MHC-8-40-3-51-38-A              | W-021792       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3275              | 3245 | 3045             | 2978 |
| MHC-8-40-3-50-38-A              | W-022270       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3275              | 3245 | 3045             | 2977 |
| MHC-8-40-3-63-25-A              | W-022276       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3275              | 3245 | 3045             | 2972 |
| MHC-8-40-3-51-25-A              | W-022282       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3275              | 3245 | 3045             | 2978 |
| MHC-8-40-3-50-25-A              | W-022288       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3275              | 3245 | 3045             | 2977 |
| MHC-8-40-3-63-40-A              | W-022294       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3275              | 3245 | 3045             | 2972 |
| MHC-8-40-3-51-40-A              | W-022300       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3275              | 3245 | 3045             | 2978 |
| MHC-8-40-3-50-40-A              | W-022306       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3275              | 3245 | 3045             | 2977 |
| MHC-8-40-3-63-26-A              | W-022312       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3275              | 3245 | 3045             | 2972 |
| MHC-8-40-3-51-26-A              | W-022318       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3275              | 3245 | 3045             | 2978 |
| MHC-8-40-3-50-26-A              | W-022324       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3275              | 3245 | 3045             | 2977 |



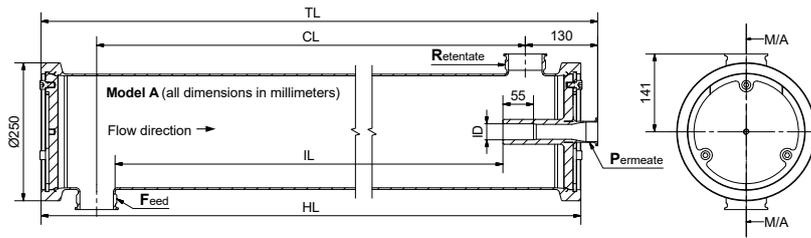
| MHC-8-40bar-3-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 103 liters |      | Dry weight 74 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-40-3-63-38-C              | W-022330       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3275              | 3245 | 3045             | 2972 |
| MHC-8-40-3-51-38-C              | W-022336       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3275              | 3245 | 3045             | 2978 |
| MHC-8-40-3-50-38-C              | W-022342       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3275              | 3245 | 3045             | 2977 |
| MHC-8-40-3-63-25-C              | W-022348       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3275              | 3245 | 3045             | 2972 |
| MHC-8-40-3-51-25-C              | W-022354       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3275              | 3245 | 3045             | 2978 |
| MHC-8-40-3-50-25-C              | W-022360       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3275              | 3245 | 3045             | 2977 |
| MHC-8-40-3-63-40-C              | W-022366       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3275              | 3245 | 3045             | 2972 |
| MHC-8-40-3-51-40-C              | W-022372       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3275              | 3245 | 3045             | 2978 |
| MHC-8-40-3-50-40-C              | W-022378       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3275              | 3245 | 3045             | 2977 |
| MHC-8-40-3-63-26-C              | W-022384       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3275              | 3245 | 3045             | 2972 |
| MHC-8-40-3-51-26-C              | W-022390       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3275              | 3245 | 3045             | 2978 |
| MHC-8-40-3-50-26-C              | W-022396       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3275              | 3245 | 3045             | 2977 |



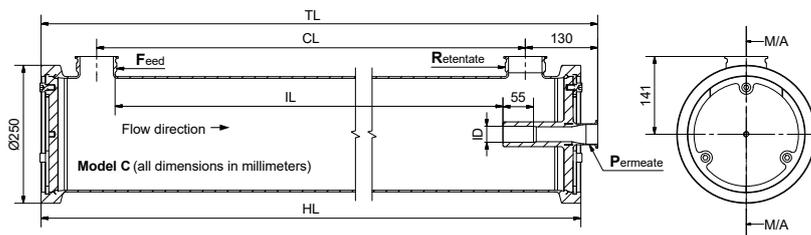
| MHC-8-40bar-4-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 135 liters |      | Dry weight 90 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-40-4-63-38-A              | W-022265       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4255              | 4225 | 4025             | 3952 |
| MHC-8-40-4-51-38-A              | W-021793       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4255              | 4225 | 4025             | 3958 |
| MHC-8-40-4-50-38-A              | W-022271       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4255              | 4225 | 4025             | 3957 |
| MHC-8-40-4-63-25-A              | W-022277       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4255              | 4225 | 4025             | 3952 |
| MHC-8-40-4-51-25-A              | W-022283       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4255              | 4225 | 4025             | 3958 |
| MHC-8-40-4-50-25-A              | W-022289       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4255              | 4225 | 4025             | 3957 |
| MHC-8-40-4-63-40-A              | W-022295       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4255              | 4225 | 4025             | 3952 |
| MHC-8-40-4-51-40-A              | W-022301       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4255              | 4225 | 4025             | 3958 |
| MHC-8-40-4-50-40-A              | W-022307       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4255              | 4225 | 4025             | 3957 |
| MHC-8-40-4-63-26-A              | W-022313       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4255              | 4225 | 4025             | 3952 |
| MHC-8-40-4-51-26-A              | W-022319       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4255              | 4225 | 4025             | 3958 |
| MHC-8-40-4-50-26-A              | W-022325       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4255              | 4225 | 4025             | 3957 |



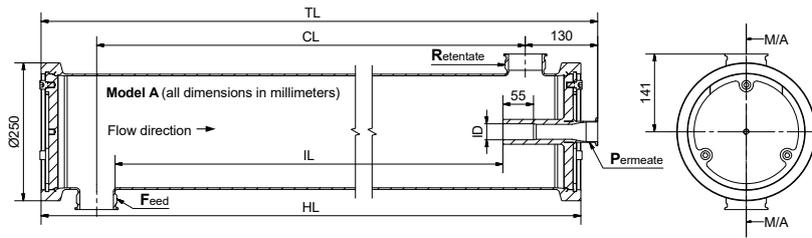
| MHC-8-40bar-4-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 135 liters |      | Dry weight 90 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-40-4-63-38-C              | W-022331       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4255              | 4225 | 4025             | 3952 |
| MHC-8-40-4-51-38-C              | W-022337       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4255              | 4225 | 4025             | 3958 |
| MHC-8-40-4-50-38-C              | W-022343       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4255              | 4225 | 4025             | 3957 |
| MHC-8-40-4-63-25-C              | W-022349       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4255              | 4225 | 4025             | 3952 |
| MHC-8-40-4-51-25-C              | W-022355       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4255              | 4225 | 4025             | 3958 |
| MHC-8-40-4-50-25-C              | W-022361       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4255              | 4225 | 4025             | 3957 |
| MHC-8-40-4-63-40-C              | W-022367       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4255              | 4225 | 4025             | 3952 |
| MHC-8-40-4-51-40-C              | W-022373       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4255              | 4225 | 4025             | 3958 |
| MHC-8-40-4-50-40-C              | W-022379       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4255              | 4225 | 4025             | 3957 |
| MHC-8-40-4-63-26-C              | W-022385       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4255              | 4225 | 4025             | 3952 |
| MHC-8-40-4-51-26-C              | W-022391       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4255              | 4225 | 4025             | 3958 |
| MHC-8-40-4-50-26-C              | W-022397       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4255              | 4225 | 4025             | 3957 |



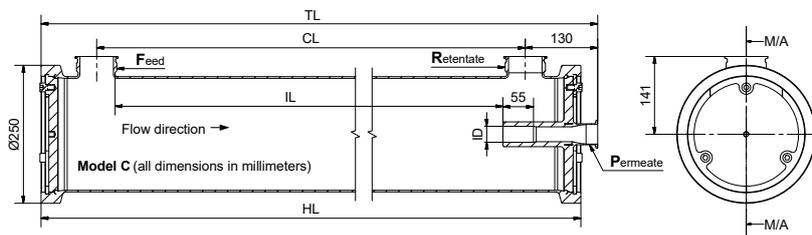
| MHC-8-40bar-5-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 167 liters |      | Dry weight 106 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MHC-8-40-5-63-38-A              | W-022266       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5240              | 5210 | 5010              | 4937 |
| MHC-8-40-5-51-38-A              | W-021794       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5240              | 5210 | 5010              | 4943 |
| MHC-8-40-5-50-38-A              | W-022272       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5240              | 5210 | 5010              | 4942 |
| MHC-8-40-5-63-25-A              | W-022278       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5240              | 5210 | 5010              | 4937 |
| MHC-8-40-5-51-25-A              | W-022284       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5240              | 5210 | 5010              | 4943 |
| MHC-8-40-5-50-25-A              | W-022290       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5240              | 5210 | 5010              | 4942 |
| MHC-8-40-5-63-40-A              | W-022296       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5240              | 5210 | 5010              | 4937 |
| MHC-8-40-5-51-40-A              | W-022302       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5240              | 5210 | 5010              | 4943 |
| MHC-8-40-5-50-40-A              | W-022308       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5240              | 5210 | 5010              | 4942 |
| MHC-8-40-5-63-26-A              | W-022314       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5240              | 5210 | 5010              | 4937 |
| MHC-8-40-5-51-26-A              | W-022320       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5240              | 5210 | 5010              | 4943 |
| MHC-8-40-5-50-26-A              | W-022326       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5240              | 5210 | 5010              | 4942 |



| MHC-8-40bar-5-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 167 liters |      | Dry weight 106 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MHC-8-40-5-63-38-C              | W-022332       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5240              | 5210 | 5010              | 4937 |
| MHC-8-40-5-51-38-C              | W-022338       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5240              | 5210 | 5010              | 4943 |
| MHC-8-40-5-50-38-C              | W-022344       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5240              | 5210 | 5010              | 4942 |
| MHC-8-40-5-63-25-C              | W-022350       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5240              | 5210 | 5010              | 4937 |
| MHC-8-40-5-51-25-C              | W-022356       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5240              | 5210 | 5010              | 4943 |
| MHC-8-40-5-50-25-C              | W-022362       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5240              | 5210 | 5010              | 4942 |
| MHC-8-40-5-63-40-C              | W-022368       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5240              | 5210 | 5010              | 4937 |
| MHC-8-40-5-51-40-C              | W-022374       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5240              | 5210 | 5010              | 4943 |
| MHC-8-40-5-50-40-C              | W-022380       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5240              | 5210 | 5010              | 4942 |
| MHC-8-40-5-63-26-C              | W-022386       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5240              | 5210 | 5010              | 4937 |
| MHC-8-40-5-51-26-C              | W-022392       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5240              | 5210 | 5010              | 4943 |
| MHC-8-40-5-50-26-C              | W-022398       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5240              | 5210 | 5010              | 4942 |



| MHC-8-40bar-6-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 199 liters |      | Dry weight 122 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MHC-8-40-6-63-38-A              | W-022267       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6220              | 6190 | 5990              | 5917 |
| MHC-8-40-6-51-38-A              | W-021795       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6220              | 6190 | 5990              | 5923 |
| MHC-8-40-6-50-38-A              | W-022273       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6220              | 6190 | 5990              | 5922 |
| MHC-8-40-6-63-25-A              | W-022279       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6220              | 6190 | 5990              | 5917 |
| MHC-8-40-6-51-25-A              | W-022285       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6220              | 6190 | 5990              | 5923 |
| MHC-8-40-6-50-25-A              | W-022291       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6220              | 6190 | 5990              | 5922 |
| MHC-8-40-6-63-40-A              | W-022297       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6220              | 6190 | 5990              | 5917 |
| MHC-8-40-6-51-40-A              | W-022303       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6220              | 6190 | 5990              | 5923 |
| MHC-8-40-6-50-40-A              | W-022309       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6220              | 6190 | 5990              | 5922 |
| MHC-8-40-6-63-26-A              | W-022315       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6220              | 6190 | 5990              | 5917 |
| MHC-8-40-6-51-26-A              | W-022321       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6220              | 6190 | 5990              | 5923 |
| MHC-8-40-6-50-26-A              | W-022327       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6220              | 6190 | 5990              | 5922 |



| MHC-8-40bar-6-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 199 liters |      | Dry weight 122 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MHC-8-40-6-63-38-C              | W-022333       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6220              | 6190 | 5990              | 5917 |
| MHC-8-40-6-51-38-C              | W-022339       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6220              | 6190 | 5990              | 5923 |
| MHC-8-40-6-50-38-C              | W-022345       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6220              | 6190 | 5990              | 5922 |
| MHC-8-40-6-63-25-C              | W-022351       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6220              | 6190 | 5990              | 5917 |
| MHC-8-40-6-51-25-C              | W-022357       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6220              | 6190 | 5990              | 5923 |
| MHC-8-40-6-50-25-C              | W-022363       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6220              | 6190 | 5990              | 5922 |
| MHC-8-40-6-63-40-C              | W-022369       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6220              | 6190 | 5990              | 5917 |
| MHC-8-40-6-51-40-C              | W-022375       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6220              | 6190 | 5990              | 5923 |
| MHC-8-40-6-50-40-C              | W-022381       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6220              | 6190 | 5990              | 5922 |
| MHC-8-40-6-63-26-C              | W-022387       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6220              | 6190 | 5990              | 5917 |
| MHC-8-40-6-51-26-C              | W-022393       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6220              | 6190 | 5990              | 5923 |
| MHC-8-40-6-50-26-C              | W-022399       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6220              | 6190 | 5990              | 5922 |





# MEMBRANE HOUSING

## DETAILED OVERVIEW FOR TYPE 'MHC-8-12' LOW PRESSURE - 12 BAR

FOR MF AND UF FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with Clamp ferrule connections manufactured by Wila A/S under the category "MHC" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with EN 1.4404 (AISI 316L) Stainless steel.**

The Membrane Housing is designed for pressures up to 12 bar and temperatures up to 70°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MHC-8-12bar-X-element – Model \_

|       |   |  |
|-------|---|--|
| MHC   | <b>M</b> embrane <b>H</b> ousing with <b>C</b> lamp ferrule connections for Feed and Retentate. |  |
| 8     | The membrane housing is designed for 7.9" x 38" (8038) membranes.                               |  |
| 12bar | The Membrane Housing is designed for pressures up to 12 bar and temperatures up to 70°C         |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MHC-8-12-X-YY-ZZ-\_

|    |                      |  |
|----|----------------------|--|
| X  | From 1 to 6 elements | Indicates the number of elements that can be fitted.     |
| YY | 76 - 63 - 51 -50**   | Indicates Feed and Retentate clamp ferrules connections. |
| ZZ | 38 - 25 - 40 - 26**  | Indicates Permeate end clamp ferrule connection.         |
| _  | Either A or C *      | Indicates Feed and Retentate connection arrangement.     |

\*Other connection arrangements are available

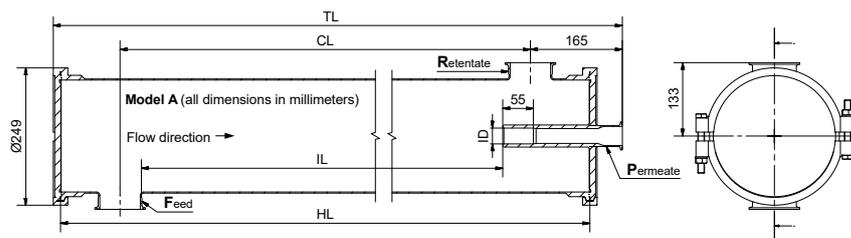
\*\*Clamp ferrule connections sizes - Other types and sizes are available

76 - 63 - 51 - 38 - 25 translates respectively to Ø76 - Ø63.5 - Ø51 - Ø38 - Ø25 in accordance with ISO 2852-2  
 50 - 40 - 26 translates respectively to DN50 - DN40 - DN25 in accordance with DIN 32676-A

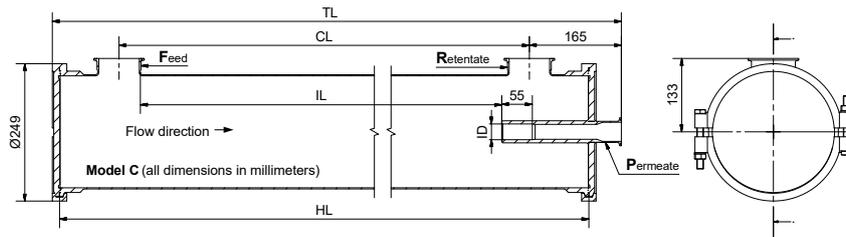
## Connections

Tri-clamp connections for Feed, Retentate and Permeate. For 12 bar pressure rating SH clamps are recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

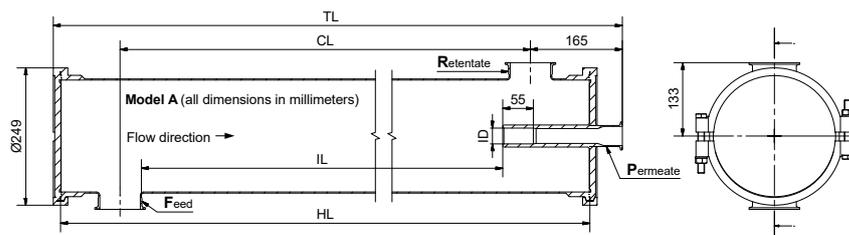
**Temperature and pressure limits must be respected at all times !**



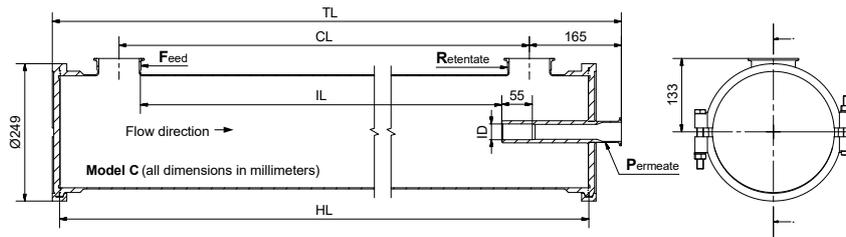
| MHC-8-12bar-1-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 41 liters |      | Dry weight 30 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-12-1-76-38-A              | W-023061       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1380             | 1309 | 1095             | 1007 |
| MHC-8-12-1-63-38-A              | W-023067       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1380             | 1309 | 1095             | 1013 |
| MHC-8-12-1-51-38-A              | W-021782       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1380             | 1309 | 1095             | 1019 |
| MHC-8-12-1-65-38-A              | W-023079       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1380             | 1309 | 1095             | 1010 |
| MHC-8-12-1-50-38-A              | W-023085       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1380             | 1309 | 1095             | 1018 |
| MHC-8-12-1-76-25-A              | W-023091       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1380             | 1309 | 1095             | 1007 |
| MHC-8-12-1-63-25-A              | W-023097       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1380             | 1309 | 1095             | 1013 |
| MHC-8-12-1-51-25-A              | W-023103       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1380             | 1309 | 1095             | 1019 |
| MHC-8-12-1-65-25-A              | W-023109       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1380             | 1309 | 1095             | 1010 |
| MHC-8-12-1-50-25-A              | W-023115       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1380             | 1309 | 1095             | 1018 |
| MHC-8-12-1-76-40-A              | W-023121       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1380             | 1309 | 1095             | 1007 |
| MHC-8-12-1-63-40-A              | W-023127       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1380             | 1309 | 1095             | 1013 |
| MHC-8-12-1-51-40-A              | W-023133       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1380             | 1309 | 1095             | 1019 |
| MHC-8-12-1-65-40-A              | W-023139       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1380             | 1309 | 1095             | 1010 |
| MHC-8-12-1-50-40-A              | W-023145       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1380             | 1309 | 1095             | 1018 |
| MHC-8-12-1-76-26-A              | W-023151       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1380             | 1309 | 1095             | 1007 |
| MHC-8-12-1-63-26-A              | W-023157       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1380             | 1309 | 1095             | 1013 |
| MHC-8-12-1-51-26-A              | W-023163       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1380             | 1309 | 1095             | 1019 |
| MHC-8-12-1-65-26-A              | W-023169       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1380             | 1309 | 1095             | 1010 |
| MHC-8-12-1-50-26-A              | W-023175       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1380             | 1309 | 1095             | 1018 |



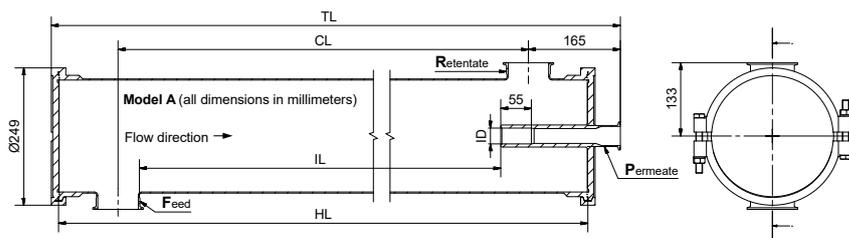
| MHC-8-12bar-1-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 41 liters |      | Dry weight 30 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-12-1-76-38-C              | W-023181       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1380             | 1309 | 1095             | 1007 |
| MHC-8-12-1-63-38-C              | W-023187       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1380             | 1309 | 1095             | 1013 |
| MHC-8-12-1-51-38-C              | W-023193       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1380             | 1309 | 1095             | 1019 |
| MHC-8-12-1-65-38-C              | W-023199       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1380             | 1309 | 1095             | 1010 |
| MHC-8-12-1-50-38-C              | W-023205       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1380             | 1309 | 1095             | 1018 |
| MHC-8-12-1-76-25-C              | W-023211       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1380             | 1309 | 1095             | 1007 |
| MHC-8-12-1-63-25-C              | W-023217       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1380             | 1309 | 1095             | 1013 |
| MHC-8-12-1-51-25-C              | W-023223       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1380             | 1309 | 1095             | 1019 |
| MHC-8-12-1-65-25-C              | W-023229       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1380             | 1309 | 1095             | 1010 |
| MHC-8-12-1-50-25-C              | W-023235       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1380             | 1309 | 1095             | 1018 |
| MHC-8-12-1-76-40-C              | W-023241       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1380             | 1309 | 1095             | 1007 |
| MHC-8-12-1-63-40-C              | W-023247       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1380             | 1309 | 1095             | 1013 |
| MHC-8-12-1-51-40-C              | W-023253       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1380             | 1309 | 1095             | 1019 |
| MHC-8-12-1-65-40-C              | W-023259       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1380             | 1309 | 1095             | 1010 |
| MHC-8-12-1-50-40-C              | W-023265       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1380             | 1309 | 1095             | 1018 |
| MHC-8-12-1-76-26-C              | W-023271       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1380             | 1309 | 1095             | 1007 |
| MHC-8-12-1-63-26-C              | W-023277       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1380             | 1309 | 1095             | 1013 |
| MHC-8-12-1-51-26-C              | W-023283       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1380             | 1309 | 1095             | 1019 |
| MHC-8-12-1-65-26-C              | W-023289       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1380             | 1309 | 1095             | 1010 |
| MHC-8-12-1-50-26-C              | W-023295       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1380             | 1309 | 1095             | 1018 |



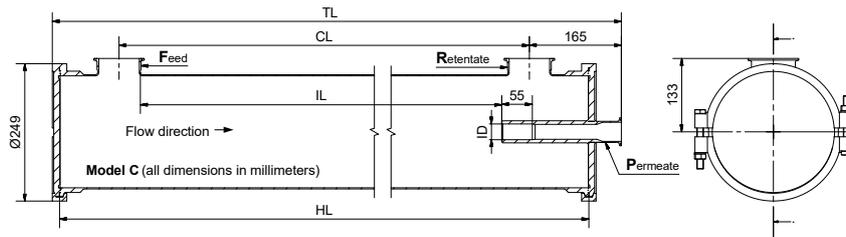
| MHC-8-12bar-2-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 72 liters |      | Dry weight 42 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-12-2-76-38-A              | W-023062       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2360             | 2289 | 2075             | 1987 |
| MHC-8-12-2-63-38-A              | W-023068       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2360             | 2289 | 2075             | 1993 |
| MHC-8-12-2-51-38-A              | W-021783       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2360             | 2289 | 2075             | 1999 |
| MHC-8-12-2-65-38-A              | W-023080       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2360             | 2289 | 2075             | 1990 |
| MHC-8-12-2-50-38-A              | W-023086       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2360             | 2289 | 2075             | 1998 |
| MHC-8-12-2-76-25-A              | W-023092       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2360             | 2289 | 2075             | 1987 |
| MHC-8-12-2-63-25-A              | W-023098       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2360             | 2289 | 2075             | 1993 |
| MHC-8-12-2-51-25-A              | W-023104       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2360             | 2289 | 2075             | 1999 |
| MHC-8-12-2-65-25-A              | W-023110       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2360             | 2289 | 2075             | 1990 |
| MHC-8-12-2-50-25-A              | W-023116       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2360             | 2289 | 2075             | 1998 |
| MHC-8-12-2-76-40-A              | W-023122       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2360             | 2289 | 2075             | 1987 |
| MHC-8-12-2-63-40-A              | W-023128       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2360             | 2289 | 2075             | 1993 |
| MHC-8-12-2-51-40-A              | W-023134       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2360             | 2289 | 2075             | 1999 |
| MHC-8-12-2-65-40-A              | W-023140       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2360             | 2289 | 2075             | 1990 |
| MHC-8-12-2-50-40-A              | W-023146       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2360             | 2289 | 2075             | 1998 |
| MHC-8-12-2-76-26-A              | W-023152       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2360             | 2289 | 2075             | 1987 |
| MHC-8-12-2-63-26-A              | W-023158       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2360             | 2289 | 2075             | 1993 |
| MHC-8-12-2-51-26-A              | W-023164       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2360             | 2289 | 2075             | 1999 |
| MHC-8-12-2-65-26-A              | W-023170       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2360             | 2289 | 2075             | 1990 |
| MHC-8-12-2-50-26-A              | W-023176       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2360             | 2289 | 2075             | 1998 |



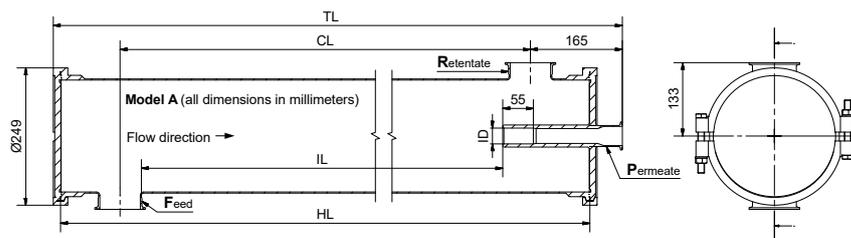
| MHC-8-12bar-2-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 72 liters |      | Dry weight 42 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-12-2-76-38-C              | W-023182       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2360             | 2289 | 2075             | 1987 |
| MHC-8-12-2-63-38-C              | W-023188       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2360             | 2289 | 2075             | 1993 |
| MHC-8-12-2-51-38-C              | W-023194       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2360             | 2289 | 2075             | 1999 |
| MHC-8-12-2-65-38-C              | W-023200       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2360             | 2289 | 2075             | 1990 |
| MHC-8-12-2-50-38-C              | W-023206       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2360             | 2289 | 2075             | 1998 |
| MHC-8-12-2-76-25-C              | W-023212       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2360             | 2289 | 2075             | 1987 |
| MHC-8-12-2-63-25-C              | W-023218       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2360             | 2289 | 2075             | 1993 |
| MHC-8-12-2-51-25-C              | W-023224       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2360             | 2289 | 2075             | 1999 |
| MHC-8-12-2-65-25-C              | W-023230       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2360             | 2289 | 2075             | 1990 |
| MHC-8-12-2-50-25-C              | W-023236       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2360             | 2289 | 2075             | 1998 |
| MHC-8-12-2-76-40-C              | W-023242       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2360             | 2289 | 2075             | 1987 |
| MHC-8-12-2-63-40-C              | W-023248       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2360             | 2289 | 2075             | 1993 |
| MHC-8-12-2-51-40-C              | W-023254       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2360             | 2289 | 2075             | 1999 |
| MHC-8-12-2-65-40-C              | W-023260       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2360             | 2289 | 2075             | 1990 |
| MHC-8-12-2-50-40-C              | W-023266       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2360             | 2289 | 2075             | 1998 |
| MHC-8-12-2-76-26-C              | W-023272       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2360             | 2289 | 2075             | 1987 |
| MHC-8-12-2-63-26-C              | W-023278       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2360             | 2289 | 2075             | 1993 |
| MHC-8-12-2-51-26-C              | W-023284       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2360             | 2289 | 2075             | 1999 |
| MHC-8-12-2-65-26-C              | W-023290       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2360             | 2289 | 2075             | 1990 |
| MHC-8-12-2-50-26-C              | W-023296       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2360             | 2289 | 2075             | 1998 |



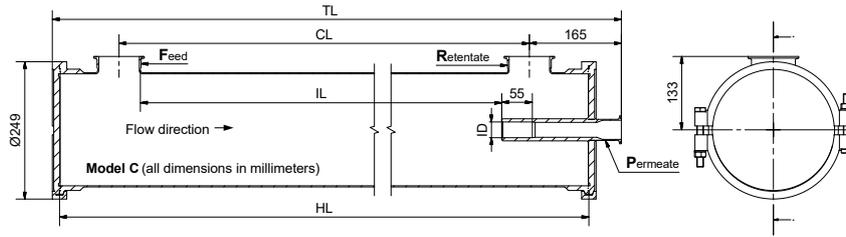
| MHC-8-12bar-3-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 104 liters |      | Dry weight 53 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-12-3-76-38-A              | W-023063       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3345              | 3274 | 3060             | 2972 |
| MHC-8-12-3-63-38-A              | W-023069       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3345              | 3274 | 3060             | 2978 |
| MHC-8-12-3-51-38-A              | W-021784       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3345              | 3274 | 3060             | 2984 |
| MHC-8-12-3-65-38-A              | W-023081       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3345              | 3274 | 3060             | 2975 |
| MHC-8-12-3-50-38-A              | W-023087       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3345              | 3274 | 3060             | 2983 |
| MHC-8-12-3-76-25-A              | W-023093       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3345              | 3274 | 3060             | 2972 |
| MHC-8-12-3-63-25-A              | W-023099       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3345              | 3274 | 3060             | 2978 |
| MHC-8-12-3-51-25-A              | W-023105       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3345              | 3274 | 3060             | 2984 |
| MHC-8-12-3-65-25-A              | W-023111       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3345              | 3274 | 3060             | 2975 |
| MHC-8-12-3-50-25-A              | W-023117       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3345              | 3274 | 3060             | 2983 |
| MHC-8-12-3-76-40-A              | W-023123       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3345              | 3274 | 3060             | 2972 |
| MHC-8-12-3-63-40-A              | W-023129       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3345              | 3274 | 3060             | 2978 |
| MHC-8-12-3-51-40-A              | W-023135       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3345              | 3274 | 3060             | 2984 |
| MHC-8-12-3-65-40-A              | W-023141       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3345              | 3274 | 3060             | 2975 |
| MHC-8-12-3-50-40-A              | W-023147       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3345              | 3274 | 3060             | 2983 |
| MHC-8-12-3-76-26-A              | W-023153       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3345              | 3274 | 3060             | 2972 |
| MHC-8-12-3-63-26-A              | W-023159       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3345              | 3274 | 3060             | 2978 |
| MHC-8-12-3-51-26-A              | W-023165       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3345              | 3274 | 3060             | 2984 |
| MHC-8-12-3-65-26-A              | W-023171       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3345              | 3274 | 3060             | 2975 |
| MHC-8-12-3-50-26-A              | W-023177       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3345              | 3274 | 3060             | 2983 |



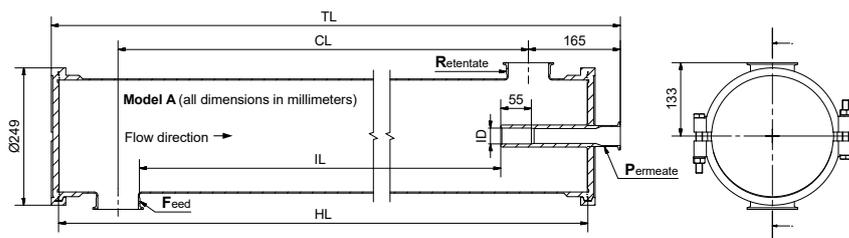
| MHC-8-12bar-3-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 104 liters |      | Dry weight 53 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-12-3-76-38-C              | W-023183       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3345              | 3274 | 3060             | 2972 |
| MHC-8-12-3-63-38-C              | W-023189       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3345              | 3274 | 3060             | 2978 |
| MHC-8-12-3-51-38-C              | W-023195       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3345              | 3274 | 3060             | 2984 |
| MHC-8-12-3-65-38-C              | W-023201       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3345              | 3274 | 3060             | 2975 |
| MHC-8-12-3-50-38-C              | W-023207       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3345              | 3274 | 3060             | 2983 |
| MHC-8-12-3-76-25-C              | W-023213       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3345              | 3274 | 3060             | 2972 |
| MHC-8-12-3-63-25-C              | W-023219       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3345              | 3274 | 3060             | 2978 |
| MHC-8-12-3-51-25-C              | W-023225       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3345              | 3274 | 3060             | 2984 |
| MHC-8-12-3-65-25-C              | W-023231       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3345              | 3274 | 3060             | 2975 |
| MHC-8-12-3-50-25-C              | W-023237       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3345              | 3274 | 3060             | 2983 |
| MHC-8-12-3-76-40-C              | W-023243       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3345              | 3274 | 3060             | 2972 |
| MHC-8-12-3-63-40-C              | W-023249       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3345              | 3274 | 3060             | 2978 |
| MHC-8-12-3-51-40-C              | W-023255       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3345              | 3274 | 3060             | 2984 |
| MHC-8-12-3-65-40-C              | W-023261       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3345              | 3274 | 3060             | 2975 |
| MHC-8-12-3-50-40-C              | W-023267       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3345              | 3274 | 3060             | 2983 |
| MHC-8-12-3-76-26-C              | W-023273       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3345              | 3274 | 3060             | 2972 |
| MHC-8-12-3-63-26-C              | W-023279       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3345              | 3274 | 3060             | 2978 |
| MHC-8-12-3-51-26-C              | W-023285       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3345              | 3274 | 3060             | 2984 |
| MHC-8-12-3-65-26-C              | W-023291       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3345              | 3274 | 3060             | 2975 |
| MHC-8-12-3-50-26-C              | W-023297       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3345              | 3274 | 3060             | 2983 |



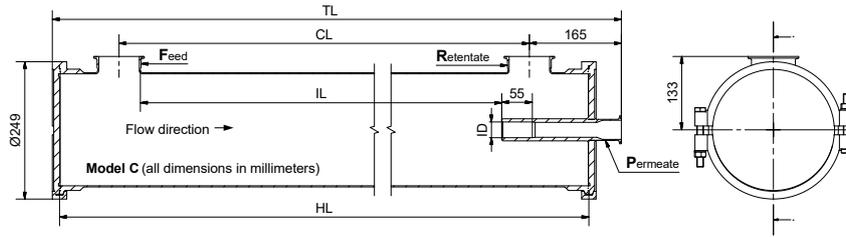
| MHC-8-12bar-4-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 136 liters |      | Dry weight 64 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-12-4-76-38-A              | W-023064       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4325              | 4254 | 4040             | 3952 |
| MHC-8-12-4-63-38-A              | W-023070       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4325              | 4254 | 4040             | 3958 |
| MHC-8-12-4-51-38-A              | W-021785       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4325              | 4254 | 4040             | 3964 |
| MHC-8-12-4-65-38-A              | W-023082       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4325              | 4254 | 4040             | 3955 |
| MHC-8-12-4-50-38-A              | W-023088       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4325              | 4254 | 4040             | 3963 |
| MHC-8-12-4-76-25-A              | W-023094       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4325              | 4254 | 4040             | 3952 |
| MHC-8-12-4-63-25-A              | W-023100       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4325              | 4254 | 4040             | 3958 |
| MHC-8-12-4-51-25-A              | W-023106       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4325              | 4254 | 4040             | 3964 |
| MHC-8-12-4-65-25-A              | W-023112       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4325              | 4254 | 4040             | 3955 |
| MHC-8-12-4-50-25-A              | W-023118       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4325              | 4254 | 4040             | 3963 |
| MHC-8-12-4-76-40-A              | W-023124       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4325              | 4254 | 4040             | 3952 |
| MHC-8-12-4-63-40-A              | W-023130       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4325              | 4254 | 4040             | 3958 |
| MHC-8-12-4-51-40-A              | W-023136       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4325              | 4254 | 4040             | 3964 |
| MHC-8-12-4-65-40-A              | W-023142       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4325              | 4254 | 4040             | 3955 |
| MHC-8-12-4-50-40-A              | W-023148       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4325              | 4254 | 4040             | 3963 |
| MHC-8-12-4-76-26-A              | W-023154       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4325              | 4254 | 4040             | 3952 |
| MHC-8-12-4-63-26-A              | W-023160       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4325              | 4254 | 4040             | 3958 |
| MHC-8-12-4-51-26-A              | W-023166       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4325              | 4254 | 4040             | 3964 |
| MHC-8-12-4-65-26-A              | W-023172       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4325              | 4254 | 4040             | 3955 |
| MHC-8-12-4-50-26-A              | W-023178       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4325              | 4254 | 4040             | 3963 |



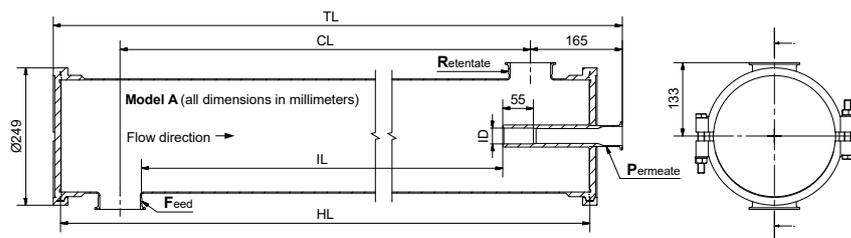
| MHC-8-12bar-4-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 136 liters |      | Dry weight 64 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-12-4-76-38-C              | W-023184       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4325              | 4254 | 4040             | 3952 |
| MHC-8-12-4-63-38-C              | W-023190       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4325              | 4254 | 4040             | 3958 |
| MHC-8-12-4-51-38-C              | W-023196       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4325              | 4254 | 4040             | 3964 |
| MHC-8-12-4-65-38-C              | W-023202       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4325              | 4254 | 4040             | 3955 |
| MHC-8-12-4-50-38-C              | W-023208       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4325              | 4254 | 4040             | 3963 |
| MHC-8-12-4-76-25-C              | W-023214       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4325              | 4254 | 4040             | 3952 |
| MHC-8-12-4-63-25-C              | W-023220       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4325              | 4254 | 4040             | 3958 |
| MHC-8-12-4-51-25-C              | W-023226       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4325              | 4254 | 4040             | 3964 |
| MHC-8-12-4-65-25-C              | W-023232       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4325              | 4254 | 4040             | 3955 |
| MHC-8-12-4-50-25-C              | W-023238       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4325              | 4254 | 4040             | 3963 |
| MHC-8-12-4-76-40-C              | W-023244       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4325              | 4254 | 4040             | 3952 |
| MHC-8-12-4-63-40-C              | W-023250       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4325              | 4254 | 4040             | 3958 |
| MHC-8-12-4-51-40-C              | W-023256       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4325              | 4254 | 4040             | 3964 |
| MHC-8-12-4-65-40-C              | W-023262       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4325              | 4254 | 4040             | 3955 |
| MHC-8-12-4-50-40-C              | W-023268       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4325              | 4254 | 4040             | 3963 |
| MHC-8-12-4-76-26-C              | W-023274       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4325              | 4254 | 4040             | 3952 |
| MHC-8-12-4-63-26-C              | W-023280       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4325              | 4254 | 4040             | 3958 |
| MHC-8-12-4-51-26-C              | W-023286       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4325              | 4254 | 4040             | 3964 |
| MHC-8-12-4-65-26-C              | W-023292       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4325              | 4254 | 4040             | 3955 |
| MHC-8-12-4-50-26-C              | W-023298       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4325              | 4254 | 4040             | 3963 |



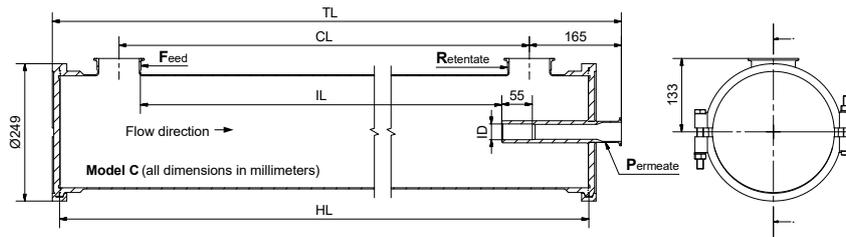
| MHC-8-12bar-5-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 168 liters |      | Dry weight 76 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-12-5-76-38-A              | W-023065       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5310              | 5239 | 5025             | 4937 |
| MHC-8-12-5-63-38-A              | W-023071       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5310              | 5239 | 5025             | 4943 |
| MHC-8-12-5-51-38-A              | W-021786       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5310              | 5239 | 5025             | 4949 |
| MHC-8-12-5-65-38-A              | W-023083       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5310              | 5239 | 5025             | 4940 |
| MHC-8-12-5-50-38-A              | W-023089       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5310              | 5239 | 5025             | 4948 |
| MHC-8-12-5-76-25-A              | W-023095       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5310              | 5239 | 5025             | 4937 |
| MHC-8-12-5-63-25-A              | W-023101       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5310              | 5239 | 5025             | 4943 |
| MHC-8-12-5-51-25-A              | W-023107       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5310              | 5239 | 5025             | 4949 |
| MHC-8-12-5-65-25-A              | W-023113       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5310              | 5239 | 5025             | 4940 |
| MHC-8-12-5-50-25-A              | W-023119       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5310              | 5239 | 5025             | 4948 |
| MHC-8-12-5-76-40-A              | W-023125       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5310              | 5239 | 5025             | 4937 |
| MHC-8-12-5-63-40-A              | W-023131       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5310              | 5239 | 5025             | 4943 |
| MHC-8-12-5-51-40-A              | W-023137       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5310              | 5239 | 5025             | 4949 |
| MHC-8-12-5-65-40-A              | W-023143       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5310              | 5239 | 5025             | 4940 |
| MHC-8-12-5-50-40-A              | W-023149       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5310              | 5239 | 5025             | 4948 |
| MHC-8-12-5-76-26-A              | W-023155       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5310              | 5239 | 5025             | 4937 |
| MHC-8-12-5-63-26-A              | W-023161       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5310              | 5239 | 5025             | 4943 |
| MHC-8-12-5-51-26-A              | W-023167       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5310              | 5239 | 5025             | 4949 |
| MHC-8-12-5-65-26-A              | W-023173       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5310              | 5239 | 5025             | 4940 |
| MHC-8-12-5-50-26-A              | W-023179       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5310              | 5239 | 5025             | 4948 |



| MHC-8-12bar-5-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 168 liters |      | Dry weight 76 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-12-5-76-38-C              | W-023185       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5310              | 5239 | 5025             | 4937 |
| MHC-8-12-5-63-38-C              | W-023191       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5310              | 5239 | 5025             | 4943 |
| MHC-8-12-5-51-38-C              | W-023197       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5310              | 5239 | 5025             | 4949 |
| MHC-8-12-5-65-38-C              | W-023203       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5310              | 5239 | 5025             | 4940 |
| MHC-8-12-5-50-38-C              | W-023209       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5310              | 5239 | 5025             | 4948 |
| MHC-8-12-5-76-25-C              | W-023215       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5310              | 5239 | 5025             | 4937 |
| MHC-8-12-5-63-25-C              | W-023221       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5310              | 5239 | 5025             | 4943 |
| MHC-8-12-5-51-25-C              | W-023227       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5310              | 5239 | 5025             | 4949 |
| MHC-8-12-5-65-25-C              | W-023233       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5310              | 5239 | 5025             | 4940 |
| MHC-8-12-5-50-25-C              | W-023239       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5310              | 5239 | 5025             | 4948 |
| MHC-8-12-5-76-40-C              | W-023245       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5310              | 5239 | 5025             | 4937 |
| MHC-8-12-5-63-40-C              | W-023251       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5310              | 5239 | 5025             | 4943 |
| MHC-8-12-5-51-40-C              | W-023257       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5310              | 5239 | 5025             | 4949 |
| MHC-8-12-5-65-40-C              | W-023263       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5310              | 5239 | 5025             | 4940 |
| MHC-8-12-5-50-40-C              | W-023269       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5310              | 5239 | 5025             | 4948 |
| MHC-8-12-5-76-26-C              | W-023275       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5310              | 5239 | 5025             | 4937 |
| MHC-8-12-5-63-26-C              | W-023281       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5310              | 5239 | 5025             | 4943 |
| MHC-8-12-5-51-26-C              | W-023287       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5310              | 5239 | 5025             | 4949 |
| MHC-8-12-5-65-26-C              | W-023293       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5310              | 5239 | 5025             | 4940 |
| MHC-8-12-5-50-26-C              | W-023299       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5310              | 5239 | 5025             | 4948 |



| MHC-8-12bar-6-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 200 liters |      | Dry weight 88 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-12-6-76-38-A              | W-023066       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6290              | 6219 | 6005             | 5917 |
| MHC-8-12-6-63-38-A              | W-023072       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6290              | 6219 | 6005             | 5923 |
| MHC-8-12-6-51-38-A              | W-021787       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6290              | 6219 | 6005             | 5929 |
| MHC-8-12-6-65-38-A              | W-023084       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6290              | 6219 | 6005             | 5920 |
| MHC-8-12-6-50-38-A              | W-023090       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6290              | 6219 | 6005             | 5928 |
| MHC-8-12-6-76-25-A              | W-023096       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6290              | 6219 | 6005             | 5917 |
| MHC-8-12-6-63-25-A              | W-023102       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6290              | 6219 | 6005             | 5923 |
| MHC-8-12-6-51-25-A              | W-023108       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6290              | 6219 | 6005             | 5929 |
| MHC-8-12-6-65-25-A              | W-023114       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6290              | 6219 | 6005             | 5920 |
| MHC-8-12-6-50-25-A              | W-023120       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6290              | 6219 | 6005             | 5928 |
| MHC-8-12-6-76-40-A              | W-023126       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6290              | 6219 | 6005             | 5917 |
| MHC-8-12-6-63-40-A              | W-023132       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6290              | 6219 | 6005             | 5923 |
| MHC-8-12-6-51-40-A              | W-023138       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6290              | 6219 | 6005             | 5929 |
| MHC-8-12-6-65-40-A              | W-023144       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6290              | 6219 | 6005             | 5920 |
| MHC-8-12-6-50-40-A              | W-023150       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6290              | 6219 | 6005             | 5928 |
| MHC-8-12-6-76-26-A              | W-023156       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6290              | 6219 | 6005             | 5917 |
| MHC-8-12-6-63-26-A              | W-023162       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6290              | 6219 | 6005             | 5923 |
| MHC-8-12-6-51-26-A              | W-023168       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6290              | 6219 | 6005             | 5929 |
| MHC-8-12-6-65-26-A              | W-023174       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6290              | 6219 | 6005             | 5920 |
| MHC-8-12-6-50-26-A              | W-023180       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6290              | 6219 | 6005             | 5928 |



| MHC-8-12bar-6-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 12 barg / 70°C                         |      | Volume 200 liters |      | Dry weight 88 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-12-6-76-38-C              | W-023186       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6290              | 6219 | 6005             | 5917 |
| MHC-8-12-6-63-38-C              | W-023192       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6290              | 6219 | 6005             | 5923 |
| MHC-8-12-6-51-38-C              | W-023198       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6290              | 6219 | 6005             | 5929 |
| MHC-8-12-6-65-38-C              | W-023204       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6290              | 6219 | 6005             | 5920 |
| MHC-8-12-6-50-38-C              | W-023210       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6290              | 6219 | 6005             | 5928 |
| MHC-8-12-6-76-25-C              | W-023216       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6290              | 6219 | 6005             | 5917 |
| MHC-8-12-6-63-25-C              | W-023222       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6290              | 6219 | 6005             | 5923 |
| MHC-8-12-6-51-25-C              | W-023228       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6290              | 6219 | 6005             | 5929 |
| MHC-8-12-6-65-25-C              | W-023234       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6290              | 6219 | 6005             | 5920 |
| MHC-8-12-6-50-25-C              | W-023240       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6290              | 6219 | 6005             | 5928 |
| MHC-8-12-6-76-40-C              | W-023246       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6290              | 6219 | 6005             | 5917 |
| MHC-8-12-6-63-40-C              | W-023252       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6290              | 6219 | 6005             | 5923 |
| MHC-8-12-6-51-40-C              | W-023258       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6290              | 6219 | 6005             | 5929 |
| MHC-8-12-6-65-40-C              | W-023264       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6290              | 6219 | 6005             | 5920 |
| MHC-8-12-6-50-40-C              | W-023270       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6290              | 6219 | 6005             | 5928 |
| MHC-8-12-6-76-26-C              | W-023276       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6290              | 6219 | 6005             | 5917 |
| MHC-8-12-6-63-26-C              | W-023282       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6290              | 6219 | 6005             | 5923 |
| MHC-8-12-6-51-26-C              | W-023288       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6290              | 6219 | 6005             | 5929 |
| MHC-8-12-6-65-26-C              | W-023294       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6290              | 6219 | 6005             | 5920 |
| MHC-8-12-6-50-26-C              | W-023300       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6290              | 6219 | 6005             | 5928 |





# MEMBRANE HOUSING

## DETAILED OVERVIEW FOR TYPE 'MHC-4-40' MEDIUM PRESSURE - 40 BAR

FOR MF, UF, NF AND RO FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with Clamp ferrule connections manufactured by Wila A/S under the category "MHC" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with EN 1.4404 (AISI 316L) Stainless steel.**

The Membrane Housing is designed for pressures up to 40 bar and temperatures up to 70°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MHC-4-40bar-X-element – Model \_

|       |   |  |
|-------|---|--|
| MHC   | <b>M</b> embrane <b>H</b> ousing with <b>C</b> lamp ferrule connections for Feed and Retentate. |  |
| 4     | The membrane housing is designed for 3.8" x 38" (3838) membranes.                               |  |
| 40bar | The Membrane Housing is designed for pressures up to 40 bar and temperatures up to 70°C         |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MHC-4-40-X-YY-ZZ- \_

|    |                      |  |
|----|----------------------|--|
| X  | From 1 to 6 elements | Indicates the number of elements that can be fitted.     |
| YY | 51 - 38 - 50 - 40**  | Indicates Feed and Retentate clamp ferrules connections. |
| ZZ | 25 - 26**            | Indicates Permeate end clamp ferrule connection.         |
| _  | Either A or C *      | Indicates Feed and Retentate connection arrangement.     |

\*Other connection arrangements are available

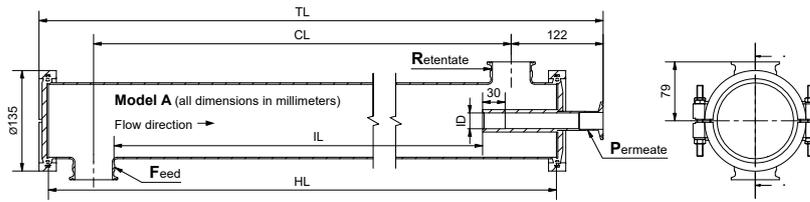
\*\*Clamp ferrule connections sizes - Other types and sizes are available

|              |   |                                |
|--------------|---|--------------------------------|
| 51 - 38 - 25 | translates respectively to Ø51 - Ø38 - Ø25    | in accordance with ISO 2852-2  |
| 50 - 40 - 26 | translates respectively to DN50 - DN40 - DN25 | in accordance with DIN 32676-A |

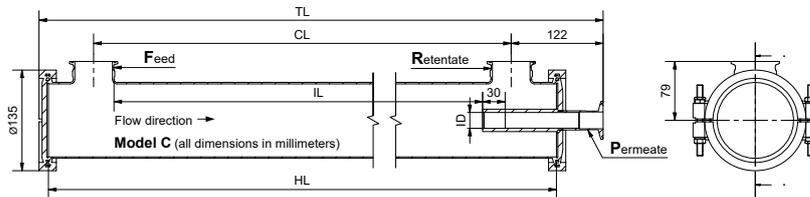
## Connections

Tri-clamp connections for Feed, Retentate and Permeate. For 40 bar pressure rating SH or SSH clamps are recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

**Temperature and pressure limits must be respected at all times !**

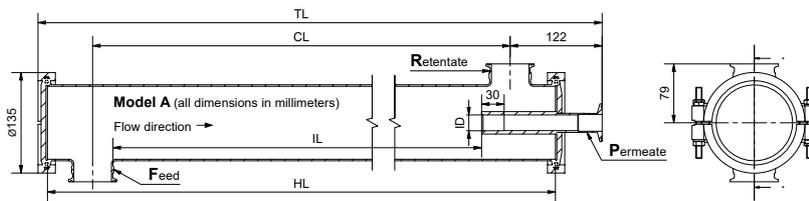


| MHC-4-40bar-1-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                 |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-----------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 9 liters |      | Dry weight 10 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL              | HL   | CL               | IL   |
| MHC-4-40-1-51-25-A              | W-023665       | 1 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 1270            | 1195 | 1075             | 1010 |
| MHC-4-40-1-38-25-A              | W-023671       | 1 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 1270            | 1195 | 1075             | 1016 |
| MHC-4-40-1-50-25-A              | W-023677       | 1 x 38"           | Ø21.1    | DN50                                   | Ø25  | 1270            | 1195 | 1075             | 1009 |
| MHC-4-40-1-40-25-A              | W-023683       | 1 x 38"           | Ø21.1    | DN40                                   | Ø25  | 1270            | 1195 | 1075             | 1015 |
| MHC-4-40-1-51-26-A              | W-023689       | 1 x 38"           | Ø21.1    | Ø51                                    | DN25 | 1270            | 1195 | 1075             | 1010 |
| MHC-4-40-1-38-26-A              | W-023695       | 1 x 38"           | Ø21.1    | Ø38                                    | DN25 | 1270            | 1195 | 1075             | 1016 |
| MHC-4-40-1-50-26-A              | W-023701       | 1 x 38"           | Ø21.1    | DN50                                   | DN25 | 1270            | 1195 | 1075             | 1009 |
| MHC-4-40-1-40-26-A              | W-023707       | 1 x 38"           | Ø21.1    | DN40                                   | DN25 | 1270            | 1195 | 1075             | 1015 |

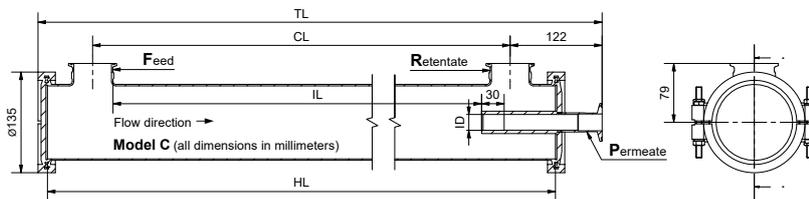


| MHC-4-40bar-1-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                 |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-----------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 9 liters |      | Dry weight 10 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL              | HL   | CL               | IL   |
| MHC-4-40-1-51-25-C              | W-029375       | 1 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 1270            | 1195 | 1075             | 1010 |
| MHC-4-40-1-38-25-C              | W-029381       | 1 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 1270            | 1195 | 1075             | 1016 |
| MHC-4-40-1-50-25-C              | W-029387       | 1 x 38"           | Ø21.1    | DN50                                   | Ø25  | 1270            | 1195 | 1075             | 1009 |
| MHC-4-40-1-40-25-C              | W-029393       | 1 x 38"           | Ø21.1    | DN40                                   | Ø25  | 1270            | 1195 | 1075             | 1015 |
| MHC-4-40-1-51-26-C              | W-029399       | 1 x 38"           | Ø21.1    | Ø51                                    | DN25 | 1270            | 1195 | 1075             | 1010 |
| MHC-4-40-1-38-26-C              | W-029405       | 1 x 38"           | Ø21.1    | Ø38                                    | DN25 | 1270            | 1195 | 1075             | 1016 |
| MHC-4-40-1-50-26-C              | W-029411       | 1 x 38"           | Ø21.1    | DN50                                   | DN25 | 1270            | 1195 | 1075             | 1009 |
| MHC-4-40-1-40-26-C              | W-029417       | 1 x 38"           | Ø21.1    | DN40                                   | DN25 | 1270            | 1195 | 1075             | 1015 |

Version I.I All new Drawing numbers in Model C tables

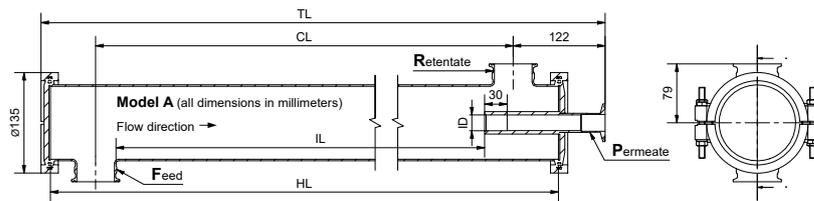


| MHC-4-40bar-2-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                    |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|--------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 16.5 liters |      | Dry weight 15 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL                 | HL   | CL               | IL   |
| MHC-4-40-2-51-25-A              | W-023666       | 2 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 2255               | 2180 | 2060             | 1995 |
| MHC-4-40-2-38-25-A              | W-023672       | 2 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 2255               | 2180 | 2060             | 2001 |
| MHC-4-40-2-50-25-A              | W-023678       | 2 x 38"           | Ø21.1    | DN50                                   | Ø25  | 2255               | 2180 | 2060             | 1994 |
| MHC-4-40-2-40-25-A              | W-023684       | 2 x 38"           | Ø21.1    | DN40                                   | Ø25  | 2255               | 2180 | 2060             | 2000 |
| MHC-4-40-2-51-26-A              | W-023690       | 2 x 38"           | Ø21.1    | Ø51                                    | DN25 | 2255               | 2180 | 2060             | 1995 |
| MHC-4-40-2-38-26-A              | W-023696       | 2 x 38"           | Ø21.1    | Ø38                                    | DN25 | 2255               | 2180 | 2060             | 2001 |
| MHC-4-40-2-50-26-A              | W-023702       | 2 x 38"           | Ø21.1    | DN50                                   | DN25 | 2255               | 2180 | 2060             | 1994 |
| MHC-4-40-2-40-26-A              | W-023708       | 2 x 38"           | Ø21.1    | DN40                                   | DN25 | 2255               | 2180 | 2060             | 2000 |

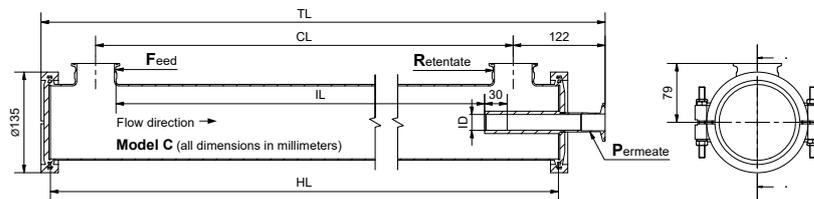


| MHC-4-40bar-2-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                    |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|--------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 16.5 liters |      | Dry weight 15 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL                 | HL   | CL               | IL   |
| MHC-4-40-2-51-25-C              | W-029376       | 2 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 2255               | 2180 | 2060             | 1995 |
| MHC-4-40-2-38-25-C              | W-029382       | 2 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 2255               | 2180 | 2060             | 2001 |
| MHC-4-40-2-50-25-C              | W-029388       | 2 x 38"           | Ø21.1    | DN50                                   | Ø25  | 2255               | 2180 | 2060             | 1994 |
| MHC-4-40-2-40-25-C              | W-029394       | 2 x 38"           | Ø21.1    | DN40                                   | Ø25  | 2255               | 2180 | 2060             | 2000 |
| MHC-4-40-2-51-26-C              | W-029400       | 2 x 38"           | Ø21.1    | Ø51                                    | DN25 | 2255               | 2180 | 2060             | 1995 |
| MHC-4-40-2-38-26-C              | W-029406       | 2 x 38"           | Ø21.1    | Ø38                                    | DN25 | 2255               | 2180 | 2060             | 2001 |
| MHC-4-40-2-50-26-C              | W-029412       | 2 x 38"           | Ø21.1    | DN50                                   | DN25 | 2255               | 2180 | 2060             | 1994 |
| MHC-4-40-2-40-26-C              | W-029418       | 2 x 38"           | Ø21.1    | DN40                                   | DN25 | 2255               | 2180 | 2060             | 2000 |

Version 1.1 All new Drawing numbers in Model C tables

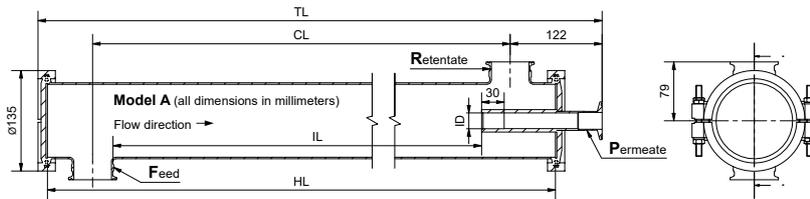


| MHC-4-40bar-3-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 24 liters |      | Dry weight 20 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-4-40-3-51-25-A              | W-023667       | 3 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 3235             | 3160 | 3040             | 2975 |
| MHC-4-40-3-38-25-A              | W-023673       | 3 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 3235             | 3160 | 3040             | 2981 |
| MHC-4-40-3-50-25-A              | W-023679       | 3 x 38"           | Ø21.1    | DN50                                   | Ø25  | 3235             | 3160 | 3040             | 2974 |
| MHC-4-40-3-40-25-A              | W-023685       | 3 x 38"           | Ø21.1    | DN40                                   | Ø25  | 3235             | 3160 | 3040             | 2980 |
| MHC-4-40-3-51-26-A              | W-023691       | 3 x 38"           | Ø21.1    | Ø51                                    | DN25 | 3235             | 3160 | 3040             | 2975 |
| MHC-4-40-3-38-26-A              | W-023697       | 3 x 38"           | Ø21.1    | Ø38                                    | DN25 | 3235             | 3160 | 3040             | 2981 |
| MHC-4-40-3-50-26-A              | W-023703       | 3 x 38"           | Ø21.1    | DN50                                   | DN25 | 3235             | 3160 | 3040             | 2974 |
| MHC-4-40-3-40-26-A              | W-023709       | 3 x 38"           | Ø21.1    | DN40                                   | DN25 | 3235             | 3160 | 3040             | 2980 |

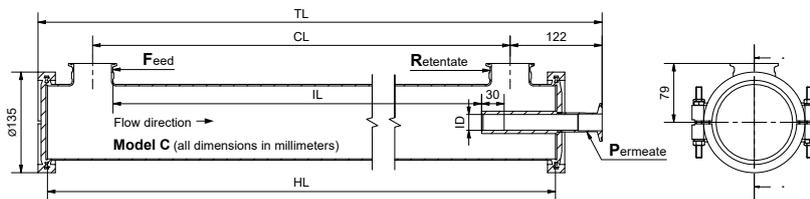


| MHC-4-40bar-3-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 24 liters |      | Dry weight 20 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-4-40-3-51-25-C              | W-029377       | 3 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 3235             | 3160 | 3040             | 2975 |
| MHC-4-40-3-38-25-C              | W-029383       | 3 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 3235             | 3160 | 3040             | 2981 |
| MHC-4-40-3-50-25-C              | W-029389       | 3 x 38"           | Ø21.1    | DN50                                   | Ø25  | 3235             | 3160 | 3040             | 2974 |
| MHC-4-40-3-40-25-C              | W-029395       | 3 x 38"           | Ø21.1    | DN40                                   | Ø25  | 3235             | 3160 | 3040             | 2980 |
| MHC-4-40-3-51-26-C              | W-029401       | 3 x 38"           | Ø21.1    | Ø51                                    | DN25 | 3235             | 3160 | 3040             | 2975 |
| MHC-4-40-3-38-26-C              | W-029407       | 3 x 38"           | Ø21.1    | Ø38                                    | DN25 | 3235             | 3160 | 3040             | 2981 |
| MHC-4-40-3-50-26-C              | W-029413       | 3 x 38"           | Ø21.1    | DN50                                   | DN25 | 3235             | 3160 | 3040             | 2974 |
| MHC-4-40-3-40-26-C              | W-029419       | 3 x 38"           | Ø21.1    | DN40                                   | DN25 | 3235             | 3160 | 3040             | 2980 |

Version 1.1 All new Drawing numbers in Model C tables

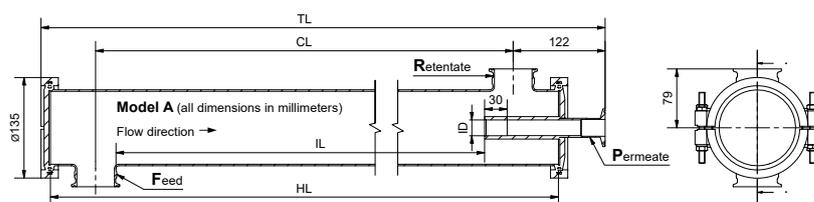


| MHC-4-40bar-4-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 31 liters |      | Dry weight 25 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-4-40-4-51-25-A              | W-023668       | 4 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 4215             | 4140 | 4020             | 3955 |
| MHC-4-40-4-38-25-A              | W-023674       | 4 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 4215             | 4140 | 4020             | 3961 |
| MHC-4-40-4-50-25-A              | W-023680       | 4 x 38"           | Ø21.1    | DN50                                   | Ø25  | 4215             | 4140 | 4020             | 3954 |
| MHC-4-40-4-40-25-A              | W-023686       | 4 x 38"           | Ø21.1    | DN40                                   | Ø25  | 4215             | 4140 | 4020             | 3960 |
| MHC-4-40-4-51-26-A              | W-023692       | 4 x 38"           | Ø21.1    | Ø51                                    | DN25 | 4215             | 4140 | 4020             | 3955 |
| MHC-4-40-4-38-26-A              | W-023698       | 4 x 38"           | Ø21.1    | Ø38                                    | DN25 | 4215             | 4140 | 4020             | 3961 |
| MHC-4-40-4-50-26-A              | W-023704       | 4 x 38"           | Ø21.1    | DN50                                   | DN25 | 4215             | 4140 | 4020             | 3954 |
| MHC-4-40-4-40-26-A              | W-023710       | 4 x 38"           | Ø21.1    | DN40                                   | DN25 | 4215             | 4140 | 4020             | 3960 |

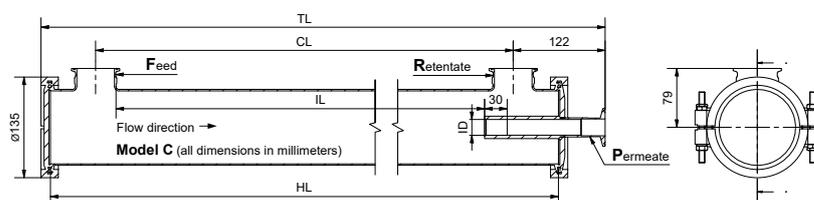


| MHC-4-40bar-4-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 31 liters |      | Dry weight 25 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-4-40-4-51-25-C              | W-029378       | 4 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 4215             | 4140 | 4020             | 3955 |
| MHC-4-40-4-38-25-C              | W-029384       | 4 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 4215             | 4140 | 4020             | 3961 |
| MHC-4-40-4-50-25-C              | W-029390       | 4 x 38"           | Ø21.1    | DN50                                   | Ø25  | 4215             | 4140 | 4020             | 3954 |
| MHC-4-40-4-40-25-C              | W-029396       | 4 x 38"           | Ø21.1    | DN40                                   | Ø25  | 4215             | 4140 | 4020             | 3960 |
| MHC-4-40-4-51-26-C              | W-029402       | 4 x 38"           | Ø21.1    | Ø51                                    | DN25 | 4215             | 4140 | 4020             | 3955 |
| MHC-4-40-4-38-26-C              | W-029408       | 4 x 38"           | Ø21.1    | Ø38                                    | DN25 | 4215             | 4140 | 4020             | 3961 |
| MHC-4-40-4-50-26-C              | W-029414       | 4 x 38"           | Ø21.1    | DN50                                   | DN25 | 4215             | 4140 | 4020             | 3954 |
| MHC-4-40-4-40-26-C              | W-029420       | 4 x 38"           | Ø21.1    | DN40                                   | DN25 | 4215             | 4140 | 4020             | 3960 |

Version 1.1 All new Drawing numbers in Model C tables

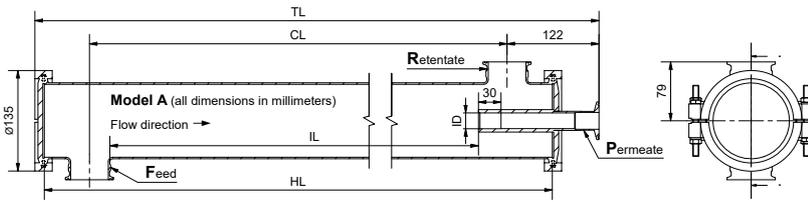


| MHC-4-40bar-5-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                    |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|--------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 38.5 liters |      | Dry weight 29 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL                 | HL   | CL               | IL   |
| MHC-4-40-5-51-25-A              | W-023669       | 5 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 5195               | 5120 | 5000             | 4935 |
| MHC-4-40-5-38-25-A              | W-023675       | 5 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 5195               | 5120 | 5000             | 4941 |
| MHC-4-40-5-50-25-A              | W-023681       | 5 x 38"           | Ø21.1    | DN50                                   | Ø25  | 5195               | 5120 | 5000             | 4934 |
| MHC-4-40-5-40-25-A              | W-023687       | 5 x 38"           | Ø21.1    | DN40                                   | Ø25  | 5195               | 5120 | 5000             | 4940 |
| MHC-4-40-5-51-26-A              | W-023693       | 5 x 38"           | Ø21.1    | Ø51                                    | DN25 | 5195               | 5120 | 5000             | 4935 |
| MHC-4-40-5-38-26-A              | W-023699       | 5 x 38"           | Ø21.1    | Ø38                                    | DN25 | 5195               | 5120 | 5000             | 4941 |
| MHC-4-40-5-50-26-A              | W-023705       | 5 x 38"           | Ø21.1    | DN50                                   | DN25 | 5195               | 5120 | 5000             | 4934 |
| MHC-4-40-5-40-26-A              | W-023711       | 5 x 38"           | Ø21.1    | DN40                                   | DN25 | 5195               | 5120 | 5000             | 4940 |

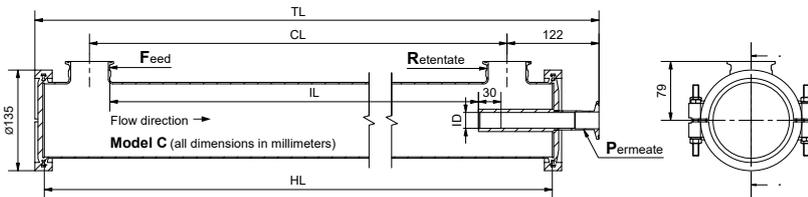


| MHC-4-40bar-5-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                    |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|--------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 38.5 liters |      | Dry weight 29 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL                 | HL   | CL               | IL   |
| MHC-4-40-5-51-25-C              | W-029379       | 5 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 5195               | 5120 | 5000             | 4935 |
| MHC-4-40-5-38-25-C              | W-029385       | 5 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 5195               | 5120 | 5000             | 4941 |
| MHC-4-40-5-50-25-C              | W-029391       | 5 x 38"           | Ø21.1    | DN50                                   | Ø25  | 5195               | 5120 | 5000             | 4934 |
| MHC-4-40-5-40-25-C              | W-029397       | 5 x 38"           | Ø21.1    | DN40                                   | Ø25  | 5195               | 5120 | 5000             | 4940 |
| MHC-4-40-5-51-26-C              | W-029403       | 5 x 38"           | Ø21.1    | Ø51                                    | DN25 | 5195               | 5120 | 5000             | 4935 |
| MHC-4-40-5-38-26-C              | W-029409       | 5 x 38"           | Ø21.1    | Ø38                                    | DN25 | 5195               | 5120 | 5000             | 4941 |
| MHC-4-40-5-50-26-C              | W-029415       | 5 x 38"           | Ø21.1    | DN50                                   | DN25 | 5195               | 5120 | 5000             | 4934 |
| MHC-4-40-5-40-26-C              | W-029421       | 5 x 38"           | Ø21.1    | DN40                                   | DN25 | 5195               | 5120 | 5000             | 4940 |

Version 1.1 All new Drawing numbers in Model C tables



| MHC-4-40bar-6-element - Model A |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 46 liters |      | Dry weight 34 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-4-40-6-51-25-A              | W-023670       | 6 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 6175             | 6100 | 5980             | 5915 |
| MHC-4-40-6-38-25-A              | W-023676       | 6 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 6175             | 6100 | 5980             | 5921 |
| MHC-4-40-6-50-25-A              | W-023682       | 6 x 38"           | Ø21.1    | DN50                                   | Ø25  | 6175             | 6100 | 5980             | 5914 |
| MHC-4-40-6-40-25-A              | W-023688       | 6 x 38"           | Ø21.1    | DN40                                   | Ø25  | 6175             | 6100 | 5980             | 5920 |
| MHC-4-40-6-51-26-A              | W-023694       | 6 x 38"           | Ø21.1    | Ø51                                    | DN25 | 6175             | 6100 | 5980             | 5915 |
| MHC-4-40-6-38-26-A              | W-023700       | 6 x 38"           | Ø21.1    | Ø38                                    | DN25 | 6175             | 6100 | 5980             | 5921 |
| MHC-4-40-6-50-26-A              | W-023706       | 6 x 38"           | Ø21.1    | DN50                                   | DN25 | 6175             | 6100 | 5980             | 5914 |
| MHC-4-40-6-40-26-A              | W-023712       | 6 x 38"           | Ø21.1    | DN40                                   | DN25 | 6175             | 6100 | 5980             | 5920 |



| MHC-4-40bar-6-element - Model C |                | Element type 3838 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 40 barg / 70°C                         |      | Volume 46 liters |      | Dry weight 34 kg |      |
| Stock number                    | Drawing number | 3.8" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-4-40-6-51-25-C              | W-029380       | 6 x 38"           | Ø21.1    | Ø51                                    | Ø25  | 6175             | 6100 | 5980             | 5915 |
| MHC-4-40-6-38-25-C              | W-029386       | 6 x 38"           | Ø21.1    | Ø38                                    | Ø25  | 6175             | 6100 | 5980             | 5921 |
| MHC-4-40-6-50-25-C              | W-029392       | 6 x 38"           | Ø21.1    | DN50                                   | Ø25  | 6175             | 6100 | 5980             | 5914 |
| MHC-4-40-6-40-25-C              | W-029398       | 6 x 38"           | Ø21.1    | DN40                                   | Ø25  | 6175             | 6100 | 5980             | 5920 |
| MHC-4-40-6-51-26-C              | W-029404       | 6 x 38"           | Ø21.1    | Ø51                                    | DN25 | 6175             | 6100 | 5980             | 5915 |
| MHC-4-40-6-38-26-C              | W-029410       | 6 x 38"           | Ø21.1    | Ø38                                    | DN25 | 6175             | 6100 | 5980             | 5921 |
| MHC-4-40-6-50-26-C              | W-029416       | 6 x 38"           | Ø21.1    | DN50                                   | DN25 | 6175             | 6100 | 5980             | 5914 |
| MHC-4-40-6-40-26-C              | W-029422       | 6 x 38"           | Ø21.1    | DN40                                   | DN25 | 6175             | 6100 | 5980             | 5920 |

Version 1.1 All new Drawing numbers in Model C tables





# MEMBRANE HOUSING

## DETAILED OVERVIEW FOR TYPE 'MHC-8-64' HIGH PRESSURE - 64 BAR

FOR RO FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with Clamp ferrule connections manufactured by Wila A/S under the category "MHC" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 and EN 1.4462 stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with both EN 1.4404 and EN 1.4462 Stainless steel.**

The Membrane Housing is designed for pressures up to 64 bar and temperatures up to 85°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).
- PED - Category I and EN 13445 for both 5 and 6 element housings

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MHC-8-64bar-X-element – Model \_

|       |   |  |
|-------|---|--|
| MHC   | <b>M</b> embrane <b>H</b> ousing with <b>C</b> lamp ferrule connections for Feed and Retentate. |  |
| 8     | The membrane housing is designed for 7.9" x 38" (8038) membranes.                               |  |
| 64bar | The Membrane Housing is designed for pressures up to 64 bar and temperatures up to 85°C         |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MHC-8-64-X-YY-ZZ- \_

|    |                      |  |
|----|----------------------|--|
| X  | From 1 to 6 elements | Indicates the number of elements that can be fitted.     |
| YY | 76 - 63 - 51 - 50**  | Indicates Feed and Retentate clamp ferrules connections. |
| ZZ | 38 - 25 - 40 - 26**  | Indicates Permeate end clamp ferrule connection.         |
| _  | Either A or C *      | Indicates Feed and Retentate connection arrangement.     |

\*Other connection arrangements are available

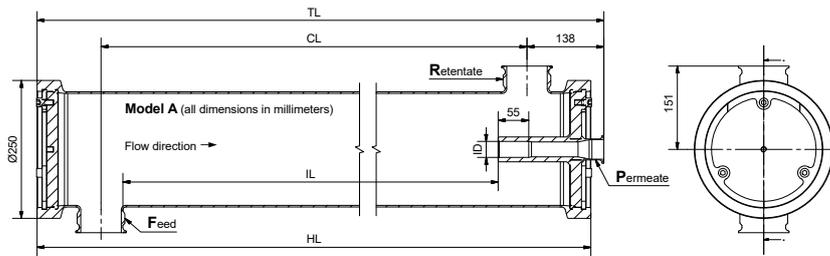
\*\*Clamp ferrule connections sizes - Other types and sizes are available

76 - 51 - 38 - 25 translates respectively to Ø76 - Ø63.5 - Ø38 - Ø25 in accordance with ISO 2852-2  
 50 - 40 - 26 translates respectively to DN50 - DN40 - DN25 in accordance with DIN 32676-A

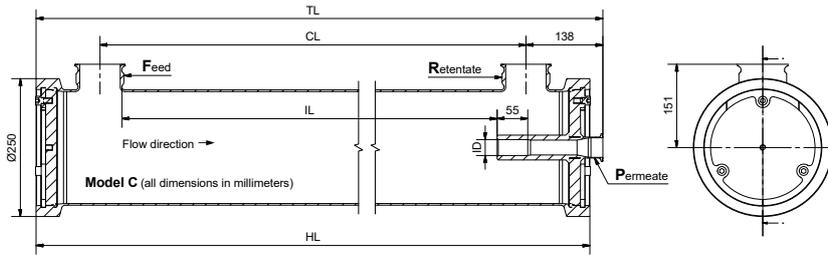
## Connections

Tri-clamp connections for Feed, Retentate and Permeate. For 64 bar pressure rating SH or SSH clamps are recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

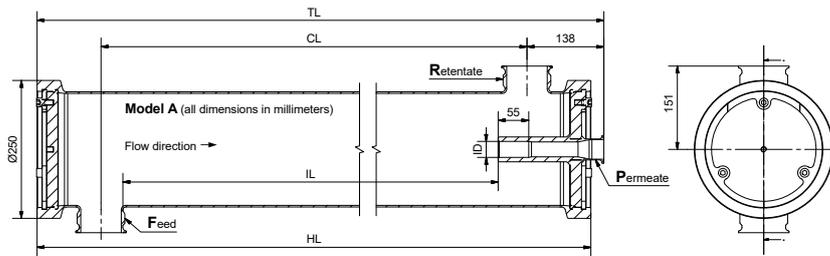
**Temperature and pressure limits must be respected at all times !**



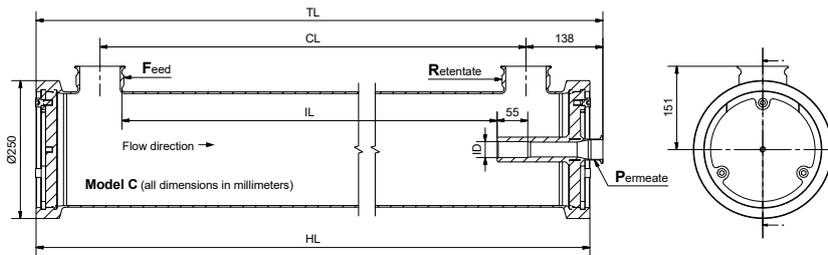
| MHC-8-64bar-1-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 41 liters |      | Dry weight 43 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-64-1-76-38-A              | W-020151       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1348             | 1325 | 1095             | 1007 |
| MHC-8-64-1-63-38-A              | W-023714       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1348             | 1325 | 1095             | 1013 |
| MHC-8-64-1-51-38-A              | W-023720       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1348             | 1325 | 1095             | 1019 |
| MHC-8-64-1-65-38-A              | W-023726       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1348             | 1325 | 1095             | 1010 |
| MHC-8-64-1-50-38-A              | W-023732       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1348             | 1325 | 1095             | 1018 |
| MHC-8-64-1-76-25-A              | W-023738       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1348             | 1325 | 1095             | 1007 |
| MHC-8-64-1-63-25-A              | W-023744       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1348             | 1325 | 1095             | 1013 |
| MHC-8-64-1-51-25-A              | W-023750       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1348             | 1325 | 1095             | 1019 |
| MHC-8-64-1-65-25-A              | W-023756       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1348             | 1325 | 1095             | 1010 |
| MHC-8-64-1-50-25-A              | W-023762       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1348             | 1325 | 1095             | 1018 |
| MHC-8-64-1-76-40-A              | W-023768       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1348             | 1325 | 1095             | 1007 |
| MHC-8-64-1-63-40-A              | W-023774       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1348             | 1325 | 1095             | 1013 |
| MHC-8-64-1-51-40-A              | W-023780       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1348             | 1325 | 1095             | 1019 |
| MHC-8-64-1-65-40-A              | W-023786       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1348             | 1325 | 1095             | 1010 |
| MHC-8-64-1-50-40-A              | W-023792       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1348             | 1325 | 1095             | 1018 |
| MHC-8-64-1-76-26-A              | W-023798       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1348             | 1325 | 1095             | 1007 |
| MHC-8-64-1-63-26-A              | W-023804       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1348             | 1325 | 1095             | 1013 |
| MHC-8-64-1-51-26-A              | W-023810       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1348             | 1325 | 1095             | 1019 |
| MHC-8-64-1-65-26-A              | W-023816       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1348             | 1325 | 1095             | 1010 |
| MHC-8-64-1-50-26-A              | W-023822       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1348             | 1325 | 1095             | 1018 |



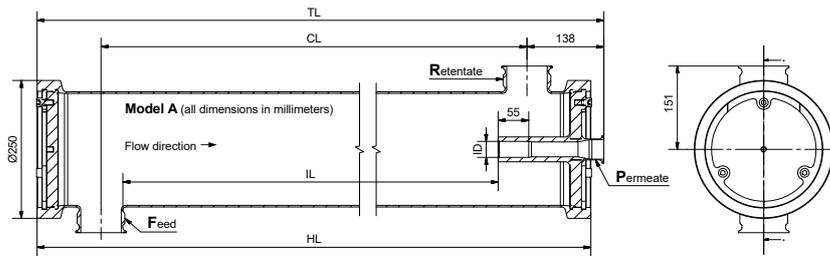
| MHC-8-64bar-1-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 41 liters |      | Dry weight 43 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-64-1-76-38-C              | W-023828       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1348             | 1325 | 1095             | 1007 |
| MHC-8-64-1-63-38-C              | W-023834       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1348             | 1325 | 1095             | 1013 |
| MHC-8-64-1-51-38-C              | W-023840       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1348             | 1325 | 1095             | 1019 |
| MHC-8-64-1-65-38-C              | W-023846       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1348             | 1325 | 1095             | 1010 |
| MHC-8-64-1-50-38-C              | W-023852       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1348             | 1325 | 1095             | 1018 |
| MHC-8-64-1-76-25-C              | W-023858       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1348             | 1325 | 1095             | 1007 |
| MHC-8-64-1-63-25-C              | W-023864       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1348             | 1325 | 1095             | 1013 |
| MHC-8-64-1-51-25-C              | W-023870       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1348             | 1325 | 1095             | 1019 |
| MHC-8-64-1-65-25-C              | W-023876       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1348             | 1325 | 1095             | 1010 |
| MHC-8-64-1-50-25-C              | W-023882       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1348             | 1325 | 1095             | 1018 |
| MHC-8-64-1-76-40-C              | W-023888       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1348             | 1325 | 1095             | 1007 |
| MHC-8-64-1-63-40-C              | W-023894       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1348             | 1325 | 1095             | 1013 |
| MHC-8-64-1-51-40-C              | W-023900       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1348             | 1325 | 1095             | 1019 |
| MHC-8-64-1-65-40-C              | W-023906       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1348             | 1325 | 1095             | 1010 |
| MHC-8-64-1-50-40-C              | W-023912       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1348             | 1325 | 1095             | 1018 |
| MHC-8-64-1-76-26-C              | W-023918       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1348             | 1325 | 1095             | 1007 |
| MHC-8-64-1-63-26-C              | W-023924       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1348             | 1325 | 1095             | 1013 |
| MHC-8-64-1-51-26-C              | W-023930       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1348             | 1325 | 1095             | 1019 |
| MHC-8-64-1-65-26-C              | W-023936       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1348             | 1325 | 1095             | 1010 |
| MHC-8-64-1-50-26-C              | W-023942       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1348             | 1325 | 1095             | 1018 |



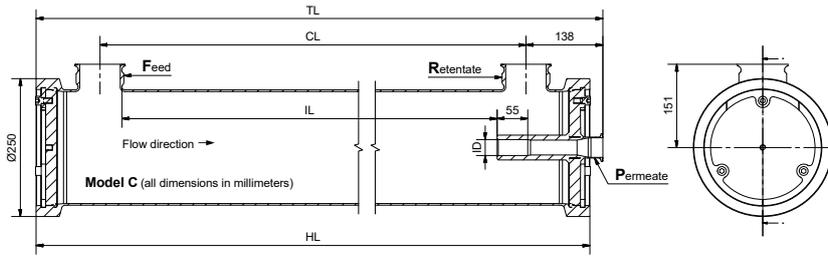
| MHC-8-64bar-2-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 72 liters |      | Dry weight 62 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-64-2-76-38-A              | W-020152       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2328             | 2305 | 2075             | 1984 |
| MHC-8-64-2-63-38-A              | W-023715       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2328             | 2305 | 2075             | 1990 |
| MHC-8-64-2-51-38-A              | W-023721       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2328             | 2305 | 2075             | 1996 |
| MHC-8-64-2-65-38-A              | W-023727       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2328             | 2305 | 2075             | 1987 |
| MHC-8-64-2-50-38-A              | W-023733       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2328             | 2305 | 2075             | 1995 |
| MHC-8-64-2-76-25-A              | W-023739       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2328             | 2305 | 2075             | 1984 |
| MHC-8-64-2-63-25-A              | W-023745       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2328             | 2305 | 2075             | 1990 |
| MHC-8-64-2-51-25-A              | W-023751       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2328             | 2305 | 2075             | 1996 |
| MHC-8-64-2-65-25-A              | W-023757       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2328             | 2305 | 2075             | 1987 |
| MHC-8-64-2-50-25-A              | W-023763       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2328             | 2305 | 2075             | 1995 |
| MHC-8-64-2-76-40-A              | W-023769       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2328             | 2305 | 2075             | 1984 |
| MHC-8-64-2-63-40-A              | W-023775       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2328             | 2305 | 2075             | 1990 |
| MHC-8-64-2-51-40-A              | W-023781       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2328             | 2305 | 2075             | 1996 |
| MHC-8-64-2-65-40-A              | W-023787       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2328             | 2305 | 2075             | 1987 |
| MHC-8-64-2-50-40-A              | W-023793       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2328             | 2305 | 2075             | 1995 |
| MHC-8-64-2-76-26-A              | W-023799       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2328             | 2305 | 2075             | 1984 |
| MHC-8-64-2-63-26-A              | W-023805       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2328             | 2305 | 2075             | 1990 |
| MHC-8-64-2-51-26-A              | W-023811       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2328             | 2305 | 2075             | 1996 |
| MHC-8-64-2-65-26-A              | W-023817       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2328             | 2305 | 2075             | 1987 |
| MHC-8-64-2-50-26-A              | W-023823       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2328             | 2305 | 2075             | 1995 |



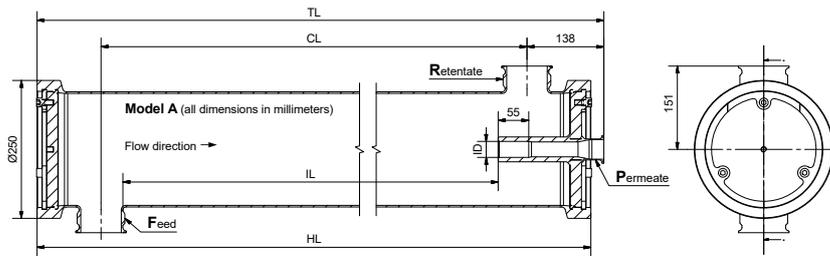
| MHC-8-64bar-2-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 72 liters |      | Dry weight 62 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-8-64-2-76-38-C              | W-023829       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2328             | 2305 | 2075             | 1984 |
| MHC-8-64-2-63-38-C              | W-023835       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2328             | 2305 | 2075             | 1990 |
| MHC-8-64-2-51-38-C              | W-023841       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2328             | 2305 | 2075             | 1996 |
| MHC-8-64-2-65-38-C              | W-023847       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2328             | 2305 | 2075             | 1987 |
| MHC-8-64-2-50-38-C              | W-023853       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2328             | 2305 | 2075             | 1995 |
| MHC-8-64-2-76-25-C              | W-023859       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2328             | 2305 | 2075             | 1984 |
| MHC-8-64-2-63-25-C              | W-023865       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2328             | 2305 | 2075             | 1990 |
| MHC-8-64-2-51-25-C              | W-023871       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2328             | 2305 | 2075             | 1996 |
| MHC-8-64-2-65-25-C              | W-023877       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2328             | 2305 | 2075             | 1987 |
| MHC-8-64-2-50-25-C              | W-023883       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2328             | 2305 | 2075             | 1995 |
| MHC-8-64-2-76-40-C              | W-023889       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2328             | 2305 | 2075             | 1984 |
| MHC-8-64-2-63-40-C              | W-023895       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2328             | 2305 | 2075             | 1990 |
| MHC-8-64-2-51-40-C              | W-023901       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2328             | 2305 | 2075             | 1996 |
| MHC-8-64-2-65-40-C              | W-023907       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2328             | 2305 | 2075             | 1987 |
| MHC-8-64-2-50-40-C              | W-023913       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2328             | 2305 | 2075             | 1995 |
| MHC-8-64-2-76-26-C              | W-023919       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2328             | 2305 | 2075             | 1984 |
| MHC-8-64-2-63-26-C              | W-023925       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2328             | 2305 | 2075             | 1990 |
| MHC-8-64-2-51-26-C              | W-023931       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2328             | 2305 | 2075             | 1996 |
| MHC-8-64-2-65-26-C              | W-023937       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2328             | 2305 | 2075             | 1987 |
| MHC-8-64-2-50-26-C              | W-023943       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2328             | 2305 | 2075             | 1995 |



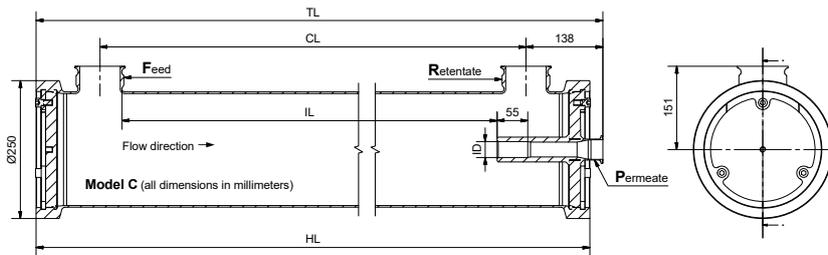
| MHC-8-64bar-3-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 104 liters |      | Dry weight 78 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-64-3-76-38-A              | W-020153       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3313              | 3290 | 3060             | 2969 |
| MHC-8-64-3-63-38-A              | W-023716       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3313              | 3290 | 3060             | 2975 |
| MHC-8-64-3-51-38-A              | W-023722       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3313              | 3290 | 3060             | 2981 |
| MHC-8-64-3-65-38-A              | W-023728       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3313              | 3290 | 3060             | 2972 |
| MHC-8-64-3-50-38-A              | W-023734       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3313              | 3290 | 3060             | 2980 |
| MHC-8-64-3-76-25-A              | W-023740       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3313              | 3290 | 3060             | 2969 |
| MHC-8-64-3-63-25-A              | W-023746       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3313              | 3290 | 3060             | 2975 |
| MHC-8-64-3-51-25-A              | W-023752       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3313              | 3290 | 3060             | 2981 |
| MHC-8-64-3-65-25-A              | W-023758       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3313              | 3290 | 3060             | 2972 |
| MHC-8-64-3-50-25-A              | W-023764       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3313              | 3290 | 3060             | 2980 |
| MHC-8-64-3-76-40-A              | W-023770       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3313              | 3290 | 3060             | 2969 |
| MHC-8-64-3-63-40-A              | W-023776       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3313              | 3290 | 3060             | 2975 |
| MHC-8-64-3-51-40-A              | W-023782       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3313              | 3290 | 3060             | 2981 |
| MHC-8-64-3-65-40-A              | W-023788       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3313              | 3290 | 3060             | 2972 |
| MHC-8-64-3-50-40-A              | W-023794       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3313              | 3290 | 3060             | 2980 |
| MHC-8-64-3-76-26-A              | W-023800       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3313              | 3290 | 3060             | 2969 |
| MHC-8-64-3-63-26-A              | W-023806       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3313              | 3290 | 3060             | 2975 |
| MHC-8-64-3-51-26-A              | W-023812       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3313              | 3290 | 3060             | 2981 |
| MHC-8-64-3-65-26-A              | W-023818       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3313              | 3290 | 3060             | 2972 |
| MHC-8-64-3-50-26-A              | W-023824       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3313              | 3290 | 3060             | 2980 |



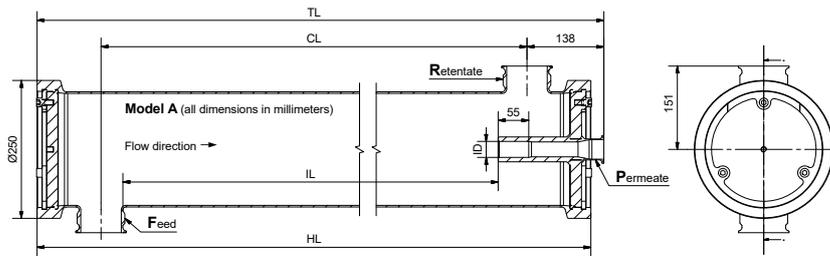
| MHC-8-64bar-3-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 104 liters |      | Dry weight 78 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-64-3-76-38-C              | W-023830       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3313              | 3290 | 3060             | 2969 |
| MHC-8-64-3-63-38-C              | W-023836       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3313              | 3290 | 3060             | 2975 |
| MHC-8-64-3-51-38-C              | W-023842       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3313              | 3290 | 3060             | 2981 |
| MHC-8-64-3-65-38-C              | W-023848       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3313              | 3290 | 3060             | 2972 |
| MHC-8-64-3-50-38-C              | W-023854       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3313              | 3290 | 3060             | 2980 |
| MHC-8-64-3-76-25-C              | W-023860       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3313              | 3290 | 3060             | 2969 |
| MHC-8-64-3-63-25-C              | W-023866       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3313              | 3290 | 3060             | 2975 |
| MHC-8-64-3-51-25-C              | W-023872       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3313              | 3290 | 3060             | 2981 |
| MHC-8-64-3-65-25-C              | W-023878       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3313              | 3290 | 3060             | 2972 |
| MHC-8-64-3-50-25-C              | W-023884       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3313              | 3290 | 3060             | 2980 |
| MHC-8-64-3-76-40-C              | W-023890       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3313              | 3290 | 3060             | 2969 |
| MHC-8-64-3-63-40-C              | W-023896       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3313              | 3290 | 3060             | 2975 |
| MHC-8-64-3-51-40-C              | W-023902       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3313              | 3290 | 3060             | 2981 |
| MHC-8-64-3-65-40-C              | W-023908       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3313              | 3290 | 3060             | 2972 |
| MHC-8-64-3-50-40-C              | W-023914       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3313              | 3290 | 3060             | 2980 |
| MHC-8-64-3-76-26-C              | W-023920       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3313              | 3290 | 3060             | 2969 |
| MHC-8-64-3-63-26-C              | W-023926       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3313              | 3290 | 3060             | 2975 |
| MHC-8-64-3-51-26-C              | W-023932       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3313              | 3290 | 3060             | 2981 |
| MHC-8-64-3-65-26-C              | W-023938       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3313              | 3290 | 3060             | 2972 |
| MHC-8-64-3-50-26-C              | W-023944       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3313              | 3290 | 3060             | 2980 |



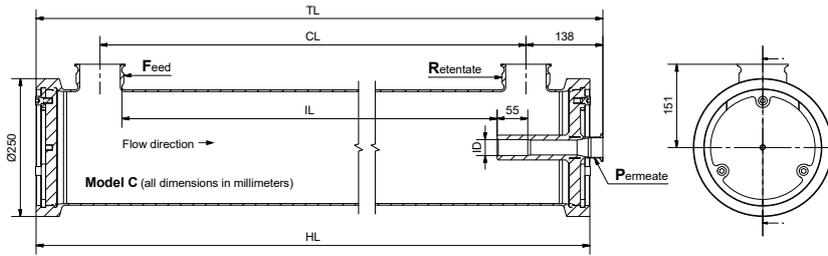
| MHC-8-64bar-4-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 136 liters |      | Dry weight 94 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-64-4-76-38-A              | W-020154       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4293              | 4270 | 4040             | 3949 |
| MHC-8-64-4-63-38-A              | W-023717       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4293              | 4270 | 4040             | 3955 |
| MHC-8-64-4-51-38-A              | W-023723       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4293              | 4270 | 4040             | 3961 |
| MHC-8-64-4-65-38-A              | W-023729       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4293              | 4270 | 4040             | 3952 |
| MHC-8-64-4-50-38-A              | W-023735       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4293              | 4270 | 4040             | 3960 |
| MHC-8-64-4-76-25-A              | W-023741       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4293              | 4270 | 4040             | 3949 |
| MHC-8-64-4-63-25-A              | W-023747       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4293              | 4270 | 4040             | 3955 |
| MHC-8-64-4-51-25-A              | W-023753       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4293              | 4270 | 4040             | 3961 |
| MHC-8-64-4-65-25-A              | W-023759       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4293              | 4270 | 4040             | 3952 |
| MHC-8-64-4-50-25-A              | W-023765       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4293              | 4270 | 4040             | 3960 |
| MHC-8-64-4-76-40-A              | W-023771       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4293              | 4270 | 4040             | 3949 |
| MHC-8-64-4-63-40-A              | W-023777       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4293              | 4270 | 4040             | 3955 |
| MHC-8-64-4-51-40-A              | W-023783       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4293              | 4270 | 4040             | 3961 |
| MHC-8-64-4-65-40-A              | W-023789       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4293              | 4270 | 4040             | 3952 |
| MHC-8-64-4-50-40-A              | W-023795       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4293              | 4270 | 4040             | 3960 |
| MHC-8-64-4-76-26-A              | W-023801       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4293              | 4270 | 4040             | 3949 |
| MHC-8-64-4-63-26-A              | W-023807       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4293              | 4270 | 4040             | 3955 |
| MHC-8-64-4-51-26-A              | W-023813       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4293              | 4270 | 4040             | 3961 |
| MHC-8-64-4-65-26-A              | W-023819       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4293              | 4270 | 4040             | 3952 |
| MHC-8-64-4-50-26-A              | W-023825       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4293              | 4270 | 4040             | 3960 |



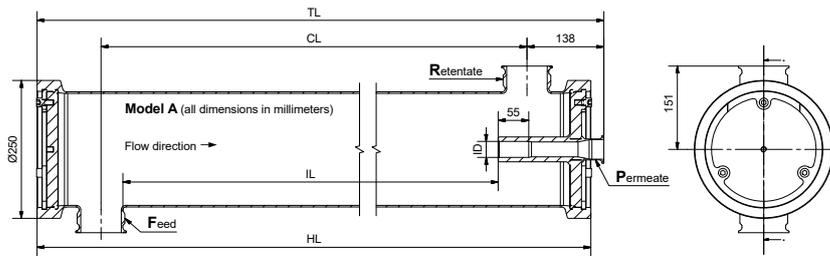
| MHC-8-64bar-4-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 136 liters |      | Dry weight 94 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-8-64-4-76-38-C              | W-023831       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4293              | 4270 | 4040             | 3949 |
| MHC-8-64-4-63-38-C              | W-023837       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4293              | 4270 | 4040             | 3955 |
| MHC-8-64-4-51-38-C              | W-023843       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4293              | 4270 | 4040             | 3961 |
| MHC-8-64-4-65-38-C              | W-023849       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4293              | 4270 | 4040             | 3952 |
| MHC-8-64-4-50-38-C              | W-023855       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4293              | 4270 | 4040             | 3960 |
| MHC-8-64-4-76-25-C              | W-023861       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4293              | 4270 | 4040             | 3949 |
| MHC-8-64-4-63-25-C              | W-023867       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4293              | 4270 | 4040             | 3955 |
| MHC-8-64-4-51-25-C              | W-023873       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4293              | 4270 | 4040             | 3961 |
| MHC-8-64-4-65-25-C              | W-023879       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4293              | 4270 | 4040             | 3952 |
| MHC-8-64-4-50-25-C              | W-023885       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4293              | 4270 | 4040             | 3960 |
| MHC-8-64-4-76-40-C              | W-023891       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4293              | 4270 | 4040             | 3949 |
| MHC-8-64-4-63-40-C              | W-023897       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4293              | 4270 | 4040             | 3955 |
| MHC-8-64-4-51-40-C              | W-023903       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4293              | 4270 | 4040             | 3961 |
| MHC-8-64-4-65-40-C              | W-023909       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4293              | 4270 | 4040             | 3952 |
| MHC-8-64-4-50-40-C              | W-023915       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4293              | 4270 | 4040             | 3960 |
| MHC-8-64-4-76-26-C              | W-023921       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4293              | 4270 | 4040             | 3949 |
| MHC-8-64-4-63-26-C              | W-023927       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4293              | 4270 | 4040             | 3955 |
| MHC-8-64-4-51-26-C              | W-023933       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4293              | 4270 | 4040             | 3961 |
| MHC-8-64-4-65-26-C              | W-023939       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4293              | 4270 | 4040             | 3952 |
| MHC-8-64-4-50-26-C              | W-023945       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4293              | 4270 | 4040             | 3960 |



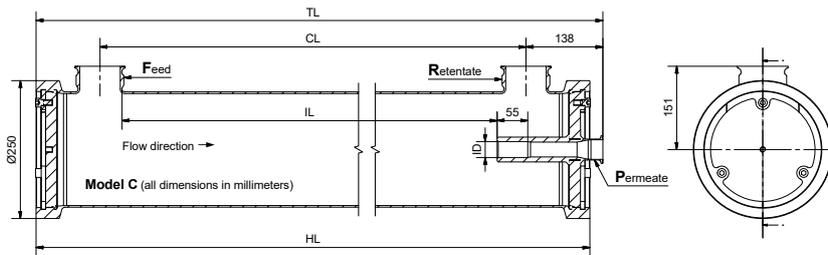
| MHC-8-64bar-5-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 168 liters |      | Dry weight 110 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MHC-8-64-5-76-38-A              | W-020155       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5278              | 5255 | 5025              | 4934 |
| MHC-8-64-5-63-38-A              | W-023718       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5278              | 5255 | 5025              | 4940 |
| MHC-8-64-5-51-38-A              | W-023724       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5278              | 5255 | 5025              | 4946 |
| MHC-8-64-5-65-38-A              | W-023730       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5278              | 5255 | 5025              | 4937 |
| MHC-8-64-5-50-38-A              | W-023736       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5278              | 5255 | 5025              | 4945 |
| MHC-8-64-5-76-25-A              | W-023742       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5278              | 5255 | 5025              | 4934 |
| MHC-8-64-5-63-25-A              | W-023748       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5278              | 5255 | 5025              | 4940 |
| MHC-8-64-5-51-25-A              | W-023754       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5278              | 5255 | 5025              | 4946 |
| MHC-8-64-5-65-25-A              | W-023760       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5278              | 5255 | 5025              | 4937 |
| MHC-8-64-5-50-25-A              | W-023766       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5278              | 5255 | 5025              | 4945 |
| MHC-8-64-5-76-40-A              | W-023772       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5278              | 5255 | 5025              | 4934 |
| MHC-8-64-5-63-40-A              | W-023778       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5278              | 5255 | 5025              | 4940 |
| MHC-8-64-5-51-40-A              | W-023784       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5278              | 5255 | 5025              | 4946 |
| MHC-8-64-5-65-40-A              | W-023790       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5278              | 5255 | 5025              | 4937 |
| MHC-8-64-5-50-40-A              | W-023796       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5278              | 5255 | 5025              | 4945 |
| MHC-8-64-5-76-26-A              | W-023802       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5278              | 5255 | 5025              | 4934 |
| MHC-8-64-5-63-26-A              | W-023808       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5278              | 5255 | 5025              | 4940 |
| MHC-8-64-5-51-26-A              | W-023814       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5278              | 5255 | 5025              | 4946 |
| MHC-8-64-5-65-26-A              | W-023820       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5278              | 5255 | 5025              | 4937 |
| MHC-8-64-5-50-26-A              | W-023826       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5278              | 5255 | 5025              | 4945 |



| MHC-8-64bar-5-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 168 liters |      | Dry weight 110 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MHC-8-64-5-76-38-C              | W-023832       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5278              | 5255 | 5025              | 4934 |
| MHC-8-64-5-63-38-C              | W-023838       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5278              | 5255 | 5025              | 4940 |
| MHC-8-64-5-51-38-C              | W-023844       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5278              | 5255 | 5025              | 4946 |
| MHC-8-64-5-65-38-C              | W-023850       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5278              | 5255 | 5025              | 4937 |
| MHC-8-64-5-50-38-C              | W-023856       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5278              | 5255 | 5025              | 4945 |
| MHC-8-64-5-76-25-C              | W-023862       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5278              | 5255 | 5025              | 4934 |
| MHC-8-64-5-63-25-C              | W-023868       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5278              | 5255 | 5025              | 4940 |
| MHC-8-64-5-51-25-C              | W-023874       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5278              | 5255 | 5025              | 4946 |
| MHC-8-64-5-65-25-C              | W-023880       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5278              | 5255 | 5025              | 4937 |
| MHC-8-64-5-50-25-C              | W-023886       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5278              | 5255 | 5025              | 4945 |
| MHC-8-64-5-76-40-C              | W-023892       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5278              | 5255 | 5025              | 4934 |
| MHC-8-64-5-63-40-C              | W-023898       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5278              | 5255 | 5025              | 4940 |
| MHC-8-64-5-51-40-C              | W-023904       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5278              | 5255 | 5025              | 4946 |
| MHC-8-64-5-65-40-C              | W-023910       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5278              | 5255 | 5025              | 4937 |
| MHC-8-64-5-50-40-C              | W-023916       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5278              | 5255 | 5025              | 4945 |
| MHC-8-64-5-76-26-C              | W-023922       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5278              | 5255 | 5025              | 4934 |
| MHC-8-64-5-63-26-C              | W-023928       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5278              | 5255 | 5025              | 4940 |
| MHC-8-64-5-51-26-C              | W-023934       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5278              | 5255 | 5025              | 4946 |
| MHC-8-64-5-65-26-C              | W-023940       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5278              | 5255 | 5025              | 4937 |
| MHC-8-64-5-50-26-C              | W-023946       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5278              | 5255 | 5025              | 4945 |



| MHC-8-64bar-6-element - Model A |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 200 liters |      | Dry weight 126 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MHC-8-64-6-76-38-A              | W-020156       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6258              | 6235 | 6005              | 5914 |
| MHC-8-64-6-63-38-A              | W-023719       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6258              | 6235 | 6005              | 5920 |
| MHC-8-64-6-51-38-A              | W-023725       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6258              | 6235 | 6005              | 5926 |
| MHC-8-64-6-65-38-A              | W-023731       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6258              | 6235 | 6005              | 5917 |
| MHC-8-64-6-50-38-A              | W-023737       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6258              | 6235 | 6005              | 5925 |
| MHC-8-64-6-76-25-A              | W-023743       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6258              | 6235 | 6005              | 5914 |
| MHC-8-64-6-63-25-A              | W-023749       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6258              | 6235 | 6005              | 5920 |
| MHC-8-64-6-51-25-A              | W-023755       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6258              | 6235 | 6005              | 5926 |
| MHC-8-64-6-65-25-A              | W-023761       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6258              | 6235 | 6005              | 5917 |
| MHC-8-64-6-50-25-A              | W-023767       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6258              | 6235 | 6005              | 5925 |
| MHC-8-64-6-76-40-A              | W-023773       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6258              | 6235 | 6005              | 5914 |
| MHC-8-64-6-63-40-A              | W-023779       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6258              | 6235 | 6005              | 5920 |
| MHC-8-64-6-51-40-A              | W-023785       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6258              | 6235 | 6005              | 5926 |
| MHC-8-64-6-65-40-A              | W-023791       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6258              | 6235 | 6005              | 5917 |
| MHC-8-64-6-50-40-A              | W-023797       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6258              | 6235 | 6005              | 5925 |
| MHC-8-64-6-76-26-A              | W-023803       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6258              | 6235 | 6005              | 5914 |
| MHC-8-64-6-63-26-A              | W-023809       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6258              | 6235 | 6005              | 5920 |
| MHC-8-64-6-51-26-A              | W-023815       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6258              | 6235 | 6005              | 5926 |
| MHC-8-64-6-65-26-A              | W-023821       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6258              | 6235 | 6005              | 5917 |
| MHC-8-64-6-50-26-A              | W-023827       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6258              | 6235 | 6005              | 5925 |



| MHC-8-64bar-6-element - Model C |                | Element type 8038 |          | Maximum pressure / Maximum temperature |      |                   |      |                   |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|-------------------|------|
|                                 |                | Quantity          | Permeate | 64 barg / 85°C                         |      | Volume 200 liters |      | Dry weight 126 kg |      |
| Stock number                    | Drawing number | 7.9" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL                | IL   |
| MHC-8-64-6-76-38-C              | W-023833       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6258              | 6235 | 6005              | 5914 |
| MHC-8-64-6-63-38-C              | W-023839       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6258              | 6235 | 6005              | 5920 |
| MHC-8-64-6-51-38-C              | W-023845       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6258              | 6235 | 6005              | 5926 |
| MHC-8-64-6-65-38-C              | W-023851       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6258              | 6235 | 6005              | 5917 |
| MHC-8-64-6-50-38-C              | W-023857       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6258              | 6235 | 6005              | 5925 |
| MHC-8-64-6-76-25-C              | W-023863       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6258              | 6235 | 6005              | 5914 |
| MHC-8-64-6-63-25-C              | W-023869       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6258              | 6235 | 6005              | 5920 |
| MHC-8-64-6-51-25-C              | W-023875       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6258              | 6235 | 6005              | 5926 |
| MHC-8-64-6-65-25-C              | W-023881       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6258              | 6235 | 6005              | 5917 |
| MHC-8-64-6-50-25-C              | W-023887       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6258              | 6235 | 6005              | 5925 |
| MHC-8-64-6-76-40-C              | W-023893       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6258              | 6235 | 6005              | 5914 |
| MHC-8-64-6-63-40-C              | W-023899       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6258              | 6235 | 6005              | 5920 |
| MHC-8-64-6-51-40-C              | W-023905       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6258              | 6235 | 6005              | 5926 |
| MHC-8-64-6-65-40-C              | W-023911       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6258              | 6235 | 6005              | 5917 |
| MHC-8-64-6-50-40-C              | W-023917       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6258              | 6235 | 6005              | 5925 |
| MHC-8-64-6-76-26-C              | W-023923       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6258              | 6235 | 6005              | 5914 |
| MHC-8-64-6-63-26-C              | W-023929       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6258              | 6235 | 6005              | 5920 |
| MHC-8-64-6-51-26-C              | W-023935       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6258              | 6235 | 6005              | 5926 |
| MHC-8-64-6-65-26-C              | W-023941       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6258              | 6235 | 6005              | 5917 |
| MHC-8-64-6-50-26-C              | W-023947       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6258              | 6235 | 6005              | 5925 |





# MEMBRANE HOUSING

## DETAILED OVERVIEW FOR TYPE 'MHC-6-16' LOW PRESSURE - 16 BAR

FOR MF AND UF FILTRATION



In the food and beverage industry membrane housings are often used in systems to reduce or eliminate microbials to make products safe for consumption and to extend their shelf life. We produce membrane housings for membrane filtration in the food industry for liquid-containing products such as juice, beer, soy, whey, milk, milk powder, chocolate etc.

**WILA A/S**  
Mads Clausens Vej 14  
8600 Silkeborg  
Denmark

Phone: +45 8680 0844

mail@wila.dk  
www.wila.dk

VAT number: 27230350

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## Introduction

This overview is for Membrane Housings with Clamp ferrule connections manufactured by Wila A/S under the category "MHC" hereinafter referred to as "Membrane Housing". A Membrane Housing is a tubular pressure vessel with a single inlet (Feed) on the shell side, an unfiltered outlet (Retentate) on the shell side and a filtered outlet (Permeate) out from one of the end centers.

The membranes and ATD's, that are also required for the filtration process, are not a part of the membrane housing, but Wila's own hygienic, easy to CIP clean, stainless steel ATD's can also be supplied upon request.

The Membrane Housing is made from EN 1.4404 (AISI 316L) stainless steel with a sanitary surface finish. The inside surface roughness is  $\leq 0,8 \mu\text{m}$  and the outside surface roughness is  $\leq 1,6 \mu\text{m}$ .

**All fluid media in use with the Membrane housing must be compatible with EN 1.4404 (AISI 316L) Stainless steel.**

The Membrane Housing is designed for pressures up to 16 bar and temperatures up to 70°C, but other types, sizes and pressure ratings are also available.

## Regulations and Directives

The membrane housing is designed and manufactured in accordance with

- the European Commission regulation No. 2023/2006 (Good Manufacturing Practices)
- the European Parliament directive No. EN 1935/2004 (Food Contact Materials).
- the European Parliament directive No. EN 1907/2006 (Chemical Restrictions (REACH)).
- PED - Article 4.3 (SEP) in the European Parliament directive No. 2014/68/EU (Pressure Equipment Directive). The membrane housing is only designed for fluid group 2 (non-dangerous fluids).

## Documentation

1. Customer drawing with description and design data table
2. Declaration of conformity
3. User Manual

As Supplement the following can be provided:

4. 3.1 material certificates according to EN 10204
5. Weld-logs with associated welding certificates according to DS/EN ISO 9601-1.

## Group specifications

Group ordering codes and specifications are as listed below. A more detailed group tables with unit codes and main dimensions can be found on the following pages.

MHC-6-12bar-X-element – Model \_

|       |   |  |
|-------|---|--|
| MHC   | <b>M</b> embrane <b>H</b> ousing with <b>C</b> lamp ferrule connections for Feed and Retentate. |  |
| 6     | The membrane housing is designed for 6.3" x 38" (6338) membranes.                               |  |
| 16bar | The Membrane Housing is designed for pressures up to 16 bar and temperatures up to 70°C         |  |
| X     | From 1 to 6 elements  | Indicates the number of elements that can be fitted. |
| _     | Either A or C *   | Indicates Feed and Retentate connection arrangement. |

\*Other connection arrangements are available

## Unit specifications

MHC-6-16-X-YY-ZZ- \_

|    |                      |  |
|----|----------------------|--|
| X  | From 1 to 6 elements | Indicates the number of elements that can be fitted.     |
| YY | 76 - 63 - 51 -50**   | Indicates Feed and Retentate clamp ferrules connections. |
| ZZ | 38 - 25 - 40 - 26**  | Indicates Permeate end clamp ferrule connection.         |
| _  | Either A or C *      | Indicates Feed and Retentate connection arrangement.     |

\*Other connection arrangements are available

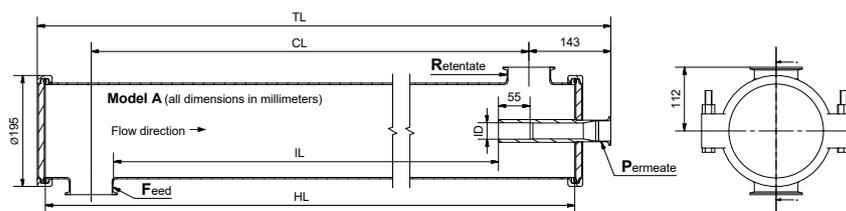
\*\*Clamp ferrule connections sizes - Other types and sizes are available

76 - 63 - 51 - 38 - 25 translates respectively to Ø76 - Ø63.5 - Ø51 - Ø38 - Ø25 in accordance with ISO 2852-2  
 50 - 40 - 26 translates respectively to DN50 - DN40 - DN25 in accordance with DIN 32676-A

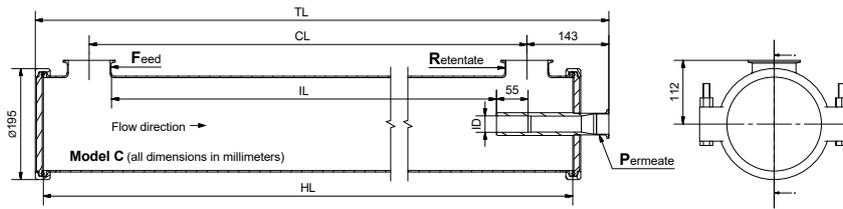
## Connections

Tri-clamp connections for Feed, Retentate and Permeate. For 16 bar pressure rating SH clamps are recommended, but always follow your fitting supplier guidelines and local legislations. The Membrane Housing should be installed with the Retentate outlet at the highest point for better air venting.

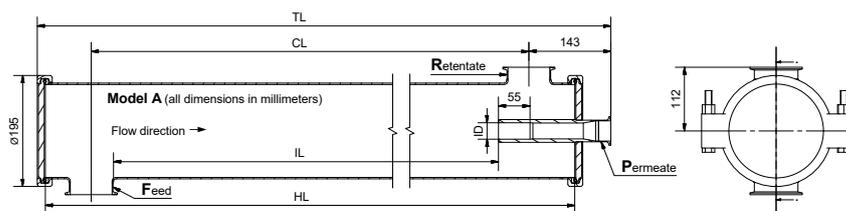
**Temperature and pressure limits must be respected at all times !**



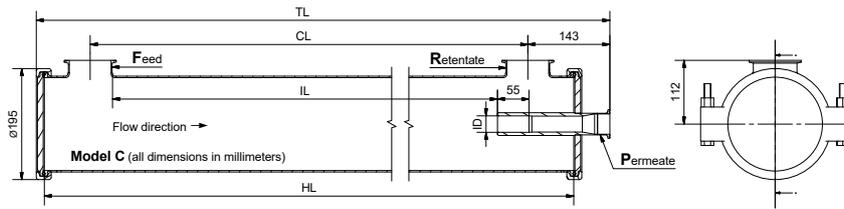
| MHC-6-16bar-1-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 27 liters |      | Dry weight 25 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-6-16-1-76-38-A              | W-023320       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1342             | 1265 | 1105             | 1013 |
| MHC-6-16-1-63-38-A              | W-023326       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1342             | 1265 | 1105             | 1019 |
| MHC-6-16-1-51-38-A              | W-023332       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1342             | 1265 | 1105             | 1025 |
| MHC-6-16-1-65-38-A              | W-023338       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1342             | 1265 | 1105             | 1016 |
| MHC-6-16-1-50-38-A              | W-023344       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1342             | 1265 | 1105             | 1024 |
| MHC-6-16-1-76-25-A              | W-023350       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1342             | 1265 | 1105             | 1013 |
| MHC-6-16-1-63-25-A              | W-023356       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1342             | 1265 | 1105             | 1019 |
| MHC-6-16-1-51-25-A              | W-023362       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1342             | 1265 | 1105             | 1025 |
| MHC-6-16-1-65-25-A              | W-023368       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1342             | 1265 | 1105             | 1016 |
| MHC-6-16-1-50-25-A              | W-023374       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1342             | 1265 | 1105             | 1024 |
| MHC-6-16-1-76-40-A              | W-023380       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1342             | 1265 | 1105             | 1013 |
| MHC-6-16-1-63-40-A              | W-023386       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1342             | 1265 | 1105             | 1019 |
| MHC-6-16-1-51-40-A              | W-023392       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1342             | 1265 | 1105             | 1025 |
| MHC-6-16-1-65-40-A              | W-023398       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1342             | 1265 | 1105             | 1016 |
| MHC-6-16-1-50-40-A              | W-023404       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1342             | 1265 | 1105             | 1024 |
| MHC-6-16-1-76-26-A              | W-023410       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1342             | 1265 | 1105             | 1013 |
| MHC-6-16-1-63-26-A              | W-023416       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1342             | 1265 | 1105             | 1019 |
| MHC-6-16-1-51-26-A              | W-023422       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1342             | 1265 | 1105             | 1025 |
| MHC-6-16-1-65-26-A              | W-023428       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1342             | 1265 | 1105             | 1016 |
| MHC-6-16-1-50-26-A              | W-023434       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1342             | 1265 | 1105             | 1024 |



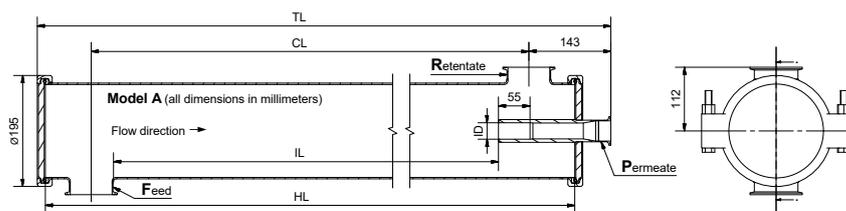
| MHC-6-16bar-1-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 27 liters |      | Dry weight 25 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-6-16-1-76-38-C              | W-023440       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 1342             | 1265 | 1105             | 1013 |
| MHC-6-16-1-63-38-C              | W-023446       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 1342             | 1265 | 1105             | 1019 |
| MHC-6-16-1-51-38-C              | W-023452       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 1342             | 1265 | 1105             | 1025 |
| MHC-6-16-1-65-38-C              | W-023458       | 1 x 38"           | Ø28.9    | DN65                                   | Ø38  | 1342             | 1265 | 1105             | 1016 |
| MHC-6-16-1-50-38-C              | W-023464       | 1 x 38"           | Ø28.9    | DN50                                   | Ø38  | 1342             | 1265 | 1105             | 1024 |
| MHC-6-16-1-76-25-C              | W-023470       | 1 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 1342             | 1265 | 1105             | 1013 |
| MHC-6-16-1-63-25-C              | W-023476       | 1 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 1342             | 1265 | 1105             | 1019 |
| MHC-6-16-1-51-25-C              | W-023482       | 1 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 1342             | 1265 | 1105             | 1025 |
| MHC-6-16-1-65-25-C              | W-023488       | 1 x 38"           | Ø28.9    | DN65                                   | Ø25  | 1342             | 1265 | 1105             | 1016 |
| MHC-6-16-1-50-25-C              | W-023494       | 1 x 38"           | Ø28.9    | DN50                                   | Ø25  | 1342             | 1265 | 1105             | 1024 |
| MHC-6-16-1-76-40-C              | W-023500       | 1 x 38"           | Ø28.9    | Ø76                                    | DN40 | 1342             | 1265 | 1105             | 1013 |
| MHC-6-16-1-63-40-C              | W-023506       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 1342             | 1265 | 1105             | 1019 |
| MHC-6-16-1-51-40-C              | W-023512       | 1 x 38"           | Ø28.9    | Ø51                                    | DN40 | 1342             | 1265 | 1105             | 1025 |
| MHC-6-16-1-65-40-C              | W-023518       | 1 x 38"           | Ø28.9    | DN65                                   | DN40 | 1342             | 1265 | 1105             | 1016 |
| MHC-6-16-1-50-40-C              | W-023524       | 1 x 38"           | Ø28.9    | DN50                                   | DN40 | 1342             | 1265 | 1105             | 1024 |
| MHC-6-16-1-76-26-C              | W-023530       | 1 x 38"           | Ø28.9    | Ø76                                    | DN25 | 1342             | 1265 | 1105             | 1013 |
| MHC-6-16-1-63-26-C              | W-023536       | 1 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 1342             | 1265 | 1105             | 1019 |
| MHC-6-16-1-51-26-C              | W-023542       | 1 x 38"           | Ø28.9    | Ø51                                    | DN25 | 1342             | 1265 | 1105             | 1025 |
| MHC-6-16-1-65-26-C              | W-023548       | 1 x 38"           | Ø28.9    | DN65                                   | DN25 | 1342             | 1265 | 1105             | 1016 |
| MHC-6-16-1-50-26-C              | W-023554       | 1 x 38"           | Ø28.9    | DN50                                   | DN25 | 1342             | 1265 | 1105             | 1024 |



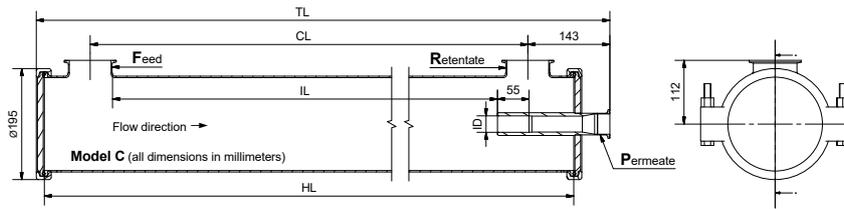
| MHC-6-16bar-2-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 47 liters |      | Dry weight 35 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-6-16-2-76-38-A              | W-023321       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2322             | 2245 | 2085             | 1993 |
| MHC-6-16-2-63-38-A              | W-023327       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2322             | 2245 | 2085             | 1999 |
| MHC-6-16-2-51-38-A              | W-023333       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2322             | 2245 | 2085             | 2005 |
| MHC-6-16-2-65-38-A              | W-023339       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2322             | 2245 | 2085             | 1996 |
| MHC-6-16-2-50-38-A              | W-023345       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2322             | 2245 | 2085             | 2004 |
| MHC-6-16-2-76-25-A              | W-023351       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2322             | 2245 | 2085             | 1993 |
| MHC-6-16-2-63-25-A              | W-023357       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2322             | 2245 | 2085             | 1999 |
| MHC-6-16-2-51-25-A              | W-023363       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2322             | 2245 | 2085             | 2005 |
| MHC-6-16-2-65-25-A              | W-023369       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2322             | 2245 | 2085             | 1996 |
| MHC-6-16-2-50-25-A              | W-023375       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2322             | 2245 | 2085             | 2004 |
| MHC-6-16-2-76-40-A              | W-023381       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2322             | 2245 | 2085             | 1993 |
| MHC-6-16-2-63-40-A              | W-023387       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2322             | 2245 | 2085             | 1999 |
| MHC-6-16-2-51-40-A              | W-023393       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2322             | 2245 | 2085             | 2005 |
| MHC-6-16-2-65-40-A              | W-023399       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2322             | 2245 | 2085             | 1996 |
| MHC-6-16-2-50-40-A              | W-023405       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2322             | 2245 | 2085             | 2004 |
| MHC-6-16-2-76-26-A              | W-023411       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2322             | 2245 | 2085             | 1993 |
| MHC-6-16-2-63-26-A              | W-023417       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2322             | 2245 | 2085             | 1999 |
| MHC-6-16-2-51-26-A              | W-023423       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2322             | 2245 | 2085             | 2005 |
| MHC-6-16-2-65-26-A              | W-023429       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2322             | 2245 | 2085             | 1996 |
| MHC-6-16-2-50-26-A              | W-021650       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2322             | 2245 | 2085             | 2004 |



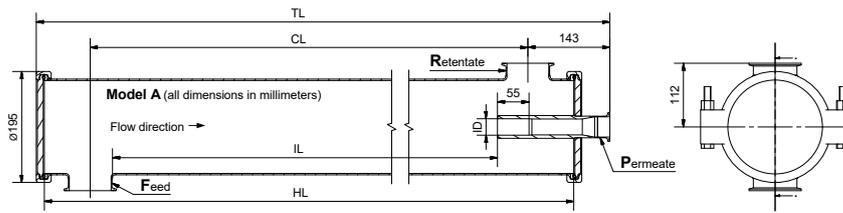
| MHC-6-16bar-2-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 47 liters |      | Dry weight 35 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-6-16-2-76-38-C              | W-023441       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 2322             | 2245 | 2085             | 1993 |
| MHC-6-16-2-63-38-C              | W-023447       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 2322             | 2245 | 2085             | 1999 |
| MHC-6-16-2-51-38-C              | W-023453       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 2322             | 2245 | 2085             | 2005 |
| MHC-6-16-2-65-38-C              | W-023459       | 2 x 38"           | Ø28.9    | DN65                                   | Ø38  | 2322             | 2245 | 2085             | 1996 |
| MHC-6-16-2-50-38-C              | W-023465       | 2 x 38"           | Ø28.9    | DN50                                   | Ø38  | 2322             | 2245 | 2085             | 2004 |
| MHC-6-16-2-76-25-C              | W-023471       | 2 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 2322             | 2245 | 2085             | 1993 |
| MHC-6-16-2-63-25-C              | W-023477       | 2 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 2322             | 2245 | 2085             | 1999 |
| MHC-6-16-2-51-25-C              | W-023483       | 2 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 2322             | 2245 | 2085             | 2005 |
| MHC-6-16-2-65-25-C              | W-023489       | 2 x 38"           | Ø28.9    | DN65                                   | Ø25  | 2322             | 2245 | 2085             | 1996 |
| MHC-6-16-2-50-25-C              | W-023495       | 2 x 38"           | Ø28.9    | DN50                                   | Ø25  | 2322             | 2245 | 2085             | 2004 |
| MHC-6-16-2-76-40-C              | W-023501       | 2 x 38"           | Ø28.9    | Ø76                                    | DN40 | 2322             | 2245 | 2085             | 1993 |
| MHC-6-16-2-63-40-C              | W-023507       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 2322             | 2245 | 2085             | 1999 |
| MHC-6-16-2-51-40-C              | W-023513       | 2 x 38"           | Ø28.9    | Ø51                                    | DN40 | 2322             | 2245 | 2085             | 2005 |
| MHC-6-16-2-65-40-C              | W-023519       | 2 x 38"           | Ø28.9    | DN65                                   | DN40 | 2322             | 2245 | 2085             | 1996 |
| MHC-6-16-2-50-40-C              | W-023525       | 2 x 38"           | Ø28.9    | DN50                                   | DN40 | 2322             | 2245 | 2085             | 2004 |
| MHC-6-16-2-76-26-C              | W-023531       | 2 x 38"           | Ø28.9    | Ø76                                    | DN25 | 2322             | 2245 | 2085             | 1993 |
| MHC-6-16-2-63-26-C              | W-023537       | 2 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 2322             | 2245 | 2085             | 1999 |
| MHC-6-16-2-51-26-C              | W-023543       | 2 x 38"           | Ø28.9    | Ø51                                    | DN25 | 2322             | 2245 | 2085             | 2005 |
| MHC-6-16-2-65-26-C              | W-023549       | 2 x 38"           | Ø28.9    | DN65                                   | DN25 | 2322             | 2245 | 2085             | 1996 |
| MHC-6-16-2-50-26-C              | W-023555       | 2 x 38"           | Ø28.9    | DN50                                   | DN25 | 2322             | 2245 | 2085             | 2004 |



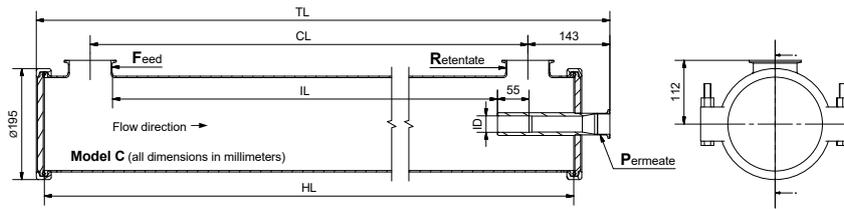
| MHC-6-16bar-3-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 68 liters |      | Dry weight 45 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-6-16-3-76-38-A              | W-023322       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3307             | 3230 | 3070             | 2978 |
| MHC-6-16-3-63-38-A              | W-023328       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3307             | 3230 | 3070             | 2984 |
| MHC-6-16-3-51-38-A              | W-023334       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3307             | 3230 | 3070             | 2990 |
| MHC-6-16-3-65-38-A              | W-023340       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3307             | 3230 | 3070             | 2981 |
| MHC-6-16-3-50-38-A              | W-023346       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3307             | 3230 | 3070             | 2989 |
| MHC-6-16-3-76-25-A              | W-023352       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3307             | 3230 | 3070             | 2978 |
| MHC-6-16-3-63-25-A              | W-023358       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3307             | 3230 | 3070             | 2984 |
| MHC-6-16-3-51-25-A              | W-023364       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3307             | 3230 | 3070             | 2990 |
| MHC-6-16-3-65-25-A              | W-023370       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3307             | 3230 | 3070             | 2981 |
| MHC-6-16-3-50-25-A              | W-023376       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3307             | 3230 | 3070             | 2989 |
| MHC-6-16-3-76-40-A              | W-023382       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3307             | 3230 | 3070             | 2978 |
| MHC-6-16-3-63-40-A              | W-023388       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3307             | 3230 | 3070             | 2984 |
| MHC-6-16-3-51-40-A              | W-023394       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3307             | 3230 | 3070             | 2990 |
| MHC-6-16-3-65-40-A              | W-023400       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3307             | 3230 | 3070             | 2981 |
| MHC-6-16-3-50-40-A              | W-023406       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3307             | 3230 | 3070             | 2989 |
| MHC-6-16-3-76-26-A              | W-023412       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3307             | 3230 | 3070             | 2978 |
| MHC-6-16-3-63-26-A              | W-023418       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3307             | 3230 | 3070             | 2984 |
| MHC-6-16-3-51-26-A              | W-023424       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3307             | 3230 | 3070             | 2990 |
| MHC-6-16-3-65-26-A              | W-023430       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3307             | 3230 | 3070             | 2981 |
| MHC-6-16-3-50-26-A              | W-023436       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3307             | 3230 | 3070             | 2989 |



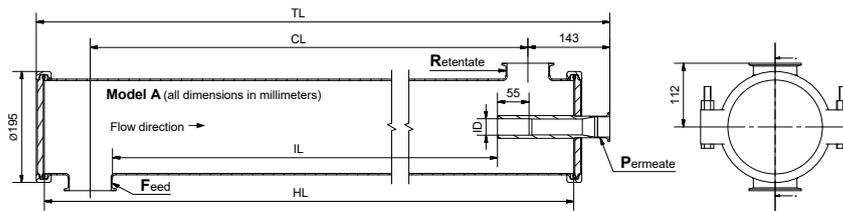
| MHC-6-16bar-3-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 68 liters |      | Dry weight 45 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-6-16-3-76-38-C              | W-023442       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 3307             | 3230 | 3070             | 2978 |
| MHC-6-16-3-63-38-C              | W-023448       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 3307             | 3230 | 3070             | 2984 |
| MHC-6-16-3-51-38-C              | W-023454       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 3307             | 3230 | 3070             | 2990 |
| MHC-6-16-3-65-38-C              | W-023460       | 3 x 38"           | Ø28.9    | DN65                                   | Ø38  | 3307             | 3230 | 3070             | 2981 |
| MHC-6-16-3-50-38-C              | W-023466       | 3 x 38"           | Ø28.9    | DN50                                   | Ø38  | 3307             | 3230 | 3070             | 2989 |
| MHC-6-16-3-76-25-C              | W-023472       | 3 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 3307             | 3230 | 3070             | 2978 |
| MHC-6-16-3-63-25-C              | W-023478       | 3 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 3307             | 3230 | 3070             | 2984 |
| MHC-6-16-3-51-25-C              | W-023484       | 3 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 3307             | 3230 | 3070             | 2990 |
| MHC-6-16-3-65-25-C              | W-023490       | 3 x 38"           | Ø28.9    | DN65                                   | Ø25  | 3307             | 3230 | 3070             | 2981 |
| MHC-6-16-3-50-25-C              | W-023496       | 3 x 38"           | Ø28.9    | DN50                                   | Ø25  | 3307             | 3230 | 3070             | 2989 |
| MHC-6-16-3-76-40-C              | W-023502       | 3 x 38"           | Ø28.9    | Ø76                                    | DN40 | 3307             | 3230 | 3070             | 2978 |
| MHC-6-16-3-63-40-C              | W-023508       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 3307             | 3230 | 3070             | 2984 |
| MHC-6-16-3-51-40-C              | W-023514       | 3 x 38"           | Ø28.9    | Ø51                                    | DN40 | 3307             | 3230 | 3070             | 2990 |
| MHC-6-16-3-65-40-C              | W-023520       | 3 x 38"           | Ø28.9    | DN65                                   | DN40 | 3307             | 3230 | 3070             | 2981 |
| MHC-6-16-3-50-40-C              | W-023526       | 3 x 38"           | Ø28.9    | DN50                                   | DN40 | 3307             | 3230 | 3070             | 2989 |
| MHC-6-16-3-76-26-C              | W-023532       | 3 x 38"           | Ø28.9    | Ø76                                    | DN25 | 3307             | 3230 | 3070             | 2978 |
| MHC-6-16-3-63-26-C              | W-023538       | 3 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 3307             | 3230 | 3070             | 2984 |
| MHC-6-16-3-51-26-C              | W-023544       | 3 x 38"           | Ø28.9    | Ø51                                    | DN25 | 3307             | 3230 | 3070             | 2990 |
| MHC-6-16-3-65-26-C              | W-023550       | 3 x 38"           | Ø28.9    | DN65                                   | DN25 | 3307             | 3230 | 3070             | 2981 |
| MHC-6-16-3-50-26-C              | W-023556       | 3 x 38"           | Ø28.9    | DN50                                   | DN25 | 3307             | 3230 | 3070             | 2989 |



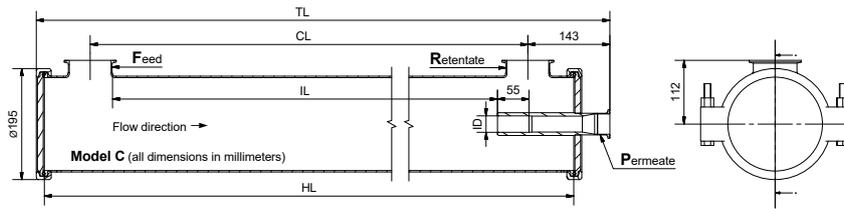
| MHC-6-16bar-4-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 88 liters |      | Dry weight 55 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-6-16-4-76-38-A              | W-023323       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4287             | 4210 | 4050             | 3958 |
| MHC-6-16-4-63-38-A              | W-023329       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4287             | 4210 | 4050             | 3964 |
| MHC-6-16-4-51-38-A              | W-023335       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4287             | 4210 | 4050             | 3970 |
| MHC-6-16-4-65-38-A              | W-023341       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4287             | 4210 | 4050             | 3961 |
| MHC-6-16-4-50-38-A              | W-023347       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4287             | 4210 | 4050             | 3969 |
| MHC-6-16-4-76-25-A              | W-023353       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4287             | 4210 | 4050             | 3958 |
| MHC-6-16-4-63-25-A              | W-023359       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4287             | 4210 | 4050             | 3964 |
| MHC-6-16-4-51-25-A              | W-023365       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4287             | 4210 | 4050             | 3970 |
| MHC-6-16-4-65-25-A              | W-023371       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4287             | 4210 | 4050             | 3961 |
| MHC-6-16-4-50-25-A              | W-023377       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4287             | 4210 | 4050             | 3969 |
| MHC-6-16-4-76-40-A              | W-023383       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4287             | 4210 | 4050             | 3958 |
| MHC-6-16-4-63-40-A              | W-023389       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4287             | 4210 | 4050             | 3964 |
| MHC-6-16-4-51-40-A              | W-023395       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4287             | 4210 | 4050             | 3970 |
| MHC-6-16-4-65-40-A              | W-023401       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4287             | 4210 | 4050             | 3961 |
| MHC-6-16-4-50-40-A              | W-023407       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4287             | 4210 | 4050             | 3969 |
| MHC-6-16-4-76-26-A              | W-023413       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4287             | 4210 | 4050             | 3958 |
| MHC-6-16-4-63-26-A              | W-023419       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4287             | 4210 | 4050             | 3964 |
| MHC-6-16-4-51-26-A              | W-023425       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4287             | 4210 | 4050             | 3970 |
| MHC-6-16-4-65-26-A              | W-023431       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4287             | 4210 | 4050             | 3961 |
| MHC-6-16-4-50-26-A              | W-023437       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4287             | 4210 | 4050             | 3969 |



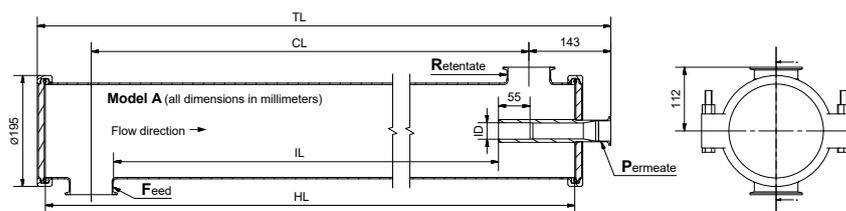
| MHC-6-16bar-4-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                  |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 88 liters |      | Dry weight 55 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL               | HL   | CL               | IL   |
| MHC-6-16-4-76-38-C              | W-023443       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 4287             | 4210 | 4050             | 3958 |
| MHC-6-16-4-63-38-C              | W-023449       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 4287             | 4210 | 4050             | 3964 |
| MHC-6-16-4-51-38-C              | W-023455       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 4287             | 4210 | 4050             | 3970 |
| MHC-6-16-4-65-38-C              | W-023461       | 4 x 38"           | Ø28.9    | DN65                                   | Ø38  | 4287             | 4210 | 4050             | 3961 |
| MHC-6-16-4-50-38-C              | W-023467       | 4 x 38"           | Ø28.9    | DN50                                   | Ø38  | 4287             | 4210 | 4050             | 3969 |
| MHC-6-16-4-76-25-C              | W-023473       | 4 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 4287             | 4210 | 4050             | 3958 |
| MHC-6-16-4-63-25-C              | W-023479       | 4 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 4287             | 4210 | 4050             | 3964 |
| MHC-6-16-4-51-25-C              | W-023485       | 4 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 4287             | 4210 | 4050             | 3970 |
| MHC-6-16-4-65-25-C              | W-023491       | 4 x 38"           | Ø28.9    | DN65                                   | Ø25  | 4287             | 4210 | 4050             | 3961 |
| MHC-6-16-4-50-25-C              | W-023497       | 4 x 38"           | Ø28.9    | DN50                                   | Ø25  | 4287             | 4210 | 4050             | 3969 |
| MHC-6-16-4-76-40-C              | W-023503       | 4 x 38"           | Ø28.9    | Ø76                                    | DN40 | 4287             | 4210 | 4050             | 3958 |
| MHC-6-16-4-63-40-C              | W-023509       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 4287             | 4210 | 4050             | 3964 |
| MHC-6-16-4-51-40-C              | W-023515       | 4 x 38"           | Ø28.9    | Ø51                                    | DN40 | 4287             | 4210 | 4050             | 3970 |
| MHC-6-16-4-65-40-C              | W-023521       | 4 x 38"           | Ø28.9    | DN65                                   | DN40 | 4287             | 4210 | 4050             | 3961 |
| MHC-6-16-4-50-40-C              | W-023527       | 4 x 38"           | Ø28.9    | DN50                                   | DN40 | 4287             | 4210 | 4050             | 3969 |
| MHC-6-16-4-76-26-C              | W-023533       | 4 x 38"           | Ø28.9    | Ø76                                    | DN25 | 4287             | 4210 | 4050             | 3958 |
| MHC-6-16-4-63-26-C              | W-023539       | 4 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 4287             | 4210 | 4050             | 3964 |
| MHC-6-16-4-51-26-C              | W-023545       | 4 x 38"           | Ø28.9    | Ø51                                    | DN25 | 4287             | 4210 | 4050             | 3970 |
| MHC-6-16-4-65-26-C              | W-023551       | 4 x 38"           | Ø28.9    | DN65                                   | DN25 | 4287             | 4210 | 4050             | 3961 |
| MHC-6-16-4-50-26-C              | W-023557       | 4 x 38"           | Ø28.9    | DN50                                   | DN25 | 4287             | 4210 | 4050             | 3969 |



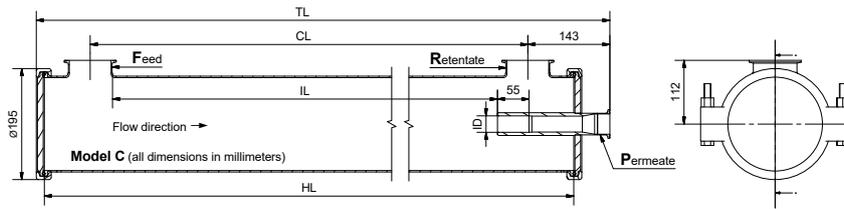
| MHC-6-16bar-5-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 109 liters |      | Dry weight 65 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-6-16-5-76-38-A              | W-023324       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5272              | 5195 | 5035             | 4943 |
| MHC-6-16-5-63-38-A              | W-023330       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5272              | 5195 | 5035             | 4949 |
| MHC-6-16-5-51-38-A              | W-023336       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5272              | 5195 | 5035             | 4955 |
| MHC-6-16-5-65-38-A              | W-023342       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5272              | 5195 | 5035             | 4946 |
| MHC-6-16-5-50-38-A              | W-023348       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5272              | 5195 | 5035             | 4954 |
| MHC-6-16-5-76-25-A              | W-023354       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5272              | 5195 | 5035             | 4943 |
| MHC-6-16-5-63-25-A              | W-023360       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5272              | 5195 | 5035             | 4949 |
| MHC-6-16-5-51-25-A              | W-023366       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5272              | 5195 | 5035             | 4955 |
| MHC-6-16-5-65-25-A              | W-023372       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5272              | 5195 | 5035             | 4946 |
| MHC-6-16-5-50-25-A              | W-023378       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5272              | 5195 | 5035             | 4954 |
| MHC-6-16-5-76-40-A              | W-023384       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5272              | 5195 | 5035             | 4943 |
| MHC-6-16-5-63-40-A              | W-023390       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5272              | 5195 | 5035             | 4949 |
| MHC-6-16-5-51-40-A              | W-023396       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5272              | 5195 | 5035             | 4955 |
| MHC-6-16-5-65-40-A              | W-023402       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5272              | 5195 | 5035             | 4946 |
| MHC-6-16-5-50-40-A              | W-023408       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5272              | 5195 | 5035             | 4954 |
| MHC-6-16-5-76-26-A              | W-023414       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5272              | 5195 | 5035             | 4943 |
| MHC-6-16-5-63-26-A              | W-023420       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5272              | 5195 | 5035             | 4949 |
| MHC-6-16-5-51-26-A              | W-023426       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5272              | 5195 | 5035             | 4955 |
| MHC-6-16-5-65-26-A              | W-023432       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5272              | 5195 | 5035             | 4946 |
| MHC-6-16-5-50-26-A              | W-023438       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5272              | 5195 | 5035             | 4954 |



| MHC-6-16bar-5-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 109 liters |      | Dry weight 65 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-6-16-5-76-38-C              | W-023444       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 5272              | 5195 | 5035             | 4943 |
| MHC-6-16-5-63-38-C              | W-023450       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 5272              | 5195 | 5035             | 4949 |
| MHC-6-16-5-51-38-C              | W-023456       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 5272              | 5195 | 5035             | 4955 |
| MHC-6-16-5-65-38-C              | W-023462       | 5 x 38"           | Ø28.9    | DN65                                   | Ø38  | 5272              | 5195 | 5035             | 4946 |
| MHC-6-16-5-50-38-C              | W-023468       | 5 x 38"           | Ø28.9    | DN50                                   | Ø38  | 5272              | 5195 | 5035             | 4954 |
| MHC-6-16-5-76-25-C              | W-023474       | 5 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 5272              | 5195 | 5035             | 4943 |
| MHC-6-16-5-63-25-C              | W-023480       | 5 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 5272              | 5195 | 5035             | 4949 |
| MHC-6-16-5-51-25-C              | W-023486       | 5 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 5272              | 5195 | 5035             | 4955 |
| MHC-6-16-5-65-25-C              | W-023492       | 5 x 38"           | Ø28.9    | DN65                                   | Ø25  | 5272              | 5195 | 5035             | 4946 |
| MHC-6-16-5-50-25-C              | W-023498       | 5 x 38"           | Ø28.9    | DN50                                   | Ø25  | 5272              | 5195 | 5035             | 4954 |
| MHC-6-16-5-76-40-C              | W-023504       | 5 x 38"           | Ø28.9    | Ø76                                    | DN40 | 5272              | 5195 | 5035             | 4943 |
| MHC-6-16-5-63-40-C              | W-023510       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 5272              | 5195 | 5035             | 4949 |
| MHC-6-16-5-51-40-C              | W-023516       | 5 x 38"           | Ø28.9    | Ø51                                    | DN40 | 5272              | 5195 | 5035             | 4955 |
| MHC-6-16-5-65-40-C              | W-023522       | 5 x 38"           | Ø28.9    | DN65                                   | DN40 | 5272              | 5195 | 5035             | 4946 |
| MHC-6-16-5-50-40-C              | W-023528       | 5 x 38"           | Ø28.9    | DN50                                   | DN40 | 5272              | 5195 | 5035             | 4954 |
| MHC-6-16-5-76-26-C              | W-023534       | 5 x 38"           | Ø28.9    | Ø76                                    | DN25 | 5272              | 5195 | 5035             | 4943 |
| MHC-6-16-5-63-26-C              | W-023540       | 5 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 5272              | 5195 | 5035             | 4949 |
| MHC-6-16-5-51-26-C              | W-023546       | 5 x 38"           | Ø28.9    | Ø51                                    | DN25 | 5272              | 5195 | 5035             | 4955 |
| MHC-6-16-5-65-26-C              | W-023552       | 5 x 38"           | Ø28.9    | DN65                                   | DN25 | 5272              | 5195 | 5035             | 4946 |
| MHC-6-16-5-50-26-C              | W-023558       | 5 x 38"           | Ø28.9    | DN50                                   | DN25 | 5272              | 5195 | 5035             | 4954 |



| MHC-6-16bar-6-element - Model A |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 130 liters |      | Dry weight 75 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-6-16-6-76-38-A              | W-023325       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6252              | 6175 | 6015             | 5928 |
| MHC-6-16-6-63-38-A              | W-023331       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6252              | 6175 | 6015             | 5934 |
| MHC-6-16-6-51-38-A              | W-023337       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6252              | 6175 | 6015             | 5940 |
| MHC-6-16-6-65-38-A              | W-023343       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6252              | 6175 | 6015             | 5931 |
| MHC-6-16-6-50-38-A              | W-023349       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6252              | 6175 | 6015             | 5939 |
| MHC-6-16-6-76-25-A              | W-023355       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6252              | 6175 | 6015             | 5928 |
| MHC-6-16-6-63-25-A              | W-023361       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6252              | 6175 | 6015             | 5934 |
| MHC-6-16-6-51-25-A              | W-023367       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6252              | 6175 | 6015             | 5940 |
| MHC-6-16-6-65-25-A              | W-023373       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6252              | 6175 | 6015             | 5931 |
| MHC-6-16-6-50-25-A              | W-023379       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6252              | 6175 | 6015             | 5939 |
| MHC-6-16-6-76-40-A              | W-023385       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6252              | 6175 | 6015             | 5928 |
| MHC-6-16-6-63-40-A              | W-023391       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6252              | 6175 | 6015             | 5934 |
| MHC-6-16-6-51-40-A              | W-023397       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6252              | 6175 | 6015             | 5940 |
| MHC-6-16-6-65-40-A              | W-023403       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6252              | 6175 | 6015             | 5931 |
| MHC-6-16-6-50-40-A              | W-023409       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6252              | 6175 | 6015             | 5939 |
| MHC-6-16-6-76-26-A              | W-023415       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6252              | 6175 | 6015             | 5928 |
| MHC-6-16-6-63-26-A              | W-023421       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6252              | 6175 | 6015             | 5934 |
| MHC-6-16-6-51-26-A              | W-023427       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6252              | 6175 | 6015             | 5940 |
| MHC-6-16-6-65-26-A              | W-023433       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6252              | 6175 | 6015             | 5931 |
| MHC-6-16-6-50-26-A              | W-023439       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6252              | 6175 | 6015             | 5939 |



| MHC-6-16bar-6-element - Model C |                | Element type 6338 |          | Maximum pressure / Maximum temperature |      |                   |      |                  |      |
|---------------------------------|----------------|-------------------|----------|--|------|-------------------|------|------------------|------|
|                                 |                | Quantity          | Permeate | 16 barg / 70°C                         |      | Volume 130 liters |      | Dry weight 75 kg |      |
| Stock number                    | Drawing number | 6.3" dia.         | ID       | F&R                                    | P    | TL                | HL   | CL               | IL   |
| MHC-6-16-6-76-38-C              | W-023445       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø38  | 6252              | 6175 | 6015             | 5928 |
| MHC-6-16-6-63-38-C              | W-023451       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø38  | 6252              | 6175 | 6015             | 5934 |
| MHC-6-16-6-51-38-C              | W-023457       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø38  | 6252              | 6175 | 6015             | 5940 |
| MHC-6-16-6-65-38-C              | W-023463       | 6 x 38"           | Ø28.9    | DN65                                   | Ø38  | 6252              | 6175 | 6015             | 5931 |
| MHC-6-16-6-50-38-C              | W-023469       | 6 x 38"           | Ø28.9    | DN50                                   | Ø38  | 6252              | 6175 | 6015             | 5939 |
| MHC-6-16-6-76-25-C              | W-023475       | 6 x 38"           | Ø28.9    | Ø76                                    | Ø25  | 6252              | 6175 | 6015             | 5928 |
| MHC-6-16-6-63-25-C              | W-023481       | 6 x 38"           | Ø28.9    | Ø63.5                                  | Ø25  | 6252              | 6175 | 6015             | 5934 |
| MHC-6-16-6-51-25-C              | W-023487       | 6 x 38"           | Ø28.9    | Ø51                                    | Ø25  | 6252              | 6175 | 6015             | 5940 |
| MHC-6-16-6-65-25-C              | W-023493       | 6 x 38"           | Ø28.9    | DN65                                   | Ø25  | 6252              | 6175 | 6015             | 5931 |
| MHC-6-16-6-50-25-C              | W-023499       | 6 x 38"           | Ø28.9    | DN50                                   | Ø25  | 6252              | 6175 | 6015             | 5939 |
| MHC-6-16-6-76-40-C              | W-023505       | 6 x 38"           | Ø28.9    | Ø76                                    | DN40 | 6252              | 6175 | 6015             | 5928 |
| MHC-6-16-6-63-40-C              | W-023511       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN40 | 6252              | 6175 | 6015             | 5934 |
| MHC-6-16-6-51-40-C              | W-023517       | 6 x 38"           | Ø28.9    | Ø51                                    | DN40 | 6252              | 6175 | 6015             | 5940 |
| MHC-6-16-6-65-40-C              | W-023523       | 6 x 38"           | Ø28.9    | DN65                                   | DN40 | 6252              | 6175 | 6015             | 5931 |
| MHC-6-16-6-50-40-C              | W-023529       | 6 x 38"           | Ø28.9    | DN50                                   | DN40 | 6252              | 6175 | 6015             | 5939 |
| MHC-6-16-6-76-26-C              | W-023535       | 6 x 38"           | Ø28.9    | Ø76                                    | DN25 | 6252              | 6175 | 6015             | 5928 |
| MHC-6-16-6-63-26-C              | W-023541       | 6 x 38"           | Ø28.9    | Ø63.5                                  | DN25 | 6252              | 6175 | 6015             | 5934 |
| MHC-6-16-6-51-26-C              | W-023547       | 6 x 38"           | Ø28.9    | Ø51                                    | DN25 | 6252              | 6175 | 6015             | 5940 |
| MHC-6-16-6-65-26-C              | W-023553       | 6 x 38"           | Ø28.9    | DN65                                   | DN25 | 6252              | 6175 | 6015             | 5931 |
| MHC-6-16-6-50-26-C              | W-023559       | 6 x 38"           | Ø28.9    | DN50                                   | DN25 | 6252              | 6175 | 6015             | 5939 |





# Sales Brochure

Anti Telescopic Device

INNOVATION - DRIVEN BY PEOPLE



# ATD – ANTI TELESCOPIC DEVICE

FOR MF, UF, NF AND RO FILTRATION



*Approved for food production  
– Hygienic design – CIP (Clean in Place) – High quality*

## About Wila

Wila develops and manufactures technical solutions for the food and beverage industry. We are well known for our solutions, all of which have been developed for specific cases and requirements. We always apply best practice and advanced expertise, and our standards are very high. Our strength is to enter into partnerships with our customers to ensure the most unique, innovative and optimum solutions.



We are experts in the field of membrane housings, tubular heat exchangers, tanks and complete units. We supply these products for major parts of the food industry, and we develop solutions for some of the most advanced lines of business. We use state-of-the-art techniques and technologies in our production and are at the cutting edge of innovation and new thinking in terms of the market as well as in terms of our knowledge of products. We live up to these things because we have some great facilities at our disposal, and we can match your technical and quality-related requirements when it comes to hygiene and production safety.

## Ready to work with your production line

We have the facilities, the know-how and the quality assurance systems to develop and manufacture stainless steel products, equipment's and plants that meet your requirements. And we have the right people to handle the job for you from its implementation to the finished delivery.

*Our series of products and components have been tested and are ready to be incorporated into your production. We will be pleased to assist you with your specifications, adjustments and project design.*



## ATD – Anti Telescopic Device

In membrane filtration systems wheel-like discs with built-in connections are normally used between spiral membrane elements, both to connect the permeate tubes and to prevent membrane-telescopic movement potentially caused by the hydraulic forces exerted on the feed end.

Wila ATDs benefits:

- Strong design to prevent membrane-telescoping
- Maximum flow area to maximise the membrane surface area available for production
- Maximum opening around permeate pipe for effective membrane cleaning

In recent years we have optimised the design of our stainless steel ATDs and we have eliminated any need for welding, thus making the ATDs more uniform and, most importantly, more hygienic and easier to clean. Additionally, a more rounded and open design of the connection tube makes camera inspections, if needed, much easier than on other models on the market.

### 8 mm thick models

8 Inch (7.9") O-ring ATD

6 Inch (6.3") O-ring ATD

4 Inch (3.8") O-ring ATD

8 Inch (7.9") Lip seal ATD

6 Inch (6.3") Lip seal ATD

4 Inch (3.8") Lip seal ATD

### 12.7 mm thick models

8 Inch (7.9") O-ring ATD

8 Inch (7.9") Lip seal ATD



## Wila's capabilities

Wila's design and engineering services range from complete projects to assisting our customers in achieving their goals. In the last 20 plus years we have been successful in working closely with food manufacturers and leading suppliers of process equipment for the very demanding food industry, which has resulted in highly competitive quality products and solutions with added value for our customers. Our extensive in-house expertise includes innovative manufacturing processes and design deeply rooted in solid engineering.



If you involve us early on in your process, we will act as a focused, innovative and solution-oriented sounding board for your ideas. Through a systematic and analytical approach, we will make a value-adding contribution to your project.





# Sales Brochure

Stainless Steel Tanks

INNOVATION - DRIVEN BY PEOPLE



# STAINLESS STEEL TANKS



*Approved for food production  
- Hygienic design - CIP (Clean in Place) - High quality*

## About Wila

Wila develops and manufactures technical solutions for the food and beverage industry. We are well known for our solutions, all of which have been developed for specific cases and requirements. We always apply best practice and advanced expertise, and our standards are very high. Our strength is to enter into partnerships with our customers to ensure the most unique, innovative and optimum solutions.



We are experts in the field of membrane housings, tubular heat exchangers, tanks and complete units. We supply these products for major parts of the food industry, and we develop solutions for some of the most advanced lines of business. We use state-of-the-art techniques and technologies in our production and are at the cutting edge of innovation and new thinking in terms of the market as well as in terms of our knowledge of products. We live up to these things because we have some great facilities at our disposal, and we can match your technical and quality-related requirements when it comes to hygiene and production safety.

## Ready to work with your production line

We have the facilities, the know-how and the quality assurance systems to develop and manufacture stainless steel products, equipment's and plants that meet your requirements. And we have the right people to handle the job for you from its implementation to the finished delivery.

*Our series of products and components have been tested and are ready to be incorporated into your production. We will be pleased to assist you with your specifications, adjustments and project design.*



## Tanks

At Wila, we have a fully equipped and modern workshop for handling and production of various types of tanks with a capacity of maximum 30 m<sup>3</sup>.

We produce a wide range of tanks for several industries within the food sector, which is why we acknowledge and live up to the importance of hygienic designs and quality.

Our construction department has a strong relationship with our customers, which ensure that our solutions match the needs and expectations of every single customer. Everything is carried out in Inventor with 3D solutions so that each facility can overview the production.

We develop tanks with different kinds of equipment such as heating mantles, insulating sheaths, and agitators (several types). The tanks can be positioned both horizontally and vertically.

We even produce special tanks such as pipe holding cells for pasteurization facilities. Read more about the different tanks we produce on our website [www.wila.dk](http://www.wila.dk)



## Wila's capabilities

Wila's design and engineering services range from complete projects to assisting our customers in achieving their goals. In the last 20 plus years we have been successful in working closely with food manufacturers and leading suppliers of process equipment for the very demanding food industry, which has resulted in highly competitive quality products and solutions with added value for our customers. Our extensive in-house expertise includes innovative manufacturing processes and design deeply rooted in solid engineering.



If you involve us early on in your process, we will act as a focused, innovative and solution-oriented sounding board for your ideas. Through a systematic and analytical approach, we will make a value-adding contribution to your project.