

Inline Filter



Instruction Manual

10202512-IM012



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1 General Description

This manual should be read carefully by all personnel involved in operation and maintenance.

Liability for any damages or issues resulting from non-compliance with these instructions will not be accepted.

It should also be noted that descriptions and specifications in this manual may be subject to technical changes.

1.1 Intended use

The inline filter is designed for the purposes outlined in chapter 2.1. Any use beyond what is described in that chapter does not adhere to regulations, and MST (Minox) will not be held responsible for any resulting damages. The operator assumes full responsibility for risks.

Proper and safe operation of the inline filter requires appropriate transportation, storage, and professional assembly. Intended use also includes adherence to operating, service, and maintenance guidelines.

1.2 Storage

The filter should be stored in accordance with the following conditions:

- Storage area should be clean and dry at all times.
- Store the filter in a temperature-controlled area to protect gaskets.
- Store the filter in a box and protect the inlet and outlet with end caps to prevent rust and contamination by foreign materials.
- Storage area should be checked periodically to ensure that these conditions are consistently maintained.

2 MINOX[®] Inline Filter

2.1 Purpose of use

MINOX[®] inline filter consists of inlet and outlet housing and strainer. The strainer is installed inside to retain the particles from a flow, protect the pump or other equipment from damage.

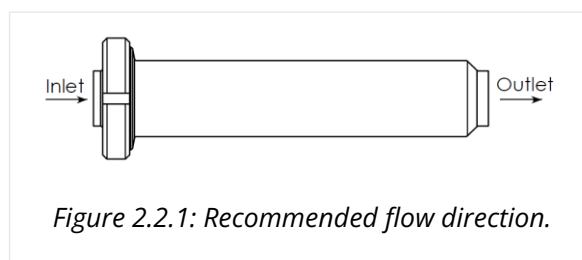
The strainer – perforated plate, wire mesh, wedge screen wire and sintered wire mesh are available to filter coarse, medium and fine particles.

2.2 Operating principle

The operating principle of inline filter is illustrated in *Figure 2.2.1*.

The liquid enters the filter through the inlet housing, directing the flow to the strainer. The strainer trapped the particles from the fluid inside the filter. The filtered liquid comes out from the outlet housing.

The **recommended flow direction** is from the nut connection (inlet) to the bottom (outlet), see *Figure 2.2.1*. It facilitates cleaning as the particles trapped inside the strainer when the filter installed horizontally.



3 Technical Data

Material

Filter housing	SS304L
	SS 316L
Strainer	SS 316L
Seal	EPDM
	Silicone
	NBR
Internal surface finish	Ra ≤ 0.8µm (polished)
Size	1" – 4" / DN25 – DN100

Working Condition

Maximum working temperature	-10°C to 135°C (EPDM) -10°C to 170°C (Silicone) -10°C to 90°C (NBR)
Maximum working pressure	10 bar

Strainer – Perforated Plate

Hole size	0.5 – 8mm
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Flow open area

Hole, D (mm)	Open Area (%)
0.5	22
1.0	22
1.5	22
2.0	22
3.0	32
5.0	46
8.0	47

Strainer – Wire Mesh

Mesh size	40 – 500 mesh
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Flow open area

Mesh	Open Area (%)	Mesh	Open Area (%)
40	50	250	37
60	45	300	28
80	31	325	38
100	37	400	37
150	34	500	26
200	37		

3 Technical Data

Strainer – Wedge Screen Wire

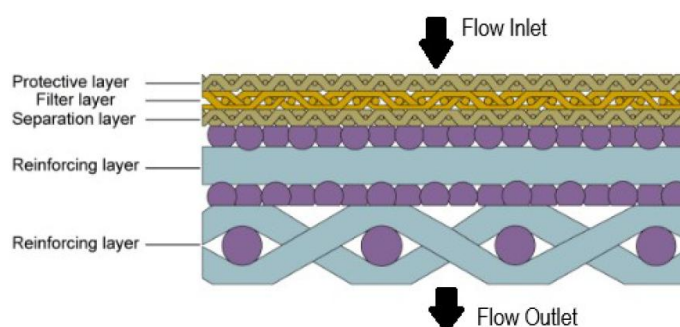
Wire size 100 – 800 micron

Flow open area

Micron	Open Area (%)	Micron	Open Area (%)
100	9	270	21
125	11	300	23
150	13	400	29
177	15	500	33
200	17	800	44
250	20		

Strainer – Sintered Wire Mesh

Structure 5 layers



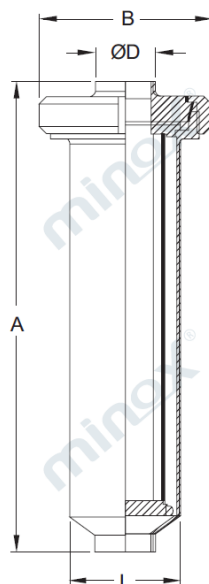
Mesh size 1 – 100 micron

Air permeability

Nominal Filter Rating (micron)	Air Permeability (L/min/cm2)
1	1.81
2	2.35
5	2.42
10	3.00
15	3.41
20	4.50
25	6.12
30	6.70
40	6.86
50	8.41
75	8.70
100	9.10

3 Technical Data

Dimension



Size (Inch)	OD x t (mm)	A (mm)	B (mm)	L (mm)
1.0"	25.4 x 1.5	320	112	70
1.5"	38.1 x 1.5	320	112	70
2.0"	50.8 x 1.5	365	112	70
2.5"	63.5 x 1.5	410	127	85
3.0"	76.2 x 1.5	460	148	104
4.0"	101.6 x 2.0	600	178	129

Size (DIN)	OD x t (mm)	A (mm)	B (mm)	L (mm)
25	29 x 1.5	320	112	70
32	35 x 1.5	320	112	70
40	41 x 1.5	320	112	70
50	53 x 1.5	365	112	70
65	70 x 2.0	410	127	85
80	85 x 2.0	460	148	104
100	104 x 2.0	600	178	129

4 Installation

4.1 General installation

1. Avoid stressing the filter during installation. Attention should be given to the following:
 - Vibration on the pipeline.
 - Thermal expansion of the pipeline during circulation of hot liquids.
 - Excessive welding.
 - Overloading on the pipeline.
2. Install the filter in the correct flow direction, see *Figure 2.2.1* and ensure it is properly aligned with the existing pipeline.

4.2 Welding

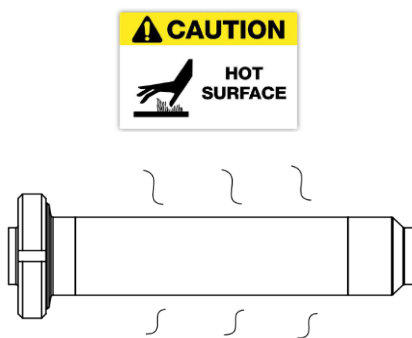
1. Dismantle the filter components from the housing according to Chapter 8.1 Filter Disassembly. Handle all parts carefully to avoid damage.
2. Weld the filter housing to the required connections.
3. TIG orbital welding is the most appropriate method.
4. After welding, reassemble the filter according to Chapter 8.2 Filter Assembly.
5. If these welding instructions are not followed, any resulting damage will not be covered by the warranty.

5 Operation

The personnel should follow the instruction of safety and filter operation before operating the filter.

The following should be taken into consideration before using the filter:

1. Check that the pipeline and the filter are completely free from foreign debris. Clean the system if required.
2. Ensure the connections are tightened and free from leakage.
3. Open the circuit.
4. Never touch the filter or pipeline when processing hot medium or when cleaning and sterilisation.



6 Maintenance

6.1 General maintenance

Read the maintenance instruction carefully. Always keep the spare service kits in stock for any necessary replacement. Always use MINOX genuine spare parts. Table 6.1.1 shows the recommended action for maintenance.

Table 6.1.1: Maintenance guide.

Recommended Action	Maintenance of DIN Gasket
Preventive maintenance	- Replace after 12 months
Maintenance after leakage	- Replace immediately
Planned maintenance	- Regular inspection for leakage and smooth operation - Keep a track record of filter - Use statistic for inspection planning
Lubrication before maintenance (if necessary)	- Use FDA approved lubricant (e.g.: Dow Corning® 7 Release Compound)

Notes:

1. During maintenance, pay particular attention to the filter which should never be pressurised or in hot conditions.
2. Contact MINOX sales personnel to order spare service kits by indicating the type of filter and the part which can be found in the Chapter 9 Spare Part List.

6 Maintenance

6.2 Strainer cleaning method

Back flushing

Removal of clogged or accumulated particles from the mesh apertures by a reverse flow of media in the filtration system. This method removes the hard-to-reach particles that ensure that the filtration system maintains compliant throughput.

Pressure Washing

Removal of stubborn particles from the mesh apertures by pressurized jets of water. This method minimizes the amount of daily manual scrubbing.

Chemical Cleaning

Removal of contaminant particles from the surface of mesh by using various chemicals such as detergents, solvents, and alcohol. This process relies mostly on manual work and is the least effective at removing clogging particles.

Notes:

1. Be sure to gently scrub the wire mesh with soft nylon brushes (if brush is used).
2. Mesh can be submerged in detergent bath, this helps to remove the stubborn contaminants.
3. Mesh should be rinsed thoroughly with clean water after using the chemical cleaning method.

7 Troubleshooting

Failures	Cause	Remedy
Excessive particles pass through the filter	- The strainer screen is defective or damaged. - Incorrect strainer screen size.	- Replace the strainer screen.
Flow clogging	- The strainer screen is blocked. - The pipeline is blocked.	- Remove and clean the strainer screen. - Unblock the pipe.
External product leak (normal period)	- The DIN gasket are worn or deteriorated.	- Replace the DIN gasket.
External product leak (early period)	- Unsuitable rubber material due to high pressure and high temperature - Unsuitable rubber material with aggressive medium	- Change the rubber material. - Monitor the process operating conditions

Note:

Contact MINOX sales personnel if technical assistance is required.

8 Filter Assembly & Disassembly

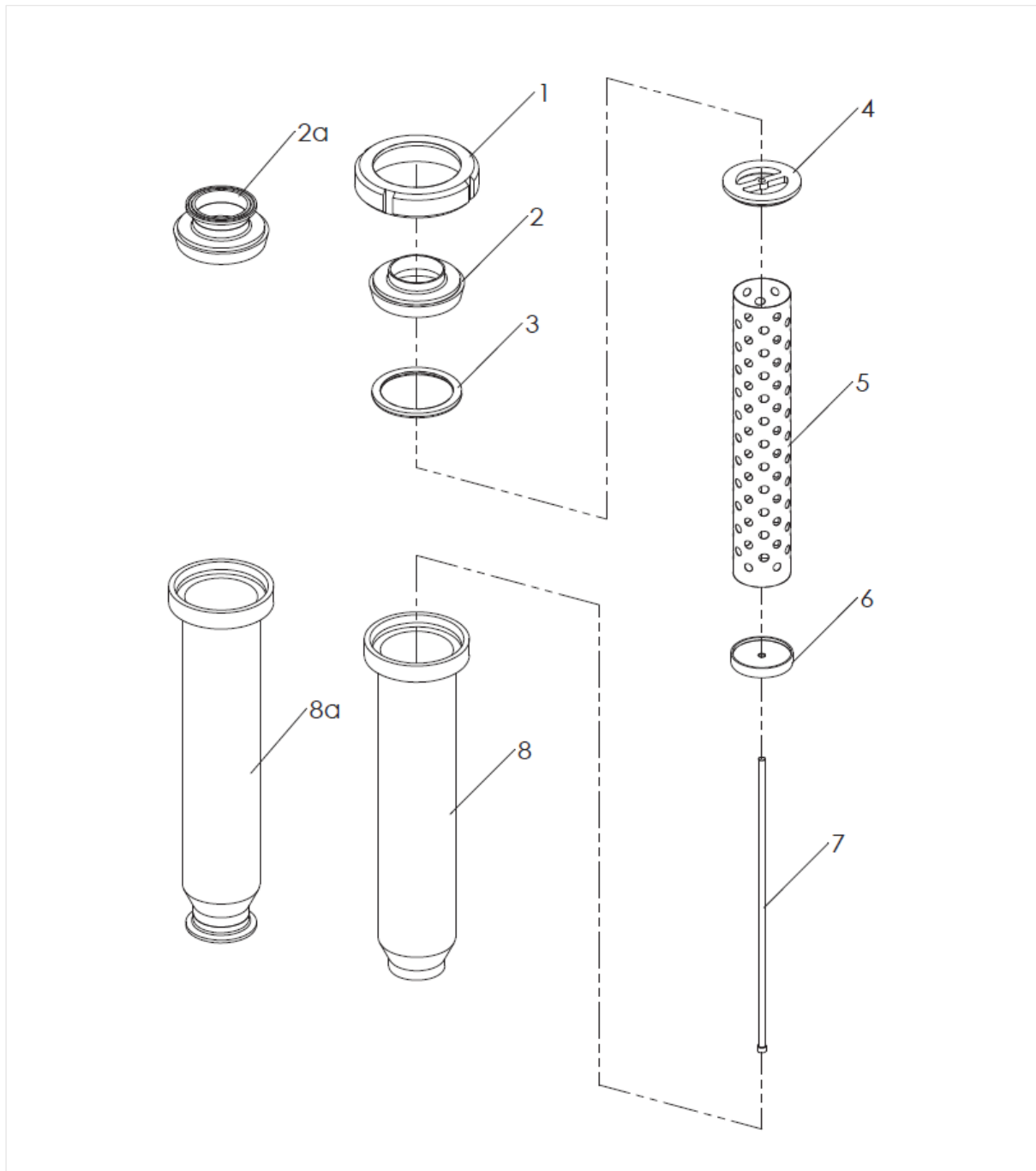
8.1 Filter disassembly

1. Use the hook spanner to loosen the DIN nut (1).
2. Remove the liner (2)/(2a) and the DIN gasket (3).
3. Remove the strainer (5) from the housing (8)/(8a).
4. Unscrew and loosen the tie rod (7).
5. Remove the upper (4) and lower discs (6).

8.2 Filter assembly

1. Clean all parts before assembly.
2. Replace the DIN gasket (3) if it is damaged or not in good condition.
3. Fit the upper (4) and lower disc (6) onto the strainer (5).
4. Screw and tighten the discs using the tie rod (7).
5. Insert the strainer (5) into the housing (8)/(8a).
6. Fit the DIN gasket (3) and liner (2)/(2a) into the housing (8)/(8a).
7. Use the hook spanner to tighten the DIN nut (1).

9 Spare Part List



9 Spare Part List

No.	Part Name	Qty.	Material
1	DIN Nut	1	304
2	Liner – weld end	1	304 316L
2a	Liner – clamp end	1	304 316L
3*	DIN gasket L-type	1	EPDM Silicone NBR
4	Upper disc	1	316L
5	Strainer	1	316L
6	Lower disc	1	316L
7	Tie rod	1	316L
8	Housing – weld end	1	304 316L
8a	Housing – clamp end	1	304 316L

SERVICE KIT

Parts marked with * are the service kit.

SERVICE KIT	DN25 (29mm) 1" (25.4mm)	DN32 (35mm)	DN40 (41mm) 1.5" (38.1mm)	DN50 (53mm) 2" (50.8mm)	DN65 (70mm) 2.5" (63.5mm)
EPDM	13001-02070	13001-02070	13001-02070	13001-02070	13001-02085
Silicone	13001-03070	13001-03070	13001-03070	13001-03070	13001-03085
NBR	13001-09070	13001-09070	13001-09070	13001-09070	13001-09085

SERVICE KIT	DN80 (85mm) 3" (76.2mm)	DN100 (104mm) 4" (101.6mm)
EPDM	13001-02104	13001-02129
Silicone	13001-03104	13001-03129
NBR	13001-09104	13001-09129



The information provided in this manual is intended for general guidance and should be used in accordance with the instructions provided.

MST Stainless Steel Sdn Bhd (Minox) reserves the right to make changes to the design and materials of this product at any time without prior notification.

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