1. Introduction

All A series cartridge filter housings are designed for efficient liquid filtration and can be customized with a wide range of features and options. Flexibility in the exact design of your filter is an important advantage of our filter housings. We will help you design a filter to fit the exact configuration and needs of your operating environment. The housing’s robust construction gives extended life in the toughest conditions. The epoxy coated AS Series option has been the industry standard for produced water and brine filtration for many years.

These filter housings provide operators with highly efficient liquid filtration, matched to their specific operating requirements. Flow rates, operating pressures and temperatures, plus the fluid being filtered are all taken into consideration when selecting the right Nowata filter for the job.

A series cartridge filter housings can be designed for many working pressures, flow rates, number of cartridges, mounting hardware, connection location, ASME code construction and more. These choices allow us to create a filtration system that is matched to your exact operating conditions.

Features

- Sizes from 4 to 81 cartridges
- 200 to 1440 psi working pressure
- Aqueous flow rates to 648 gpm
- Bolted closure for safe, fast cartridge replacement
- Multiple O-ring closure seals available
- ASME code construction available

Housing Material Choices

- Standard carbon steel construction
- Carbon steel with stainless steel trim & epoxy lining
- Stainless steel wetted construction
### 2. Dimensional Information

| Model   | Max. pressure (psi) | No. of cartridges | No. of cartridge posts | Shipping weight (lbs) | A | B | C | D | E | F | G | J | K |
|---------|---------------------|-------------------|------------------------|-----------------------|---|---|---|---|---|---|---|---|---|---|---|
| A4      | 200                 | 4                 |                         |                       | 160| 34| 4-1/4| 8 | 8 | 3-1/4 | 14-5/8 |
| AS4     | 300                 |                   |                         |                       | 164| 34| 4-1/4| 8 | 8 | 3-1/4 | 16-5/8 |
| U4      | 740                 |                   |                         |                       | 172| 39| 4-1/2| 8-1/2| 3-1/4 | 16-5/8 |
| 1440    |                     |                   |                         |                       | 216| 39| 4-3/4| 8-1/2| 3-1/4 | 16-5/8 |
| A6      | 200                 | 6                 |                         |                       | 190| 45| 4-1/4| 8 | 8 | 3-1/4 | 14-5/8 |
| AS6     | 300                 |                   |                         |                       | 194| 45| 4-1/4| 8 | 8 | 3-1/4 | 16-5/8 |
| U6      | 740                 |                   |                         |                       | 202| 49| 4-1/2| 8-1/2| 3-1/4 | 16-5/8 |
| 1440    |                     |                   |                         |                       | 248| 49| 4-3/4| 8-1/2| 3-1/4 | 16-5/8 |
| A8      | 200                 | 8                 |                         |                       | 190| 36| 4-1/4| 8 | 8 | 3-1/4 | 18-5/8 |
| AS8     | 300                 |                   |                         |                       | 212| 36| 5 | 9-1/2| 10 | 3-1/4 | 18-5/8 |
| U8      | 740                 |                   |                         |                       | 266| 41| 5-1/2| 9-1/2| 3-1/2 | 18-5/8 |
| 1440    |                     |                   |                         |                       | 344| 41| 5-3/4| 9-1/2| 3-3/4 | 18-5/8 |
| A12     | 200                 | 12                |                         |                       | 220| 47| 5 | 10 | 10 | 3-1/4 | 18-5/8 |
| AS12    | 300                 |                   |                         |                       | 242| 47| 5 | 10-1/2| 10-1/2| 3-1/2 | 18-5/8 |
| U12     | 740                 |                   |                         |                       | 290| 51| 5-1/2| 10-1/2| 3-1/2 | 18-5/8 |
| 1440    |                     |                   |                         |                       | 390| 51| 5-3/4| 10-1/2| 3-1/2 | 18-5/8 |
| A21     | 200                 | 21                |                         |                       | 280| 51| 6 | 11-1/2| 11-1/2| 3-1/2 | 24-3/4 |
| AS21    | 300                 |                   |                         |                       | 340| 51| 6-1/2| 11-1/2| 3-3/4 | 24-3/4 |
| U21     | 740                 |                   |                         |                       | 422| 53| 6-1/4| 11-1/2| 3-3/4 | 24-3/4 |
| 1440    |                     |                   |                         |                       | 650| 53| 6-1/4| 11-1/2| 3-3/4 | 24-3/4 |
| A30     | 200                 | 30                |                         |                       | 380| 52| 6 | 12-5/8| 12-5/8| 3-1/2 | 24-3/4 |
| AS30    | 300                 |                   |                         |                       | 430| 52| 6 | 12-1/2| 12-1/2| 3-3/4 | 24-3/4 |
| U30     | 740                 |                   |                         |                       | 645| 53| 7 | 12-1/2| 12-1/2| 3-3/4 | 24-3/4 |
| 1440    |                     |                   |                         |                       | 890| 57| 7 | 12-1/2| 12-1/2| 3-3/4 | 24-3/4 |
| A48     | 200                 | 48                |                         |                       | 510| 64| 27-1/2| 22-3/4| N/A | 28 |
| AS48    | 300                 |                   |                         |                       | 570| 66| 27-1/2| 22-3/4| N/A | 28 |
| U48     | 740                 |                   |                         |                       | 959| 70| 27-1/2| 23 | N/A | 28 |
| 1440    |                     |                   |                         |                       | 1300| 70| 28-1/2| 22-3/4| N/A | 28 |
| A60     | 200                 | 60                |                         |                       | 700| 70| 29-1/2| 25-1/2| N/A | 30 |
| AS60    | 300                 |                   |                         |                       | 810| 70| 29-1/2| 25-1/2| N/A | 30 |
| U60     | 740                 |                   |                         |                       | 1338| 70| 29-1/2| 25-1/2| N/A | 30 |
| 1440    |                     |                   |                         |                       | 1480| 70| 29-1/2| 25-1/2| N/A | 30 |
| A81     | 200                 | 81                |                         |                       | 850| 67| 29-1/2| 25-1/2| N/A | 32 |
| AS81    | 300                 |                   |                         |                       | 1006| 70| 29-1/2| 25-1/2| N/A | 32 |
| U81     | 740                 |                   |                         |                       | 1620| 70| 30-1/2| 25-1/2| N/A | 32 |
| 1440    |                     |                   |                         |                       | 2000| 74| 32-1/2| 27-1/2| N/A | 32 |

Dimensions in inches unless otherwise noted. Specifications are for reference only and subject to change without notice.
General Notes

A = Overall height, also see (4)
B = Vessel outside diameter
C = Height to inlet centerline
D = Height to output centerline
E = Height to upper chamber drain centerline
F = Height to vessel drain centerline (FIG. 1 only)
G = Inlet & Outlet connection size,
   2” and 3” internal pipe thread standard;
   4” and 6” RF ANSI Flanges standard
(1) = Shown are the first few characters of the part number
(2) = Maximum allowable non-shock pressure
(3) = Number of 9-3/4” or 10” length cartridges, single length equivalents
(4) = Davit arm provided as standard on all models except the 200 and 300 psi models in the 4, 6, 8 and 12 cartridge sizes

H = Flanged connection face to face-inlet & outlet
I = Mounting hole spacing
J = Internal pipe thread upper chamber drain size
   (FIG. 1 only: Under 9” O.D. = 1”, Over 9” O.D. = 2”)
K1 = Internal pipe thread vessel drain size (1/2”)
K2 = Internal pipe thread vessel drain size (1”)
L = Internal pipe thread vent size
M = Mounting holes (4 each) diameter (7/8”)

All dimensions are shown in inches.

FIG. 1
Housings that are 12-3/4 inches and smaller, outside diameter, utilize a round base plate.

FIG. 2
Housings that are over 12-3/4 inches, outside diameter, feature support legs.

3. Standard Construction Notes

Standard A Series Construction
A series models are designed for applications involving fresh water and non-corrosive fluids. They are constructed of all welded carbon steel with internal cartridge supports and retainers of Brass. Larger models come standard with closure lifting davits for easy cartridge removal. 3” or smaller inlet and outlet connections are FNPT internal pipe thread. The 4” and larger sizes are provided with ANSI flanges. Internal pipe threaded vessel drain, backwash drain and vent are standard, with the size depending on vessel diameter.

U Series Construction Feature
The U series feature is designed for applications requiring the increased corrosion resistance and fluid compatibility of stainless steel. All wetted surfaces, including the cartridge supports and the retainers, are 316 stainless steel. The top closure is constructed of high-strength carbon steel, with a stainless steel liner plate.

S Construction Feature
The S feature provides epoxy lined carbon steel construction, with 316 stainless steel in the uncoated area of the closure o-ring seal. Internal pipe thread, vent and drain connections are also made of 316 stainless steel. Brass internal cartridge fittings are furnished as standard, other materials are available. Although exposed areas are made of 316 stainless steel, all wetted carbon steel surfaces are coated with epoxy. Care should be taken to use the S feature housings with fluids that do not vigorously attack plain steel.

Standard Construction for Glycol Filtration
A series models are especially suited for removing solids from triethylene glycol in natural gas dehydrators. Since Brass cannot be used with glycol, plated carbon steel internals are required. Solids in the glycol stream can damage pumps and plug spray nozzles. Most applications require filtration in the 25 to 50 micron range, to provide the protection needed.

Working Pressure Ranges
A series housings are available in the following maximum allowable non-shock working pressure ratings:
200 psi, 300 psi, 740 psi, and 1440 psi.
4. Optional Construction Notes

Seal Material
The standard Buna o-ring operates at up to 250 °F. Viton seals are available for up to 450 °F service. Other o-ring materials, such as Teflon encapsulated silicone, and ethylene propylene are also available.

Connections
Customized inlet and outlet connection sizes and locations are available on all filter housings. All units are available with optional external pipe thread connections or ANSI flanges. Internal pipe threaded drains and vent are provided as standard. Connections are also available in flanged or external pipe thread type, or in non-standard sizes. Special purpose connections, such as relief valve fittings and pressure taps, are also available. Non-standard connections location, unusual mounting heights or dimensions are also available.

Internal Materials
Standard brass and optional plated carbon steel internals are stocked at the factory. 316 stainless steel is standard for the use series and optional on the A series.

Horizontal Housings
Our rigid cartridge support and seal system is ideally suited for the horizontal configuration of the A series housings. This is especially important when overhead clearance, or other unique operating considerations preclude the usual vertical installation of the housings.

Extra Length Housings and Cartridges
When extra dirt holding capacity is needed, an extra length housing can be built to hold our 40” length cartridges. This offers the advantage of a 33% increase in cartridge life, for little extra cost.

ASME Code Construction
A series filters are designed in accordance with the Pressure Vessel Code of the American Society of Mechanical Engineers. When required, each unit can be stamped with the appropriate ASME code denoting fabrication and testing performed by specific procedures.

Accessories
Several items are available to monitor or control filter operation. Ask us about accessory features for your filtration system.

5. Typical Applications

Waterflood Filtration
Our filters are used to clean the water being injected into wells surrounding a producing oil well. This water must be filtered in order to prevent plugging of the injection formation, which also keeps the fluid environmentally friendly.

Filters For Disposal
Produced water from an oil field, to be re-injected into the ground or reintroduced into the ecosystem, must first be filtered to remove contaminants, and thereby not damage the environment. A series cartridge filter housings are especially suited for the job, providing excellent, cost effective filtration.

Glycol & Amine Filtration
The removal of solid particles from glycol or amine in a gas treatment system is very important for the performance of the equipment. Our filters and cartridges are an excellent choice for this type of filtration application.

General Industrial Filtration
MAHLE filters, with their wide range of capabilities in terms of micron ratings, flow rates and working pressures, are excellent for use in many types of industrial filtration. Contact us to customize a filter system to your application.

6. Optional Corrosion Resistant Epoxy Coating

Longer Life, Lower Cost
The cost of filtering corrosive fluids can be reduced with the AS option for the A series cartridge filter housings. Filtering saltwater and other corrosive fluids has been a problem for operators and engineers. The only choices were between carbon steel vessels with limited life or with expensive all stainless filters. The AS option for the A series filter housing designates construction materials for use in filtering corrosive fluids by utilizing a combination of stainless trim and epoxy lined carbon steel. This design offers the benefit of longer vessel life at a much lower cost than all stainless steel construction.

Corrosion Resistand Epoxy Lining
The A series housing becomes an AS series when the Epoxy Coating is used. Each of the critical areas in the AS filter housings, including the cartridge post receptacles, dirty chamber drain, vent and clean chamber drains, are made of stainless steel. The o-ring seal area is stainless, as well as the wetted area of the closure. The filter is then completely lined with 10-20 mils of heat cured epoxy, which results in all wetted areas being either epoxy lined or stainless steel. The following diagram shows the wetted areas of the housing in either stainless steel or with the epoxy coating.
Features of the “AS” Epoxy Option
- Stainless steel used for critical o-ring seal area
- Wetted surface of closure is stainless steel
- Small threaded fittings throughout vessel are stainless

Heat cured, powdered Epoxy Lining
- Stainless steel threaded cartridge post receptacle
- Standard brass cartridge posts

General Notes
A = Cartridge post
B = Closure seal
C = Inlet
D = Cartridge
E = Outlet
F = Threaded post receptacle

- Epoxy Lining
- Stainless Steel
### 7. Ordering Code

**Example**

<table>
<thead>
<tr>
<th>Material and Closure Style</th>
<th>A</th>
<th>S</th>
<th>21</th>
<th>T</th>
<th>C</th>
<th>20</th>
<th>F</th>
<th>4</th>
<th>B</th>
<th>N</th>
<th>(options)</th>
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</thead>
<tbody>
<tr>
<td>A = Flat top CS</td>
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<td>D = RFWN flange top</td>
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<tr>
<td>F = RFSO flange top</td>
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</tbody>
</table>

**Trim Options**
- Blank = All carbon steel
- A = All 304 SS
- B = 304 SS wetted
- C = Hastelloy C276 wetted
- S = CS/SS trim/epoxy lined
- T = 316 SS wetted
- U = All 316 SS

**Number of Elements**
- Number of 9-3/4 or 10 inch length cartridges, Single length equivalents

**Cartridge Length**
- S = 9-3/4 or 10 inch
- D = 19-1/2 or 20 inch
- T = 29-1/4 or 30 inch
- Q = 40 inch

**ASME Code**
- C = ASME U stamp
- U = ASME UM stamp
- N = Non-code

**Pressure Rating**
- 20 = 200 psi
- 30 = 300 psi
- 74 = 740 psi
- 144 = 1440 psi

**Inlet/Outlet Style**
- F = RFSO
- L = RFLWN
- N = FNPT
- W = RFWN

**Inlet/Outlet Size**
- G = 1/2 inch
- H = 3/4 inch
- I = 1 inch
- J = 1-1/4 inches
- K = 1-1/2 inches
- L = 2 inches
- M = 3-1/2 inches
- N = 4 inches
- P = 6 inches
- Q = 8 inches
- R = 10 inches

**Internal Materials**
- B = Brass
- C = Carbon steel rigid
- J = 222 316 SS threaded
- P = 336 Sock
- Q = 316 Sock
- S = 316 SS rigid

**Closure Seal Material**
- N = Buna
- V = Viton
- E = EPDM
- F = Flat
- S = Teflon encapsulated silicon
- S = Teflon encapsulated viton

(Options)
- Assigned by MAHLE to indicate optional features