Compressed Natural Gas (CNG) Filters

FILTRATION for CNG
- Dryers
- Compressors
- Storage Cascades
- Dispensers

Compressed Natural Gas (CNG) Filters
We understand what service means to you

Products Designed for CNG

- Practical solutions developed from 40 years of experience
- Full range of products for one-stop shopping
- Proven quality on a global scale

Exceptional Technical Support

- Flexible, fully trained technical team
- Expert advice and simple solutions for the right product, every time

Customers First

- Direct line, live support
- Products in stock, ready to ship
- Uncomplicated visual catalogue
XEBEC MISSION

To provide customers with innovative solutions which transform raw natural gas into marketable sources of clean energy.

Expert Problem Solvers on a Global Scale

Founded in 1967, Xebec has over 40 years of experience in adsorption technology, the foundation of all of Xebec’s systems. To date, Xebec has supplied more than 9000 adsorption systems, built to ASME, National Code or PED specifications, to more than 1500 customers worldwide. With major installations throughout North America, China, Russia, Australia, South America, Indonesia and the Middle East, Xebec offers worldwide service and support through a dedicated CNG team, providing design services, installation expertise and systems development for end-to-end solutions.
The Application

What is Compressed Natural Gas (CNG)?

CNG is natural gas that is highly compressed and stored in thick-walled steel, aluminum, or composite high-pressure storage containers. CNG is a clear and non-corrosive alternative transportation fuel for automobiles, trucks and buses. Its use is becoming more and more popular because it is less expensive than gasoline and it is far more friendly to the environment with reductions of CO₂, nitrous-oxide, and particulate emissions. As a result, many governments financially encourage the conversion and use of this alternative fuel as an energy source.

The Problem

In NGV Fueling Stations, natural gas is taken from a pipeline and compressed to pressures ranging from 2000 psig up to 6000 psig. The resulting CNG is then stored in large tanks before making its way to a gas dispenser where it is ready for use in vehicles. CNG, like all fuels, experiences contamination as it travels from pipeline to dispenser. Like traditional fuels, solids collect during handling, water condenses in tanks, and compressor lube oils carry over into the CNG stream. Contaminants are also present within the delivery system that can lead to compressor fouling, vehicle fuel system repair, liquids in storage tanks, and gas dispenser replacement.

The Solution

Filters are essential for compressed natural gas treatment and are present throughout the treatment chain. CNG filters remove all types of solid and liquid contaminants in stages — large amounts of condensate and coarse contamination particles such as rust, abrasion particles, oil droplets, and dust in the first stages; fine oil mist and fine dust particles in subsequent stages. Compressed gas filters containing activated carbon also remove oil and oil vapour.

Typical CNG Fuel Station Layout

A Before drying—upstream filter of adsorption dryer: liquid condensate reduces the drying efficiency of the desiccant used in the dryer while liquid oil contaminates the desiccant bed and damages dryer performance permanently. Therefore, both contaminants must be effectively removed upstream of an adsorption dryer. Installing a lower pressure particulate filter removes pipe scale to prevent dryer and compressor damage.

B Before compression: dust from the dryer must be removed to protect the compressor.
CNG Filters – Design and Accessories

- **Filter Elements**: The core of a compressed gas filter separates levels of contaminants from the compressed gas, depending on the filter media and grade. The element permanently captures the solid particles. It then requires periodic replacement dependent on the level of contamination.

- **Filter Housings**: Pressure housings with a method for supporting the filter element, a compressed gas inlet and outlet with the flow paths to and from the filter element, a condensate outlet for discharging separated liquids, and connections for monitoring the differential pressure across the filter element.

- **Differential Pressure Gauges**: Measure the differential pressure across the filter element. They indicate when a filter element needs to be replaced, either because it has reached the end of its useful life, or large amount of contamination has been discharged upstream.

- **Manual Condensate Drains**: Used for manually discharging the separated liquids and for pressure relief of the filter.

- **Oil Indicators**: Measure the oil aerosol content in the compressed gas. Oil indicators are mainly used to determine the saturation level and whether an activated carbon filter needs to be replaced.

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**C** After compression: medium and high pressure particulate filters and activated carbon elements will remove oil and oil vapour coming from the compressor.

**D** Before CNG is transported from storage to NGV dispenser: pre-filtration of the gas with two-stage coalescing high pressure filters will eliminate solid particles and oil vapours generated by the compressor during underground transit.

**E** For extra protection: high efficiency, high pressure coalescer filters are placed inside the gas dispenser as a final security to protect sensitive metering equipment and prevent oil from making its way into the vehicle.
Overview

What best in class looks like

Surface Protection

The high-grade, cast aluminum filter housings (XL and XM series) are chromatized for corrosion protection and finished with an impact and abrasion-proof powder coating on the outer side. High pressure carbon steel housings (XH series) are manufactured by means of iron phosphate passivation and have a nickel-coated finish. This multi-layer surface protection ensures high resistance and a long service life.

Conformity with International Standards

The X Series has been performance validated according to ISO8573 quality standards and ISO test methods by IUTA, an independent verification body. All filters have been tested to ASME standards, are CRN-registered and comply with EU Pressure Equipment Directive (PED) 97/23/EC.

An Optimized Accessories Range – Perfectly Simple

- Differential pressure gauges
- Oil Indicators
- Condensate drains
- Assembly kits

Simple Design. Easy Maintenance.

Xebec filters have lugs in the lower filter part to which the filter element is securely mounted, fastened and sealed when the housing is screwed tight. That eliminates the need for a tie rod, which allows the filter to be located only a few inches above ground level. A mechanical end stop prevents the housing thread from being overstressed and ensures easy opening of the filter housing even after prolonged operating periods. A hex-nut at the bottom of the bowl has been added for extra help. The filter element holder has guide paths in order for the filter element to be automatically locked in the holder when being installed.

www.xebecinc.com
Filter Media Designed For Natural Gas

High quality compressed gas filtration starts with selecting the correct filter media. Xebec uses superior-quality filter media with a new hybrid technology. Xebec elements stop the perpetual discussion about the use of filter media with or without binders because they are layered with both types, tailored to the filtration task. The fine filter media is protected on both sides using a supporting fabric to increase both stability and reliability.

Pleated Filter Elements

Pleated filter elements provide significantly greater filtration volumes than non-pleated. The higher filter volume provides more void space for holding contaminants which reduces the differential pressure caused by retention of solid particles. The service life of the filter element increases proportionally which results in operating and maintenance cost savings.

Incorporated Drainage Media

The filter and drainage media are compacted between two stainless steel supporting cylinders, eliminating any potential detachment of the filter media. The drainage media is located inside the filter element, eliminating potential handling damage. The stainless steel cylinders have big, diamond-shaped openings for optimum flow conditions. Compared to punch-hole versions, their contribution to differential pressure is much lower and they are much more environmentally friendly because they are made from expanded sheet metal, i.e. without metal scrap during the production process.

2-Stage Dry-Type Separation

During dry-type separation with out-to-inside flow through the filter elements, the drainage media functions as a pre-filter stage, preventing coarse contaminants from entering the fine filter media. As a result, the differential pressure caused by contaminants is reduced and the service life of the filter is extended. As an additional advantage, the filter elements can also be used for wet type filtration.

Abrasion-free Activated Carbon Filter
with 100% Activated Carbon

Both the filter element type and the cartridge type contain pure activated carbon granulate. The increased filling quantities contribute to a high separation performance and a long service life. Both the filter elements and the cartridges have an integrated general purpose filter element which significantly reduces the abrasion particles of the activated carbon. As a result, downstream dust filtration is not required, reducing installation, operation and maintenance costs.

www.xebecinc.com
## Type Of Filtration

Elements come with polymer endcaps but are available with aluminum or stainless steel end caps.

<table>
<thead>
<tr>
<th>Purity Class acc to ISO 8573-1</th>
<th>Water Separator</th>
<th>Coarse, Pre-Filter</th>
<th>General Purpose Filter particulate &amp; coalescing</th>
<th>Fine Filter particulate &amp; coalescing</th>
<th>Super Fine Filter</th>
<th>Water and oil separation</th>
<th>Water vapour adsorption</th>
<th>Oil vapour adsorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordering Example: XE L 203 C A</td>
<td>WS</td>
<td>C</td>
<td>G</td>
<td>F</td>
<td>SF</td>
<td>AC</td>
<td>AAC</td>
<td>ACC</td>
</tr>
<tr>
<td>Type Of Filtration</td>
<td>Water separation</td>
<td>Wet &amp; dry type</td>
<td>Wet &amp; dry type</td>
<td>Wet &amp; dry type</td>
<td>Wet &amp; dry type</td>
<td>Oil vapour adsorption</td>
<td>Water vapour adsorption</td>
<td>Oil vapour adsorption</td>
</tr>
<tr>
<td>Application</td>
<td>Removal of large amounts of liquid.</td>
<td>Removal of large amounts of solid or liquid coarse contaminants.</td>
<td>Removal of medium amounts of solid or liquid fine contaminants.</td>
<td>Removal of small amounts of solid or liquid of fine contaminants. Recommend combining with upstream G or F element in the event of increased amounts of contaminant.</td>
<td>Removal of small amounts of solid or liquid of finest contaminants. Recommend combining with upstream G or F element in the event of increased amounts of contaminant.</td>
<td>Removal of small amounts of gaseous contaminants, in particular, oil vapour. Upstream F or SF element required. No downstream particulate filter required as it comes with integrated G element.</td>
<td>Removal of small amounts of water vapour.</td>
<td>Removal of small amounts of gaseous contaminants, in particular, oil vapour for low volume flow rates. Upstream F or SF element required. No downstream particulate filter required as it comes with integrated G element.</td>
</tr>
</tbody>
</table>

### TO ORDER YOUR ELEMENTS

**ORDERING EXAMPLE:** XE L 203 C A

Coarse, pre-filter element for filter model XL7, with aluminum end caps

<table>
<thead>
<tr>
<th>Filter Element Size</th>
<th>Media Grade (microns)</th>
<th>End Cap</th>
<th>Dimensions</th>
<th>Flow Capacity*</th>
<th>For Filter Housing</th>
</tr>
</thead>
<tbody>
<tr>
<td>103</td>
<td>WS</td>
<td>default: P (polymer)</td>
<td>inches</td>
<td>mm</td>
<td>scfm</td>
</tr>
<tr>
<td>XE_103</td>
<td>ø=1½; h=2</td>
<td>Ø=42; h=53</td>
<td>30</td>
<td>50</td>
<td>XH</td>
</tr>
<tr>
<td>XE_106</td>
<td>ø=2; h=2½</td>
<td>Ø=51; h=59</td>
<td>40</td>
<td>70</td>
<td>XH</td>
</tr>
<tr>
<td>XE_107</td>
<td>ø=2; h=3</td>
<td>Ø=51; h=75</td>
<td>60</td>
<td>100</td>
<td>XL2</td>
</tr>
<tr>
<td>XE_114</td>
<td>ø=2; h=5½</td>
<td>Ø=51; h=144</td>
<td>90</td>
<td>150</td>
<td>XL3</td>
</tr>
<tr>
<td>XE_201</td>
<td>ø=3; h=4½</td>
<td>Ø=75; h=118</td>
<td>150</td>
<td>250</td>
<td>XL5</td>
</tr>
<tr>
<td>XE_203</td>
<td>ø=3; h=8½</td>
<td>Ø=75; h=218</td>
<td>300</td>
<td>450</td>
<td>XL6</td>
</tr>
<tr>
<td>XE_205</td>
<td>ø=3; h=12</td>
<td>Ø=75; h=318</td>
<td>410</td>
<td>700</td>
<td>XL7</td>
</tr>
<tr>
<td>XE_206</td>
<td>ø=3; h=20</td>
<td>Ø=75; h=508</td>
<td>630</td>
<td>1050</td>
<td>XL8</td>
</tr>
<tr>
<td>XE_207</td>
<td>ø=3½; h=30</td>
<td>Ø=92; h=760</td>
<td>820</td>
<td>1400</td>
<td>XL9</td>
</tr>
<tr>
<td>XE_507</td>
<td>ø=5½; h=38</td>
<td>Ø=140; h=755</td>
<td>1240</td>
<td>2100</td>
<td>XL10</td>
</tr>
</tbody>
</table>

*Refers to 1 bar(s) and 68°F / 20°C at 100 psig/7 barg
**Water Separation**

Large, heavy amounts of liquid droplets or particles from a compressed gas flow are separated by means of gravitational forces, centrifugal forces, inertial effects, etc. The differential pressure is constant and a high separation efficiency is guaranteed over the whole specified flow rate range.

**Dry Type Filtration**

Solid contaminants are separated from the compressed gas system. The solids contact the fibres of the filter media where they remain. A coarse and a fine coarse media filter protects the fine filter media, increasing the service life. The differential pressure (dry) increases with an increasing amount of contaminant. The elements can be operated from inside to out or vice versa. The preferred direction of flow is toward the finer filter fibres, i.e. from out-to-in.

**Wet Type Filtration**

Liquid contaminants from the compressed gas flow are separated using a fine multi-layer filter media in combination with a drainage media (coalescing filter). The liquid contaminants contact the fibres of the fine filter media, move along the fibres due to the compressed gas flow and form larger droplets when they are merged (coalescing effect). The droplets are absorbed by the drainage media, discharged to the filter element bottom due to gravitational forces, and dropped off the filter element. Theoretically, the differential pressure (wet) is constant. However, it rises as the filter element is continuously loaded with liquid and solid contaminants. The direction of flow is toward the drainage media, i.e. from in-to-out.

**Oil Vapour Adsorption**

Compressed gas flow is separated by means of absorption to activated carbon. The CNG becomes virtually oil-free which cannot condense into a liquid any more. There is often a filter media downstream of the activated carbon in order to eliminate activated carbon abrasion particles (abrasion-free activated carbon filter). The differential pressure (dry) is constant. The direction of flow is always toward the media, i.e. from in-to-out. Liquid oil or water would dramatically reduce the retention capacity of the activated carbon for oil vapour and should, therefore, be separated in advance using appropriate grade filters.
The XL series of low pressure filters are used to remove solid, liquid and, when using activated carbon cartridges, gaseous contaminants from compressed gas flows. In addition to liquids and dust, these filters eliminate oil droplets and finest dust particles from the compressed gas.

**Filter Elements**

- **WS**: Water Separator Element
- **C**: 3µm Coarse Pre-filter Element
- **G**: 1µm General Purpose Element
- **F**: 0.1µm Fine Element
- **SF**: 0.01µm Super-fine Element
- **AC**: Activated Carbon Element
- **AAC**: Activated Alumina Cartridge
- **MSC**: Molecular Sieve Cartridge
- **ACC**: Activated Carbon Cartridge

**Gauges**

- **G1**
- **G2**
- **G3**

**Manual Drains**

- **D1**
- **D3**
Operating Temperature

°F 32 41 50 59 68 77 86 95 104 122 140 158 176 194 221 230 248
°C 0 5 10 15 20 25 30 35 40 50 60 70 80 90 100 110 120

Orifice Diameter

psig 15 29 44 58 73 87 100 116 131 145 160 174 189 203 218 232 247 261 276 290
barg 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Cft 1.07 1.1 1.04 1.02 1 0.98 0.97 0.95 0.94 0.91 0.88 0.85 0.83 0.81 0.79 0.77 0.75

Flow Correction Factors

To select the right filter use the following formulas and the nominal flow figures from the filter model table:

For calculating Actual Flow Capacity: \( V_a = V_n * \text{Cft} * \text{Cfp} \)

For calculating Nominal Flow Capacity: \( V_n = V_a / \text{Cft} / \text{Cfp} \)

To Order Your XL Filters

ORDERING EXAMPLE: XLC N 5 SF P G1 O1 N

Low pressure CNG filter, ¾" NPT, flow 400 scfm, superfine media grade, DP gauge, manual drain.

Flow Capacity

<table>
<thead>
<tr>
<th>XL Filter Model</th>
<th>NPT Port Size (in)</th>
<th>Filter Element</th>
<th>CNG flow capacity at 290 psig/20 barg*</th>
<th>Dimensions</th>
<th>Volume</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>scfm</td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>1</td>
<td>¼</td>
<td>XEL105</td>
<td>105</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>2</td>
<td>½</td>
<td>XEL107</td>
<td>160</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>3</td>
<td>¾</td>
<td>XEL114</td>
<td>240</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>XEL114</td>
<td>240</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>5</td>
<td>1½</td>
<td>XEL201</td>
<td>400</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>XEL202</td>
<td>780</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>7</td>
<td>2½</td>
<td>XEL203</td>
<td>1080</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>XEL205</td>
<td>1600</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>9</td>
<td>3½</td>
<td>XEL305</td>
<td>2160</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>10</td>
<td>4</td>
<td>XEL307</td>
<td>3260</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
<tr>
<td>11</td>
<td>4½</td>
<td>XEL506</td>
<td>5400</td>
<td>7 ¾</td>
<td>197</td>
<td>3 ¼</td>
</tr>
</tbody>
</table>

*Refers to 1 bar(a) and 68°F/20°C at 290 psig/20barg

Use this table to find your filter model.
XM SERIES

MEDIUM PRESSURE. AMAZING PERFORMANCE.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td>725 psig / 50 barg</td>
</tr>
<tr>
<td>Volume Flow Range</td>
<td>260 to 13,000 scfm – 450 to 22,300 Nm³/h</td>
</tr>
<tr>
<td>Operating Temps</td>
<td>32-176°F (248°F elements available)</td>
</tr>
<tr>
<td></td>
<td>0-80 °C (120°C elements available)</td>
</tr>
<tr>
<td>Port Size</td>
<td>½” to 3” NPT</td>
</tr>
<tr>
<td>Accessories</td>
<td>Differential Pressure Gauge, Manual Drain</td>
</tr>
</tbody>
</table>

The XM series of medium pressure filters are used to remove solid, liquid and, when using activated carbon cartridges, gaseous contaminants from compressed gas flows. In addition to liquids and dust, these filters eliminate oil droplets and finest dust particles from the compressed gas. With AC or ACC grade elements oil aerosols and odours will be removed.

Filter Elements

- **WS**: Water Separator Element
- **C**: 3µm Coarse Pre-filter Element
- **G**: 1µm General Purpose Element
- **F**: 0,1µm Fine Element
- **SF**: 0,01µm Super-fine Element
- **AC**: Activated Carbon Element
- **AAC**: Activated Alumina Cartridge
- **MSC**: Molecular Sieve Cartridge
- **ACC**: Activated Carbon Cartridge

Differential Pressure Drop Indicator

Manual Ball Valve
To Order Your XM Filters

ORDERING EXAMPLE: XMC N 1 6 S G4 N N

Medium pressure CNG filter, ½” NPT, flow 260 scfm, general purpose media, with s/s endcaps, with DP gauge, no drain. No accessories.

Use this table to find your filter model.

<table>
<thead>
<tr>
<th>XM Filter Model</th>
<th>NPT Port Size (in)</th>
<th>Filter Element</th>
<th>CNG Flow capacity at 725 psig/50 barg*</th>
<th>Dimensions</th>
<th>Volume</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>scfm</td>
<td>in³/h</td>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td>1 ½ XEM105</td>
<td>260</td>
<td>450</td>
<td>9 ¾</td>
<td>250</td>
<td>4</td>
<td>102</td>
</tr>
<tr>
<td>2 ¾ XEM107</td>
<td>380</td>
<td>640</td>
<td>9 ¾</td>
<td>250</td>
<td>4</td>
<td>102</td>
</tr>
<tr>
<td>3 XEM114</td>
<td>570</td>
<td>950</td>
<td>9 ¾</td>
<td>250</td>
<td>4</td>
<td>102</td>
</tr>
<tr>
<td>4 1 ½ XEM202</td>
<td>1900</td>
<td>2850</td>
<td>21</td>
<td>535</td>
<td>5 ½</td>
<td>141</td>
</tr>
<tr>
<td>5 1 ½ XEM203</td>
<td>2600</td>
<td>4400</td>
<td>21</td>
<td>535</td>
<td>5 ½</td>
<td>141</td>
</tr>
<tr>
<td>6 2 XEM205</td>
<td>4000</td>
<td>6700</td>
<td>28 ¼</td>
<td>715</td>
<td>5 ½</td>
<td>141</td>
</tr>
<tr>
<td>7 2 XEM305</td>
<td>5200</td>
<td>8900</td>
<td>28 ¼</td>
<td>715</td>
<td>5 ½</td>
<td>141</td>
</tr>
<tr>
<td>8 2 XEM307</td>
<td>7900</td>
<td>13300</td>
<td>37 ¼</td>
<td>945</td>
<td>5 ½</td>
<td>141</td>
</tr>
<tr>
<td>9 3 XEM506</td>
<td>10500</td>
<td>17800</td>
<td>33 ¼</td>
<td>847</td>
<td>7 ½</td>
<td>198</td>
</tr>
<tr>
<td>10 3 XEM507</td>
<td>13000</td>
<td>22300</td>
<td>39 ¼</td>
<td>1010</td>
<td>7 ¾</td>
<td>198</td>
</tr>
</tbody>
</table>

*Refers to 1 bar(a) and 68°F/20°C at 725 psig/50 barg

Flow Correction Factors

To select the right filter use the following formulas and the nominal flow figures from the filter model table:

For calculating Actual Flow Capacity: \[ V_a = V_n \times Cft \times Cf \]

For calculating Nominal Flow Capacity: \[ V_n = V_a / Cft / Cf \]
The XH series of high pressure filters are used to remove solid, liquid and, when using activated carbon cartridges, gaseous contaminants from compressed gas flows. In addition to liquids and dust, these filters eliminate oil droplets and finest dust particles from the compressed gas.

Filter Elements

- **WS** Water Separator Element
- **C** 3µm Coarse Pre-filter Element
- **G** 1µm General Purpose Element
- **F** 0,1µm Fine Element
- **SF** 0,01µm Super-fine Element
- **AC** Activated Carbon Element
- **AAC** Activated Alumina Cartridge
- **MSC** Molecular Sieve Cartridge
- **ACC** Activated Carbon Cartridge

**Manual Needle Valve**

**Pressure** 6000 psig / 420 barg

**Volume Flow Range** 750 to 11,580 scfm – 1,210 to 18,640 Nm³/h

**Operating Temps** 32-176°F (248°F elements available)

0-80 °C (120°C elements available)

**Port Size** ¼” to 2” NPT, SAE option available

**Accessories** Manual Drain
To Order Your XH Filters

ORDERING EXAMPLE: XHC N 5 SF S N D4 N

High pressure CNG filter, 1" NPT, flow 4400 scfm, super fine media element with stainless steel endcaps, no DPI gauge, manual drain. No accessories.

Use this table to find your filter model.

<table>
<thead>
<tr>
<th>XH Filter Model</th>
<th>NPT Port Size (in)</th>
<th>Filter Element</th>
<th>CNG Flow Capacity at 6000 psig/420 barg**</th>
<th>Dimensions</th>
<th>Volume</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>scf/m³</td>
<td>in</td>
<td>mm</td>
<td>in</td>
</tr>
<tr>
<td>1 ¼ XEH103</td>
<td>1</td>
<td>WS</td>
<td>750</td>
<td>1210</td>
<td>6</td>
<td>155</td>
</tr>
<tr>
<td>2 ¼ XEH107</td>
<td>2</td>
<td>WS</td>
<td>1710</td>
<td>2760</td>
<td>7 ¼</td>
<td>193</td>
</tr>
<tr>
<td>3 ¼ XEH114</td>
<td>3</td>
<td>WS</td>
<td>2470</td>
<td>3970</td>
<td>10 ¼</td>
<td>262</td>
</tr>
<tr>
<td>4 ¼ XEH114</td>
<td>4</td>
<td>WS</td>
<td>2470</td>
<td>3970</td>
<td>10 ¼</td>
<td>262</td>
</tr>
<tr>
<td>5 1 XEH201</td>
<td>5</td>
<td>SF (0.01µ)</td>
<td>4430</td>
<td>7130</td>
<td>11 ¼</td>
<td>285</td>
</tr>
<tr>
<td>6 1 XEH202</td>
<td>6</td>
<td>SF (0.01µ)</td>
<td>7400</td>
<td>11910</td>
<td>15 ¼</td>
<td>385</td>
</tr>
<tr>
<td>7 2 XEH203</td>
<td>7</td>
<td>SF (0.01µ)</td>
<td>11580</td>
<td>18640</td>
<td>19 ¼</td>
<td>494</td>
</tr>
</tbody>
</table>

**Refers to 1 bar(a) and 68°F/20°C at 6000 psig/420 barg

Flow Correction Factors

To select the right filter use the following formulas and the nominal flow figures from the filter model table:

For calculating Actual Flow Capacity: \( V_a = V_n \times C_{ft} \times C_{fp} \)

For calculating Nominal Flow Capacity: \( V_n = V_a / C_{ft} / C_{fp} \)

| Operating Temperature | °F | 32 | 41 | 50 | 59 | 68 | 77 | 86 | 95 | 104 | 122 | 140 | 158 | 176 | 194 | 221 | 230 | 248 |
|-----------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cft                   | 1.07 | 1.1 | 1.04 | 1.02 | 1 | 0.98 | 0.97 | 0.95 | 0.94 | 0.91 | 0.88 | 0.85 | 0.83 | 0.81 | 0.79 | 0.77 | 0.75 |

| Operating Pressure | psig | 798 | 870 | 943 | 1015 | 1088 | 1160 | 1233 | 1305 | 1378 | 1450 | 1513 | 1575 | 1638 | 2901 | 3263 | 3626 | 3988 | 4351 | 4713 | 5076 | 5439 | 5801 | 6000 |
|-------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Cfp               | 0.43 | 0.47 | 0.51 | 0.55 | 0.59 | 0.63 | 0.66 | 0.70 | 0.73 | 0.74 | 0.78 | 0.79 | 0.80 | 0.81 | 0.83 | 0.85 | 0.88 | 0.90 | 0.93 | 0.94 | 0.97 | 0.99 | 1    |

To select the right filter use the following formulas and the nominal flow figures from the filter model table:

For calculating Actual Flow Capacity: \( V_a = V_n \times C_{ft} \times C_{fp} \)

For calculating Nominal Flow Capacity: \( V_n = V_a / C_{ft} / C_{fp} \)
**XT SERIES** | **XZ SERIES**

**ENGINEERED FLANGED FILTERS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure</td>
<td><strong>260 psig / 18 barg</strong></td>
</tr>
<tr>
<td>Volume Flow Range</td>
<td><strong>1,250 to 24,300 scfm – 2,100 to 41,280 Nm³/h</strong></td>
</tr>
<tr>
<td>Operating Temps</td>
<td><strong>32-176°F (248°F elements available)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>0-80 °C (120°C elements available)</strong></td>
</tr>
<tr>
<td>Port Size</td>
<td><strong>2&quot; to 12&quot; class 150 Flange</strong></td>
</tr>
<tr>
<td>Standard Model</td>
<td>Carbon Steel Construction, Stainless Steel Internals, Inline (T) or Freestanding (Z)</td>
</tr>
<tr>
<td>Accessories</td>
<td>Differential Pressure Gauge, Manual Drain</td>
</tr>
</tbody>
</table>

**CUSTOM MODELS**
- Larger Flows / Higher Pressures
- Stainless Steel Construction
- Vacuum Applications
- Activated Carbon Tower
- Stainless Steel Internal Parts

**Filter Elements**
- **3µm Coarse Pre-filter Element**
- **1µm General Purpose Element**
- **0.1µm Fine Element**
- **0.01µm Super-fine Element**
- **Activated Carbon Element**

**Gauges**
- **Manual Ball Valve**
- **D3**
- **G1**
- **G2**
- **G3**

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To Order Your XT and XZ Filters

ORDERING EXAMPLE: XTC F 3 SF S G1 N

CNG inline filter, 4” flange connection, flow 2450 scfm, super fine media with stainless steel endcaps, DP gauge, no drain.

Use this table to find your filter model.

**XT INLINE FILTER**

<table>
<thead>
<tr>
<th>Filter Model</th>
<th>Flow Capacity @ 100 psig / 7 bar g</th>
<th>Inlet/Outlet Connection 150µ Flg</th>
<th>Drain Connection NPT</th>
<th>Dimensions</th>
<th>Design Pressure</th>
<th>Weight</th>
<th>Filter Element Quantity/ Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sfcm</td>
<td>Min/hr</td>
<td>in</td>
<td>in</td>
<td>in</td>
<td>in</td>
<td>in</td>
<td>mm</td>
</tr>
<tr>
<td>1</td>
<td>1250</td>
<td>2100</td>
<td>15</td>
<td>17</td>
<td>7</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>2100</td>
<td>3550</td>
<td>15</td>
<td>17</td>
<td>7</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>2450</td>
<td>4100</td>
<td>15</td>
<td>17</td>
<td>7</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>3700</td>
<td>6280</td>
<td>15</td>
<td>17</td>
<td>7</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>5100</td>
<td>8660</td>
<td>15</td>
<td>17</td>
<td>7</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>15000</td>
<td>25400</td>
<td>15</td>
<td>17</td>
<td>7</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>19300</td>
<td>32800</td>
<td>15</td>
<td>17</td>
<td>7</td>
<td>16</td>
<td>10</td>
</tr>
</tbody>
</table>

**Flow Correction Factors**

To select the right filter use the following formulas and the nominal flow figures from the filter model table:

For calculating Actual Flow Capacity: \( V_c = V_f \times C_f \times C_t \)

For calculating Nominal Flow Capacity: \( V_n = V_f / C_f / C_t \)

| Operating | Temperature | psig | barg | °F | °C | 0 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
|-----------|-------------|------|------|----|----|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| psig      | C_f         |      |      |    |    | 0.98 | 0.97 | 0.95 | 0.94 | 0.91 | 0.88 | 0.85 | 0.83 | 0.81 | 0.79 | 0.77 | 0.75 |
| barg      | C_t         |      |      |    |    | 1.07 | 1.04 | 1.02 | 1.01 | 1.00 | 0.98 | 0.97 | 0.95 | 0.94 | 0.91 | 0.88 | 0.85 | 0.83 | 0.81 | 0.79 | 0.77 | 0.75 |

* Consult factory

www.xebecinc.com
Remove bulk water from your compressed gas system

Bulk water, which exists in compressed gas systems, causes corrosion of piping, damage to valves, and reduces the effectiveness of aftercoolers/heat exchangers.

Over 99% of bulk water can be easily and economically removed by installing a type XWS Water Separator. Your gas system will operate much more efficiently with reduced downtime and maintenance costs.

To Order Your Water Separator

ORDERING EXAMPLE: XWSC 3

Use this table to find your water separator model.

Flow Correction Factors
To select the right filter use the following formulas and the nominal flow figures from the filter model table:

For calculating Actual Flow Capacity: \( V_a = V_n \times Cft \times Cfp \)
For calculating Nominal Flow Capacity: \( V_n = V_a / Cft / Cfp \)
### ACCESSORIES

#### G1
- **Name:** Manual Needle Valve Condensate Drain
- **Technical Data:**
  - Max. Pressure: 6000 psig / 420 barg
  - Max. Temperature: 176°F / 80°C
- **For Use With:** XH

#### G2
- **Name:** Manual Needle Valve Condensate Drain
- **Technical Data:**
  - Max. Pressure: 6000 psig / 420 barg
  - Max. Temperature: 176°F / 80°C
- **For Use With:** XH

#### G3
- **Name:** Magnetic Pressure Drop Indicator Differential Manometer
- **Technical Data:**
  - Max. Pressure: 290 psig / 20 barg
  - Max. Temperature: 176°F / 80°C
- **For Use With:** XL, XT, XZ

#### G4
- **Name:** Magnetic Pressure Drop Indicator Differential Manometer
- **Technical Data:**
  - Max. Pressure: 290 psig / 20 barg
  - Max. Temperature: 176°F / 80°C
- **For Use With:** XL, XT, XZ

#### D1
- **Name:** Manual Valve Condensate Drain Stainless Steel
- **Technical Data:**
  - Max. Pressure: 290 psig / 20 barg
  - Max. Temperature: 176°F / 80°C
- **For Use With:** XL

#### D3
- **Name:** Manual Ball Valve Condensate Drain Stainless Steel
- **Technical Data:**
  - Max. Pressure: 290 psig / 20 barg
  - Max. Temperature: 176°F / 80°C
- **For Use With:** XM, XT, XZ, XWS
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Whatever you need for your gas purification and filtration, Xebec can offer a solution. 40 years of experience speak to our solid track record of completing countless projects successfully. By keeping virtually all stages of production in-house, there are practically no limits to what we can achieve. Talk to us about solutions that work for your business.

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