



Separator Cartridges

Filter/Separator 2nd Stage Elements

Features

- Optimum 2nd stage water removal
- Choice of Teflon® Coated Screen, Synthetic or Pleated Paper Media
- Field proven performance
- Largest selection of replacement elements

General

Separator Cartridges are employed as the second stage in filter/separator vessels. Their sole function is to repel coalesced water drops produced by the first stage cartridges while allowing hydrocarbon fluids to pass through. Water drops settle into the filter/separator sump and are not carried downstream. All particle filtering is done by the first stage coalescer cartridge.

How Separator Cartridges Work

Flow direction is from outside-to-inside. The top photo insert shows water being repelled by the hydrophobic separator medium on the cartridge's outside surface. Hydrocarbon fluids, on the other hand, easily pass through and exit the separator cartridge. Cartridges with three different types of repelling media are offered:

TCS Teflon Coated Screen Cartridges are, by far, the most popular type of separator cartridge. With proper cleaning and inspection (see Velcon Form #1242), cost effective TCS elements can be *reused* over many coalescer cartridge changeout cycles. And, TCS cartridges generate considerably less static charge than pleated paper cartridges. These features have made them the preferred choice for aircraft fueling applications.

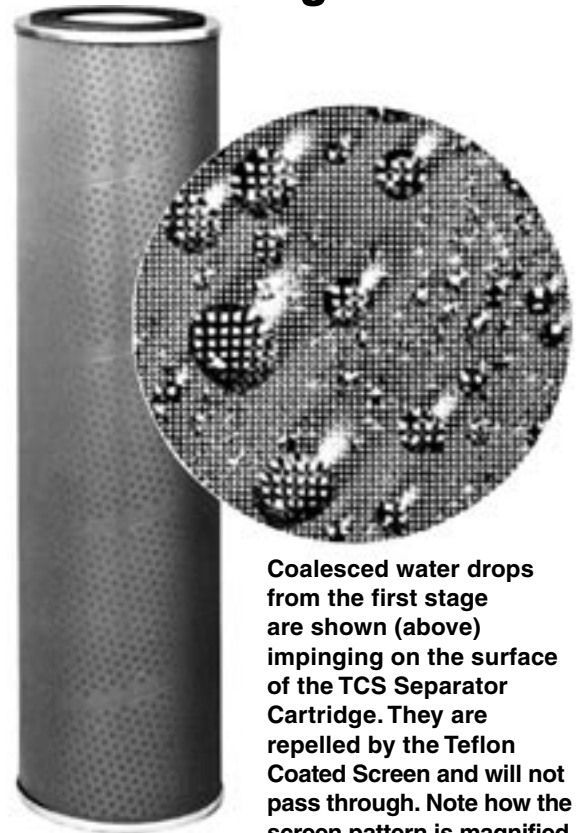
Pleated Paper Cartridges cannot be reused and are replaced at every coalescer cartridge changeout. They are often used with diesel and other fuel oils which may contain materials that adhere to TCS cartridges and cannot be cleaned off.

Synthetic Media Cartridges can be cleaned a maximum of two times. They are lower in price than TCS cartridges and are intended for customers who do not want to take the time to clean separators (see Form #1806).

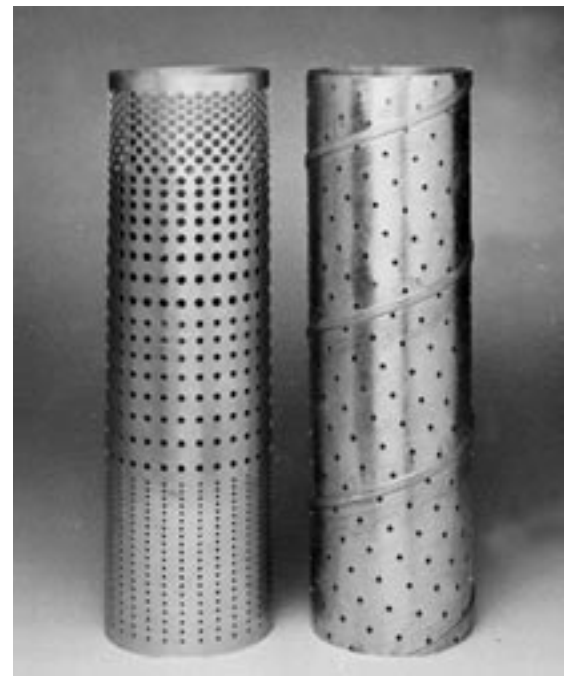
Separator Cartridge Performance

Maintaining a uniform flow along the length of the cartridge optimizes performance and reduces the number of cartridges required. Flow is controlled by a tube, inside each cartridge, through which the hydrocarbon fluid exits the cartridge and the filter/separator vessel. Two styles of inner tube are offered. See bottom photo.

Cartridges with uniform hole pattern inner tubes are adequate for many applications. However, where optimum flow distribution is required, cartridges with variable hole pattern inner tubes are recommended. When converting older equipment, a lesser number of variable hole pattern cartridges is usually required. Operating costs will be reduced.



Coalesced water drops from the first stage are shown (above) impinging on the surface of the TCS Separator Cartridge. They are repelled by the Teflon Coated Screen and will not pass through. Note how the screen pattern is magnified by the drops.



Variable Hole Pattern
Inner Tube

Uniform Hole Pattern
Inner Tube

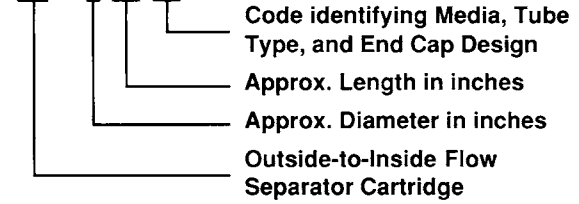
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Separator Cartridges

Model number system. Refer to box at right and table below. Note that "C" in the code always means a Uniform hole pattern inner tube with TCS media, and "V" means Variable hole pattern with TCS media. Blind caps have a hole for the tie rod.

Velcon Model Numbers include significant product information. **Example:**

SO - 6 3 6 P V



Cartridge Code Identification Table

| Model Number | Flow Control Hole Pattern | OD | Mounting End ID | Opposite End ID | Media |
|---------------------------|---------------------------|----------------------------------|-----------------------------------|---------------------------------|---------------|
| SO-3xxC | Uniform | 3 ¹ / ₁₆ " | 1 ¹⁵ / ₁₆ " | Blind | TCS |
| SO-3xxV | Variable | 3 ¹ / ₁₆ " | 1 ¹⁵ / ₁₆ " | Blind | TCS |
| SO-4xxC | Uniform | 4 ⁹ / ₁₆ " | 3 ¹ / ₂ " | Blind | TCS |
| SO-4xxV | Variable | 4 ⁹ / ₁₆ " | 3 ¹ / ₂ " | Blind | TCS |
| SO-6xxC | Uniform | 6" | 3 ¹ / ₂ " | 3 ¹ / ₂ " | TCS |
| SO-6xxCM | Uniform | 6" | 4 ¹ / ₂ " | Blind | TCS |
| SO-6xxVA (5) | Variable | 6" | 3 ¹ / ₂ " | Blind | TCS |
| SO-6xxV (5) | Variable | 6" | 4 ¹ / ₂ " | Blind | TCS |
| SO-6xxPV (5) | Variable | 6" | 4 ¹ / ₈ " | Blind | TCS |
| SO-6xxPLF3 ⁽ⁿ⁾ | Uniform | 6" | 3 ¹ / ₂ " | 3 ¹ / ₂ " | Pleated Paper |
| SO-6xxPLBZ ⁽ⁿ⁾ | Uniform | 6" | 3 ¹ / ₂ " | Blind | Pleated Paper |
| SO-6xxCSN* | Uniform | 6" | 3 ¹ / ₂ " | 3 ¹ / ₂ " | Synthetic |
| SO-6xxCMSN* | Uniform | 6" | 4 ¹ / ₂ " | Blind | Synthetic |
| SO-6xxCPSN* | Uniform | 6" | 4 ¹ / ₈ " | Blind | Synthetic |

Table Notes

SO Series Cartridge listed in Code Identification Table at left are the most commonly used types. A variety of other styles are available for special applications. Contact your Velcon distributor for details.

SO-6xxPLF3 Pleated Separators come in lengths of 11.25, 14.5, 16.25, 29.0, and 33.12 inches. Frequently, they are installed in stacks of two or three cartridges. SO-6xxC cartridges are available in these same stackable lengths plus longer lengths. However, single-unit designs are recommended for installation ease and lower cost. Other styles listed in Table are not intended to be stacked.

Velcon variable size hole pattern cartridges should not be replaced with uniform hole pattern cartridges unless appropriate full-scale test data can be supplied showing equivalent performance.

For more information about API/IP 1581 5th Ed qualified separators, please see data sheet 1923.

SO-6xxCSN/CMSN/CPSN separators are intended for customers who want a lower cost separator for disposal rather than clean and re-use (can be cleaned a maximum of two times).

1. Please note: The shelf life for pleated paper separators (for example, SO-XXXPLF3 and SO-6XXPLBZ) is one year.
* U.S. Patent No. 6,068,723 and 6,415,930

General Specifications

- TCS medium is 200 mesh stainless steel screen coated on both sides with green Teflon. The screen is lockseam folded and fastened with an internal aluminum clip.
- End caps and tubes are aluminum.
- Gaskets are Buna-N.
- Pleated medium is silicone treated resin impregnated paper with a protective outer aluminum screen jacket.
- pH range is 5 to 9.
- Maximum operating temperature is 200°F.



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