

Inline Right Angle Vacuum Filters

CSL Series 3/8" - 4"

Overview

Solberg's CSL Series is designed to protect equipment from contaminants carried over from a variety of industrial processes. Ideal for rough-medium vacuum service, the CSL can be utilized in systems where standard duty flanges and threaded connections are acceptable. Multiple filter element media options offer superior protection and longevity for the vacuum system.

Benefits

- Large holding capacity and easy field cleaning, especially when mounted horizontally or inverted
- Low pressure design

Features

- Seamless drawn housings
- O-ring seal
- Corrosive resistant black powder coat carbon steel
- Stainless steel torsion clips for durability

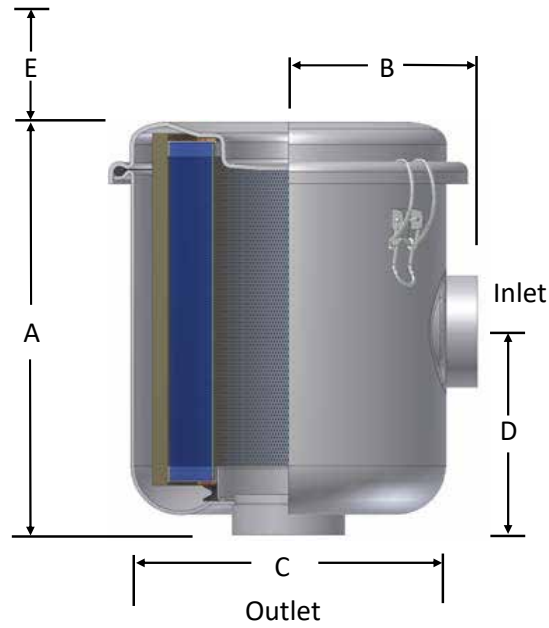
Technical Specifications

- Vacuum Rating: medium vacuum service*
- Temp (continuous): min -26°C (-15°F) max 104°C (220°F)
- Filter change out differential: 37-50 mbar over initial ΔP
- Polyester: 99%+ removal efficiency standard to 5 micron
- Paper: 99%+ removal efficiency standard to 2 micron

Options ATEX Available

- Vacuum gauge
- Higher holding capacity configurations available (select models)
- Material/Finishes: stainless steel, epoxy coating
- Support brackets
- Alternative top-to-canister fastening system for low pressure or pulsating systems
- Stainless steel (select models)





| Inlet/Outlet Size | Type | Assembly m ³ /hr Rating | Assembly Part Number | | Dimensions - mm | | | | Suggested Service ht. E | Approx. Weight (kg) | Replacement Element Part No. | | Element m ³ /hr Rating |
|----------------------|------|--|----------------------|----------------|-----------------|-----|-----|-----|-------------------------------|---------------------------|---------------------------------|-------|---|
| | | | Polyester | Paper | A | B | C | D | | | Polyester | Paper | |
| 3/8" | BSPP | 31 | CSL-825-039HCB | CSL-824-039HCB | 85 | 54 | 95 | 46 | 76 | 0.40 | 825 | 824 | 43 |
| 1/2" | BSPP | 31 | CSL-825-051HCB | CSL-824-051HCB | 89 | 57 | 95 | 49 | 76 | 0.40 | 825 | 824 | 43 |
| 1/2" | BSPP | 34 | CSL-843-051HCB | CSL-842-051HCB | 103 | 76 | 146 | 64 | 83 | 1.4 | 843 | 842 | 94 |
| 3/4" | BSPP | 41 | CSL-825-076HCB | CSL-824-076HCB | 89 | 58 | 95 | 50 | 76 | 0.40 | 825 | 824 | 43 |
| 3/4" | BSPP | 43 | CSL-843-076HCB | CSL-842-076HCB | 103 | 76 | 146 | 64 | 83 | 1.4 | 843 | 842 | 94 |
| 1" | BSPP | 60 | CSL-843-101HCB | CSL-842-101HCB | 111 | 83 | 146 | 67 | 83 | 1.4 | 843 | 842 | 94 |
| 1" | BSPP | 68 | CSL-849-101HCB | CSL-848-101HCB | 170 | 105 | 187 | 114 | 133 | 2.3 | 849 | 848 | 196 |
| 1 1/4" | BSPP | 94 | CSL-843-126HCB | CSL-842-126HCB | 111 | 83 | 146 | 67 | 83 | 1.4 | 843 | 842 | 94 |
| 1 1/4" | BSPP | 102 | CSL-849-126HCB | CSL-848-126HCB | 170 | 105 | 187 | 114 | 133 | 2.3 | 849 | 848 | 196 |
| 1 1/2" | BSPP | 136 | CSL-849-151HCB | CSL-848-151HCB | 171 | 105 | 187 | 114 | 133 | 2.3 | 849 | 848 | 196 |
| 2" | BSPP | 298 | CSL-851-201HCB | CSL-850-201HCB | 260 | 114 | 222 | 127 | 235 | 6.8 | 851 | 850 | 493 |
| 2 1/2" | BSPP | 357 | CSL-851-251HCB | CSL-850-251HCB | 271 | 130 | 222 | 140 | 235 | 6.8 | 851 | 850 | 493 |
| 3" | BSPP | 510 | CSL-239-301HCB | CSL-238-301HCB | 362 | 184 | 337 | 182 | 279 | 15 | 239™ | 238™ | 969 |
| 3" | BSPT | 510 | CSL-2541-301B | CSL-2540-301B | 391 | 216 | 337 | 216 | 305 | 14 | 2541 | 2540 | 1360 |
| 4" | BSPT | 880 | CSL-2541-401B | CSL-2540-401B | 416 | 242 | 337 | 241 | 305 | 15 | 2541 | 2540 | 1360 |

*See Vacuum Filter Technical Data for Vacuum Service Data.



Inline Right Angle Vacuum Filters

CSL Series 3" - 6", DN80 - DN300

Overview

Solberg's CSL Series is designed to protect equipment from contaminants carried over from a variety of industrial processes. Ideal for rough-medium vacuum service, the CSL can be utilized in systems where standard duty flanges and threaded connections are acceptable. Multiple filter element media options offer superior protection and longevity for the vacuum system.

Benefits

- Reduce piping costs with multiple mounting configurations (mount horizontal or inverted)
- Minimize equipment pressure-drop change with low pressure-drop filter design

Features

- Heavy duty T-bolts for easy maintenance
- Corrosive resistant black powder coat carbon steel
- O-ring stays in place with unique U-channel groove
- Inlet & outlet 1/4" gauge taps
- Lifting lugs
- Brackets for optional support legs
- Nameplate bracket

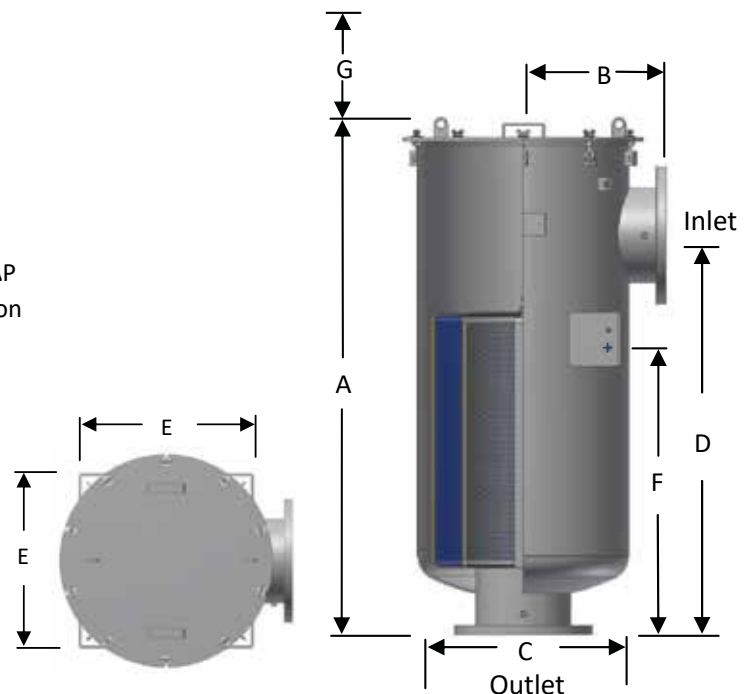
Technical Specifications

- Vacuum Rating: medium vacuum service*
- Filter change out differential: 37-50 mbar over initial ΔP
- Polyester: 99%+ removal efficiency standard to 5 micron
- Paper: 99%+ removal efficiency standard to 2 micron

Options



- Straight-through configurations
- Specialty filter media
- Stainless steel
- Various nonstandard finishes and connection styles
- ISO flange
- PN6, PN16 flange patterns
- Flange faces and internal surfaces free of paint
- Mounting housing bands

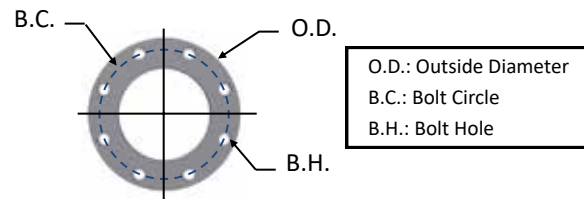


Flanged Assemblies

| Flange Inlet & Outlet | Assembly m ³ /hr Rating | Assembly Part Number | | Dimensions - mm | | | | | | Suggested Service ht. G | Approx. Weight (kg) | Replacement Element Part No. | | Element m ³ /hr Rating |
|-----------------------|------------------------------------|--------------------------------|--------------------------------|-----------------|-----|-----|------|-----|-----|-------------------------|---------------------|------------------------------|-----------------------|-----------------------------------|
| | | Polyester | Paper | A | B | C | D | E | F | | | Polyester | Paper | |
| DN80 | 510 | CSL-235P-DN80 | CSL-234P-DN80 | 695 | 229 | 356 | 470 | 300 | 312 | 305 | 28 | 235P™ | 234P™ | 970 |
| DN80 | 510 | CSL-335P-DN80 | CSL-334P-DN80 | 695 | 229 | 356 | 470 | 300 | 312 | 432 | 29 | 335P™ | 334P™ | 1360 |
| DN100 | 885 | CSL-235P-DN100 | CSL-234P-DN100 | 695 | 229 | 356 | 470 | 300 | 312 | 305 | 28 | 235P™ | 234P™ | 970 |
| DN100 | 885 | CSL-335P-DN100 | CSL-334P-DN100 | 695 | 229 | 356 | 470 | 300 | 312 | 432 | 29 | 335P™ | 334P™ | 1360 |
| DN125 | 1360 | CSL-245P-DN125 | CSL-244P-DN125 | 730 | 279 | 470 | 495 | 377 | 347 | 305 | 40 | 245P™ | 244P™ | 1500 |
| DN125 | 1360 | CSL-345P-DN125 | CSL-344P-DN125 | 730 | 279 | 470 | 495 | 377 | 347 | 432 | 41 | 345P™ | 344P™ | 1870 |
| DN150 | 1870 | CSL-275P-DN150 | CSL-274P-DN150 | 755 | 305 | 470 | 521 | 377 | 365 | 305 | 50 | 275P™ | 274P™ | 1870 |
| DN150 | 1870 | CSL-375P-DN150 | CSL-374P-DN150 | 755 | 305 | 470 | 521 | 377 | 365 | 432 | 51 | 375P™ | 374P™ | 2550 |
| DN200 | 3060 | CSL-377P-DN200 | CSL-376P-DN200 | 991 | 356 | 572 | 648 | 484 | 464 | 432 | 83 | 377P™ | 376P™ | 3105 |
| DN250 | 4930 | CSL-385P-DN250 | CSL-384P-DN250 | 1156 | 406 | 686 | 864 | 560 | 598 | 432 | 115 | 385P™ | 384P™ | 5610 |
| DN300 | 7990 | CSL-485P-DN300 | CSL-484P-DN300 | 1156 | 406 | 686 | 864 | 560 | 642 | 610 | 125 | 485P™ | 484P™ | 8000 |
| DN250 | 4930 | CSL-685P-DN250 | CSL-384P(2)-DN250 ⁺ | 1480 | 406 | 686 | 1143 | 560 | 820 | 787 | 171 | 685P™ | 384P™(2) ⁺ | 11220 |
| DN300 | 8415 | CSL-685P-DN300 | CSL-384P(2)-DN300 ⁺ | 1480 | 406 | 686 | 1143 | 560 | 820 | 787 | 171 | 685P™ | 384P™(2) ⁺ | 11220 |
| DN300 | 8415 | CSL-485P(2)-DN300 ⁺ | CSL-484P(2)-DN300 ⁺ | 1785 | 406 | 686 | 1448 | 560 | 547 | 610 | 209 | 485P™(2) ⁺ | 484P™(2) ⁺ | 16000 |

⁺Denotes 2 elements stacked in housing.

| PN10 Pattern Flange | Dimensions - mm | | | No. of Holes | Flange Thickness mm |
|---------------------|-----------------|------|------|--------------|---------------------|
| | O.D. | B.C. | B.H. | | |
| DN80 | 200 | 160 | 18 | 8 | 20 |
| DN100 | 220 | 180 | 18 | 8 | 22 |
| DN125 | 250 | 210 | 18 | 8 | 22 |
| DN150 | 285 | 240 | 22 | 8 | 24 |
| DN200 | 340 | 295 | 22 | 8 | 24 |
| DN250 | 395 | 350 | 22 | 12 | 26 |
| DN300 | 445 | 400 | 22 | 12 | 26 |



All flanges are oriented "split center".

BSPT Assemblies

| BSPT Inlet & Outlet | Assembly m ³ /hr Rating | Assembly Part Number | | Dimensions - mm | | | | | | Suggested Service ht. G | Approx. Weight (kg) | Replacement Element Part No. | | Element m ³ /hr Rating |
|---------------------|------------------------------------|----------------------|--------------|-----------------|-----|-----|-----|-----|-----|-------------------------|---------------------|------------------------------|-------|-----------------------------------|
| | | Polyester | Paper | A | B | C | D | E | F | | | Polyester | Paper | |
| 3" | 510 | CSL-235P-301 | CSL-234P-301 | 695 | 229 | 356 | 470 | 300 | 312 | 305 | 21 | 235P™ | 234P™ | 970 |
| 3" | 510 | CSL-335P-301 | CSL-334P-301 | 695 | 229 | 356 | 470 | 300 | 312 | 432 | 23 | 335P™ | 334P™ | 1360 |
| 4" | 885 | CSL-235P-401 | CSL-234P-401 | 695 | 229 | 356 | 470 | 300 | 312 | 305 | 23 | 235P™ | 234P™ | 970 |
| 4" | 885 | CSL-335P-401 | CSL-334P-401 | 695 | 229 | 356 | 470 | 300 | 312 | 432 | 25 | 335P™ | 334P™ | 1360 |
| 5" | 1360 | CSL-245P-501 | CSL-244P-501 | 730 | 279 | 470 | 495 | 377 | 347 | 305 | 37 | 245P™ | 244P™ | 1500 |
| 5" | 1360 | CSL-345P-501 | CSL-344P-501 | 730 | 279 | 470 | 495 | 377 | 347 | 432 | 40 | 345P™ | 344P™ | 1870 |
| 6" | 1870 | CSL-275P-601 | CSL-274P-601 | 755 | 305 | 470 | 521 | 377 | 365 | 305 | 43 | 275P™ | 274P™ | 1870 |
| 6" | 1870 | CSL-375P-601 | CSL-374P-601 | 755 | 305 | 470 | 521 | 377 | 365 | 432 | 44 | 375P™ | 374P™ | 2550 |

*See Vacuum Filter Technical Data for vacuum service data and sizing guidelines.



Technical Data

Inlet Vacuum Filters

Applications & Equipment

- Industrial & Severe Duty
- Vacuum Pumps & Systems: Roots, Rotary Vane, Screw, Piston
- Vacuum Packaging Equipment
- Vacuum Furnace
- Blowers: Side Channel & P.D.
- Vacuum Lifters
- Intake Suction Filters
- Food Industry
- Woodworking/Routers
- Ash Handling
- Printing Industry
- Medical/Hospital
- Sterilization
- Remote Installations for Piston & Screw Compressors
- Paper Processing
- Waste Water Aeration
- Cement Processing
- Bag House Systems
- Vacuum Vent Breathers
- Chemical Processing
- Factory Automation Equipment
- Leak Detection Systems
- Semiconductor / Solar

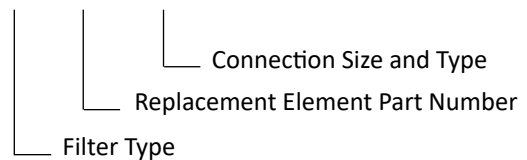
Identification

Standard Solberg assemblies should have an identification label/nameplate that gives the following information:

- Assembly Model #
- Replacement Element #

The part number designates the filter type, the element configuration and housing connection size. For example, the following part number identifies the filter as being a “CSL” design filter with a “235™” element, “P” prefilter and DN100 flange connection size.

CSL-235P-DN100



Vacuum Service Rating Chart

Threaded vacuum filter connections must be free of defect and properly sealed to achieve deeper vacuum levels. Vacuum service levels are given for reference only and serve as a guideline for product selection. Product certification and alternative designs are available for applications requiring deeper vacuum levels and specific leak rates. Please contact factory for details.

| Vacuum Level | Pressure (mbar) | Pressure (Torr) | Pressure (Pa) |
|----------------------|--|--|--|
| Atmospheric Pressure | 1013 | 760 | 1.013x10 ⁺⁵ |
| Rough Vacuum | 1013 to 33 | 760 to 25 | 1x10 ⁺⁵ to 3x10 ⁺³ |
| Medium Vacuum | 33 to 1.3x10 ⁻³ | 25 to 1x10 ⁻³ | 3x10 ⁺³ to 1x10 ⁻¹ |
| High Vacuum | 1.3x10 ⁻³ to 1.3x10 ⁻⁹ | 1x10 ⁻³ to 1x10 ⁻⁹ | 1x10 ⁻¹ to 1x10 ⁻⁷ |

Choosing the Best Filter for Your Equipment

A. When the connection & airflow is known:

1. Select the appropriate connection style. (i.e.: BSPT, Flange, BSPP, etc.)
 - a. Verify assembly m³/hr (flow) rating. Compare with your required airflow.
(Note: Assembly flow ratings are based on 6,000 FPM or 30m/sec for a given connection size to achieve low pressure drop performance. When required flow exceeds assembly flow rating, the pressure drop through the outlet connection will increase. In such cases select by element m³/hr (flow) rating.)
 - b. Verify that the flow rating matches connection size; skip to “C. Selecting Elements”.

B. When the connection size is unknown, flexible, or the required flow rating exceeds assembly flow rating:

1. Match required flow rating with the element flow rating.
2. Choose related connection size.

C. Selecting Elements: The filter performance is influenced by the actual application duty and the equipment it is installed on. Regular maintenance checks and proper servicing is required.

Application Duty Descriptions:

Industrial Duty: clean workshop or clean outdoor environment - small element sizing is sufficient.

Severe Duty: dirty workshop, wastewater – medium to large element is recommended.

Extreme Duty: cement, steel making, plastics or dusty material conveying – largest element sizing is recommended.

1. Select media required by your application. Options include:
 - a. Standard media
 1. Polyester: all purpose; withstands pulses, moisture, and oily air
 2. Paper: mostly dry, smooth flow applications
 - b. Special Media: for a variety of micron levels and media types, see the “Filter Media Specifications” in the Replacement Element Section or contact Solberg.
2. Select element size by matching the element with the anticipated duty and upsize accordingly.

Filter Assembly Maintenance

Request the appropriate maintenance manual for more in-depth information from your Solberg representative or on our website: www.solbergmfg.com.

Element Maintenance

Solberg elements should be replaced once the pressure drop reaches 37-50 mbar above the initial pressure drop of the installation. Cleaning the element is also an option.

Solberg recommends replacing dirty elements for optimal performance. Any damage which results from by-pass or additional pressure drop created by element cleaning is the sole responsibility of the operator.

Note: The overall performance of a filter element is altered once cleaned. The initial pressure drop after subsequent cleanings will be greater than the original, clean pressure drop of the element. After each cleaning, the pressure drop will continue to increase. Under all circumstances, the initial pressure drop of the element needs to be maintained at less than 37 mbar.

If the pressure drop exceeds 50 mbar at start-up; it should be replaced with a new element. With many types of equipment, the maximum pressure drop allowed will be dictated by the ability of the equipment to perform to its rated capacity. Under all circumstances, the operator should avoid exceeding the manufacturer’s recommended maximum pressure drop for their specific equipment.

