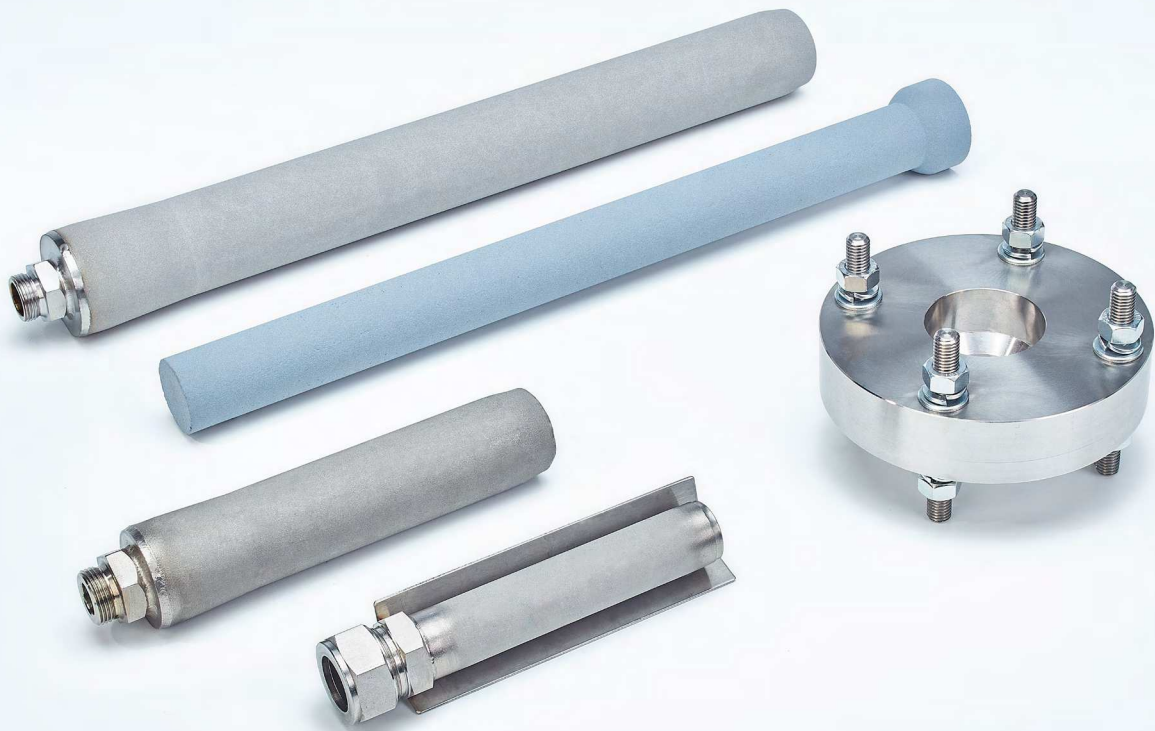


# Product Group Pre-Filters.

Product Category Gas Sampling.





Pre-filters for series SP®

## Pre-Filters for Gas Sample Probes Series SP®

Version SP2000/V20 with G 3/4" connection,  
SP2000/V12 with flange connection,  
Version SP2000/20SS 150 with tube connection

### Special Features

- For dust load > 2 g/m<sup>3</sup>
- Sampling temperature up to max. 1000 °C [3272 °F]
- Various dimensions
- Great variety of materials
- Large filter surface
- Back-purging possible
- Easy mounting

### Application

The M&C-pre-filters are used together with M&C gas sample probes series SP® for continuous gas sampling in processes with increased dust levels.

The feeding of process gas is carried out via the three longitudinal slots distributed over the 180° circumference of the tube. The special two-layer design of the pre-filters /V12-1 and /V12-3 ensures a particularly high back-purging effect.

### Description

The large active surface of the M&C pre-filters ensures a long service life, since even with a higher sample gas flow rate, there is only a very low differential pressure at the filter matrix between the clean gas and the raw gas side and this prevents solid particles from penetrating into the depth of the filter pore structure. They are deposited as "filter cake" on the filter surface and act as a pre-filtration layer to extend the service life.

Depending on manufacturing, the pre-filters /V20 and /V12 are partially made of different material combinations, see table. To reduce the lag time in case of a low sample gas flow, pre-filters with volume displacer have to be used.

The M&C-pre-filters SP2000 /V20, /V12 and /20SS are selected according to the specific application. The basis for selection are the process parameters, i.e. the gas compounds, dust load, particle size distribution, water vapor saturation, temperature, pressure and flow rate.

The M&C tube pre-filters /V20-T made of PTFE with interwoven metal threads to reduce the surface resistance (to avoid electrical charging) has excellent back-purging properties. It is used, for example, to extract gas from coal bunkers with a high content of fine dust.

The M&C pre-filters /V20 are equipped with a welded thread connector for installation into the mounting flange of the M&C gas sample probe. For an optimum sampling position in the process, the pre-filters /V20 can be mounted to the sample probe via an extension tube /Vm.

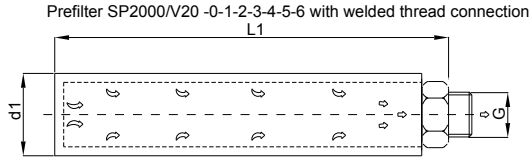
The pre-filter /20SS 150 is used for direct mounting on the M&C sample tubes SP2000/SS. It is supplied with a shape protection plate and a tube fitting with a double cutting ring.

If there are problems e.g. in case the installation depth for a pre-filter is too small or the flow rate is too high, or the dust level or the temperature are too high, then the electrically heated adapter tube /AR should be used. It is equipped with a flange connection on both sides and is to be mounted on the plant's sampling nozzle.

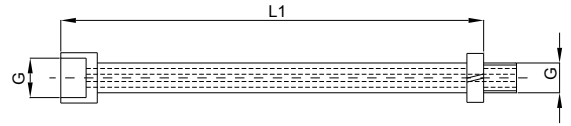
In case of a high flow rate of the process gas, shape protection plates /AB are used in order to protect the pre-filters /V20 against abrasion.

The pre-filters /V12 are equipped with a mounting flange adapter made of stainless steel with 4 welded-in threaded bolts for easy installation. The pre-filter versions /V12, /SS, /V12, /IC are equipped with a welded protection tube out of stainless steel or Incoloy on the mounting flange adapter.

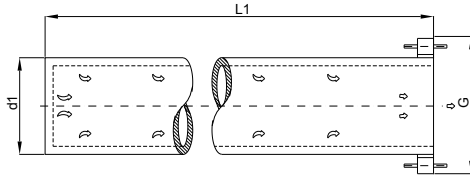
# Dimensions



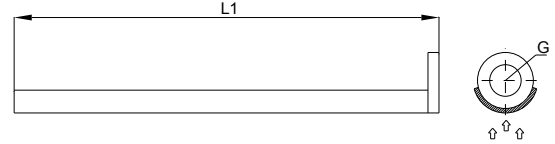
Extension tube SP2000/Vm...



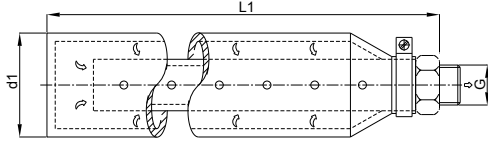
Prefilter SP2000/V12... with mounting flange adaptor



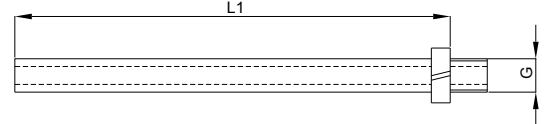
Shape protection plate SP2000/AB..



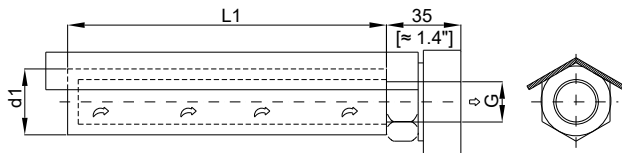
Tube prefilter SP2000/V20-T including support tube with thread connection



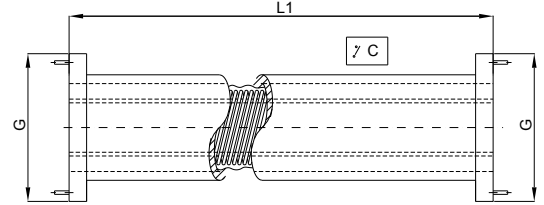
Volume displacer V12-2/3



Prefilter SP2000/20SS 150 with tube fitting and shape protection plate



Heated adaptor tube SP2000-H/AR



Dimensions in mm [Inches]

## Technical Data

| M&C Probe Pre-filters Type    | Part No. | Temp. max. °C [°F] | Material Filter/Connection             | Filter porosity µm | Dust content g/m <sup>3</sup> | Internal volume displacer | Back-purging      | Length "L1" mm [Inch]       | Filter ø "d1" mm | Connection "G" |
|-------------------------------|----------|--------------------|--|--------------------|-------------------------------|---------------------------|-------------------|-----------------------------|------------------|----------------|
| SP2000/20SS 150               | 20S9160  | 600 [1112]         | SS 316L/316Ti                          | 20                 | 2-10                          |                           | Yes               | 150 [≈ 5.9"]                | 31               | ø 25           |
| SP2000/V20                    | 20S9085  | 600 [1112]         | SS 316L/316Ti                          | 2                  | 2-10                          |                           | Yes               | 220 [≈ 8.7"]                | 51               | G 3/4" a       |
| SP2000/V20-0                  | 20S9105  | 600 [1112]         | SS 316L/316Ti                          | 2                  | 2-10                          | X                         | Yes               | 220 [≈ 8.7"]                | 51               | G 3/4" a       |
| SP2000/V20/HC                 | 20S9095  | 900 [1652]         | HastelloY-C                            | 2                  | 2-10                          |                           | Yes               | 220 [≈ 8.7"]                | 51               | G 3/4" a       |
| SP2000/V20-0/HC               | 20S9115  | 900 [1652]         | HastelloY-C                            | 2                  | 2-10                          | X                         | Yes               | 220 [≈ 8.7"]                | 51               | G 3/4" a       |
| SP2000/V20-T                  | 20S9315  | 200 [392]          | PTFE/SS 316Ti                          | 3                  | > 10                          |                           | Yes <sup>4)</sup> | 400 [≈ 15.7"]               | 65               | G 3/4" a       |
| SP2000/V20-2                  | 20S9125  | 600 [1112]         | SS 316L/316Ti                          | 2                  | > 10                          |                           | Yes               | 520 [≈ 20.5"]               | 60               | G 3/4" a       |
| SP2000/V20-1                  | 20S9145  | 600 [1112]         | SS 316L/316Ti                          | 2                  | > 10                          | X                         | Yes               | 520 [≈ 20.5"]               | 60               | G 3/4" a       |
| SP2000/V20-2/HC               | 20S9135  | 900 [1652]         | HastelloY-C                            | 2                  | > 10                          |                           | Yes               | 520 [≈ 20.5"]               | 60               | G 3/4" a       |
| SP2000/V20-1/HC               | 20S9155  | 900 [1652]         | HastelloY-C                            | 2                  | > 10                          | X                         | Yes               | 520 [≈ 20.5"]               | 60               | G 3/4" a       |
| SP2000/V20-4 <sup>1)</sup>    | 20S9290  | 600 [1112]         | SS 316L/316Ti                          | 2                  | 2-10                          |                           | Yes               | <sup>1)</sup> 300 [≈ 11.8"] | 31               | G 3/4" a       |
| SP2000/V20-3 <sup>1)</sup>    | 20S9300  | 600 [1112]         | SS 316L/316Ti                          | 2                  | 2-10                          | X                         | Yes               | <sup>1)</sup> 300 [≈ 11.8"] | 31               | G 3/4" a       |
| SP2000/V20-5                  | 20S9127  | 500 [932]          | SS 316L/316Ti                          | 3                  | 2-10                          |                           | Yes <sup>4)</sup> | 220 [≈ 8.5"]                | 50               | G 3/4" a       |
| SP2000/V20-6                  | 20S9128  | 500 [932]          | SS 316L/316Ti                          | 3                  | > 10                          |                           | Yes <sup>4)</sup> | 520 [≈ 20.5"]               | 60               | G 3/4" a       |
| SP2000/V12-1                  | 20S9500  | 1000 [1832]        | Ceramic <sup>5)</sup> /SS 316Ti        | 1                  | > 10                          |                           | Yes <sup>4)</sup> | 500 [≈ 19.5"]               | 40               | DN 65 PN 6     |
| SP2000/V12-3                  | 20S9510  | 1000 [1832]        | Ceramic <sup>5)</sup> /SS 316Ti        | 1                  | > 10                          | Optional                  | Yes <sup>4)</sup> | 1000 [≈ 39.4"]              | 60               | DN 65 PN 6     |
| SP2000/V12-2                  | 20S9505  | 1000 [1832]        | Ceramic <sup>5)</sup> /SS 316Ti        | 2                  | > 10                          | Optional                  | Yes               | 1000 [≈ 39.4"]              | 60               | DN 65 PN 6     |
| SP2000/V12-1/SS <sup>2)</sup> | 20S9525  | 600 [1112]         | Ceramic <sup>5)</sup> /SS 316Ti        | 1                  | > 10                          |                           | Yes <sup>4)</sup> | 500 [≈ 19.7"]               | 40               | DN 65 PN6      |
| SP2000/V12-3/SS <sup>3)</sup> | 20S9535  | 600 [1112]         | Ceramic <sup>5)</sup> /SS 316Ti        | 1                  | > 10                          | Optional                  | Yes <sup>4)</sup> | 1000 [≈ 39.4"]              | 60               | DN 100 PN6     |
| SP2000/V12-2/SS <sup>3)</sup> | 20S9530  | 600 [1112]         | Ceramic <sup>5)</sup> /SS 316Ti        | 2                  | > 10                          | Optional                  | Yes               | 1000 [≈ 39.4"]              | 60               | DN 100 PN6     |
| SP2000/V12-1/IC <sup>2)</sup> | 20S9540  | 1000 [1832]        | Ceramic <sup>5)</sup> /Incoloy - 316Ti | 1                  | > 10                          |                           | Yes <sup>4)</sup> | 500 [≈ 19.7"]               | 40               | DN 65 PN6      |
| SP2000/V12-3/IC <sup>3)</sup> | 20S9550  | 1000 [1832]        | Ceramic <sup>5)</sup> /Incoloy - 316Ti | 1                  | > 10                          | Optional                  | Yes <sup>4)</sup> | 1000 [≈ 39.4"]              | 60               | DN 100 PN6     |
| SP2000/V12-2/IC <sup>3)</sup> | 20S9545  | 1000 [1832]        | Ceramic <sup>5)</sup> /Incoloy - 316Ti | 2                  | > 10                          | Optional                  | Yes               | 1000 [≈ 39.4"]              | 60               | DN 100 PN6     |

<sup>1)</sup> Prefilter V20-3, V20-4 optional up to 1000 mm [≈ 39.4"] length available

<sup>2)</sup> With protection tube V12-1

<sup>3)</sup> With protection tube V12-2/3

<sup>4)</sup> Pre-filter with special construction for efficient back-purging

<sup>5)</sup> Please pay attention to the characteristic feature of ceramic in case of high and changing temperatures!

| Type  | Part No. | Temperature max. °C [°F] | Material    | Length "L1" mm [Inch] | Connection "G" |
|---|----------|--------------------------|-------------|-----------------------|----------------|
| <b>Extension tubes for /V20</b>   |          |                          |             |                       |                |
| SP2000/Vm 500 mm  | 20S9165  | 600 [1112]               | SS 316Ti    | 500 [≈ 19.7"]         | G 3/4" i/o     |
| SP2000/Vm 1000 mm   | 20S9170  | 600 [1112]               | SS 316Ti    | 1000 [≈ 39.4"]        | G 3/4" i/o     |
| SP2000/Vm 1500 mm   | 20S9175  | 600 [1112]               | SS 316Ti    | 1500 [≈ 59.1"]        | G 3/4" i/o     |
| SP2000/Vm 2000 mm   | 20S9176  | 600 [1112]               | SS 316Ti    | 2000 [≈ 78.7"]        | G 3/4" i/o     |
| SP2000/VmHC 500 mm  | 20S9180  | 900 [1652]               | Hastelloy-C | 500 [≈ 19.7"]         | G 3/4" i/o     |
| SP2000/VmHC 1000 mm   | 20S9185  | 900 [1652]               | Hastelloy-C | 1000 [≈ 39.4"]        | G 3/4" i/o     |
| SP2000/VmHC 1500 mm   | 20S9190  | 900 [1652]               | Hastelloy-C | 1500 [≈ 59.1"]        | G 3/4" i/o     |
| <b>Shape protection plates for /V20[/HC], /V20-0[/HC], /V20-5:</b>                          |          |                          |             |                       |                |
| SP2000/AB-SS  | 20S9250  | 600 [1112]               | SS 316Ti    | 220 [≈ 8.7"]          | ø 3/4" i       |
| SP2000/AB-HC  | 20S9260  | 900 [1652]               | Hastelloy-C | 220 [≈ 8.7"]          | ø 3/4" i       |
| <b>Shape protection plates for /V20-1[/HC], /V20 -2[/HC], V20-6:<br/>[not for SP2500-H]</b> |          |                          |             |                       |                |
| SP2000/AB1-SS   | 20S9255  | 600 [1112]               | SS 316Ti    | 520 [≈ 20.5"]         | ø 3/4" i       |
| SP2000/AB1-HC   | 20S9265  | 900 [1652]               | Hastelloy-C | 520 [≈ 20.5"]         | ø 3/4" i       |
| <b>Volume displacer for /V12-2[/IC], /V12-3[/IC]:</b>                                       |          |                          |             |                       |                |
| V12-2/3   | 20S9515  | 600 [1112]               | SS 316Ti    | 950 [≈ 37.4"]         | G 3/4" o       |
| V12-2/3IC   | 20S9520  | 1000 [1832]              | Incoloy     | 950 [≈ 37.4"]         | G 3/4" o       |
| <b>Electrically heated adapter tube to integrate/V12-1</b>                                  |          |                          |             |                       |                |
| SP2000-H/AR-500-R 230 V   | 20S9398  | Max. 200 [392]           | SS 316Ti    | 500* [≈ 19.7"]*       | DN 65 PN 6     |
| SP2000-H/AR-500-R 115 V   | 20S9398a | Max. 200 [392]           | SS 316Ti    | 500* [≈ 19.7"]*       | DN 65 PN 6     |

Heated sample tubes SP30, SP35 if the dew point is underrun on the process side, see data sheet „Electrically Heated Sample Probe Tube Series SP“, Versions SP30-H, SP30-H1.1-V, SP35-H“. Automatic back-purging, other materials or types on request.

Further technical information, see sample probes SP 210/2100/2000.

\* Others on request