



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.

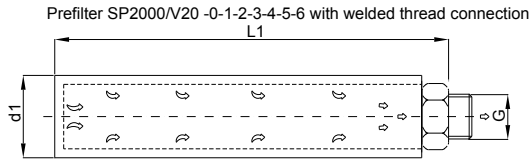
The M&C pre-filters /V20 are equipped with a welded thread connector for installation into the mounting flange of the M&C gas sample probe. For an optimum sampling position in the process, the pre-filters /V20 can be mounted to the sample probe via an extension tube /Vm.

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.

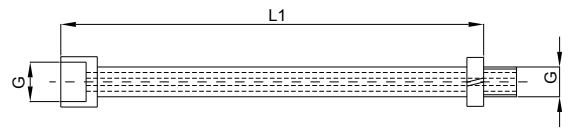
In case of a high flow rate of the process gas, shape protection plates /AB are used in order to protect the pre-filters /V20 against abrasion.

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.

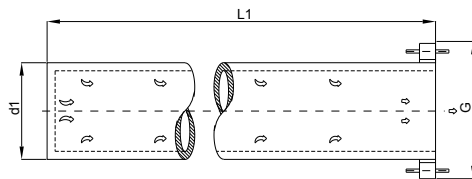
The pre-filters /V12 are equipped with a mounting flange adapter made of stainless steel with 4 welded-in threaded bolts for easy installation. The pre-filter versions /V12, /SS, /V12, /IC are equipped with a welded protection tube out of stainless steel or Incoloy on the mounting flange adapter.



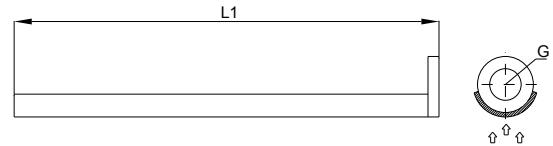
Extension tube SP2000/Vm...



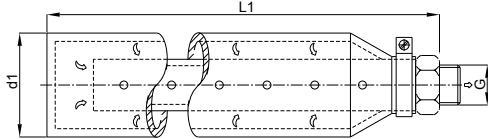
Prefilter SP2000/V12... with mounting flange adaptor



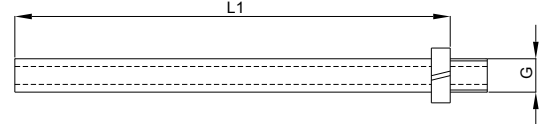
Shape protection plate SP2000/AB..



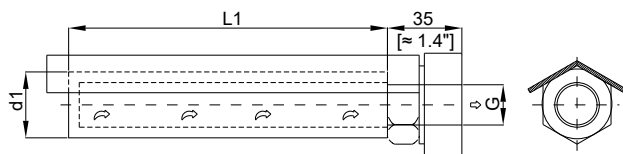
Tube prefilter SP2000/V20-T including support tube with thread connection



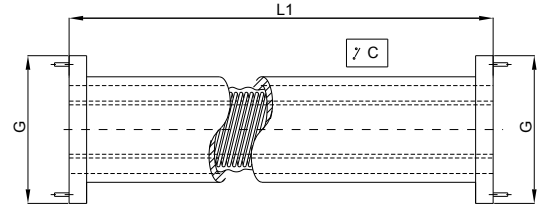
Volume displacer V12-2/3



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"]	46	G 3/4" a
SP2000/V20-0	20S9105	600 [1112]	SS 316L/316Ti	2	2-10	X	Yes	220 [≈ 8.7"]	46	G 3/4" a
SP2000/V20/HC	20S9095	900 [1652]	HastelloY-C	2	2-10		Yes	220 [≈ 8.7"]	46	G 3/4" a
SP2000/V20-0/HC	20S9115	900 [1652]	HastelloY-C	2	2-10	X	Yes	220 [≈ 8.7"]	46	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: [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