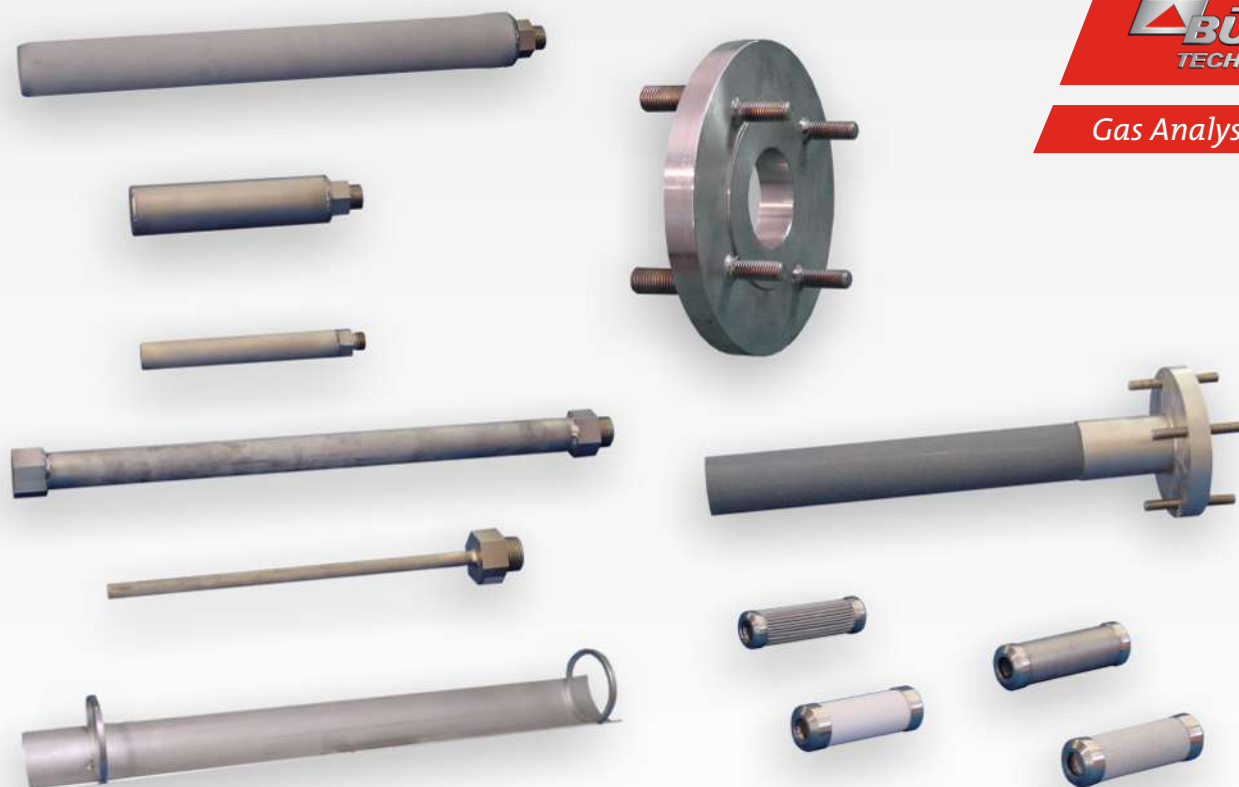




Accessories for Sample Gas Probe GAS 222

In many applications gas analysis is key for safe and efficient control of process flows, environmental protection, and quality assurance. In extractive gas analysis the location of the gas sampling point is crucial for the reproducibility and accuracy of the analysis results.

The specific filter capacity, corrosion resistance and functional equipment requirements for the probe arise from the composition of the sample gas. To meet these requirements, there is a wide range of accessories available for the GAS probe series.

Sampling tubes

Upstream filters

Extensions

Downstream filters

Adapter flanges

Blowback controls



Overview and functionality of the accessories

Blowback (optionally heated)

If the sample gas has a high dust content, particles will settle in the filter over time. To prevent clogging, the upstream filter can be fitted with a blowback device that flushes it with compressed air either at fixed intervals or manually, ensuring effective cleaning.

Gas connection

A purge gas connection is provided on the probes for purging the probe with inert gas or instrument air.

Demister

A demister or droplet separator is always recommended if the process gas has a high water content or aerosols. It consists of a wire mesh on which liquid droplets condense due to their higher inertia, while the gas flows through unhindered, and the condensate flows back into the process.

Adapter flanges

The probe can be fitted with a DIN or ANSI flange. Numerous adapter flanges are available to ensure adaptation to the process connection.

Downstream filter

The downstream filter is located in the probe head and is suitable for dust loads up to 2 g/m^3 . It can be used in combination with an upstream filter, thereby increasing operational reliability. The filter can be exchanged easily and without tools, using the handle.

Extension

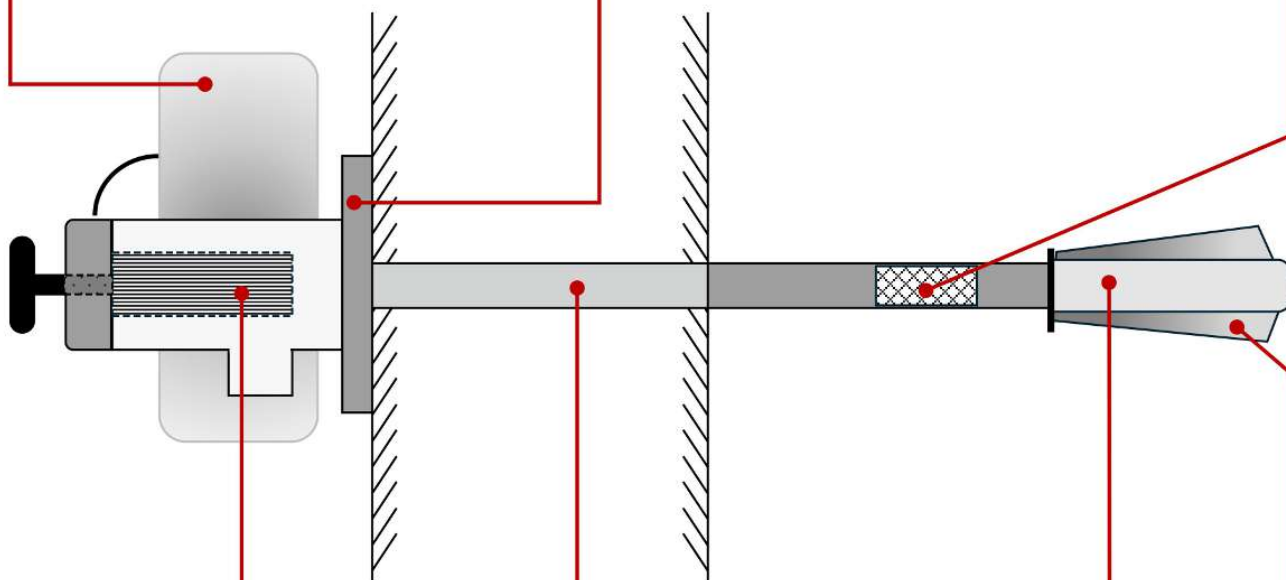
The extension is located between the probe and the sampling tube or upstream filter. It serves as a bridge between the process connection of the probe and the sampling point (e.g. through a chimney wall). The extension can also be heated to prevent condensate cold spots.

Sampling tube (opt. upstream filter)

The sampling tube extends into the process stream and is available for various temperature and media resistance levels. An upstream filter can be connected here to remove particles from the process gas. In the case of very high dust concentrations, a blowback system can be used to clean the upstream filter.

Deflector

To protect the upstream filter from abrasion and deposits caused by particles, a deflector can be attached to the filter to divert the flow.



Ordering instructions

The following pages list the accessories that, together with the basic probe type, result in a functional probe. The basic probe type determines which options are available for a probe. The options for the blowback control are already defined by the type code. The other selectable accessories are listed in the corresponding tables:

Table 1: Blowback control and extensions

Table 2: Sampling tubes

Table 3: Downstream filters

Table 4: Upstream filters

Table 5: Accessories - adapter flanges, fittings

Table 6: Spare parts and accessories

An overview of the individual accessories and their functions is shown in the diagram on the previous page.

Restrictions and notes

Blowback control integrated in the probe controller

A blowback control integrated in the probe controller is standard. Such parameters as time and duration of the blowback are set once on the probe, after which the action takes place automatically. The status of the controller and the condition of the blowback can be read electrically. If required, a separate RSS blowback control can also be connected to the probe, which facilitates manual blowback at a location distinct from the probe.

Limitations categories/zones due to accessories

For safe operation of our Ex probes for use in potentially explosive areas, we expressly recommend the accessories marked with the Ex symbol. These have been subjected to careful safety testing in combination with our Ex probes. Bühler accepts no responsibility for explosion protection, function or conformity when accessories or components not approved by Bühler are used. The use of accessories not listed is at your own risk and may compromise safety. Statutory liability provisions remain unaffected by this.

GAS 222 types	with accessories:	ATEX + IECEx	Only ATEX	
		Gas	Dust	Gas and dust (separate zones)
		Sampling zone/operating zone		
11 Ex1, 21 Ex1, 30 Ex1, 31 Ex1, 35 Ex1, 35-U Ex1	Pressure vessel PAV 01 (item no. 46222PAV and accessories)	Zone1***/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1
11 Ex1, 21 Ex1, 30 Ex1, 31 Ex1	Deflector plates for upstream filters	Zone 1/Zone 1	Zone 21/Zone 21	Zone 1/Zone 21
11 Ex1, 21 Ex1, 30 Ex1, 31 Ex1	Ceramic upstream filters* (item no.: 46222307, 46222307F, 46222307C, 46222330, 46222330C)	Zone 2/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1 or Zone 2 / Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Ceramic downstream filters* (item no.: 46222026 / 46222026P)	Zone 2/Zone 1	Zone 20/Zone 21	Zone 20/Zone 1 or Zone 2 / Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Sampling tubes (item no.: 46222001XXXX, 46222006XXXX, 46222004XXXX, 46222016XXXX)	Zone 0/Zone 1	No zone/Zone 21	Zone 0/Zone 21
11 Ex1, 20 Ex1, 21 Ex1	Ceramic sampling tubes** (item no.: 46222002XXXX)	Zone 2/Zone 1	No zone/Zone 21	Zone 2/Zone 21

* Accessories not suitable for sampling highly ignitable dusts with a minimum ignition energy (MIE) of < 3 mJ.

** When sampling gas from Zone 2, ceramic sampling tubes may only be used if application- and process-related intensive electrostatic charges are ruled out.

*** Blowback of explosive atmosphere/gases is prohibited.

General accessories

Probe models:											
Unheated/heated extension	Length [mm]	GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
 G 3/4 Unheated Stainless steel (1.4571)	200	•	•	•	•	•	•	•	•		4622230320200
	400	•	•	•	•	•	•	•	•		4622230320400
	500	•	•	•	•	•	•	•	•		4622230320500
	700	•	•	•	•	•	•	•	•		4622230320700
	1000	•	•	•	•	•	•	•	•		4622230321000
	1200	•	•	•	•	•	•	•	•		4622230321200
	1500	•	•	•	•	•	•	•	•		4622230321500
	2000	•	•	•	•	•	•	•	•		4622230322000
 G 1/2 Unheated Stainless steel (1.4571)	250									•	4622235910250
	500									•	4622235910500
	700									•	4622235910700
	1500									•	4622235911500
GF heated, 230 V Stainless steel (1.4571)	500					•	•		•		462223036
	1000					•	•		•		462223033
GF heated, 115 V Stainless steel (1.4571)	500					•	•		•		462223136
	1000					•	•		•		462223133
GF ANSI heated, 115 V Stainless steel (1.4571)	500					•	•		•		462223036C1
	1000					•	•		•		462223033C1
GF heated, 230 V Hastelloy	1000					•	•		•		462223033H
Blowback control											
Blowback control 24 V			•				•	•	•	•	46222199
Blowback control 115/230 V			•				•	•	•	•	46222299

 Recommended accessories for use in hazardous areas.

Tab. 1: Blowback control and extensions

Probe models:		GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
Sampling tubes	Length [mm]										
 Hastelloy/1.4571 ¹⁾ ø12 mm T _{max} : 752 °F (400 °C)	500	•	•	•	•	•	•	•	•		462220060500
	1000	•	•	•	•	•	•	•	•		462220061000
	1500	•	•	•	•	•	•	•	•		462220061500
	2000	•	•	•	•	•	•	•	•		462220062000
 Stainless steel ¹⁾ ø12 mm T _{max} : 1112 °F (600 °C)	300	•	•	•	•	•	•	•	•		462220010300
	500	•	•	•	•	•	•	•	•		462220010500
	1000	•	•	•	•	•	•	•	•		462220011000
	1500	•	•	•	•	•	•	•	•		462220011500
 Stainless steel ¹⁾ ø0.8" (20 mm) T _{max} : 1112 °F (600 °C)	500	•	•	•	•	•	•	•	•		462220160500
	1000	•	•	•	•	•	•	•	•		462220161000
	1500	•	•	•	•	•	•	•	•		462220161500
	2000	•	•	•	•	•	•	•	•		462220162000
 Inconel/1.4571 ¹⁾ ø21 mm T _{max} : 1922 °F (1050 °C)	500	•	•	•	•	•	•	•	•		462220040500
	1000	•	•	•	•	•	•	•	•		462220041000
	1500	•	•	•	•	•	•	•	•		462220041500
	2000	•	•	•	•	•	•	•	•		462220042000
 Kanthal/1.4571 ø15 mm T _{max} : 2552 °F (1400 °C)	500	•	•	•	•	•	•	•	•		462220170500
	1000	•	•	•	•	•	•	•	•		462220171000
	2000	•	•	•	•	•	•	•	•		462220172000
 Ceramic/1.4571 ¹⁾ ø24 mm T _{max} : 2912 °F (1600 °C)	500	•	•	•	•	•	•	•	•		4622200205
	1000	•	•	•	•	•	•	•	•		4622200210
	1500	•	•	•	•	•	•	•	•		4622200215
 Sampling tube with demister Material: 1.4571 T _{max} : 752 °F (400 °C)	100	•	•	•	•	•	•	•	•		4622204201
	300	•	•	•	•	•	•	•	•		4622204203
	500	•	•	•	•	•	•	•	•		4622204205
	600	•	•	•	•	•	•	•	•		4622204206
	800	•	•	•	•	•	•	•	•		4622204208
	1000	•	•	•	•	•	•	•	•		4622204210
 Sampling tube with demister Material: Hastelloy T _{max} : 752 °F (400 °C)	500	•	•	•	•	•	•	•	•		4622201290500
	750	•	•	•	•	•	•	•	•		4622201290750
	1000	•	•	•	•	•	•	•	•		4622201291000
Sampling tube with demister Material: PVDF/ETFE T _{max} : 248 °F (120 °C)	200	•	•	•	•	•	•	•	•		462220400200
	650	•	•	•	•	•	•	•	•		462220400650
	800	•	•	•	•	•	•	•	•		46222040

1) Restrictions for the approved Ex zones for sampling and operation apply. Details can be found in the table at the beginning of the data sheet.

 Recommended accessories for use in hazardous areas.

Tab. 2: Sampling tubes

Accessories for probe with downstream filter

Probe models:								
 Downstream filter	average pore size [µm]	GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	Item no.
 Sintered stainless steel O-ring: Viton	0,5	•	•	•	•	•	•	46222010F ⁴⁾
	5	•	•	•	•	•	•	46222010
 Sintered stainless steel O-ring: FFKM	0,5	•	•	•	•	•	•	46222010FP ⁴⁾
	5	•	•	•	•	•	•	46222010P
 Ceramic ¹⁾ O-ring: Viton	3	•	•	•	•	•	•	46222026
 Ceramic ¹⁾ O-ring: FFKM	3	•	•	•	•	•	•	46222026P
Sintered stainless steel O-ring: Viton	15	•	•	•	•	•	•	462220139
Sintered stainless steel O-ring: FFKM	15	•	•	•	•	•	•	462220139P
Micro-strand glass fibre with silicate binder O-ring: Viton (matching handle)		•	•	•	•	•	•	462220671 (46222067)
Micro-strand glass fibre with silicate binder O-ring: FFKM (matching handle)		•	•	•	•	•	•	462220671P (46222067)
Cover piece incl. tube, filter wool O-ring: Viton		•	•	•	•	•	•	46222163
Cover piece incl. tube, filter wool O-ring: FFKM		•	•	•	•	•	•	46222163P
Cover piece incl. tube, steel wool O-ring: Viton		•	•	•	•	•	•	46222163001

1) Restrictions for the approved Ex zones for sampling and operation apply. Details can be found in the table at the beginning of the data sheet.

4) Upon request.

 Recommended accessories for use in hazardous areas.

Tab. 3: Downstream filters

Accessories for probe with upstream filter

Probe models:							
 Upstream filters	average pore size [µm]	GAS 222.11	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
Stainless steel/1.4404/1.4571 Length: 9" (229 mm) T _{max} : 1112 °F (600 °C)	0,5					●	46222359F ⁴⁾
	5					●	46222359
Stainless steel/1.4571 Length: 9.3" (237 mm) T _{max} : 1112 °F (600 °C)	0,5	●	●	●	●		46222303F ⁴⁾
	5	●	●	●	●		46222303
Stainless steel with displacer Length: 9.3" (237 mm) T _{max} : 1112 °F (600 °C)	0,5	●	●	●	●		462223031F ⁴⁾
	5	●	●	●	●		462223031
Stainless steel/1.4571 Length: 21.2" (538 mm) T _{max} : 1112 °F (600 °C)	0,5	●	●	●	●		46222304F ⁴⁾
	5	●	●	●	●		46222304
Stainless steel with displacer Length: 21.2" (538 mm) T _{max} : 1112 °F (600 °C)	0,5	●	●	●	●		462223041F ⁴⁾
	5	●	●	●	●		462223041
Hastelloy Length: 9.3" (237 mm) T _{max} : 752 °F (400 °C)	0,5	●	●	●	●		46222303HF ⁴⁾
	5	●	●	●	●		46222303H
Hastelloy Length: 21.2" (538 mm) T _{max} : 752 °F (400 °C)	0,5	●	●	●	●		46222304HF ⁴⁾
	5	●	●	●	●		46222304H
Hastelloy with displacer Length: 9.3" (237 mm) T _{max} : 752 °F (400 °C)	0,5	●	●	●	●		462223031HF ⁴⁾
	5	●	●	●	●		462223031H
Hastelloy with displacer Length: 21.2" (538 mm) T _{max} : 752 °F (400 °C)	0,5	●	●	●	●		462223041HF ⁴⁾
	5	●	●	●	●		462223041H
Ceramic/1.4571 ¹⁾ Length: 18.8" (478 mm) T _{max} : 1832 °F (1000 °C)	0,3	●	●	●	●		46222307F ²⁾
	2	●	●	●	●		46222307 ²⁾
	2	●	●	●	●		46222307C ^{2), 3)}
Ceramic/1.4571 ¹⁾ Length: 38.5" (978 mm) T _{max} : 1832 °F (1000 °C)	2	●	●	●	●		46222330 ²⁾
	2	●	●	●	●		46222330C ^{2), 3)}
 Deflectors							
For upstream filters 03 ¹⁾		●	●	●	●		462223034
For upstream filters 04 ¹⁾		●	●	●	●		462223044

1) Restrictions for the approved Ex zones for sampling and operation apply. Details can be found in the table at the beginning of the data sheet.

2) Furnace gas filtration: oxidising atmosphere max. 1382 °F (750 °C), reducing atmosphere max. 1112 °F (600 °C); Not suitable for extracting ignition-sensitive dusts with minimum ignition energy < 3 mJ.

3) For probes with ANSI flanges

4) Upon request.

 Recommended accessories for use in hazardous areas.

Tab. 4: Upstream filters

Probe models:		GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
 Accessories - fittings											
Sample gas connection for Ø 6 mm pipe		●	●	●	●	●	●	●	●	●	9029000
Sample gas connection for Ø 8 mm pipe		●	●	●	●	●	●	●	●	●	9029001
Purge gas connection Ø 12 mm pipe			●				●	●	●	●	9029002
Sample gas connection for Ø 1/4" pipe		●	●	●	●	●	●	●	●	●	9008584
Sample gas connection for Ø 3/8" pipe		●	●	●	●	●	●	●	●	●	9029011
Purge gas connection Ø 1/2" pipe			●				●	●	●	●	9008582
 Accessories – adapter flanges - selection - others upon request											
Probe	► Process										
DIN DN 65 PN 6	ANSI DN 1 1/4" 150 lb.	●	●	●	●	●	●	●	●	●	46222501
DIN DN 65 PN 6	ANSI DN 2" 150 lb.	●	●	●	●	●	●	●	●	●	46222314
DIN DN 65 PN 6	ANSI DN 2" 300 lb.	●	●	●	●	●	●	●	●	●	46222502
DIN DN 65 PN 6	ANSI DN 2 1/2" 150 lb.	●	●	●	●	●	●	●	●	●	46222068
DIN DN 65 PN 6	ANSI DN 3" 150 lb.	●	●	●	●	●	●	●	●	●	46222014
DIN DN 65 PN 6	ANSI DN 3" 300 lb.	●	●	●	●	●	●	●	●	●	46222034
DIN DN 65 PN 6	ANSI DN 4" 150 lb.	●	●	●	●	●	●	●	●	●	46222035
DIN DN 65 PN 6	DIN DN150 PN 6	●	●	●	●	●	●	●	●	●	462220140
DIN DN 65 PN 6	ANSI DN 6"-150 lb.	●	●	●	●	●	●	●	●	●	462220127
ANSI DN 3"-150 lb.	ANSI DN 4" 150 lb.	●	●	●	●	●	●	●	●	●	46222058

 Recommended accessories for use in hazardous areas.

Tab. 5: Accessories - adapter flanges, fittings

Spare parts and accessories

Probe models:	GAS 222.10	GAS 222.11	GAS 222.15	GAS 222.17	GAS 222.20	GAS 222.21	GAS 222.30	GAS 222.31	GAS 222.35	Item no.
 Downstream filter										
Filter wool	•	•	•	•	•	•				46222167
 O-ring set Viton incl. installation grease	•	•	•	•	•	•				46222012
 O-ring set LT 170 incl. installation grease	•	•	•	•	•	•				462220100011
 O-ring set FFKM incl. installation grease	•	•	•	•	•	•				46222024
Sampling tubes										
Demister ETFE $T_{\max}$: 248 °F (120 °C) (matching safety pin)	•	•	•	•	•	•	•	•		462220402 (462220403)
 Demister stainless steel $T_{\max}$: 752 °F (400 °C) (matching safety pin)	•	•	•	•	•	•	•	•		4611004 (462220421)
 Demister Hastelloy $T_{\max}$: 752 °F (400 °C) (matching safety pin)	•	•	•	•	•	•	•	•		4622201291 (4622201292)

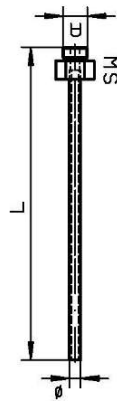
 Recommended accessories for use in hazardous areas.

Tab. 6: Spare parts and accessories

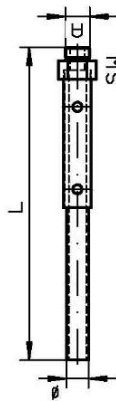
Dimensions

Entnahmerohre / tubes

Typ	L	ø	A	SW
01	var.	12	G3/4	36
06	var.	12	G3/4	36
08	var.	21,3	G3/4	36
12	var.	20	G3/4	36
13	var.	15	G3/4	36
14	var.	18	G3/4	36

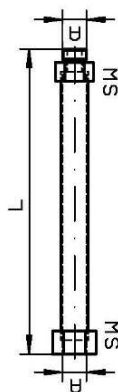


Typ	L	ø	A	SW
02-0,5	500	24	G3/4	36
02-1,0	1000	24	G3/4	36
02-1,5	1500	24	G3/4	36



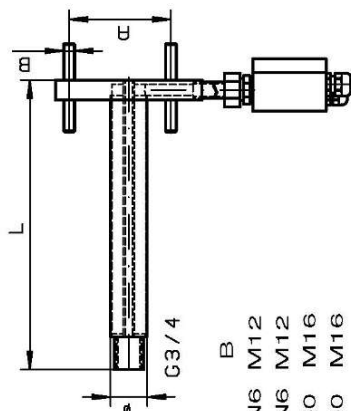
Verlängerungen / extensions

unbeheizt / unheated
Typ L A SW
G3/4 var. G3/4 36
G1/2 var. G1/2 27



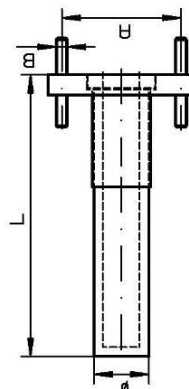
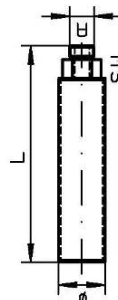
beheizt / heated

Typ	L	ø	A	B
GF	500	40	DN65 PN6	M12
GF	1000	40	DN65 PN6	M12
GF ANSI/CSA	500	40	DN3"-150	M16
GF ANSI/CSA	1000	40	DN3"-150	M16



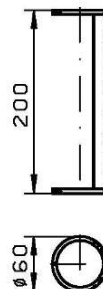
Eintrittsfilter / in-situ filters

Typ	L	ø	A	SW
03	237	51	G3/4	36
031	237	51	G3/4	36
04	538	60	G3/4	36
041	538	60	G3/4	36
35	229	29	G1/2	27

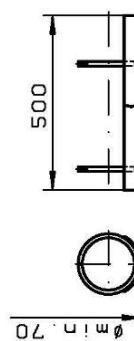


Typ	L	ø	A	B
07	500	60	DN65 PN6	M12
07 ANSI	500	60	DN3"-150	M16

Abweisblech / protection shield

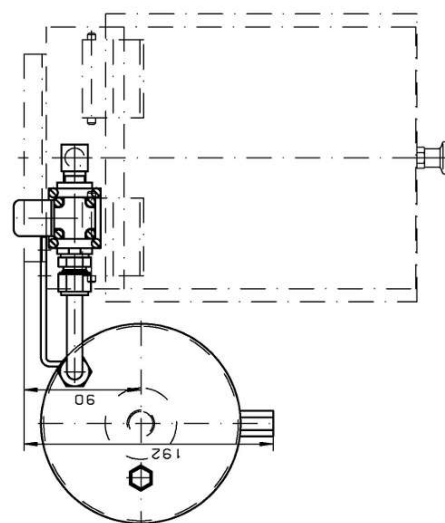
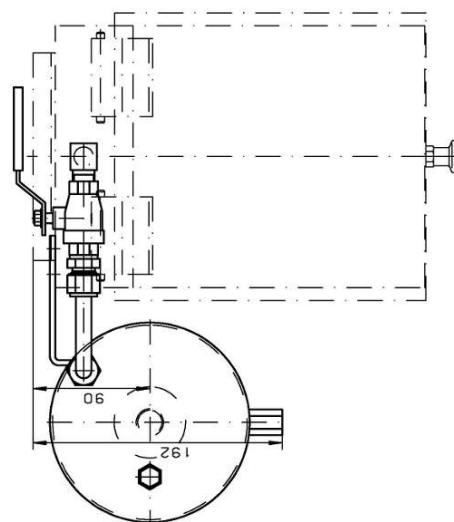
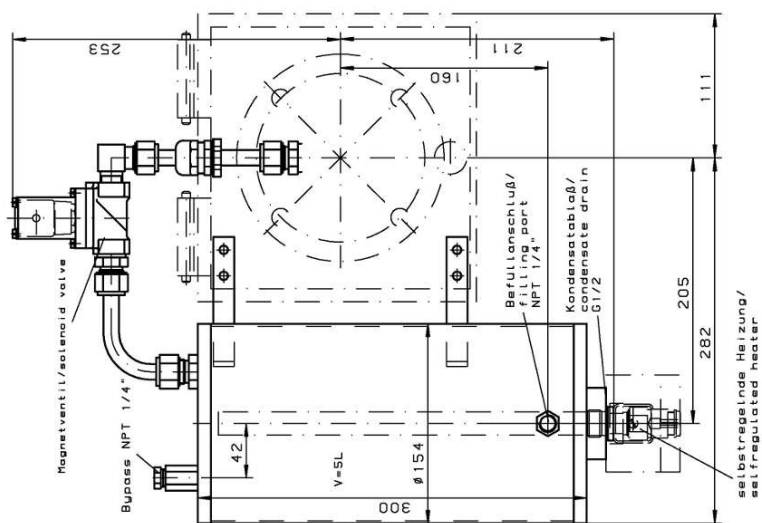
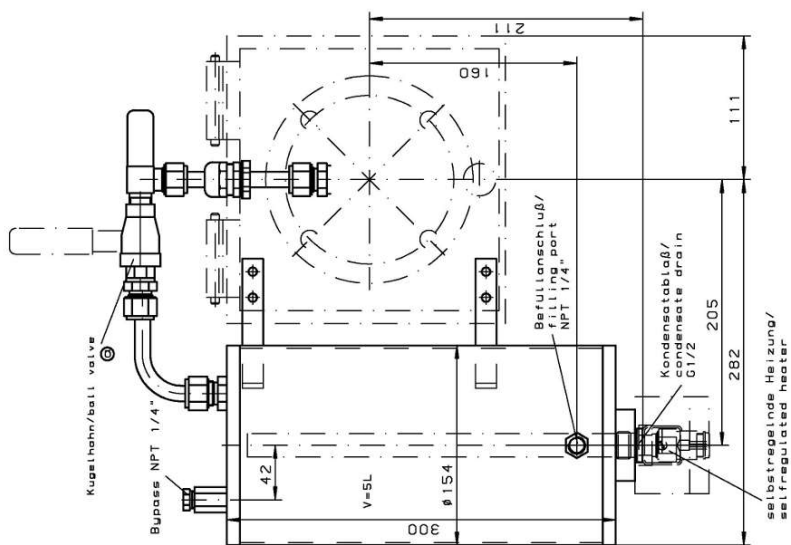


Eintrittsfilter / in-situ filter 03



Eintrittsfilter / in-situ filter 04

ALLE KONTEN GRATIS! Oberflächenbear- beitungszeichen		Maße ohne Toleranzangabe nach ISO 2768-mK		Maßstab 1:5 (Gewicht)	
✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	Benennung: Rohre/Filter/Verlängerungen tubes/filter/extensions GAS 222	
✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	Zeichn.-Nr. 46/107-Z01-01-3A	
✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	✓ = $\sqrt{\frac{f_{h,1}}{f_{h,2}}}$	Art.-Nr.	
Zust. Rnd. Datum Name Ers für				ARBEITSSAMMEIUNG:	



max. Betriebsdruck/operating pressure 10bar
max. Betriebstemperatur/operating temperature 50 °C

"Änderungen nur nach Rücksprache
mit dem Auftragsgeber zulässig"

ALLE RECHTE VORBEHALTEN		Maße ohne Toleranzangabe nach ISO 2768-MK		Maßstab 1:2,5		[Übersicht]	
Zust. / Veränd.		Datum		Verstärker		Herzschlag	
0		15.11.18					
1		15.11.18					
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