Technical Documentation

Variable area flow meters

+GF+

GEORG FISCHER
PIPING SYSTEMS

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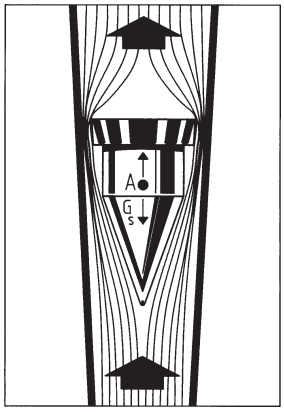
The technical data is not binding and not an expressly warranted characteristic of the goods. It is subject to change. Please consult our General Conditions of Supply.

General

The plastic variable area flow meters in the SK series from George Fischer are radially installed dismountable meters for measuring the rate of flow in industrial pipework applications. The measurement ranges, which are attuned to our customers' needs, and the range of materials available for the tubes and screwed fittings, mean that the flow meters can be used for a wide range of applications and a great variety of media.

Mode of operation



If a medium is flowing upwards at a sufficient rate of flow through the vertically mounted taper tube, the float is raised to the point at which a state of equilibrium sets in between the lifting force of the medium and the weight of the float. Since the mean rate of flow is proportional to the quantity flowing through per unit of time, this state of equilibrium corresponds to the measurement of the instantaneous flow rate.

Pressure range

nominal pressure 10 bars at 20 °C

Materials

Tube:	Polyamid 12, Polysulphone, PVDF and PVC-U transparent
Float:	PVDF, PTFE
End stops:	PVDF
Screwed fittings:	PVC-U (PP, PVDF, ABS)
O-ring:	EPDM (FPM)

Calibrated scales

Standard version is equipped with a double scale: a percentage scale and a scale giving the rate of flow. Short version is fitted with one scale, indicating the rate of flow. The scales are adhesive-bonded to the tube and are printed with a special hardwearing paint.
Standard scale: l/h
Special scales: m^3/h, GPM
Scales for other liquids HCl, NaOH and Air

Accuracy of measurement: In accordance with VDE/VDI 3513 sheet 2, accuracy class 4

1. part failure ± 3% related to the measured value
2. part failure ± 1% related to the full scale

flow rate %	1. part failure		2. part failure		total measurement error	
	% from measured value	% from full scale value	% from measured value	% from full scale value	% from measured value	% from full scale value
100	3,0	3,0	1,000	1,000	4,000	4,000
90	3,0	2,7	1,111	1,000	4,111	3,700
80	3,0	2,4	1,250	1,000	4,250	3,400
70	3,0	2,1	1,429	1,000	4,429	3,100
60	3,0	1,8	1,667	1,000	4,667	2,800
50	3,0	1,5	2,000	1,000	5,000	2,500
40	3,0	1,2	2,500	1,000	5,500	2,200
30	3,0	0,9	3,333	1,000	6,333	1,900
20	3,0	0,6	5,000	1,000	8,000	1,600
10	3,0	0,3	10,000	1,000	13,000	1,300

Temperature range

For definite the maximum internal pressure we refer you to our material addicted pressure/temperature charts.

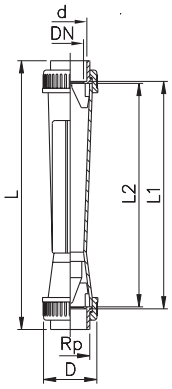
max. temperature range at 2 bar:

PVC-U transp. with PVC-U fitting	Polyamid 12 and Polysulfon with PVC-U- fitting	Polysulfon with PP-PVDF- fitting	or PVDF with PVDF-fitting
0- +40°C	0- +60°C	0- +90°C	0- +100°C

Variable area flow meters

Standard version
Float in PVDF without magnet
Solvent cement socket PVC-U metric

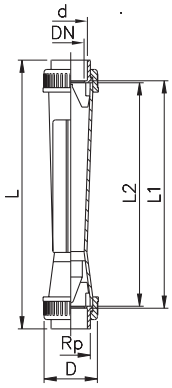
Type	Scale range l/h	d	DN	Taper tube in Polyamid O-rings in EPDM Code	Taper tube in Polysulfone O-rings in EPDM Code	Taper tube in PVC-U transp. O-rings in EPDM Code
SK 10	50 - 500	32	25	**198 801 900**	**198 801 901**	**198 803 290**
SK 11	100 - 1000	32	25	**198 801 902**	**198 801 903**	**198 803 291**
SK 12	150 - 1500	32	25	**198 803 734**	**198 803 735**	**198 803 736**
SK 18	200 - 2000	50	40	**198 803 738**	**198 803 739**	**198 803 740**
SK 19	250 - 2500	50	40	**198 803 741**	**198 803 742**	**198 803 743**
SK 20	300 - 3000	50	40	**198 801 904**	**198 801 905**	**198 803 292**
SK 21	600 - 6000	50	40	**198 801 906**	**198 801 907**	**198 803 293**
SK 29	600 - 6000	63	50	**198 803 744**	**198 803 745**	**198 803 746**
SK 30	1000 - 10000	63	50	**198 801 908**	**198 801 909**	**198 803 294**
SK 31	1500 - 15000	63	50	**198 801 910**	**198 801 911**	**198 803 295**
SK 40	2000 - 20000	75	65	**198 801 330**	**198 801 331**	**198 803 296**
SK 41	3000 - 30000	75	65	**198 801 332**	**198 801 333**	**198 803 297**



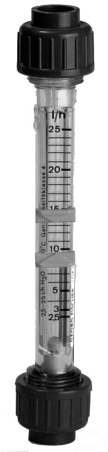
Type	D	L	L1	L2	Rp
SK 10	60	385	341	335	1 1/2"
SK 11	60	385	341	335	1 1/2"
SK 12	60	385	341	335	1 1/2"
SK 18	83	403	341	335	2 1/4"
SK 19	83	403	341	335	2 1/4"
SK 20	83	403	341	335	2 1/4"
SK 21	83	403	341	335	2 1/4"
SK 29	103	417	341	335	2 3/4"
SK 30	103	417	341	335	2 3/4"
SK 31	103	417	341	335	2 3/4"
SK 40	122	457	342	335	3 1/2"
SK 41	122	457	342	335	3 1/2"

Standard version
Float in PVDF with magnet
Solvent cement socket PVC-U metric

Type	Scale range l/h	d	DN	Taper tube in Polyamid O-rings in EPDM Code	Taper tube in Polysulfone O-rings in EPDM Code	Taper tube in PVC-U transp. O-Rings in EPDM Code	Limit switch control bistable GK01 Code	
SK 100	50 - 500	32	25	**198 801 912**	**198 801 913**	**198 803 300**	**198 801 936**	
SK 110	100 - 1000	32	25	**198 801 914**	**198 801 915**	**198 803 301**	**198 801 936**	
SK 120	150 - 1500	32	25	**198 803 747**	**198 803 748**	**198 803 749**	**198 801 936**	
SK 180	200 - 2000	50	40	**198 803 750**	**198 803 751**	**198 803 752**	**198 801 841**	
SK 190	250 - 2500	50	40	**198 803 753**	**198 803 754**	**198 803 755**	**198 801 936**	
SK 200	300 - 3000	50	40	**198 801 916**	**198 801 917**	**198 803 302**	**198 801 936**	
SK 210	600 - 6000	50	40	**198 801 918**	**198 801 919**	**198 803 303**	**198 801 936**	
SK 290	600 - 6000	63	50	**198 803 756**	**198 803 757**	**198 803 758**	**198 801 841**	
SK 300	1000 - 10000	63	50	**198 801 920**	**198 801 921**	**198 803 304**	**198 801 936**	
SK 310	1500 - 15000	63	50	**198 801 922**	**198 801 923**	**198 803 305**	**198 801 936**	
SK 400	2000 - 20000	75	65	**198 801 334**	**198 801 335**	**198 803 306**	**198 801 936**	
SK 410	3000 - 30000	75	65	**198 801 336**	**198 801 337**	**198 803 307**	**198 801 936**	

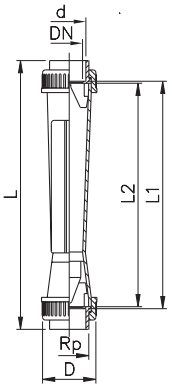


Type	D	L	L1	L2	Rp	
SK 100	60	385	341	335	1 1/2"	
SK 110	60	385	341	335	1 1/2"	
SK 120	60	385	341	335	1 1/2"	
SK 180	83	403	341	335	2 1/4"	
SK 190	83	403	341	335	2 1/4"	
SK 200	83	403	341	335	2 1/4"	
SK 210	83	403	341	335	2 1/4"	
SK 290	103	417	341	335	2 3/4"	
SK 300	103	417	341	335	2 3/4"	
SK 310	103	417	341	335	2 3/4"	
SK 400	122	457	342	335	3 1/2"	
SK 410	122	457	342	335	3 1/2"	



Short version
Float in PVDF without magnet
Solvent cement socket PVC-U metric

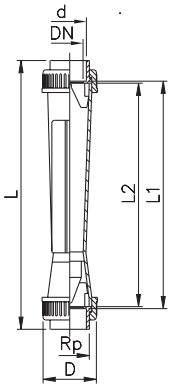
Type	Scale range l/h	d	DN	Taper tube in Polysulfone O-rings in EPDM Code	Taper tube in PVC-U transp. O-rings in EPDM Code
SK 50	2,5 - 25	16	10	**198 801 880**	**198 803 310**
SK 51	5 - 50	16	10	**198 801 881**	**198 803 311**
SK 52	10 - 100	16	10	**198 801 882**	**198 803 312**
SK 60	8 - 80	20	15	**198 801 883**	**198 803 313**
SK 61	15 - 150	20	15	**198 801 884**	**198 803 314**
SK 62	20 - 200	20	15	**198 801 885**	**198 803 315**
SK 70	15 - 150	32	25	**198 801 886**	**198 803 316**
SK 71	30 - 300	32	25	**198 801 887**	**198 803 317**
SK 72	50 - 500	32	25	**198 801 888**	**198 803 318**
SK 73	100 - 1000	32	25	**198 801 889**	**198 803 319**



Type	D	L	L1	L2	Rp
SK 50	35	199	171	165	3/4"
SK 51	35	199	171	165	3/4"
SK 52	35	199	171	165	3/4"
SK 60	43	223	191	185	1"
SK 61	43	223	191	185	1"
SK 62	43	223	191	185	1"
SK 70	60	250	206	200	1 1/2"
SK 71	60	250	206	200	1 1/2"
SK 72	60	250	206	200	1 1/2"
SK 73	60	250	206	200	1 1/2"

Short version
Float in PVDF with magnet
Solvent cement socket PVC-U metric

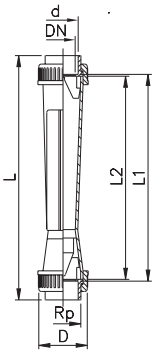
Type	Scale range l/h	d	DN	Taper tube in Polysulfone O-rings in EPDM Code	Taper tube in PVC-U transp. O-Rings in EPDM Code	Limit switch control GK03 top Code	Limit switch control GK04 bottom Code	
SK 500	2,5 - 25	16	10	**198 801 890**	**198 803 320**	**198 801 878**	**198 801 879**	
SK 510	5 - 50	16	10	**198 801 891**	**198 803 321**	**198 801 878**	**198 801 879**	
SK 520	10 - 100	16	10	**198 801 892**	**198 803 322**	**198 801 878**	**198 801 879**	
SK 600	8 - 80	20	15	**198 801 893**	**198 803 323**	**198 801 878**	**198 801 879**	
SK 610	15 - 150	20	15	**198 801 894**	**198 803 324**	**198 801 878**	**198 801 879**	
SK 620	20 - 200	20	15	**198 801 895**	**198 803 325**	**198 801 878**	**198 801 879**	
SK 700	15 - 150	32	25	**198 801 896**	**198 803 326**	**198 801 878**	**198 801 879**	
SK 710	30 - 300	32	25	**198 801 897**	**198 803 327**	**198 801 878**	**198 801 879**	
SK 720	50 - 500	32	25	**198 801 898**	**198 803 328**	**198 801 878**	**198 801 879**	
SK 730	100 - 1000	32	25	**198 801 899**	**198 803 329**	**198 801 878**	**198 801 879**	



Type	D	L	L1	L2	Rp
SK 500	35	199	171	165	3/4"
SK 510	35	199	171	165	3/4"
SK 520	35	199	171	165	3/4"
SK 600	43	223	191	185	1"
SK 610	43	223	191	185	1"
SK 620	43	223	191	185	1"
SK 700	60	250	206	200	1 1/2"
SK 710	60	250	206	200	1 1/2"
SK 720	60	250	206	200	1 1/2"
SK 730	60	250	206	200	1 1/2"

Special version PVDF-HP
Float in PTFE
Fusion spigot BCF

Type	Scale range l/h	Scale range GPM	d	DN	Taper tube in Polysulfone O-rings in FPM Code
SK 73	136 - 795	0.6 - 3.5	32	25	**198 801 202**
SK 20	568 - 2273	2.5 - 10	50	40	**198 801 203**
SK 21	909 - 4091	4.0 - 18	50	40	**198 801 204**
SK 30	1000 - 8142	4.4 - 36	63	50	**198 801 205**
SK 31	1000 - 9091	4.4 - 40	63	50	**198 801 206**
SK 40	1848 - 11364	8.0 - 50.0	75	65	**198 801 207**
SK 41	2273 - 16364	10.0 - 72.0	75	65	**198 801 208**

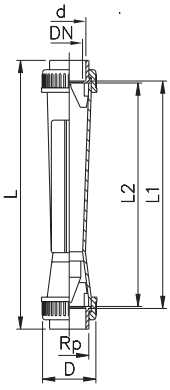


Type	D	L	L1	L2	Rp
SK 73	60	338	-	200	1 1/2"
SK 20	83	511	-	335	2 1/4"
SK 21	83	511	-	335	2 1/4"
SK 30	103	524	-	335	2 3/4"
SK 31	103	524	-	335	2 3/4"
SK 40	122	495	-	335	3 1/2"
SK 41	122	495	-	335	3 1/2"

Special version PVDF
Float in PVDF (red) without magnet
Fusion socket / Fusion spigot metric

Limit contacts (min. / max.) and Special scales on request

Type	Scale range l/h	d	DN	Taper tube in PVDF O-rings in FPM fusion socket Code	Taper tube in PVDF O-rings in FPM IR fusion spigot Code
SK 10	50 - 500	32	25	**198 806 466**	**198 803 905**
SK 11	100 - 1000	32	25	**198 806 467**	**198 803 906**
SK 20	200 - 2000	50	40	**198 806 468**	**198 803 907**
SK 21	300 - 3000	50	40	**198 806 469**	**198 803 908**
SK 30	600 - 6000	63	50	**198 806 470**	**198 803 909**
SK 31	1200 - 12000	63	50	**198 806 471**	**198 803 910**
SK 40	2000 - 20000	75	65	**198 806 472**	**198 803 911**
SK 41	3000 - 30000	75	65	**198 806 473**	**198 803 912**



Type	D	L	L (IR-SS)	L1	L2	Rp
SK 10	60	385	443	341	335	1 1/2"
SK 11	60	385	443	341	335	1 1/2"
SK 20	83	403	459	341	335	2 1/4"
SK 21	83	403	459	341	335	2 1/4"
SK 30	103	417	461	339	335	2 3/4"
SK 31	103	417	461	339	335	2 3/4"
SK 40	122	429	453	341	335	3 1/2"
SK 41	122	429	453	341	335	3 1/2"

Accessories

1. Limit contacts

Variable area flow meters from George Fischer are equipped with two dovetailed holders. For external electrical monitoring, these can be used for fitting magnetically actuated limit contacts having a bistable switching function.

Note

By additional mounting of limit contacts you have to change the standard float into a magnetic float.
Magnetic floats are marked with a "B" on top.

Mode of operation of contacts
Position of float in relation to limit contacts

	above	below
Maximal contact	closed	open
Minimal contact	open	closed

The contacts remain in these positions, even if the float moves away from the contact concerned.

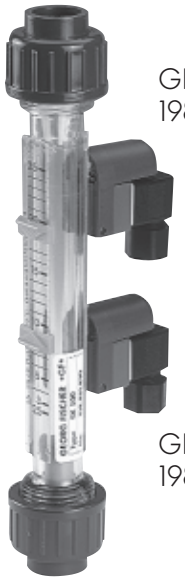
GK 01
198 801 936
198 801 841

Technical Data

Type: **GK 01**
(for SK 100–SK 410)
Connection: Standard plug DIN 43650
Contact fitted: Bistable reed contact
Mode of protection: IP 65
Max. voltage: 250 V AC
Max. continuous current: 0,2 A
Peak switch-on current: 0,5 A
(**For use with inductive loads, use a relay to protect the contacts**)

The same contact type can be used for monitoring both the min. and max. levels. Fitting should be carried out in such a way that the cableways are mutually opposed.

Type: **GK 03** and **GK 04**
(for SK 500–SK 730)
Connection: Standard plug DIN 40050
Contact fitted: Bistable reed contact
Mode of protection: IP 65
Max. voltage: 250 V AC
Max. continuous current: 0,2 A
Peak switch-on current: 0,5 A
(**For use with inductive loads, use a relay to protect the contacts**)



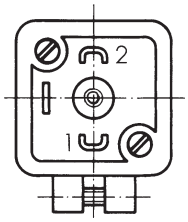
GK 03
198 801 878

max.

min.

GK 04
198 801 879

Electrical Connection



Electrical connection
GK 01, GK 03, GK 04

2. 4–20 mA Sensor Type GK 05

The sensor type GK 05 was especially developed for our variable area flow meters SK 10 – SK 41. By installing this sensor, the customer is able to achieve remote indication easily and economically or a simple control function.

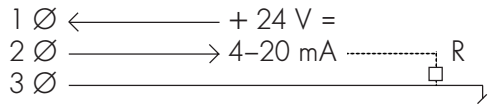
An analog signal (4–20 mA) is emitted, proportional to the position of the float, which can be used directly as an indication value.

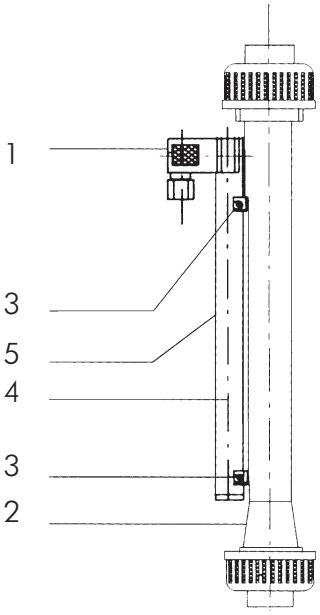
Technical Data

Operating voltage:	24 V = +/– 10%
Current consumption:	6 mA for 4 mA at the current interface
Working resistance:	min. 0 Ω / max. 250 Ω
Current output:	4–20 mA / max. voltage-span + 5 V =
Electrical tolerance:	max. +/– 3% of reading
Protection rating:	IP 65 according to DIN 40050
Ambient temperature:	0° to + 50 °C
Connection:	DIN plug according to DIN 43650
Protection:	– reverse polarity protection – RC wiring for operating voltage

Electrical Connection

Pin 1: Operating voltage 24 V =
Pin 2: Output signal 4–20 mA
Pin 3: 0 V





Function elements

1- connector
2- flow meter with monostable magnet float. (type GK 05)
3- fasting screws to adjust the sensor to the dovetail shaft
4- dovetail shaft
5- measurement sensor

Function

The measurement sensor which is fitted on the flow meter gives an analogue output signal (4 – 20 mA) which is proportional to the position of the flow meter. You can handle this signal without additional electronics analyse. So you can realise low priced flow monitoring or controlling. Additional mounting is possible (monostable float is necessary). For a good reproducibility we have two kinds of measurement sensors which are perfectly adjusted to the different accuracy of measurements.

Installation

1. Telescoping sensor and dovetail.
2. Adjusting the mark of sensor with the 50% marking of scale
3. Tightening fasting screws
4. Taking off the connector and wiring according to specification

Note: Change standard float into a monostable one (marked with a "M").

Accessories
4-20 mA Sensor

Kit GK 05:
- 1 x sensor 4-20 mA
- 1 x float PVDF with magnet (monostable)

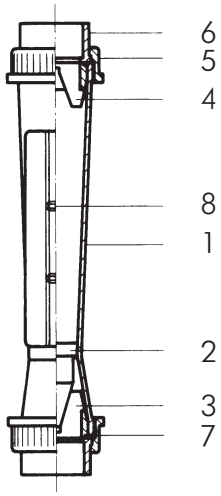
Basic unit is standard version (without magnet)

Type	d	DN	*	Code	
GK 05	32	25	SK 10 / 11	**199 190 334**	
GK 05	50	40	SK 20 / 21	**199 190 335**	
GK 05	63	50	SK 30 / 31	**199 190 336**	
GK 05	75	65	SK 40	**199 190 337**	
GK 05	75	65	SK 41	**199 190 338**	

* other types on request

Technical features

Pos.	Item	Quantity
1	Taper tube	1
2	Float	1
3	Bottom insert	1
4	Top insert	1
5	Union nut	2
6	Insert	2
7	O-Ring	2
8	Flow value indicator	2



Pressure loss

Type	Loss (mm Wp)
SK 10/100	242
SK 11/110	242
SK 12/120	242
SK 18/180	255
SK 19/190	255
SK 20/200	255
SK 21/210	255
SK 29/290	254
SK 30/300	305
SK 31/310	305

Type	Loss (mm Wp)
SK 40/400	312
SK 41/410	312
SK 50/500	44
SK 51/510	44
SK 52/520	44

Type	Loss (mm Wp)
SK 60/600	83
SK 61/610	83
SK 62/620	83
SK 70/700	46
SK 71/710	46
SK 72/720	46
SK 73/730	46

Special scales Standard version

	Type	Scale range	Code
m^3/h	SK 10/100	0,05- 0,5	198 801 937
	SK 11/110	0,10- 1,0	198 801 938
	SK 12/120	0,15- 1,5	198 803 808
	SK 18/180	0,20- 2,0	198 803 809
	SK 19/190	0,25- 2,5	198 803 810
	SK 20/200	0,30- 3,0	198 801 939
	SK 21/210	0,60- 6,0	198 801 940
	SK 29/290	0,60- 6,0	198 803 811
	SK 30/300	1,00- 10	198 801 941
	SK 31/310	1,50- 15	198 801 942
	SK 40/400	2,00- 20	198 801 318
	SK 41/410	3,00- 30	198 801 319
Imp. GPM	SK 10/100	0,183- 1,83	198 801 943
	SK 11/110	0,366- 3,66	198 801 944
	SK 12/120	0,55- 5,5	198 803 812
	SK 18/180	0,733- 7,33	198 803 813
	SK 19/190	0,916- 9,16	198 803 814
	SK 20/200	1,09- 10,9	198 801 945
	SK 21/210	2,19- 21,9	198 801 946
	SK 29/290	2,2- 22	198 803 815
	SK 30/300	3,66- 36,6	198 801 947
	SK 31/310	5,49- 54,9	198 801 948
US GPM	SK 10/100	0,22- 2,2	198 801 949
	SK 11/110	0,44- 4,4	198 801 950
	SK 12/120	0,66- 6,6	198 803 816
	SK 18/180	0,88- 8,8	198 803 817
	SK 19/190	1,1- 11	198 803 818
	SK 20/200	1,32- 13,2	198 801 951
	SK 21/210	2,64- 26,4	198 801 952
	SK 29/290	2,64- 26,4	198 803 819
	SK 30/300	4,40- 44,02	198 801 953
	SK 31/310	6,60- 66,04	198 801 954
	SK 40/400	8,80- 88	198 801 320
	SK 41/410	13,20- 132	198 801 321

	Type	Scale range	Code
Air/ 0 bar	SK 10/100	2,1- 16	198 801 284
N m^3/h	SK 11/110	4,2- 32	198 801 285
	SK 18/180	10- 70	198 803 821
	SK 20/200	12,1- 90	198 801 286
	SK 21/210	21,1- 177	198 801 287
	SK 29/290	22- 190	198 803 823
	SK 30/300	34,2- 276	198 801 288
	SK 31/310	49,6- 414	198 801 289
	SK 40/400	60- 580	198 801 322
	SK 41/410	100- 860	198 801 323
HCL	SK 10/100	50- 450	198 801 290
30-33%	SK 11/110	150- 900	198 801 291
	SK 18/180	200- 1900	198 803 825
	SK 20/200	500- 2500	198 801 292
use only	SK 21/210	700- 5000	198 801 293
with tube	SK 29/290	800- 5600	198 803 827
PVC-U	SK 30/300	700- 8500	198 801 294
	SK 31/310	1000- 12000	198 801 295
	SK 40/400	2000- 18000	198 801 324
	SK 41/410	3600- 25000	198 801 325
NaOH	SK 10/100	15- 240	198 801 296
30%	SK 11/110	50- 600	198 801 297
l/h	SK 18/180	100- 1400	198 803 829
	SK 20/200	200- 2000	198 801 298
	SK 21/210	500- 4500	198 801 299
	SK 29/290	400- 4600	198 803 831
	SK 30/300	500- 7500	198 801 300
	SK 31/310	800- 11000	198 801 301
	SK 40/400	1400- 15000	198 801 326
	SK 41/410	2000- 20000	198 801 327
NaOH	SK 10/100	2- 60	198 801 302
50%	SK 11/110	10- 190	198 801 303
l/h	SK 18/180	20- 600	198 803 833
	SK 20/200	50- 1000	198 801 304
	SK 21/210	100- 2500	198 801 305
	SK 29/290	200- 3400	198 803 835
	SK 30/300	100- 4750	198 801 306
	SK 31/310	300- 7000	198 801 307
	SK 40/400	500- 11000	198 801 328
	SK 41/410	1000- 14000	198 801 329

Special scales Short version

	Type	**Scale range**	**Code**
Water m^3/h	SK 50/500	2,5- 25	198 801 386
	SK 51/10	5- 50	198 801 387
	SK 52/520	10- 100	198 801 388
	SK 60/600	8- 80	198 801 389
	SK 61/610	15- 150	198 801 390
	SK 62/620	20- 200	198 801 391
	SK 70/700	15- 150	198 801 392
	SK 71/710	30- 300	198 801 393
	SK 72/720	50- 500	198 801 394
	SK 73/730	100- 1000	198 801 395
US GPM	SK 50/500	0,01- 0,11	198 801 961
	SK 51/10	0,02- 0,22	198 801 962
	SK 52/520	0,04- 0,44	198 801 963
	SK 60/600	0,03- 0,35	198 801 964
	SK 61/610	0,06- 0,66	198 801 965
	SK 62/620	0,08- 0,88	198 801 966
	SK 70/700	0,06- 0,66	198 801 967
	SK 71/710	0,13- 1,32	198 801 968
	SK 72/720	0,22- 2,20	198 801 969
	SK 73/730	0,44- 4,40	198 801 970
Air/ 0 bar N m^3/h	SK 50/500	0,5- 0,95	198 801 308
	SK 51/10	0,5- 1,9	198 801 309
	SK 52/520	0,8- 3,0	198 801 310
	SK 60/600	0,6- 2,8	198 801 311
	SK 61/610	1,4- 5,6	198 801 312
	SK 62/620	1,5- 7,0	198 801 313
	SK 70/700	1,0- 6,5	198 801 314
	SK 71/710	1,5- 11,0	198 801 315
	SK 72/720	3,0- 18,0	198 801 316
	SK 73/730	6,0- 30,0	198 801 317
HCL 30-33% l/h use only with tube PVC-U	SK 50/500	2,5- 20	198 806 511
	SK 51/10	5- 40	198 806 512
	SK 52/520	10- 85	198 806 513
	SK 60/600	8- 70	198 806 514
	SK 61/610	15- 125	198 806 515
	SK 62/620	20- 170	198 806 516
	SK 70/700	5- 125	198 806 517
	SK 71/710	30- 260	198 806 518
	SK 72/720	50- 425	198 806 519
	SK 73/730	100- 850	198 806 520
NaOH 30% l/h	SK 50/500	0,2- 5	198 806 521
	SK 51/10	1- 14	198 806 522
	SK 52/520	3- 35	198 806 523
	SK 60/600	2- 23	198 806 524
	SK 61/610	3- 55	198 806 525
	SK 62/620	5- 80	198 806 526
	SK 70/700	3- 55	198 806 527
	SK 71/710	6- 130	198 806 528
	SK 72/720	10- 250	198 806 529
	SK 73/730	40- 590	198 806 530
NaOH 50% l/h	SK 60/600	0,2- 3,5	198 806 531
	SK 61/610	0,5- 10	198 806 532
	SK 62/620	0,5- 16	198 806 533
	SK 70/700	0,5- 11	198 806 534
	SK 71/710	1- 33	198 806 535
	SK 72/720	2- 80	198 806 536
	SK 73/730	10- 220	198 806 537

Spare parts standard version

tubes / inserts / scales o-rings

		tubes			**insert**		**scales**	
DN	Type	Polyamid	Polysulphone	PVC-U trans.	top	bottom	Water (L/h)	Water (%)
DN25	SK10/100	198 801 971	198 801 990	198 803 778	198 801 983	198 801 983	198 801 955	198 801 076
DN25	SK11/110	198 801 972	198 801 991	198 803 779	198 801 983	198 801 983	198 801 956	198 801 077
DN25	SK12/120	198 803 774	198 803 836	198 803 780	198 801 983	198 801 983	198 803 800	198 803 804
DN40	SK18/180	198 803 775	198 803 837	198 803 781	198 803 957	198 803 957	198 803 801	198 803 805
DN40	SK19/190	198 803 776	198 803 838	198 803 782	198 801 984	198 801 984	198 803 802	198 803 806
DN40	SK20/200	198 801 973	198 801 992	198 803 783	198 801 984	198 801 984	198 801 957	198 801 078
DN40	SK21/210	198 801 974	198 801 993	198 803 784	198 801 984	198 801 984	198 801 958	198 801 079
DN50	SK29/290	198 803 777	198 803 839	198 803 785	198 803 958	198 803 958	198 803 803	198 803 807
DN50	SK30/300	198 801 975	198 801 994	198 803 786	198 801 986	198 801 985	198 801 959	198 801 080
DN50	SK31/310	198 801 976	198 801 995	198 803 787	198 801 986	198 801 985	198 801 960	198 801 081
DN65	SK40/400	198 801 441	198 801 442	198 803 788	198 801 998	198 801 997	198 801 876	198 801 082
DN65	SK41/410	198 801 443	198 801 444	198 803 789	198 801 998	198 801 997	198 801 877	198 801 083

float / o-rings

		float					**O-rings**	
		PVDF		**PVDF-Nature***		**PTFE**		
DN	Type	without magnet	with magnet bistabile	without magnet	with magnet bistabile	without magnet	EPDM	FPM
DN25	SK10/100	198 801 977	198 801 980	—	—	—	748 410 008	749 410 008
DN25	SK11/110	198 801 977	198 801 980	—	—	—	748 410 008	749 410 008
DN25	SK12/120	198 801 977	198 801 980	—	—	—	748 410 008	749 410 008
DN40	SK18/180	198 803 959	198 803 960	—	—	—	748 410 010	749 410 010
DN40	SK19/190	198 801 978	198 801 981	—	—	—	748 410 010	749 410 010
DN40	SK20/200	198 801 978	198 801 981	—	—	198 807 167	748 410 010	749 410 010
DN40	SK21/210	198 801 978	198 801 981	—	—	198 807 171	748 410 010	749 410 010
DN50	SK29/290	198 803 961	198 803 962	—	—	—	748 410 170	749 410 170
DN50	SK30/300	198 801 979	198 801 982	—	—	198 807 168	748 410 011	749 410 011
DN50	SK31/310	198 801 979	198 801 982	—	—	198 807 172	748 410 011	749 410 011
DN65	SK40/400	198 801 987	198 801 988	—	—	198 807 169	748 410 014	749 410 014
DN65	SK41/410	198 801 344	198 801 345	—	—	198 807 170	748 410 014	749 410 014

* Special version on request

(**a**) **union nut**
(**b**) **socket**
(**c**) **spigot**

Type	**d/DN**	**PVC-U**	**PVC-C**	**PP**	**PVDF***	**ABS**
SK 10, 11, 12 SK 100, 110, 120	32 DN 25 (1")	a) 721 690 008 b) 721 600 108	a) 723 690 008 b) 723 600 105	a) 727 690 408 b) 727 600 108 c) 727 608 508	a) 735 690 408 b) 735 600 108 c) 735 608 608	a) 729 690 408 b) 729 600 108
SK 18, 19, 20, 21 SK 180, 190, 200, 210	50 DN 40 (1 1/2")	a) 721 690 010 b) 721 600 110	a) 723 690 010 b) 723 600 110	a) 727 690 410 b) 727 600 110 c) 727 608 510	a) 735 690 410 b) 735 600 110 c) 735 608 610	a) 729 690 410 b) 729 600 110
SK 29, 30, 31 SK 290, 300, 310	63 DN 50 (2")	a) 721 690 011 b) 721 600 111	a) 723 690 011 b) 723 600 111	a) 727 690 411 b) 727 600 111 c) 727 808 511	a) 735 690 411 b) 735 600 111 c) 735 608 611	a) 729 690 411 b) 729 600 111
SK 40, 41 SK 400, 410	75 DN 65 (2 1/2")	a) 198 806 423 b) 721 600 112	b) 723 600 112	a) 198 806 421 b) 700 253 866 c) 700 256 401	a) 198 806 422 b) 700 253 865 — **	b) 729 600 162

* exempted special version; measurement tube in PVDF and PVDF-HP
** on request

Spare parts short version

tubes
inserts
O-rings

DN	Type	**tube**		**insert**	**O-ring**	
		Polysulphone	PVC-U trans.	top	EPDM	FPM
DN10	SK50/500	198 801 341	198 803 790	198 807 188	748 410 005	749 410 005
DN10	SK51/510	198 801 342	198 803 791	198 807 188	748 410 005	749 410 005
DN10	SK52/520	198 801 343	198 803 792	198 807 188	748 410 005	749 410 005
DN15	SK60/600	198 801 449	198 803 793	198 807 187	748 410 006	749 410 006
DN15	SK61/610	198 801 450	198 803 794	198 807 187	748 410 006	749 410 006
DN15	SK62/620	198 801 451	198 803 795	198 807 187	748 410 006	749 410 006
DN25	SK70/700	198 801 445	198 803 796	198 807 182	748 410 008	749 410 008
DN25	SK71/710	198 801 338	198 803 797	198 807 182	748 410 008	749 410 008
DN25	SK72/720	198 801 339	198 803 798	198 807 182	748 410 008	749 410 008
DN25	SK73/730	198 801 340	198 803 799	198 807 182	748 410 008	749 410 008

float

DN	Type	**float PVDF**		**PVDF-nature ***		**PTFE**
		without magnet	with magnet	without magnet	with magnet	without magnet
DN10	SK50/500	198 806 219	198 806 222	—	—	—
DN10	SK51/510	198 806 219	198 806 222	—	—	—
DN10	SK52/520	198 806 219	198 806 222	—	—	—
DN15	SK60/600	198 806 220	198 806 223	—	—	—
DN15	SK61/610	198 806 220	198 806 223	—	—	—
DN15	SK62/620	198 806 220	198 806 223	—	—	—
DN25	SK70/700	198 806 221	198 806 224	—	—	—
DN25	SK71/710	198 806 221	198 806 224	—	—	—
DN25	SK72/720	198 806 221	198 806 224	—	—	—
DN25	SK73/730	198 806 221	198 806 224	—	—	198 807 166

* Special version on request

(**a**) **union nut**
(**b**) **socket**
(**c**) **spigot**

Type	**d/DN**	**PVC-U**	**PVC-C**	**PP**	**PVDF***	**ABS**
SK 50, 51, 52 SK 500, 510, 520	16 DN 10 (3/8")	a) 721 690 005 b) 721 600 105	a) 723 690 005 b) 723 600 105	a) 727 690 405 b) 727 600 105	a) 735 690 405 b) 735 600 105	a) 729 690 405 b) 729 600 105
SK 60, 61, 62 SK 600, 610, 620	20 DN 15 (1/2")	a) 721 690 006 b) 721 600 106	a) 723 690 006 b) 723 600 106	a) 727 690 406 b) 727 600 106 c) 727 608 506	a) 735 690 406 b) 735 600 106 c) 735 608 606	a) 729 690 406 b) 729 600 106
SK 70 - 73 SK 700 - 730	32 DN 25 (1")	a) 721 690 008 b) 721 600 108	a) 723 690 008 b) 723 600 108	a) 727 690 408 b) 727 600 108 c) 727 608 508	a) 735 690 408 b) 735 600 108 c) 735 608 608	a) 729 690 408 b) 729 600 108

* exempted special version PVDF-HP

Pressure-adjustment-chart for gases

* underlying pressure at calibration time was 0 bar.

new pressure	calibrating pressure (bar)																	
bar	0	0,2	0,4	0,6	0,8	1	1,5	2	3	4	5	6	7	8	9	10	11	12
0	1	0,91	0,85	0,79	0,75	0,71	0,63	0,58	0,5	0,45	0,41	0,38	0,35	0,33	0,36	0,3	0,29	0,27
0,2	1,1	1	0,93	0,87	0,82	0,78	0,69	0,63	0,55	0,49	0,45	0,41	0,39	0,37	0,35	0,33	0,32	0,3
0,4	1,18	1,08	1	0,94	0,88	0,84	0,75	0,68	0,59	0,53	0,48	0,45	0,42	0,4	0,38	0,36	0,34	0,33
0,6	1,27	1,16	1,07	1	0,94	0,9	0,8	0,73	0,63	0,57	0,52	0,48	0,45	0,42	0,4	0,38	0,37	0,35
0,8	1,34	1,22	1,13	1,06	1	0,95	0,85	0,78	0,67	0,6	0,55	0,51	0,47	0,45	0,43	0,4	0,39	0,37
1	1,41	1,29	1,2	1,12	1,06	1	0,9	0,82	0,71	0,63	0,58	0,54	0,5	0,47	0,45	0,43	0,41	0,39
1,5	1,58	1,45	1,34	1,25	1,18	1,12	1	0,91	0,79	0,71	0,65	0,6	0,56	0,53	0,5	0,48	0,46	0,44
2	1,73	1,58	1,46	1,37	1,29	1,22	1,09	1	0,87	0,77	0,71	0,65	0,61	0,58	0,55	0,52	0,5	0,48
3	2	1,82	1,69	1,58	1,49	1,41	1,26	1,15	1	0,89	0,82	0,76	0,71	0,67	0,63	0,6	0,58	0,56
4	2,24	2,04	1,89	1,77	1,67	1,58	1,41	1,29	1,12	1	0,91	0,85	0,79	0,75	0,71	0,68	0,65	0,62
5	2,45	2,24	2,07	1,93	1,83	1,73	1,55	1,41	1,22	1,1	1	0,93	0,87	0,82	0,78	0,74	0,71	0,68
6	2,65	2,42	2,24	2,09	1,97	1,87	1,67	1,53	1,32	1,18	1,08	1	0,94	0,88	0,84	0,8	0,77	0,73
7	2,83	2,58	2,39	2,23	2,11	2	1,79	1,63	1,41	1,26	1,15	1,07	1	0,94	0,9	0,85	0,82	0,79
8	3	2,74	2,54	2,38	2,24	2,12	1,87	1,73	1,5	1,34	1,23	1,14	1,06	1	0,95	0,91	0,87	0,83
9	3,17	2,89	2,67	2,5	2,36	2,24	2	1,82	1,58	1,41	1,29	1,19	1,12	1,05	1	0,95	0,91	0,88
10	3,32	3,03	2,8	2,62	2,48	2,35	2,1	1,92	1,66	1,48	1,35	1,25	1,17	1,11	1,05	1	0,96	0,92
11	3,46	3,16	2,93	2,74	2,58	2,45	2,19	2	1,73	1,54	1,41	1,31	1,23	1,16	1,09	1,04	1	0,96
12	3,6	3,29	3,04	2,85	2,69	2,55	2,28	2,08	1,8	1,61	1,47	1,36	1,27	1,2	1,14	1,08	1,04	1

100-1000 mm water column (**gases**)

		calibrating pressure mm water column									
		100	200	300	400	500	600	700	800	900	1000
operating-pressure	100	1	1	0,99	0,99	0,98	0,98	0,97	0,97	0,96	0,96
	200	1,01	1	1	0,99	0,99	0,98	0,98	0,97	0,97	0,96
	300	1,01	1,01	1	1	0,99	0,99	0,98	0,98	0,97	0,97
	400	1,02	1,01	1,01	1	1	0,99	0,99	0,98	0,98	0,97
	500	1,02	1,02	1,01	1,01	1	1	0,99	0,99	0,98	0,98
	600	1,03	1,02	1,02	1,01	1,01	1	1	0,99	0,99	0,98
	700	1,03	1,03	1,02	1,02	1,01	1,01	1	1	0,99	0,99
	800	1,04	1,03	1,02	1,02	1,02	1,01	1,01	1	1	0,99
	900	1,04	1,03	1,03	1,02	1,02	1,02	1,01	1,01	1	1
	1000	1,05	1,04	1,03	1,03	1,02	1,02	1,01	1,01	1,01	1

Use this chart to adjust the displayed values for gaseous media of your flow meter, if the specific media weight is differing from the underlying specific pressure (0 bar) at calibrating time.

Example:
Calibrating pressure is 6 bar and operating pressure is 3 bar. From the column calibrating pressure 6 bar and line new pressure 3 bar you take the factor 0,755. The values shown by the flow meter has to be multiplied with this factor. Now the real flow valve with the specific operating pressure of 3 bar can be calculated.

You get the factor with the following formula:

$$\sqrt{\frac{p\ new}{p\ old}} = \sqrt{\frac{4}{7}} = 0{,}755$$

(You must include the atmospheric pressure include in your calculation)

Note:
New density is higher: factor < 1
New density is lower : factor > 1

Temperature-adjustment-chart

* underlying temperature at calibrating time was 20°C

	calibrating temp. (C°)																		
operating temp. (C°)		0	10	20	30	40	50	60	70	80	90	100	110	120	140	160	180	200	
	0	1	1,018	1,035	1,052	1,07	1,088	1,103	1,12	1,135	1,152	1,169	1,183	1,198	1,23	1,258	1,287	1,315	0
	10	0,983	1	1,018	1,035	1,051	1,068	1,084	1,1	1,116	1,131	1,149	1,163	1,18	1,21	1,24	1,266	1,292	10
	20	0,965	0,983	1	1,015	1,032	1,05	1,065	1,08	1,096	1,111	1,126	1,142	1,157	1,187	1,215	1,242	1,27	20
	30	0,948	0,966	0,983	1	1,015	1,031	1,047	1,062	1,08	1,093	1,11	1,124	1,138	1,165	1,194	1,221	1,249	30
	40	0,933	0,95	0,967	0,984	1	1,015	1,031	1,046	1,061	1,075	1,09	1,105	1,12	1,149	1,175	1,201	1,23	40
	50	0,92	0,936	0,953	0,968	0,984	1	1,015	1,03	1,045	1,06	1,074	1,09	1,102	1,131	1,159	1,184	1,12	50
	60	0,905	0,922	0,938	0,953	0,968	0,985	1	1,015	1,03	1,045	1,058	1,072	1,085	1,112	1,14	1,165	1,19	60
	70	0,892	0,907	0,924	0,94	0,955	0,97	0,985	1	1,014	1,026	1,041	1,055	1,07	1,095	1,121	1,148	1,172	70
	80	0,88	0,895	0,912	0,927	0,943	0,965	0,971	0,987	1	1,014	1,027	1,041	1,055	1,082	1,109	1,133	1,16	80
	90	0,868	0,883	0,898	0,913	0,923	0,943	0,958	0,972	0,987	1	1,013	1,026	1,04	1,065	1,091	1,117	1,14	90
	100	0,856	0,87	0,886	0,902	0,917	0,931	0,94	0,96	0,973	0,986	1	1,013	1,027	1,053	1,079	1,103	1,127	100
	110	0,845	0,858	0,875	0,888	0,903	0,916	0,93	0,945	0,958	0,974	0,985	1	1,011	1,038	1,061	1,085	1,11	110
	120	0,833	0,848	0,853	0,878	0,892	0,906	0,92	0,933	0,948	0,96	0,973	0,987	1	1,025	1,049	1,072	1,095	120
	140	0,814	0,828	0,843	0,856	0,87	0,884	0,898	0,911	0,925	0,938	0,95	0,963	0,975	1	1,024	1,048	1,07	140
	160	0,795	0,808	0,823	0,836	0,85	0,863	0,877	0,89	0,903	0,915	0,928	0,94	0,953	0,977	1	1,024	1,045	160
	180	0,775	0,79	0,803	0,817	0,83	0,843	0,856	0,869	0,883	0,895	0,907	0,919	0,93	0,955	0,977	1	1,021	180
	200	0,76	0,774	0,787	0,801	0,813	0,827	0,838	0,852	0,865	0,876	0,888	0,9	0,911	0,935	0,957	0,98	1	200

Use this chart to adjust the displayed values for gaseous media of your flow meter, if the operating temperature is differing from the underlying temperature at calibrating time.

Example:
Calibrating temperature is 40°C and operating temperature is 70°C. Calibrating temperature is 40°C and operating temperature is 70°C. The values shown by the flow meter has to be multiplied with this factor. Now the real flown through amount with the operating temperature of 70°C an be calculated.

You get the factor with the following formula:

$$\sqrt{\frac{\textit{calibrating temperature}}{\textit{operating temperature}}} = \sqrt{\frac{313}{343}} = 0{,}955$$

Note:

New operating temperature is higher: factor < 1

New operating temperature is lower: factor > 1

Density-adjustment-chart for gases

* underling specific gravity at calibration time was 1 kg/Nm³ (air)

operating gases	P (kg/Nm³)	Gases for calibration										
		air	oxygen	nitrogen	ammonia	acetylene	chlorine	hydrogen	carbon dioxide	sulphur dioxide	coal gas	propane
Luft	1,293	1	1,05	0,983	0,772	0,953	1,58	0,262	1,238	1,495	0,652	1,25
Sauerstoff	1,429	0,953	1	0,935	0,735	0,906	1,5	0,25	1,175	1,43	0,621	1,189
Stickstoff	1,251	1,017	1,069	1	0,786	0,968	1,604	0,267	1,255	1,53	0,664	1,272
Ammoniak	0,771	1,295	1,36	1,272	1	1,232	2,04	0,34	1,6	1,946	0,845	1,62
Acetylen	1,171	1,05	1,105	1,033	0,812	1	1,66	0,276	1,3	1,58	0,685	1,314
Chlor	3,22	0,633	0,665	0,623	0,49	0,603	1	0,166	0,785	0,953	0,413	0,792
Wasserstoff	0,089	3,81	4,01	3,75	2,94	3,63	6,02	1	4,715	5,725	2,48	4,76
Kohlendioxid	1,977	0,808	0,85	0,796	0,625	77	1,275	0,212	1	1,216	0,528	1,01
Schwefeldioxid	2,926	0,668	0,698	0,654	0,514	0,633	1,05	0,1745	0,823	1	0,433	0,83
Leuchtgas	0,55	1,532	1,61	1,506	1,185	1,46	2,42	0,403	1,895	2,306	1	1,915
Propan	2,02	0,8	0,841	0,786	0,618	0,762	1,262	0,21	99	1,205	0,522	1

Use this chart to adjust the displayed values for gaseous media of your flow meter, if the specific media gravity is differing from the underlying specific gravity at calibrating time.

Example:
Specific gravity at calibrating time is 1,429 kg/Nm³.
The media hydrogen with its specific gravity of 0,089 kg/Nm³ should be measured. From the column hydrogen, in line seven for operating gas, you get the factor 4,01 . The values shown by the flow meter has to be multiplied with this factor. Now the real flown through amount with the specific gravity of 0,089 kg/Nm³ can be calculated.

Note:
New density is higher: factor < 1
New density is lower : factor > 1

Density-adjustment-chart for liquids

*underlying specific gravity at calibration time was 1kg/l (water)

		calibratina solution (kg/l) float material PVDF																	
		0,5	0,6	0,7	0,8	0,9	1	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	1,9	2		
Density of operating liquid	0,5	1	1,105	1,2	1,29	1,38	1,464	1,545	1,63	1,71	1,785	1,86	1,94	2,02	2,09	2,16	2,24	0,5	
	0,6	0,903	1	1,084	1,168	1,248	1,32	1,397	1,475	1,545	1,615	1,68	1,754	1,82	1,89	1,95	2,02	0,6	
	0,7	0,834	0,923	1	1,078	1,15	1,22	1,29	1,36	1,425	1,49	1,55	1,615	1,68	1,745	1,8	1,865	0,7	
	0,8	0,775	0,856	0,928	1	1,066	1,133	1,196	1,262	1,325	1,38	1,43	1,5	1,56	1,62	1,67	1,73	0,8	
	0,9	0,724	0,802	0,87	0,937	1	1,06	1,12	1,18	1,24	1,295	1,35	1,405	1,46	1,515	1,57	1,62	0,9	
	1	0,683	0,755	0,818	0,883	0,94	1	1,055	1,114	1,17	1,22	1,27	1,325	1,375	1,43	1,48	1,53	1	
	1,1	0,645	0,715	0,771	0,836	0,892	0,946	1	1,055	1,106	1,155	1,2	1,255	1,3	1,35	1,4	1,45	1,1	
	1,2	0,613	0,678	0,735	0,793	0,845	0,896	0,947	1	1,05	1,095	1,14	1,19	1,235	1,28	1,33	1,37	1,2	
	1,3	0,585	0,648	0,7	0,755	0,807	0,857	0,903	0,955	1	1,044	1,088	1,134	1,176	1,22	1,264	1,305	1,3	
	1,4	0,56	0,62	0,671	0,723	0,773	0,82	0,865	0,913	0,958	1	1,042	1,085	1,13	1,17	1,21	1,25	1,4	
	1,5	0,537	0,595	0,645	0,695	0,743	0,787	0,832	0,877	0,92	0,96	1	1,042	1,084	1,125	1,16	1,205	1,5	
	1,6	0,515	0,57	0,618	0,665	0,712	0,755	0,798	0,84	0,882	0,92	0,958	1	1,04	1,08	1,11	1,15	1,6	
	1,7	0,496	0,548	0,595	0,641	0,685	0,726	0,767	0,81	0,848	0,886	0,923	0,961	1	1,038	1,072	1,11	1,7	
	1,8	0,478	0,538	0,574	0,617	0,66	0,7	0,74	0,78	0,817	0,853	0,888	0,926	0,962	1	1,032	1,07	1,8	
	1,9	0,462	0,511	0,555	0,597	0,638	0,676	0,715	0,755	0,79	0,826	0,858	0,897	0,93	0,968	1	1,034	1,9	
	2	0,446	0,495	0,536	0,578	0,617	0,654	0,691	0,73	0,798	0,798	0,83	0,867	0,9	0,935	0,965	1	2	

Use this chart to adjust the displayed values for liquid media of your flow meter, if the specific media gravity is differing from the underlying specific gravity at calibrating time.

Example:
Specific gravity at calibration 1,4 l/h.
The liquid media with a specific gravity of 0,9 is to be measured.
If you have a calibrating solution of 1,4 you take in line five the factor 1,295.
The values shown by the flow meter has to be multiplied with this factor.
Now the real flow valve with the specific gravity of 0,9 can be calculated.

Note:
New density is higher: factor < 1
New density is lower : factor > 1

Notes:

Notes:

General Condition of Supply of Georg Fischer Piping Systems Limited, Schaffhausen

1 General

1.1 These General Conditions shall apply to all Products supplied by George Fischer to the Purchaser.
They shall also apply to all future business even when no express reference is made to them.

1.2 Any deviating or supplementary conditions especially Purchaser's general conditions of purchase and verbal agreements shall only be applicable if accepted in writing by George Fischer.

1.3 The written form shall be deemed to be fulfilled by all forms of transmission, evidenced in the form of text, such as telefax, e-mail, etc.

2 Tenders

Tenders shall only be binding if they contain a specifically stated period for a acceptance.

3 Scope of Delivery

3.1 George Fischer's product range is subject to change.

3.2 The confirmation of order shall govern the scope and execution of the contract.

4 Data and Documents

4.1 Technical documents such as drawings descriptions illustrations and data on dimensions performance and weight as well as the reference to standards are for information purposes only. They are not warranted characteristics and are subject to change.

4.2 All technical documents shall remain the exclusive property of George Fischer and may only be used for the agreed purposes or as George Fischer may consent.

5 Confidentiality, Protection of Personal Data

5.1 Each party shall keep in strict confidence all commercial or technical information relating to the business of the other party, of which it has gained knowledge in the course of its dealing with the other party. Such information shall neither be disclosed to third parties nor used for other purposes than those for which the information has been supplied.

5.2 In the context of the contractual relation with the Purchaser personal data may be processed. The Purchaser agrees to the disclosure of said data to third parties such as foreign subcontractors and suppliers etc .

6 Local Laws and Regulations, Export Controls

6.1 The Purchaser shall bring to the attention of George Fischer all local laws and regulations at the place of destination which bear connection with the execution of the contract and the adherence to relevant safety regulations and approval procedures.

6.2 In case of re-exports, Purchaser shall be responsible for compliance with pertinent export control regulations.

7 Price

7.1 Unless agreed otherwise, the prices shall be deemed quoted net ex works (according to Incoterms of the ICC, latest version) including standard packing. All supplementary costs such as the cost of carriage insurance export and import licences etc. shall be borne by the Purchaser. The Purchaser shall also bear the costs of all taxes fees duties etc. connected with the contract.

7.2 If the costs of packing, carriage, insurance, fees and other supplementary costs are included in the tender price or contract price or are referred to specifically in the tender or confirmation of order, George Fischer reserve the right to revise their prices accordingly should any change occur in the relevant tariffs.

8 Terms of Payment

8.1 The Purchaser shall make payment in the manner agreed by the parties to the George Fischer works conducting the a count without any deductions such as discounts, costs, taxes or dues.

8.2 The Purchaser may only withhold or off-set payments due against counter claims which are either expressly acknowledged by George Fischer or finally awarded to the Purchaser.
In particular, payment shall still be made when unessential items are still outstanding provided, however, that the Products already delivered are not rendered unusable as a result.

9 Retention of Title

9.1 The Products shall remain the property of George Fischer until the Purchaser shall have settled all claims, present and future, which George Fischer may have against him.

9.2 Should the Purchaser sell Products to which title is reserved, in the ordinary course of business, he shall hereby be deemed to have tacitly assigned to George Fischer the proceeds deriving from their sale together with all collateral rights, securities and reservations of title until all claims held by George Fischer shall have been settled. Until revoked by George Fischer, this assignment shall not preclude Purchaser's right to collect the assigned receivables.

9.3 To the extent the value of the Products to which title is reserved together with collateral securities should exceed George Fischer's claims against the Purchaser by more than 20%, George Fischer shall re-assign the above proceeds to Purchaser at his request.

10 Delivery

10.1 The term of delivery shall commence as soon as the contract has been entered into, all official formalities such as import and payment permits have been obtained and all essential technical points have been settled. The term of delivery shall be deemed duly observed when, upon its expiry, the Products are ready for despatch.

10.2 Delivery is subject to the following conditions, i.e. the term of delivery shall be reasonably extended:

a) if George Fischer are not supplied in time with the information necessary for the execution of the contract or if subsequent changes causing delays are made by the Purchaser.

b) if George Fischer are prevented from performing the contract by force majeure. Force majeure shall equally be deemed to be any unforeseeable event beyond George Fischer's control which renders George Fischer's performance commercially unpractical or impossible, such as delayed or defective supplies from sub contractors labour disputes, governmental orders or regulations, shortages in materials or energy, serious disturbances in George Fischer's works, such as the total or partial destruction of plant and equipment or the breakdown of essential facilities, serious disruptions in transport facilities, e.g. impassable roads.
Should the effect of force majeure exceed a period of six months, either party may cancel the contract forthwith.
George Fischer shall not be liable for any damage or loss of any kind whatsoever resulting therefrom, any suspension or cancellation being without prejudice to George Fischer's right to re over all sums due in respect of consignments delivered and costs incurred to date.

c) if the Purchaser is in delay with the fulfilment of his obligations under the contract, in particular, if he does not adhere to the agreed conditions of payment or if he has failed to timely provide the agreed securities.

10.3 If for reasons attributable to George Fischer the agreed term of delivery or a reasonable extension thereof is exceeded, George Fischer shall not be deemed in default until the Purchaser has granted to George Fischer in writing a reasonable extension thereof of not less than one month which equally is not met.
The Purchaser shall then be entitled to the remedies provided at law, it being however understood that, subject to limitations of Art. 16, damage claims shall be limited to max. 10% of the price of the delayed delivery.

10.4 Part shipments shall be allowed and George Fischer shall be entitled to invoice for such deliveries.

10.5 If the Purchaser fails to take delivery within a reasonable time of Products notified as ready for despatch, George Fischer shall be entitled to store the Products at the Purchaser's expense and risk and to invoice them as delivered. If Purchaser fails to effect payment, George Fischer shall be entitled to dispose of the Products.

10.6 Should Purchaser cancel an order without justification and should George Fischer not insist on the performance of the contract, George Fischer shall be entitled to damages in the amount of 10% of the contract price, unless George Fischer can prove higher damages.

11 Packing

If the Products are provided with additional pa king over and above the standard packing, such packing shall be invoiced separately and be non-returnable.

12 Passing of Risk

12.1 The risk in the Products shall pass to the Purchaser as soon as they have left George Fischer's works (EX WORKS, Incoterms ICC, latest version), even if delivery is made carriage-paid, under similar clauses or including installation or when carriage is organized and managed by George Fischer.

12.2 If delivery is delayed for reasons beyond George Fischer's control, the risk shall pass to the Purchaser when he is notified that the Products are ready for despatch.

13 Carriage and Insurance

13.1 Unless agreed otherwise, the Purchaser shall bear the cost of carriage.

13.2 The Purchaser shall be responsible for transport insurance against damage of whatever kind. Even when such insurance is arranged by George Fischer it shall be deemed taken out by the order of and for the account of the Purchaser and at his risk.

13.3 Special requests regarding carriage and insurance shall be communicated to George Fischer in due time. Otherwise carriage shall be arranged by George Fischer at their discretion, but without responsibility, by the quickest and cheapest method possible.
In case of carriage-paid delivery transport arrangements shall be made by George Fischer. If the Purchaser specifies particular requirements, any extra costs involved shall be borne by him.

13.4 In the event of damage or loss of the Products during carriage the Purchaser shall mark the delivery documents accordingly and immediately have the damage ascertained by the carrier. Not readily ascertainable damages sustained during carriage shall be notified to the carrier within six days after receipt of the Products.

14 Inspection and Acceptance

14.1 The Products will be subject to normal inspection by George Fischer during manufacture. Additional tests required by the Purchaser shall be agreed upon in writing and shall be charged to the Purchaser.

14.2 It shall be a condition of George Fischer's obligation under the warranties stated hereinafter that George Fischer be notified in writing by the Purchaser of any purported defect immediately upon discovery. Notice concerning weight, numbers or apparent defects is to be given latest within 30 days from receipt of the Products, notice of other defects latest within the agreed warranty period.

14.3 Purchaser shall not dispose of allegedly defective Products until all warranty and/or damage claims are finally settled. At its request, defective Products are to be placed at George Fischer's disposal.

14.4 At its request, George Fischer shall be given the opportunity to inspect the damage, prior to commencement of remedial work, either itself or by third party experts.

15 Warranty

15.1 At the written request of the Purchaser, George Fischer undertake to repair or replace at their discretion, as quickly as possible and free of charge all Products supplied which demonstrably suffer from faulty design, materials or workmanship or from faulty operating or installation instructions.
Replaced parts shall become property of George Fischer.
For Products which are manufactured to specifications, drawings or patterns supplied by the Purchaser, George Fischer's warranty shall be restricted to proper materials and workmanship.

15.2 The Purchaser shall be entitled to cancel the contract or to demand a reduction in the contract price if:
- repair or replacement is impossible, or
- George Fischer are unable or refuse to remedy the defect or replace the defective Products within a reasonable, or
- George Fischer are unduly delaying such remedy or replacement.

15.3 For Products or essential components manufactured by a third party and supplied by George Fischer under this contract, George Fischer's warranty is limited to the warranty provided by said third party.

15.4 This warranty shall not apply to damage resulting from normal wear, improper storage and maintenance, failure to observe the operating instructions, overstressing or overloading, unsuitable operating media, unsuitable construction work or unsuitable building ground, improper repairs or alterations by the Purchaser or third parties, the use of non-genuine parts and other reasons beyond George Fischer's control.

15.5 No action or claim may be brought by the Purchaser on account of any alleged breach of warranty or any other obligation of George Fischer after the expiration of twelve (12) months from receipt of the Products by the end user or at the latest within eighteen (18) months of the Products being despatched by George Fischer.

15.6 In case of Products for use in domestic installations or in utilities
- George Fischer will assume the costs of dismantling the defective Product and restoring the damaged object as well as, in case of negligence, all other direct damages caused by the defective Product (damage to property and injury to or death of persons) up to CHF 1'000'000 per occurrence.
- the statute of limitations for warranty or damage claims - contrary to Section 15.5 - will be 5 years from the date of installation.

16 Limitation of Liability

All cases of breach of contract and the relevant consequences as well as all rights and claims on the part of the customer, irrespective on what ground they are based, are exhaustively covered by these general conditions of supply. In particular, any claims not expressly mentioned for damages, reduction of price, termination of or withdrawal from the contract are excluded. In no case whatsoever shall the customer be entitled to claim damages other than compensation for costs of remedying defects in the supplies. This in particular refers, but shall not be limited, to loss of production, loss of use, loss of orders, loss of profit and other direct or indirect or consequential damage. This exclusion of liability, however, does not apply to unlawful intent or gross negligence on the part of George Fischer and in case of strict liability under applicable product liability statutes, but does apply to unlawful intent or gross negligence of persons employed or appointed by the supplier to perform any of its obligations.

17 Severability

Should any term or clause of these General Conditions in whole or in part be found to be unenforceable or void, all other provisions shall remain in full force and effect and the unenforceable or void provision shall be replaced by a valid provision, which comes closest to the original intention of the unenforceable or invalid provision.

18 Place of Performance and Jurisdiction

18.1 Place of performance for the Products shall be the George Fischer works from which the Products are despatched.

18.2 Any civil action based upon any alleged breach of this contract shall be filed and prosecuted exclusively in the courts of Schaffhausen, Switzerland.
George Fischer however reserves the right to file actions in any court having jurisdiction over controversies arising out of or in connection with the present contract.

18.3 The contract shall be governed by Swiss law without regard to conflict of law provisions that would require the application of another law.

1/2004

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