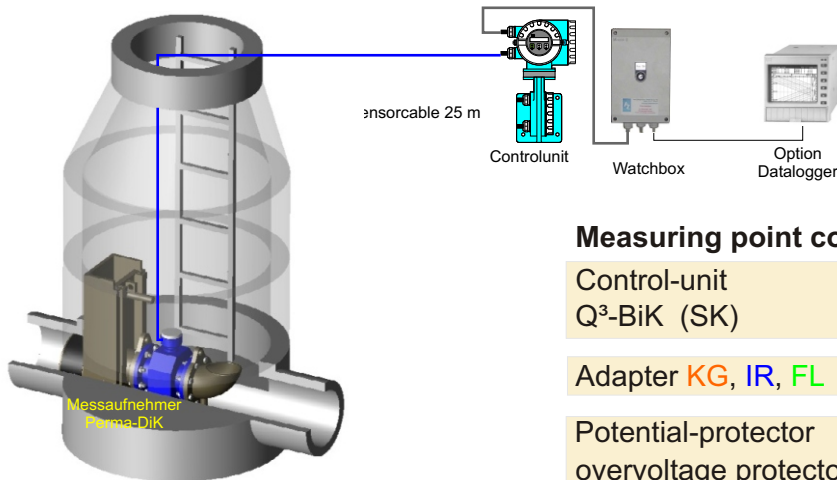


Q³-BiK SK

Waste-water flowmeasurement for small manholes



Design and construction Q³-BiK-SK



Measuring point consists off:

Control-unit
Q³-BiK (SK)

Adapter **KG**, **IR**, **FL**

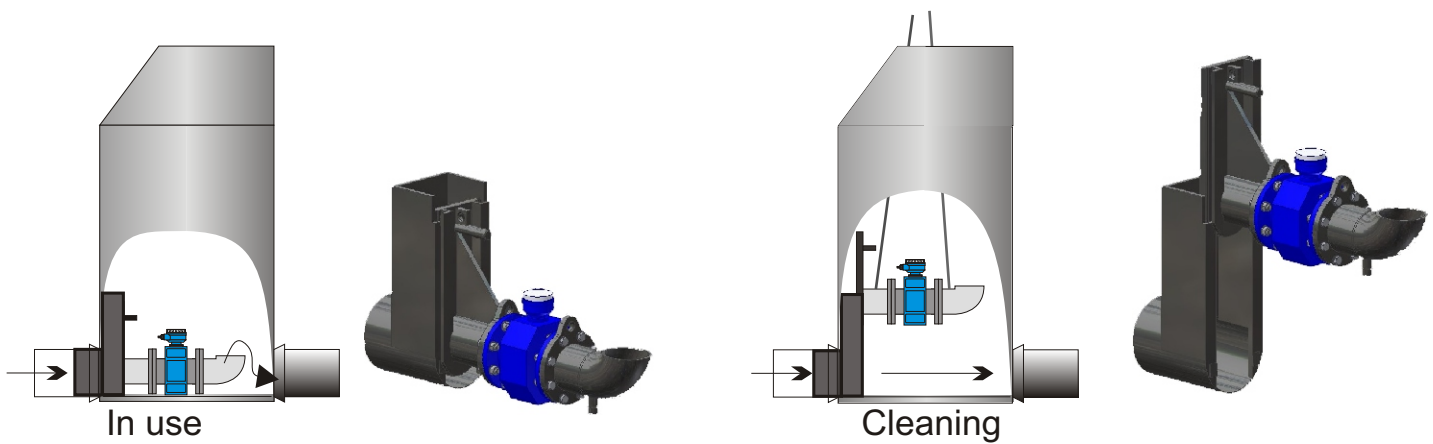
Potential-protector
overvoltage protector
Datalogger
Control cabinet



Example

Simple dismounting and cleaning

When the manhole cover is on the right place, nobody must enter the manhole. For cleaning you can dismount with 2 ropes the Q³-BiK out of the manhole.



Features

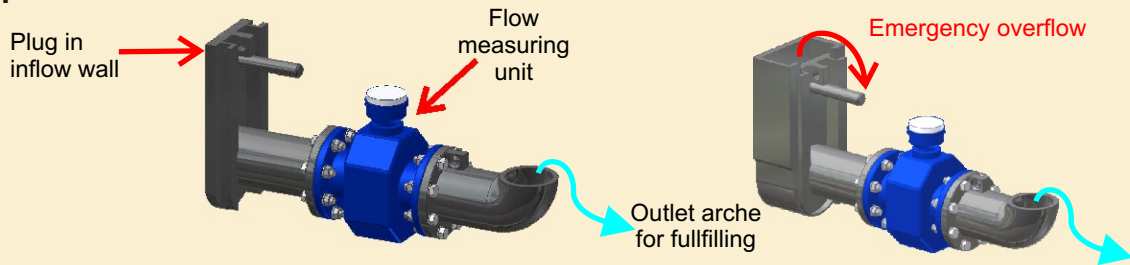
- ⇒ Measuring error <2% of reading
- ⇒ Complete system calibrated ex work
- ⇒ Short installation length, work under water
- ⇒ no in- and outlet run. All integrated.
- ⇒ Full-filling with end arch
- ⇒ Safe low flow measurement
- ⇒ Cleaning during flow
- ⇒ Emergency overflow intergated.
- ⇒ No bypass needed
- ⇒ No waste influence
(10% sand in profile = + 1% measuring error)

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System design



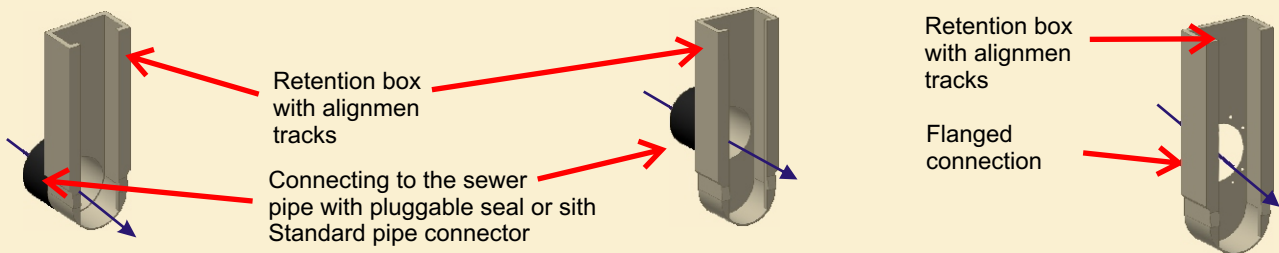
Adapter selection

Outlet arche for fullfilling

Mounting adapter IR/KG

Mounting adapter IR/KG With higher inlet

Mounting adapter FL

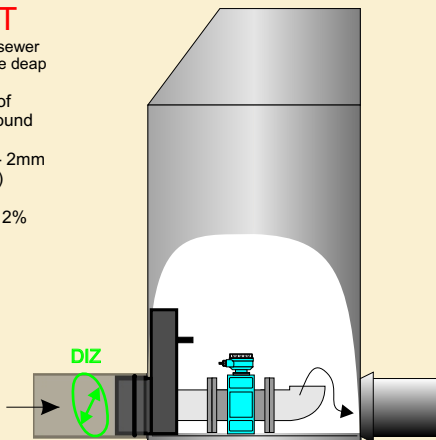


Finished measuring point

Q³-BiK -SK -IRT

Permanent flow measurement in sewer
SK= Retention box IRT=Inline pipe deep

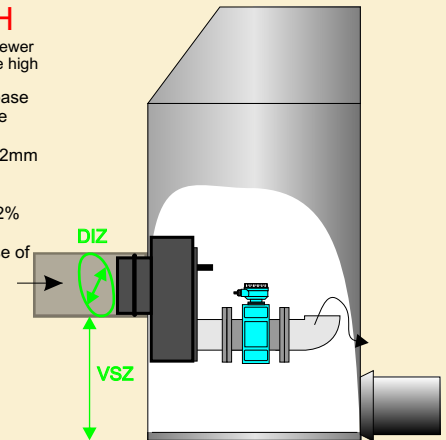
Base of duct is equal the base of sewer. Sealed with a gasket around the innertube from the adapter.
Measure the inner diameter +/- 2mm
The pipe must be circular! (DIZ)
Diameter variation +/- 2mm
Off-axis angle maximum 1° or 2% hydraulic gradient



Q³-BiK -SK -IRH

Permanent flow measurement in sewer
SK= Retention box IRT=Inline pipe high

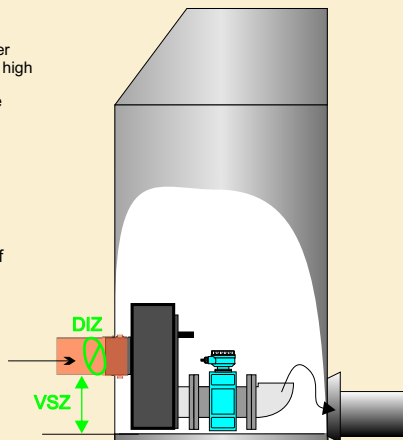
Base of duct is higher than the base of sewer. Gasket for smooth bore pipe.
Measure the inner diameter +/- 2mm
The pipe must be circular! (DIZ)
Diameter variation +/- 2mm
Off-axis angle maximum 1° or 2% hydraulic gradient
Distance manhole bottom to base of



Q³-BiK -SK -KGH

Permanent flow measurement in sewer
SK= Retention box KGH=Standard pipe high

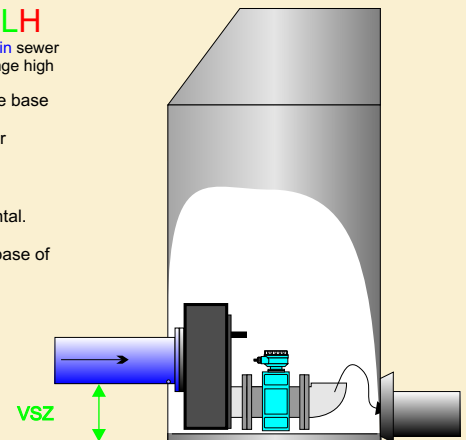
Base of duct is higher than the base of sewer. Connection with a Standard pipe. Declare exact the type.
Measure the inner diameter +/- 2mm
Off-axis angle maximum 1° or 2% hydraulic gradient
Distance manhole bottom to base of



Q³-BiK -SK -FLH

Permanent flow measurement in sewer
SK= Retention box FLH=Flange high

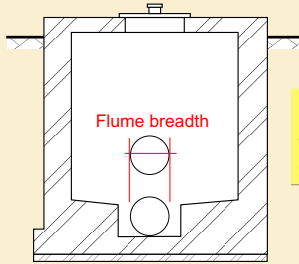
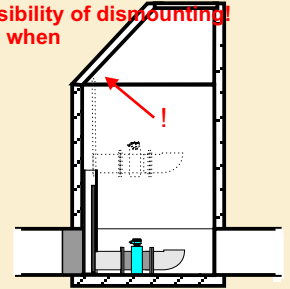
Base of duct is higher than the base of sewer. Pipe with flange.
We need the flange parameter
Diameter in mm
Pressure stage
Number of holes
Flange must be 90° to horizontal.
Max 1° different.
Distance manhole bottom to base of sewer (Offset VSZ)



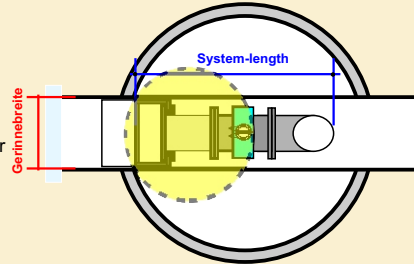
Dimensions and measurement range

Q ³ -BiK System-pipe	Range at 800mm storage level (SH)	Optimal length	Minimal length	Min. Q ³ -BiK breadth = minimal Flume breadth	max. Flow meter breadth	Flange-diameter	Weight	Weight
		with 500mm retention box	with 200 mm retention box	BG	K-Maß	Aussen	(empty)	(with water)
DN	l/s	mm	mm	mm	mm	mm	in kg	in kg
100	0,16 - 17	665	525	295	180	220	17	22
125	0,25 - 25	833	568	310	260	250	24	33
150	0,35 - 35	1026	686	350	260	285	30	49
200	0,63 - 63	1329	814	395	324	340	55	95
250	0,98-92	1657	1012	450	400	395	78	160
300	1,41 - 125	2027	1227	645	460	445	150	250

Proff the possibility of dismounting! (Particularly when the cover is not over the inflow-pipe)



Optimal position of the cover is directly over the retention box. Therefore the system will be better dismounted..



Is the cover breadth enough ?

Retangular cover

The smallest inside dimension must be bigger then inside diameter of the sewer pipe + 200mm.

Circular cover:

Up to inside dimension of the sewer pipe <= 350 mm cover **625mm**
 - Up to inside dimension of the sewer pipe <= 450 mm cover **800mm**
 -

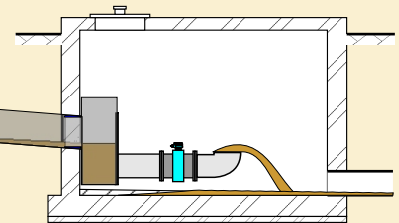
Hydraulic dimensioning

Backflow level up to 2m

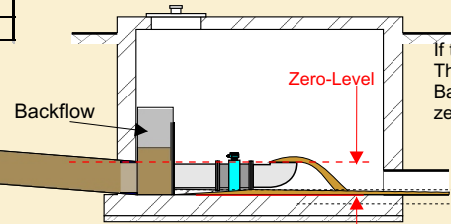
mm	l/s DN 100	l/s DN 125	l/s DN 150	l/s DN 200	l/s DN 250	l/s DN 300
100	6,1	10,0	14,4	27,6	43,2	62,2
200	9,0	14,6	21,1	39,0	61,1	88,0
300	11,4	17,9	25,8	47,8	74,8	107,8
400	13,2	20,6	29,8	55,2	86,3	124,5
500	14,7	23,1	33,3	61,7	96,5	139,2
600	16,1	25,3	36,5	67,6	105,8	152,5
700	17,4	27,3	39,4	73,0	114,2	164,7
800	18,6	29,2	42,1	78,0	122,1	176,0
900	19,8	31,0	44,7	82,8	129,5	186,7
1000	20,8	32,6	47,1	87,2	136,5	196,8
1100	21,8	34,2	49,4	91,5	143,2	206,4
1200	22,8	35,8	51,6	95,6	149,6	215,6
1300	23,7	37,2	53,7	99,5	155,7	224,4
1400	24,6	38,6	55,8	103,2	161,5	236,6
1500	25,5	40,0	57,7	106,8	167,2	244,9
1600	26,3	41,3	59,6	110,3	172,7	252,9
1700	27,1	42,6	61,4	113,7	178,0	260,7
1800	27,9	43,8	63,2	117,0	183,2	268,3
1900	28,7	45,0	65,0	120,2	188,2	275,6
2000	29,4	46,2	66,6	123,4	196,2	282,8

Backflow

For waterflow we need a different between the two water level. You see it in the retention box as a backflow level. To find the right Q³-BiK system you must look for the possible backflow in your sewer.



Higher base of sewer:
 If the top of the outlet arche is in the same level as the base of the sewer the: Backflow = Backflow level
 At zero flow there is no backflow in the sewer.



If the inflow is base of duct:
 The system variable.
 Backflow up base of sewer = zero level + backflow level

Zero-Level

The zero-level is the distance between Magflowmeter bottom and the top of outlet arche.

MID DN	mm
100	179
125	232,5
150	245
200	300
250	350
300	400

Equipment versions

Q ³ -BiK SK	Variants	Q ³ -BiK SK	Possible equipment
Pipe- /Box-material :	PE-HD Black / PP / V2A	Protection category	IP68
Hight of Inflow wall	800 mm	Magflowmeter coting:	PU / Hardrubber / Teflon
Hight of retention box	1000 mm	Magflowmeter electrodes :	1.4435 / Alloy C22 / Tantal / Pt-Rh
Gasket material :	EPDM / Viton	Output signal	0/4-20 mA + counter pulse
Protective lacquer	two-component epoxide resin adhesive (AMERLOK) / PP	Power supply :	16 - 62 VDC / 20-55 V AC / 85-260 V 50/60 Hz
Temperatur range	0 - 45°C / 0-80°C	Exp proof :	Nicht Ex / ATEX II 2GD EEx de , EEx e
Possible pH range	pH 6 - 9 / pH 0-14	Max. cable length betw een Flow meter and control unit	200 m in waste water

Blue + underlined = Standard

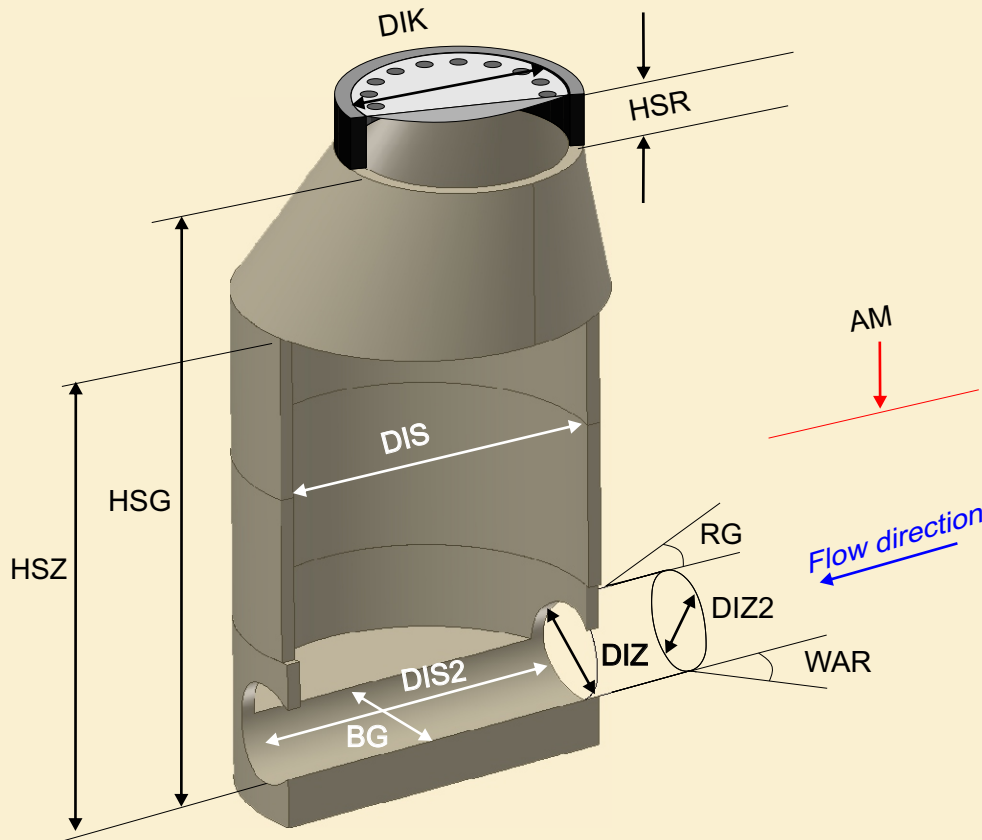
If the standard is not possible ?

Please, send us your exact manhole datas. Then we can make a special offer.

Please send the completed table to:

e-mail: info@axel-zangenberg.de

Fax +49 7635 /82447-799



Please all data with a accuracy of +/- 1mm.

	Measuring point	Remark	Input
DIK	Sewer cover inner diameter length and breadth	The system must go through the cover.	
HSG	Shaft height complete	From Base of duct to the cover	
HSZ	Shaft height up to the conus	From Base of duct to the conus begin	
HSR	Height of the shaft-ring	The system must pass this ring.	
DIS	Inner diameter of the shaft or length		
DIS2	Inner diameter between the pipe or flanges	Sometimes the pipes look inside the shaft.	
DIZ	Inner diameter of the inlet pipe	several times in the round. Some pipes are not circular.	
DIZ2	Inner diameter of the inlet pipe 300mm inside the pipe	contractions. We need it for the adapter construction.	
BG	Flume breadth	Has the flume the same breadth as the sewer ?	
RG	hydraulic gradient	From the inflow	
WAR	Off-axis angle	Angle in the horizontal	
AM	Maximum possible backflow	Is there a barrier before the manhole ?	