

VARIFLUX IFS 6000 Electromagnetic Flowmeter

for sanitary and aseptic
applications



- For many different application fields with many different types of process connections
- For measurement of quantities! Dosing! Batching!
- 3A und Weihenstephan authorizations,
- FDA-approved materials for wetted parts

Variable area flowmeters

Vortex flowmeters

Flow controllers

Electromagnetic flowmeters

Ultrasonic flowmeters

Mass flowmeters

Level measuring instruments

Communications engineering

Engineering systems & solutions



VARIFLUX IFS 6000 Electromagnetic Flowmeter

for hygienic and aseptic applications

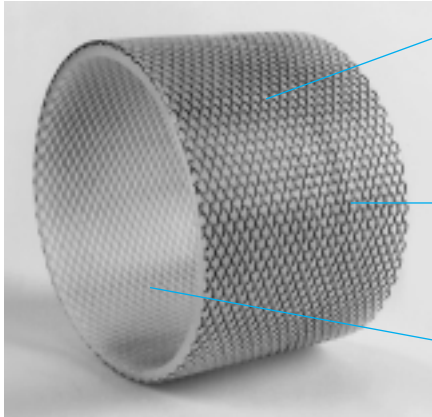
VARIFLUX flowmeters measure the volumetric flowrate of electrically conductive liquids, acids, alkaline solutions, pastes, etc.

Fields of application

- Batching, dosing, measurement of quantities in sanitary and aseptic applications
- Abrasion resistance: high
- Chemical resistance: all concentrations

Calibrated on **EN 45 001**
certified calibration rigs,
accuracy of calibration better
than 99.97% of the measured value.



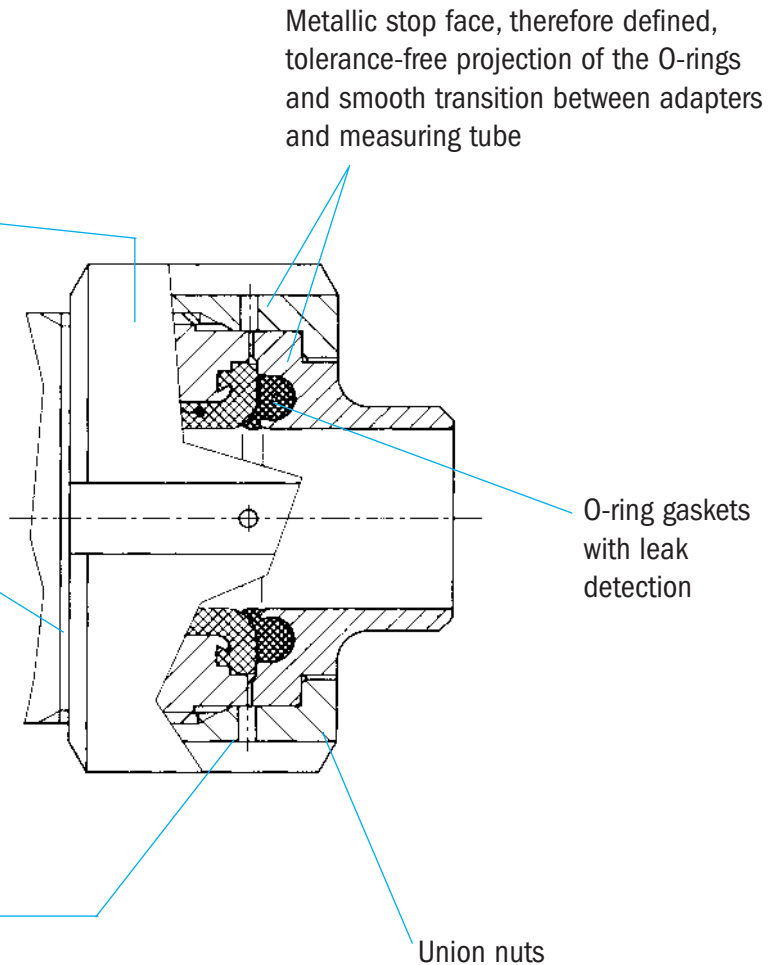


Dimensionally stable through stainless steel mesh reinforcement or sintered metal bearing bush, also at high temperatures and when exposed to vacuum impact, resistant to high-temperature steam, residue-free cleaning by CIP and SIP up to 140°C (180°C for separate systems)

No electrode gaskets

KROHNE Teflon®-PFA liner, with FDA approval, surface roughness Ra < 0.8 µm

Simple, quick and low-cost installation through the sanitary welding connections or the many different self-centering connections to DIN, ISO, ANSI, SMS, etc.



Stainless steel measuring tube

Metallic stop face, therefore defined, tolerance-free projection of the O-rings and smooth transition between adapters and measuring tube

O-ring gaskets with leak detection

Pressure-relief through-hole, therefore no pressure build-up behind sealing groove between seal and environment

Union nuts

Can be operated together with all KROHNE signal converters of integral or separate design

Background	Water Wastewater	Abrasive, corrosive and hot products	Non-contact measurement $K \geq 0.05 \mu\text{S}/\text{cm}$	Food, Beverage, Pharmaceutical	High Pressure and special connections	Signal converter Integral and Remote	Remote	Calibration / Measuring Principle	Sizing / Installation guides	Ordering guide
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Available sizes/types and connections

Size Type		Inside diameter $\varnothing d_i$ of measuring tube in mm (inches) for connections to ...		Aseptic weld-on connections for pipes to DIN 11850	Aseptic weld-on connections for pipes to ISO 2037		Connection and pipe flanges to DIN 2501/PN40	Connection and pipe flanges to ANSI B 16.5/150, 300lb	Connection and pipe flanges to JIS 2210/20 K	Dairy screw connections and tube nozzles (option) to DIN 11851	Screwed pipe connections to ISO 2853	Screwed pipe connections to SMS 1145	Clamp joints to ISO 2852		
mm	inches	DIN	ISO, SMS, ect.	mm	mm	inches	mm	inches	mm	mm	mm	inches	mm	mm	inches
DN2.5	1/10	2.5	2.5	DN 10	12	-	DN 10	1/2	DN 10	DN 10	12	-	-	12	-
DN4	1/8	4	4	DN 10	12	-	DN 10	1/2	DN 10	DN 10	12	-	-	12	-
DN6	1/4	6	6	DN 10	12	-	DN 10	1/2	DN 10	DN 10	12	-	-	12	-
DN10	3/8	10	10	DN 10	12	-	DN 10	1/2	DN 10	DN 10	12	-	-	12	-
DN15	1/2	13	13	DN 15	18	-	DN 15	1/2	DN 15	DN 15	18	-	-	18	-
DN25	1	26	23	DN 25	25	1*	-	-	-	DN 25	25	-	25	25	-
DN40	1 1/2	38	36	DN 40	38	1 1/2	-	-	-	DN 40	38	1 1/2	38	38	1 1/2
DN50	2	50	49	DN 50	51	2	-	-	-	DN 50	51	2	51	51	2
DN65	2 1/2	66	60	DN 65	63.5	2 1/2	-	-	-	DN 65	63.5	2 1/2	63.5	63.5	2 1/2
DN80	3	81	73	DN 80	76.1	3	-	-	-	DN 80	76.1	3	76	76.1	3

Other connections on request

* not to ISO 2037

Pipe standard to

DIN 11850

Meter size	dia. d_i mm
DN 25	26
DN 40	38
DN 50	50
DN 65	66
DN 80	81

Pipe standard to

ISO, SMS, RJT, JIS OD-Tube

Meter size	dia. d_i mm
DN 25 / 1"	23
DN 40 / 1 1/2"	36
DN 50 / 2"	49
DN 65 / 2 1/2"	60
DN 80 / 3"	73

Same inside diameter of measuring tube and pipeline



Tests and approvals

**Dairy and Research Center
Weihenstephan**

Technical University Munich

Chair for Food Process Engineering
and Dairy Technology

Applications in the food and beverage industry



Institute for Food
Process Engineering



**Qualification testing of a type VARIFLUX IFS 6000 F
electromagnetic flowmeter with regard to its cleaning
capability under food processing conditions**

Main points of the test report

- The subject of the test was the VARIFLUX IFS 6000 F primary head with PFA liner
- The gaskets pertaining to the two adapters on the flowmeter are designed with special reference to the cleaning aspect
- Through-bores in the adapter allow immediate detection of any leakages through the O-ring gaskets.
- The polished electrode tip forms a crevicefree seal with the PFA liner.
- Outstanding cleaning capability even under non-typically hard soiling conditions and given reduced performance of the CIP cleaning unit.

- Resistance to thermal shock, abrupt cooling from 131°C to 13°C/267.8 °F to 55.4°F has no effect on the function of the VARIFLUX IFS 6000 F.
- Vacuum resistance: even after 300 strokes by vacuum absolutely no noticeable effect on measuring accuracy.

Summarized assessment

- The VARIFLUX IFS 6000 was found to satisfy dairy and food processing requirements in regard to its cleaning capability.
- The VARIFLUX IFS 6000 was found to be stable when exposed to heat in the form of saturated steam, 131°C/267.8°F, and when exposed to vacuum impact.

Use in hazardous areas

Additional information on the signal converters is provided in the relevant Data Sheets.



European Standard

IFS 6000 F-EEEx primary heads

are approved in conformity with European Standard: EEx me ib IIC T3 – T5, KEMA No. Ex-95.D.9699X.

The IFM 6080 K-EEEx integral flowmeters

are approved in conformity with European Standard: EEx d ib IIC T6 – T3 or EEx de ib IIC T6 – T3 or EEx dme ib IIC T6 – T3, KEMA No. Ex-96.D.1850X.



FM approval applied for

Class I:
Div 1 / Groups B, C, D
Div 2 / Groups A, B, C, D

Class II:
Div 1, 2 / Groups E, G

Class III:
Div 1, 2

Background
Water Wastewater
Abrasive, corrosive and hot products
Non-contact measurement $K \geq 0.05 \mu\text{s}/\text{cm}$
Food, Beverage, Pharmaceutical
High Pressure and special connections
Signal converter and Remote
Remote
Calibration / Measuring Principle
Sizing / Installation guides
Ordering guide

Technical data

Size/type	DN2.5 - 80 and 1/10" - 3"
Available connections	see page 4
Electrical conductivity	≥ 5µS/cm (≥ 20µS/cm for demineralized water)
Ambient temperature	
Standard	-25 to + 60°C / -13 to + 140°F
Hazardous duty versions	-20 to + 40°C / -24 to + 104°F
Max. permissible operating data	
Operating pressure / product temperature	see table "limits" on next page
Vacuum load	0mbar abs. / 0 psia
Insulation class of field coils	H
Electrode design	permanently fitted (≥ DN25 / ≥ 1" surface polished)
Power for field coils	< 60V from signal converter
Grounding rings	standard for flanged connections
Protection category (IEC 529/EN 60 529)	IP67, equivalent to NEMA 6
Hazardous-duty versions	see Page 5
Materials	
<u>Measuring tube</u>	stainless steel 1.4301 / 304-AISI
<u>Liner</u>	clear, virgin Teflon®-PFA, FDA-approved
DN2.5 - 10 mm / 1/10" - 3/8"	reinforced with sintered metal bearing bush
DN 15 - 80 mm / 1/2" - 3"	reinforced with stainless steel mesh
<u>Electrodes</u>	
Standard	Hastelloy C4
Special version	stainless steel 1.4571/316 Ti-AISI, titanium, tantalum, platinum, others on request
<u>Connections</u>	
Flanges to DIN 2501	} Standard: stainless steel 1.4301/304-AISI Special version: stainless steel } 1.4404/316L-AISI
ANSI B 16.5	
JIS 2210	
Aseptic weld-on connection for pipes to DIN 11 850	} stainless steel 1.4404 / 316L-AISI
ISO 2037	
Dairy screw connection and tube nozzles (option) to DIN 11 851	
Screwed pipe connection to SMS 1145	
Screwed pipe connection to ISO 2853	
Clamp joint to ISO 2852	
<u>Housing</u>	
DN2.5 - 15 mm / 1/10" - 1/2"	stainless steel 1.4462 Duplex
DN 25 - 80 mm / 1" - 3"	stainless steel 1.4301/ 304-AISI
<u>Terminal box</u>	
Standard	die cast aluminium, paint finish
Special version	stainless steel 1.4301/304-AISI, others on request
<u>Grounding rings (only for flange versions)</u>	stainless steel 1.4571/316 Ti-AISI, others on request

Teflon® is a registered trademark of Du Pont

Limits for operating pressure and product temperature

Please note:

The limits specified in the table for temperature and pressure allow for the liner and the max. operating data of the connections and supplied gaskets.

Connections	Connection meter size	Max. operating pressure in bar/psig at product temperature of ...							
		< 40 °C (< 105 °F)	< 60 °C (< 140 °F)	< 70 °C (< 158 °F)	< 90 °C (< 195 °F)	< 100 °C (< 210 °F)	< 120 °C (< 250 °F)	<140 °C ** (< 285 °F)	<180 °C ** (< 355 °F)
Flange DIN 2501/PN 40	DN10* - 15	39 (566)	37 (537)	36 (522)	34 (493)	33 (497)	32 (464)	30 (435)	28 (406)
Flange JIS 2210/20K	DN10* - 15	39 (566)	37 (537)	36 (522)	34 (493)	33 (497)	32 (464)	30 (435)	28 (406)
Flange ANSIB16.5: 150 lb	1/2"*	19.6 (284)	19.0 (276)	18.7 (271)	18.1 (263)	17.7 (257)	17.0 (247)	16.2 (235)	14.7 (213)
300 lb	1/2"*	39 (566)	37 (537)	36 (522)	34 (493)	33 (479)	32 (464)	30 (435)	28 (406)
Aseptic weld-on connection for pipes to DIN 11850	DN10*- 40	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	-
	DN50 - 80	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	-
Aseptic weld-on connection for pipes to ISO 2037	12* - 38/1" - 1 1/2"*	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	-
	51 - 76.1 / 2"-3"	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	-
Dairy screw connection DIN 11851	DN10*- 40	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	-
	DN50 - 80	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	-
Screwed pipe connection ISO 2853	12* - 38mm	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	40 (580)	-
	51 - 76.1mm/1 1/2"-3.0"	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	25 (360)	-
Screwed pipe connection SMS 1145	25 - 76mm	6 (90)	6 (90)	6 (90)	6 (90)	6 (90)	6 (90)		
CLAMP joint ISO 2852	12* - 51mm/1 1/2"-2.0"	16 (230)	16 (230)	16 (230)	16 (230)	16 (230)	16 (230)	-	-
	63.5 - 76.1mm/2 1/2"-3.0"	10 (150)	10 (150)	10 (150)	10 (150)	10 (150)	10 (150)	-	-

* size DN2.5 - 10 / 1/10" - 3/8"

** max. process temperature 140 °C (285 °F) for integral flowmeters



Background
Water Wastewater
Abrasive, corrosive and hot products
Non-contact measurement K < 0.05 µS/cm
Food, Beverage, Pharmaceutical
High Pressure and special connections
Integral and Remote
Signal converter Remote
Calibration / Measuring Principle
Sizing / Installation guides
Ordering guide

Dimensions and weights

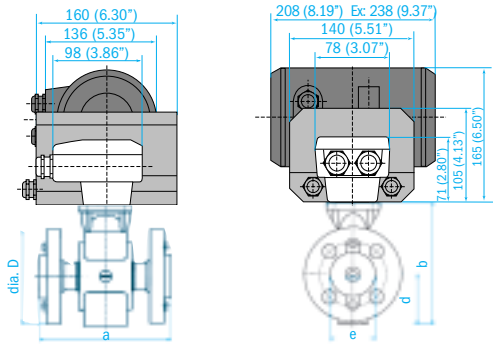
PLEASE NOTE !

The **total dimension for the height** is obtained from **dimension b** (see table) **plus the height** of the terminal box or the signal converter, see drawings.

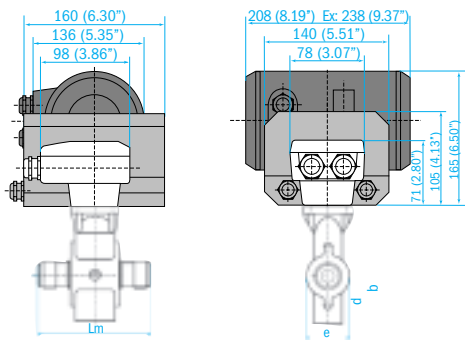
The **total weight** is made up of the weight of the signal converter (see table) **plus the weight** of the terminal box or signal converter, see below.

Dimensions in mm (inches)

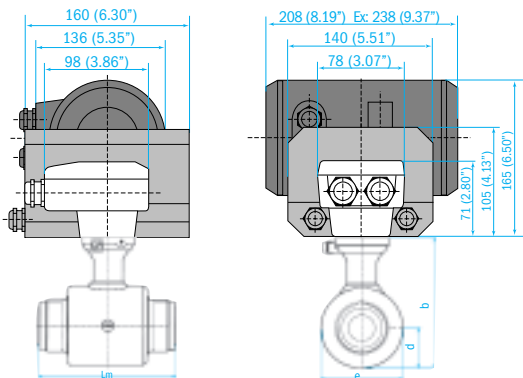
DN 2.5 - 15 / 1/10" - 1/2"



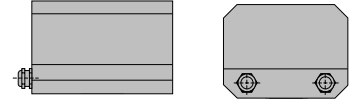
DN 2.5 - 15 / 1/10" - 1/2"



DN 25 - 80 / 1" - 3"

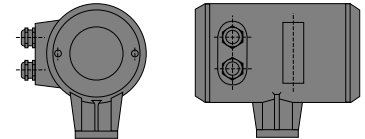


IFC 010 K and IFC 020 K signal converter



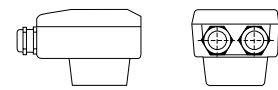
Weight approx. 1.6 kg (3.6 lb)

IFC 090 K signal converter



Weight approx. 2.3 kg (5.1 lb)

Terminal box



Weight approx. 0.5 kg (1.1 lb)

Flange connections to DIN, JIS and ANSI

Flowmeter		Dimensions in mm and (inches)						Approx. weight in kg (lb)			
Size/type	Flanges	a	b _{max}	ØD			d				
DIN/JIS	ANSI	DIN/JIS	ANSI	DIN/PN 40	JIS/20K	ANSI/150lb	ANSI/300lb				
DN 2.5	1/10"										
DN 4	1/8"										
DN 6	1/4"	DN 10	1/2"	130 (5.12)	142 (5.59)	90 (3.54)	90 (3.54)	88.9 (3.50)	95.2 (3.75)	51 (2.01)	2.6 (5.8)
DN 10	3/8"										
DN 15	1/2"	DN 15				95 (3.74)	95 (3.74)				

Dimensions without connectors/adapters

Size/type		Dimensions in mm and (inches)					Approx. weight in kg (lb) without adapters	
mm	inches	LM	b _{max}	d	e			
DN 2.5	1/10	180 (7.09)	142 (5.59)	51 (2.01)	44 (1.73)	1.2 (2.7)		
DN 4	1/8	180 (7.09)	142 (5.59)	51 (2.01)	44 (1.73)	1.2 (2.7)		
DN 6	1/4	180 (7.09)	142 (5.59)	51 (2.01)	44 (1.73)	1.2 (2.7)		
DN 10	3/8	180 (7.09)	142 (5.59)	51 (2.01)	44 (1.73)	1.2 (2.7)		
DN 15	1/2	180 (7.09)	142 (5.59)	51 (2.01)	44 (1.73)	1.2 (2.7)		
DN 25	1	186 (7.32)	146 (5.75)	40 (1.57)	80 (3.15)	1.8 (4.0)		
DN 40	1 1/2	200 (7.87)	164 (6.46)	49 (1.93)	98 (3.86)	3.2 (7.1)		
DN 50	2	204 (8.03)	196 (7.72)	65 (2.56)	130 (5.12)	4.5 (10.0)		
DN 65	2 1/2	250 (9.84)	221 (8.70)	78 (3.07)	156 (6.14)	7.0 (15.5)		
DN 80	3	266 (10.47)	221 (8.70)	78 (3.07)	156 (6.14)	7.0 (15.5)		

Dimensions with mounted connectors/adapters

Aseptic weld-on connection for pipes to DIN 11850

Connection meter size	dia. D	L _A	a	dia. D1	dia. D2	dia. D3
DN 10 ¹⁾	38 (1.50)	30.0 (1.18)	180 (7.09)	10 (0.39)	12 (0.47)	15 (0.59)
DN 15				16 (0.63)	18 (0.71)	21 (0.83)
DN 25	63 (2.48)	25.0 (0.98)	186 (7.32)	26 (1.02)	28 (1.10)	31 (1.22)
DN 40	78 (3.07)	23.0 (0.91)	200 (7.87)	38 (1.50)	40 (1.57)	43 (1.69)
DN 50	92 (3.62)	22.0 (0.87)	204 (8.03)	50 (1.97)	52 (2.05)	55 (2.17)
DN 65	112 (4.41)	21.0 (0.83)	250 (9.84)	66 (2.60)	68 (2.68)	72 (2.83)
DN 80	127 (5.00)	29.0 (1.14)	266 (10.47)	81 (3.19)	83 (3.27)	87 (3.43)

Sanitary weld-on connection for pipes to ISO 2037

Connection meter size	dia. D	L _A	a	dia. D1	dia. D2	dia. D3
12 mm ¹⁾	38 (1.50)	30.0 (1.18)	180 (7.09)	10.0 (0.39)	12.0 (0.47)	15.0 (0.59)
18 mm				16.0 (0.63)	18.0 (0.71)	21.0 (0.83)
25 mm ^{1 2)}	63 (2.48)	22.0 (0.87)		22.6 (0.89)	-	25.6 (1.01)
38 mm ^{1 1/2"}	78 (3.07)	26.5 (1.04)	207 (8.15)	35.6 (1.40)	-	38.6 (1.52)
51 mm ^{2"}	92 (3.62)	28.5 (1.12)	217 (8.54)	48.6 (1.91)	-	51.6 (2.03)
63.5 mm ^{2 1/2"}	112 (4.41)	27.5 (1.08)	263 (10.35)	60.3 (2.37)	-	64.1 (2.52)
76.1 mm ^{3"}	127 (5.00)			72.9 (2.87)	-	76.7 (3.02)

Dairy screw connection to DIN 11851

Connection meter size	dia. D	L _A	a
DN 10 ¹⁾	38 (1.50)	47.0 (1.85)	214 (8.43)
DN 15			230 (9.06)
DN 25	63 (2.48)	49.0 (1.93)	252 (9.92)
DN 40	78 (3.07)	49.0 (1.93)	252 (9.92)
DN 50	92 (3.62)	50.0 (1.97)	260 (10.24)
DN 65	112 (4.41)	53.0 (2.09)	314 (12.36)
DN 80	127 (5.00)	66.0 (2.60)	340 (13.39)

Screwed pipe connection to ISO 2853

Connection meter size	dia. D	L _A	a
12 mm ¹⁾	38 (1.50)	53.0 (2.09)	226 (8.90)
18 mm			
25 mm	63 (2.48)	45.0 (1.77)	
38 mm ^{1 1/2"}	78 (3.07)	49.5 (1.95)	253 (9.96)
51 mm ^{2"}	92 (3.62)	51.5 (2.03)	263 (10.35)
63.5 mm ^{2 1/2"}	112 (4.41)	50.5 (1.99)	309 (12.17)
76.1 mm ^{3"}	127 (5.00)		

Screwed pipe connection to SMS 1145

Connection meter size	dia. D	L _A	a
25 mm ¹⁾	63 (2.48)	38.5 (1.52)	213 (8.39)
38 mm	78 (3.07)	48.0 (1.89)	250 (9.84)
51 mm	92 (3.62)	50.0 (1.97)	260 (10.24)
63.5 mm	112 (4.41)	53.0 (2.09)	314 (12.36)
76 mm	127 (5.00)		

Clamp joint ISO 2852

Connection meter size	dia. D	L _A	a
12 mm ¹⁾	38 (1.50)	49.5 (1.95)	219 (8.62)
18 mm			
25 mm	63 (2.48)	45.0 (1.77)	226 (8.90)
38 mm ^{1 1/2"}	78 (3.07)	49.5 (1.95)	253 (9.96)
51 mm ^{2"}	92 (3.62)	51.5 (2.03)	263 (10.35)
63.5 mm ^{2 1/2"}	112 (4.41)	50.5 (1.99)	309 (12.17)
76.1 mm ^{3"}	127 (5.00)		

1) for sizes DN 2.5 - 10 / 1/10" - 3/8"

2) not to ISO 2037

