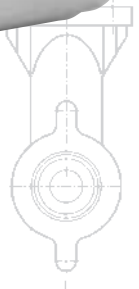
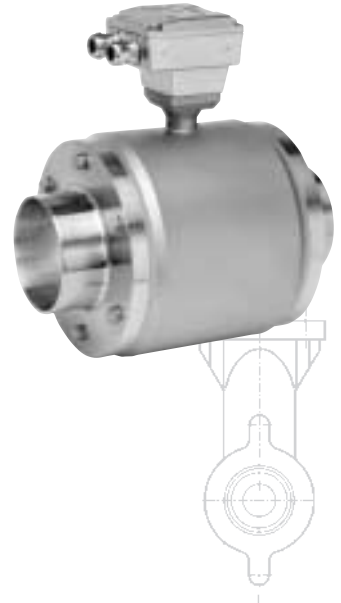
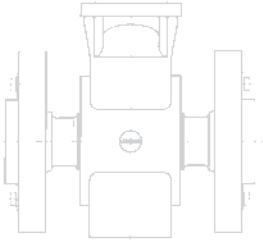


Installation instructions

VARIFLUX 6000

Electromagnetic flowmeters

- Flow sensors
- Compact flowmeters



How to use these Instructions

The flowmeters are supplied ready for operation.

The flow sensor must be installed in the pipeline as described in the installation instructions inside the packing of the primary head.

- Installation in the pipeline
- Grounding

Pages 4-5+7-8

Page 9

Power the flowmeter. THAT'S ALL. The system is operative.

Variable area flowmeters

Vortex flowmeters

Flow controllers

Electromagnetic flowmeters

Ultrasonic flowmeters

Mass flowmeters

Level measuring instruments

Communications technology

Engineering systems & solutions

Switches, counters, displays and recorders

Heat metering

Pressure and temperature

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System description

VARIFLUX electromagnetic flowmeters are precision measuring instruments designed for the linear flow measurement of process liquids.

The process liquids must be electrically conductive: $\geq 5 \mu\text{S/cm}$
 $\geq 20 \mu\text{S/cm}$ for demineralized cold water

The **full-scale range** $Q_{100\%}$ can be set as a function of the **meter size**:

DN 2.5 - 150 / $1/10''$ - 6" $Q_{100\%} = 0.01 - 763 \text{ m}^3/\text{hr} = 0.02 - 3361 \text{ US Gal/min}$

This is equivalent to a flow velocity of 0.3 - 12 m/s, or 1 - 40 ft/s.

Product liability and warranty

VARIFLUX electromagnetic flowmeters are designed solely for measuring the volumetric flowrate of electrically conductive, liquid process products.

Special codes and regulations apply to their use in hazardous locations, and these are referred to in the special "EEx" installation and operating instructions (supplied only with hazardous-duty equipment).

Please note: Flowmeters for use in hazardous locations (EEx) have different dimensions and changed constructions.

Responsibility as to suitability and intended use of these electromagnetic flowmeters rests solely with the operator.

Improper installation and operation of the flowmeters (systems) may lead to loss of warranty.

In addition, the "General conditions of sale" forming the basis of the purchase contract are applicable.

If VARIFLUX flowmeters need to be returned to Krohne, please note the information given on the last-but-one page of this manual. Krohne regret that they cannot repair or check your flowmeter(s) unless accompanied by the completed form sheet.

Standards and approvals

Please refer to the installation and operating instructions for the signal converter.



The VARIFLUX flowmeters are approved to 3A and to EHDEG for the adapters to DIN 11850, ISO 2037 and DIN 11864-2a.

Items included with supply

VARIFLUX 6000 flow sensor

- flow sensor in the size as ordered
- certificate of calibration data
- installation instructions

VARIFLUX 6010 K, VARIFLUX 6020 K and VARIFLUX 6080 K compact flowmeters

- compact flowmeter in the size as ordered
- certificate of calibration data
- installation instructions
- installation and operating instructions for the signal converter

Items included with supply

mounted adapter with fitted L-shaped gaskets D1 (counterparts for the pipeline).

Available meter size / Types and sizes of connections

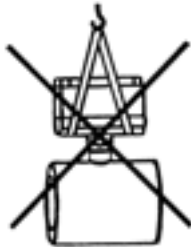
Meter size		Available types and sizes of connections							
		Weld on to ...		Screwed to ...		Clamp joint to ...			Flanged to
		DIN 11850	ISO 2037	DIN 11851 (dairy screw)	SMS 1145	ISO 2852	TRI-CLOVER	DIN 32676	DIN 11864-2a
DN mm	inch	mm	mm (inch)	mm	mm (inch)	mm (inch)	mm (inch)	mm	mm
2.5	1/10	DN 10	10.0 (0.39)	DN 10	-	10.0 (0.39)	-	-	-
4	1/8	DN 10	10.0 (0.39)	DN 10	-	10.0 (0.39)	-	-	-
6	1/4	DN 10	10.0 (0.39)	DN 10	-	10.0 (0.39)	-	-	-
10	3/8	DN 10	10.0 (0.39)	DN 10	-	10.0 (0.39)	-	-	-
15	1/2	DN 15	15.0 (0.59)	DN 15	-	15.0 (0.59)	-	-	-
25	1	DN 25	22.6 (0.89)	DN 25	25 (1)	22.6 (0.89)	22.6 (0.89)	22.6	DN 25
40	1 1/2	DN 40	37.6 (1.48)	DN 40	40 (1 1/2)	37.6 (1.48)	37.6 (1.48)	37.6	DN 40
50	2	DN 50	48.6 (1.91)	DN 50	50 (2)	48.6 (1.91)	48.6 (1.91)	48.6	DN 50
65	2 1/2	DN 65	60.3 (2.37)	DN 65	65 (2 1/2)	60.3 (2.37)	60.3 (2.37)	60.3	DN 65
80	3	DN 80	72.9 (2.87)	DN 80	80 (3)	72.9 (2.87)	72.9 (2.87)	72.9	DN 80
100	4	DN 100	97.6 (3.84)	DN 100	100 (4)	97.6 (3.84)	97.6 (3.84)	97.6	DN 100
125	5	DN 125	110.3 (4.34)	DN 125	-	110.3 (4.34)	-	-	DN 125
150	6	DN 150	135.7 (5.34)	DN 150	-	135.7 (5.34)	-	-	DN 150

1 Important information for installation: PLEASE NOTE !

- **Handling**

Do not lift flowmeter by the signal converter housing or the terminal box.

Do not set flowmeter down on signal converter housing or terminal box.

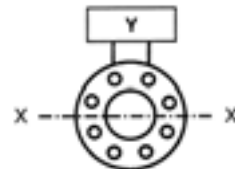


PLEASE NOTE: the temperature limits for storage and transport, see below.

- Use only solventless detergents to clean the signal converter housing (polycarbonate).
- **Temperatures**
Refer to Section 11 "Limits" for operating pressure and vacuum load based on flange standards and type of tube liner.

	Ambient temperature	Process temperature
Compact systems	-25 to +60 °C (-13 to +140 °F)	-20 to + 60 °C (-4 to +140 °F)
	-25 to +40 °C (-13 to +104 °F)	-20 to +140 °C (-4 to +284 °F)
VARIFLUX 6000	-25 to +60 °C (-13 to +140 °F)	-20 to + 60 °C (-4 to +140 °F)
	-25 to +40 °C (-13 to +104 °F)	-20 to +140 °C (-4 to +284 °F)

- **Location and position as required,**
but electrode axis
X - - - - - X
must be approximately horizontal in a horizontal pipe run.



Y terminal box or converter housing

- **Measuring tube must be completely filled at all times.**
- **Direction of flow is arbitrary.** Arrow on flowmeter can normally be ignored. For exceptions, refer to Section "Factory settings" in the installation and operating instructions for the signal converter.
- **Stud bolts and nuts:** to fit, make sure there is sufficient room next to the pipe flanges.
- **Vibration:** support the pipeline on both sides of the compact flowmeter.
Level of vibration in conformity with IEC 068-2-34: 20-500 Hz, random / 2g runs / 30 minutes / x, y, z directions.
- **Do not expose to direct sunlight,** fit a sunshade if necessary, not included with flowmeter, to be provided by customer.

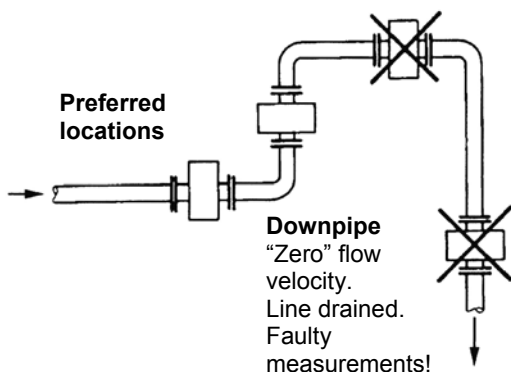
- **Strong electromagnetic fields**, avoid in vicinity of flowmeter
- **Straight inlet run minimum of $5 \times DN$ and outlet run minimum of $2 \times DN$** , (DN = meter size), measured from the electrode axis.
- **Vortex and corkscrew flow**: increase length of inlet and outlet runs or install flow conditioners.
- **Mixing different process liquids**: install flowmeter upstream of mixing point or at an adequate distance downstream (minimum of $30 \times DN$), otherwise display may be unsteady.
- **Insulated pipeline**: do not insulate flowmeter.
- **Zero setting not necessary**. To check, it should be possible to set “zero” flow velocity in the completely filled measuring tube. Shutoff valves should therefore be provided either downstream of the flowmeter or upstream and downstream of the flowmeter.

2 Suggestions for installation


To avoid measuring errors due to gas/air inclusion or to pipe running empty, please observe the following:

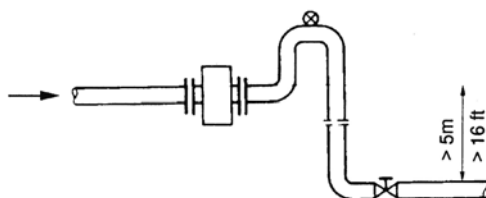
Highest point of pipe run

(Air bubbles collect in measuring tube - faulty measurements!)



Downpipe over 5 m (16 ft) length

Install air valve  downstream of flowmeter.



Long pipeline

Always install control and shutoff valves downstream of flowmeter.



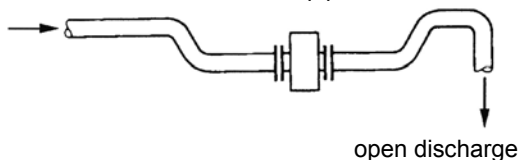
Horizontal pipe run

Install in slightly inclining pipe section. If not possible, assure adequate velocity to prevent air, gas or vapour from collecting in upper part of flow tube.



Open feed or discharge

Install meter in low section of pipe.



Pumps

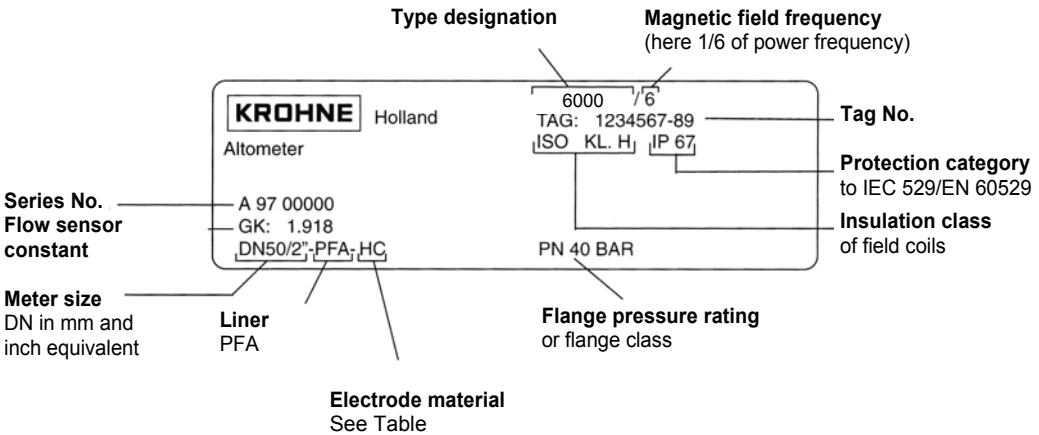
Never install flowmeter on pump suction side.



3 Instrument nameplate

VARIFLUX 6000

separate flow sensor



Electrode materials

HB	Hastelloy B2
HC	Hastelloy C4
PT	Platinum
TA	Tantalum
TI	Titanium
V4A	Stainless steel 1.4571 / SS 316-Ti or Stainless steel 1.4401 / SS 316L

Instrument nameplate for VARIFLUX 6000 compact flowmeters

see installation and operating instructions for the signal converter.

4 Versions

VARIFLUX 6000 **Separate flow sensor** electrically connected to the signal converter by signal and field current cables.

VARIFLUX 6010 K **Compact flowmeter (K)**, IFC 010 K or IFC 020 K signal converter mounted direct on the flow sensor.

VARIFLUX 6020 K **Compact flowmeter (K)**, IFC 090 K signal converter mounted direct on the flow sensor.

Versions for hazardous locations

VARIFLUX 6000 and VARIFLUX 6080 K are approved as electrical equipment to the harmonized European Standards and to Factory Mutual (FM).

Test certificate, certificate of conformity and wiring instructions for these devices are attached to the **“EEEx” installation instructions**, provided only with hazardous-duty equipment.

Please note: Flowmeters for use in hazardous locations (EEEx) have different dimensions and changed constructions.

5 Installation in the pipeline

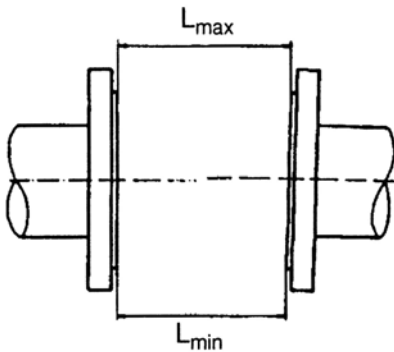
- **Installation material not included**, to be provided by customer (stud bolts, nuts, gaskets, etc.)
- **Pipe connections, operating temperature and pressure:**
refer to tables on "Limits" in Section 6.
- **Fitting dimension**
see Sect. 12 "Dimensions and weights";
- **High-temperature pipelines**
Where process temperatures exceed 100 °C/212 °F, provide for facilities to compensate for longitudinal expansion on heat-up of the pipeline.
For **short** pipelines use resilient gaskets and for **long** pipelines install flexible pipe elements (e.g. elbows).
- **Position of connections**
Install flowmeter in line with the pipe axis. Pipe connections must be parallel to each other, max. permissible deviation:
 $L_{\max} - L_{\min} \leq 0.5 \text{ mm}$
 $\leq 0.02''$
- **Torques**

For flanged instruments to DIN 11864-2a

Tighten down stud bolts and nuts with max. torque:
32 Nm ~ 3.2 kpm ~ 23.5 ft x lbf

For all other connections

Tighten down to metal stop.



6 Limits

Type of connections	Size of connections		Pressure rating of connections	Max. operating pressure in bar (psig) at product temperature of ...				
	mm	inch		< 40 °C (< 104 °F)	< 100 °C (< 212 °F)	< 120 °C (< 248 °F)	< 140 °C (< 284 °F)	
Aseptic weld on for pipes ** to DIN 11850	DN 10" - 40	–	PN 40	–	40 (580)	40 (580)	40 (580)	40 (580)
	DN 50 - 80	–	PN 25	–	25 (360)	25 (360)	25 (360)	25 (360)
	DN 100	–	PN 16	–	16 (230)	16 (230)	16 (230)	16 (230)
	DN 125 - 150	–	PN 10	–	10 (145)	10 (145)	10 (145)	10 (145)
Aseptic weld on for pipes to ISO 2037	12" - 37.6	0.47" - 1.48	PN 40	580 psig	40 (580)	40 (580)	40 (580)	40 (580)
	48.6 - 72.9	1.91 - 2.87	PN 25	360 psig	25 (360)	25 (360)	25 (360)	25 (360)
	97.6	3.84	PN 16	232 psig	16 (230)	16 (230)	16 (230)	16 (230)
	110.3 - 135.7	4.34 - 5.34	PN 10	145 psig	10 (145)	10 (145)	10 (145)	10 (145)
Dairy screw to DIN 11851	DN 10" - 40	–	PN 40	–	40 (580)	40 (580)	40 (580)	40 (580)
	DN 50 - 80	–	PN 25	–	25 (360)	25 (360)	25 (360)	25 (360)
	DN 100	–	PN 16	–	16 (230)	16 (230)	16 (230)	16 (230)
	DN 125 - 150	–	PN 10	–	10 (145)	10 (145)	10 (145)	10 (145)
Screwed to SMS 1145	25 - 100	–	PN 6	–	6 (90)	6 (90)	6 (90)	6 (90)
Flanges to DIN 11864-2A	DN 25 - 40	–	PN 40	–	40 (580)	40 (580)	40 (580)	40 (580)
	DN 50 - 80	–	PN 25	–	25 (360)	25 (360)	25 (360)	25 (360)
	DN 100	–	PN 16	–	16 (230)	16 (230)	16 (230)	16 (230)
	DN 125 - 150	–	PN 10	–	10 (145)	10 (145)	10 (145)	10 (145)
Clamp joint to ISO 2852	12" - 51	1½" - 2.0"	PN 16	232 psig	16 (230)	16 (230)	16 (230)	–
	63.5 - 76.1	2½" - 3.0"	PN 10	145 psig	10 (145)	10 (145)	10 (145)	–
	100	4"	PN 8	115 psig	8 (115)	8 (115)	8 (115)	–
	125 - 150	5" - 6"	PN 5	72 psig	5 (72)	5 (72)	5 (72)	–
Clamp joint to DIN 32676 **	DN 25 - 50	–	PN 16	–	16 (230)	16 (230)	16 (230)	16 (230)
	DN 65 - 100	–	PN 10	–	10 (145)	10 (145)	10 (145)	10 (145)
Clamp joint to TRI-CLOVER	25 - 80	1" - 3"	PN 20	280 psig	20.5 (295)	20.5 (295)	20.5 (295)	–
	100	4"	PN 12	174 psig	13.8 (200)	13.8 (200)	13.8 (200)	–
Vacuum load	all versions and sizes		all versions and pressure ratings		0 mbar abs. (0 psia)			

* for meter size size DN 2.5 - 10 / 1/10" - 3/8"

** max. temperature are 150 °C (302 °F)

7 Grounding

- **Warning:** All flowmeters must be properly grounded to avoid personnel shock hazard.
- The ground conductor should not transmit any interference voltages, therefore do not ground any other electrical devices together with this conductor.

VARIFLUX 6000 compact systems

Supply power > 50 V AC

- Grounding is via the **PE protective ground conductor** incorporated in the power supply cable, see also Section "Connection to power" in the installation and operating instructions for the signal converter.
- **EXCEPTION: Do not connect up the PE protective ground conductor in the terminal box** if e.g. compact units are operated in the proximity of electric furnaces, electrolysis plants, etc., and large potential differences occur in the pipeline system. An FE functional ground must simultaneously take over the function of the protective conductor (combined protective / functional ground). Refer to appropriate national codes for specific requirements for this type of installation, which may require the addition of a ground fault detection circuit interrupter.

Supply power 24 V AC or DC

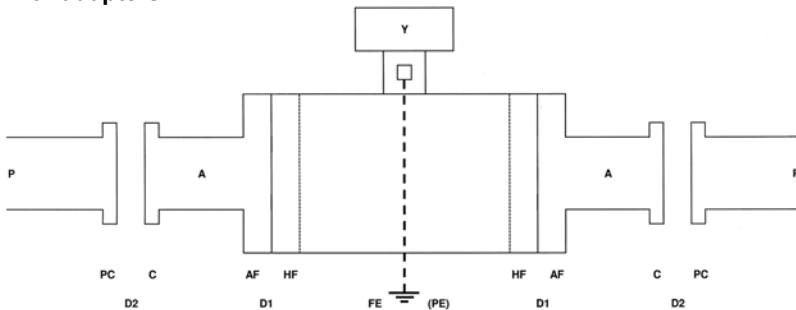
- Protective separation (PELV) must be ensured (VDE 0100 / VDE 0106 or IEC 364 / IEC 536 or equivalent national regulations).
- An **FE functional ground conductor** must be connected for measurement reasons.

VARIFLUX 6000 separate flow sensor with terminal box

- **A functional ground FE** must always be connected.
- **Signal converters with a field power supply of > 125 mA / > 60 V:**
Because of the higher field current from the signal converter, a **PE protective conductor** must be connected to the VARIFLUX 6000 flow sensor, see grounding diagrams.

Grounding diagram

Flowmeter with adapters



- A** Adapter complete, ready assembled
AF Adapter flange
C Adapter connection
D1 L-shaped gasket
D2 Gaskets not included in supply, to be provided by customer
FE Functional ground, wire $\geq 4 \text{ mm}^2 \text{ Cu}$, (10 AWG).
HF Housing flange for adapter
P Pipeline
PC Pipe connection not included in supply, to be provided by customer
PE Protective conductor required if the VARIFLUX 6000 is operated with a signal converter that supplies a field current of **> 125 mA / > 60 V**. Wire $\geq 4 \text{ mm}^2 \text{ Cu}$ (10 AWG), not included with flowmeter, to be provided by customer
Y Signal converter or connection box

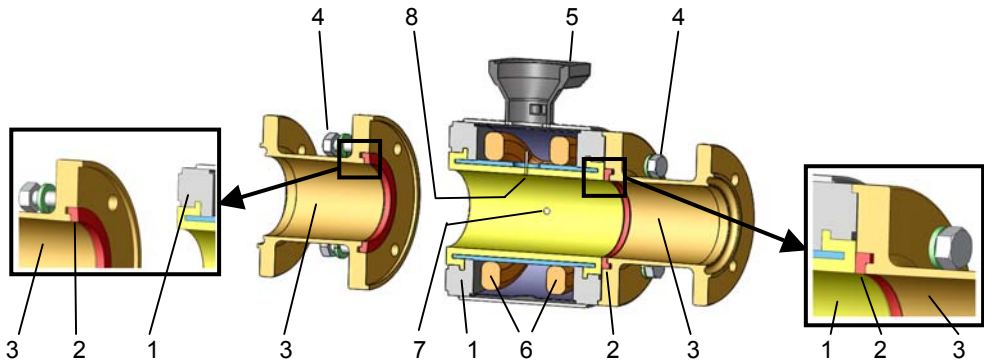
8 Replacement of the separate flow sensors

Switch off power source before commencing work !

- 1) Note down terminal assignment before dismantling the "old" flow sensor.
- 2) Install the new flow sensor as described in the supplied installation instructions.
- 3) Make electrical connection at the signal converter as described in the installation and operating instructions for the signal converter.
- 4) Specific calibration data are defined during factory calibration for each flow sensor, which are indicated on the instrument nameplate.
This includes the primary constant GK and the magnetic field frequency.
These data need to be reset in the signal converter.
- 5) If the size of flow sensor is also different from the old one, the full-scale range $Q_{100\%}$ and the meter size will need to be reset.
- 6) After resetting the signal converter, carry out a zero point check.
- 7) If necessary, reset the internal electronic totalizer of the signal converter.

9 Replacement of L-shaped gaskets with adapters

- Unscrew bolts (4) of the adapters (3).
- Remove the flowmeter (1) from the pipeline.
- Remove the L-shaped gaskets (2), new ones see spare parts in Sect. 10.
- Apply grease to new gaskets (Paraliq GTE 703, Silubin or similar) and insert the new L-shaped gaskets in the adapters
- Slide the flowmeter (1) between the adapters and tighten bolts (4) down to metal stop.



- 1 Flow sensor
- 2 L-shaped gasket
- 3 Adapter
- 4 Screws for adapter
- 5 Connecting socket for signal converter (compact system)
or for connection box (separate version)
- 6 Field coils
- 7 Flow electrodes
- 8 3rd electrode for measurement of empty pipe (preparation for future developments)

10 Spare parts and order numbers

Gasket material	Meter size		Sanitary connection to ...	Order No.
	DN mm	inch		
EPDM	DN 2.5 - 10	$\frac{1}{10} - \frac{3}{8}$	DIN	XN 99 03 041 0
	DN 15	$\frac{1}{2}$	DIN	XN 99 03 042 0
	DN 2.5 - 10	$\frac{1}{10} - \frac{3}{8}$	ISO	XN 99 03 051 0
	DN 15	$\frac{1}{2}$	ISO	XN 99 03 052 0
	DN 25	1	DIN / ISO / SMS	XN 99 03 061 0
	DN 40	$1\frac{1}{2}$	DIN / ISO / SMS	XN 99 03 062 0
	DN 50	2	DIN / ISO / SMS	XN 99 03 063 0
	DN 65	$2\frac{1}{2}$	DIN / ISO / SMS	XN 99 03 064 0
	DN 80	3	DIN / ISO / SMS	XN 99 03 065 0
	DN 100	4	DIN / ISO / SMS	XN 99 03 066 0
	DN 125	5	DIN / ISO	XN 99 03 067 0
	DN 150	6	DIN / ISO	XN 99 03 068 0
	Silicone	DN 2.5 - 10	$\frac{1}{10} - \frac{3}{8}$	DIN
DN 15		$\frac{1}{2}$	DIN	XN 99 03 081 0
DN 25		1	DIN / ISO / SMS	XN 99 03 082 0
DN 40		$1\frac{1}{2}$	DIN / ISO / SMS	XN 99 03 083 0
DN 50		2	DIN / ISO / SMS	XN 99 03 084 0
DN 65		$2\frac{1}{2}$	DIN / ISO / SMS	XN 99 03 085 0
DN 80		3	DIN / ISO / SMS	XN 99 03 086 0
DN 100		4	DIN / ISO / SMS	XN 99 03 087 0
DN 125		5	DIN / ISO	XN 99 03 088 0
DN 150		6	DIN / ISO	XN 99 03 089 0

11 Technical data

Size/type	DN 2.5 – 150 and $\frac{1}{10}$ " – 6"
Available connections	see page 3
Electrical conductivity	$\geq 5 \mu\text{S/cm}$ ($\geq 20 \mu\text{S/cm}$ for demineralized water)
Ambient temperature	– 25 to + 60°C – 13 to + 140°C
Max. permissible operating data	
Operating pressure / product temperature	see table "Limits" in Sect. 6
Vacuum load	0 mbar abs. / 0 psia
Insulation class of field coils	H
Electrode design	permanently fitted ($\geq \text{DN } 25 / \geq 1"$ surface polished)
Power for field coils	> 60 V from signal converter
Protection category (IEC 529/EN 60 529)	IP 67, equivalent to NEMA 6
Materials	
<u>Measuring tube</u>	stainless steel 1.4301
<u>Liner</u>	clear, virgin PFA, FDA-approved
DN 2.5 - 10 / $\frac{1}{10}$ " - $\frac{3}{8}$ "	reinforced with sintered metal bearing bush
DN 15 - 150 / $\frac{1}{2}$ " - 6"	reinforced with stainless steel mesh
<u>Electrodes</u>	
Standard	Hastelloy C4
Special versions: $\leq \text{DN } 15 / \frac{1}{2}"$	Hastelloy B2, stainless steel 1.4571/316 Ti-AISI, titanium, tantalum, platinum
$\geq \text{DN } 25 / 1"$	stainless steel 1.4401/316L, titanium
<u>Connections</u>	stainless steel 1.4404/316L-AISI
<u>L-shaped gaskets</u>	
Standard	EPDM
Option	Silicone or FKM
<u>Housing</u>	
DN 2.5 - 15 mm / $\frac{1}{10}$ " - $\frac{1}{2}"$	stainless steel 1.4462 Duplex
DN 25 - 150 mm / 1" - 6"	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

12 Dimensions and weights

PLEASE NOTE !

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

The **total weight** is made up of the weight of the signal converter (see Tables "Dimensions with mounted adapters") **plus** the weight of the terminal box or signal converter, see below.

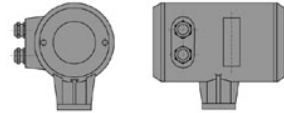
Meter size		Dimensions in mm and (inch)			
DN mm	inch	b _{max}	d	LM	
2.5	1/10	142 (5.59)	49.5 (1.95)	120 (4.72)	
4	1/8	142 (5.59)	49.5 (1.95)	120 (4.72)	
6	1/4	142 (5.59)	49.5 (1.95)	120 (4.72)	
10	3/8	142 (5.59)	49.5 (1.95)	120 (4.72)	
15	1/2	142 (5.59)	49.5 (1.95)	120 (4.72)	
25	1	128 (5.04)	45 (1.77)	95 (3.74)	
40	1 1/2	153 (6.02)	57 (2.24)	101 (3.98)	
50	2	153 (6.02)	57 (2.24)	101 (3.98)	
65	2 1/2	180 (7.09)	71 (2.80)	140 (5.51)	
80	3	191 (7.52)	76 (2.99)	150 (5.91)	
100	4	242 (9.53)	102 (4.02)	165 (6.50)	
125	5	258 (10.16)	110 (4.33)	190 (7.48)	
150	6	293 (11.54)	127 (5.00)	200 (7.87)	

IFC 010 K and IFC 020 K signal converter



Weight approx. 1.6 kg (3.6 lb)

IFC 090 K signal converter



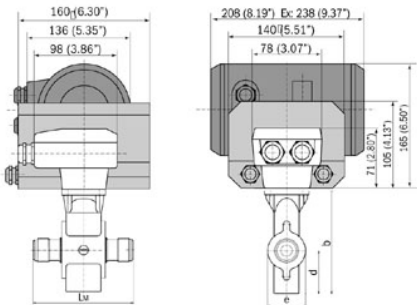
Weight approx. 2.3 kg (5.1 lb)

Terminal box

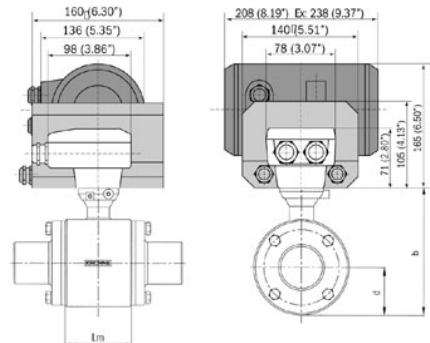


Weight approx. aluminium: 0.5 kg (1.1 lb)
stainless steel: 1.3 kg (2.9 lb)

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



DN 25 - 150 / 1" - 6"



Dimensions with mounted adapters

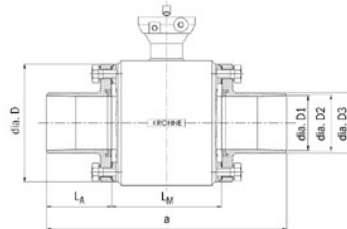
Aseptic weld-on connection to DIN 11850

Dimension L_M see Table on Page 12

Meter size		Dimensions in mm and (inch)								approx. Weight	
DN mm	inch	a	LA	D1	D2	D3	ØD			kg	(lb)
2.5	1/10	180 (7.09)	30 (1.18)	10 (0.39)	12 (0.47)	15 (0.59)	38 (1.50)			1.5	(2.2)
4	1/8	180 (7.09)	30 (1.18)	10 (0.39)	12 (0.47)	15 (0.59)	38 (1.50)			1.5	(2.2)
6	1/4	180 (7.09)	30 (1.18)	10 (0.39)	12 (0.47)	15 (0.59)	38 (1.50)			1.5	(2.2)
10	3/8	180 (7.09)	30 (1.18)	10 (0.39)	12 (0.47)	15 (0.59)	38 (1.50)			1.5	(2.2)
15	1/2	180 (7.09)	30 (1.18)	16 (0.63)	18 (0.71)	21 (0.83)	38 (1.50)			1.5	(2.2)
25	1	132.6 (5.22)	21 (0.83)	26 (1.02)	22.6 (0.89)	31 (1.22)	88.9 (3.50)			3.0	(2.2)
40	1 1/2	220 (8.66)	61.7 (2.43)	38 (1.50)	37.6 (1.48)	43 (1.69)	114.3 (4.50)			5.3	(2.2)
50	2	220 (8.66)	61.7 (2.43)	50 (1.97)	48.6 (1.91)	55 (2.17)	114.3 (4.50)			5.0	(2.2)
65	2 1/2	220 (8.66)	42.2 (1.66)	66 (2.60)	60.3 (2.37)	71 (2.80)	141.3 (5.56)			9.0	(2.2)
80	3	280 (11.02)	67.2 (2.65)	81 (3.19)	72.9 (2.87)	86 (3.39)	152.4 (6.00)			10.8	(23.8)
100	4	280 (11.02)	59.7 (2.35)	100 (3.94)	97.6 (3.84)	105 (4.13)	203.2 (8.00)			18.4	(40.6)
125	5	319 (12.56)	66.3 (2.61)	125 (4.92)	110.3 (4.34)	130 (5.12)	219.1 (8.63)			on request	
150	6	325 (12.80)	64.3 (2.53)	150 (5.91)	135.7 (5.34)	156 (6.14)	254 (10.00)			on request	

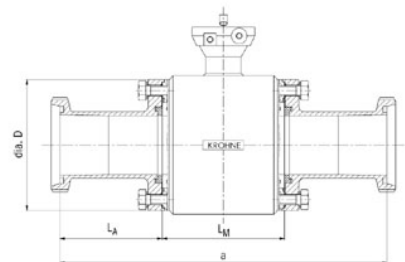
Aseptic weld-on connection to ISO 2037

Meter size		Dimensions in mm and (inch)								approx. Weight	
DN mm	inch	a	LA	D1	D2	D3	ØD			kg	(lb)
2.5	1/10	180 (7.09)	30 (1.18)	10 (0.39)	12 (0.47)	15 (0.59)	38 (1.50)			1.5	(2.2)
4	1/8	180 (7.09)	30 (1.18)	10 (0.39)	12 (0.47)	15 (0.59)	38 (1.50)			1.5	(2.2)
6	1/4	180 (7.09)	30 (1.18)	10 (0.39)	12 (0.47)	15 (0.59)	38 (1.50)			1.5	(2.2)
10	3/8	180 (7.09)	30 (1.18)	10 (0.39)	12 (0.47)	15 (0.59)	38 (1.50)			1.5	(2.2)
15	1/2	180 (7.09)	30 (1.18)	16 (0.63)	18 (0.71)	21 (0.83)	38 (1.50)			1.5	(2.2)
25	1	132.6 (5.22)	20.6 (0.81)	22.6 (0.89)	22.6 (0.89)	31 (1.22)	88.9 (3.50)			3.0	(2.2)
40	1 1/2	220 (8.66)	61.7 (2.43)	37.6 (1.48)	37.6 (1.48)	43 (1.69)	114.3 (4.50)			5.3	(2.2)
50	2	220 (8.66)	61.7 (2.43)	48.6 (1.91)	48.6 (1.91)	55 (2.17)	114.3 (4.50)			5.0	(2.2)
65	2 1/2	220 (8.66)	42.2 (1.66)	60.3 (2.37)	60.3 (2.37)	71 (2.80)	141.3 (5.56)			9.0	(2.2)
80	3	280 (11.02)	67.2 (2.65)	72.9 (2.87)	72.9 (2.87)	86 (3.39)	152.4 (6.00)			10.8	(23.8)
100	4	280 (11.02)	59.7 (2.35)	97.6 (3.84)	97.6 (3.84)	105 (4.13)	203.2 (8.00)			18.4	(40.6)
125	5	319 (12.56)	66.3 (2.61)	110.3 (4.34)	110.3 (4.34)	130 (5.12)	219.1 (8.63)			on request	
150	6	325 (12.80)	64.3 (2.53)	135.7 (5.34)	135.7 (5.34)	156 (6.14)	254 (10.00)			on request	



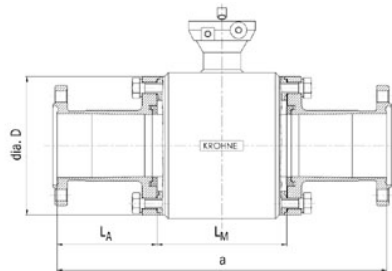
Diary screw connection to DIN 11851

Meter size		Dimensions in mm and (inch)				approx. Weight	
DN mm	inch	a	LA	ØD	kg	(lb)	
2.5	1/10	214 (8.43)	47 (1.85)	38 (1.50)	1.5	(3.3)	
4	1/8	214 (8.43)	47 (1.85)	38 (1.50)	1.5	(3.3)	
6	1/4	214 (8.43)	47 (1.85)	38 (1.50)	1.5	(3.3)	
10	3/8	214 (8.43)	47 (1.85)	38 (1.50)	1.5	(3.3)	
15	1/2	214 (8.43)	47 (1.85)	38 (1.50)	1.5	(3.3)	
25	1	190 (7.48)	49.7 (1.96)	88.9 (3.50)	3.2	(7.1)	
40	1 1/2	280 (11.02)	91.7 (3.61)	114.3 (4.50)	5.5	(12.1)	
50	2	284 (11.18)	93.7 (3.69)	114.3 (4.50)	5.3	(11.7)	
65	2 1/2	292 (11.50)	78.2 (3.08)	141.3 (5.56)	10.0	(22.0)	
80	3	362 (14.25)	108.2 (4.26)	152.4 (6.00)	12.5	(27.6)	
100	4	380 (14.96)	109.7 (4.32)	203.2 (8.00)	21.8	(48.1)	
125	5	on request	on request	219.1 (8.63)	on request		
150	6	on request	on request	254 (10.00)	on request		



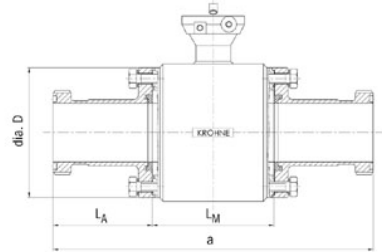
Flanged connection to DIN 11864-2a

Meter size		Dimensions in mm and (inch)			approx. Weight	
DN mm	inch	a	LA	ØD	kg	(lb)
25	1	183 (7.20)	46.2 (1.82)	88.9 (3.50)	4.4	(9.7)
40	1 1/2	264 (10.39)	83.7 (3.30)	114.3 (4.50)	7.5	(16.5)
50	2	264 (10.39)	83.7 (3.30)	114.3 (4.50)	9.0	(19.8)
65	2 1/2	264 (10.39)	64.2 (2.53)	141.3 (5.56)	14.5	(32.0)
80	3	392 (15.43)	123.2 (4.85)	152.4 (6.00)	18.6	(41.0)
100	4	392 (15.43)	115.7 (4.56)	203.2 (8.00)	28.2	(62.2)
125	5	on request	on request	219.1 (8.63)	on request	
150	6	on request	on request	254 (10.00)	on request	



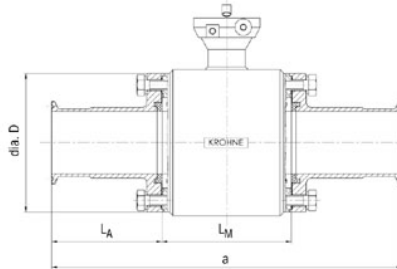
Screwed pipe connection to SMS 1145

Meter size		Dimensions in mm and (inch)			approx. Weight	
DN mm	inch	a	LA	ØD	kg	(lb)
25	1	147.6 (5.81)	28.1 (28.10)	88.9 (3.50)	3.2	(7.1)
40	1 1/2	262 (10.31)	82.7 (82.70)	114.3 (4.50)	5.7	(12.6)
50	2	266 (10.47)	84.7 (84.70)	114.3 (4.50)	5.4	(11.9)
65	2 1/2	276 (10.87)	70.2 (70.20)	141.3 (5.56)	9.9	(21.8)
80	3	346 (13.62)	100.2 (100.20)	152.4 (6.00)	12.1	(26.7)
100	4	336 (13.23)	87.7 (87.70)	203.2 (8.00)	21.9	(48.3)



Clamp joint connection to ISO 2852

Meter size		Dimensions in mm and (inch)			approx. Weight	
DN mm	inch	a	LA	ØD	kg	(lb)
2.5	1/10	219 (8.62)	49.5 (1.95)	38 (1.50)	1.5	(3.3)
4	1/8	219 (8.62)	49.5 (1.95)	38 (1.50)	1.5	(3.3)
6	1/4	219 (8.62)	49.5 (1.95)	38 (1.50)	1.5	(3.3)
10	3/8	219 (8.62)	49.5 (1.95)	38 (1.50)	1.5	(3.3)
15	1/2	219 (8.62)	49.5 (1.95)	38 (1.50)	1.5	(3.3)
25	1	175 (6.89)	42.2 (1.66)	88.9 (3.50)	3.3	(7.3)
40	1 1/2	273 (10.75)	88.2 (3.47)	114.3 (4.50)	5.4	(11.9)
50	2	273 (10.75)	88.2 (3.47)	114.3 (4.50)	5.2	(11.5)
65	2 1/2	273 (10.75)	68.7 (2.70)	141.3 (5.56)	9.5	(20.9)
80	3	333 (13.11)	93.7 (3.69)	152.4 (6.00)	11.2	(24.7)
100	4	333 (13.11)	86.2 (3.39)	203.2 (8.00)	19.1	(42.1)
125	5	on request	on request	219.1 (8.63)	on request	
150	6	on request	on request	254 (10.00)	on request	



Clamp joint connection to DIN 32676

Meter size		Dimensions in mm and (inch)			approx. Weight	
DN mm	inch	a	LA	ØD	kg	(lb)
25	1	190 (7.48)	49.7 (1.96)	88.9 (3.50)	3.2	(7.1)
40	1 1/2	280 (11.02)	91.7 (3.61)	114.3 (4.50)	5.5	(12.1)
50	2	284 (11.18)	93.7 (3.69)	114.3 (4.50)	5.3	(11.7)
65	2 1/2	292 (11.50)	78.2 (3.08)	141.3 (5.56)	10.0	(22.0)
80	3	362 (14.25)	108.2 (4.26)	152.4 (6.00)	12.5	(27.6)
100	4	380 (14.96)	109.7 (4.32)	203.2 (8.00)	21.8	(48.1)

Clamp joint connection to Tri-Clover

Meter size		Dimensions in mm and (inch)			approx. Weight	
DN mm	inch	a	LA	ØD	kg	(lb)
25	1	190 (7.48)	49.7 (1.96)	88.9 (3.50)	3.2	(7.1)
40	1 1/2	280 (11.02)	91.7 (3.61)	114.3 (4.50)	5.5	(12.1)
50	2	284 (11.18)	93.7 (3.69)	114.3 (4.50)	5.3	(11.7)
65	2 1/2	292 (11.50)	78.2 (3.08)	141.3 (5.56)	10.0	(22.0)
80	3	362 (14.25)	108.2 (4.26)	152.4 (6.00)	12.5	(27.6)
100	4	380 (14.96)	109.7 (4.32)	203.2 (8.00)	21.8	(48.1)

Dimension L_M see Table on Page 12

If you need to return flowmeters for testing or repair to KROHNE

Your electromagnetic flowmeter

- has been carefully manufactured and tested by a company with ISO 9001 certification
- and volumetrically calibrated in one of the world's most accurate test rigs.

If installed and operated in accordance with these operating instructions, your flowmeter will rarely present any problems.

Should you nevertheless need to return a flowmeter for checkout or repair, please pay strict attention to the following points:

Due to statutory regulations concerning protection of the environment and the health and safety of our personnel, Krohne may only handle, test and repair returned flowmeters that have been in contact with liquids if it is possible to do so without risk to personnel and environment. This means that Krohne can only service your flowmeter if it is

accompanied by a certificate in line with the following model confirming that the flowmeter is safe to handle.

If the flowmeter has been operated with toxic, caustic, flammable or water-endangering liquids, you are kindly requested

- to check and ensure, if necessary by rinsing or neutralizing, that all cavities in the flowmeter are free from such dangerous substances.
(Directions on how you can find out whether the flow sensor has to be opened and then flushed out or neutralized are obtainable from Krohne on request.)
- to enclose a certificate with the flowmeter confirming that the flowmeter is safe to handle and stating the liquid used.

KROHNE regret that they cannot service your flowmeter unless accompanied by such a certificate.

SPECIMEN certificate

Company: Address:

Department: Name:

Tel. No.:

The enclosed electromagnetic flowmeter

Type: KROHNE Order No. or Series No

has been operated with the following liquid:

Because this liquid is

water-endangering * / toxic * / caustic * / flammable *

we have

- checked that all cavities in the flowmeter are free from such substances *
- flushed out and neutralized all cavities in the flowmeter *

(* delete if not applicable)

We confirm that there is no risk to man or environment through any residual liquid contained in this flowmeter.

Date: Signature:

Company stamp: