

General Specifications

Model RAKD Small Metal Rotameter

A float is guided concentrically in a conic metal tube. The position of this float is magnetically transmitted to the indicator. The short-tube Rotameter is used for measurement of low flow rates of liquids and gases. Its special application is in troubled, opaque or aggressive mediums and under high pressure. The instrument is mounted in a vertical pipeline with flow direction upwards.

When the process conditions are changed the scale needs to be replaced by a new one of which the values should be calculated.

FEATURES

- Different process connections like internal threads and flanges
- With fine control valve (horizontal connection) and without valve (vertical connection)
- All wetted parts of stainless steel AISI 316Ti (1.4571)
- Accuracy class 4 acc. VDI/VDE 3513
- Round industrial standardized stainless steel housing with degree of protection IP 65
- Light, guided floats resulting in low pressure loss and stable float movement
- Maximum flow range 1-250 l/h water resp. 40-8000 l/h air, portioned in 13 flow ranges with a relation of 1:10
- Pressure controller (normal up to 25 bar at 20°C) for a maximum flow of 100 l/h water resp. 3.250 l/h air (only in combination with valve)
- Electric μ P-controlled transmitter with linearized output
- Electrical connection by fast connection technique (Quickon)
- Limit switches, also available as "Fail Safe" version
- Connection of common transformer isolated barriers and transmitter power supplies possible
- Alignment possibility of the electric transmitters with additional tuner (Service Box)
- Intrinsically safe version (Ex-i) (ATEX, CSA, SAA, NEPSI)



Fig. 1a Indicator RAKD with tube without valve

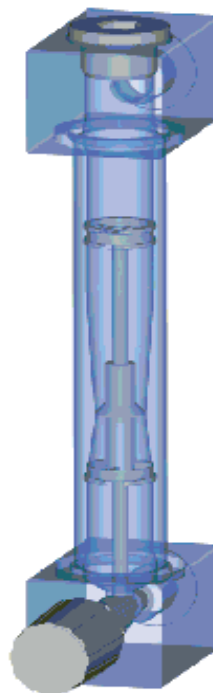


Fig. 1b Tube RAKD with valve

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STANDARD SPECIFICATIONS

The responsibility with respect to the suitability and according application of our flowmeter is only situated by the customer.

METERING TUBES

Materials of wetted parts	: Stainless steel AISI 316Ti (1.4571) other materials on request
Fluids to be measured	: Liquid or gas
Measuring range	: see flow table
Measuring range ratio	: 10:1
Process connections	:
– Inner thread	: G 1/4; 1/4 NPT; G 3/8; 3/8 NPT
– Cutting ring	: 6 mm; 8 mm; 10 mm; 12 mm
– Cutting ring (Swagelok)	: 6 mm; 8 mm; 10 mm; 12 mm
– Nozzle	: 6 mm; 8 mm
– Flange	: - acc. EN 1092-1 DN15 and DN25 PN40; - acc. ASME B 16.5 1/2" and 1" 150lbs, 300lbs
Process pressure	: depends on process connection; see model code
Process temperature	: without valve -25°C to 250°C with valve -25°C to 150°C See also fig. 6. Lower temperatures on request.
Accuracy	: class 4 acc. VDI/VDE 3513 ± 4% f.s.
Installation	:
– Installation position	: vertical
– Flow direction	: upwards
– Face to face length	: 125 mm (with flange 250 mm)
Weight	: see table 9
Process-/ Ambient temperature	: see fig. 6

LOCAL INDICATOR

(Indicator/Code -T)

Principle	:
The indication is made by magnetic coupling of a magnet enclosed in the float and a magnet in the indication unit, which follows the movements of the float.	
Indication scale	: Flow units
Housing	:
– Material	: Stainless steel AISI 304 (1.4301)
– Protection	: IP65
Transportation and storage condition	: - 40°C to +110°C

ELECTRONIC TRANSMITTER

(Indicator/Code -E)

Temperature range	: -25°C to 65°C
Transportation and storage condition	: - 40°C to +70°C
Power supply	: 13.5-30 V DC
Load resistance	: (U-13.5V)/20mA
Analog output	: 4-20 mA
Linearity	: ≤ ± 0.25% f.s.
Hysteresis	: ≤ ± 0.15% f.s.
Repeatability	: ≤ ± 0.16% f.s.
Influence of power supply	: ≤ ± 0.1% f.s.
Temp. coefficient of analog output	: ≤ ± 0.5% /10 K f.s.
AC-part of analog output	: ≤ ± 0.15% f.s.
Long time stability	: ≤ ± 0.2% / year
Maximum output current	: 21.5 mA

Output current in case of failure

Response time (99%)	: ≤ 3.6 mA (NAMUR NE 43)
Electrical connection	: appr. 1 s
– Cable diameter	: 4-6 mm
– Cable cross section	: 0.34 to 0.75 mm ²
Pulse output (Option /CP)	: Electronic switch with galvanic isolation acc. EN 60947-5-6 (NAMUR)
– Pulse length	: 200 ms
– Max. frequency	: 4 Hz
– Pulse rate	: $Q_{max} \leq 1 \rightarrow 0.0001$ $1 < Q_{max} \leq 10 \rightarrow 0.001$ etc. e.g.. $Q_{max} = 1 \text{ m}^3/\text{h} \rightarrow$ 1 Puls = 0.0001 m ³ = 0.1 l

POWER SUPPLY FOR ELECTRONIC TRANSMITTER (Option /U__)

Type	: power supply with galvanically separated input and output SINEAX B811
Supply voltage	: 24 V to 60 V AC/DC 85 V to 230 V AC
Maximum load	: 750 Ω
Output signal	: 0/4 mA - 20 mA

LIMIT SWITCHES IN STANDARD VERSION

(option /K1 to /K3)

Type	: Inductive proximity switch SC2-NO acc. DIN EN 60947-5-6
Nominal voltage	: 8VDC
Output signal	: ≤ 1 mA or ≥ 3 mA
Hysteresis	: < 0.5 mm

LIMIT SWITCHES IN FAIL SAFE VERSION

(option /K6 to /K8)

Type	: Inductive proximity switch SJ2-SN acc. DIN EN 60947-5-6
Nominal voltage	: 8VDC
Output signal	: ≤ 1 mA or ≥ 3 mA
Hysteresis	: < 0.5 mm

POWER SUPPLY FOR LIMIT SWITCHES

(Option /W__)

Type	: Transmitter relay acc. DIN EN 50227 (NAMUR) - KFA6-SR2-Ex1-W (230 V AC) - KFA5-SR2-Ex1-W (115 V AC) - KFD2-SR2-Ex1-W (24 V DC)
Power supply	: - 230 V AC ± 10%, 45-65 Hz - 115 V AC ± 10%, 45-65 Hz - 24 V DC ± 25%
Relay output	: 1 or 2 potential-free changeover contact(s)
Switching capacity	: max. 250V AC, max. 2 A

SWITCHING LEVELS FOR LIMIT SWITCHES

Table 1

		SC 2-NO		SJ 2-SN		
Function	Pointer	Switch	Signal	Switch	Signal	Fail safe
MAX	above GW below GW	on off	1mA 3mA	on off	1mA 3mA	1mA
MIN	above GW below GW	off on	3mA 1mA	off on	3mA 1mA	1mA

GW = limit

T1.EPS

CONTROLLER (Option /R1 and R3)

Differential pressure controller for a constant flow at fluctuations of the process pressure.

These are no valves to reduce the pressure.

- **Controller /R1** for liquids with variable inlet or outlet pressure and for gases with variable inlet pressure and constant back pressure.

- **Controller /R3** for gases with fluctuations of the back pressure.

Max. liquid flow : 100 l/h

Max. gas flow : 3250 l/h

Max. pressure : 25 bar

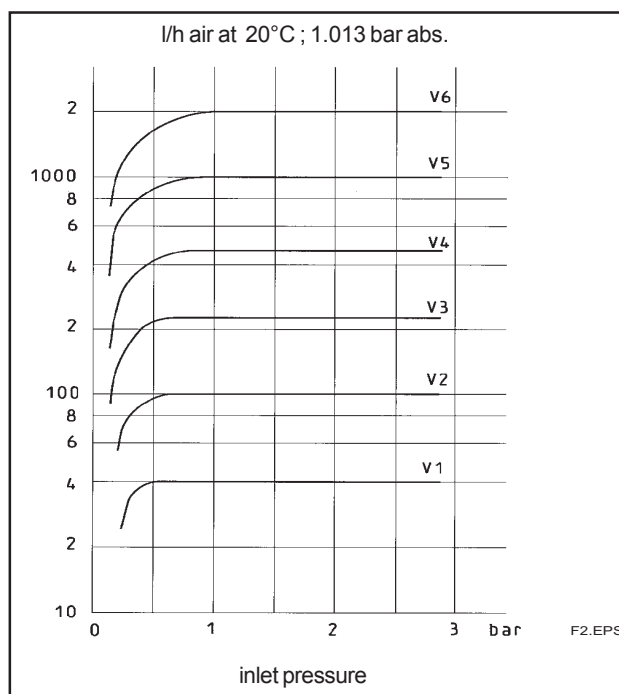
Recommended differential pressure
: >400 mbar

Temperature range : -25°C to + 80°C

Materials

	Housing	Diaphragm	Springs
R1 / R3	CrNi-Steel	PTFE	CrNi-Steel

T5.EPS



F2.EPS

Fig. 2 Diagram controller characteristic

HAZARDOUS AREA SPECIFICATIONS**RAKD with ATEX- certification "intrinsic safe"**

(option /KS1)

Certificate :

KEMA 00ATEX 1037X

Output signal :

4-20 mA

Explosion proof :

EEx ia IIC T6; group II ; category 2G

Entity parameter :

Table 2

	Analog output	Puls output	Limit switch Type 2	Limit switch Type 3
Ui [V]	30	16	16	16
Ii [mA]	100	20	25	52
Pi [mW]	750	64	64	169
Li [mH]	0.73	0	0.15	0.15
Ci [nF]	2.4	0	150	150

Tex1.EPS

Temperature specification :

Version 1: RAKD with indicator "T" and limit switch type 2 :

Table 3

Temperature class	T6	T5	T5	T4	T4
Max. ambient temperature	65°C	80°C	59°C	100°C	73°C
Max. process temperature	65°C	80°C	100°C	100°C	135°C

Tex2.EPS

Version 2: RAKD with indicator "T" and limit switch type 3:

Table 4

Temperature class	T6	T5	T5	T4	T4	T4
Max. ambient temperature	24°C	37°C	34°C	57°C	54°C	48°C
Max. process temperature	65°C	80°C	100°C	80°C	100°C	135°C

Tex3.EPS

Version 3 : RAKD with indicator "E" and with or without limit switch type 2 :

Table 5

Temperature class	T6	T5	T5	T4
Max. ambient temperature	65°C	50°C	45°C	38°C
Max. process temperature	65°C	80°C	100°C	135°C

Tex4.EPS

Version 4 : RAKD with indicator "E" with limit switch type 3:

The smaller environmental temperature must be found according to the available temperature class and the maximum process temperature from table 4 and 5.

RAKD "non incendive" (option /KN1)

Type "n" (non incendive) acc. EN 60079-15.

Explosion proof :

EEx nL IIC T6 protection „nL“; group II ; category 3G

Dust proof :

EEx II 3D; group II ; category 3D

Max. surface temperature : 80°C

Entity parameter :

table 6

	Analog output	Pulse output /CP	Limit switch SC2-N0, /K1...3	Limit switch SJ2-SN, /K6...8
Ui [V]	30	16	20	20
Ii [mA]	100	20	25	25
Pi [mW]	750	64	64	64
Li [μH]	730	0	150	100
Ci [nF]	2,4	0	150	30

T12.EPS

RAKD with NEPSI- certification “intrinsic safe” (China) (option /NS1) :

Certificate :

GYJ05153

Output signal :

4–20 mA

Explosion proof :

Ex ia IIC T6

Max. Tamb. :

65°C

Entity parameter of electronic transmitter :

see ATEX in table 2

Limit switches :

option /K1 to /K8

Entity parameter of limit switches :

see certificate NEPSI GYJ06542X

Intrinsically safe and dust proof limit switches with ATEX-certification (only for indicator T with option /K1 .. /K8) (option /KS2) :

Certificate :

- PTB 99 ATEX 2219X (SC2-NO)

- PTB 00 ATEX 2049X (SJ 2-S.N)

- ZELM 03 ATEX 0128X (for dust proof)

Explosion proof :

EEx ia IIC T6, group II category 2G

Dust proof:

Ex iaD 20 T 108 °C, group II category 1D

Max. surface temperature : T108°C

Entity parameter :

see certificate of conformity

Intrinsically safe limit switches with SAA-certification (Australia)(only for indicator T with option /K1 .. /K8) (option /SS1) :

Certificate :

AUS Ex 02.3838X

Explosion proof :

Ex ia IIC T1 ... T6

Entity parameter :

see certificate of conformity

Intrinsically safe limit switches with CSA-certification (USA + Canada) (only for indicator T with option /K1 .. /K8) (option /CS1) :

Certificate :

1007121 (LR 96321-2)

Explosion proof :

Cl. I, Div. 1, Grp A, B, C, D

Cl. II, Div. 1, Grp. E, F, G

Cl. III, Div. 1

or

Class I, Zone 0, Gp. IIC T6 (Ta = 60°C)

Entity parameter :

see FM-control drawing 116-0165b

Power Supply for the intrinsically safe electronic transmitter (option /U__)

Type

: Intrinsically safe power supply with galvanically separated input and output
- SINEAX B811

Certificate

: PTB 97 ATEX 2083

Supply voltage

: - 24 V to 60 V AC/DC

- 85 V to 230 V AC

Maximum load impedance

: 750 Ω

Output signal

: 0/4 mA - 20 mA

Control circuit

: Intrinsically safe [EEx ia] IIC group II, category (1)G

Entity parameters

: see fig 5 or certificate

Power supply for intrinsically safe limit switches (option W__)

Type

: - KFA6-SR2-Ex1-W (230 V AC)

- KFA5-SR2-Ex1-W (115 V AC)

- KFD2-SR2-Ex1-W (24 V DC)

Certificate

: - PTB 00 ATEX 2081

(115/230 V AC)

- PTB 00 ATEX 2080 (24 V DC)

Control circuit

: [EEx ia] IIC; group II ; category (1)GD

Entity parameter

: see fig 3 or certificate

INSTALLATION

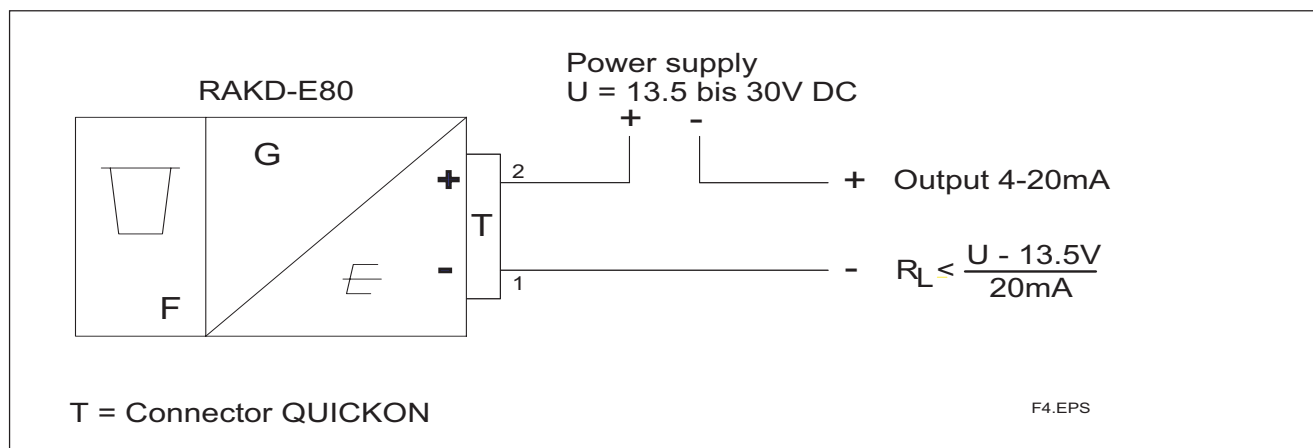


Fig. 3 RAKD with electronic transmitter

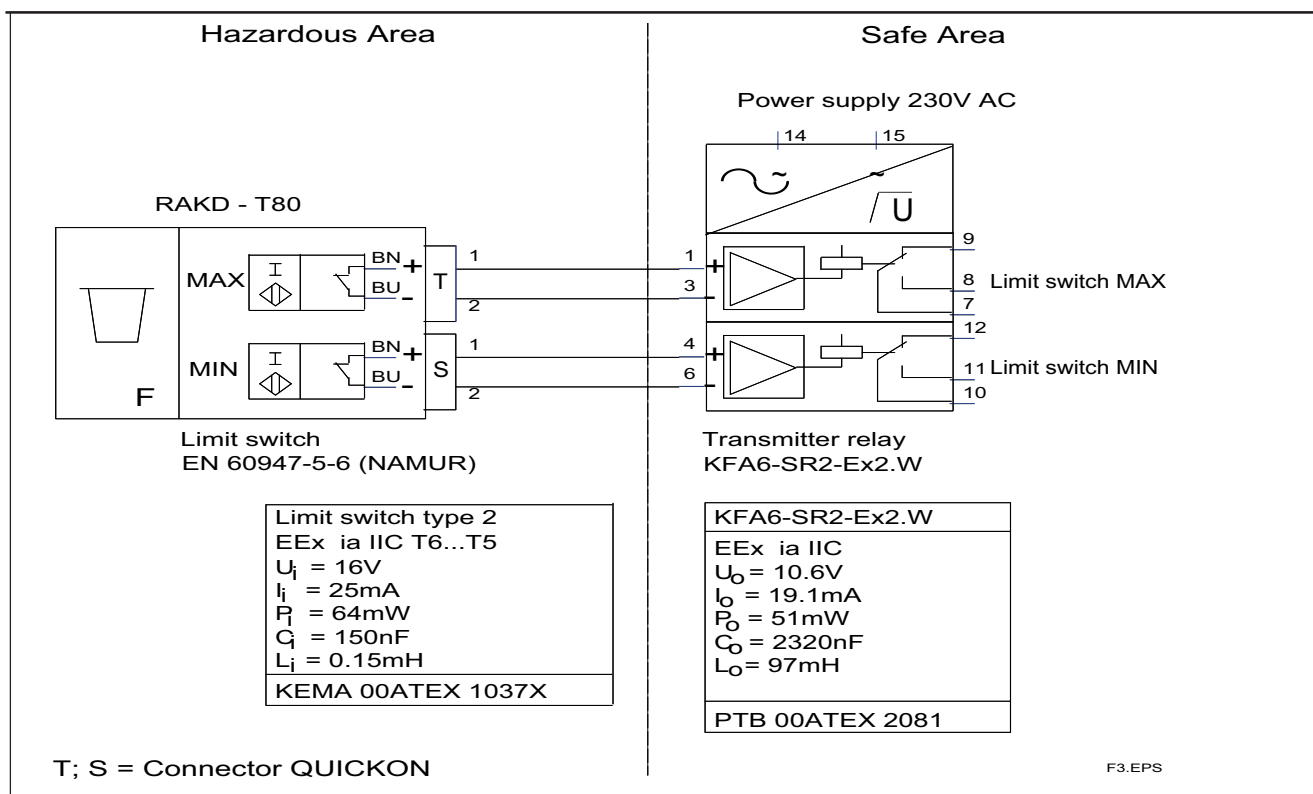


Fig. 4 Ex-version of RAKD with 2 limit switches in combination with transmitter relay

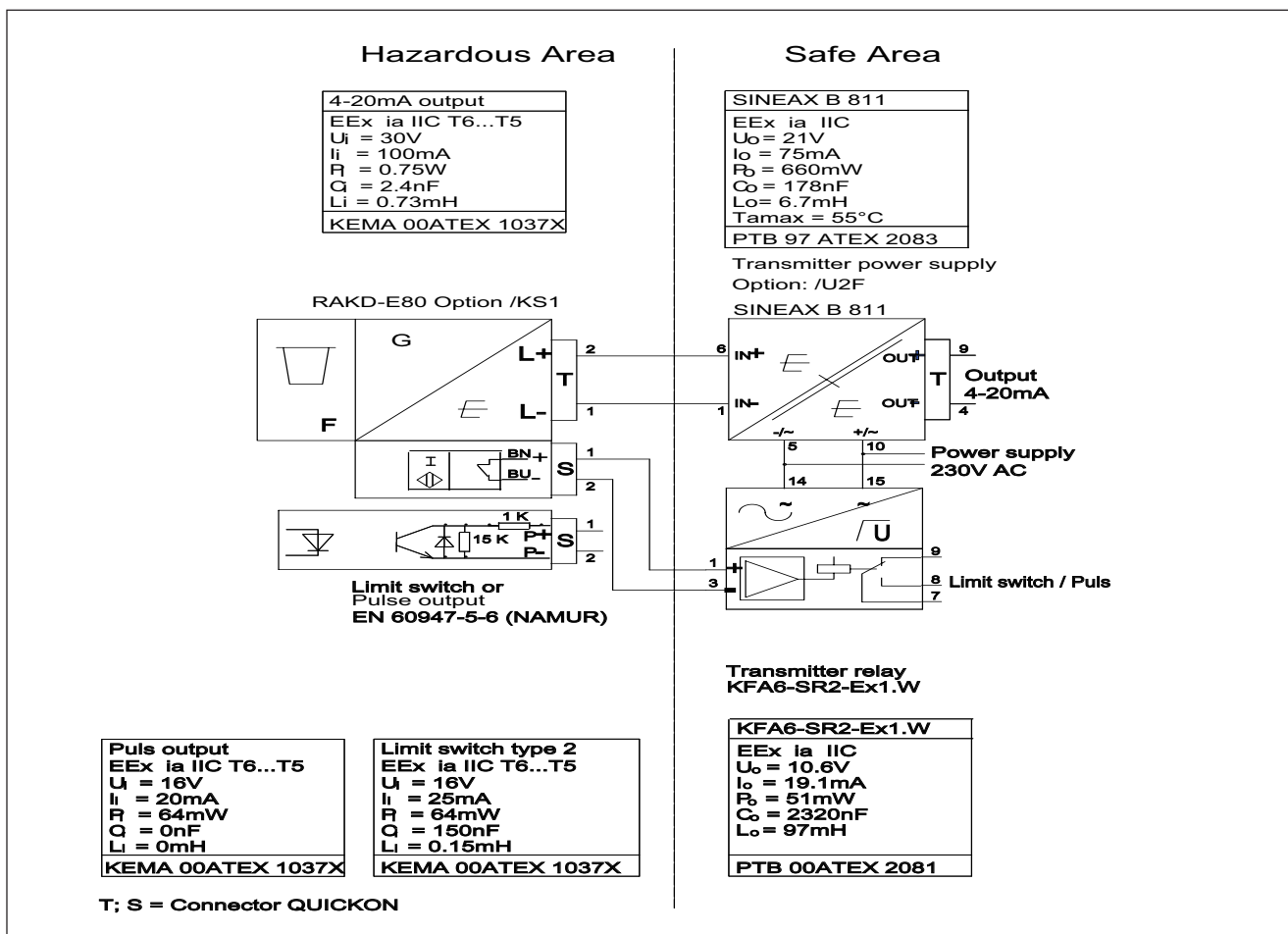


Fig. 5 Ex-version of RAKD with electronic transmitter with power supply and limit switch or pulse output in combination with transmitter relay

TEMPERATURE SPECIFICATION

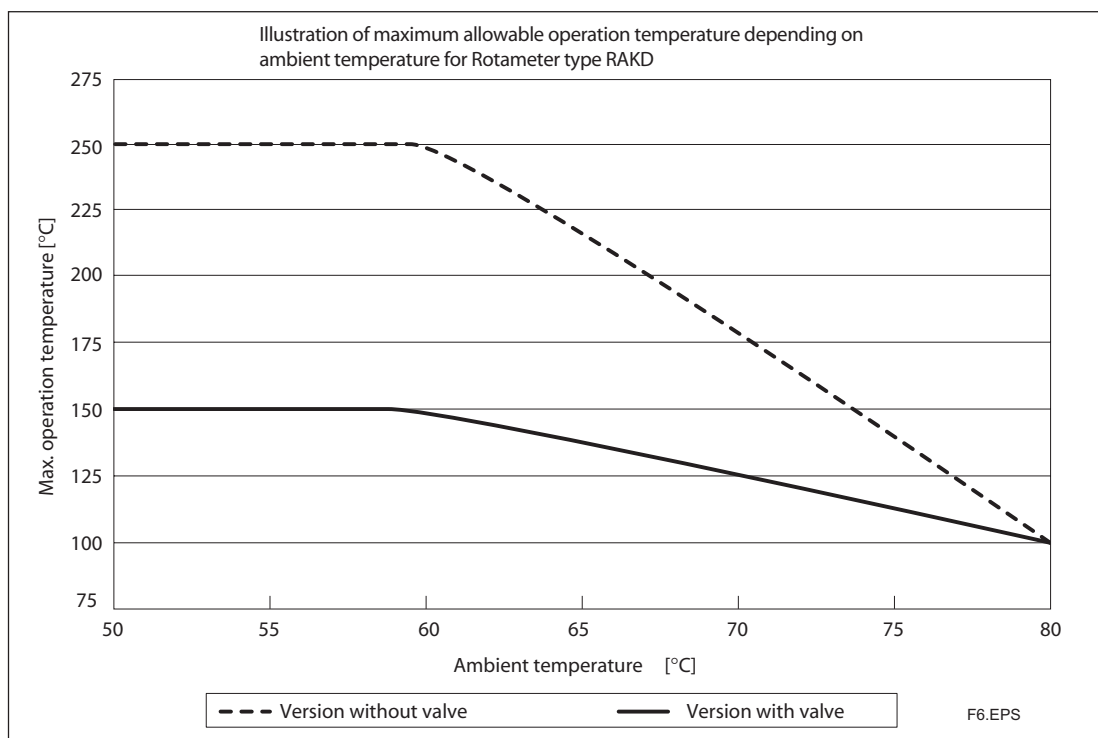


Fig. 6

For option /KS1, /KS2 or /KN1 (Ex-version) the maximum values for ambient and process temperature according to the respective temperature class mentioned in fig. 5 and tables 2 to 5 must be regarded.

The minimum ambient temperature is -25°C. Lower temperatures on request.

MODEL AND OPTION SPECIFICATIONS

Please make your decision in this order :					
1. Option controller	with controller	without controller	without controller	without controller	without controller
2. Version	with valve	with valve	without valve	without valve	without valve
3. Max. Flow	1.0 - 100 l/h Water 40 - 3250 l/h Air 31 - 51	1.0 - 250 l/h Water 40 - 8000 l/h Air 31 - 53	1.0 - 100 l/h Water 40 - 3250 l/h Air 31 - 51	160 - 250 l/h Water 5000 - 8000 l/h Air 52 - 53	
4. Process connection	Inner thread Cutting ring Cut. ring (Swagelok) Nozzle	Inner thread Cutting ring Cut. ring (Swagelok) Nozzle	Inner thread Cutting ring Cut. ring (Swagelok) Nozzle Flange	Inner thread Cutting ring Cut. ring (Swagelok) Flange	
Specify the model code according the mentioned page	Page 7	Page 8	Page 9	Page 10	

Ordering instructions

T10.EPS

Standard:

- a: Model, suffix and option code
- b: Flow conditions
- c: Temperature
- d: Pressure
- e: Viscosity
- f: Density

For gases: cross reference of the scale

Option/B□ : customer specification notes

RAKD with valve and controller (option /R1 and /R3) 1.0 - 100 l/h water / 40 - 3250 l/h air:

R	A	KD		SS			80	/	options
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Process connection		Max. Flow	Cone	Version	Indicator
Internal thread:		Water (l/h)	Air (l/h)	With valve in inlet	Type:
Rp 1/4 PN 25	41 R3	1	40	Gasket Valve seat	Local indicator
1/4 NPT PN 25	41 T3	1.6	60	PTFE Silver	Indicator with electric output
		2.5	100	PTFE PCTFE	T
		4.0	150		E
Cutting ring:		6.0	200	With valve in outlet	
Ø 6 PN 25	53 C3	10	325	Gasket Valve seat	
Ø 8 PN 25	54 C3	16	500	PTFE Silver	
Ø 10 PN 25	55 C3	25	800	PTFE PCTFE	
Ø 12 PN 25	56 C3	40	1400		
Swagelok:		60	2000	Gasket Valve seat	Housing type:
Ø 6 PN 25	53 W3	100	3250	PTFE Silver	Stainless steel
Ø 8 PN 25	54 W3				80
Ø 10 PN 25	55 W3				
Ø 12 PN 25	56 W3				
Nozzle:					Power supply:
Ø 6 PN 10	53 P1				none,
Ø 8 PN 10	54 P1				for local indicator „T“
					for electric type „E“,
					24V DC, 2-wire,
					4-20mA

Material: 1.4571	SS
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Cone	Δp mbar
31-37	6
41-43	8
44-51	11

For calculation to other fluids / process conditions please use our sizing program Durep_V.

T6.EPS

RAKD with valve 1.0 – 250 l/h water / 40 – 8000 l/h air:

R

A

KD

SS

80

/

options

Process connection

Internal thread:

G 1/4 PN 40

41

G4

G 1/4 PN 100

41

G6

1/4 NPT PN 40

41

T4

1/4 NPT PN 100

41

T6

Cutting ring:

Ø 6 PN 40

53

C4

Ø 6 PN 100

53

C6

Ø 8 PN 40

54

C4

Ø 8 PN 100

54

C6

Ø 10 PN 40

55

C4

Ø 10 PN 100

55

C6

Ø 12 PN 40

56

C4

Ø 12 PN 100

56

C6

Swagelok:

Ø 6 PN 40

53

W4

Ø 6 PN 100

53

W6

Ø 8 PN 40

54

W4

Ø 8 PN 100

54

W6

Ø 10 PN 40

55

W4

Ø 10 PN 100

55

W6

Ø 12 PN 40

56

W4

Ø 12 PN 100

56

W6

Nozzle:

Ø 6 PN 10

53

P1

Ø 8 PN 10

54

P1

Max. Flow

Cone

Water (l/h)

Air (l/h)

1

40

31

1.6

60

32

2.5

100

33

4.0

150

34

6.0

200

37

10

325

41

16

500

42

25

800

43

40

1400

44

60

2000

47

100

3250

51

160

5000

52

250

8000

53

Konus

Δp mbar

31-37

6

41-43

8

44-51

11

52-53

13

Version

With valve in input

Gasket

Valve seat

PTFE

Silver

PTFE

PCTFE

With valve in output

Gasket

Valve seat

PTFE

Silver

PTFE

PCTFE

Indicator

Type:

Local indicator

T

Indicator with electric output

E

Housing type:

Stainless steel

80

Power supply:

none,

NNN

for local indicator „T“

for electric type „E“,

424

24V DC, 2 wire,

-20mA

Materia: 1.4571

SS

For calculation to other fluids / process conditions please use our sizing program Durep_V.

RAKD without valve 1.0 – 100 l/h water / 40 – 3250 l/h air:

R	A	KD		SS		NNN		80	/	options
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Process connection		
Flange:		
DN 15 PN 40	01	D4
DN 25 PN 40	02	D4
ANSI 1/2 150 lbs	01	A1
ANSI 1 150 lbs	02	A1
ANSI 1/2 300 lbs	01	A2
ANSI 1 300 lbs	02	A2

Internal thread:		
G 1/4 PN 100	41	G6
G 1/4 PN 160	41	G7
1/4 NPT PN 100	41	T6
1/4 NPT PN 160	41	T7

Cutting ring:		
Ø 6 PN 100	53	C6
Ø 6 PN 160	53	C7
Ø 8 PN 100	54	C6
Ø 8 PN 160	54	C7
Ø 10 PN 100	55	C6
Ø 10 PN 160	55	C7
Ø 12 PN 100	56	C6
Ø 12 PN 160	56	C7

Swagelok:		
Ø 6 PN 100	53	W6
Ø 6 PN 160	53	W7
Ø 8 PN 100	54	W6
Ø 8 PN 160	54	W7
Ø 10 PN 100	55	W6
Ø 10 PN 160	55	W7
Ø 12 PN 100	56	W6
Ø 12 PN 160	56	W7

Nozzle:		
Ø 6 PN 10	53	P1
Ø 8 PN 10	54	P1

Material:	1.4571
SS	

Max. Flow	Cone
Water (l/h)	Air (l/h)
1	40
1.6	60
2.5	100
4.0	150
6.0	200
10	325
16	500
25	800
40	1400
60	2000
100	3250

Version	Indicator
Without valve	NNN

Type:	
Local indicator	T
Indicator with electric output	E

Housing type:	
Stainless steel	80

Power supply:	
none,	NNN
for local indicator „T“	
for electric type „E“,	424
24V DC, 2-wire,	
4-20mA	

For calculation to other fluids / process conditions please use our sizing program Durep_V.

RAKD without valve 160 – 250 l/h water / 5000 – 8000 l/h air:

R	A	KD		SS		NNN		80		/	options
---	---	----	--	----	--	-----	--	----	--	---	---------

Process connection		
Flange:		
DN 15 PN 40	01	D4
DN 25 PN 40	02	D4
ANSI ½ 150 lbs	01	A1
ANSI 1 150 lbs	02	A1
ANSI ½ 300 lbs	01	A2
ANSI 1 300 lbs	02	A2

Material: 1.4571	
SS	

Max. Flow	Cone
Water (l/h)	Air (l/h)
160	5000
250	8000
Cone	
52-53	Δp mbar
	13

Version	
Without valve	NNN

Indicator	
Type:	
Local indicator	T
Indicator with electric output	E

Housing type:	
Stainless steel	80

Power supply:	
none, for local indicator „T“	NNN
for electric type „E“, 24V DC, 2-wire, 4-20mA	424

For calculation to other fluids / process conditions please use our sizing program Durep_V.

T9.EPS

OPTIONS

Options	Option code	Description	Restrictions
Indicator	/A12	US-engineering units	Only for indicator E
Marking	/B1 /B4 /B8 /BG /BD	Tag plate (SS) fixed by wire and marking on scale Neutral version Customer provided marking on label Customer specific notes on scale Dual Scale	Plate 12 x 40 mm; max. 45 digits Not with option /P6 and Ex-proof type Max. 45 digits Adjustment only possible for 1 fluid
Limit switches	/K1 /K2 /K3 /K6 /K7 /K8	MIN-contact MAX-contact MIN-MAX-contact MIN-contact "Fail Safe"- version MAX-contact "Fail Safe"- version MIN-MAX-contact "Fail Safe"- version	Only for indicator T Only for indicator T
Pulse output	/CP	Pulse output, acc. NAMUR EN50227	Only for indicator E; not with limit switches
Ex-proof type	/KS1 /KS2 /KN1 /CS1 /SS1 /NS1	ATEX intrinsically safe "ia" ATEX gas and dust proof limit switches, category 2G 1D ATEX category 3G "nL" / 3D CSA intrinsic safe approval for limit switches (US+CAN) SAA approval for limit switches (Australia) NEPSI approval (China)	Not for indicator T without limit switches Only for indicator T with limit switches Not for indicator T without limit switch Only for indicator T with limit switches Only for indicator T with limit switches Not for indicator T without limit switches
Test and certificates	/PP /P2 /P3 /P6 /PM1 /PM4 /PM5	Pressure test report measuring system Certificate of Compliance with the order acc. to EN 10204: 2004- 2.1 As /P2 +Test report acc. to EN 10204: 2004- 2.2 Material certificate acc. to EN 10204: 2004- 3.1 PAMI test (1 test point : metering tube) PAMI test (4 test points : metering tube, connection heads, sealing plug) PAMI test (5 test points : metering tube, connection pieces, slip on flanges)	 Only for tube, connection heads, screw sealing plug Only for models with valve Only for models with process connection D4, A1, A2
GOST approvals	/QR1 /QR2	Russian GOST approval Kasachian GOST approval	
Controller	/R1 /R3	Pre pressure controller 1.4571 (only with valve in inlet; for gas with variable pre pressure and liquids with variable pre and back pressure) Back pressure controller 1.4571 (only with valve in outlet; for gas with variable back pressure)	Only for process connection R3, T3, C3, W3, P1; only with valve Only for process connection R3, T3, C3, W3, P1; only with valve
Power supply for electronic transmitter	/U2F /U3F	SINEAX B811, 85 - 250 V AC, EEx i SINEAX B811, 24 V AC/DC, EEx i	Only for indicator E Only for indicator E
Power supply for limit switch(es) (transmitter relay)	/W1A /W1B /W2A /W2B /W2E /W4A /W4B /W4E	KFA5-SR2-Ex1.W / 115 V AC, 1 channel KFA5-SR2-Ex2.W / 115 V AC, 2 channels KFA6-SR2-Ex1.W / 230 V AC, 1 channel KFA6-SR2-Ex2.W / 230 V AC, 2 channels KHA6-SH-Ex1 / 230 V AC, 1 channel, Fail Safe KFD2-SR2-Ex1.W / 24 V DC, 1 channel KFD2-SR2-Ex2.W / 24 V DC, 2 channels KHD2-SH-Ex1 / 24 V DC, 1 channel, Fail Safe	Only for limit switches /K1 + /K2 + /K3 Only for limit switches /K1 + /K2 + /K3 Only for limit switches /K1 + /K2 + /K3 Only for limit switches /K1 + /K2 + /K3 Only for limit switches /K6 + /K7 + /K8 Only for limit switches /K1 + /K2 + /K3 Only for limit switches /K1 + /K2 + /K3 Only for limit switches /K1 + /K2 + /K3 Only for limit switches /K6 + /K7 + /K8
Instruction manuals	/IE n /ID n /IF n	Quantity of instruction manuals in English Quantity of instruction manuals in German Quantity of instruction manuals in French	n = 1 to 9 selectable *) n = 1 to 9 selectable *) n = 1 to 9 selectable *) *) if no instruction manual is selected, only a CD with instruction manuals is shipped with the flowmeter

DIMENSIONS

Note : The dimensions a ; b ; c ; L1 ; L2 ; L3 are listed in table 7 and 8.

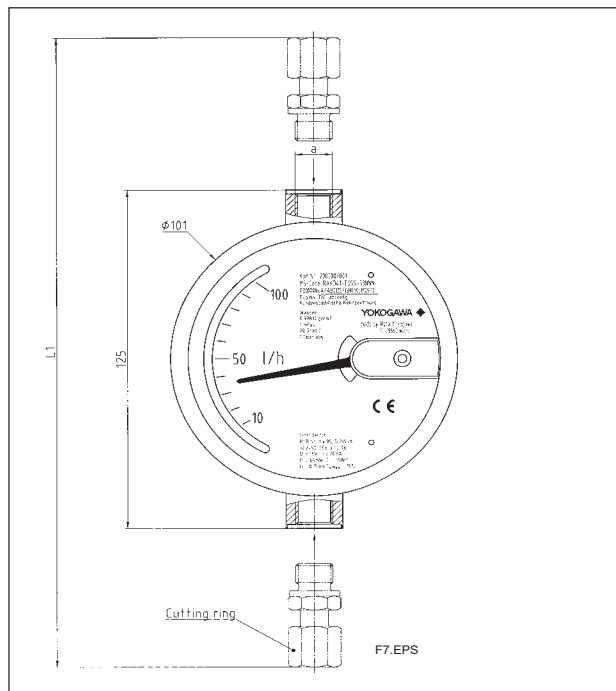


Fig. 7 Version without valve

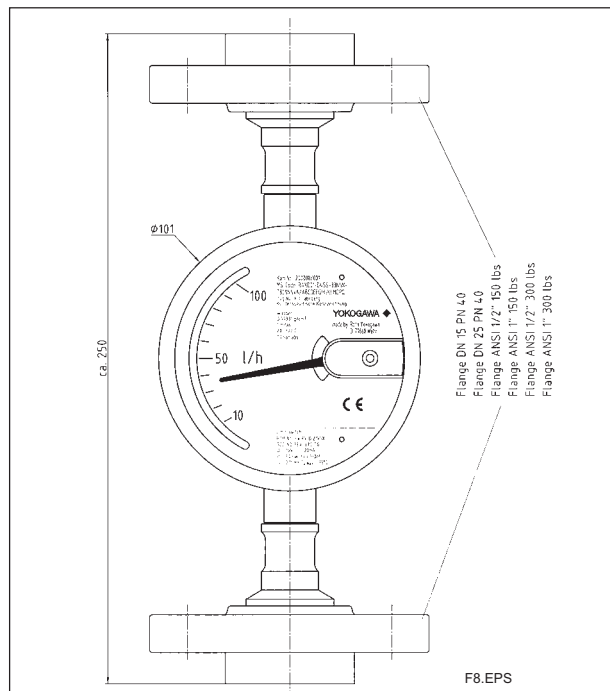


Fig. 8 Version with flange connection

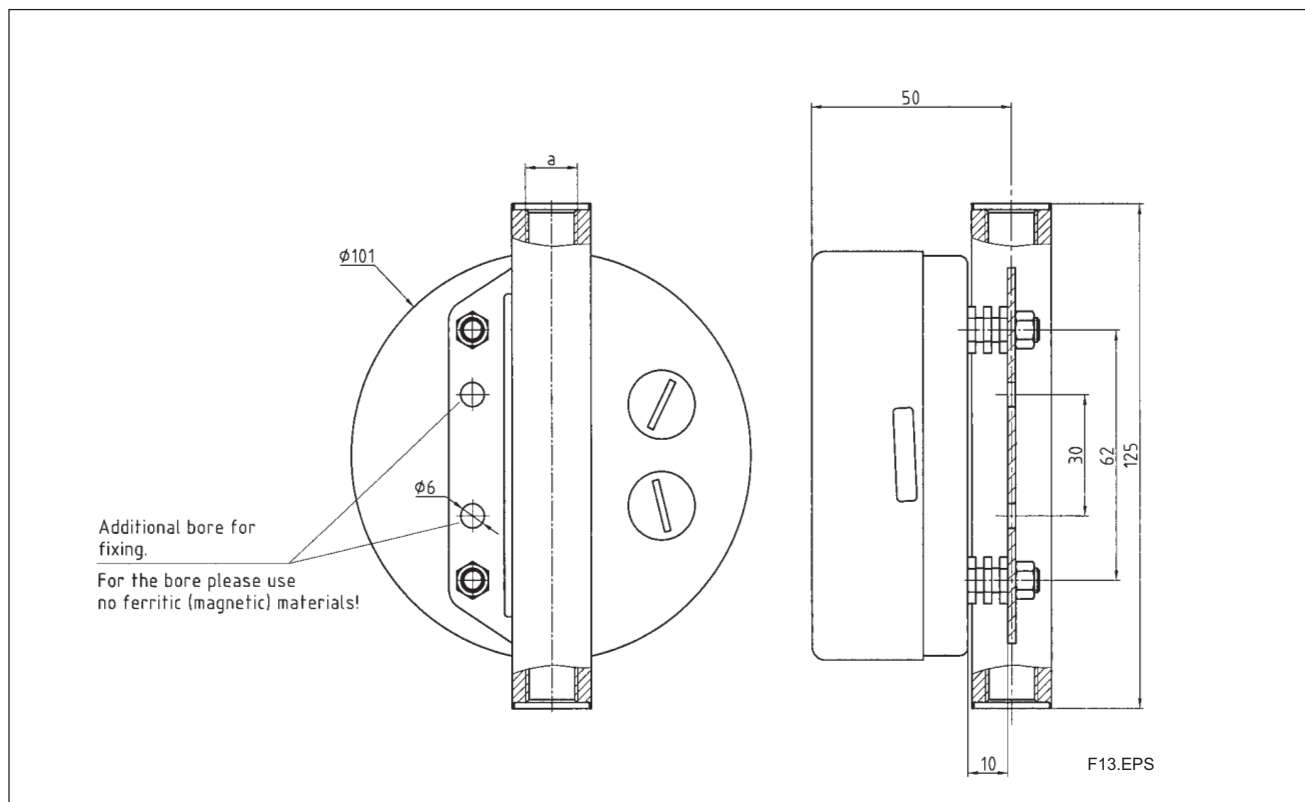


Fig. 9 Back view with mounting

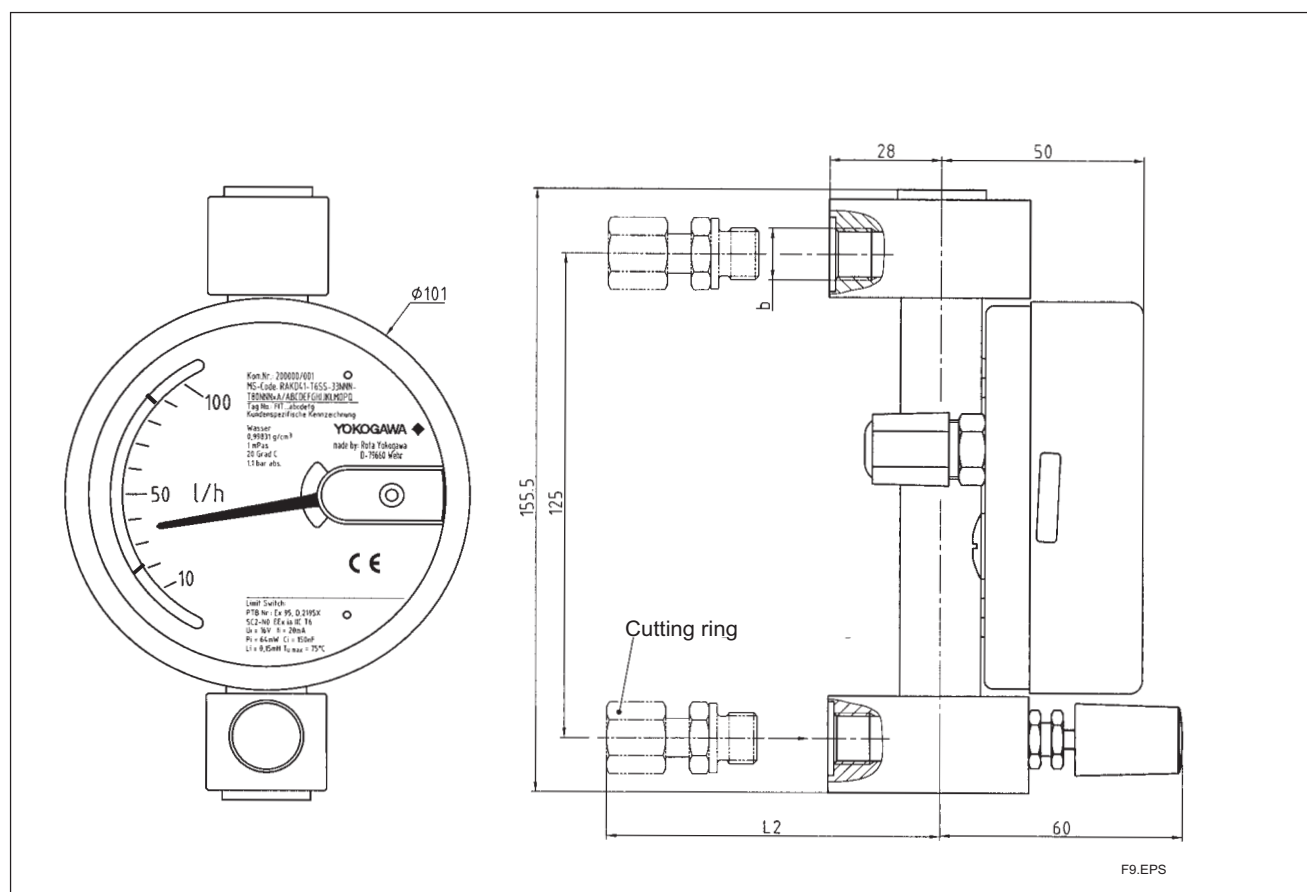


Fig. 10 Version with inlet valve

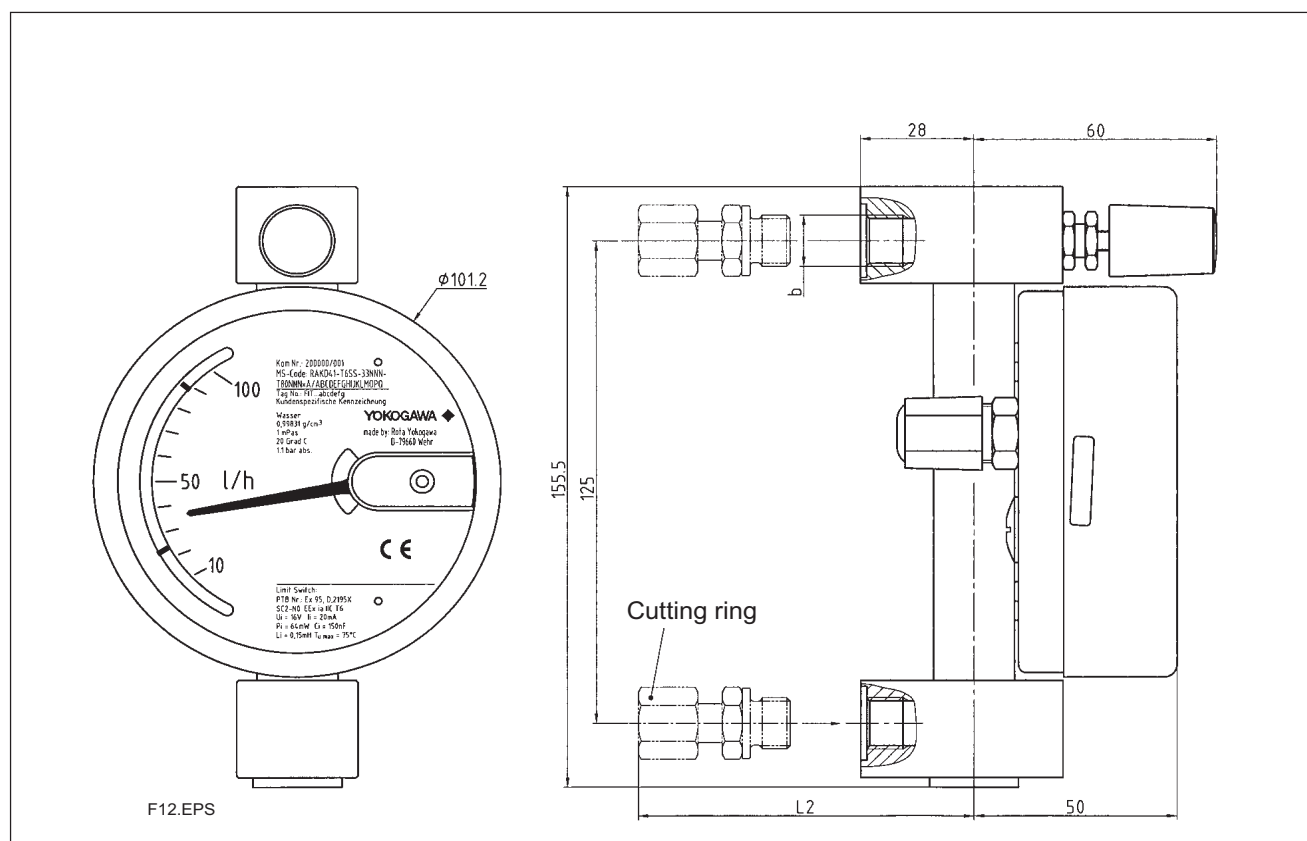


Fig. 11 Version with outlet valve

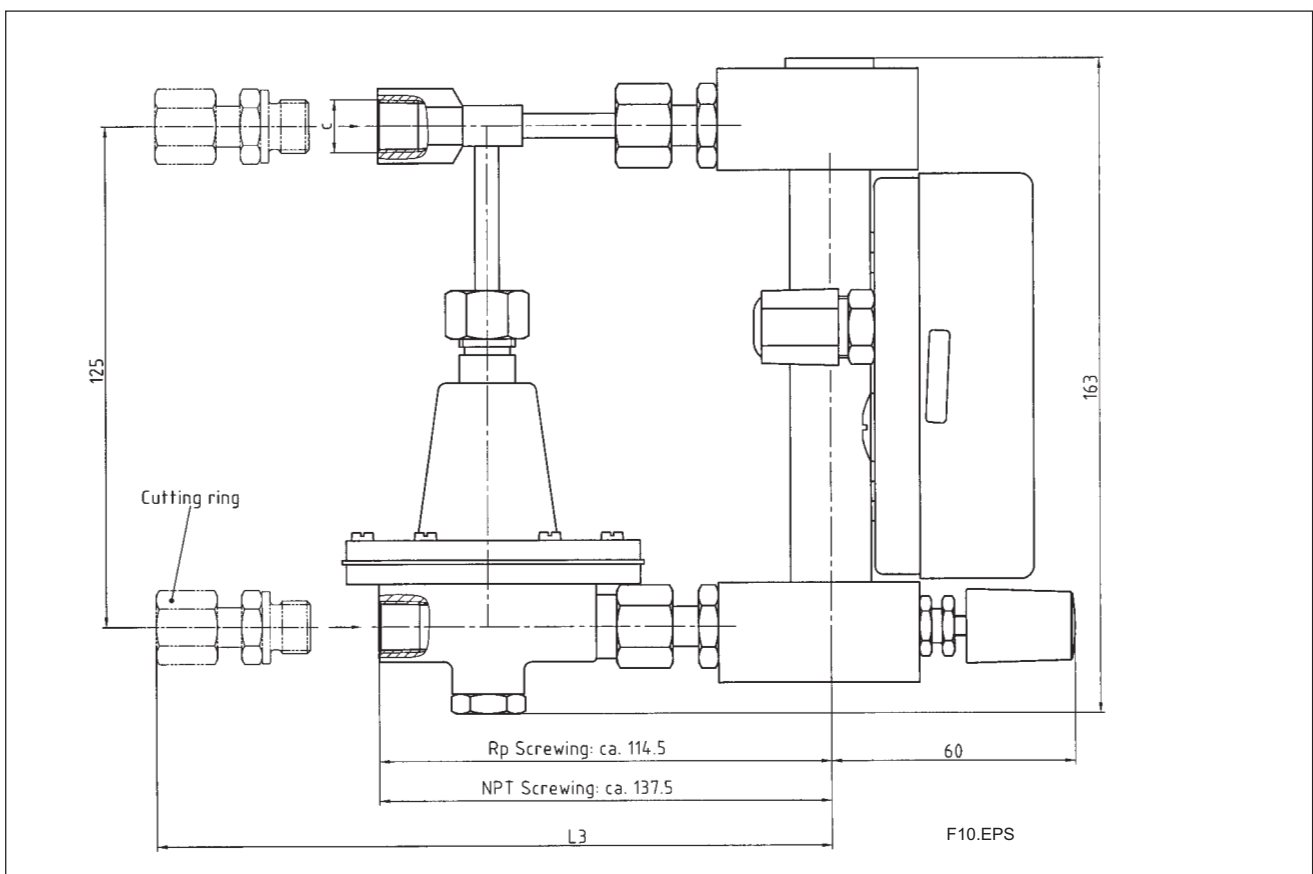


Fig. 12 Version with inlet valve and inlet controller

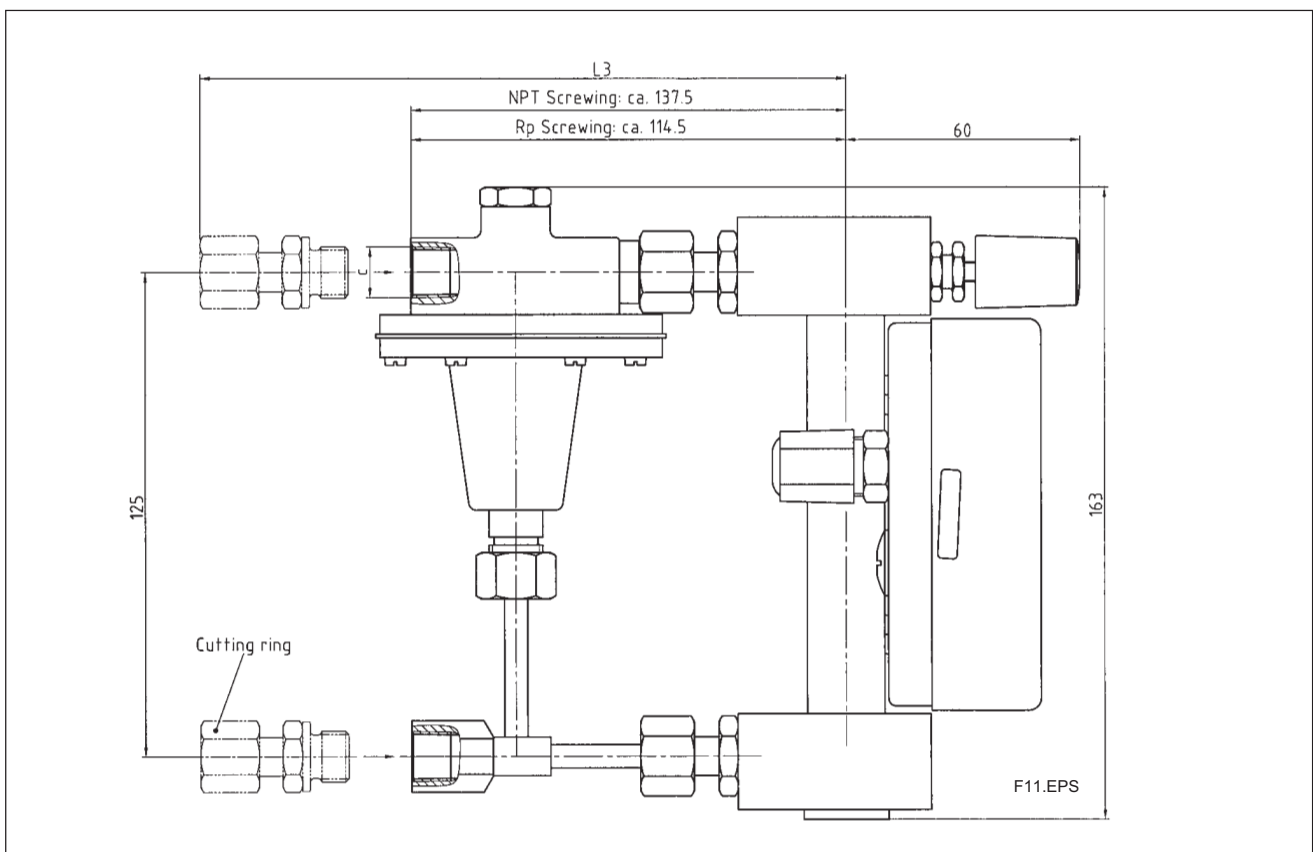


Fig. 13 Version with outlet valve and back pressure controller

CONNECTION TYPES

Table 7

Size	a		b	c
	Cone 31-51	Cone 52-53	Cone 31-53	Cone 31-51
Thread	G 1/4	G 3/8	G 1/4	Rp 1/4
	1/4 NPT	3/8 NPT	1/4 NPT	1/4 NPT

T2.EPS

INSTALLATION LENGTHS DEPENDING ON CONNECTION TYPE AND SIZE

Table 8

Size		L1		L2	L3
Process connection	NW	Cone 31-51	Cone 52-53	Cone 31-53	Cone 31-51
Cutting ring	6 mm	178 mm	----	54.5 mm	142.5 mm
	8 mm	172 mm	----	51.5 mm	139.5 mm
	10 mm	174 mm	----	52.5 mm	140.5 mm
	12 mm	174 mm	177 mm	52.5 mm	140.5 mm
Nozzle	6 mm	182 mm	----	56.5 mm	144.5 mm
	8 mm	182 mm	----	56.5 mm	144.5 mm

T3.EPS

WEIGHTS

Table 9

	without valve	with valve	with controller
Weight	approx. 600g	approx. 1000g	approx. 1800g

T4.EPS

PLANNING HINTS

- The real working pressure has to be less than the specified pressure limit of the Rotameter.
- Make sure that the wetted material is resistant to the medium.
- Ambient and operation temperature has to be less than the specified maximum value.
- If dirt accumulation is to be expected we recommend to install a bypass pipe.
- To avoid float bouncing in case of gas application notice the recommendations of VDI/VDE 3513 Sheet 3.
- To avoid mutual magnetic influence in case of a parallel design of several Rotameters take care that the distance between the tube middle axes is not less than 120 mm. The distance to other ferric materials should not be less than 60 mm.
- The strength of external magnetic fields close by the Rotameter should be approximately 0mT.

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