

Transmitters for Liquid Level, Interface and Density

Accessories for Buoyancy Transmitters

Type: 104XX



Technical Information

01/2010

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Technical Information 104XX
Rev. 0
01/2010
Subject to technical alteration.

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Type: 144XX

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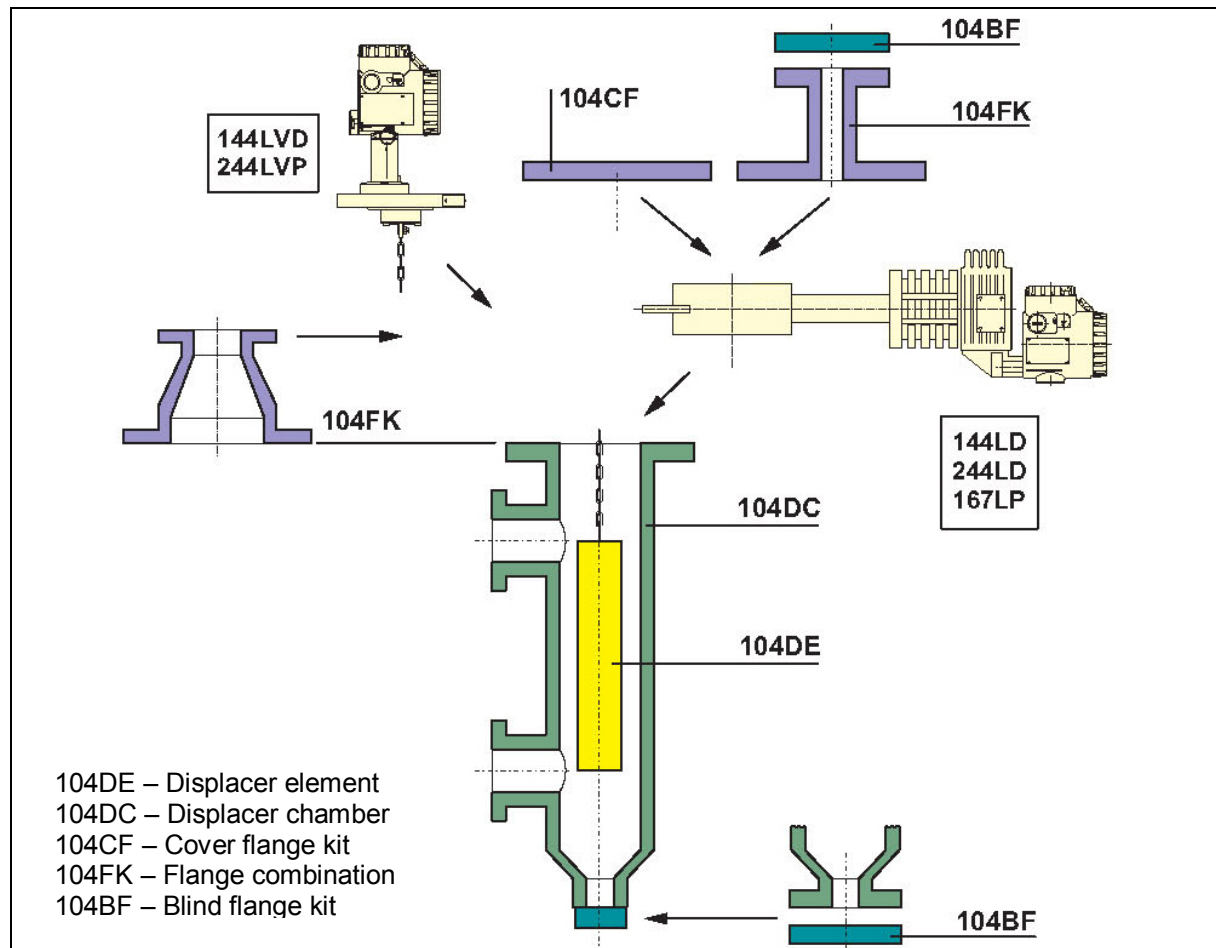
Description

Buoyancy transmitters to measure liquid level, interface and density are used for open or closed vessels or containers. They can be mounted directly on top of the vessel, or if the application requires, on a side mounted cage. Depending on application an vessel design various installation accessories and the applicable displacer have to be selected.

Features

◆	Universally applicable for all buoyancy transmitters (series 144, 167 und 244)
◆	Standards acc. DIN and ANSI
◆	Various connections, dimensions and materials
◆	Displacers are available in standard fabricated sizes and materials – and also customized
◆	Certification according to „Pressure Regulation Directive“ PED /Druckgeräte-Richtlinie)
◆	Certified as part of an overfill protection acc. WHG

Technical Data



Ordering informationen 104DE / Displacer Element

Model code

Code	Description
104DE	Displacer element
Density range for 144LD, 244LD, 144LVD, 244LVP and 167LP	
SD	Standard (Density range see Product data sheets) (b)
ID	Interface measurement (Density range see Product data sheets) (c)
Displacer material	
S	1.4404 / 1.4435 / 1.4571 (316L) (not for pressure range C) (a)
P	PTFE (for density range SD) (not for applications in Zone 0)
O	PTFE mit 25 % Carbon (for density range SD) (for applications in Zone 0) (not with 167LP)
C	Hastelloy C (for density range SD) (not for pressure range C) (a)
Displacer length „L“	
	Length Max range
Standard for DIN	
10	350 mm 0...350 mm
11	500 mm 0...500 mm
12	750 mm 0...750 mm
13	1000 mm 0...1000 mm
14	1200 mm 0...1200 mm
15	1500 mm 0...1500 mm
16	1800 mm 0...1800 mm
17	2000 mm 0...2000 mm
18	2500 mm 0...2500 mm
19	3000 mm 0...3000 mm
Standard for ANSI	
20	14" 0...14"
22	32" 0...32"
24	48" 0...48"
25	60" 0...60"
26	72" 0...72"
27	84" 0...84"
28	96" 0...96"
29	120" 0...120"
For DIN and ANSI:	
30	Intermediate lengths, max. 3000 mm / 120" (d) 0...3000 mm / 0...120"
Suspension length (dimension B) (specify exact length!)	
000	up to 0,99 m / 39"
003	1 m / 39,4" to 3 m / 118,1"
005	3 m / 118,1" to 5 m / 196,8"
010	5 m 196,8" to 10 m / 394"
Suspension Material	
S	1.4404 / 1.4435 (316L)
C	Hastelloy C
Pressure rating	
A	up to PN100 / Cl. 600 (for interface max. PN40/63)
B	up to PN250 / Cl. 1500 (only with 144LD, 244LD, 144LVD and 167LP)
C	PN500 / Cl. 2500 only with 144LVD und 167LP, versions 51 and 52
Options	
D	Damping spring (mat. 1.4301, max. 250 °C)
O	Cleaned for Oxygen Service
X	Additional partition point
Messstellenbeschriftung	
S	Stamped with weather resistant colour
L	Stainless steel label fixed with wire
Zertifikate	
1	EN 10204-2.1 Certificate of Compliance
3	EN 10204-3.1 Inspection certificate of process wetted material (e)

(a) For application in Zone 0
(b) Fluid density, pressure and temperature required for calibration.
(c) Upper and lower fluid density Dichte required for calibration.
(d) Length of displacer in mm or inches required for manufacturing.
(e) Not with displacer material P or O

Displacer Chamber 104 DC

Displacer Chambers are offered in your vessel mounting arrangements. The length L between the connection flanges corresponds to the displacer element length.

For use as part of an overfill protection the same length of displacer element and chamber is required..

<u>Connection</u>	<u>144LVD, 244LVP</u>	<u>144LD, 244LD, 167LP</u>
Side-Side	✓	✓
Side-Bottom	✓	✓
Side-Top	✗	✓
Top-Bottom	✗	✓
with heating jacket	✓	✓

Materials

Steel:

- pipes: 1.0305 (A519-1020)
- flanges: 1.0460 (A105)
- steam jacket: 1.0345 (A-201-A)

Stainless steel:

- all parts: 1.4571 (316Ti)

Displacer chamber 104DC; Connections

without heating jacket				with heating jacket
Side-Side	Side-Bottom	Side-Top	Top-Bottom	Side-Side
1: connection flange #1 to transmitter (see model code: flange size & pressure rating) 2: process connection flange #2 (see model code: flanges to vessel) 3: drain flange #3 4: drain plug #4 5: flange combination 104FK (only 144LD or 167LP) 6: connection flange for heat jacket DN15, PN40, DIN 2135, max. op. Pressure 25 bar / 362 psi				
L= length of displacer element = max. span				

Ordering informationen 104DC / Displacer Chamber

Model code

Code	Description
104DC	Displacer chamber
Mounting type (flanges to vessel)	
SS	Side-Side
SB	Side-Bottom
ST	Side-Top
TB	Top-Bottom
Flange size (to transmitter) & Pressure rating	
	Flange size
11	DN 80
12	DN 80
13	DN 80
14	DN 80
15	DN 80
21	DN 100
22	DN 100
23	DN 150
24	DN 150
31	3"
32	3"
33	3"
34	3"
35	3"
41	4"
42	4"
43	6"
44	6"
Pressure rating	
	PN 16/40
	PN 63
	PN 100
	PN 160 (nur für SS)
	PN 250 (nur für SS)
	PN 16
	PN 40
	PN 16
	PN 40
	Cl. 150
	Cl. 300
	Cl. 600
	Cl. 900 (nur für SS)
	Cl. 1500 (nur für SS)
	Cl. 150
	Cl. 300
	Cl. 150
	Cl. 300
Contact face (transmitter mounting flange) (e)	
C	Type C
E	Type E
F	Type F
L	Type L
R	Type RF
J	Type RJF
S	Smooth Finish (RA=125 µm) (available up to ANSI Cl. 600)
Dimension	
S	Standard („L“ = 10...29)
Z	Intermediate lengths („L“ = 33...49)
Displacer length „L“	
Standard for DIN	
10	350 mm (c)
11	500 mm (c)
12	750 mm (c)
13	1000 mm (c)
14	1200 mm (c)
15	1500 mm (c)
16	1800 mm (c)
17	2000 mm (c)
18	2500 mm (c)
19	3000 mm (c)
Standard for ANSI	
20	14" (b)
22	32" (b)
24	48" (b)
25	60" (b)
26	72" (b)
27	84" (b)
28	96" (b)
29	120" (b)
Intermediate lengths (specify exact length!)	
33	L ≤ 1000 mm
37	1000 mm < L < 2000 mm
39	2000 mm < L < 3000 mm
44	L ≤ 48"
47	48" < L < 84"
49	84" < L < 120"

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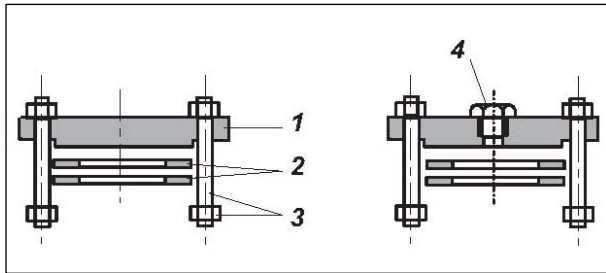
Material	
K	Steel 1.0460 (A105)
S	1.4571 (316Ti)
Flanges to vessel	
C	DN50 type C (Rz40-16) acc. DIN 2526 (with flange size 11, 21...24)
E	DN50 type E (Rz16) acc. DIN 2526 (with flange size 12, 13)
N	DN50 type N Nut groove acc. DIN 2512 (a)
F	DN50 type F tongue acc. DIN 2512 (a)
L	DN50 type L lens acc. DIN 2696 (with flange size 14, 15)
R	2" type RF Raised Face acc. ANSI B16.5
J	2" type RJF Ring Joint Face acc. ANSI B16.5 (with flange size 32...35, 42, 44 and mounting type SS)
S	2" Type SF Smoot Finish (RA 125 µm) (up to Cl. 600)
Drain flange	
H	without (only mounting type SB; TB)
G	Drain plug G ¾ (DIN)
N	Drain plug ¾-14 NPT
K	Type C
A	Type E
B	Type N
C	Type F
D	Type L
L	Type C
F	Type N
J	Type F
S	Type C
M	Type E
P	Type N
Q	Type F
R	Type L
Z	Type C
T	Type E
U	Type N
V	Type F
X	Type L
1	½" Type RF
2	½" Type RJF
3	¾" Type RF
4	¾" Type RJF
5	1" Type RF
6	1" Type RJF
7	2" Type RF
8	2" Type RJF

Options	
O	Cleand for Oxygen service (PN25) (with mounting type SS & Flange size 11...13, 31...33 & Contact face E, R)
TAG-no. Labelling	
S	Stamped with weather resistant colour
L	SS-label fixed with wire
Certificates	
1	EN 10204-2.1 Certificate of Compliance
3	EN 10204-3.1 Inspection certificate of process wetted material
4	PED 97/23/EC add. Unit verification, acc. Modul F/G
6	Comply with NACE Standard MR-01-75 (d)
9	Wasserstand 100 (with drain flange DN20, DN25, ¾" or 1")
Material tests	
7	X-ray & isotope test for weldings
8	Dye penetrant test

- (a) with flange size 11...13 und 21...25
- (b) with flange size 31...44
- (c) with flange size 11...24
- (d) on request
- (e) type C (Rz 40-160) acc. DIN 2526
- type E (Rz 16) acc. DIN 2526
- type N groove acc. DIN 2512
- type F tongue acc. DIN 2512
- type RF raised face acc. ANSI B 16.5
- type RJF ring joint face acc. ANSI B 16.5
- type L lens acc. DIN 2696

Cover Flange Kit 104 CF

The cover flange kit is necessary for the sandwich type torque tube transmitters 144LD, 244LD and 167LP. Seals, studs and nuts are included. Vent plug is optional.



-1: Blind flange (Code 11 to 45 / E to J)

-2: Gasket

-3: Bolts & Nuts

-4: Vent plug

Materials:

Flange	1.0460 (A105) 1.4571 (316Ti) Hastelloy C ¹⁾	1) Basic material: 1.4571 with covering of special material
Seals, spiral wound seals ²⁾	Stahl / Graphit 1.4404/Graphit ³⁾	2) Depending on the basic material
Bolts	21CrMo V57 oder A2 ⁴⁾	3) For all materials, except 1.0460
Nuts	24CrMo 5 oder A2 ⁴⁾	4) A2 for temperatures below -10 °C

Ordering informationen 104CF / Cover Flange Kit

Model code

Code	Description
104CF	Cover flange kit
Flange size & Pressure rating	
	Flange size Pressure rating
11	DN80 PN16/40
12	DN80 PN63
13	DN80 PN100
14	DN80 PN160
15	DN80 PN250
16	DN80 PN400
17	DN70 PN500
21	DN100 PN16
22	DN100 PN40
23	DN100 PN63
24	DN100 PN100
25	DN100 PN160
26	DN100 PN250
31	3" Cl. 150
32	3" Cl. 300
33	3" Cl. 600
34	3" Cl. 900
35	3" Cl. 1500
41	4" Cl. 150
42	4" Cl. 300
43	4" Cl. 600
44	4" Cl. 900
45	4" Cl. 1500
Contact face	
C	type C (with 11,21,22)
E	type E (with 12, 13, 23, 24)
F	type F (with 11...13 & 21...24)
N	Type N (with 11...13 & 21...24)
L	type L (with 14, 15, 16, 25, 26)
H	type L lens acc. high pressure standard (with 17)
R	Type RF (mit 31...45)
J	Type RJF (mit 31...45)
S	Smooth Finish (RA 125 µm) (up to Cl. 600)
Material	
K	Steel / A105
S	1.4571 / 316Ti
C	Hastelloy C

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Optionen	
G	Vent plug G ¾ (DIN) (with material K & S)
N	Vent plug NPT ¾" (ANSI) (with material K & S)
F	Short bolts for flange mounting
A	Bolts & nuts for process temperature below -10 °C
O	Cleaned for oxygen service
TAG-No. Labelling	
S	Stamped with weather resistant colour
L	SS-label fixed with wire
Certificates	
1	EN 10204-2.1 Certificate of Compliance
3	EN 10204-3.1 Inspection certificate of process wetted material
6	Comply with NACE MR-01-75 (c)

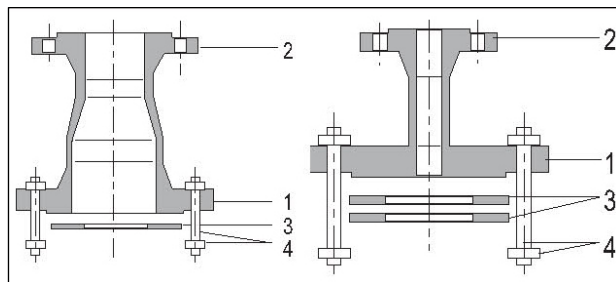
- (a) type C (Rz 40-160) acc. DIN 2526
type E (Rz 16) acc DIN 2526
type F tongue acc. DIN 2512
type N groove acc. DIN 2512
type L lens acc. DIN 2696
type RF Raised Face acc. ANSI 16.5
type RJF Ring Joint Face acc ANSI 16.5
(b) with 11...13, 22...24, 31...33, 41...42. Flanges 1.4571 palated with special materials; with contact face C, E & R
(c) on request

Flange combination 104 FK

The flange combination is used if

- ◆ displacer chamber with side-top (ST) or top-bottom (TB) design is applied to a torque tube transmitter model 144LD, 244LD or 167LP.
- ◆ a transmitter is mounted on a DN 50 (2") or DN 150 (6") flange connection.
- ◆ the cover flange is to be taken off for service without removing the transmitter.

The flange combination will be supplied with gaskets, bolts and nuts for connection to the transmitter.



Materials:

Flange combination	1.0460 (A105) 1.4571 (316Ti)
Gaskets, spiral wound gaskets	Stahl/Graphit 1.4404/Graphit
Bolts	21CrMo V57 oder A2
Nuts	24CrMo 5 oder A2

Mounting:

Flange size #1	DN80/DN100/DN150 3"/4"/6"
Flange size #2	DN15/20/25/50/80 ½"/¾"/1"/2"/3"
Pressure rating:	PN16/40/63/100/160/250 Cl. 150/300/600/900/1500

Ordering informationen 104FK / Flange Combination

Model code

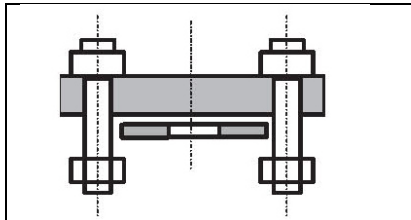
Code	Description
104FK	Flange combination
Flange size #1 & Pressure rating	
	Flange size #1
	Pressure rating
11	DN80 PN16/40
12	DN80 PN63
13	DN80 PN100
14	DN80 PN160
15	DN80 PN250
21	DN100 PN16
22	DN100 PN40
23	DN100 PN63
24	DN100 PN100
25	DN100 PN160
26	DN100 PN250
27	DN150 PN16
28	DN150 PN40
31	3" Cl. 150
32	3" Cl. 300
33	3" Cl. 600
34	3" Cl. 900
35	3" Cl. 1500
41	4" Cl. 150
42	4" Cl. 300
43	4" Cl. 600
44	4" Cl. 900
45	4" Cl. 1500
47	6" Cl. 150
48	6" Cl. 300
Flange size #2	
A	DN15 (with flange size #1: 11...26)
B	DN20 (with flange size #1: 11, 21, 22)
C	DN25 (with flange size #1: 11...26)
D	DN50 (with flange size #1: 11...26)
K	DN80 (with flange size #1: 11...15, 21, 22, 27, 28)
E	1/2" (with flange size #1: 31...45)
F	3/4" (with flange size #1: 31...45)
G	1" (with flange size #1: 31...45)
H	2" (with flange size #1: 31...45)
L	3" (with flange size #1: 31...35, 41, 42, 47, 48)
Contact face (b)	
C	type C (Rz40-160) acc. DIN 2526 (with flange size #1: 11, 21, 22, 27, 28)
E	type E (Rz16) acc. DIN 2526 (with flange size #1: 12, 13, 23, 24)
F	type F tongue acc. DIN 2512 (with flange size #1: 11...13, 21...24, 27, 28)
N	type N groove acc. DIN 2512 (with flange size #1: 11...13, 21...24, 27, 28)
L	type Linse acc. DIN 2696 (with flange size #1: 11, 15, 25, 26)
R	type RF Raised Face acc. ANSI 16.5 (with flange size #1: 31...48)
J	type RJF Ring Joint Face acc. ANSI 16.5 (with flange size #1: 31...48)
S	Smooth Finish (RA=125 µm) (up to ANSI Cl. 600)
Material	
K	1.0460
S	1.4571
Gaskets (for flange size #1)	
F	1 gasket for flange type mounting
S	2 gaskets for sandwich type mounting
Bolts	
F	for flange type mounting
S	for sandwich type mounting

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Options	
A	Bolts & nuts for process temperature below -10 °C (material 1.4571)
O	Cleaned for oxygen service
TAG No. Labelling	
S	Stamped with weather resistant colour
L	SS-label fixed with wire
Certificates	
1	EN 10204-2.1
3	EN 10204-3.1
4	PED 97/23/EC additional unit verification, acc. Modul F/G
6	Comply with NACE Standard MR-01-75
Material tests	
7	X-Ray and isotope test for weldings
8	Dye penetrant test
	(a) on request
	(b) type C (Rz 40-160 acc. DIN 2526
	type E (Rz 16) acc. DIN 2526
	type N groove acc. DIN 2512
	type RF raised face acc. ANSI B 16.5
	type RJF ring joint face acc. ANSI B 16.5
	type L lens acc. DIN 2696

Blind Flange-Kit 104 BL

The blind flange kit is required to close both the drain flange and the top mounted flange connection, if no other additional equipment is connected.



Mounting:

Flange size

Pressure rating

DN15 / 20 / 25 / 50

1/2" / 3/4" / 1" / 2"

PN16/40/63/100/160/250

Cl. 150/300/600/900/1500

Contact face:

acc. DIN 2526

acc. DIN 2521

acc. DIN 2696

acc. ANSI 16.5

type C, smooth Rz= 40-160 µm

type E, smooth Rz= 16 µm

type N, groove

type F, tongue

type L, lens

type RF, raised face

type RJF, ring joint face

AA' RH, smooth finish Ra=150 µ"

Ordering informationen 104BL / Blind Flange Kit

Model code

Code	Description
104BL	Blind Flange Kit (Flange, Gasket, Nuts & Bolts)
	Flange size
11	DN15
12	DN20 (with pressure rating A)
13	DN25
14	DN50
21	1/2"
22	3/4"
23	1"
24	2"
	Pressure rating
A	PN40 (with flange size: 11...14)
B	PN63 (with flange size: 11, 13, 14)
C	PN100 (with flange size: 11, 13, 14)
D	PN160 (with flange size: 11, 13, 14)
E	PN250 (with flange size: 11, 13, 14)
F	Cl. 150 (with flange size: 21...24)
G	Cl. 300 (with flange size: 21...24)
H	Cl. 600 (with flange size: 21...24)
I	Cl. 900 (with flange size: 21...24)
K	Cl. 1500 (with flange size: 21...24)

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Contact face (a)	
C	type C (with pressure rating: A)
E	type E (with pressure rating: B, C)
F	type F (with pressure rating: A to C)
N	type N (with pressure rating: A to C)
L	type L (with pressure rating: D, E)
R	type RF (with pressure rating: F to K)
J	type RJF (with pressure rating: F to K)
S	Smooth Finish (RA 125 µm) up to Cl. 600
Material	
K	C22.8
S	1.4571

Options	
A	Bolts & Nuts for process temperature below -10 °C
O	Cleaned for oxygen service
TAG no. labelling	
S	Stamped with weather resistant colour
L	SS-label fixed with wire
Certificates	
1	EN 10204-2.1 Certificate of Compliance
3	EN 10204-3.1 Inspection certificate of process wetted material
6	Comply with NACE Standard MR-01-75 (b)

- (a) type C (Rz 40-160) acc. DIN 2526
type E (Rz 16) acc. DIN 2526
type F Feder acc. DIN 2512
type N groove acc. DIN 2512
type L lens acc. DIN 2696
type RF raised face acc. ANSI 16.5
type RJF ring joint face acc ANSI 16.5
- (b) on request
- (c) material S on request

ROOM FOR YOUR NOTES

Besides the products covered by this brochure, Intra-Automation GmbH also manufactures other high-quality and high precision instruments for industrial measurement tasks. For more information, please contact us (contact details on the backside of this brochure).

Flow measurement



Itabar®-Flow Sensor



IntraSonic IS210 Ultrasonic Flow Meter

Level measurement



ITA-mag. Level Gauge



MAGLINK Level Indicator

Other Measurement Tasks:



DigiFlow Flow and Level Computers



IntraCon Digital Controllers



IntraDigit Digital Indicators / Meters

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