10.3 Sensor Series IBFD 100 bar (1470 psi) and 887°F (475°C)

Description

The ITABAR-sensor series IBFD is designed to measure the flow of saturated and superheated steam The installation assembly includes a flanged connection and thus allows the sensor to be used in high pressure applications (to 1470psi). The maxium possible temperature is 887°F. The standard sensor material is 316 st steel (1.4571)

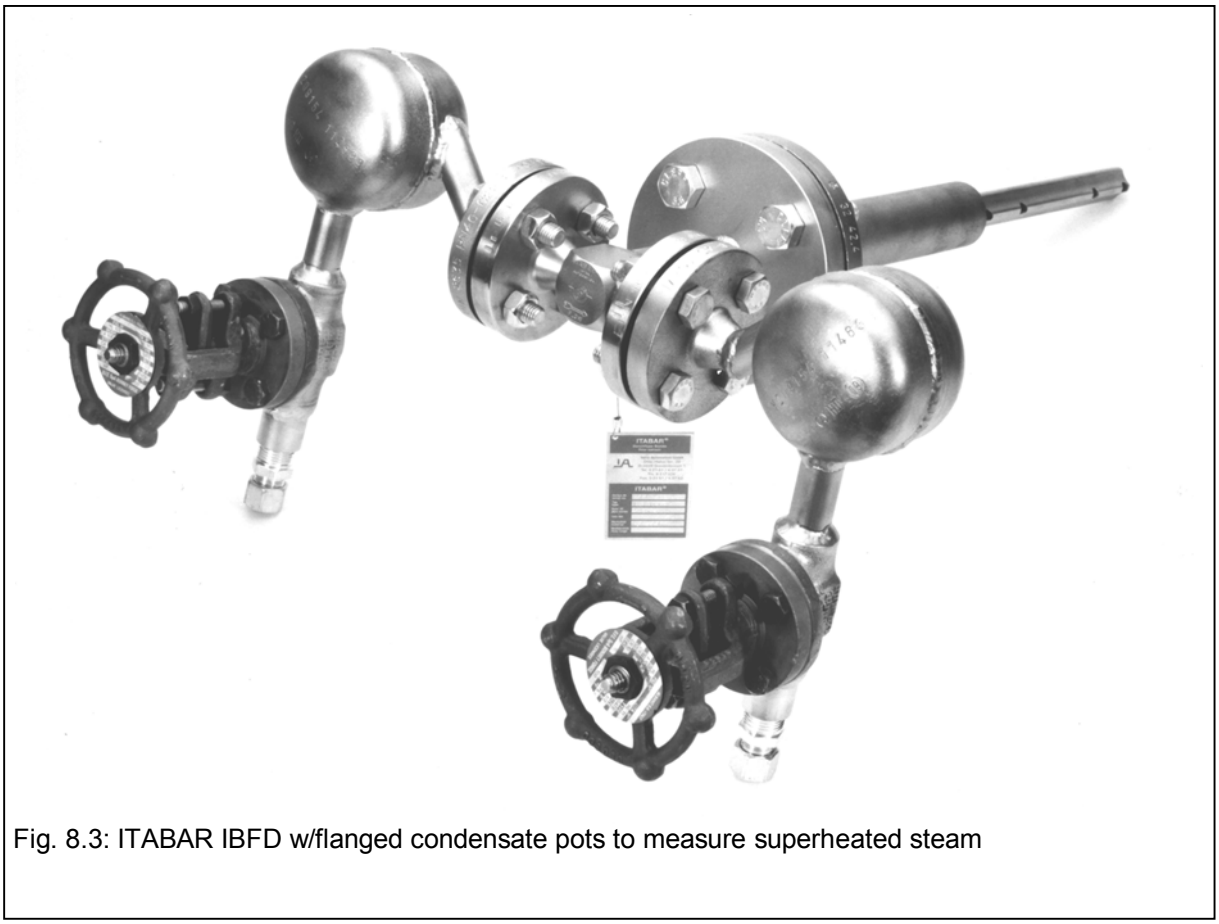
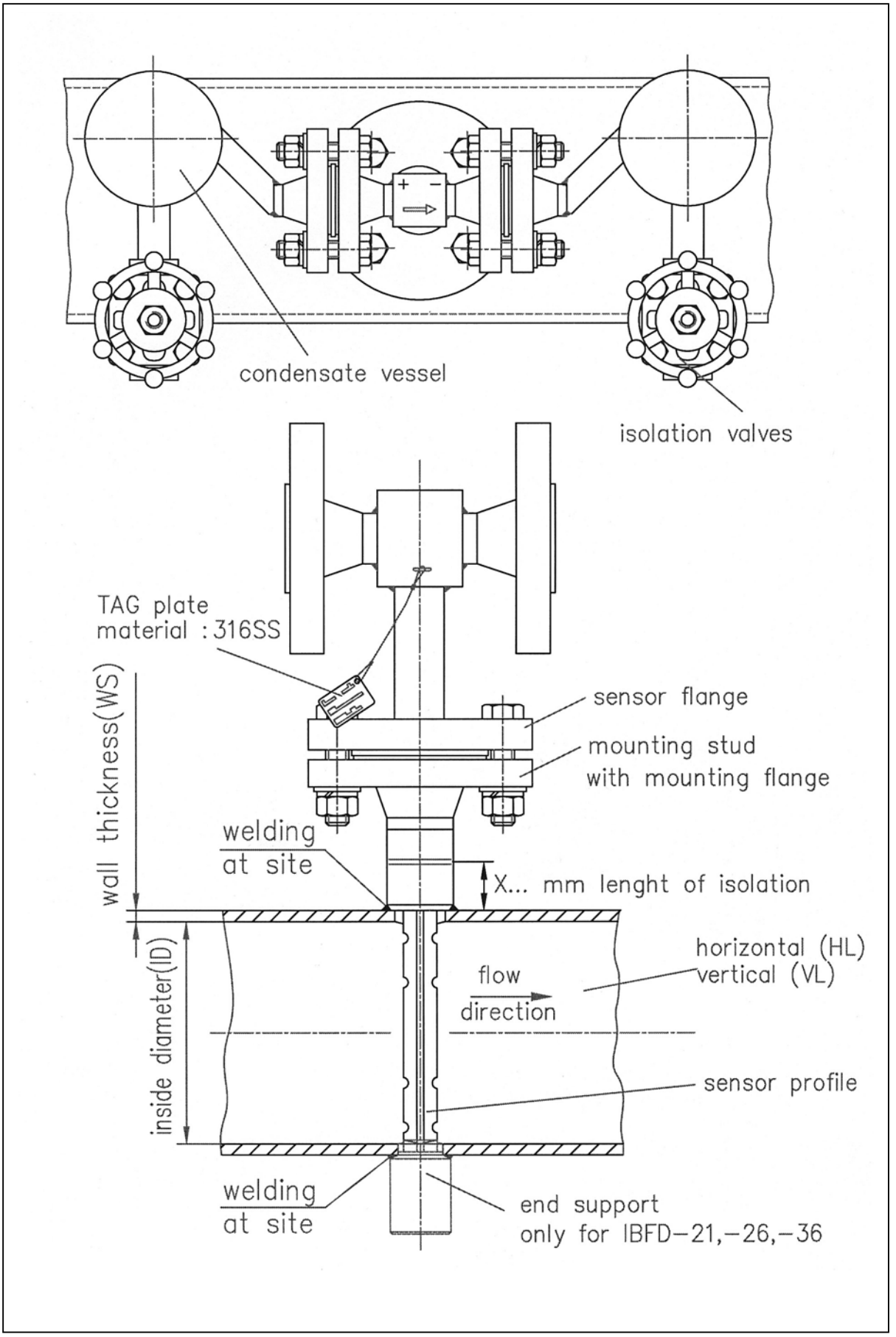


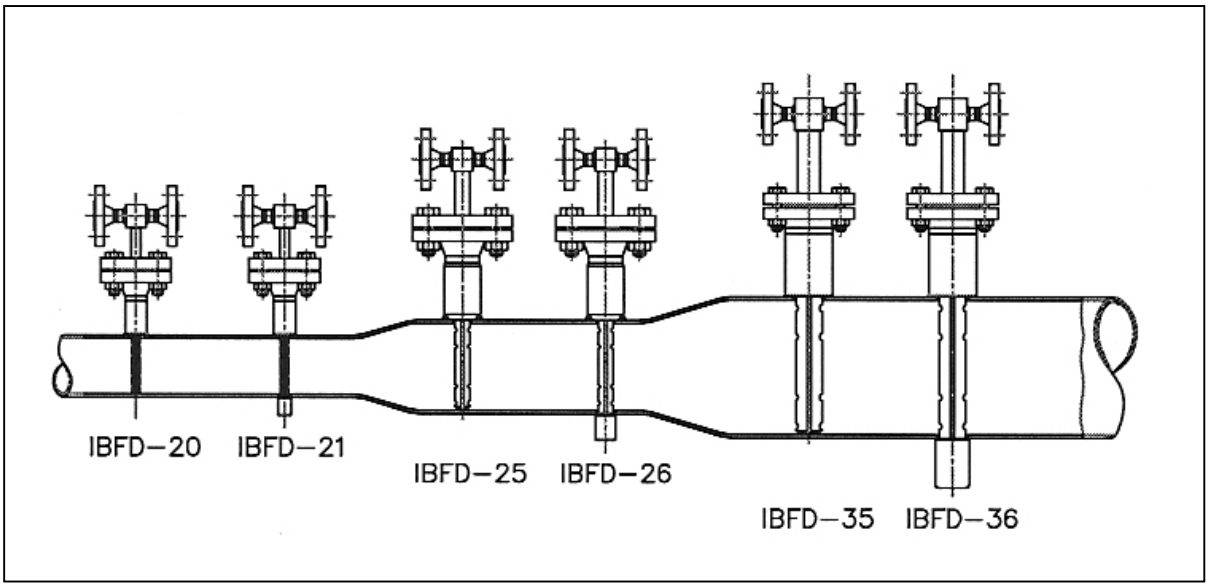
Fig. 8.3: ITABAR IBFD w/flanged condensate pots to measure superheated steam

Drawings for ITABAR Series IBFD



Order Data for ITABAR Series IBFD

1. Sensor Type



Pipe ID inches	mm	Maxium Flow Volume GPM					
		IBFD - 20	IBFD - 21	IBFD - 25	IBFD - 26	IBFD - 35	IBFD - 36
1 ½	DN 40	126	501	---	---	---	---
2	DN 50	260	708	---	---	---	---
2 ¼	DN 65	420	1069	---	---	---	---
2 ½	DN 80	572	1443	---	---	---	---
4	DN 100	787	1936	902	2398	---	---
5	DN 125	1047	2512	1240	3168	---	---
6	DN 150	---	---	1579	3938	---	---
8	DN 200	---	---	270	5473	---	---
10	DN 250	---	---	3027	7150	---	---
12	DN 300	---	---	3841	8962	7739	18519
14	DN 350	---	---	4637	10718	9438	22321
16	DN 400	---	---	5403	12416	11154	26175
20	DN 500	---	---	7013	15976	14462	33528
24	DN 600	---	---	8588	19470	17850	41087
28	DN 700	---	---	10212	23069	21350	48923
32	DN 800	---	---	11897	26870	34965	56962
36	DN 900	---	---	---	30839	---	65155
40	DN 1000	---	---	---	34896	---	73453

These values are for water of 0.999 SGU and at a temperature T = 68 °F. To calculate volumetric or mass flow of fluids with other densities see chapter 6 „Specifications of DP Sensors with WINFLOW“.

1.Order specification ITABAR-FLOW-Sensor, series IBFD-20 / 21

1. type of sensor

20	without end support
21	with end support

2. inside diameter and wall thickness.

ID / W.-thickn.	inside diameter and wall thickness in inches (or mm), please specify

3. sensor material

S	material 316 SS (standard)

4. sensor flange, always identically to sensor material.

SM	flange according DIN
SA	flange according ANSI

5. gasket

1	gasket strip according to DIN
2	ANSI RF
3	ANSI RF SF (smooth finish)
4	RTJ

6. PN and DN of Sensor flange

		DIN	ANSI
1	PN16 / 150 lbs	DN25	1"
2	PN40 / 300 lbs	DN25	1"
3	PN63 / 300 lbs	DN25	1"
4	PN100 / 600 lbs	DN25	1"

7. design assembly connecting pieces

R	assembly connecting pieces with flange (standard)
W	Weldolet-assembly connecting pieces and flange

8. assembly connecting piece with flange, identically to sensor flange.

0	without flange
M	flange according DIN, gasket strip form C
A	flange according ANSI, gasket strip RF
F	flange according ANSI, gasket strip SF (smooth finish)
T	flange according ANSI, gasket strip RTJ

9. material connecting piece, with flange (max. press. rat.) allways identically to sensor flange.

			DIN	ANSI
C1	C.S.	PN16 / 150 lbs	DN25	1"
S1	316 SS	PN16 / 150 lbs	DN25	1"
P1	1.5415, 15 Mo 3	PN16 / 150 lbs	DN25	1"
R1	1.7335, 13CrMo 4 4	PN16 / 150 lbs	DN25	1"
C2	C.S.	PN40 / 300 lbs	DN25	1"
S2	316 SS	PN40 / 300 lbs	DN25	1"
P2	1.5415, 15 Mo 3	PN40 / 300 lbs	DN25	1"
R2	1.7335, 13CrMo 4 4	PN40 / 300 lbs	DN25	1"
C3	C.S.	PN63 / 300 lbs	DN25	1"
S3	316 SS	PN63 / 300 lbs	DN25	1"
P3	1.5415, 15 Mo 3	PN63 / 300 lbs	DN25	1"
R3	1.7335, 13CrMo 4 4	PN63 / 300 lbs	DN25	1"
C4	C.S.	PN100 / 600 lbs	DN25	1"
S4	316 SS	PN100 / 600 lbs	DN25	1"
P4	1.5415, 15 Mo 3	PN100 / 600 lbs	DN25	1"
R4	1.7335, 13CrMo 4 4	PN100 / 600 lbs	DN25	1"

10. end support (IBFD-21)

0	without support
C	end support, material: C.S.
S	end support, material: identically to sensor flange.

11. condesate vessel with connection

	s. page 133

1.Order specification ITABAR-FLOW-Sensor, series IBFD-20 / 21

	type of sensor	inside diameter and wall thickness		sensor material	sensor flange	gasket	PN, material and DN of Sensor flange	design assembly connecting pieces	assembly connecting piece with flange	material connecting piece, with flange	end support	condesat vessel with connection	isolation	piping run	14. process connection,	15. Instrum. valves
IBFD-			/													

12. thermal isolation

KI	without
X..	thermal isolation in inches or mm, please specify

13. piping run

HL	horizontal
VL	vertikal

14. process connection,

s. page 133

15. Instrum. valves

s. page 133

1.Order specification ITABAR-FLOW-Sensor, series IBFD-25 / 26

1. type of sensor

25	without end support
26	with end support

2. inside diameter and wall thickness.

ID / W.-thickn.	inside diameter and wall thickness in inches (or mm), please specify

3. sensor material

S	material 316 SS (standard)

4. sensor flange, always identically to sensor material.

SM	flange according DIN
SA	flange according ANSI

5. gasket

1	Gasket strip according to DIN
2	ANSI RF
3	ANSI RF SF (smooth finish)
4	RTJ

6. PN and DN of Sensor flange		**DN**	**ANSI**
1	PN16 / 150 lbs	DN32	1 1/2"
2	PN40 / 300 lbs	DN32	1 1/2"
3	PN63 / 300 lbs	DN40	1 1/2"
4	PN100 / 600 lbs	DN40	1 1/2"

7. design assembly connecting pieces

R	assembly connecting pieces with flange (standard)
W	Weldolet-assembly connecting pieces and flange

8. assembly connecting piece with flange, identically to sensor flange.

0	without flange
M	flange according DIN, gasket strip form C
A	flange according ANSI, gasket strip RF
F	flange according ANSI, gasket strip SF (smooth finish)
T	flange according ANSI, gasket strip RTJ

9. material connecting piece, with flange (max. press. rat.) allways identically to sensor flange.			**DN**	**ANSI**
C1	C.S.	PN16 / 150 lbs	DN32	1 1/2"
S1	316 SS	PN16 / 150 lbs	DN32	1 1/2"
P1	1.5415, 15 Mo 3	PN16 / 150 lbs	DN32	1 1/2"
R1	1.7335, 13CrMo 4 4	PN16 / 150 lbs	DN32	1 1/2"
C2	C.S.	PN40 / 300 lbs	DN32	1 1/2"
S2	316 SS	PN40 / 300 lbs	DN32	1 1/2"
P2	1.5415, 15 Mo 3	PN40 / 300 lbs	DN32	1 1/2"
R2	1.7335, 13CrMo 4 4	PN40 / 300 lbs	DN32	1 1/2"
C3	C.S.	PN63 / 300 lbs	DN40	1 1/2"
S3	316 SS	PN63 / 300 lbs	DN40	1 1/2"
P3	1.5415, 15 Mo 3	PN63 / 300 lbs	DN40	1 1/2"
R3	1.7335, 13CrMo 4 4	PN63 / 300 lbs	DN40	1 1/2"
C4	C.S.	PN100 / 600 lbs	DN40	1 1/2"
S4	316 SS	PN100 / 600 lbs	DN40	1 1/2"
P4	1.5415, 15 Mo 3	PN100 / 600 lbs	DN40	1 1/2"
R4	1.7335, 13CrMo 4 4	PN100 / 600 lbs	DN40	1 1/2"

10. end support (only IBFD-26)

0	without end support
C	end support material: C.S.
S	end support, material: identically to sensor flange.

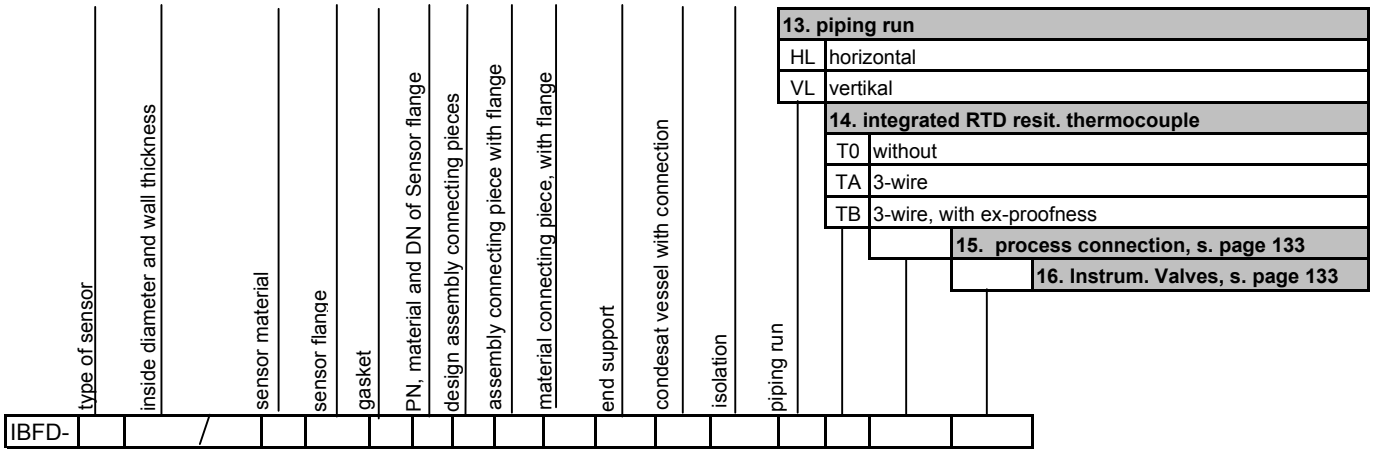
11. condesate vessel with connection

	s. page 133

12. thermal isolation

KI	without
X..	thermal isolation in inches or mm, please specify

1.Order specification ITABAR-FLOW-Sensor, series IBFD-25 / 26



1.Order specification ITABAR-FLOW-Sensor, series IBFD-35 / 36

1. type of sensor

35	without end support
36	with end support

2. inside diameter and wall thickness.

ID / W.-thickn	inside diameter and wall thickness in inches (or mm), please specify

3. sensor material

S	material 316 SS (standard)

4. sensor flange, always identically to sensor material.

SM	flange according DIN
SA	flange according ANSI

5. gasket

1	Gasket strip according to DIN
2	ANSI RF
3	ANSI RF SF (smooth finish)
4	RTJ

6. PN and DN of Sensor flange

		DN	ANSI
1	PN16 / 150 lbs	DN50	2"
2	PN40 / 300 lbs	DN50	2"
3	PN63 / 300 lbs	DN50	2"
4	PN100 / 600 lbs	DN50	2"

7. design assembly connecting pieces

R	assembly connecting pieces with flange (standard)
W	Weldolet-assembly connecting pieces and flange

8. assembly connecting piece with flange, identically to sensor flange.

0	without flange
M	flange according DIN, gasket strip form C
A	flange according ANSI, gasket strip RF
F	flange according ANSI, gasket strip SF (smooth finish)
T	flange according ANSI, gasket strip RTJ

9. material connecting piece, with flange (max. press. rat.) allways identically to sensor flange.

			DN	ANSI
C1	C.S.	PN16 / 150 lbs	DN50	2"
S1	316 SS	PN16 / 150 lbs	DN50	2"
P1	1.5415, 15 Mo 3	PN16 / 150 lbs	DN50	2"
R1	1.7335, 13CrMo 4 4	PN16 / 150 lbs	DN50	2"
C2	C.S.	PN40 / 300 lbs	DN50	2"
S2	316 SS	PN40 / 300 lbs	DN50	2"
P2	1.5415, 15 Mo 3	PN40 / 300 lbs	DN50	2"
R2	1.7335, 13CrMo 4 4	PN40 / 300 lbs	DN50	2"
C3	C.S.	PN63 / 300 lbs	DN50	2"
S3	316 SS	PN63 / 300 lbs	DN50	2"
P3	1.5415, 15 Mo 3	PN63 / 300 lbs	DN50	2"
R3	1.7335, 13CrMo 4 4	PN63 / 300 lbs	DN50	2"
C4	C.S.	PN100 / 600 lbs	DN50	2"
S4	316 SS	PN100 / 600 lbs	DN50	2"
P4	1.5415, 15 Mo 3	PN100 / 600 lbs	DN50	2"
R4	1.7335, 13CrMo 4 4	PN100 / 600 lbs	DN50	2"

10. end support (only IBFD-36)

0	without end support
C	end support material: C.S.
S	end support, material: identically to sensor flange.

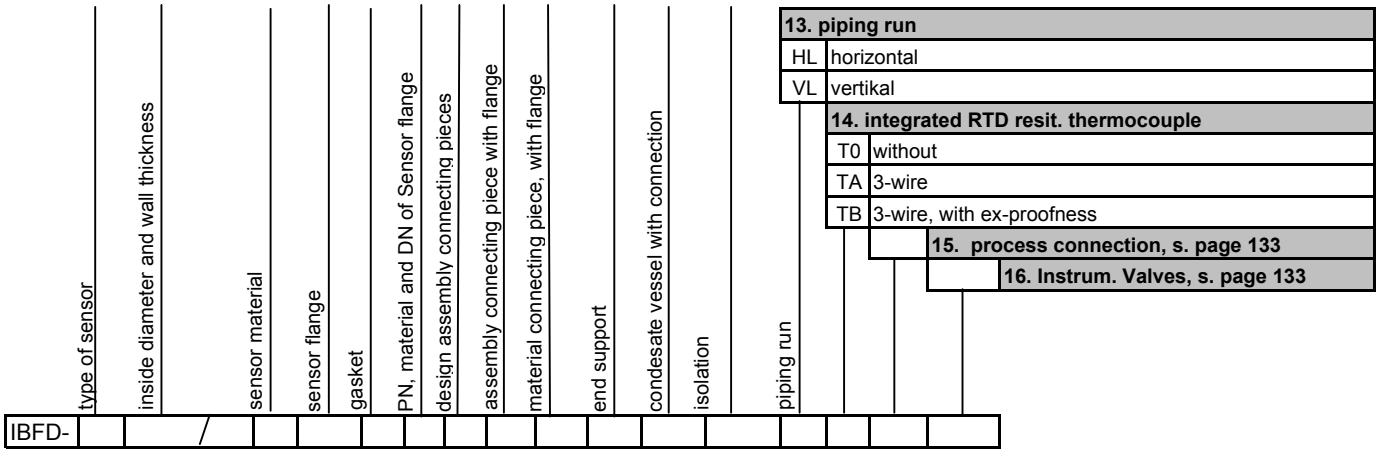
11. condesate vessel with connection

	s. page 133

12. thermal isolation

KI	without
X..	thermal isolation in inches or mm, please specify

1.Order specification ITABAR-FLOW-Sensor, series IBFD-35 / 36



Order specification condensate vessel
IBFD 20, 21, 25, 26, 35, 36

flanged joint at sensor head		
K0	without condensate vessel	
K1	codensate vessel, weld sockets 21,3mm, edge form 21 according DIN 2559	

material and size for condensat vessel		
H	Kesselbach HII	size: Ø 88,9 x 5 mm
S	material: 316 SS	size: Ø 88,9 x 3,2 mm

Order specification instrument connection and shut-off valve
Typ IBFD- 20, 21, 25, 26, 35, 36

shut-off device for effect pressure pipe, standard with weld together condensat vessel	
A00	without shut-off valve
A81	ANSI gate valve, nominal pressure 800 lbs connection: 1/2"-NPT, material: A105 (C22)
	case: A105, packing: graphite-fiber glass
A82	ANSI gate valve, nominal pressure 800 lbs connection: 1/2"-NPT,material: 316L
	case: 316L, packing: graphite-fibre glas

Order specification condensate vessel (only compact construction)
IBFD 20, 21, 25, 26, 35, 36

flanged joint of sensor head		
A1	condensate vessel with sensor head, effect pressure pipe and mountig flange welds directly	

material and size condensate vessel		
H	Kesselbach HII	size: Ø 88,9 x 5 mm
S	material 316 SS	size: Ø 88,9 x 3,2 mm

Order specification connection, only with A1
type IBFD- 20, 21, 25, 26, 35, 36

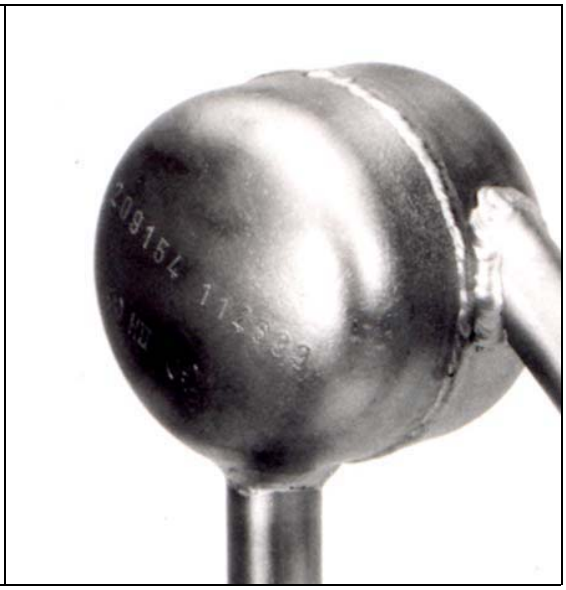
connection	
A06	flange plate for für 3-way-valve block
A07	flange plate for 5-way-valve block

Order specification for shut-off valve, only with A1
type IBFD- 20, 21, 25, 26, 35, 36

shut-off valve for effect pressure pipe and mountig flange welds directly	
A00	without shut- off valve
A66	3-way-mainfold, PN400, 1.4401 / packing: graphit
A71	5-way-mainfold, PN400, 1.4401 / packing: graphite

Picture of Condensate Pots

Fig. 8.10: condensate pot, ∅ 3.5 x 0.13 inches



8.8.2 Pressure- Temperature Tables for Shut-Off Valves

Code	Maximum operating pressure (PSI) at temperature in /°F											
	32	212	302	392	572	662	752	797	842	887	932	950
A81	2013	1955	1911	1866	1778	1602	1411	1176	1014	837	632	-
A82	2028	1955	1911	1866	1778	1602	1425	1308	1249	1205	1102	-

Fig. 8.13: Construction of small slidegate valve. A09