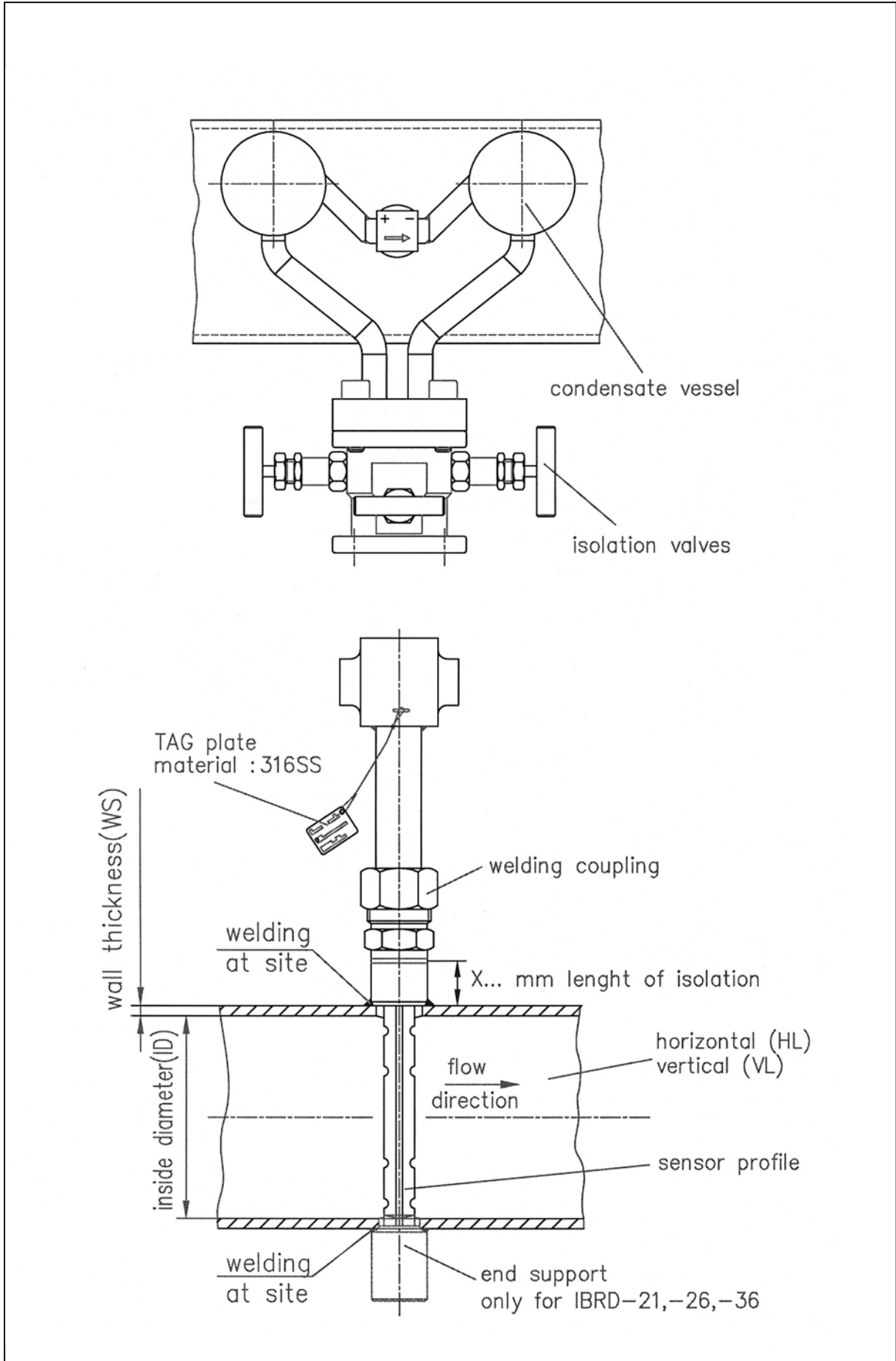
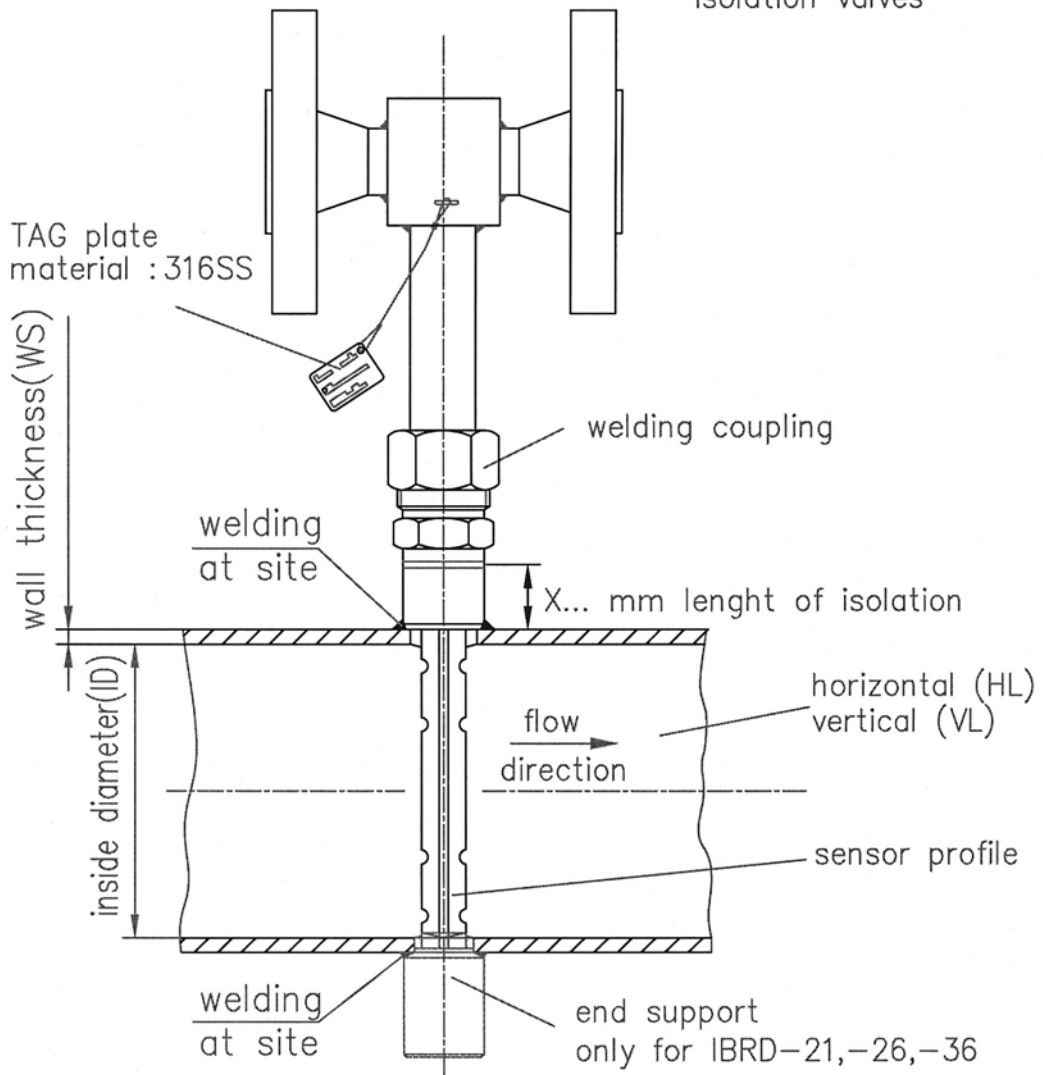
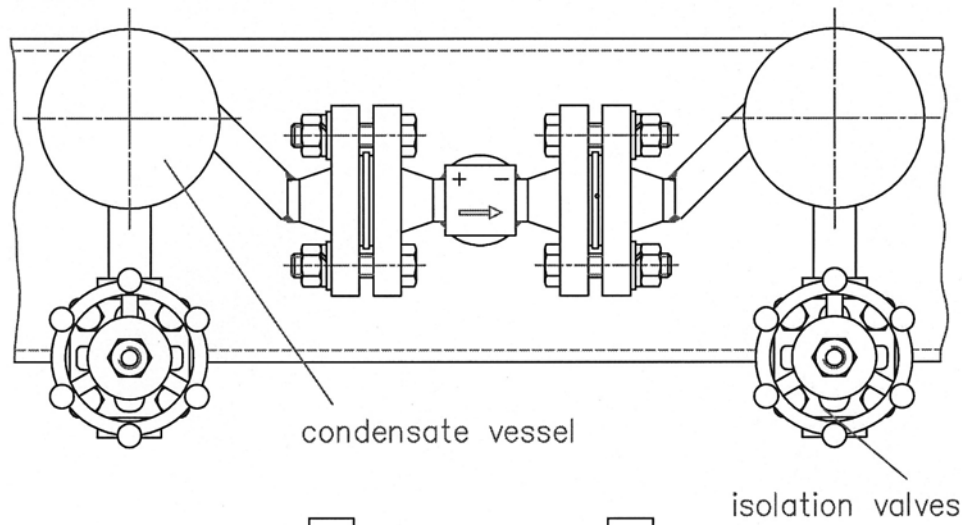


Compact Version ITABAR Series IBRD with Flange Plate



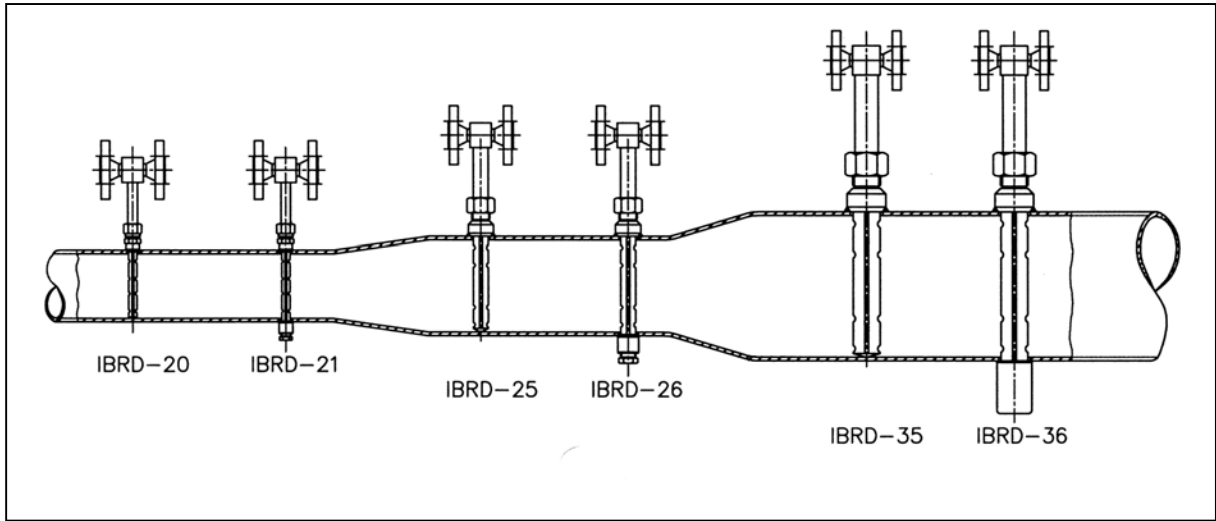
ITABAR Series IBRD, Flanged Connection at Sensor Head

seperate installation of sensor and transmitter



Oder Data for ITABAR Series IBRD 20/21/25/25/35/36

1. Sensor Type



Pipe Size inches mm		Maxium Flow Volume GPM					
		Sensor Type					
		IBRD -20	IBRD -21	IBRD -25	IBRD -26	IBRD -35	IBRD -36
1 ½	DN 40	228	541	---	---	---	---
2	DN 50	329	770	---	---	---	---
2 ¼	DN 65	501	1161	---	---	---	---
2 ½	DN 80	686	1566	---	---	---	---
4	DN 100	924	2099	1126	2618	---	---
5	DN 125	1201	2996	1504	3454	---	---
6	DN 150	---	---	1878	4285	---	---
8	DN 200	---	---	2622	5926	---	---
10	DN 250	---	---	3418	7695	---	---
12	DN 300	---	---	4272	9596	8830	19826
14	DN 350	---	---	5090	11418	10608	23786
16	DN 400	---	---	5882	13173	12390	27755
20	DN 500	---	---	7519	16830	15787	35323
24	DN 600	---	---	9116	20394	19245	43040
28	DN 700	---	---	10753	24059	22818	51013
32	DN 800	---	---	12491	27913	26470	59171

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“.

Selection and Specification of a Steam Flow Sensor
P-max. 235,2 psi, T-max. 392°F

To Be Decided By Customer Before Sensor Selection

1. Remote mounting of DP transmitter – separate from the sensor (connections via Ermeto coupling, or compact version (DP transmitter integral with sensor))
2. Sensor to be equipped with integral PT100 temperature sensor

Existing Process Data

Pipe size (ID) and pipe wall thickness, pipe material
Pipe configuration at sensor location; insulation of pipe (thickness)
Flow volume
Process pressure (abs.)
Process temperature

Example:

1. Pipe ID: 13,64 inches, wall thickness: 0,18 inches
2. Pipe material : C.S. (St 35.8)
3. Insulation: 3,94 inches
4. Pipe configuration: horizontal
5. Flow max. 35000 kg/h (saturated steam)
6. Pressure: 6 bar A (88,2 PSI/ abs.)
7. Temperature 158,85°C (317.93°F)
8. Selected option : integrated PT-100 temperature sensor

The sensor type IBRD-25 or IBRD-26 are selected via the pipe diameter in the table on page 117,. The Winflow program supplies information about the sensor type.

The above mentioned Winflow calculation will determine sensor type IBRD-25. The differential pressure according to process data entered is 40,3 mbar.

Sensor type IBRD-25 can be used up to a max. flow of (lb/hr) 57310 kg/h. Should the flow volume be higher than allowed for the selected sensor the WINFLOW program will issue a message: "Please select another sensor type". The customer can then for example select a sensor type IBRD-26 (w/end support).

Order code example:

IBRD-25-ID346,6/4,5mm-S-1-0-K1-C-X100-HL-TA-A81

INTRA-AUTOMATION GmbH

D-41515 Grevenbroich * Otto-Hahn-Str. 20 * Tel: +49 2181-68761 * Fax: +49 2181-64492

WINFLOW 2.75 (I) Diff. Pressure Calculation ITABAR - Flow - Sensor

Company: Mustermann
 Name(capital letters):
 Street:
 Zip Code/City:
 Offer-/Com. No:
 P. Order Number:
 Tag No.:
 Serial No.:
 Pipe Data: ID= 346,600/4,500 mm - horizontal
 Date: 18.04.2002
 Person in charge U.P.

Calculation: Mass rate Gas & steam
 Fluid: Saturated steam

Pipe Internal Dimensions: 346,600 mm
 Flowing Temperature: 158,850 °C
 Flowing Pressure: 6,000 bar A
 Density: 3,167 kg/m³
 Viscosity: 0,0140 cPs
 K-Factor: 0,6345 without unit

Base Temperature	273,15 Kelvin
Base Pressure	101,30 kPa

	QMax	QNorm	QMin	
Flow Rate	35.000,00	28.000,00	7.000,00	kg/H
Reynolds No.	2.550.490	2.040.392	510.098	without unit
Permanent press. loss	3,290	2,100	0,130	mbar
Expansionsfactor	0,999	0,999	1,000	without unit
Velocity:	32,53	26,03	6,51	m/sec.
Differential Pressure	40,381	25,828	1,613	mbar

Itabar-Type: IBRD-25-346,6/4,5mm-S-1-0-K1-C-X100-HL-TA-A81
 Material Sensor:
 Note:

Max. DeltaP	112,70 mbar	Max. Flow Rate	58.521,05 kg/H
Natural Freq.:	145,24 hz	Operat. Freq.:	101,44 hz

1. Order specification ITABAR-FLOW-Sensor, series IBRD-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	316 SS
4. welding coupling	
0	without
1	material: C.S.
2	material: 316 SS
5. material end support (only IBRD-21)	
0	without end support
C	end support, material: C.S.
S	end support, material: 316 SS
6. instrument connection and condensate vessels	
	s. page 122
7. isolation	
KI	without
X..	thermal isolation in inches or mm, please specify
8. piping run	
HL	horizontal
VL	vertikal
	9. instrument valves s. page 122

IBRD- / S

1. Order specification ITABAR-FLOW-Sensor, series IBRD-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	316 SS
4. welding coupling	
0	without
1	material: C.S.
2	material: 316 SS
5. material end support (only IBRD-26)	
0	without end support
C	end support, material: C.S.
S	end support, material: 316 SS
6. instrument connection and condensate vessels	
	s. page 122
7. isolation	
KI	without
X..	thermal isolation in inches or mm, please specify
8. piping run	
HL	horizontal
VL	vertikal
9. integrated RTD resit. thermocouple	
T0	without
TA	3-wire
TB	3-wire, with ex-proofness
	10. instrument valves s. page 122

IBRD- / S

Order specification condensate vessel

IBRD 20, 21, 25, 26, 35, 36

flanged joint at sensor head

K0	without condensate vessel
K1	condensate vessel, weld sockets 21,3mm, edge form 21 according DIN 2559

material and size for condensat vessel

H	Kesselbach H11	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 IBRD- 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)

IBRD 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 H11	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 IBRD- 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 IBRD- 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

