

## 12.1 Model Series FTHD to 588 psi (PN 40)

### Description

The ITABAR-sensor series FTHD is designed to measure volumetric flow of saturated and super heated steam.

The sensor construction features a flanged connection between the pipe and the sensor-related parts, a compression fitting to seal the sensor and a gate valve to insert the sensor profile into the pipe.

The sensor can be used at an operating pressure of up to 588 psi (40 bar) and an operating temperature of up to 400°C / 752°F.

The insertion or removal of the sensor is made easy by two guide-rod spindles or (as an option) via a hand wheel driven gearbox.

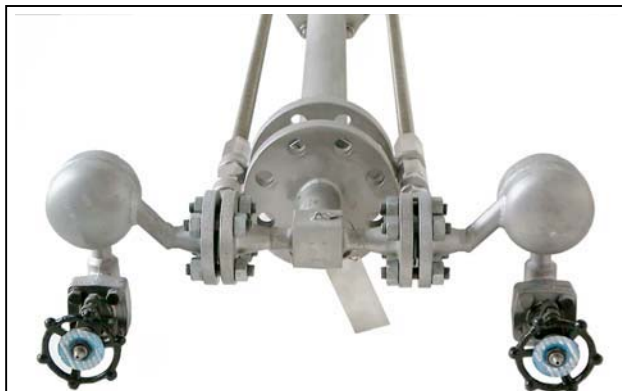
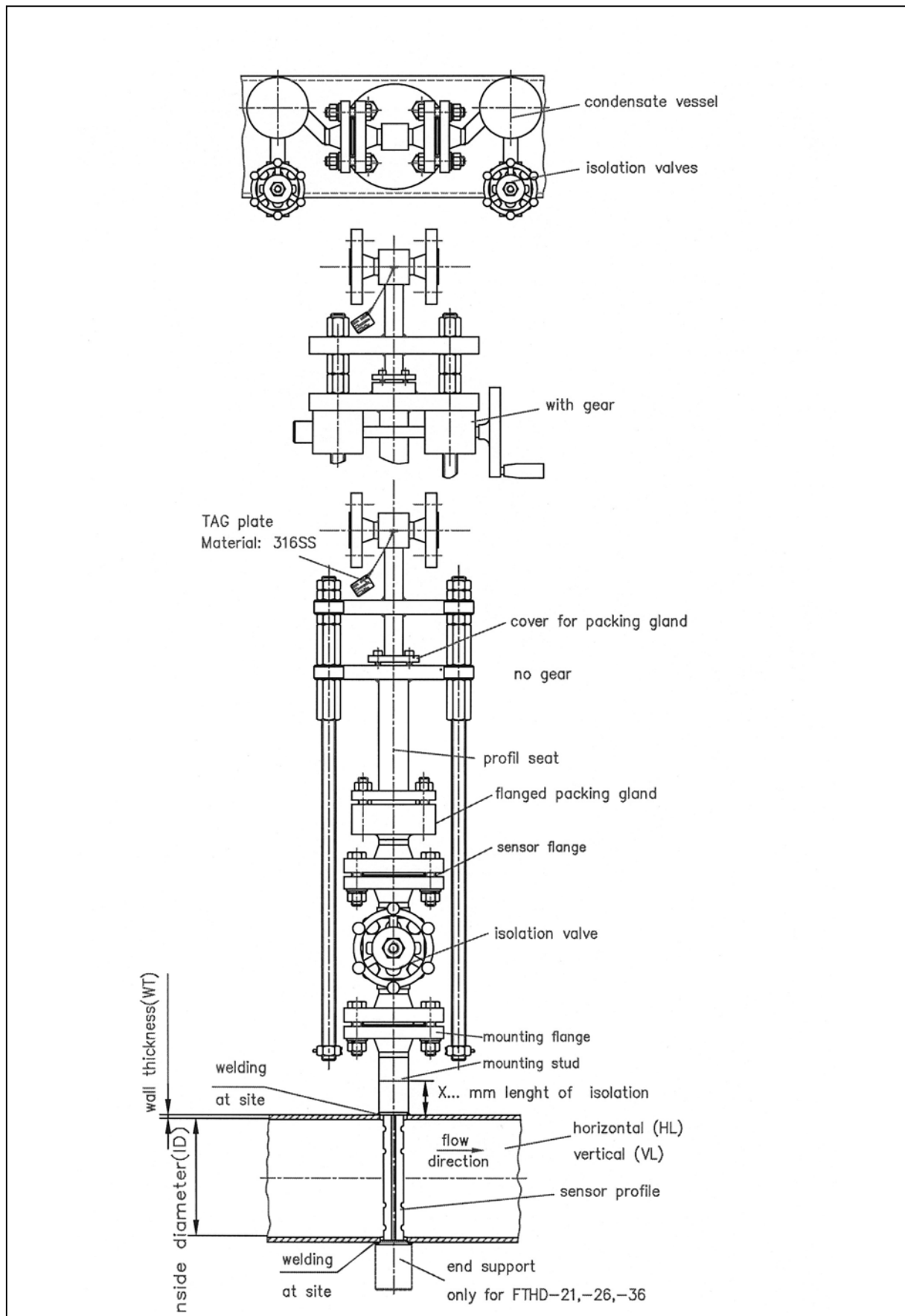


Fig. 12.3: : Pitot tube sensor FTHD-36 made of st. steel for a pipe with ID = 336.5 mm



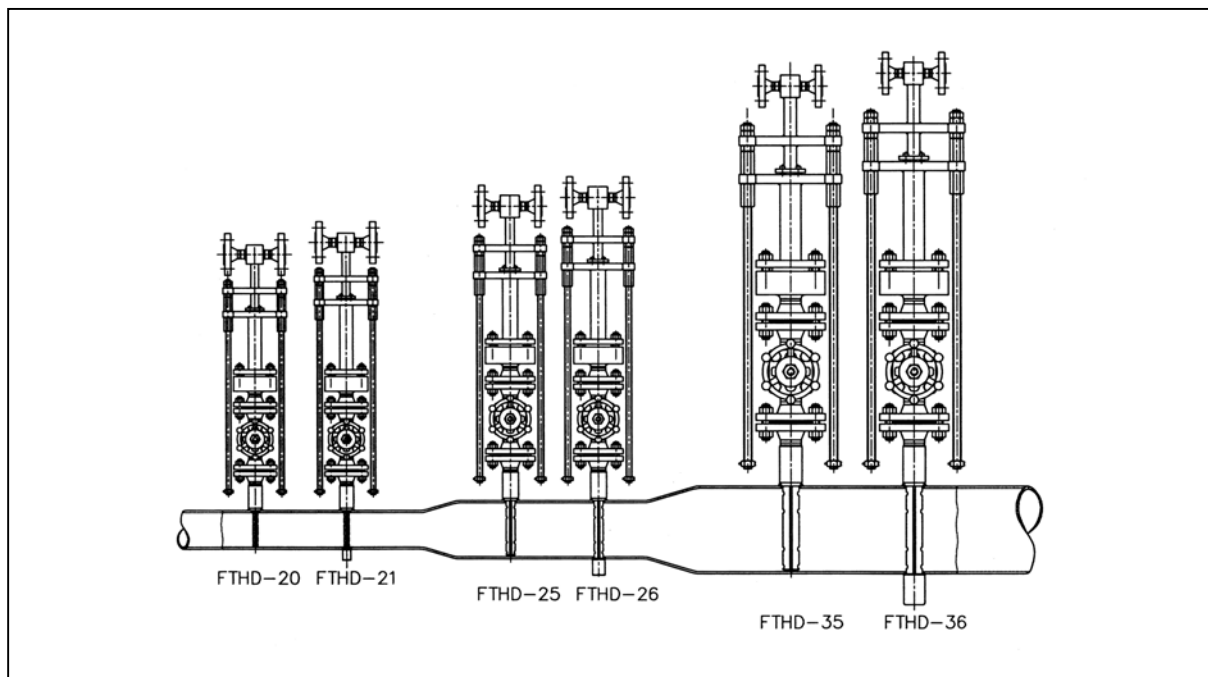
Fig. 12.4: Pitot tube sensor FTHD-36, shown in a horizontal installation for horizontal or vertical pipe runs.

# Drawings für ITABAR Series FTHD



# Order Data for ITABAR Series FTHD-20/21/25/26/35/36

## 1. Sensor Type



Pipe diameter (inches)	Maximum allowable volumetric flow in GPM					
	Sensor type					
	FTHD -20	FTHD -21	FTHD -25	FTHD -26	FTHD -35	FTHD -36
1 1/2	175	502	---	---	---	---
2	260	708	---	---	---	---
2 1/4	409	1069	---	---	---	---
3	572	1443	---	---	---	---
4	787	1936	902	2398	---	---
5	1047	2512	1240	3168	---	---
6	---	---	1579	3938	---	---
8	---	---	2270	5473	---	---
10	---	---	3027	7150	---	---
12	---	---	3841	8962	7739	18519
14	---	---	4637	10718	9438	22321
16	---	---	5403	12460	11154	26158
20	---	---	7013	15976	14462	33528
24	---	---	8588	19483	17850	41087
28	---	---	10212	23069	21370	48923
32	---	---	11910	26870	24965	56962
36	---	---	---	30839	---	65155
40	---	---	---	34896	---	73189
48	---	---	---	43010	---	90090
56	---	---	---	50965	---	106695
64	---	---	---	58656	---	123292
72	---	---	---	66255	---	139264
80	---	---	---	---	---	---

# 1. Order specification ITABAR-FLOW-Sensor, series FTHD-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 (standard)

## 4. sensor flange, always identically to sensor material.

- SM flange according DIN
- SA flange according ANSI

## 5. gasket

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

## 6. PN, material and DN of Sensor flange

		DIN	ANSI
1	PN16 / 150 lbs	DN25	1"
2	PN40 / 300 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. pressure rating)

always identically to sensor flange. DIN ANSI

C1	C.S.	PN16 / 150 lbs	DN25	1"
S1	316 SS	PN16 / 150 lbs	DN25	1"
C2	C.S.	PN40 / 300 lbs	DN25	1"
S2	316 SS	PN40 / 300 lbs	DN25	1"

## 10. end support (only FTHD-21)

- Y without end support
- C end support, material:C.S.
- S end support, material 316 SS

## 11. isolation valve for the sensor profile identically to sensor flange.

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## 12. flanged packing gland

- S material: 316 SS

## 13. cage nipple

- PC material: C.S.
- PS material: 316 SS

## 14. packing material for the flanged and welded packing gland

- 1 packing material: PTFE, max 200°C
- 2 packing material: Graphit, max 400°C

## 15. gears

- 0 without gears
- 1 with gears

## 16. condensate vessel

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## 17. thermal isolation

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

## 18. piping run

- HL horizontal
- VL vertikal

## 19. shut-off device

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FTHD- / S S

**2. Order specification ITABAR-FLOW-Sensor - Flo-Tap-version****shut-off device for type FTHD-20/21****isolation valve for the sensor profile, DIN**

MF01 ball valve, DN25 / PN16, material: C.S.

MF02 ball valve DN25 / PN16, material: 1.4401

MF03 ball valve DN25 / PN40, material: C.S.

MF04 ball valve DN25 / PN40, material: 1.4401

MS01 gate valve DN25 / PN100, material: C.S.

MS02 gate valve DN25 / PN100, material: 1.4401

**isolation valve for the sensor profile, ANSI**

AF01 ball valve, 1" ANSI 150 lbs, material: C.S.

AF02 ball valve, 1" ANSI 150 lbs, material: 1.4401

AF03 ball valve, 1" ANSI 300 lbs, material: C.S.

AF04 ball valve, 1" ANSI 300 lbs, material: 1.4401

AS01 gate valve, 1" ANSI / 600lbs, material: C.S.

AS02 gate valve, 1" ANSI / 600lbs, material: 1.4401



# 1. Order specification ITABAR-FLOW-Sensor, series FTHD-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 (standard)

## 4. sensor flange, always identically to sensor material.

SM	flange according DIN
SA	flange according ANSI

## 5. gasket

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

## 6. PN, material and DN of Sensor flange

		DIN	ANSI
1	PN16 / 150 lbs	DN50	2"
2	PN40 / 300 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. pressure rating)

always identically to sensor flange.			DIN	ANSI
C1	C.S.	PN16 / 150 lbs	DN50	2"
S1	316 SS	PN16 / 150 lbs	DN50	2"
C2	C.S.	PN40 / 300 lbs	DN50	2"
S2	316 SS	PN40 / 300 lbs	DN50	2"

## 10. end support (only FTHD-26)

Y	without end support
C	end support, material:C.S.

## 11. isolation valve for the sensor profile

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## 12. flanged packing gland

S material: 316 SS

## 13. cage nipple

PC	material; C.S.
PS	material: 316 SS

## 14. packing material for the flanged and welded packing gland

1	packing material: PTFE, max 200°C
2	packing material: Graphit, max 400°C

## 15. gears

0	without gears
1	with gears

## 16. thermal isolation

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

## 17. condensate vessel

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## 18. piping run

HL	horizontal
VL	vertikal

## 19. integ. RTD resit. thermocouple

T0	without
TA	3-wire
TB	3-wire, with ex-proofness



## 2. Order specification ITABAR-FLOW-Sensor - Flo-Tap-version

### shut-off device for type FT HD-25/26

#### isolation valve for the sensor profile, DIN

MF08	ball valve, DN32 / PN16, material: C.S.
MF09	ball valve, DN32 / PN16, material: 1.4401
MF13	ball valve, DN32 / PN40, material: C.S.-Stahl
MF14	ball valve, DN32 / PN40, material: 1.4401
MF18	ball valve, DN40 / PN63, material C.S.
MF19	ball valve, DN40 / PN63, material: 1.4401
MS10	gate valve DN40 / PN100, material: C.S.
MS11	gate valve DN40 / PN100, material: 1.4401



#### isolation valve for the sensor profile, ANSI

AF05	ball valve, 1 1/2" ANSI 150 lbs, material: C.S.
AF06	ball valve, 1 1/2" ANSI 150 lbs, material: 1.4401
AF10	ball valve, 1 1/2" ANSI 300 lbs, material: C.S.
AF11	ball valve, 1 1/2" ANSI 300 lbs, material: 1.4401
AS10	gate valve 1 1/2" ANSI 600 lbs, material: C.S.
AS11	gate valve, 1 1/2" ANSI 600 lbs, material: 1.4401



# 1. Order specification ITABAR-FLOW-Sensor, series FTHD-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 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 DIN |
| 2 | ANSI RF                    |
| 3 | ANSI RF SF (smooth finish) |
| 4 | RTJ                        |

## 6. PN, material and DN of Sensor flange

		DIN	ANSI
1	PN16 / 150 lbs	DN50	2"
2	PN40 / 300 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. pressure rating)

always identically to sensor flange.		DIN	ANSI
C1	C.S.	PN16 / 150 lbs	DN25 2"
S1	316 SS	PN16 / 150 lbs	DN25 2"
C2	C.S.	PN40 / 300 lbs	DN25 2"
S2	316 SS	PN40 / 300 lbs	DN25 2"

## 10. end support (only FTHD-36)

Y	without end support
C	end support, material:C.S.

## 11. isolation valve for the sensor profile

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## 12. flanged packing gland

S material: 316 SS

## 13. cage nipple

PC	material; C.S.
PS	material: 316 SS

## 14. packing material for the flanged and welded packing gland

1	packing material: PTFE, max 200°C
2	packing material: Graphit, max 400°C

## 15. gears

0	without gears
1	with gears

## 16. thermal isolation

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

## 17. condensate vessel

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## 18. piping run

HL	horizontal
VL	vertikal

## 19. integ. RTD resit. thermocouple

T0	without
TA	3-wire



## 2. Order specification ITABAR-FLOW-Sensor - Flo-Tap-version

### shut-off device for FTHD-35/36

#### isolation valve for the sensor profile, DIN

MF30	ball valve DN50 / PN16, material: C.S.
MF31	ball valve DN50 / PN16, material: 1.4401
MF35	ball valve DN50 / PN40, material: C.S.
MF36	ball valve DN50 / PN40, material: 1.4401
MF40	ball valve DN50 / PN63, material: C.S.
MF41	ball valve DN50 / PN63, material: 1.4401
MS20	gate valve, DN50 / PN100, material: C.S.
MS21	gate valve DN50 / PN100, material: 1.4401



#### isolation valve for the sensor profile, ANSI

AF30	ball valve 2" ANSI 150 lbs, material: C.S.
AF31	ball valve 2" ANSI 150 lbs, material: 1.4401
AF35	ball valve 2" ANSI 300 lbs, material: C.S.
AF36	ball valve, 2" ANSI 300 lbs, Werkstoff: 1.4401
AS20	gate valve 2" ANSI 600 lbs, material: C.S.
AS21	gate valve 2" ANSI 600 lbs, material: 1.4401



**Order specification condensate vessel**

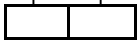
**FTHD 20, 21, 25, 26, 35, 36**

**flanged joint at sensor head**

K0	without condensate vessel
K1	condensate vessel with welding stud 21,3 mm, edge form 21 acc. DIN 2559

**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 connections and shut-off device**

**type FTHD- 20, 21, 25, 26, 35, 36**

**shut-off device for effect pressure pipe, standard with welding condensate vessel**

A00	without shut-off device
A81	ANSI small gate valve, nominal pressure 800 lbs connection: 1/2"-NPT material case: A105, packing: graphite-glas-fibre
A82	ANSI small gate valve, nominal pressure 800 lbs connection: 1/2"-NPT material case 316L, packing: graphite-glas-fibre



**Order specification condensate vessel (only compact construction)**

**FTHD 20, 21, 25, 26, 35, 36**

**flanged joint at sensor head**

A1	condensate vessel with sensor head, effect pressure pipe and direct welding flange
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**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 connections, only with A1**

**type FTHD- 20, 21, 25, 26, 35, 36**

**connections**

A06	flanged joint for 3-way manifold
A07	flanged joint for 5-way manifold



**Order specification shut-off device, only with A1**

**type FTHD- 20, 21, 25, 26, 35, 36**

**shut-off device for effect pressure pipe**

A00	without shut-off device
A66	mounted 3-way manifold, PN400, 1.4401 / packing: graphite
A71	mounted 5-way manifold, PN400, 1.4401 / packing: graphite



## 13. Documentation

Code	Description
D00	None

### General Documentation :

Code	Description
D01	Certificate of Compliance
D04	Certificate of Origin
D05	Notarized Certificate of Origin
D07	Inspection Certificate

### Manufacturing Process Documentation :

Code	Description
P12	Welding Methods Specifications (WPS, PQR), for standard materials
P13	Welding Methods Specifications (WPS, PQR), for special materials

### Instrument Testing Documentation:

Code	Description
Y14	Materials Certificate (EN 10204 2.2)
Y15	Materials Certificate (EN 10204 3.1 B) for Models IBF and IBR
Y17	Materials Certificate (EN 10204 3.1 A)
Y18	Materials Certificate (EN 10204 3.1 C)
Y19	Hydraulic Pressure Test incl. Test Report
Y20	Construction- and Pressure Test according to Pressure Vessel Guidelines by TÜV, incl. Materials Certificate (EN 10204 3.1B)
Y21	Construction- and Pressure Test according AD-Procedure, TRB und TRD by TÜV, incl. Materials Certificate (EN 10204 3.1B AD-W2)
Y22	X-ray Testing of Welding Seams per DIN 54 111 oder ASME Sec. VIII
Y23	Dye Tests of Welding Seams per DIN 54152 or ASME Sec.VIII
Y24	Hardness Test to NACE MR01-75, incl. NACE-Certificate of Conformance
Y25	Weight Certificate (for all instruments of an order)
Y26	Mistaking check (PMI-check)
Y27	Certificate about ferrit particles in welding seam

Ordering Sample:	D01-P12-Y25
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