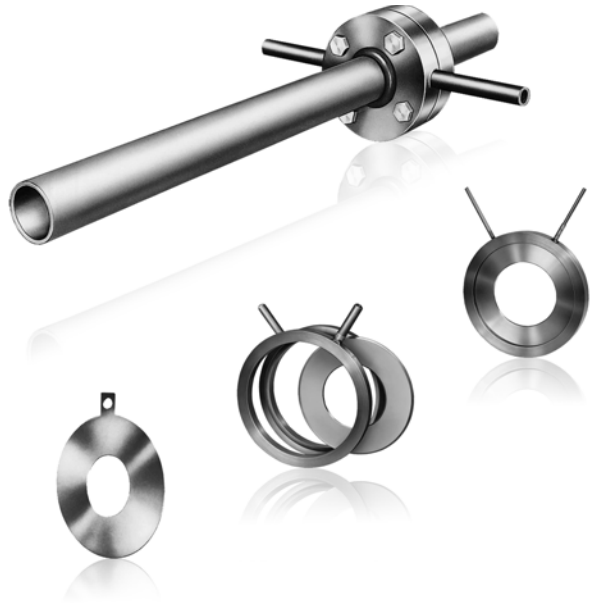
Data Sheet 10/14-5.11-EN

D. P. - Flow elements
Fluid flow measurement by means of differential pressure devices



Metering runs
for steam, liquid or gas

Orifice plate carrier assemblies
for steam, liquid or gas

Orifice plates
for flange in accordance with DIN and ASA

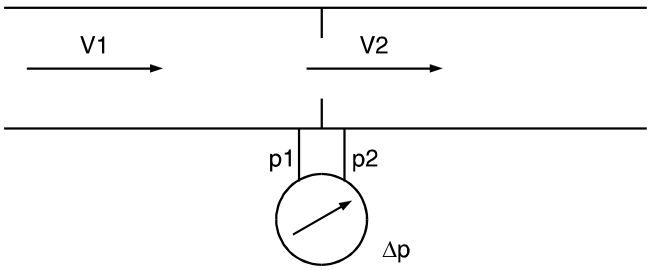
Integral weld-in flow meters
for steam, liquid or gas

Power and productivity
for a better world™

Technical data

Measuring principle

A primary device creates a difference in static pressures between the inlet and the restriction cross-section. From this differential pressure, it is possible to use the physical characteristics of the fluid to calculate the flow velocity in the restriction cross-section v2 and hence to determine the volume flow.



Associated standards

Calculation standards

EN ISO 5167 (DIN 1952)
Measurement of fluid flow by means of pressure differential devices

VDI / VDE 2040 Pages 1 to 5
Calculation principles for measurement of fluid flow using orifice pates, nozzles and venturi tubes

VDI / VDE 2041
Measurement of fluid flow with primary devices (quarter-circle orifices, segment orifices, inlet and outlet measurements)

Design standards

DIN 19 205
Flow measurement; differential pressure devices with corner taps; meter runs nominal diameter 10...200 and carrier rings nominal diameter from 50...2000

DIN 19 206
Flow measurement; orifice plates for insertion between flanges, nominal diameter 50...2000, nominal pressure 1...100; sealing surface raised face

DIN 19 208
Flow measurement; mating dimensions and application of shut-off valves for differential pressure transducers and differential pressure piping

DIN 19 211
Flow measurement; condensation chambers for differential pressure devices

DIN 19 213
Flow measurement; connections of differential pressure instruments and direct flanged shut-off valves up to PB 400 bar

DIN 19 215
Flow measurement; overall lengths of differential pressure devices with weld ends

Applications

Operational limits of orifices
Standard orifices may only be used under the following conditions:

Orifices with corner taps

Orifice diameter	$d > 12.5$ mm
Pipe inside diameter	$50 \text{ mm} < D < 1000 \text{ mm}$
Diameter ratio	$0.2 < \beta < 0.75$ ($\beta = d/D$)
Reynolds number	$R_{eD} > 5000$ for $0.2 < \beta < 0.45$
Reynolds number	$R_{eD} > 10000$ for $\beta > 0.45$

Orifices with flange or D-D/2 taps

Orifice diameter	$d > 12.5$ mm
Pipe inside diameter	$50 \text{ mm} < D < 1000 \text{ mm}$
Diameter ratio	$0.2 < \beta < 0.75$ ($\beta = d/D$)
Reynolds number	$> 1260 \cdot \beta^2 \cdot D$

Operational limits of ISA-1932 nozzles and Venturi nozzles
Nozzles may only be used under the following conditions:

ISA-1932 nozzles

Pipe inside diameter	$50 \text{ mm} < D < 500 \text{ mm}$
Diameter ratio	$0.3 < \beta < 0.8$ ($\beta = d/D$)
Reynolds number	$7 \cdot 10^4 < R_{eD} < 10^7$ for $0.3 < \beta < 0.44$
Reynolds number	$2 \cdot 10^4 < R_{eD} > 10^7$ for $0.44 < \beta > 0.8$

Venturi nozzles

Aperture diameter	$d > 50$ mm
Pipe inside diameter	$65 \text{ mm} < D < 500 \text{ mm}$
Diameter ratio	$0.316 < \beta < 0.775$ ($\beta = d/D$)
Reynolds number	$1.5 \cdot 10^5 < R_{eD} < 2 \cdot 10^6$

Moreover, the following flow velocities should not be exceeded:

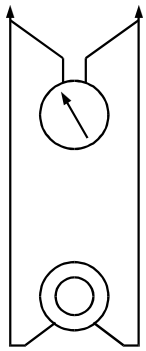
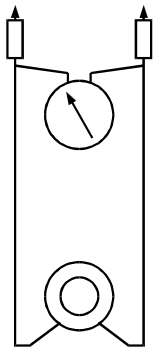
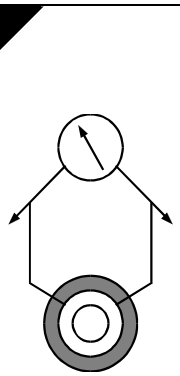
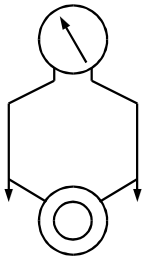
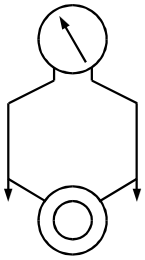
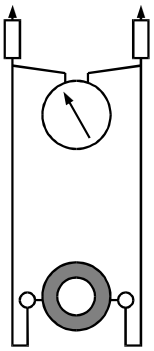
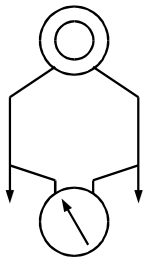
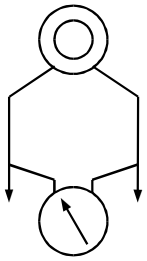
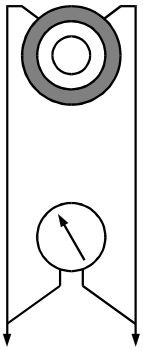
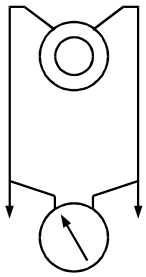
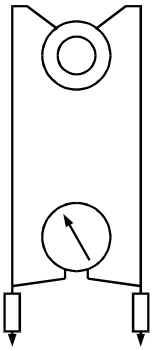
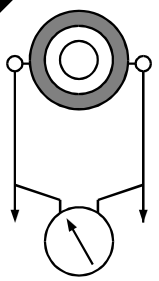
Water (liquids)
Pump suction lines: up to 2 m/sec
Pump pressure lines, feed water lines: up to 5 m/sec.

Steam
Saturated steam lines: up to 30 m/sec.
Overheated steam lines: up to 70 m/sec.

Gases
Gas lines: up to 15 m/sec.

Technical data

Possible measuring arrangements for d. p. flow meters

State of the measured medium	Liquid			Gaseous (gases and steam)		
State of the substance in the active pressure lines	Liquid	Partially outgassing	Completely evaporated	Gaseous	Partially condensed	Completely liquefied
Examples	Condensation	Boiling water gas-loading method	Liquid gases	Dry air	Humid air	Water vapour
Active pressure measuring instrument above the flow restrictor						
Active pressure measuring instrument below the flow restrictor						

These arrangements are preferred

Technical data

Straight length requirements for orifices, nozzles and venturi nozzles

(values are stated as a multiple of the pipe inside diameter D)

	On inlet side of the primary element									**On outlet side of the primary element**
Diameter ratio $\beta = d/D$	Single 90° bend or tee (flow from one branch only)	Two or more 90° bends in the same plane	Two or more 90° bends in different planes	Reducer from 2 D to D over a length of 1.5 D to 3 D	Diffuser from 0.5 D to D over a length of D to 2 D	Globe valve* opened completely	Gate valve* opened	Thermowell*) with a diameter < 0.03 D	Thermowell*) with a diameter between 0.03 D and 0.13 D	Valves and fittings (columns 2 to 8)
1	2	3	4	5	6	7	8	9	10	11
0.20	10 (6)	14 (7)	34 (17)	5	16 (8)	18 (9)	12 (6)	5 (3)	20 (10)	4 (2)
0.25	10 (6)	14 (7)	34 (17)	5	16 (8)	18 (9)	12 (6)	5 (3)	20 (10)	4 (2)
0.30	10 (6)	16 (8)	34 (17)	5	16 (8)	18 (9)	12 (6)	5 (3)	20 (10)	5 (2.5)
0.35	12 (6)	16 (8)	36 (18)	5	16 (8)	18 (9)	12 (6)	5 (3)	20 (10)	5 (2.5)
0.40	14 (7)	18 (9)	36 (18)	5	16 (8)	20 (10)	12 (6)	5 (3)	20 (10)	6 (3)
0.45	14 (7)	18 (9)	38 (19)	5	17 (9)	20 (10)	12 (6)	5 (3)	20 (10)	6 (3)
0.50	14 (7)	20 (10)	40 (20)	6 (5)	18 (9)	22 (11)	12 (6)	5 (3)	20 (10)	6 (3)
0.55	16 (8)	22 (11)	44 (22)	8 (5)	20 (10)	24 (12)	14 (7)	5 (3)	20 (10)	6 (3)
0.60	18 (9)	26 (13)	48 (24)	9 (5)	22 (11)	26 (13)	14 (7)	5 (3)	20 (10)	7 (3.5)
0.65	22 (11)	32 (16)	54 (27)	11 (6)	25 (13)	28 (14)	16 (8)	5 (3)	20 (10)	7 (3.5)
0.70	28 (14)	36 (18)	62 (31)	14 (7)	30 (15)	32 (16)	20 (10)	5 (3)	20 (10)	7 (3.5)
0.75	36 (18)	42 (21)	70 (35)	22 (11)	38 (19	36 (18)	24 (12)	5 (3)	20 (10)	8 (4)
0.80	46 (23)	50 (25)	80 (40)	30 (15)	54 (27)	44 (22)	30 (15)	5 (3)	20 (10)	8 (4)

*) The installation of thermowells does not change the necessary minimum values for the straight pipe sections of the other valves and fittings

Notes:
The minimum values for the straight pipe sections are the lengths which are to be provided, in the event of various installation faults in the inlet and outlet, between the fault and the primary element. All lengths must be measured from the in-flow side of the primary element.
The values without brackets apply to “0 % additional uncertainty”.
The values in brackets apply to “0.5 % additional uncertainty”.

Technical data

Metering runs with orifice in accordance with DIN 19205 Construction E[1)]

Metering runs with orifices in accordance with DIN 19205, construction E, with weld ends in accordance with DIN 2559 for welding in the pipeline.

Configuration
Metering runs with two-part ring-type carrier and exchangeable orifice plate

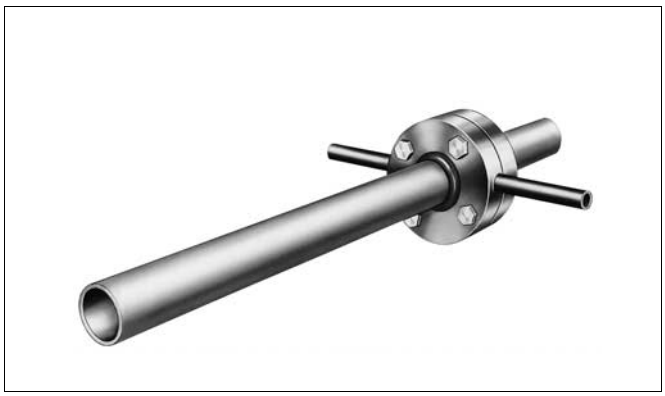
Rated pressure PN
up to 40 bar

Max. temperature
200 °C

Tapping type
for liquid or gas
Corner taps
DN 10...25
Solderless pipe union DIN 2353 for pipe 12 × 2 mm
DN 32...50
Either solderless pipe union DIN 2353 for pipe 12 × 2 mm or weld connection, pipe 24 × 7.1mm

For steam
DN 10...25
Weld connection, pipe 12 × 2 mm
DN 32...50
Weld connection, pipe 24 × 7.1mm

1) Also available as construction F for flanging on request

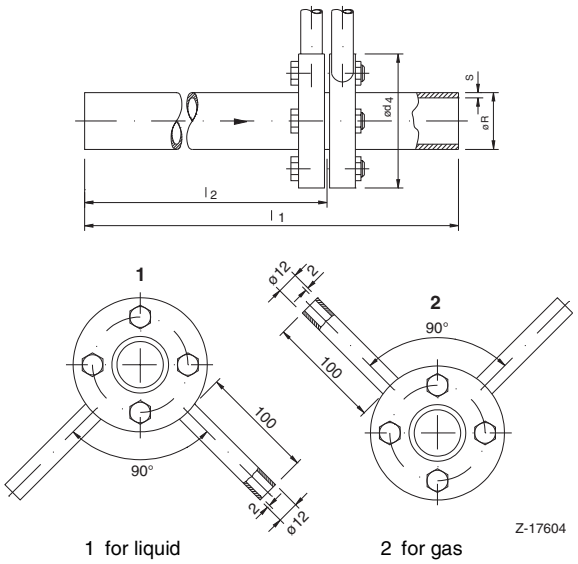


Design[2)]	Steel	Stainless steel
Materials for	Material no.	Material no.
Inlet and outlet pipe	1.0305	1.4571
Pressure taps	1.0309	1.4571
Flange	1.0037	1.4571
Orifice plate	1.4571	1.4571

Notes
The welding of the shut-off valves (for steam also the equalisation vessels) to the active pressure lines is not part of the scope of supply of the measuring section.

2) Other materials on request

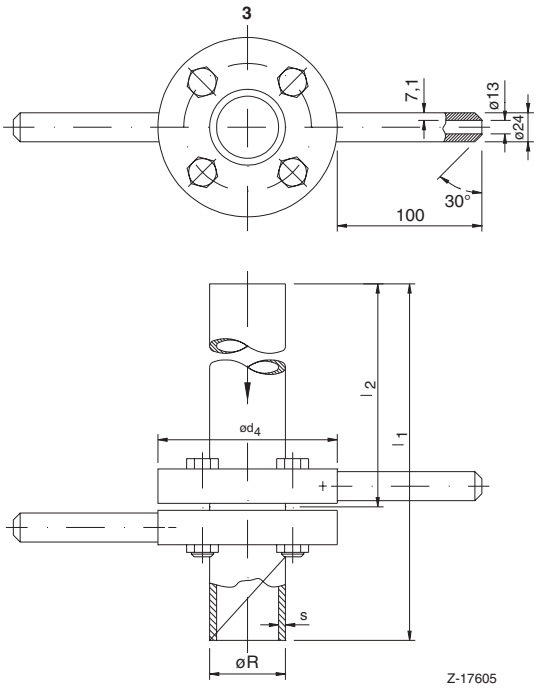
Dimensional drawings (Dimensions in mm)



1 for liquid

2 for gas

DN	R	s	l1	l2	d4
10	17.2	2.3	400	230	60
15	21.3	2.0	550	380	70
20	26.9	2.3	700	500	75
25	33.7	2.6	900	650	90
32	42.4	2.6	1100	800	105
40	48.3	2.9	1300	1000	115
50	60.3	3.6	1500	1200	150



3 for horizontal pipeline for steam

DN	R	s	l1	l2	d4
32	42.4	2.6	1100	800	105
40	48.3	2.9	1300	1000	115
50	60.3	3.6	1500	1200	150

Technical data

Description

Orifice plate carrier assemblies in accordance with DIN 19205, suitable for DIN flange[4], with corner taps.

Flange and gaskets must be provided by the customer.

The orifice plate can be designed as an orifice, quarter-circle nozzle or double-bevelled orifice.

2 configurations are offered:

Configuration 1

One-part ring-type carrier, non-exchangeable orifice plate, overall length 40 mm for rated pressure stages up to PN 400

Configuration 2

Two-part ring-type carrier, exchangeable orifice plate, overall length 65 mm for rated pressure stages up to PN 100

Materials

Configuration 1	Orifice	1.0425 1.0460 1.4571
	Tapping pipes	1.0305 1.4571
Configuration 2	Ring-type carriers	1.0425 1.0460 1.4571
	Orifice plate	1.4571
	Tapping pipes	1.0305 1.4571

Other materials available on request,
for example 1.5415, 1.7335,
Hasteloy, Tantal, PVC

Configuration 1, construction B
Orifice with one-part ring-type carrier

Tapping at the top:
Gas flow measurement

Configuration 2, construction A
Orifice with two-part ring-type carrier

Tapping at the bottom:
Liquid flow measurement

Active pressure tapping

Rated pressure	up to PN 100	up to PN 400
Liquid, gas	Pipe 12 × 2 mm for solderless pipe union with ferrule in accord. with DIN 2353	Pipe 24 × 7.1 mm for weld connection up to PN 160 Threaded pipe tap in DIN 19 207 G 1/2 A form V
Steam	Threaded pipe tap in acc. with DIN 19207 G 1/2 A form V Pipe 24 × 7.1 mm for weld connection	

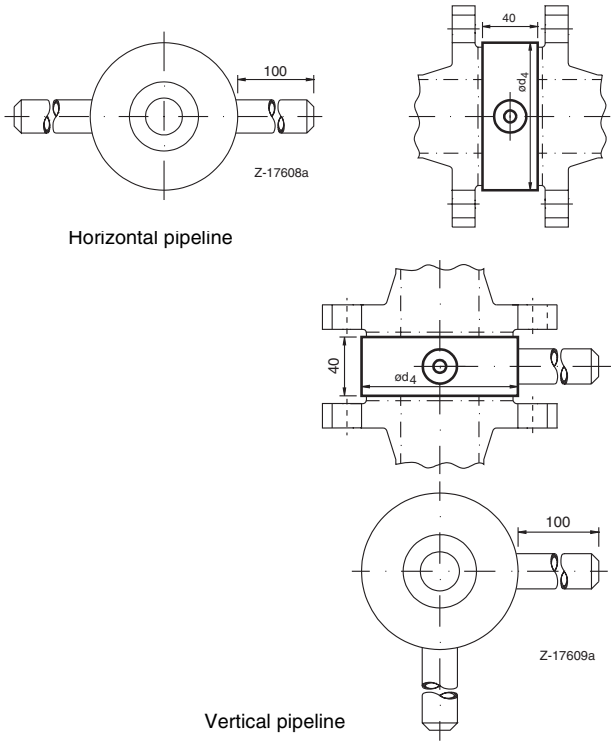
For additional pipe taps see page 14, Ordering information.
Note: Installation work does not form part of the scope of supply.

Orifices in accordance with DIN 19 205, construction B with single tap, with one-part ring-type carrier, measuring edge armoured with 1.4571

for steam, DN 50...500[1], PN 6...160[2], ...400 °C[3]
Tapping: weld connection 24 × 7.1

DN	Suitable for DIN flange PN										
	6	10	16	25	40	64	100	160	250	320	400
	d_4										
50	96	107	107	107	107	113	119	119	124	134	150
65	116	127	127	127	127	138	144	144	154	170	192
80	132	142	142	142	142	148	154	154	170	190	207
100	152	162	162	168	168	174	180	180	202	229	256
125	182	192	192	194	194	210	217	217	242	274	301
150	207	218	218	224	224	247	257	257	284	311	348
175	–	–	248	254	265	277	287	284	–	358	402
200	262	273	273	284	290	309	324	324	358	398	442
250	317	328	329	340	352	364	391	388	442	488	–
300	373	378	384	400	417	424	458	458	538	–	–
350	423	438	444	457	474	486	512	–	–	–	–
400	473	489	495	514	548	543	572	–	–	–	–
450	–	539	555	–	–	–	–	–	–	–	–
500	578	594	617	624	628	657	704	–	–	–	–

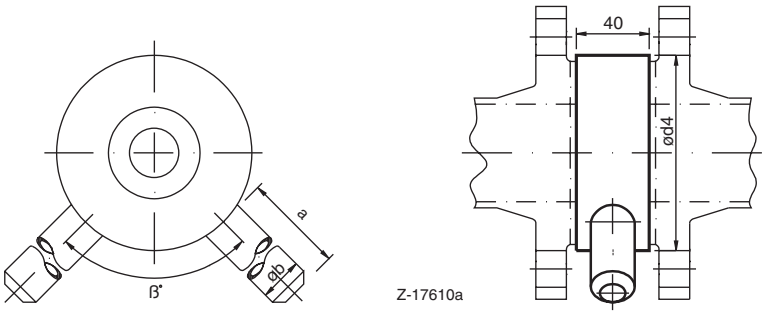
1) Larger nominal sizes on request
2) Higher rated pressure stages on request
3) Higher temperatures on request
4) Also available for flange in accordance with ASA



Technical data

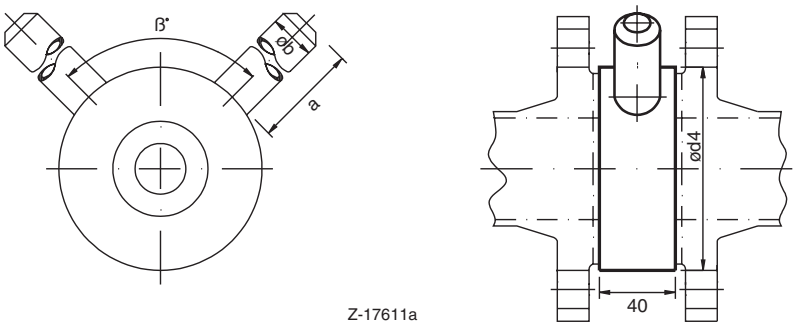
Orifices in accordance with DIN 19 205, construction B with single tap, with one-part ring-type carrier, measuring edge armoured with 1.4571

for liquid, DN 50...1000, PN 6...160, ...400 °C[1)]



PN	a	b	Type of connection
6...100	100	12 × 2	Solderless pipe union with ferrule
160...400	100	24 × 7.1	Weld connection
6...400	100	G 1/2 A	Threaded connection

for gas, DN 50...1000, PN 6...400, ...400 °C[1)]



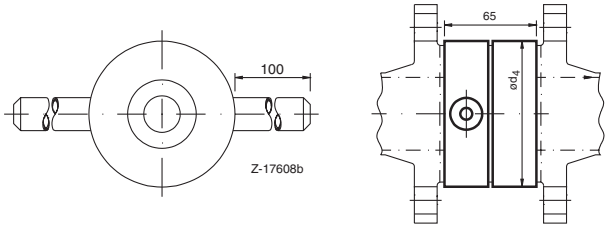
DN	Suitable for DIN flange PN																					
	6		10		16		25		40		64		100		160		250		320		400	
	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°
50	96	135	107	135	107	135	107	135	107	135	113	135	119	135	119	135	124	90	134	90	150	90
65	116	135	127	135	127	135	127	135	127	135	138	90	144	90	144	90	154	90	170	90	192	90
80	132	135	142	90	142	90	142	90	142	90	148	90	154	90	154	90	170	90	190	90	207	90
100	152	135	162	90	162	90	168	90	168	90	174	90	180	90	180	90	202	90	229	90	256	90
125	182	90	192	90	192	90	194	90	194	90	210	90	217	90	217	90	242	60	274	60	301	60
150	207	90	218	90	218	90	224	90	224	90	247	90	257	60	257	60	284	60	311	60	348	60
(175)	–	–	–	–	248	90	254	60	265	60	277	60	287	60	284	60	–	–	358	60	402	60
200	262	90	273	90	273	60	284	60	290	60	309	60	324	60	324	60	358	60	398	45	442	45
250	317	60	328	60	329	60	340	60	352	60	364	60	391	60	388	60	442	45	488	45	–	–
300	373	60	378	60	384	60	400	45	417	45	424	45	458	45	458	45	538	45	–	–	–	–
350	423	60	438	45	444	45	457	45	474	45	486	45	512	45	–	–	–	–	–	–	–	–
400	473	45	489	45	495	45	514	45	548	45	543	45	572	45	–	–	–	–	–	–	–	–
450	–	–	539	36	555	36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
500	578	36	594	36	617	36	624	36	628	36	657	36	704	36	–	–	–	–	–	–	–	–
600	679	36	695	36	734	36	731	36	747	36	764	36	813	36	–	–	–	–	–	–	–	–
700	784	30	810	30	804	30	833	30	852	30	879	30	950	30	–	–	–	–	–	–	–	–
800	890	30	917	30	911	30	942	30	974	30	988	30	–	–	–	–	–	–	–	–	–	–
900	990	30	1017	26	1011	26	1042	26	1084	26	1108	26	–	–	–	–	–	–	–	–	–	–
1000	1090	26	1124	26	1128	26	1154	26	1194	26	1220	26	–	–	–	–	–	–	–	–	–	–

[1)] Higher temperatures on request

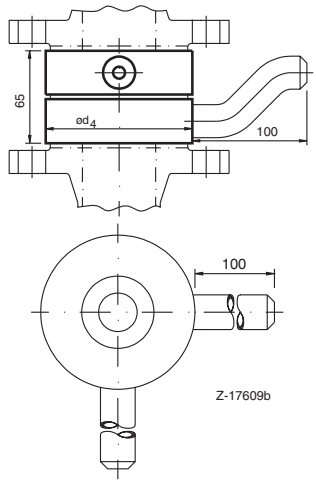
Technical data

Orifices in accordance with DIN 19 205, construction A with annular slot, with two-part ring-type carrier

for steam ...400 °C[2], DN 50...500[1], PN 6...100

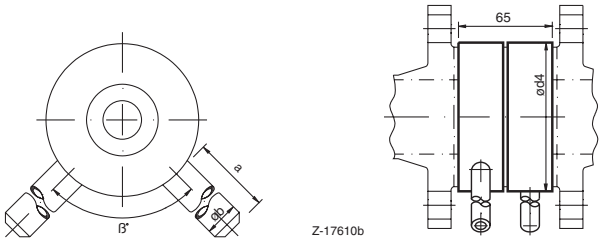


Horizontal pipeline

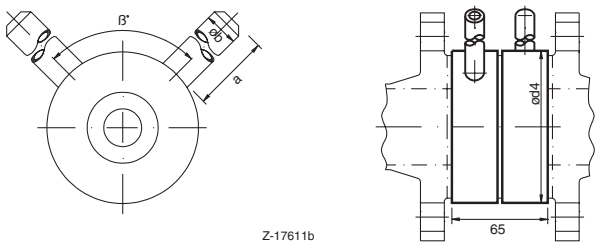


Vertical pipeline

for liquid, DN 50...1000, PN 6...100



for gas, DN 50...1000, PN 6...100



DN	Suitable for DIN flange PN						
	6	10	16	25	40	64	100
	d_4						
50	96	107	107	107	107	113	119
65	116	127	127	127	127	138	144
80	132	142	142	142	142	148	154
100	152	162	162	168	168	174	180
125	182	192	192	194	194	210	217
150	207	218	218	224	224	247	257
(175)	–	–	248	254	265	277	287
200	262	273	273	284	290	309	324
250	317	328	329	340	352	364	391
300	373	378	384	400	417	424	458
350	423	438	444	457	474	486	512
400	473	489	495	514	548	543	572
450	–	539	555	–	–	–	–
500	578	594	617	624	628	657	704

[1] Larger nominal sizes on request
[2] Higher temperatures on request

DN	Suitable for DIN flange PN													
	6		10		16		25		40		64		100	
	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°	d_4	β°
50	96	135	107	135	107	135	107	135	107	135	113	135	119	135
65	116	135	127	135	127	135	127	135	127	135	138	90	144	90
80	132	135	142	90	142	90	142	90	142	90	148	90	154	90
100	152	135	162	90	162	90	168	90	168	90	174	90	180	90
125	182	90	192	90	192	90	194	90	194	90	210	90	217	90
150	207	90	218	90	218	90	224	90	224	90	247	90	257	60
(175)	–	–	–	–	248	90	254	60	265	60	277	60	287	60
200	262	90	273	90	273	60	284	60	290	60	309	60	324	60
250	317	60	328	60	329	60	340	60	352	60	364	60	391	60
300	373	60	378	60	384	60	400	45	417	45	424	45	458	45
350	423	60	438	45	444	45	457	45	474	45	486	45	512	45
400	473	45	489	45	495	45	514	45	548	45	543	45	572	45
450	–	–	539	36	555	36	–	–	–	–	–	–	–	–
500	578	36	594	36	617	36	624	36	628	36	657	36	704	36
600	679	36	695	36	734	36	731	36	747	36	764	36	813	36
700	784	30	810	30	804	30	833	30	852	30	879	30	950	30
800	890	30	917	30	911	30	942	30	974	30	988	30	–	–
900	990	30	1017	26	1011	26	1042	26	1084	26	1108	26	–	–
1000	1090	26	1124	26	1128	26	1154	26	1194	26	1220	26	–	–

Technical data

Orifice plate in accordance with DIN 19206 part 1

Rated pressure
1...100 bar

Measured media
Liquids, steam or gases

Active pressure tapping
Flange taps must be provided by the customer
Flange, for example:welding neck flange
in accordance with type series DIN 26 ...[1)]
Pipe tap, for example: bushing in accordance with DIN 2986

Mounting dimensions
See dimensional drawing Z-17606

Material
for temperatures
-10...+400 °C
stainless CrNi steel
X6 CrNiMoTi 17122 (V4A Extra), material no. 1.4571

[1)] Flange with recess DIN 2513 and slot DIN 2512 on request

Orifice plate in accordance with ASA

Rated pressure
up to 900 lb

Measured media
Liquids, steam or gases

Active pressure tapping
Flange taps
must be provided by the customer
Flange, for example: Orifice measuring flange
with smooth gasket surfaces[2)]

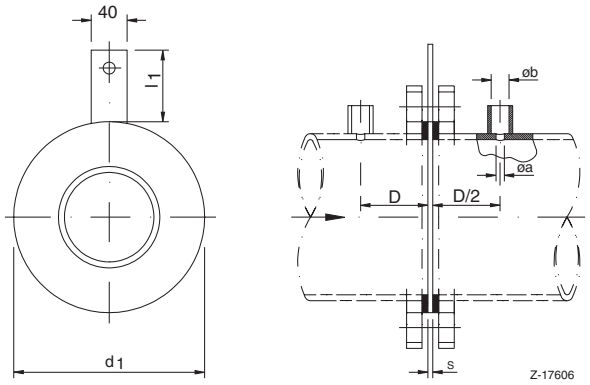
Mounting dimensions
See dimensional drawing Z-17607

Material
for temperatures
-10...+400 °C
stainless CrNi steel
X6 CrNiMoTi 17122 (V4A Extra), material no. 1.4571

[2)] Flange with RTJ sealing surface on request

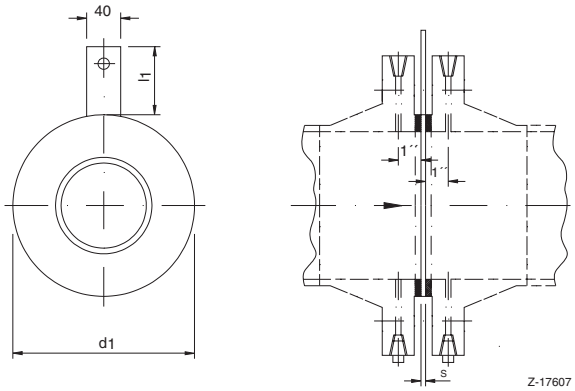
Dimensional drawings (Dimensions in mm)

Orifice plate in accordance with DIN 19 206 part 1



Nominal size	Form of the sealing surfaces C						E			Tab
	d_1 at rated pressure PN									
DN	1 and 2.5	6	10	16	25	40	64	100	s	l_1
50	96	96	107	107	107	107	113	119	2.5	160
65	116	116	127	127	127	127	138	144	3	
80	132	132	142	142	142	142	148	154	4	
100	152	152	162	162	168	168	174	180		
125	182	182	192	192	194	194	210	217		
150	207	207	218	218	224	224	247	257		
200	262	262	273	273	284	290	309	324		
250	317	317	328	329	340	352	364	391		
300	373	373	378	384	400	417	424	458		
350	423	423	438	444	457	474	486	512		
400	473	473	489	495	514	546	543	572		
450	–	528	539	555	–	571	–	–		
500	578	578	594	617	624	628	657	704	6	200
600	679	679	695	734	731	747	764	813		
700	784	784	810	804	833	852	879	950	8	
800	890	890	917	911	942	974	988	–		
900	990	990	1017	1011	1042	1084	1108	–		
1000	1090	1090	1124	1128	1154	1194	1220	–	10	220
1200	1290	1307	1341	1342	1364	1398	1452	–		
1400	1490	1524	1548	1542	1578	1618	–	–	12	

Orifice plate in accordance with ASA



DN		S	l_1	300 lb	400 lb	600 lb	900 lb
Inch	mm	mm	mm	d_1 mm			
1	25	2.5	130	71			76
1¼	32			81			86
1½	40			93.5			95
2	50		160	109.5			140
2½	65	3		128.5			162
3	80	4		147.5			165
4	100			179.5	174.5	190.5	203
5	125			212.5	209.5	2238	245
6	150			247.5	244.5	263.5	286
8	200			305	301.5	317.5	356
10	250			358.5	355.5	397	432
12	300			419	416	454	495
14	350			482.5	–		
16	400			536.5			
18	450			593.5			
20	500	6	200	651			

Technical data

Description

Primary element with welded pipes in accordance with DIN 19215, construction B, for welding in the pipeline. Pipe ends with welding grooves in accordance with DIN 2559.

Primary element designed as orifice, ISA 1932 nozzle, venturi nozzle or classical venturi tube with single tap.

Where possible, the pipes must be provided free of charge by the customer (min. dim. L1 + 50 mm). Multiple taps are available.

Materials:

ST 35.8 III	Material no. 1.0305
13 CrMo 4 4	Material no. 1.7335
10 CrMo 9 10	Material no. 1.7380
X 10 CrMoVNb 91	Material no. 1.4903
X 6 CrNiMoTi 17 122	Material no. 1.4571

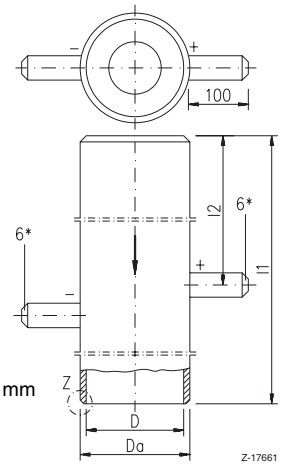
Other materials available on request (for example, C22, boiler plate, 15 Mo 3).

The orifice plates of material no. 1.0460 (low-alloy steel) are supplied with armoured measuring edge (VA-like alloy) for operating temperatures up to 500 °C.

Welded primary elements are also available as metering runs from DN 25...50.

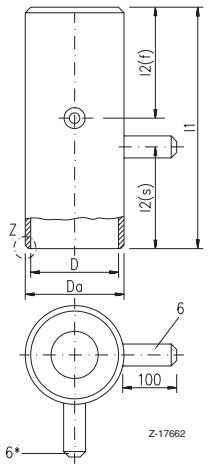
Dimensional drawings (Dimensions in mm)

Primary element
for steam, horizontal pipeline



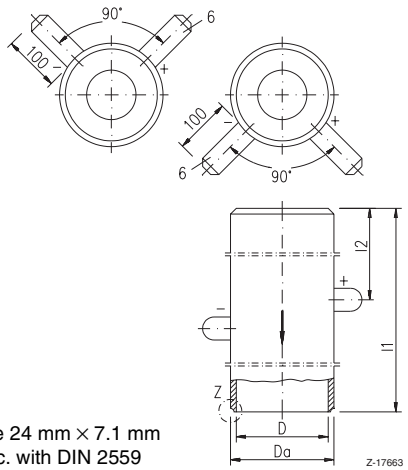
$D \sim D_N$
6 Weld connection, pipe 24 mm × 7.1 mm
Z Welding groove in accordance with DIN 2559

Primary element
for steam, vertical pipeline



$D \sim D_N$
6 Weld connection, pipe 24 mm × 7.1 mm
Z Welding groove in acc. with DIN 2559
l2 (s) for vertically rising
l2 (f) for vertically falling

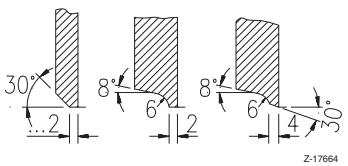
Primary element
for liquid or gas



$D \sim D_N$
1 For liquid
2 For gas
6 Weld connection, pipe 24 mm × 7.1 mm
Z Welding groove in acc. with DIN 2559

DN	L_1	l_2
25	900	650
32	1100	800
40	1300	1000
50	1500	1200
50	250	150
65	300	180
80	350	230
100	400	280
125	500	350
150	600	400
175	700	470
200	800	570
250	1000	690
300	1200	820
350	1400	950
400	1500	1050
450	1700	1200
500	2000	1370
600	2000	1500
700	2000	1500
800	2000	1500

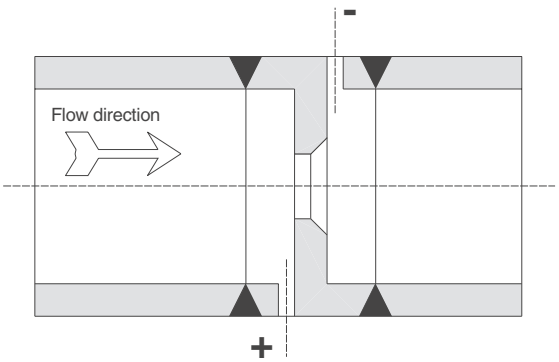
Detail Z



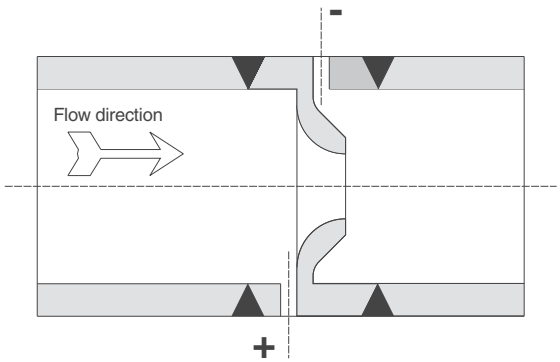
Classification figure:
22 3 4

Configurations

Orifice

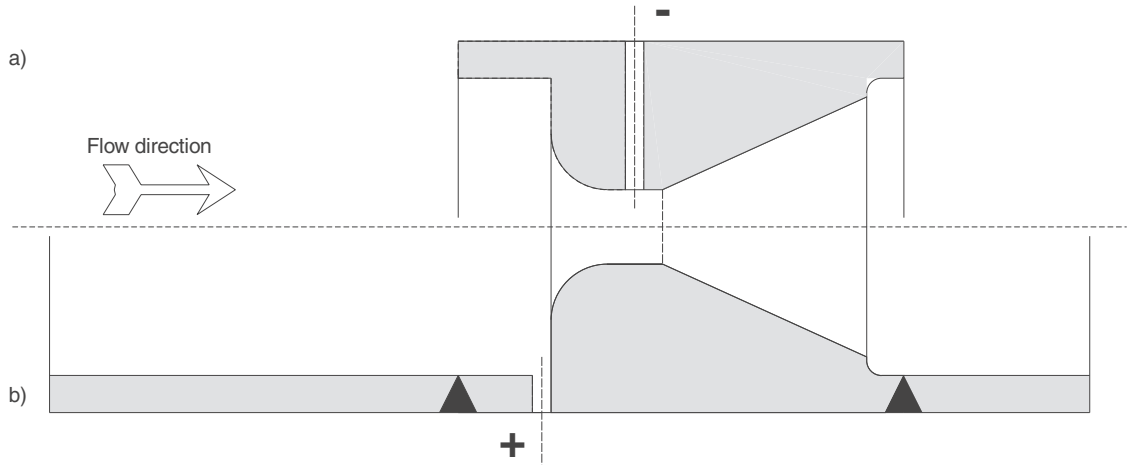


ISA 1932 nozzle



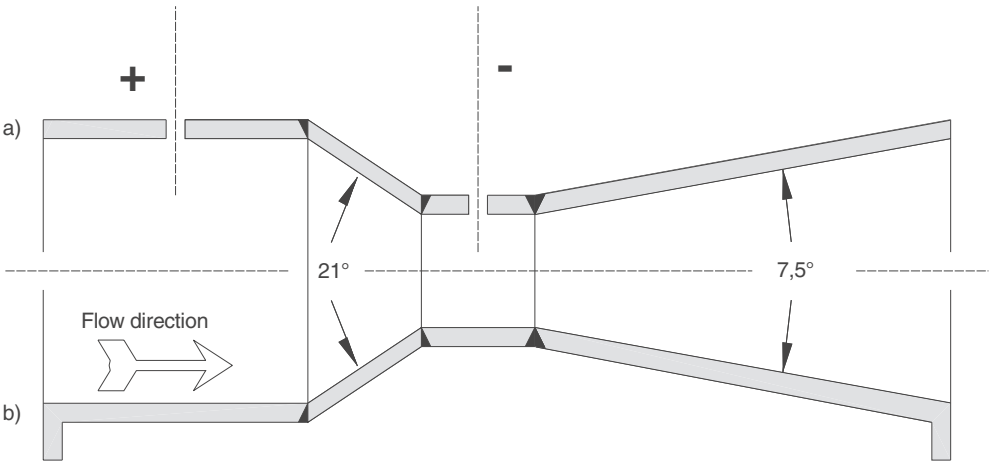
Orifices and ISA 1932 nozzles are supplied in accordance with DIN 19 215 with welded extension pipes

Venturi nozzle



Venturi nozzles can be supplied in accordance with DIN 19 215 either a) without or b) with extension pipes

Classical venturi tube



Classical venturi tube can be supplied a) for welding or b) for flanging.

Ordering information

	Catalog No							Code		
Multipart measuring section PN 40	**V14130A-**					**0**				
Measured medium										
Steam		1								
Liquid		2								
Gas		3								
Oxygen (fat-free design b)		4		0						
Active pressure taps										
Pipe 12 x 2 mm for solderless pipe unions DIN 2353			3							
Pipe 24 x 7,1 mm for weld connection			4							
Threaded pipe tap in accordance with DIN 19 207 G 1/2 A, form V			6							
a) Steel design										
Nominal size DN Approx. weight kg										
10 1,2				1	0					
15 1,5				2	0					
20 2,0				3	0					
25 3,0				4	0					
32 6,0				5	0					
40 8,0				6	0					
50 14,0				7	0					
b) Stainless steel design										
Nominal size DN Approx. weight kg										
10 1,2				0	1					
15 1,5				0	2					
20 2,0				0	3					
25 3,0				0	4					
32 6,0				0	5					
40 8,0				0	6					
50 14,0				0	7					
Primary element as[1)]										
Orifice						5	0			
Double-bevelled orifice						6	0			
Quarter-circle nozzle						7	0			
Certificate in accordance with EN 10 204										
Without certificate								0		
Certificate of compliance with order EN 10 204-2.1								1		
Acceptance test certificate EN 10 204-3.1 B								2		

[1)] Design is deteminated after calculation; design indicated is supplied preferentially.

Ordering information											
	Catalog No								Code		
Orifice	**V14132A-**										
Configuration 1 one-part (up to PN 400) with ring-type carrier											
for measured medium steam		1									
for measured medium liquid		2									
for measured medium gas		3									
Configuration 2 multipart (up to PN 100) with ring-type carrier											
for measured medium steam		4									
for measured medium liquid		5									
for measured medium gas		6									
Primary element as[1]											
Orifice			5								
Double-bevelled orifice			6								
Quarter-circle nozzle			7								
Rated pressure stage PN 6				1	0						
10				2	0						
16				3	0						
25				4	0						
40				5	0						
64				6	0						
100				7	0						
160				0	1						
250				0	2						
320				0	3						
400				0	4						
Active pressure taps											
Pipe 24 x 7,1 mm for weld connection						1					
Pipe 12 x 2 mm for solderless pipe unions with ferrule	only up to PN 100				0	2					
Threaded pipe tap in accordance with DIN 19 207 G 1/2 A, form V						6					
Gasket type											
for flange with smooth gasket surface, for example DIN 26…							1				
for flange with projection in accordance with DIN 2513	only up to PN 100				0		2				
for flange with tongue in accordance with DIN 2512	only up to PN 100				0		3				
Certificate in accordance with EN 50 049											
Without certificate								0			
Certificate of compliance with order EN 10 204-2.1								1			
Acceptance test certificate EN 10 204-3.1 B								2			

Other additional ordering information				
Deviating active pressure tapping (clear text indication, drawing necessary)		501		
Additional pipe tap:				
Material 1.0305	Pipe 24 x 7,1 mm	521		
Material 1.4571	Pipe 24 x 7,1 mm	522		
Material 1.0305	Pipe 12 x 2,0 mm	523		
Material 1.4571	Pipe 12 x 2,0 mm	524		
Material 1.0305	Threaded pipe tap in accordance with DIN 19 207	525		
Material 1.4571	Threaded pipe tap in accordance with DIN 19 207	526		
Fat-free design for oxygen (material no. 1.4571)		551		
Unilateral tapping for horizontal pipeline (only possible for configuration 2)		509		
Offset tapping for vertical pipeline (configuration 2)		510		

[1] Design is deteminated after calculation; design indicated is supplied preferentially.

Orifice plate carrier assemblies

Other ordering information (for orifices)						
Configuration		**1**	**1**		**2**	**2**
		Mat. No.	Mat. No.		Mat. No.	Mat. No.
Ring-type carrier		1.0425	1.4571		1.0425	1.4571
Orifice plate		1.0425	1.4571		1.4571	1.4571
Pipe tap		1.0309	1.4571		1.0309	1.4571
DN	appr. kg	Code	Code	appr. kg	Code	Code
50	4	301	341	5	561	381
65	5	302	342	6	562	382
80	6	303	343	8	563	383
100	8	304	344	10	564	384
125	10	305	345	14	565	385
150	13	306	346	18	566	386
(175)	16	307	347	22	567	387
200	20	308	348	27	568	388
250	27	309	349	38	569	389
300	35	310	350	49	570	390
350	43	311	351	58	571	391
400	52	312	352	70	572	392
450	60	313	353	82	573	393
500	69	314	354	95	574	394
600	85	315	355	120	575	395
700	102	316	356	142	576	396
800	118	317	357	165	577	397
900	134	318	358		578	398
1000	150	319	359		579	399

Ordering information

			Catalog No					Code		
Orifice plate for flange in acc. With DIN or ASA			**V14133A-**							
Nominal size DN	**Material**	**approx. kg**								
25	X 10CrNiMo Ti 18 10	0.1	6	0	0	2				
32	(V4A-Extra) 1.4571	0.12	7	0	0	2				
40		0.15	8	0	0	2				
50		0.2	9	0	0					
65		0.3	0	1	0					
80		0.5	0	2	0					
100		0.8	0	3	0					
125		1.0	0	4	0					
150		1.5	0	5	0					
200		1.5	0	6	0					
250		2.5	0	7	0					
300		3.0	0	8	0					
350		4.0	0	9	0					
400		5.0	0	0	1					
450		7.0	0	0	2					
500		8.0	0	0	3					
600		10.0	0	0	4					
700		13.0	0	0	5					
800		17.0	0	0	6					
900			0	0	7					
1000			0	0	8					
1200			0	0	9					
Installation										
Between flange with smooth gasket surface, in accordance with DIN						1				
in accordance with ASA						2				
Certificate in accordance with EN 10 204										
Without certificate							0			
Certificate of compliance with order DIN 10 204-2.1							1			
Acceptance test certificate B EN 10 204-3.1 B							2			

Other additional ordering information

		Code		
Active pressure taps				
Corner pressure	in accordance with ASA	315		
D-D/2	in accordance with DIN	316		
Flange 1"	in accordance with ASA	317		
Rated pressure stage in accordance with DIN 2401				
	PN 1…6	301		
	PN 10[1)]	302		
	PN 16[1)]	303		
	PN 25[1)]	304		
	PN 40[1)]	305		
	PN 64[1)]	306		
	PN 100[1)]	307		
Rated pressure stage in accordance with ASA				
	PN 300 lb	310		
	PN 400 lb	311		
	PN 600 lb[1)]	312		
	PN 900 lb[1)]	313		
Segmental orifice plates DN 50…500 on request				

[1)] Use the price of the selected nominal size

Ordering information

	Catalog No					Code		
Welded primary element	**V14124A-**							
Orifice		1						
ISA-1932 nozzle		2						
Venturi nozzle		3						
Traditional Venturi tube		4						
Measured medium								
Stream			1					
Liquid			2					
Gas			3					
Extension pipes								
Supplied by customer				1				
Supplied by manufacturer				2				
N/A				3				
Active pressure taps								
2 pipes 24 x 7,1 mm					1			
4 pipes 24 x 7,1 mm					2			
6 pipes 24 x 7,1 mm					3			
for weld connection								
Certificate in accordance with EN 10 204								
Without certificate						0		
Certificate of compliance with order EN 10 204-2.1						1		
Acceptance test certificate EN 10 204-3.1 B						2		
Acceptance test certificate EN 10 204-3.1 A						3		
type test by TÜV (German Technical Inspection Authorities) (TRD 201)								

Additional ordering information

Nominal size DN	(Clear text)		710	
Pipe diameter	(Clear text)		714	
Wall thickness	(Clear text)		713	
Material	(Clear text)		712	
Mounting length	(Clear text)		716	
Ultrasonic test		1 round weld	731	
		2 round welds	732	
X-ray test on		1 round weld	734	
		2 round welds	735	
Hardness test on		1 round weld	736	
		2 round welds	737	
Surface crack test		1 round weld	738	
		2 round welds	741	
Surface crack test on		… tap welds (Clear text)	742	
NB! The final delivery date cannot be fixed until the extension pipe supplied by the customer has been received.				

	Catalog-Number		
Calculation of a primary element	14199-07957510		
Calculation for venturi tube with dimension sketch	14199-07957511		

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