

Orifice Plate Assemblies

Orifice Flange Type 90

Orifice Tube Type 91

Orifice Flange Type 92

Application

Orifice plate assemblies for flow measurement · Generation of a defined differential pressure

In combination with a differential pressure meter, for example, Media 5, the orifice plates measure the flow rates of liquids, gases and vapors.

The size of the orifice bore is calculated in accordance with the standard DIN EN ISO 5167-1/A1.

Versions

Type 90 (Fig. 1) · Orifice flange with standard orifice plate and annular chamber · DN 32 to DN 400 · PN 6 to 40

Differential pressure connections: compression fittings for 12 x 1 mm or 12 x 1.5 mm pipes

Special version · Dimensions according to ANSI Class 150/300 · Free of oil and grease for oxygen · Without orifice plate · Orifice plate only with concentric bore · Flange with groove Form D acc. to DIN EN 1092-1 · Other materials · Other nominal sizes

Type 91 (Fig. 2) · Orifice tube with standard orifice plate, annular chamber with welded-on calibrated pipes · DN 15 to DN 50 · PN 25

Differential pressure connections: compression fittings for 12 x 1 mm or 12 x 1.5 mm pipes

Special version · Free of oil and grease for oxygen · Without orifice plate · Orifice plate only with concentric bore

Type 92 (Fig. 3) · Orifice flange with flange end connections and standard orifice plate · DN 20 to DN 50 · PN 16

Differential pressure connections: compression fittings for 12 x 1 mm or 12 x 1.5 mm pipes



Fig. 1 · Type 90 Orifice Flange



Fig. 2 · Type 91 Orifice Tube



Fig. 3 · Type 92 Orifice Flange

Sizing the orifice plate assemblies

To record the relevant operating data, SAMSON provides the Questionnaire **FB 9500 EN**. Enter the specifications required to calculate the differential pressure.

SAMSON uses these specifications to size the orifice plate assembly correctly when processing an order.

Installation

The following generally applies:

- Install the **orifice plate assembly** in horizontal pipelines.
- The high pressure must be tapped upstream of the orifice and the low pressure downstream of the orifice. The sharp edge of the standard orifice plate must be placed to face the oncoming medium flow.

The direction of the medium flow is indicated by an arrow and the differential pressure connections are marked with "+" and "-".

- Refer to Fig. 4 for the arrangement of differential pressure lines.

The following applies for:

- **Type 90 and Type 92 Orifice Flanges** are installed between DIN mating flanges which can also be supplied on request. The undisturbed pipe length should be at least 20 x DN at the inlet and 5 x DN at the outlet.
- **Type 91 Orifice Tube** is welded into the pipeline. The undisturbed pipe length at the inlet and outlet is determined by the welded-on calibrated pipes.

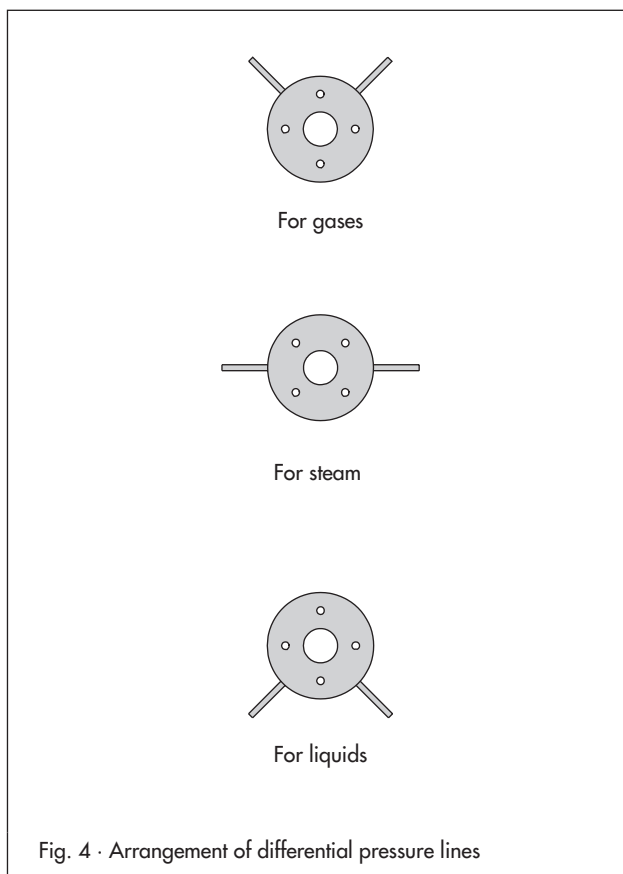


Fig. 4 · Arrangement of differential pressure lines

Table 1 · Technical data

Orifice plate assembly		Nominal size DN	Nominal pressure	
			PN	ANSI Class
Orifice Flange	Type 90 ¹⁾	32 to 400	6, 10, 16, 25, 40	150 and 300
Orifice Tube	Type 91	15, 20, 25, 32, 40, 50	25	–
Orifice Flange	Type 92	20, 25, 32, 40, 50	16	–

¹⁾ Other nominal sizes/nominal pressures on request

Table 2 · Materials · Material number according to DIN EN and ASME

Orifice Flange/Tube Type ...	90 ¹⁾	91 ¹⁾	92
Standard orifice plate	1.4404		
Annular chamber max. 300 °C	1.0566/SA 516-70	1.0566/SA 516-70	EN-JL 1040 (GG-25)
Permissible temperature max. 400 °C	1.4404/316L · 1.5415	–	–
Tube	–	Chromated steel or 1.4404/316L	–
Differential pressure connections	Chromated steel or 1.4404/316L		
Gasket	Fiber gasket (max. 300 °C) · Graphite with metal core (max. 550 °C)		

¹⁾ Other materials available on request

Dimensions and weights

Table 3 · Type 90 Orifice Flange · Dimensions in mm

Nominal size ¹⁾	DN	32	40	50	65	80	100	125	150	200	250	300	350	400
Size for ANSI version	NPS	1¼	1½	2	2½	3	4	5	6	8	10	12	14	16
Class 150		73	82	96	116	132	168	194	218	273	329	400	444	495
Class 300		76	92	107	127	142	168	194	224	290	352	417	474	514
Length	L	65												
Mounting ring Ø D	PN 6	76	86	96	116	132	152	182	207	262	317	373	423	473
	PN 10	82	92	107	127	142	162	192	218	273	328	378	438	489
	PN 16	82	92	107	127	142	162	193	218	273	329	384	444	495
	PN 25	82	92	107	127	142	168	194	224	284	340	400	457	514
	PN 40	82	92	107	127	142	168	194	224	290	352	417	474	546
Mounting ring	Ø d	38	46	58	75	88	108	132	159	208	263	308	358	408
Weight (PN 16), approx.	kg	2.3	2.7	3.6	4.5	5.4	7	9	11	15 ²⁾	20 ²⁾	26 ²⁾	34	40

¹⁾ Other nominal sizes available on request

²⁾ +50 % for PN 25/40

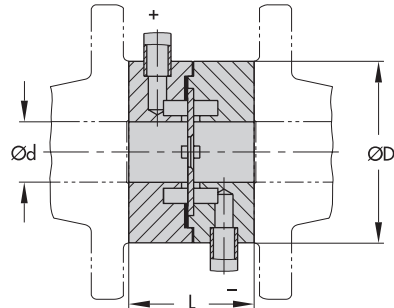


Fig. 5 · Type 90 Orifice Flange

Table 4 · Type 91 Orifice Tube · Dimensions in mm

Nominal size	DN	15	20	25	32	40	50
Length	L	550	700	900	1100	1300	1500
Installation length	L1	381	501	651	801	1001	1201
Mounting ring	Ø D	89	92	99	119	129	139
Weight, approx.	kg	4.0	4.5	5.5	8.5	12	16

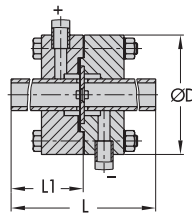
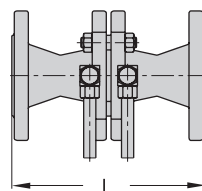


Fig. 6 · Type 91 Orifice Tube

Table 5 · Type 92 Orifice Flange · Dimensions in mm

Nominal size	DN	20	25	32	40	50
Length	L	150	160	180	200	230
Weight, approx.	kg	5	6	9	10	13.5



Length of differential pressure lines approx. 250 mm

Fig. 7 · Type 92 Orifice Flange

Ordering text

Type 90 Orifice Flange,

DN ..., PN ...,

Material ...,

Specifications to size the orifice bore according to
DIN EN ISO 5167-1/A1 (enter data in FB 9500 EN
Questionnaire),

Orifice bore \varnothing in mm ... (according to customer
specifications),

On option, special version

Type 91 Orifice Tube

DN ..., material ...,

Arrangement of differential pressure lines with gas/with
steam/with liquids ...,

Specifications to size the orifice bore according to
DIN EN ISO 5167-1/A1 (enter data in FB 9500 EN
Questionnaire),

Orifice bore \varnothing in mm ... (according to customer
specifications),

On option, special version

Type 92 Orifice Flange

DN ...,

Specifications to size the orifice bore according to
DIN EN ISO 5167-1/A1 (enter data in FB 9500 EN
Questionnaire),

On option, special version

Specifications subject to change without notice.

