

## T 9550 EN

### Differential Pressure and Flow Meters Type 90 Orifice Flange · Restriction Orifice Plate



#### Application

Orifice plate assemblies for flow measurement · Generation of a defined differential pressure  
Restriction orifice plate for mass flow restriction

In combination with a differential pressure meter, for example Media 6, the orifice flanges measure the flow rates of liquids, gases and vapors. The orifice bore is calculated according to DIN EN ISO 5167-1/A1.

The restriction orifice plate is used to limit the mass flow in process engineering plants.

#### Versions

##### Orifice flange (orifice plate assembly)

**Type 90 Orifice Flange** (Fig. 1) · Orifice flange with standard orifice plate and annular chamber DN 32 to 500 · PN 6 to 40  
Differential pressure connections: compression fittings for 12x1 mm or 12x1.5 mm pipes

##### Special version

Dimensions according to Class 150/300 · NPS 1¼ to 20 · Without orifice plate · Orifice plate only with concentric bore · Flange with groove form D according to DIN EN 1092-1 · Other materials · Other valve sizes

**Restriction orifice plate** (Fig. 2) · DN 15 to 500 · PN 10 to 40

##### Special versions

Dimensions according to Class 150/300 · NPS ½ to 20

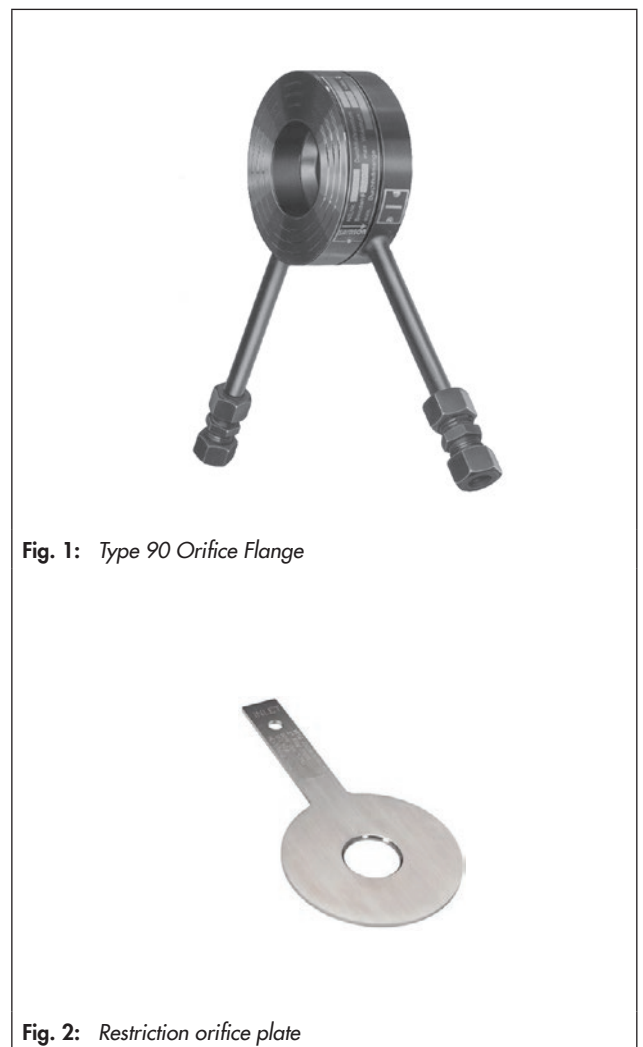


Fig. 1: Type 90 Orifice Flange

Fig. 2: Restriction orifice plate

### Sizing the orifice plate assemblies

To record all the relevant operating data, SAMSON provides the questionnaire ► T 9500-9. Enter the specifications required to calculate the differential pressure.

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

### Installation

The following general points apply:

- Install the orifice plate assembly in horizontal pipelines.
- The high pressure must be tapped upstream of the orifice plate and the low pressure downstream of it. The sharp edge of the standard orifice plate must face the oncoming flow.
- The direction of flow is indicated by an arrow. The connections are marked with '+' and '-'.
- Fig. 3 shows the location of the differential pressure lines.
- The **restriction orifice plate** can be installed upstream or downstream of the control equipment (e.g. control valve). The sharp edge of the orifice plate must face the oncoming flow.

The following special points apply:

- Install the **Type 90 Orifice Flange** between DIN mating flanges (included in the scope of delivery if requested). The undisturbed pipe length must be at least 20 x DN at the inlet and 5 x DN at the outlet.

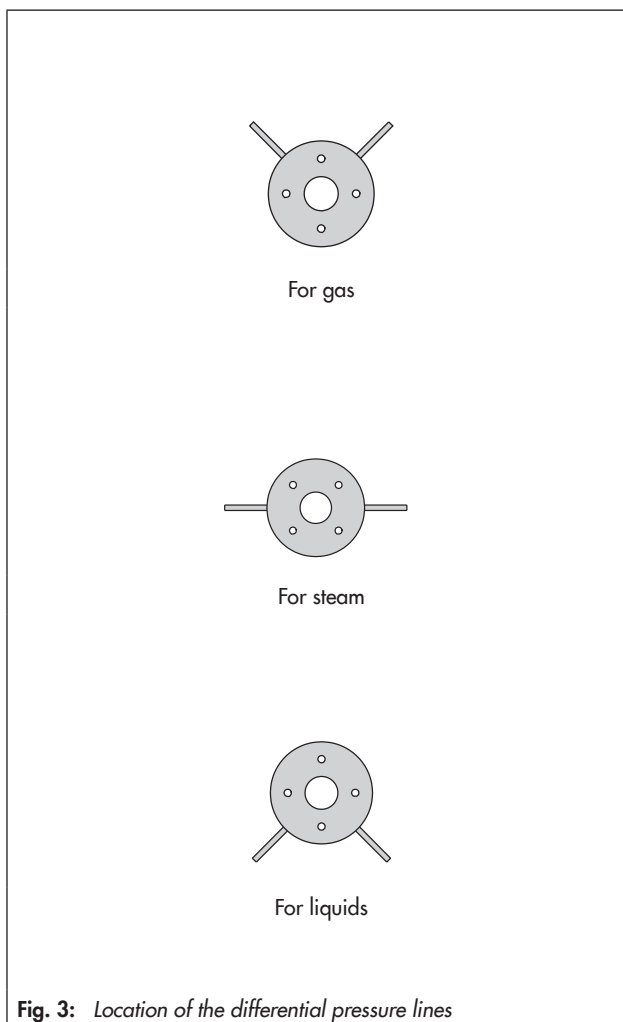


Fig. 3: Location of the differential pressure lines

Table 1: Technical data

Type	Type 90 Orifice Flange <sup>1)</sup>	Restriction orifice plate <sup>1)</sup>
Pressure rating	PN 6, 10, 16, 25 and 40 · Class 150 and 300	PN 6, 10, 16, 25 and 40 · Class 150 and 300
Valve size	DN 32 to 500 · NPS 1¼ to 20	DN 15 to 500 · NPS ½ to 20

<sup>1)</sup> Other valve sizes/nominal pressures on request

Table 2: Max. permissible temperatures and materials · Material number according to DIN EN and ASME

Type	Type 90 Orifice Flange		Restriction orifice plate
Annular chamber <sup>1)</sup>	1.0460/A105	1.4404/316L	-
Gasket	Fiber gasket	Max. 200 °C	
	Graphite on metal core	Max. 400 °C	Max. 450 °C
Differential pressure connections	Steel or 1.4404/316L		-
Standard orifice plate	1.4404/316L		1.4404/316L

<sup>1)</sup> Other materials on request

## Dimensions and weights

**Table 3:** Type 90 Orifice Flange · Dimensions in mm

### DIN

Valve size <sup>1)</sup>	DN	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500
Overall length	L	65														
Mounting ring ØD	PN 6	76	86	96	116	132	152	182	207	262	317	373	423	473	528	577
	PN 10	82	92	107	127	142	162	192	218	273	328	378	438	489	539	594
	PN 16	82	92	107	127	142	162	193	218	273	329	384	444	495	555	617
	PN 25	82	92	107	127	142	168	194	224	290	340	400	457	514	564	624
	PN 40	82	92	107	127	142	168	194	224	290	352	417	474	546	571	628
Mounting ring Ød		35	41	53	69	83	105	129	156	204	256	305	348	396	428	495
Weight <sup>2)</sup> , approx. kg		2.3	2.7	3.6	4.5	5.4	7	9	11	17	24	33	42	57	51	60

<sup>1)</sup> Other valve sizes on request

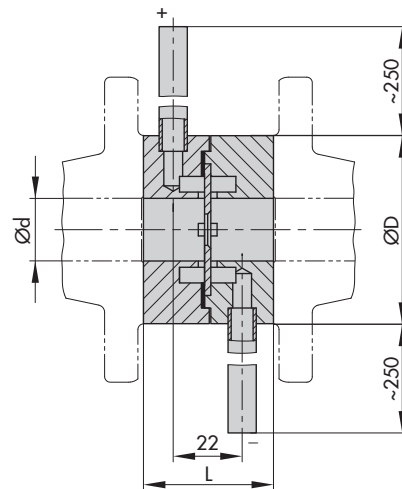
<sup>2)</sup> Based on PN 40

### ANSI

Valve size <sup>1)</sup>	NPS	1¼	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20
Overall length	L	65														
Mounting ring ØD	Class 150	73	83	102	121	133	171	194	219	276	337	406	448	511	546	603
	Class 300	80	92	108	127	146	178	213	248	305	359	419	483	536	594	651
Mounting ring Ød		34	40	51	60	75	98	123	148	195	245	293	333	381	428	477
Weight <sup>2)</sup> , approx. kg		2.3	2.9	3.8	5	6.4	9	12	16	22	28	36	49	57	68	78

<sup>1)</sup> Other valve sizes on request

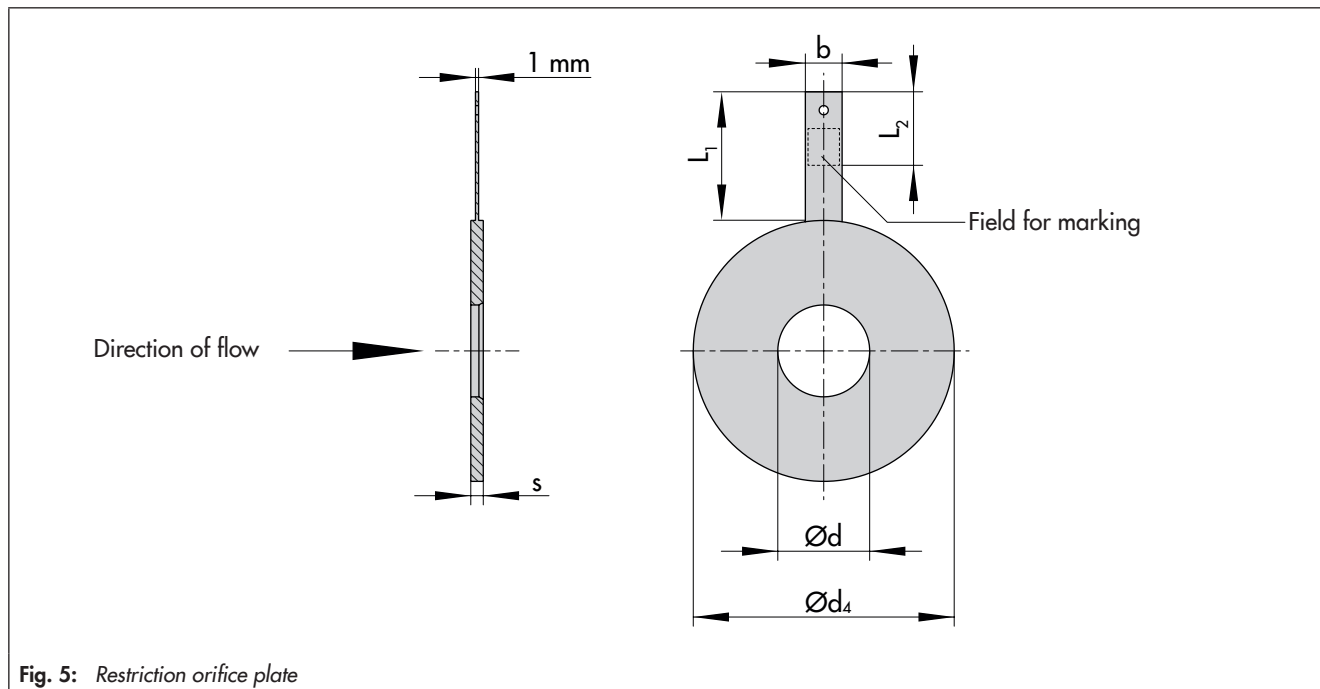
<sup>2)</sup> Based on Class 300



**Fig. 4:** Type 90 Orifice Flange

**Table 4:** Restriction orifice plate · Dimensions in mm

Valve size		Orifice plate no.	b	Ød	Ød <sub>4</sub>				L <sub>1</sub>	L <sub>2</sub>	s	Weight, approx.
DN	NPS				PN 10	PN 16	PN 25	PN 40				
15	½	1099-4201	30	Sizing based on the operating parameters!	51				130	80	3	1 kg
20	¾	1099-4202	40		61				130	80	3	1 kg
25	1	1099-4203	40		71				130	80	3	1 kg
32	1¼	1099-4204	40		82				130	80	3	1 kg
40	1½	1099-4205	40		92				130	80	3	1 kg
50	2	1099-4206	40		107				140	80	3	1 kg
65	2¼	1099-4207	40		127				140	80	3	1 kg
80	3	1099-4208	40		127		142		140	80	4	1 kg
100	4	1099-4209	40		162		168		140	80	4	1 kg
125	5	1099-4210	40		192		194		140	80	4	2 kg
150	6	1099-4211	40		218		224		140	80	4	2 kg
200	8	1099-4212	40		273		284		140	80	4	2 kg
250	10	1099-4213	40		319		340	352	140	80	4	2 kg
300	12	1099-4214	40		378	384	400	417	140	80	4	3 kg
350	14	1099-4215	40		438	444	457	474	140	80	4	3 kg
400	16	1099-4216	40		489	495	514	546	140	80	4	3 kg
500	20	1099-4217	50		594	617	624	628	180	100	6	5 kg



**Fig. 5:** Restriction orifice plate

**Ordering text for Type 90 Orifice Flange**

DN ..., PN ...  
 Material ...  
 Specifications to size the orifice bore according to  
 DIN EN ISO 5167-1/A1 (enter data in ► T 9500-9)  
 Orifice bore Ø in mm ... (according to your specifications)  
 Special version

**Ordering text for restriction orifice plate**

DN ..., PN ...  
 Material ...  
 Specifications to size the orifice bore according to  
 DIN EN ISO 5167-1/A1 (enter data in ► T 9500-9)  
 Orifice bore Ø in mm ... (according to your specifications)  
 Special version