

BLS 100 Orifice Plate DIN 19206

Application

Flow rate measurement of aggressive and non-aggressive media –particularly for large pipelines.

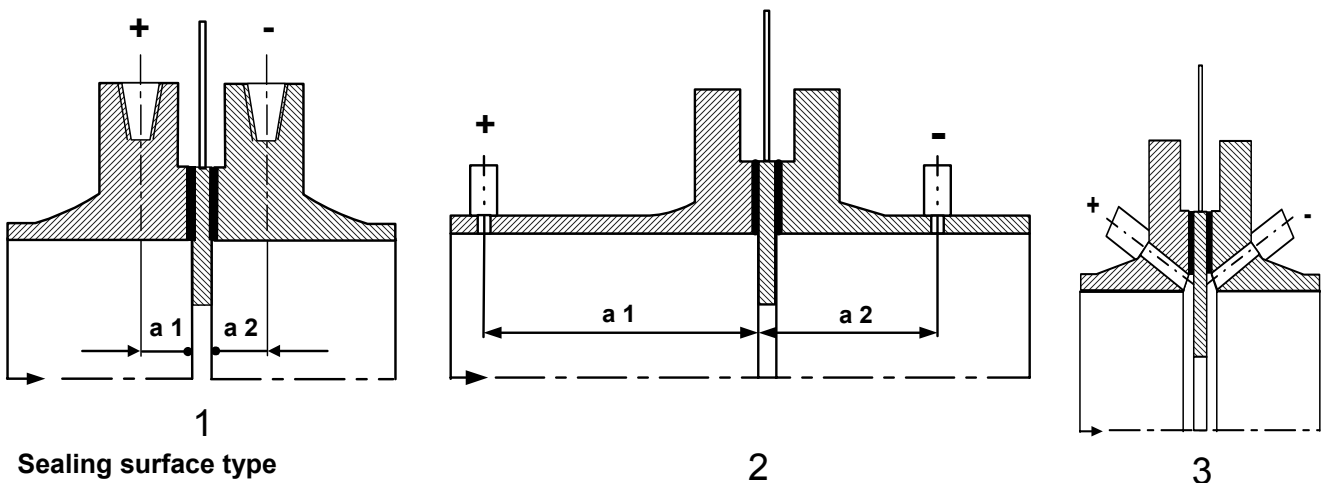
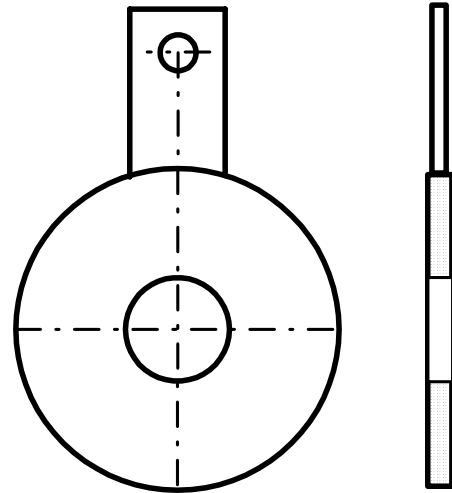
Construction

Orifice plate with welded-on handle/spade for direct installation between flanges with smooth sealing faces. Available as a sharp edged, rounded or quarter circle nozzle according to appropriate conditions of use.

Differential-Pressure Measurement

Normally taken through the flange blade or in the pipeline at distances a_1 and a_2 from the orifice.

There is a differentiation between pressure taps as flange taps according to DIN 19214 (figure 1) and D-D/2- pressure tapping within the pipe (figure 2) whereas a_1 is equivalent to the pipe diameter D and a_2 is identical with $D/2$. In special cases the pressure tapping may occur norm-like as corner tapping in the flange (figure 3).



Sealing surface type

The installation takes place between flange and orifice flange.

The types of sealing are smooth (DIN 19206 part 1), nose- and tongue (DIN 19206 part 2) and lens (DIN 19206 part 3). According to API- and ANSI-regulations as smooth make and as ring-joint-gasket (RTJ).

Materials

The table to the right shows the most usual materials for the orifices. The given temperatures are guiding data. When selecting the material special consideration has to be taken for aggressive materials. Other special materials are available.

Material Certificates

Material certificates i.e. according to EN 10204 can be supplied for the used materials.

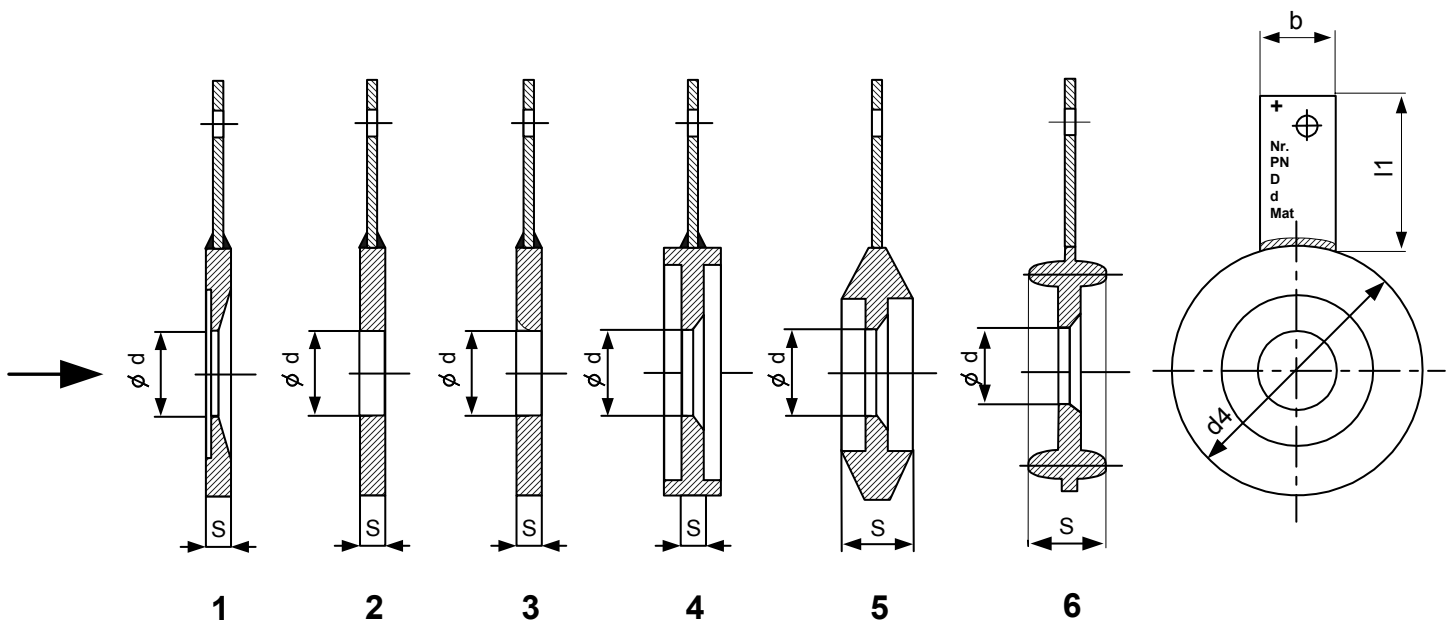
Category	Abbreviation	W.No.	Application °C
Unalloyed (plain) steel	S 235 JR (St37-2)	1.0037	+20...+300
	P 265 GH (HII)	1.0425	+20...+400
Corrosion-proof and acid resisting steels	X6CrNiTi 1810	1.4541	-190...+400
	X6CrNiMoTi 17 12 2	1.4571	-60...+400
Heat resistant steels	X10 CrAl 7	1.4713	up to +800
High corrosion-proof alloys	Hastelloy B	2.4600	-200...+500
	Hastelloy C	2.4602	-200...+500
	Titanium	3.7035	up to +500

Accessories

Flanges, seals and pressure taps are not included in the standard scope of delivery for the orifice plate but may be ordered separately. For shut-off valves, condensate pots and manifolds please refer to detailed data sheets.

Technical Details:

- Nominal Pressure:** PN 1 up to PN 100 for sealing-type: smooth
 PN 10 up to PN 100 for sealing-type: nose and tongue
 PN 64 up to PN 400 for sealing-type: lense
- Nominal Diameter:** DN 50 up to DN 2000 for sealing-type: smooth
 DN 10 up to DN 400 for sealing-type: nose and tongue, lense
- Outer Diameter d4:** The outer diameter of smooth orifice plates is a result -according to DIN- of the bolt circle diameter of the pipe flange minus whole bolt circle. For other designs and regulations see appropriate respectives.
- Bore Diameter d:** The calculation of the bore diameter will be done by us from the supplied data considering the relevant standards and regulations and is part of the scope of deliveries
- Pressure Loss:** The remaining pressure loss depends on nozzle opening ratio $d:D$ approx. 30-80% of differential pressure and is part of the data-sheet. If smaller pressure losses are necessary you have to use venturi tubes
- Identification:** On inlet side of handle: +, Tag-No., PN, D, d and material
- Designs:** They depend on nominal size, media and the required sealing-type. Normal configuration is the orifice plate (figure 1). A special configuration is the reducer orifice plate (figure 2). It serves mainly in small pipes for pressure-reduction and for flow-limitation. The quarter circle nozzle (figure 3) is assigned for use with small Reynold's figures. Orifice with nose, lense-sealing and ring-joint-sealing (figures 4-6) show you the possible sealing-types. Quarter circle nozzles according to VDI/VDE 2041 for special requirements are available for delivery.



- Dimensions:** The lengths for installation s and the dimensions of the handle depend on the nominal size and are part of the regulations of IDN 19206 part 1-3 and of the ANSI-regulations.

Construction strengths "s":

The installation lengths "s" as well as the dimensions grab handle follows nominal width specifications and are defined in DIN 19206 section 1-3 as well as in the ANSI standards. The following table is taken from DIN 19206 section 1 and show our standard design dimensions respectively.

DIN		ANSI	
DN	Constructi on strengths "s": mm	DN	Constructi on strengths "s": mm
50	3	2"	3
65	3	2,5"	3
80	4	3"	3
100	4	4"	3
125	4	5"	3
150	4	6"	3
175	4	7"	6
200	4	8"	6
250	4	10"	6
300	4	12"	6
350	4	14"	6
400	4	16"	6
450	4	18"	6
500	6	20"	6
550	x	22"	10
600	6	24"	10
650	x	26"	10
700	8	28"	10
750	8	30"	10
800	8	32"	10
850	x	34"	10
900	8	36"	12
950	x	38"	12
10000	10	40"	12

x = not standardized in the DIN standard
(DN 50 conformed to general valid practices)

Construction strengths are laid out for a pressure
difference
of a max. of 1000 mbar

DP-Flow Element with Flange Pressure Tapping According to DIN 19214

Application:

For flow measurements for gases, steams and fluids in pipes for nominal sizes from 50 up to 500 (sealing-type: smooth) and for nominal sizes from 10 up to 400 (sealing-type: nose and tongue, lense)

Construction:

Orifice plate according to DIN 19206 completely mounted including pipe flanges, screws and sealings and DP-flow element extraction outlet (as indicated on form A6).

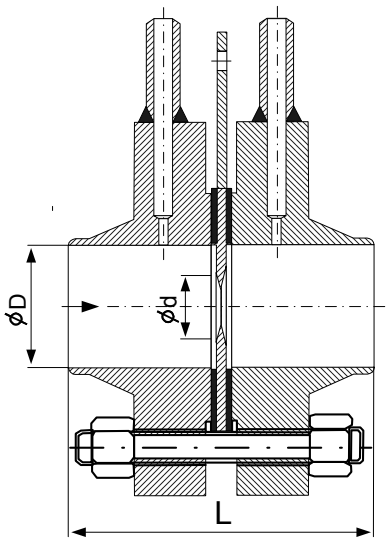
For technical details of these orifices please refer to those from sheet 91.2.

Materials:

The flanges and screws are the same as those from the pipe.

For the materials of the orifices please refer to the table on sheet 91.1

Dimensional Sketches



Orifice flange

with orifice plate

Sealing-type: smooth

Pressure-tap welded

Meter runs

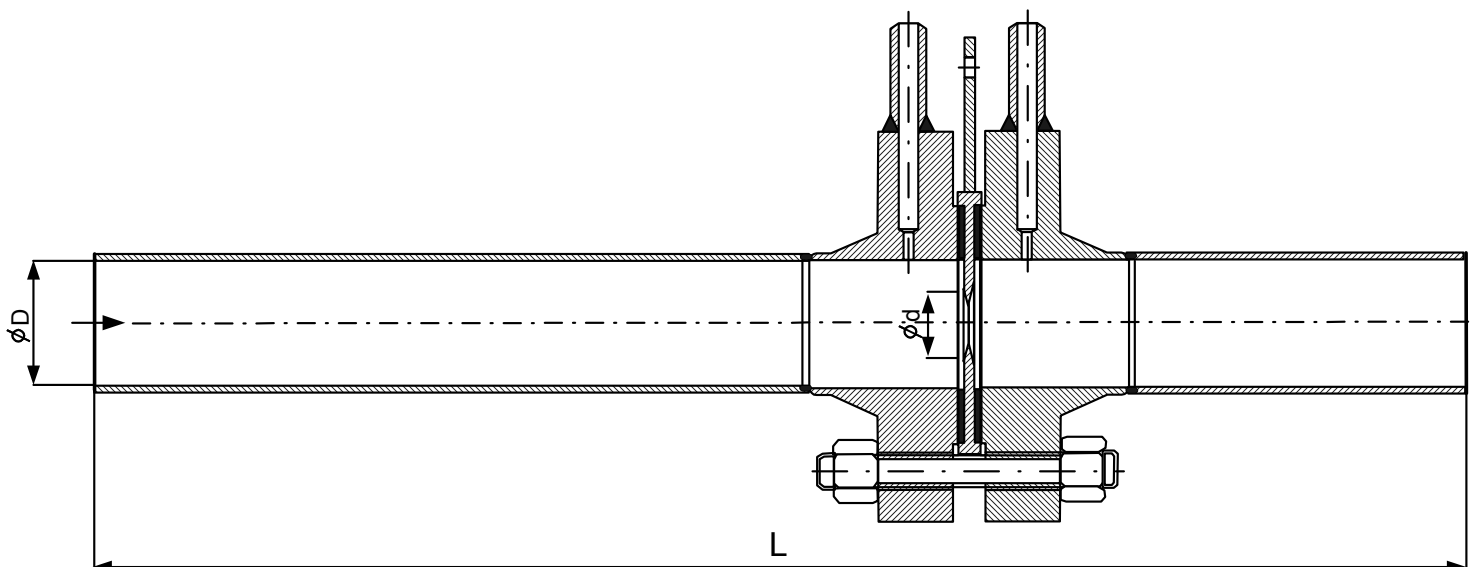
for welding in design E with orifice

Sealing-type: tongue

Pressure-tap welded

Optional with joint flanges design F

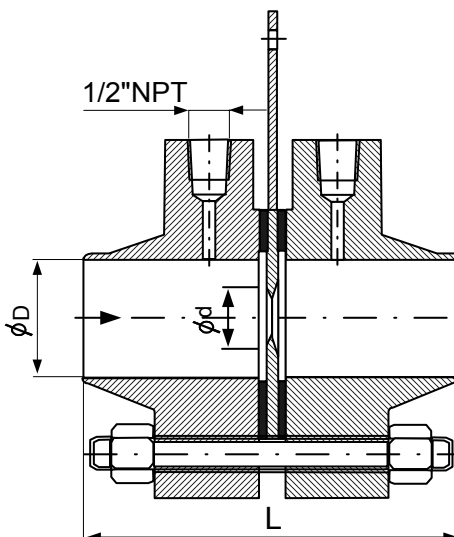
The sealing faces of joint flanges do not have to match with profile of measuring flange



DP-Flow Element with Flange Pressure Tapping According to ANSI B 16.36

- Application:** For flow measurements for gases, steams and fluids in pipes according to ANSI-regulations.
For nominal sizes from 1" up to 24" and pressure stages from 300 lbs up to 2500 lbs.
Special sizes on inquiry.
- Construction:** Orifice plates completely mounted with orifice flanges, screws, gaskets, jackscrews and locking plugs.
- Materials:** According to ASTM-standards.

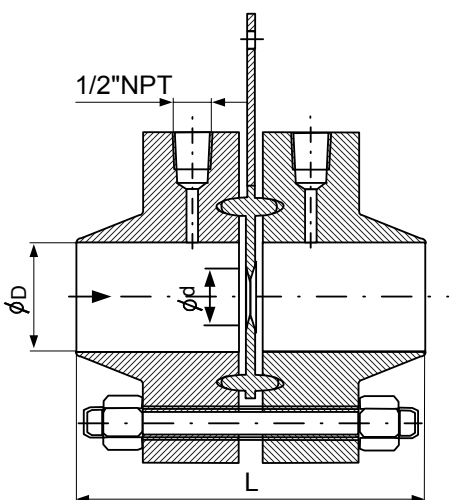
Dimensional Sketches



Orifice flange

with orifice plate, sealing-type smooth (RF)

In every flange there are two outlet-bores (placed offset of 180°) and a jackscrew aligned correspondingly. Special designs, i.e. other angle positions of the pressure taps and screwed-in pressure taps are possible.



Orifice flange

with orifice plate, sealing-type ring-joint-sealing (RTJ) As a normal design the sealing is oval, for special requirements it may also be carried out octagonal. In all cases the pipe diameter D has to be given from customer.

BLS 100 R Restriction Orifice

Application

Restrictors are used where a defined pressure loss in processing is required or in blow out piping.

In special cases an application is also possible in flow rate limitation.

Restrictors are useable for all media

Construction

Restrictors can be used as simple isolating plates

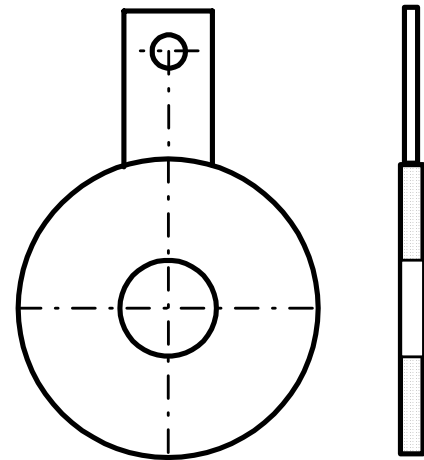
with an attached gripper plate for inserting

between the conduit flanges with different surface thicknesses or as an weld variation.

The bore is finished as a basic cylindrical.

This also can be eccentrically arranged for special applications

Multi-hole apertures and multi-level restrictors are then used when acoustic pressure limits are required.



Calculation

The calculation of the restrictor aperture is based on the ISO 5167. If requested the sound pressure (dBA) can be calculated.

Seal types

The installation occurs between flanges corresponding to DIN or ANSI with different forms of surface thickness (flat / groove / spring / projection / back crack / ring joint (RTJ)).

With weld variations the connection is adapted to the existing piping.

Construction strengths

The construction strengths of the restrictor apertures are calculated from the nominal width, the material, the pressure loss and the working temperature. The calculation of the construction strength is according to the valid AD leaflets and tables.

An example curve is shown.

Materials:

The materials used can be taken from the table on Page 1

Material testing

Certificates regarding material e.g., according to EN 10204 3.1 or 3.2 are delivered upon request

Recommended Plate Thickness

