

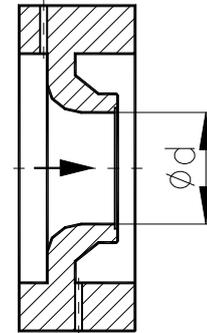
Nozzle DU 600 (ISA 1932)

Application

ISA 1932 nozzles are used as flow elements for flow measurement of aggressive and non-aggressive gases, steam and liquids.

Design

ISA 1932 nozzles consist of a rounded inlet section and a cylindrical throat. The pressure tapplings are either designed as single bore taps in the carrier ring or as a ring chamber.



Advantages

Compared to orifice plates, nozzles are recommended for applications which require low pressure losses. At similar flow values, nozzles generate less differential pressure which results in lower permanent pressure loss. The rounded inlet profile is less susceptible to erosion in comparison to the sharp edge of an orifice plate. Hence, nozzles achieve higher service life times.

Measuring Uncertainty

Ranges from 0,8% - 1,2% of the discharge coefficient C, depending on the application.

Pressure Loss

The pressure loss depends on the diameter ratio β (d/D) and ranges from 30 - 80% of the differential pressure.

Nominal Diameter (ISO 5167)

DN 50 to DN 500 / 2" to 20" (if requested other sizes are possible)

Pressure Rating

PN 6 to PN 400 / 150# to 2500# (ASME), ring chamber design up to PN 100 / 600#

Sealing Surface of the Nozzle

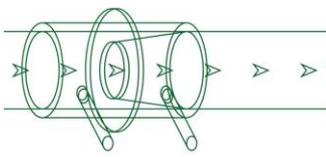
according to EN 1092-1:

- flat (form B1 and B2)
- groove (form D)
- female (form E)

according to ASME B16.5:

- flat (RF and SF)
- groove (small/large)
- female (small/large)
- RTJ female

or according to other flange standards specified by the customer.



Installation Length „L“

Standard: 65 mm; the carrier ring length can be increased in order for the nozzle not to protrude into the carrier ring.

Bore Diameter "d"

The calculation of the bore diameter is based on the supplied process data. All relevant standards and regulations will be considered. The calculation is part of the scope of supply.

Pressure Taps

Pressure taps will be designed according to customer requirements. Typical tap designs are:

- plain ends for fittings
- butt weld ends
- threaded ends
- flanged ends
- compact taps according to IEC 61518

The typical tapping length is approx. 100 mm.

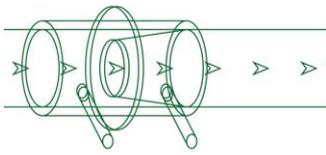
Marking

Tag no. of flow element
 Pressure rating "PN"
 Pipe inner diameter "D"
 Bore diameter "d"
 Material, direction of flow and tagging
 of pressure tapplings with "+" and "-"

Materials

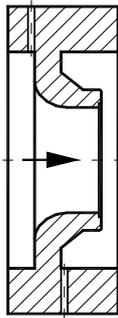
The following table shows a selection of typical materials utilized for nozzles. The material is chosen based on process medium, pressure and temperature. The pressure tap material is selected to be equivalent to the carrier ring material.

Nozzle material	Description	DIN material no.	ASTM / UNS
non-alloy steels	P250GH (C22.8)	1.0460	~A105
	A105	~1.0432	A105
heat resistant/alloyed steels	16Mo3	1.5415	A182 Gr. F1
	13CrMo44	1.7335	A182 Gr. F11
	10CrMo910	1.7380	A182 Gr. F22
stainless steels	X2CrNiMo17-12-2	1.4404	A182 Gr. 316L
	X6CrNiMoTi 17 12 2	1.4571	A182 Gr. 316Ti
high corrosion-resistant alloys	Hastelloy C276	2.4819	N 10276
	Monel 400	2.4360	N 04400

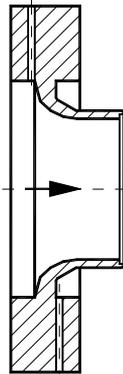


Example Drawings

for mounting between flanges,
single bore tappings

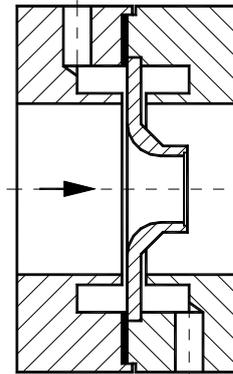


nozzle with small
bore diameter ratio



nozzle with large
bore diameter ratio

for mounting between flanges,
ring chamber tappings



Installation

For mounting between flanges according to EN 1092-1 / ASME B 16.5 or other standard such as DIN, JIS or BS. The pipe may be positioned horizontally, vertically or sloped.

Quality Control

Manufacture and Test work is done according to the relevant codes and standards such as AD 2000, EN 13480, ASME Codes (without stamp) or customer specifications.

Inspection certificates according to EN 10204 3.1 and 3.2 are furnished if ordered. Special inspections are available upon request.

Accessories

Pipe flanges, bolts/nuts, gaskets, instrument valves, condensate pots, manifolds, mounting accessories can be offered upon request.