

VENTURI · NOZZLE

Flow Nozzle

Flow Nozzle (ISO 5167 Long Radius)

MODEL : DHON-BW / DHON-HR / DHON-FL



DHON-BW

DHON-HR

DHON-FL

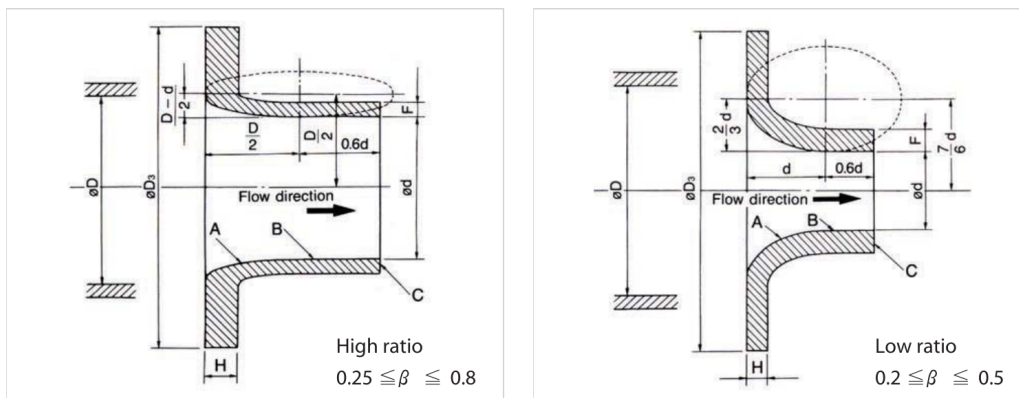
Although a flow nozzle costs more than an orifice because of its construction, it is suitable for measuring the flow of fluids at high temperature and high pressure.

Under the same measuring conditions, a flow nozzle has higher mechanical strength, can pass more than 60% more flow than an orifice of the same bore, and measures fluids containing solid particles with less disturbance than an orifice. It is therefore also suitable for high-velocity fluids.

Supplied not only as a nozzle alone but also as a meter run with short pipe sections welded on both the upstream and downstream sides.

2B ~ 24B (50A ~ 600A) β 0.2 ~ 0.8 Accuracy $\pm 2.0\%$ 1D - 1/2D taps

Measurement principle



Long radius nozzle

Long radius nozzle shape — High ratio ($0.25 \leq \beta \leq 0.8$) · Low ratio ($0.2 \leq \beta \leq 0.5$)

The long radius nozzle consists of an elliptical (quarter-ellipse) convergent section and a cylindrical throat of length $0.6d$, with differential pressure sensed at taps located $1D$ upstream and $1/2D$ downstream ($1D$ - $1/2D$ taps).

Depending on β ($= d/D$), nozzles are classified as high ratio ($0.25 \leq \beta \leq 0.8$) or low ratio ($0.2 \leq \beta \leq 0.5$), and their shapes differ.

Types · model configuration



FIG 1 · DHON-BW

Cutaway rendering for illustration

Weld-in type — nozzle welded directly into the pipe, cutaway image

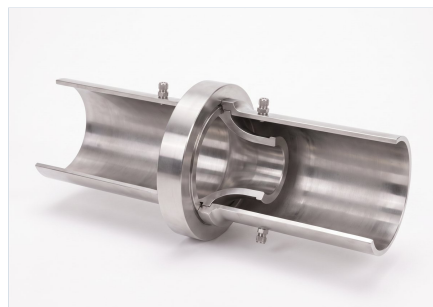


FIG 2 · DHON-HR

Cutaway rendering for illustration

Holding-ring type — nozzle held by a ring inside the meter run, cutaway image



FIG 3 · DHON-FL

Cutaway rendering for illustration

Flange type — nozzle clamped between flanges, cutaway image

The three images are cutaway renderings with the pipe cut lengthwise to show the installation method; the actual products are closed pipe / meter-run sections.

Item	DHON-BW Weld-in type (Weld in)	DHON-HR Holding ring type (Holding Ring)	DHON-FL Flanged type
Features	Butt welding mounting type (Weld in type, FIG 1)	Holding ring mounting type (Holding Ring type, FIG 2)	Flange mounting type (Flange type, FIG 3)
Turndown	6:1	6:1	6:1
Materials	Carbon Steel, STS304, STS316, Inconel, Monel, Hastelloy	Carbon Steel, STS304, STS316, Inconel, Monel, Hastelloy	Carbon Steel, STS304, STS316, Inconel, Monel, Hastelloy
Connection	Butt Weld	Butt Weld	Flange 150#, 300#, 600#, 900#, 1500#, 2500#
Applicable piping	2B ~ 24B (50A ~ 600A) Pipe	2B ~ 24B (50A ~ 600A) Pipe	2B ~ 24B (50A ~ 600A) Pipe
Standards	ISO5167-3	ISO5167-3	ISO5167-3
Accuracy	±2.0%	±2.0%	±2.0%

Technical Specifications

Item	Value
Accuracy	±2.0%
Turndown	6:1
Mounting type	ISO 5167 Long Radius — Weld in type (FIG 1) · Holding Ring type (FIG 2) · Flange type (FIG 3)
Flow calculation standard	ISO5167, JIS Z 8762, ASME, KS A 0612
Pressure taps	1D - 1/2D taps
Applicable pipe sizes	2 to 24B (50A to 600A)
β range	0.2 ≤ β ≤ 0.8 — Low beta long radius nozzle 0.2 ≤ β ≤ 0.5 · High beta long radius nozzle 0.25 ≤ β ≤ 0.8
Nozzle material	Carbon Steel · 304SS, 304L SS, 316SS, 316L SS · Ni, Cr, Mo Alloy Steel (A182 F11 to 91)
Meter run material	A53 Gr B · A106 Gr B · A335 P11 · A335 P22 · A335 P51 · A335 P91
Flange rating	150#, 300#, 600#, 900#, 1500#, 2500# (DHON-FL)
DP tap connection	NPT 1/2 · NPT 3/4 · SW 1/2 · SW 3/4
Holding ring type meter run	Upstream 4D (MIN.) · downstream 2D (MIN.) · reducer angle 30° Max · splice weld required to maintain the minimum downstream length per A.S.M.E. Fluid Meters
Weld-in type note	For sizes under 3", the downstream connection weld may overlap the nozzle/pipe weld

Standards · ISO 5167-3 · ISO 5167 · JIS Z 8762 · ASME · KS A 0612

Installation requirements

- The taps are located 1D upstream and 1/2D downstream of the upstream face of the nozzle (1D-1/2D taps).
 - The holding ring type (DHON-HR) is manufactured as a meter run including at least 4D upstream and 2D downstream of straight pipe, with a connecting reducer angle of 30° or less.
- For weld-in type (DHON-BW) sizes under 3", the downstream connection weld may overlap the nozzle/pipe weld.
 - Whether a meter run is included is specified by the ordering code Meter Run (N: nozzle only / Y: meter run included).

Ordering information (How to Order)

1	Model (DHON-)
BW	Weld in type
HR	Holding Ring type
FL	Flange type

2	Meter Run
N	Element Only (nozzle only)
Y	Meter run Include (meter run included)

3	Nominal Pipe Size
	Pipe size in inch or mm (nominal pipe size, inch or mm)

4	Nozzle Material
A1	A105
4S	A182 F304
4L	A182 F304L
6S	A182 F316
6L	A182 F316L
11	A182 F11
22	A182 F22
51	A182 F51
91	A182 F91
OP	Option

5	Meter Run Material
A5	A 53 Gr B
10	A 106 Gr B
P1	A 335 P11
P2	A 335 P22
P5	A 335 P51
P9	A 335 P91
00	Option

6	Diff' Taps
1	NPT 1/2
2	NPT 3/4
3	SW 1/2
4	SW 3/4

7	Flange Type
000	Flange Rating (specify flange rating)

8	Option
	Options (by separate agreement)