NV

Needle valves
1/4"… 2"

NV

Needle valves

Contents

Description

NV type valves are designed for fine-adjusting of gas flow and air flow in industrial combustion processes.

Features

Valves are made of aluminum, with wide range of threaded connections.

Suitable for use with air and non-aggressive gases according to EN 437. Special versions for critical media are available.

Valves are operated manually using an Allen key to set the precise fire rate of the burner.

All components are designed to withstand any mechanical, chemical, thermal condition occurring during typical service. Effective impregnation and surface treatments have been used to improve mechanical sturdiness, sealing and resistance to corrosion of the components.

WARNING

This control must be installed in compliance with the rules in force.
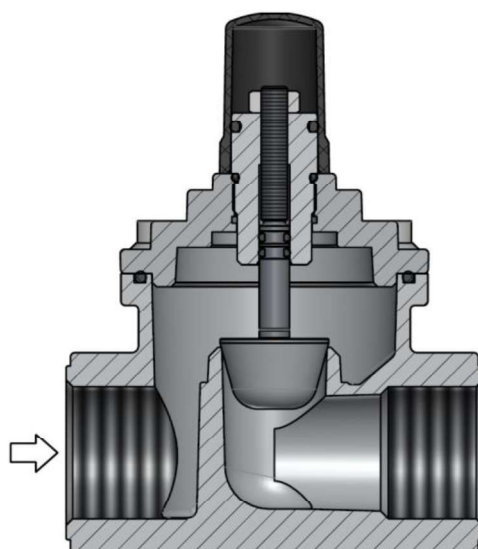
Functioning and application

Fig.1

The valve is provided with a taper plunger that can be adjusted sensitively with an Allen wrench, turning the screw counterclockwise increases flow, then a locking nut allows to hold the regulation. A plastic cap hides the adjustment to avoid tampering with the setting.
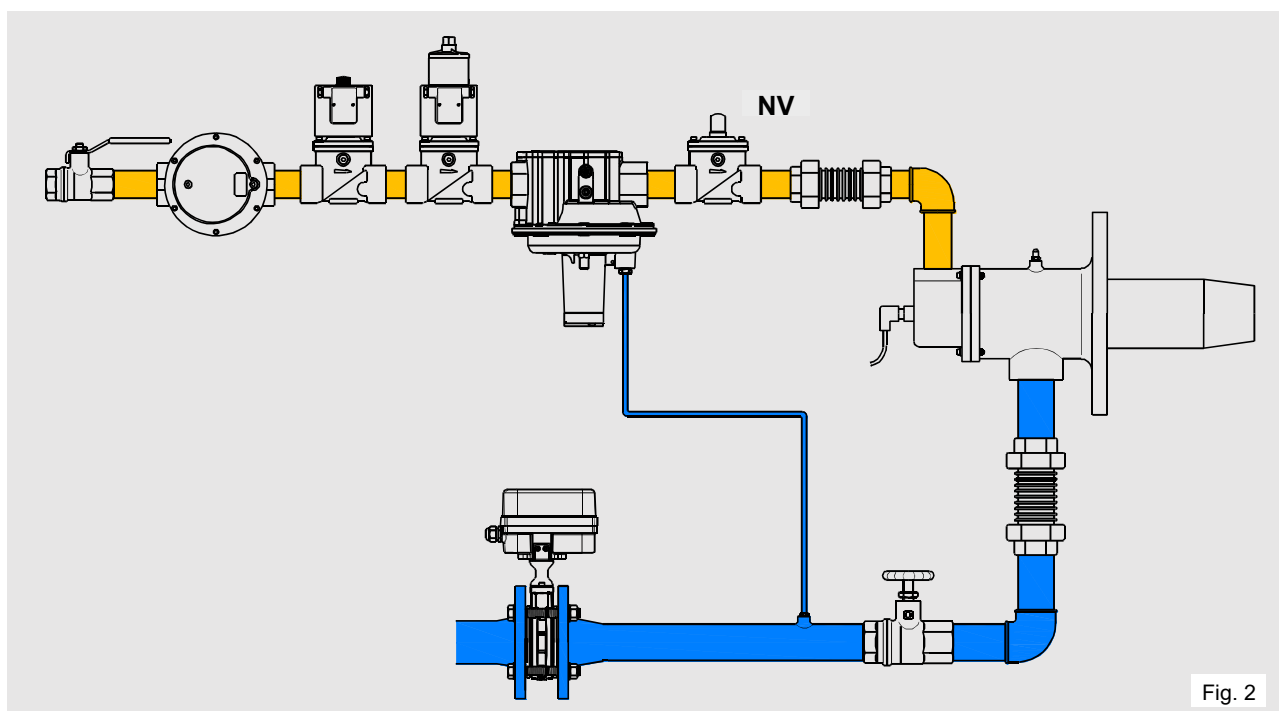

Fig. 2

Example: in case of combustion process being regulated by combustion air modulation, the required lambda value can be set using the fine-adjusting valve NV and an air adjusting cock installed as close as possible to the burner.

⚠ WARNING

NV type valves are not designed for shutting off gas. Use an approved ball valve, plug valve or cock to this purpose.

Technical specifications

Tab. 1

|	
Connections	Threaded from Rp1/4 to Rp2 according to EN 10226-1 or NPT ANSI-ASME B1.20 Flanged ISO 7005 PN16 from DN40 to DN50 ANSI-ASA-ASME B16.5 class 150 - 2"
Ambient temperature	-15°C / +60°C
Media type	Air and non-aggressive gases according EN 437 (special versions for Aggressive Gases and Hydrogen)
Media temperature	+60°C max. (special version for air up to +200°C)
Max. Operating pressure	500 mbar (50 kPa) 6 bar (600 kPa)
Flow rate	See diagram
Materials in contact with fluid	Aluminium alloy Stainless steel Nitrile rubber (NBR) Fluoroelastomer (FPM) Brass (only 1/4")
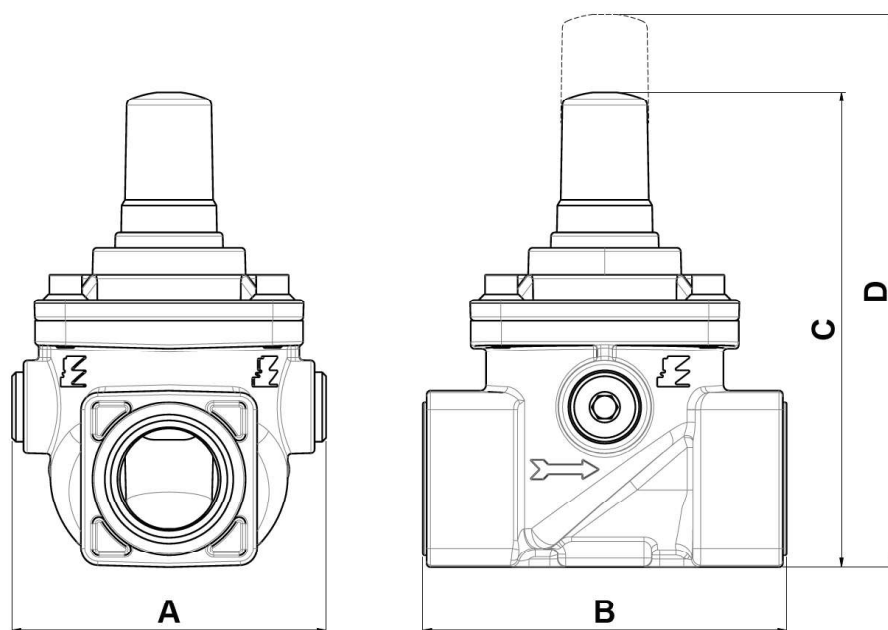
Fig.3

Tab. 2

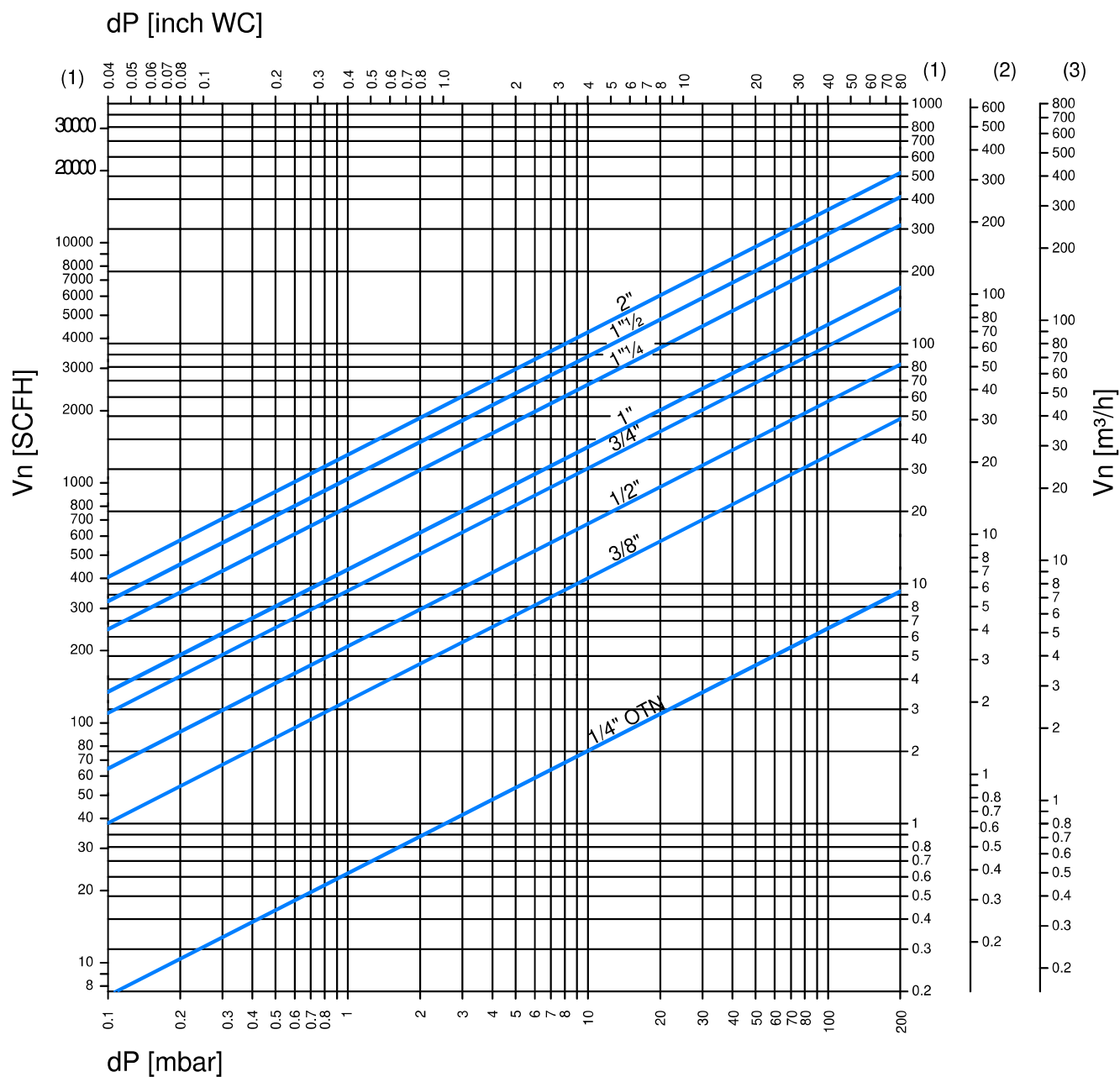| Connections	Overall dimensions [mm]				Weight [Kg]	Kvs [m^3/h]
	A	B	C	D		
Rp 1/4	25	46	60	90	0,10	0,55
Rp 3/8	66	76	106	136	0,35	3
Rp 1/2	66	76	106	136	0,35	5
Rp 3/4	82	95	124	160	0,57	9
Rp 1	82	95	124	160	0,57	11
Rp 1¼	115	152	159	200	1,50	20
Rp 1½	115	152	159	200	1,50	26
Rp 2	105	156	170	210	1,78	32
DN 40	165	196	207	247	3,18	32
DN 50	165	196	207	247	3,18	32

Flow chart

Fig.4

Formula of conversion from air to other gases

Tab. 3

$$V_{GAS} = k \cdot V_{AIR}$$

$$k = \sqrt{\frac{\rho_{AIR}}{\rho_{GAS}}}$$

Gas type	Density ρ [Kg/m³]
(1) Natural gas	0,80
(2) LPG	2,00
(3) Air	1,225

15°C, 1013 mbar, dry

When the flow read on the diagram is referred to operating pressure instead of standard conditions, the pressure drop Δp read on the diagram must be multiplied for the factor:
(1+ relative pressure in bar)

Example:

In the 3/4" needle valve with NG flow of 30 m^3/h at standard conditions, there is a pressure drop Δp = 10 mbar.
If we consider that 30 m^3/h is the flow at 200 mbar of inlet pressure, then the pressure drop to be consider is:

Δp = 10x(1+0,2) = 12 mbar

Normally, pressure drop and flow rate for the valves are read from the gas flow diagram.
However, the valves can also be chosen in accordance with the characteristic "Kvs value" which is shown in table 2.
The selection of the valve requires the calculation of the Kv under the operating conditions.

Considering only subcritical pressure drops:

$$\Delta p < \frac{p_1}{2}$$

Kv can be calculated with the formula:

$$Kv = \frac{Vn}{514} \sqrt{\frac{\rho(t+273)}{\Delta p \cdot p_2}}$$

where

Vn = flow rate at standard conditions [m^3/h]
Kv = flow factor [m^3/h]
ρ = density [Kg/m^3]
p_1 = absolute inlet pressure [bar]
p_2 = absolute outlet pressure [bar]
Δp = differential pressure p_1-p_2 [bar]
t   = media temperature [°C]

The valve with the next higher Kvs value should be selected.

Ordering Information

	NV	1	-6	N	.J

Valve type

Size

01OTN	1/4"
0	3/8"
1	1/2"
2	3/4"
3	1"
35	1"¼
4	1"½
6	2"

Max. Operating pressure

none	500 mbar
-6	6 bar

Variants

none	Rp threads
F	Flanged connections (only for 1"½ - 2")
N	NPT threads

Special versions

J	Biogas
HF	Hydrogen
R	Temperature up to 200°C
Z	Anodization of housing and external aluminum parts
Z1	Epoxy body coating and anodization of inner aluminum parts

Tab.4

Standards and approvals

NV valves are designed according to EN13611 when applicable.

Quality Management System certified according to UNI EN ISO 9001.

INDUSTRIAL VALVE SOLUTION
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