



NV

**Needle valves
3/8" ... 2"**

NV

Needle valves

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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

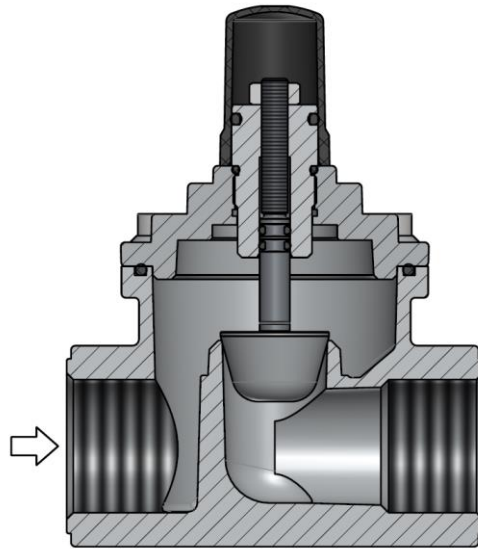


Fig.1

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.

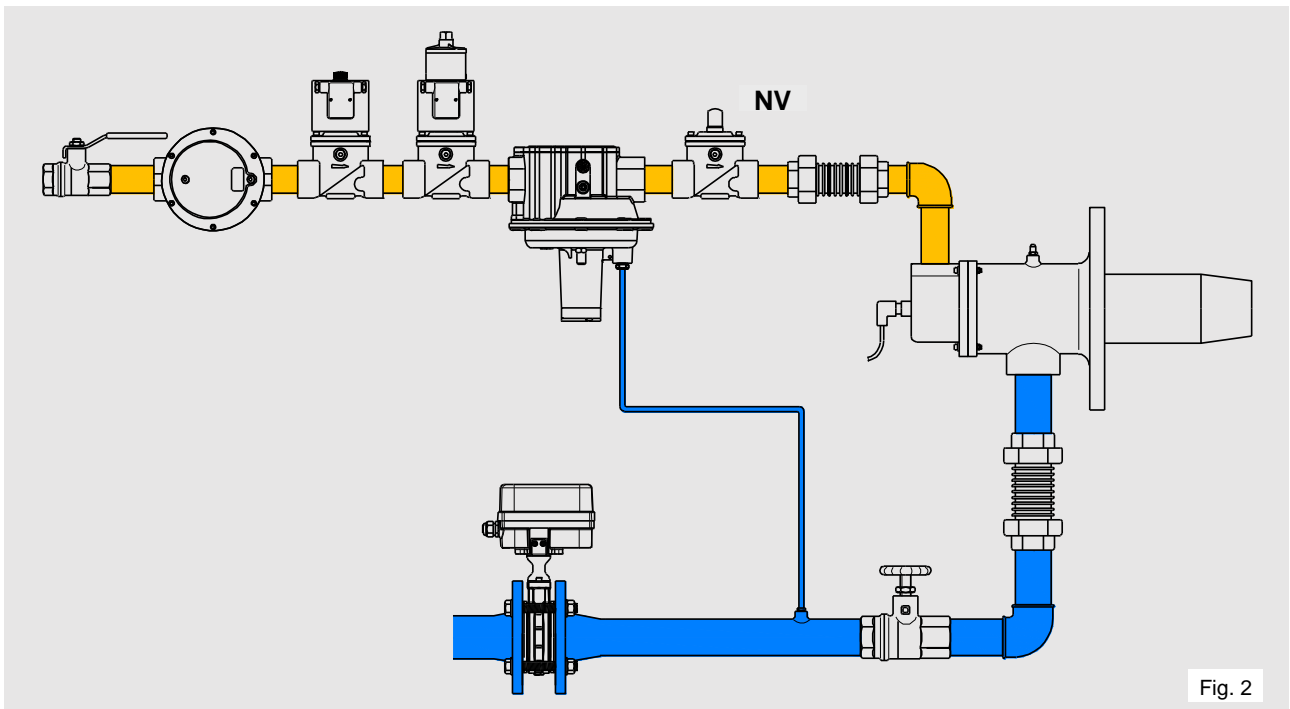


Fig. 2

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 Rp3/8 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 from 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)

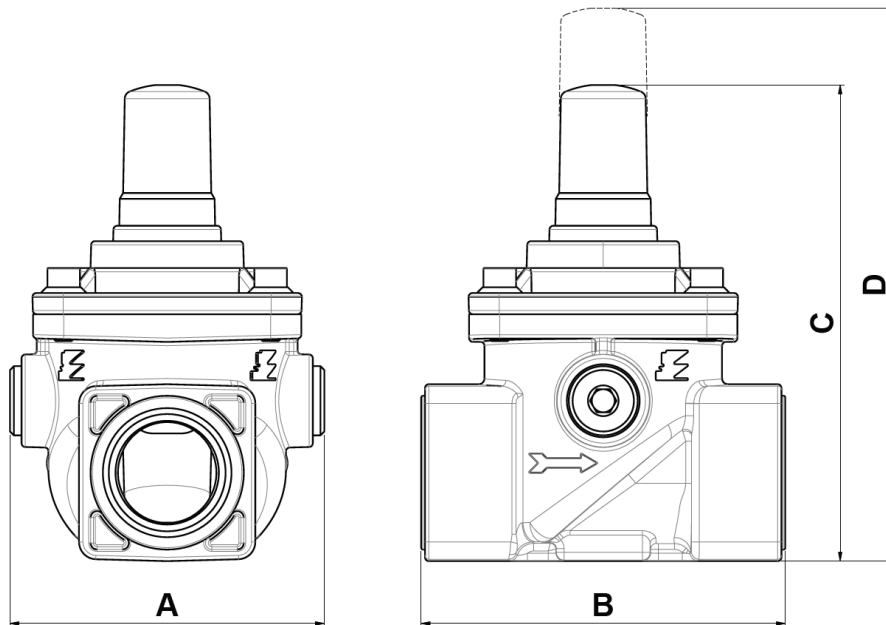


Fig.3

Tab. 2

Connections	Overall dimensions [mm]				Weight [Kg]	Kvs [m³/h]
	A	B	C	D		
Rp 3/8	66	76	106	136	0,35	2,9
Rp 1/2	66	76	106	136	0,35	4,9
Rp 3/4	82	95	124	160	0,57	9,5
Rp 1	82	95	124	160	0,57	12
Rp 1¼	115	152	159	200	1,50	22
Rp 1½	115	152	159	200	1,50	29
Rp 2	105	156	170	210	1,78	40
DN 40	165	196	207	247	3,18	40
DN 50	165	196	207	247	3,18	40

Flow chart

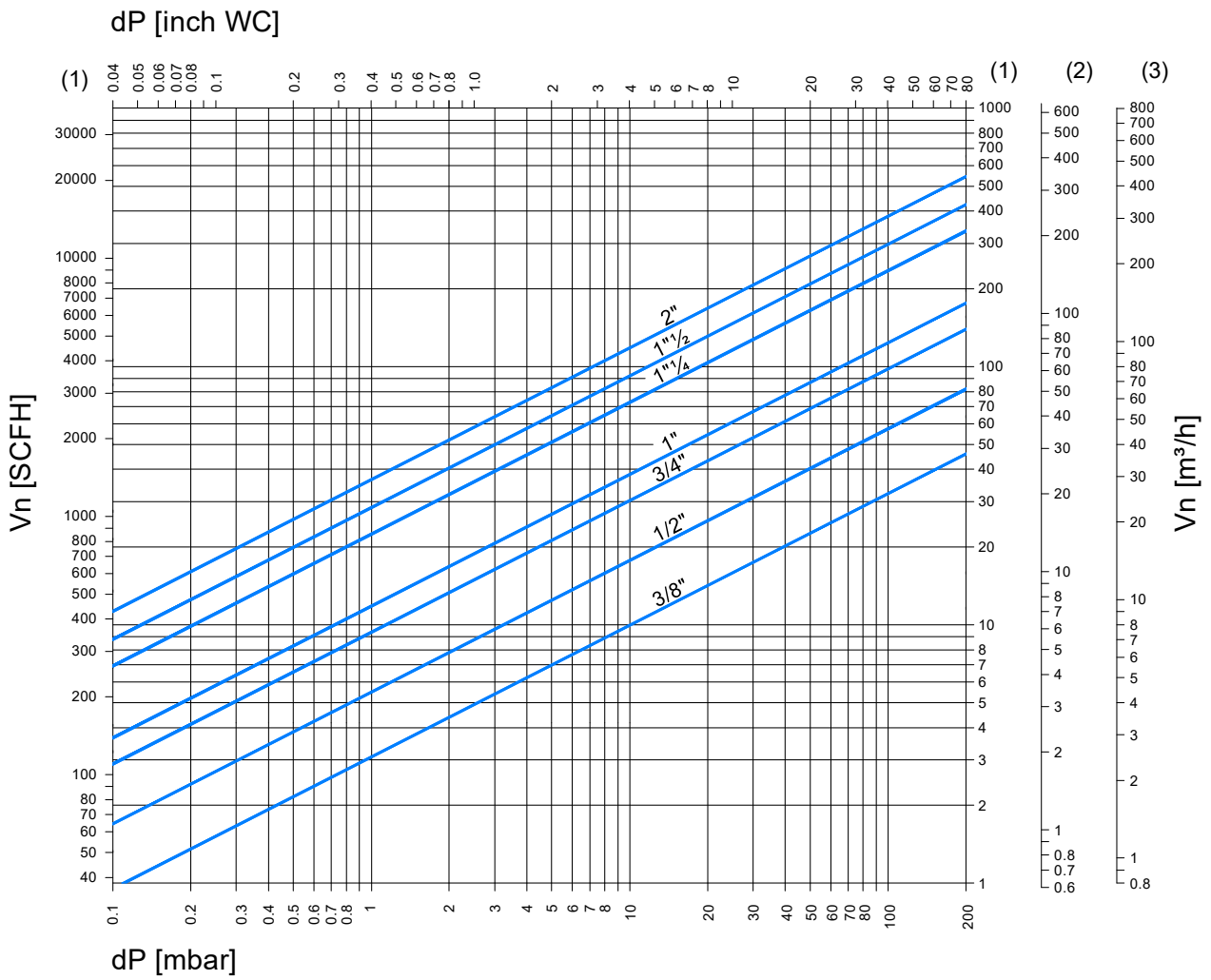


Fig.4

Formula of conversion from air to other gases

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

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

Tab. 3

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 m³/h at standard conditions, there is a pressure drop $\Delta p = 10$ mbar.

If we consider that 30 m³/h is the flow at 200 mbar of inlet pressure, then the pressure drop to be consider is:

$$\Delta p = 10 \times (1 + 0,2) = 12 \text{ mbar}$$

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 [m³/h]

Kv = flow factor [m³/h]

ρ = density [Kg/m³]

p₁ = absolute inlet pressure [bar]

p₂ = absolute outlet pressure [bar]

Δp = differential pressure p₁-p₂ [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					
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.



The information in this document contains general descriptions of technical options available and based on current specifications.

The company reserves the right to make changes in specifications and models as design improvements are introduced, without prior notice.

Visit Elektrogas website for updates and further details.

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