NV

Needle Valve

3/8...2” NPT

N Version for the North American Market

NV
Needle Valves

Contents

Description

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

Features

Valves are made of aluminum, with a wide range of thread connections.

Suitable for use with air and non-aggressive gases. Special version available for heated air and aggressive gases.

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

All the components are designed to withstand any mechanical, chemical, or thermal condition occuring 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 appliance must be installed in compliance with the rules in force

Functioning and Application

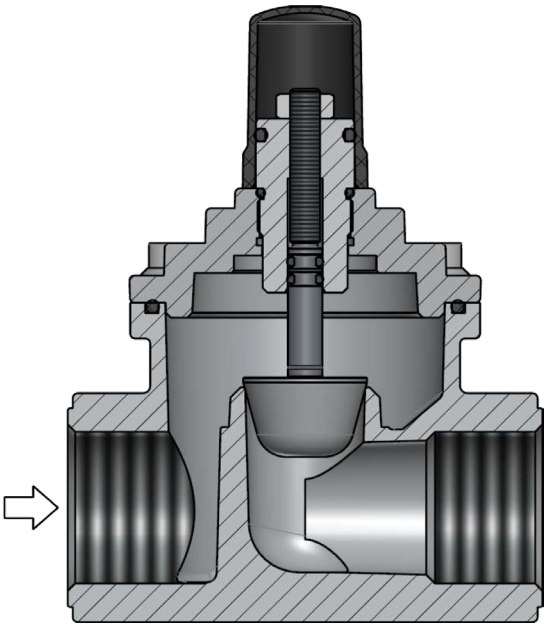

Fig. 1

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

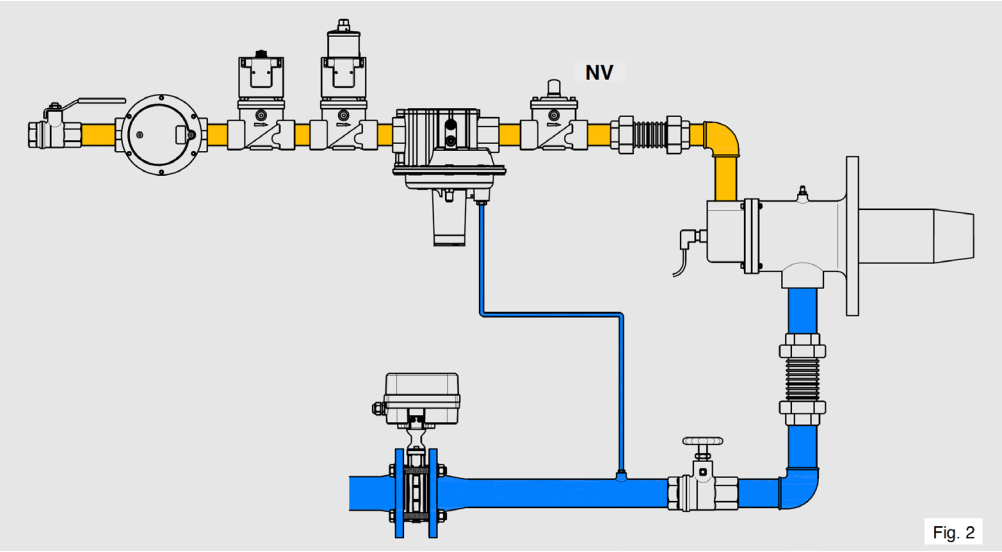

Fig. 2

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

WARNING

NV valves are not designed for shutting off gas.
Use an approved ball valve or plug valve.

Technical Specifications

Tab. 1

Connections	Threaded from 3/8NPT to 2NPT according to NPT ANSI-ASME B1.20
Ambient Temperature	5ºF / +140ºF (-15ºC / +60ºC)
Media Type	Air and non-aggressive gases (special versions for aggressive gases and hydrogen)
Max Media Temperature	+140ºF +390ºF for use with air only (special version on request)
Max Working Pressure	7.25 PSI (500 mbar) 90 PSI (6 bar)
Flow rate	See diagram
Materials in Contact With Fluid	Aluminum alloy Stainless steel Nitrile rubber (NBR) Fluoroelastomer (FPM)

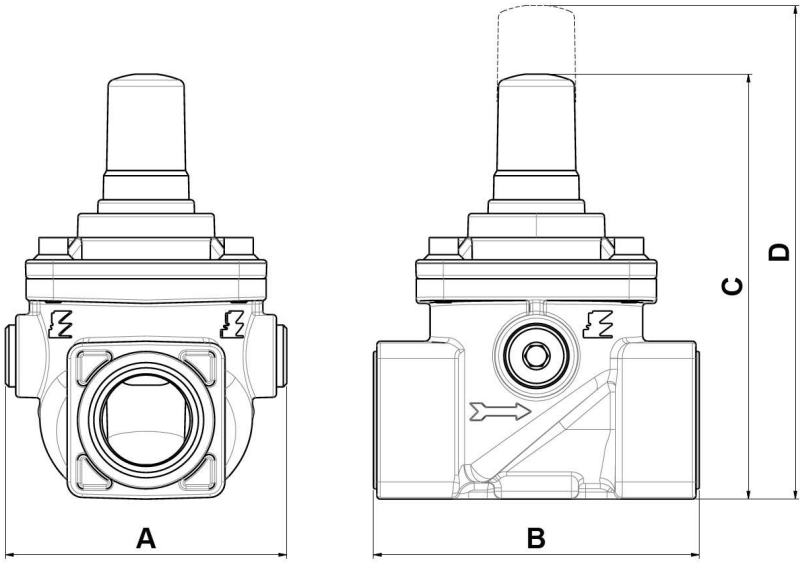

Fig. 3

Tab. 2

Connections	Overall dimensions [inches]				Weight [lbs]	Kvs [SCFH]
	A	B	C	D		
3/8" NPT	2.6	3	4.2	5.4	.77	1.7
1/2" NPT	2.6	3	4.2	5.4	.77	2.9
3/4" NPT	3.2	3.7	4.9	6.3	1.3	5.6
1" NPT	3.2	3.7	4.9	6.3	1.3	7.1
1¼" NPT	4.5	6	6.3	7.9	3.3	12.9
1½" NPT	4.5	6	6.3	7.9	3.3	17.1
2" NPT	4.1	6.1	6.7	8.3	3.9	23.5

Flow Chart

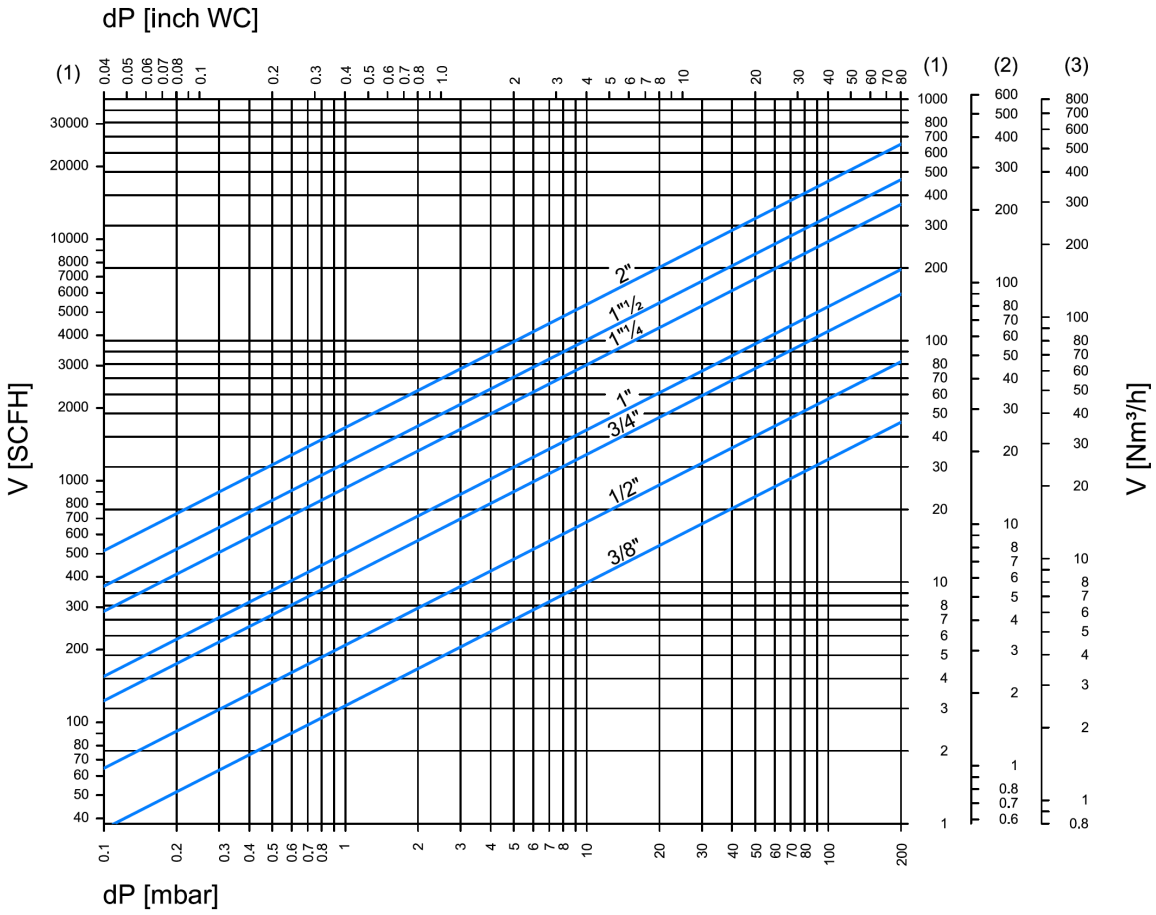

Fig. 4

Formula of conversion from air to other gases

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

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

Tab. 3

Gas Type	Density ρ [lb/ft³]
(1) Natural gas	0.056
(2) LPG	0.1175
(3) Air	0.0806

60°F, 14.7 psia, dry

When the flow read on the flow chart refers to operating pressure instead of standard conditions, the pressure drop Δp read on the chart 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 considered 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 [ºC]

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

Ordering Information

	NV	1	-6	·	N	J
NV	needle valve					
0	3/8”					
1	1/2”					
2	3/4”					
3	1”					
35	1-1/4”					
4	1-1/2”					
6	2”					
none	7 PSI max.					
-6	90 PSI max.					
.						
N	NPT (standard)					
J	Biogas					
HF	Hydrogen					
R	Temperature up to 390°F					
Z	Anodization of housing and external aluminum parts					
Z1	Epoxy body coating and anodization of inner aluminum parts					

Tab. 4

Options for high pressure and special versions are omitted when not used.

Standards and approvals

NV valves are designed according to EN13611 when applicable.

Quality Management System certified according to UNI EN ISO 9001

OLSTRÄD

Elektrogas is represented in the USA, Canada, and Mexico by Olsträd Corporation.

Olsträd Corporation
600 Mogadore Road
Kent, OH 44240

ph: 330.678.4328
combustion911.com
support_ab@combustion911.com
olstrad.com
order_processing@olstrad.com

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.

elektrogas®

Elektrogas is a brand name of:

Elettromeccanica Delta S.p.A.
Via Trieste 132
31030 Arcade (TV) – ITALY

tel +39 0422 874068
fax +39 0422 874048
www.delta-elektrogas.com
info@delta-elektrogas.com