Solenoid Valves for gas

VG

T 12.3.1.1.6 edition 2.94

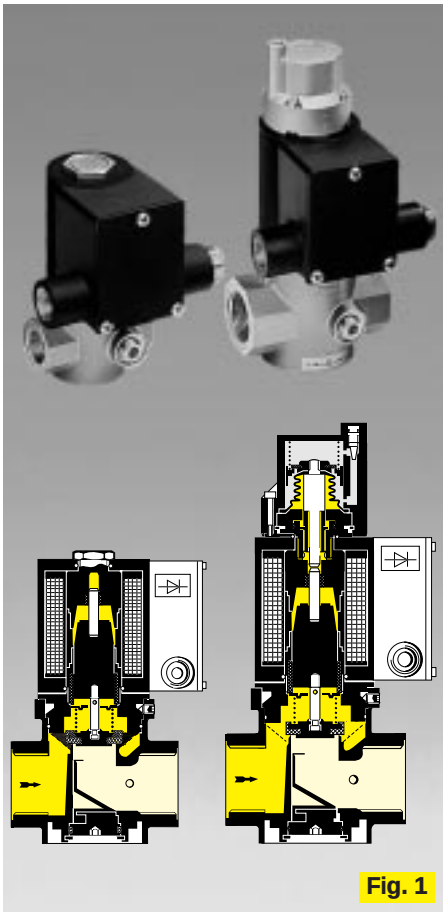


Fig. 1

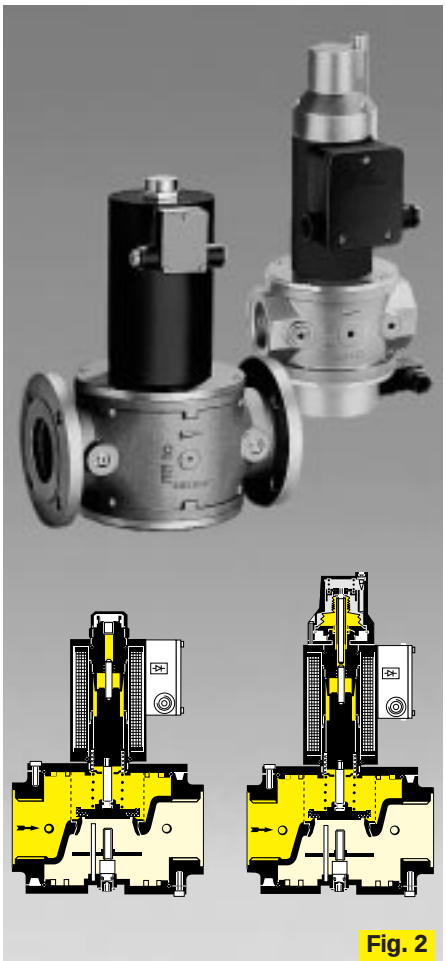


Fig. 2

Solenoid Valves for gas or air VG . .

- Operating pressures
- 2 psig (130 mbar)
  5 psig (360 mbar)
- Designed for continous on-off cycling
- Designed for maintenance free operation
- Fast or slow opening
- Gas flow adjustable from 10 % to 100 % of its rated capacity
- Due to d.c. - coil-system overheating of the coil is not possible
- Kromschröder is a company certified to ISO 9001

Application

FM approved as a shut-off valve to control or modulate the fluid flow rate.

UL listed as shut-off valve actuated by a safety control or an emergency device to prevent the unsafe delivery or a fluid. It may be used also as a general purpose valve.

CSA certified as an electromagnetically operated valve.

CGA approved as an automatic fail-safe shut-off valve.

Technical Description

Valve with spring-loaded valve disk, normally closed.

Valve housing: Die cast aluminium
Female thread: NPT
Flange: ASA
O-rings: Buna N (NBR)
Valve disk seal: Buna N (NBR)
Type of gas: natural gas, LPG and air

Max. operating pressure:
See specification table
Flow rate: Refer to flow diagram or specification table
Opening time:
VG..N: fast opening approx. < 0.5 s
VG..L: slow opening adjustable from 0.5 s to approx. 10 s
Closing time VG..N, VG..L: < 1 s
Switching frequency:
VG..N: 60 per minute
VG..L: 6 per minute with full reproducibility of the damping unit
Operating Cycles: 2.000.000
Voltage for power supply:
120 V AC +10/-15 %, 50/60 Hz.

Solenoids are operated with D.C. coils, with a full wave rectifier circuit located in valve terminal box.
There are two grounding screws in the terminal box.

Power factor of solenoid coil: cos. φ = 1

The electrical rating as per specification table is the same during start-up or continuous operation.

Duty cycle: continuous
Conduit connection: 1/2" NPT
Terminal: Maximum 14 gauge wire size
Typ of enclosure: NEMA 3

Flow rate is adjustable from 10 to 100 % of the rate rated capacity by rotating a socket head screw located on the bottom of the valve body.

Ambient temperature: max. -4° F (-20° C) to 104° F (40° C) CSA approved up to 140° F (60° C).

Model VG 15 - 40/32 (Fig. 1)

Pressure taps 1/4" NPT are located on both sides at outlet end of valve Built-in brass strainer.
Limiting orifice material: polyacetate

Model VG 40 - 100 (Fig. 2)

Pressure taps 1/4" NPT are located on both sides at inlet and outlet. Built-in stainless steel strainer.
Limiting orifice material: galvanized steel

Valve options

VG . . N fast opening
VG . . L with damping unit, slow opening
VG . . D with limiting orifice
VG . . S with closed position indicator
VG 40-100 for visual indicator assembly

Setting of initial gas flow with VG . . L

Adjustable from 0 - 70 % of the flow rate (at = Δp = 0.4 inch WC [1 mbar]).

The initial gas flow rate is not set at the factory. The damping unit is fully adjustable as shown in Fig. 3.

Closed position indicator only for VG . . S (Fig. 4).

These types are equipped with a two pole micro-switch to indicate closed position. The switch has been factory adjusted and tested.

Wiring for switch by GDM connector-conduit connection: 1/2" NPT or cable gland for multi-conductor cable.

Connected loads: 60 to 250 V, 50/60 Hz. Max. load: 2 A

Visual indicator VG . . I (Fig. 5)

For assembly with VG 40-100 fast and slow opening by 1/2" thread in bottom of the valve.
Not in connection with limiting orifice and closed position indicator.

Installation (Fig. 6)

Watch flow direction. The valves are designed for flow in one direction only. Coil must be in horizontal or vertical position. Do not locate coil below horizontal position. When installing the valves, don't use coil housing as levers. Use suitable wrenches.

For other than standard 120 V AC, 50/60 Hz systems consult Kromschröder Inc. for details

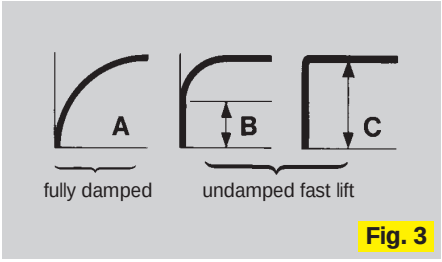


Fig. 3

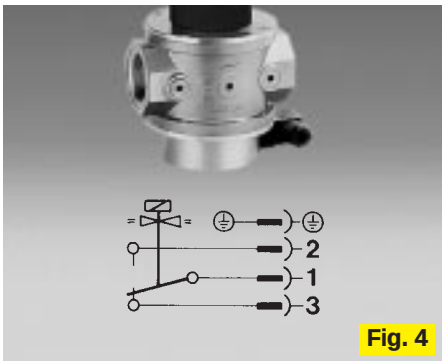


Fig. 4


Fig. 5

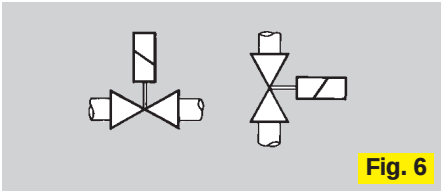
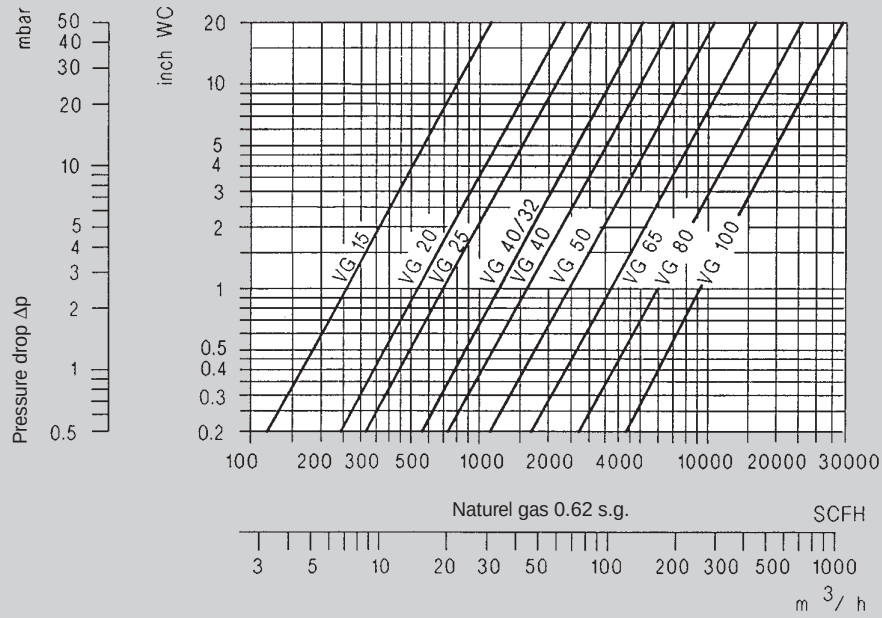


Fig. 6

Flow rate



To correct for any conditions:

Flows in the table are at 60° F, seal level (14.7 PSIA), with a supply pressure to the orifice of 1 PSIA. To correct for other conditions, use the following formula:

Corrected Flow =

$$\text{Flow From Table} \sqrt{\frac{460° + °F}{520} \quad \frac{1}{S.G.} \quad \frac{PSIA + PSIG}{15.7}}$$

Where

°F	=	Gas temp. through orifice
S.G.	=	Specific gravity of gas
PSIA	=	Barometric pressure
PSIG	=	Supply pressure to orifice

Correction Factors

To correct for specific gravity ONLY:

Multiply the flow from the table by:

Air,	1.00 s.g.	.774
Propane,	1.56 s.g.	.620
Butane,	2.00 s.g.	.547

Use these figures to estimate barometric pressure at various altitudes:

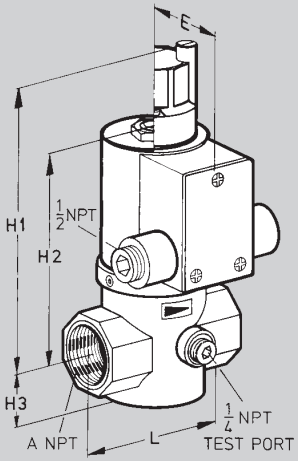
Sea Level	14.7 PSIA
1000’	14.2 PSIA
2000’	13.7 PSIA
3000’	13.2 PSIA
4000’	12.7 PSIA
5000’	12.2 PSIA
6000’	11.8 PSIA
7000’	11.3 PSIA

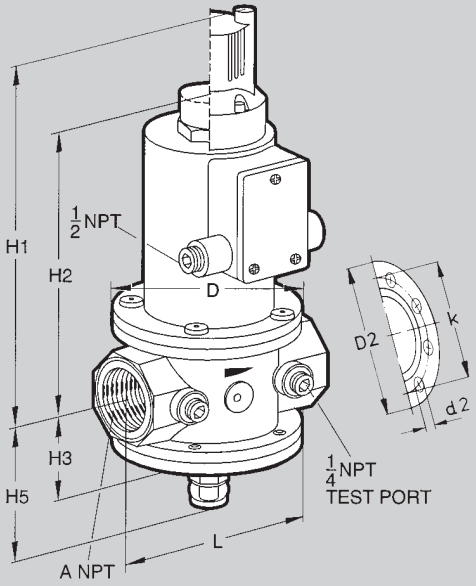
Type code

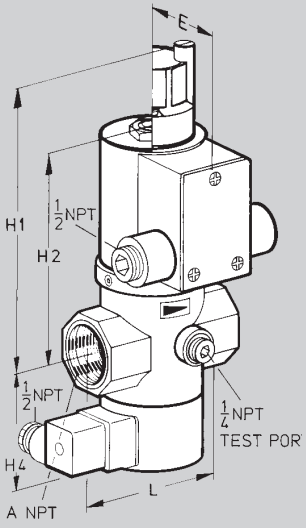
Type	VG	40	N	01	L	D	S	9	3
Size = 15, 20, 25, 40/32, 40, 50, 65, 80, 100									
Connection: NPT-thread = N, flange = A									
max. inlet pressure 0,1/0,2 = 2 psig (130 mbar) 0,3 = 5 psig (360 mbar)									
with damping unit = L, without damping unit = N									
with maximum flow-limiting orifice = D*									
with closed position indicator = S*									
Terminal box metal = 9									
pressure taps at the outlet = 2, pressure taps at inlet and outlet = 3									

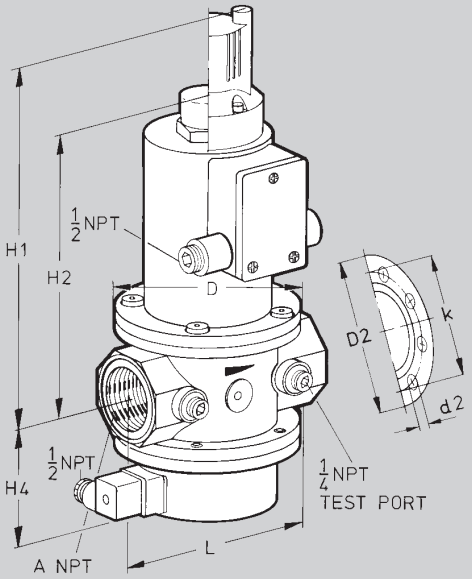
*If not applicable this letter is omitted, i. e. the next letter moves one up.

We reserve the right to make technical changes designed to improve our products without prior notice.









Type	Connection		Dimensions																Flange ANSI (ASA) B 16,5 150 lb/s.g.in.				Bore			max. inlet pressure		V Air in SCFH with Δp =	P	Weight	
	NPT ANSI	DN	L		E		Ø D		H1		H2		H3		H4		H5		D2		k		d2		Numbers of holes	psig	mbar	1 in W.C.	120 VAC VA/W	LBS	kg
			IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm							
VG 15N02	½	15	$2^{13}/_{16}$	71	$2^{17}/_{32}$	64			$6^{11}/_{32}$	161	$4^{13}/_{32}$	112	$^{15}/_{16}$	24	$2^{1}/_{2}$	62										2	130	213	31 (31)	3.1 (35)	1.4 (1.6)
VG 15N03	½	15	$2^{13}/_{16}$	71	$2^{17}/_{32}$	64			$6^{11}/_{32}$	161	$4^{13}/_{32}$	112	$^{16}/_{16}$	24	$2^{1}/_{2}$	62										5	360	213	31 (31)	3.1 (3.5)	1.4 (1.6)
VG 20N02	¾	20	$3^{19}/_{32}$	91	$2^{23}/_{32}$	69			$6^{27}/_{32}$	174	$4^{31}/_{32}$	126	$1^{5}/_{16}$	33	$2^{3}/_{4}$	70										2	130	450	31 (31)	4.5 (4.9)	2.0 (2.2)
VG 20N03	¾	20	$3^{19}/_{32}$	91	$2^{23}/_{32}$	69			$6^{27}/_{32}$	175	$4^{31}/_{32}$	126	$1^{5}/_{16}$	33	$2^{3}/_{4}$	70										5	360	450	31 (36)	5.3 (5.8)	2.4 (2.6)
VG 25N02	1	25	$3^{19}/_{32}$	91	$2^{23}/_{32}$	69			$6^{27}/_{32}$	175	$4^{31}/_{32}$	126	$1^{5}/_{16}$	33	$2^{3}/_{4}$	70										2	130	563	31 (31)	4.4 (4.8)	2.0 (2.2)
VG 25N03	1	25	$3^{19}/_{32}$	91	$2^{23}/_{32}$	69			$6^{27}/_{32}$	175	$4^{31}/_{32}$	126	$1^{5}/_{16}$	33	$2^{3}/_{4}$	70										5	360	563	36 (36)	5.2 (5.7)	2.4 (2.6)
VG 40/32N02	$1^{1}/_{2}$	40	$5^{1}/_{16}$	128	$2^{30}/_{32}$	74			$7^{5}/_{8}$	194	$5^{23}/_{32}$	145	$1^{9}/_{16}$	39	3	76										2	130	1013	36 (36)	6.5 (6.9)	2.9 (3.1)
VG 40N01	$1^{1}/_{2}$	40	$5^{24}/_{32}$	150			$5^{1}/_{16}$	129	11	280	$8^{1}/_{16}$	205	2	51	$3^{3}/_{8}$	86	$3^{5}/_{16}$	84								2	130	1350	64 (64)	13.0 (14.1)	5.9 (6.4)
VG 40N03	$1^{1}/_{2}$	40	$5^{24}/_{32}$	150			$5^{1}/_{16}$	129	11	280	$8^{1}/_{16}$	205	2	51	$3^{3}/_{8}$	86	$3^{5}/_{16}$	84								5	360	1350	74 (74)	15.9 (17.0)	7.2 (7.7)
VG 50N01	2	50	$7^{3}/_{32}$	180			$6^{5}/_{32}$	157	$11^{15}/_{32}$	291	$8^{1}/_{2}$	216	$2^{7}/_{16}$	62	$3^{7}/_{8}$	98	$3^{47}/_{64}$	95								2	130	2083	74 (74)	17.0 (18.1)	7.7 (8.2)
VG 50N03	2	50	$7^{3}/_{32}$	180			$6^{5}/_{32}$	157	$11^{15}/_{32}$	291	$8^{1}/_{2}$	216	$2^{7}/_{16}$	62	$3^{7}/_{8}$	98	$3^{47}/_{64}$	95								5	360	2083	80 (80)	27.3 (28.4)	12.4(12.9)
VG 65N01	$2^{1}/_{2}$	65	$8^{19}/_{32}$	218			$7^{7}/_{32}$	184	$11^{15}/_{16}$	303	$8^{31}/_{32}$	228	$2^{29}/_{32}$	74	$4^{5}/_{16}$	110	$4^{7}/_{32}$	107								2	130	3208	80 (80)	30.6 (31.7)	13.9 (14.4)
VG 65N03	$2^{1}/_{2}$	65	$8^{19}/_{32}$	218			$7^{7}/_{32}$	184	$15^{15}/_{32}$	393	$12^{19}/_{32}$	318	$2^{29}/_{32}$	74	$4^{5}/_{16}$	110	$4^{7}/_{32}$	107								5	360	3208	110 (110)	43.2 (44.3)	19.6 (20.1)
VG 80A01	80	80	$12^{3}/_{16}$	310			$8^{7}/_{32}$	210	$15^{15}/_{16}$	404	$12^{15}/_{16}$	329	$4^{1}/_{16}$	103	$5^{7}/_{16}$	138	$5^{23}/_{64}$	136	$7^{1}/_{2}$	191	6	152.4	¾	19	4	2	130	5066	110 (110)	55.1 (56.2)	25.0 (25.5)
VG 80A03	80	80	$12^{3}/_{16}$	310			$8^{7}/_{32}$	210	$15^{29}/_{32}$	404	$12^{15}/_{16}$	329	$4^{1}/_{16}$	103	$5^{7}/_{16}$	138	$5^{23}/_{64}$	136	$7^{1}/_{2}$	191	6	152.4	¾	19	4	5	360	5066	160 (160)	79.4 (80.5)	36.0 (36.5)
VG 100A01	100	100	$13^{25}/_{32}$	350			$8^{9}/_{32}$	210	–	–	$13^{24}/_{32}$	353	$4^{12}/_{32}$	110	$5^{45}/_{64}$	145	$5^{5}/_{8}$	143	9	229	$7^{1}/_{2}$	190.5	¾	19	8	2	130	7992	160 (–)	90.4 (–)	41.0 (–)

( ) = Version with L damping unit
Version with closed position indicator } + 0.4 LBS = 0.2 kg

Power consumption: $I = \frac{\text{Power intput (VA)}}{\text{Voltage (V)}} = \frac{\text{Power intput (W)}}{\text{Voltage (V)} \cdot \cos\varphi}$ ($\cos\varphi = 1$)

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