GAS LIMITING ORIFICE VALVES
LVG SERIES

NATURAL GAS
Full Open Valve Capacity

		PRESSURE DROP						
Model No.	**Pipe Size**	**1"wc 2.5 mbar**	**2"wc 5 mbar**	**4"wc 10 mbar**	**6.9"wc 17.2 mbar**	**13.8"wc 34.3 mbar**	**20.8"wc 51.8 mbar**	**27.7"wc 69 mbar**
LVG 505E	1/2 NPT	275	410	575	757	1,055	1,290	1,470
LVG 507E	3/4 NPT	405	590	815	1,070	1,520	1,855	2,120
LVG 510D	1 NPT	635	870	1,230	1,625	2,245	2,750	3,155
LVG 512D	1-1/4 NPT	1,070	1,520	2,160	2,840	4,020	4,890	5,630
LVG 515D	1-1/2 NPT	1,500	2,140	3,000	3,930	5,560	6,740	7,680
LVG 520D	2 NPT	2,560	3,520	5,010	6,565	9,080	11,120	12,700
LVG 525A	2-1/2 NPT	3,985	5,630	7,970	10,480	14,830	18,160	20,960
LVG 530A	3 NPT	5,215	7,830	14,330	13,720	19,420	23,770	27,440
LVG 540A	4"FLG	9,370	13,240	18,740	24,640	34,880	42,700	49,270

Notes
1. Capacities based on natural gas at 0.60 s.g. and 60°F (or 0°C).
2. Pressure drop measured across full open valve.
3. Maximum inlet pressure is 15 psig (1034 mbar)
4. For natural gas leakage rates with valve fully closed, consult Hauck.

SELECTION

To effectively do the job for which it was designed, the LVG must not be undersized or oversized. If the LVG valve is selected based on the pipe size alone, then the valve will normally be oversized for the application. **DO NOT BASE THE SELECTION OF THE LVG VALVE SOLELY ON THE NPT PIPE SIZE.** For applications with gases having different specific gravities, or LVG series valves to be utilized as a right angle type valve, consult Hauck.

Example: An SVG140-HR burner must operate with air pressure at the burner inlet of 27.7"wc (69mbar) to achieve the required natural gas flow of 2,140 scfh (57.4 nm^3/hr). At these conditions, natural gas must be supplied to the inlet of the burner at 9.5"wc (23.6mbar) (i.e., 2,214,000 Btu/ft^3 □1,034 Btu/ft^3 natural gas from the burner capacity literature). Per your design calculations, the natural gas pressure available to the inlet of the LVG will be a nominal 31.6"wc (78.6 mbar) at high fire, i.e., 3"wc (7.5 mbar) pressure drop from the ratio regulator outlet pressure of 34.6"wc (86.1mbar). Then, calculate the pressure drop (Delta P) across the valve as shown:

$$LVG\ Delta\ P = LVG\ Inlet\ P - Burner\ Inlet\ P$$

$$= 31.6"wc - 9.5"wc \qquad or \qquad = 78.6 - 23.6\ mbar)$$

$$= 22.1"wc \qquad\qquad = 55mbar$$

From the LVG capacity table, select the pressure drop closest to 22.1"wc (55mbar) which is 20.8"wc (51.8mbar). Next, multiply the required natural gas flow of 2,140 scfh (57.4 nm^3/hr) by 2 to determine the nominal full open valve capacity which is 4,280 scfh (67.2 nm^3/hr). Then, in the 20.8"wc (51.8mbar) column, select the full open valve capacity closest to 4,280 scfh (115 nm^3/hr) which is 4,890 scfh (131 nm^3/hr) and equates to a LVG 512 (1-1/4").

Then determine the maximum full open valve flow through the LVG 512 (1-1/4") at 22.1"wc (5,500 Pa) Delta P as shown:

$$V_2 = V_1\, x \sqrt{\frac{P_2}{P_1}}$$

$$= 4{,}890\ scfh\ x \sqrt{\frac{22.1"wc}{20.8"wc}} \qquad or \qquad = 131 nm^3/hr\ x \sqrt{\frac{55mbar}{51.8mbar}}$$

$$= 5{,}040\, scfh \qquad\qquad = 135\, nm^3/hr$$

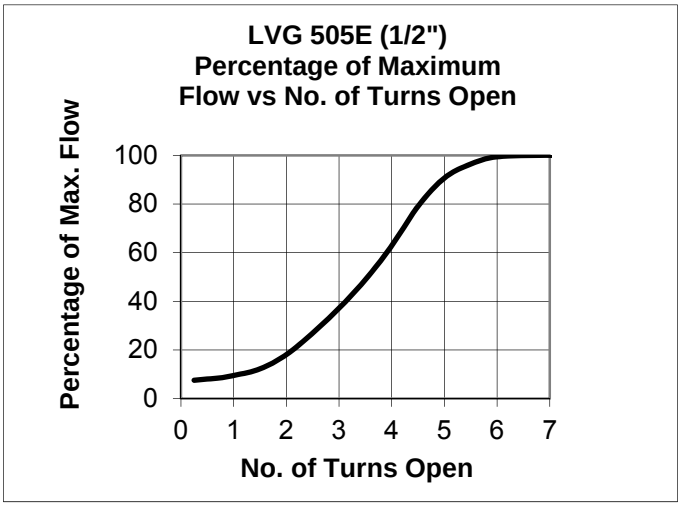
Finally, determine the % of maximum flow and number of turns open for the required natural gas flow as shown:

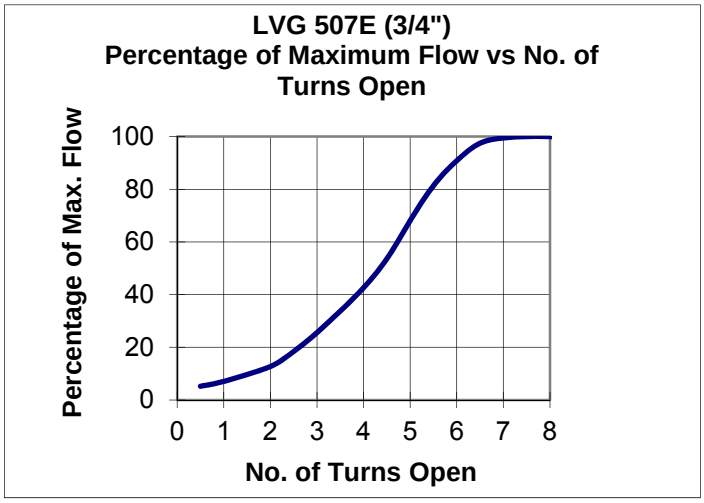
$$\%\ of\ Max.\ Flow = \frac{scfh(\mathrm{Re}quired)}{scfh(100\%\ of\ Max.\ Flow)}\ x100$$

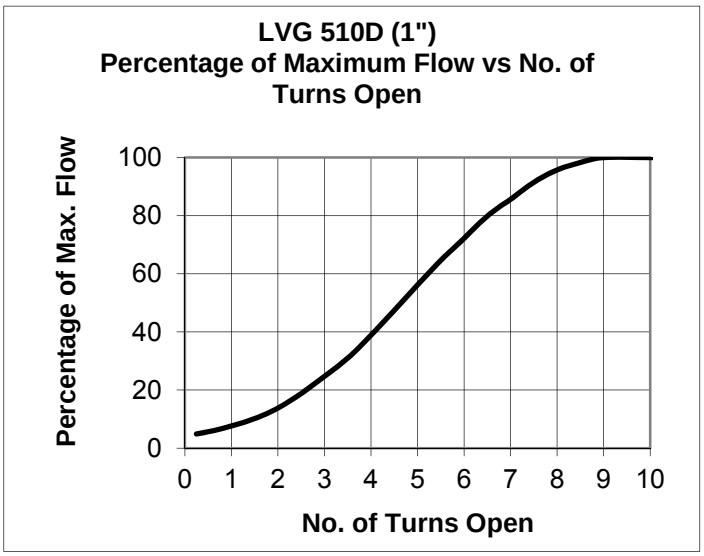
$$= \frac{2{,}140\, scfh}{5{,}040\, scfh}\ x100 \qquad or \qquad = \frac{57.4 nm^3/hr}{135 nm^3/hr}\ x100$$

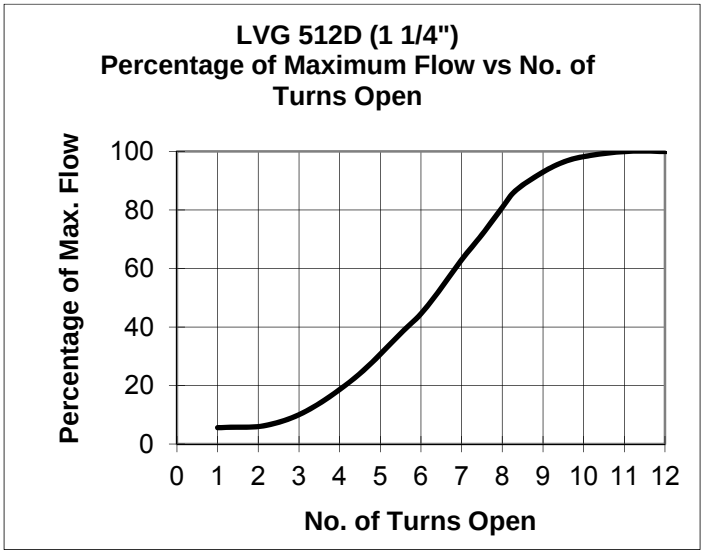
$$= 43\% \qquad\qquad = 43\%$$

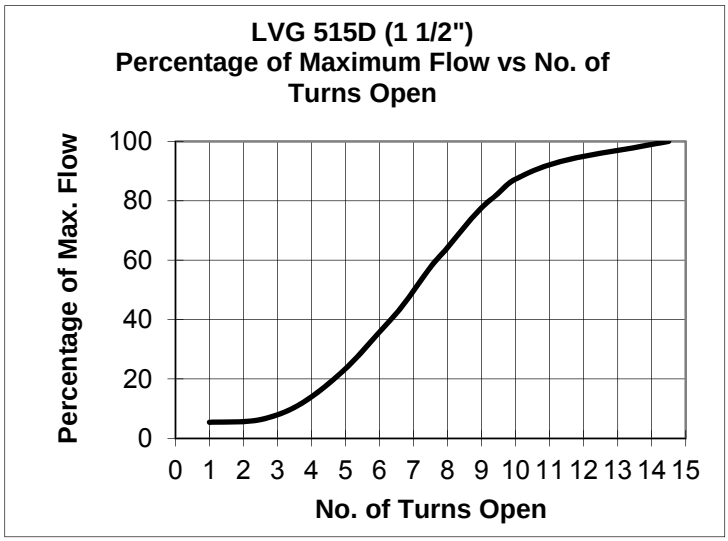
From the flow curve for the LVG 512 (1¼"), 43% of maximum flow equates to approximately 6 turns open. Therefore, the LVG 512 (1¼") has been selected (Note: smaller than the 2" gas inlet pipe size of the SVG 140-HR burner), and the initial LVG valve setting will be a nominal 6 turns open.

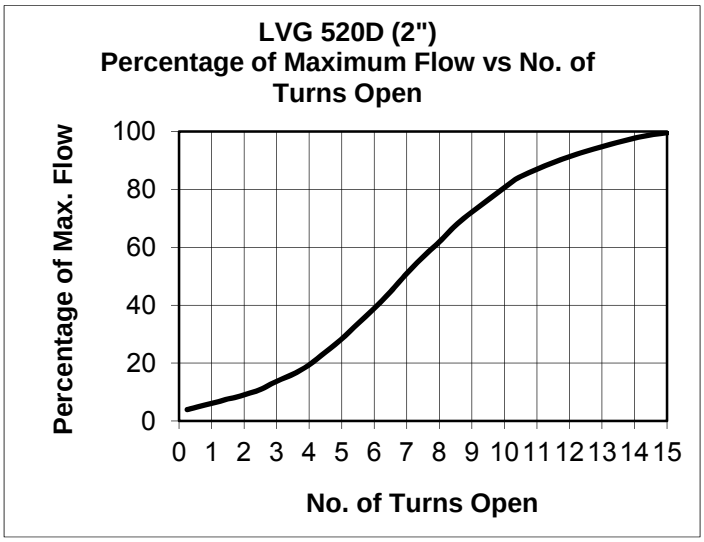

LVG 505E (1/2")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
80
60
40
20
0
0 1 2 3 4 5 6 7
No. of Turns Open

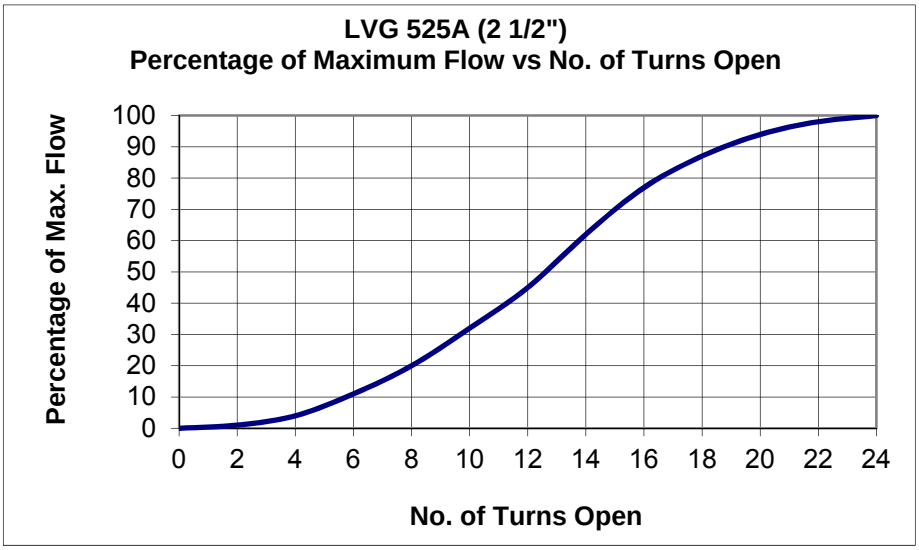

LVG 507E (3/4")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8
No. of Turns Open

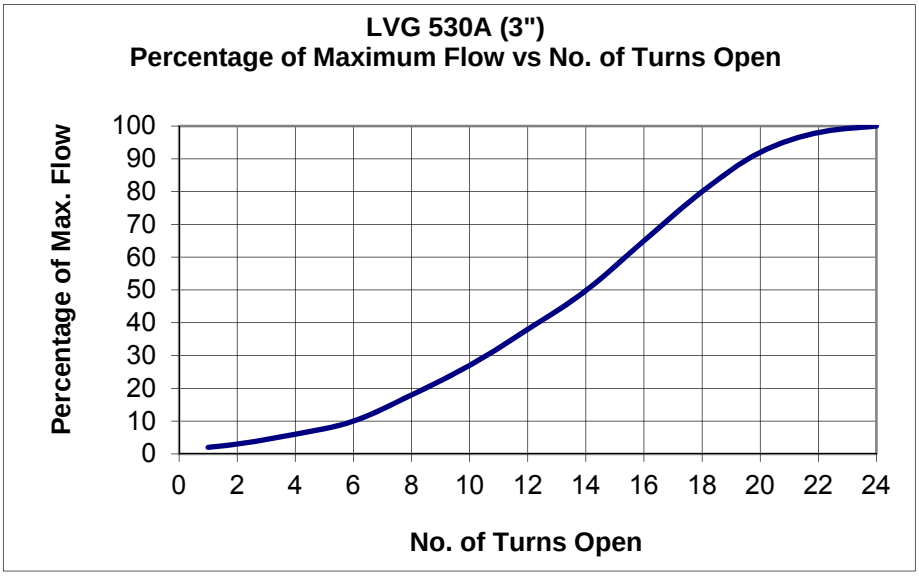

LVG 510D (1")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10
No. of Turns Open

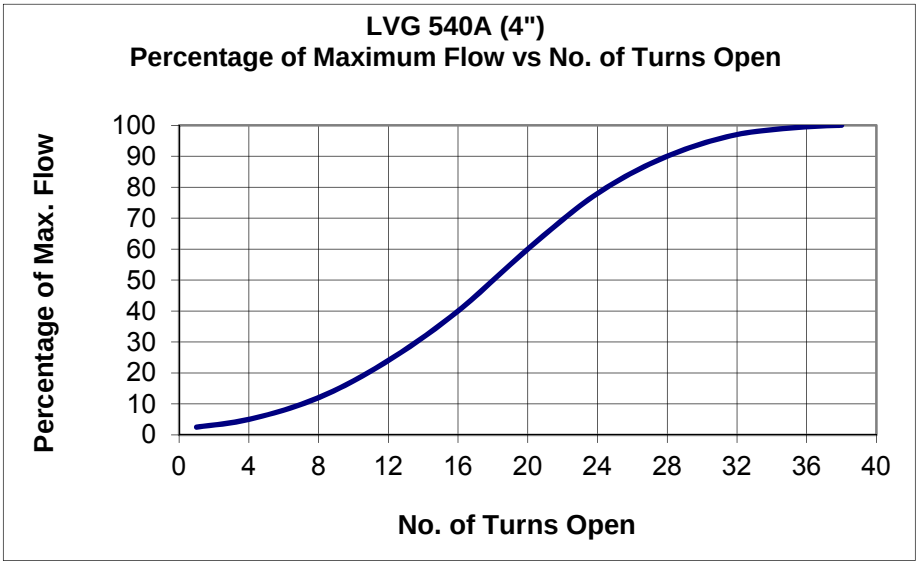

LVG 512D (1 1/4")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10 11 12
No. of Turns Open


LVG 515D (1 1/2")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
No. of Turns Open

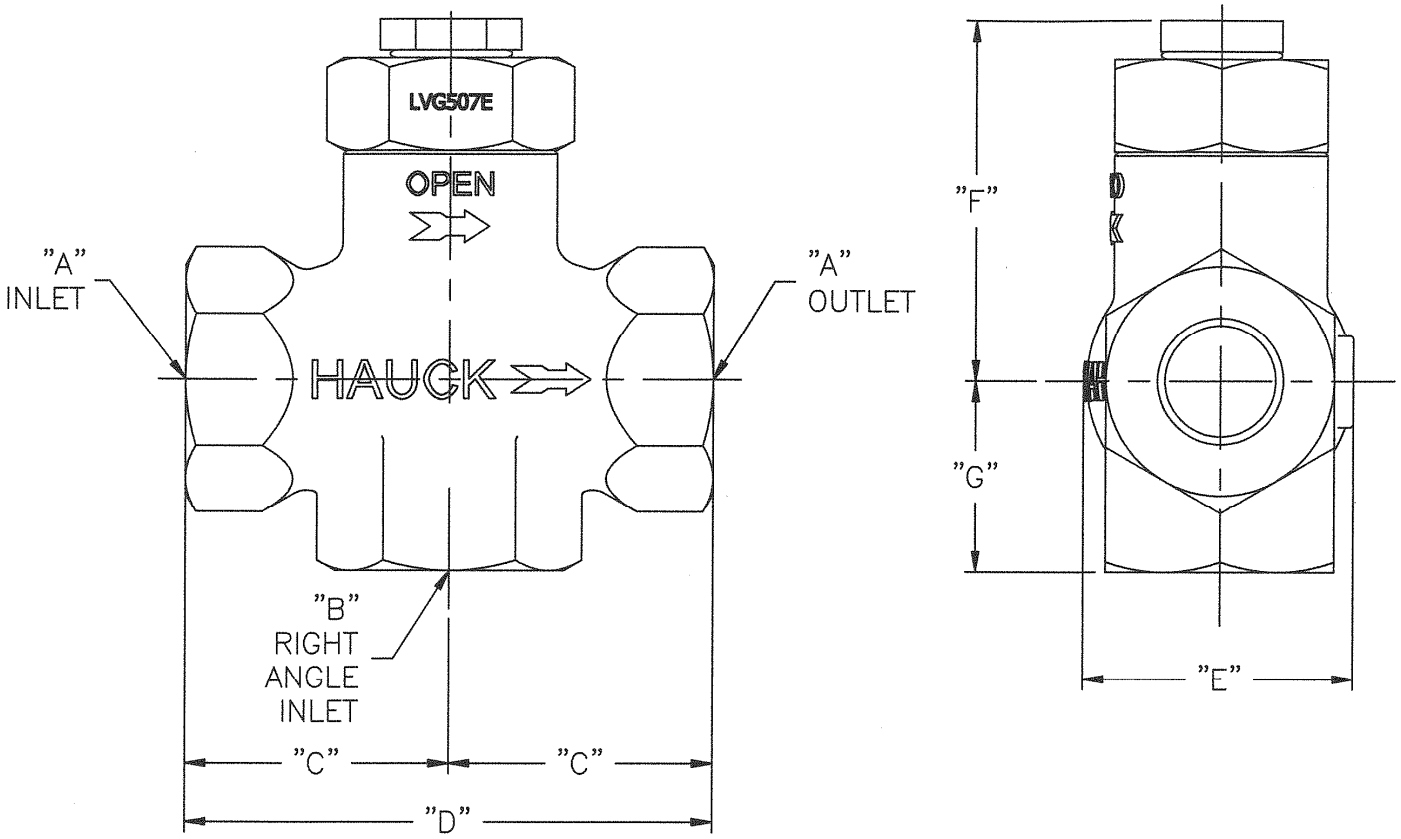

LVG 520D (2")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
80
60
40
20
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
No. of Turns Open


LVG 525A (2 1/2")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
90
80
70
60
50
40
30
20
10
0
0 2 4 6 8 10 12 14 16 18 20 22 24
No. of Turns Open


LVG 530A (3")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
90
80
70
60
50
40
30
20
10
0
0 2 4 6 8 10 12 14 16 18 20 22 24
No. of Turns Open


LVG 540A (4")
Percentage of Maximum Flow vs No. of Turns Open
Percentage of Max. Flow
100
90
80
70
60
50
40
30
20
10
0
0 4 8 12 16 20 24 28 32 36 40
No. of Turns Open

GAS LIMITING ORIFICE VALVES
LVG SERIES



MODEL NO.	"A"	"B"	"C"	"D"	"E"	"F"	"G"	APPROX. NET WT.
LVG505E	1/2 NPT	1/2 NPT	2 5/32	4 5/16	2 3/16	2 15/16	1 9/16	3.6 LB
LVG507E	3/4 NPT	3/4 NPT						3.6 LB
LVG510D	1 NPT	1 NPT						3.6 LB
LVG512D	1 1/4 NPT	1 1/4 NPT	2 5/8	5 1/4	3 1/4	3 7/16	2 3/16	7.3 LB
LVG515D	1 1/2 NPT	1 1/2 NPT						7.3 LB
LVG520D	2 NPT	2 NPT	2 15/16	5 7/8	3 3/4	4	2 7/16	12 LB

NOTE:
1. DIMENSIONS ARE IN INCHES.

W6715
(NOT TO SCALE)