

SLAM SHUT VALVE



DILOCK



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INTRODUCTION

This is a safety device (SAV) which quickly shuts off the gas flow when the pressure it is monitoring reaches a pre-set limit due to any abnomality in the system, or when required by the operator to operate from a remote point.



Fig. 1 DILOCK 507-512



Fig. 2 DILOCK 108

MAIN FEATURES

- Max. inlet pressure Pe max: 274 PSIG
- Gas Operating temperature: 4 °F to + 140 °F;
- Ambient temperature: 40 °F to + 140 °F
- Range of outlet pressure Wh: .43 to 79.77 PSIG ;
- Accuracy: AG ± 5% on the value of the pressure setting;
- Intervention on pressure increase and/or decrease;
- Manual push-button control;
- Option for pneumatic or elecromagnetic remote control;
- Manual re-setting with internal by-pass activated by the manouvering lever;
- Possibility of application of devices for intervention remote signal (contact switches or proximity switches);
- Small overal size;
- Available size:
 - Dilock 75: Rp 1" x 1"
 - Dilock 125: Rp 1" x 1"1/2
 - Dilock 1080: Rp 1", 11/4 x 1"1/4, 11/2 x 1"1/2, 2" x 2" •
- Connections:
 - threaded NPT
 - Flanging class 150RF according to ANSI B 16.5

Its "top entry" design allows an easy periodical maintenance without removing the body from the pipeline.



MATERIALS

	Steel casting ASTM A 216 gr WCB, spheroidal graphite cast iron GS - 400 - 18 ISO 1083
Valve body	≈ ASTM S 100 B for sizes 160 and 250 Only spheroidal graphite cast iron GS 500 - 7 UNI 4544 - 74,
	for sizes 75 and 125
Stem Valve	AISI 416 stainless steel
Seals	Nitril rubber
Disengagement device	Housing in light alloy, levers in inoxidizable material or with special anticorrosion treatment

The specifications listed above are referred to standard products special materials are available upon request.

PRESSURE DROP

The following formula can be used to calculate pressure losses of the slam shut valve with the valve at full open position:

$$\Delta p = \frac{K_{G} \cdot Pe - \sqrt{K_{G}^{2} \cdot Pe^{2} - 4 Q^{2}}}{2 \cdot K_{G}}$$

 Δp = pressure losses in bars Pe = absolute inlet pressure in bars Q = flow rate inlet Stm³/h

 K_G = flow coefficient

Tab. 1 - VALVE COEFI						
Dilock	75	125	108 1"	108 11/4"	108 11/2"	108 2"
- K _G coefficient	126	210	354	376	750	874

Pressure losses calculated as above are referred to natural gas with specific gravity of 0.61 (air=1) temperature of 15 $^{\circ}$ C at valve inlet, for gases with different specific gravity S and temperatures t $^{\circ}$ C, pressure losses can still be calculated with the above formula, replacing the value of the flow coefficent in the table with:

$$K_{G1} = K_{G} \cdot \sqrt{\frac{175,8}{S \cdot (273,16+t)}}$$

Table 2 show corrective coefficents Fc valid for several gases at a temperature of 60 $^\circ\text{F}.$

Tab. 2 CORRECTION FACTOR FC

Type of gas	Specific gravity	Factor Fc
Air	1.0	0.78
Propane	1.53	0.63
Butane	2.0	0.55
Nitrogen	0.97	0.79
Oxigen	1.14	0.73
Carbon dioxide	1.52	0.63

Caution: to obtain good performance, to avoid erosion phenomena and to limit noise level, it is recommended to limit gas speed on outlet flange to 131 ft./sec. Gas speed on outlet flange may be calculated with following formula:

$$V = 345.92 \cdot \frac{Q}{DN^2} \cdot \frac{1-0.002 \cdot p}{1+p}$$

where:

V =gas speed in m/sec

Q = gas flow in Stm³/h

DN = nominal size of the valve in mm

p =outlet pressure in bar

Tab. 3 PRESSURE SWITCHES in PSIG

Туре	ВР	МР	TR
Intervention range for max pressure (PSIG)	.435-2.61	2.61-3.62	3.62-79.77
Intervention range for min pressure (PSIG)	.14- 1.3	1.3-3.48	2.17-50.76

INSTALLATION

To ensure proper operation and the declared performance, the following should be observed when installing the DILOCK slam shut valves:

- a) filtering: the gas flowing in the piping must be adequately filtered.
 It is also recommended that the piping upstream from
- the regulator is clean and avoids impurities;b) sensing line: for correct operation, the sensing line
- nipple must be appropriately positioned. Between the valve and the downstream take-off there must be a lenght of pipe ≥ four times the diameter of the outlet pipe; beyond the take-off, there must be a further lenght of pipe ≥ twice the same diameter.

OVERALL DIMENSIONS in inches



DIMENSIONS - IN INCHES								
	DNe x DNu NDi x NDo	S	L	Α	в	с	Е	G
507	Rp 1"x1"	.39	-	2.55	3.15	7.28	8.07	50
512	Rp 1"x1" ¹ / ₂	5.11	-	2.55	3.15	7.48	8.26	2.36
	1" x 1" Flg.	7.2	2.67					
108	11/2"x 11/2" Flg.	8.78	-	5.71	4.72	7.48	8.26	3.15
	2" x 2" Flg.	10	2.9					
108	2" x 2" NPT	6	2.9	4.33	4.72	8.22	8.26	3.15

WEIGH	r						
		160 A/G					
		50	75	1"	11/2"	2" Flg.	2" NPT
Lb.s		5.5	6	22	28	33	26



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October 2019