



Dival 700



Pressure
Regulators





Dival 700

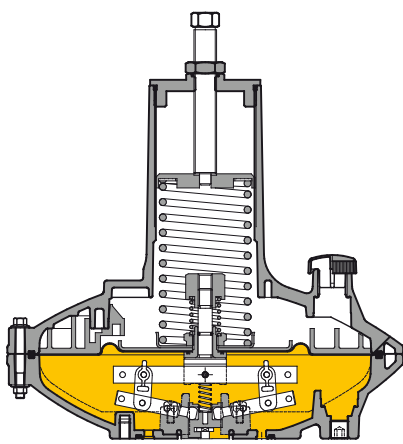


> Pressure regulators

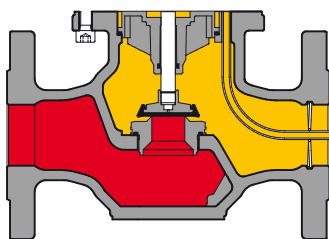
Introduction

DIVAL 700 series pressure regulators are direct acting devices for low and medium pressure applications controlled by a diaphragm and counter spring.

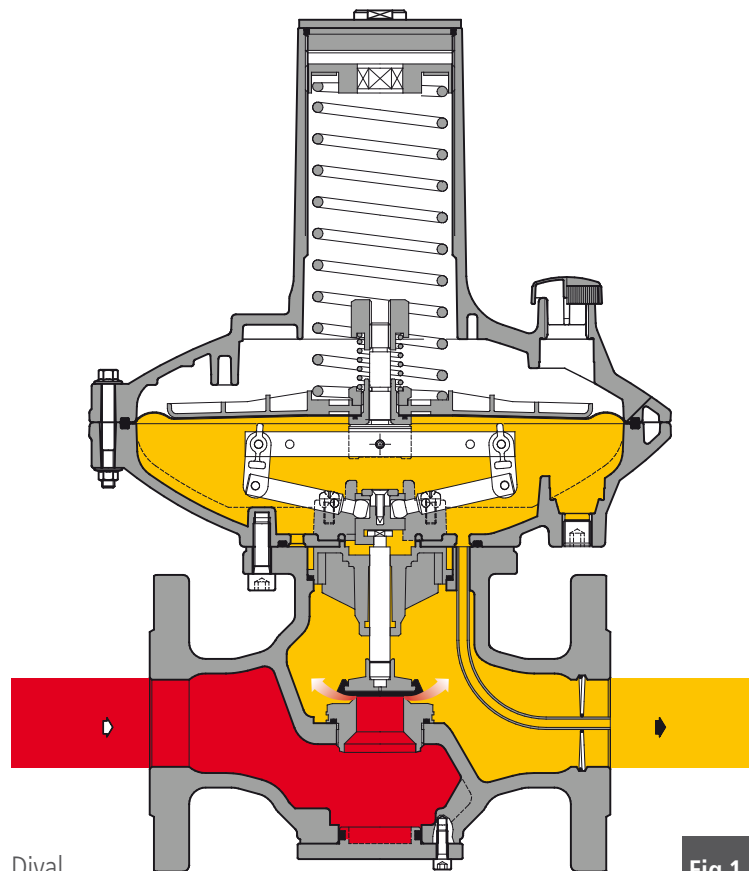
These regulators are suitable for use with previously filtered, non corrosive gases.



Testata TR



3 ways body



Dival

Fig.1

Main Features

Modular design of pressure regulator **DIVAL 700 series** allows the installation of an incorporated of slam shut on the same body without changing the face-to-face dimension.

Furthermore the truly "top entry design" allows an easy periodical maintenance without removing body from the line.

DIVAL 700 series regulators have features that make it particularly suitable for applications in process where sudden rate variations may occur (for example, applications on industrial burners with considerable sudden flow rate changes). **DIVAL 700 series** is designed to working with internal sensing line.

An extremely easy maintenance and a reduced number of parts are the background of low cost operation.

Accessory on request:

- Incorporated slam shut-valve
- In line monitor function
- Incorporated relief valve



Dival series 700



Dival series 700 + LA/...

Designed
With All
Needs In Mind

- Compact Design
- Easy Maintenance
- Top Entry
- Fast Response Time
- High Turn Down Ratio
- Good Accuracy
- Low Operation Cost
- Wide Range of Applications



Main Features

- Design pressure: up to 20 bar (290 Psi)
- Design temperature: -20 °C to +60 °C (-4 to + 140 °F)
- Ambient temperature: -20 °C to +60 °C (-4 to + 140 °F)
- Max inlet pressure Pu: according to table here below

Seat (Inches)	1/4"	3/8"	1/2"	3/4"	1"	1" 1/4
Pu max (bar)	8,63	8,63	8,63	5	3,45	2,07
Pu max (Psi)	125	125	125	72	50	30

- Outlet pressure range of Wds: 5 to 1454 mbar (2" w.c. to 21psig)
- Available size DN: 1" (25) - 1" 1/2 (40) - 2"(50)
- Flanging: class PN 16/25 according to ISO 7005-1, ISO 7005-2; class ANSI 150RF according to ANSI B16.5, ASME B16.42 and class ANSI 125 FF according to ASME B16.1
- Threaded connections: DN 2" Rp ISO 7-1 or DN 2"NPTF ASME B1.20.1 (only ductile iron)

Materials

Body	Cast steel ASTM A216 WCB Ductile cast iron GS 400-18 ISO 1083
Head covers	Die cast aluminium EN AC-AISI 12 UNI EN 1706
Diaphragm	Rubberized canvas
Valve seat	Brass
Seals	Nitril rubber

The characteristics listed above are referred to standard products.
Special characteristics and materials for specific applications may be supplied upon request.



7Dival 700

Table 1: Spring range data

Inlet pressure = 1,7 bar

SPRING (dimension and color)	Ø 280 Head											
	Seat 1/4"		Seat 3/8"		Seat 1/2"		Seat 3/4"		Seat 1"		Seat 1"1/4	
	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)
d=3,2 De=65 Lo=180 White (2701175)	5	13	6	16	7	17	10	20	13	22	16	26
d=3,5 De=65 Lo=180 Yellow (2701345)	7	19	8	21	8	22	11	25	14	27	18	32
d=4 De=65 Lo=180 Orange (2701620)	10	32	12	34	12	34	15	38	19	40	22	45
d=4,5 De=65 Lo=180 Red (2702190)	15	53	17	55	18	56	21	60	25	62	25	67
d=5 De=65 Lo=180 Green (2702190)	23	80	24	83	24	84	29	89	32	90	36	97
d=5,5 De=65 Lo=180 Black (2702370)	38	127	41	129	43	131	48	143	48	142	52	147
d=6 De=65 Lo=180 Blue (2702540)	50	173	53	178	55	179	56	188	61	191	65	197
d=6,5 De=65 Lo=180 Light Blue (2702730)	81	280	82	280	82	287	88	299	94	303	98	306
d=7 De=65 Lo=180 Brown (2702950)	95	372	100	380	105	386	110	395	113	401	120	404

Inlet pressure = 3,4 bar

SPRING (dimension and color)	Ø 280/TR Head											
	Seat 1/4"		Seat 3/8"		Seat 1/2"		Seat 3/4"		Seat 1"		Seat 1"1/4	
	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)	Pd min (mbar)	Pd max (mbar)
d=7 De=65 Lo=150 Light Blue (2702940)	164	753	170	778	188	779	207	807	259	844	261	863
d=7,5 De=65 Lo=150 White/Yellow (2702125)	292	1150	317	1160	324	1156	351	1170	365	1194	380	1216
d=8 De=65 Lo=150 White/Orange (2703325)	357	1391	369	1402	347	1403	385	1412	400	1430	458	1454

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> Pressure regulators

Table 2: Outlet pressure change (mbarg) as result of a 0,5 Barg Inlet Pressure Change

SPRING (dimension and color)	Orefice size (Inches)					
	Ø 280 Head					
	1/4"	3/8"	1/2"	3/4"	1"	1"1/4
d=3,2 De=65 Lo=180 White (2701175)	0,2	0,4	0,5	1,3	2,4	3,4
d=3,5 De=65 Lo=180 Yellow (2701345)	0,2	0,4	0,5	1,3	2,4	3,4
d=4 De=65 Lo=180 Orange (2701620)	0,2	0,4	0,6	1,3	2,4	3,4
d=4,5 De=65 Lo=180 Red (2702190)	0,3	0,5	0,7	1,4	2,6	3,5
d=5 De=65 Lo=180 Green (2702190)	0,3	0,5	0,9	1,5	2,3	3,6
d=5,5 De=65 Lo=180 Black (2702370)	0,4	0,6	0,9	1,6	2,4	3,7
d=6 De=65 Lo=180 Blue (2702540)	0,4	0,7	1,1	1,9	2,6	3,8
d=6,5 De=65 Lo=180 Light Blue (2702730)	0,9	1	1,3	2,8	3,1	3,9
d=7 De=65 Lo=180 Brown (2702950)	1	1,1	1,5	3,5	3,7	4,6
	Head Ø 280/TR					
d=7 De=65 Lo=150 Light Blue (2702940)	2	3	5	11	18	28
d=7,5 De=65 Lo=150 White/Yellow (2702125)	2	3	5	11	18	29
d=8 De=65 Lo=150 White/Orange (2703325)	3	5	6	11	18	29

The flow rate values indicated on the following tables are valid for natural gas having a relative density of 0.61 w.r.t. air and a regulator inlet temperature of 15 °C (59°F). For gases having a different relative density S and temperature t in °C, the value of the flow rate, calculated as above, shall be multiplied by a correction factor, as follows:

$$F_c = \sqrt{\frac{175.8}{S \times (273.16 + t)}}$$

Table 3 lists the correction factors Fc for a number of gases at 15 °C (59°F).

Table 3: Correction factors Fc

Type of gas	Relative density	Fc Factor
Air	1.0	0.78
Propane	1.53	0.63
Butane	2.0	0.55
Nitrogen	0.97	0.79
Oxygen	1.14	0.73
Carbon dioxide	1.52	0.63

Control Heads

Outlet pressure range is determined by the control head installed.

The control heads used are:

- heads Ø 280: 5 to 404 mbar
- heads Ø 280/TR: 164 to 1454 mbar

Regulator Dival 700 - DN 40 performance

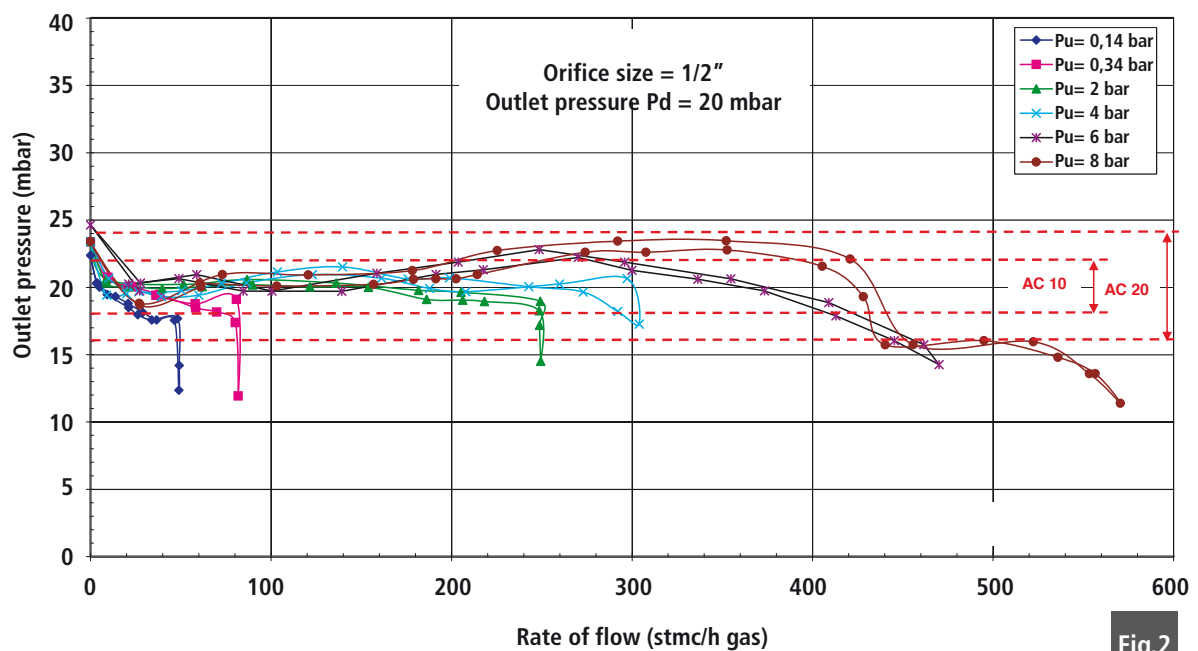


Fig.2



Dival 700



> Pressure regulators

Capacity Tables

DIVAL SERIES 700

DN 25 - 1"

OUTLET PRESSURE mbar (Pd)	Capacity in stmc/h (Natural gas)																ORFICE SIZE Inches
	INLET PRESSURE bar (Pu)																
	0,07	0,1	0,14	0,2	0,3	0,34	0,5	0,7	1,0	1,38	2,0	3,00	4,00	5,00	6,00	8,00	
20	10	12	15	20	23	25	30	35	45	60	75	100	120	140	150	80	1/4"
	15	20	25	30	40	45	55	70	90	100	140	140	140	140	150	80	3/8"
	40	45	50	59	65	70	95	100	105	110	180	190	200	200	200	200	1/2"
	45	50	58	65	85	100	150	175	200	225	250	270	300	320			3/4"
50		10	12	15	20	25	30	35	50	60	75	100	125	150	180	95	1/4"
		20	25	30	40	50	55	70	90	105	120	130	140	220	200	125	3/8"
		30	35	40	60	70	80	100	110	120	160	165	170	240	200	200	1/2"
		40	50	60	80	100	110	120	130	140	230	270	270	270			3/4"
70			10	17	25	25	30	35	50	60	75	100	130	145	180	180	1/4"
			17	30	40	45	50	70	90	107	128	140	150	165	180	180	3/8"
			25	49	65	80	100	110	110	150	200	250	250	250	250	250	1/2"
			38	67	90	102	110	123	135	147	250	250	250	250			3/4"
100			10	15	20	25	30	35	45	65	75	95	130	150	180	120	1/4"
			20	30	40	50	60	70	90	120	130	150	180	200	200	200	3/8"
			30	45	57	63	85	100	120	140	170	180	195	220	230	230	1/2"
			45	65	130	105	110	120	135	220	185	210	220	235			3/4"
138				10	19	20	30	35	45	68	75	100	130	150	180	125	1/4"
				25	35	50	60	80	90	132	140	150	215	215	214	254	3/8"
				32	48	76	85	117	120	154	182	180	213	225	239	284	1/2"
				65	85	101	120	151	140	199	234	320	244	250			3/4"
300						10	30	30	45	68	75	100	130	150	180	230	1/4"
						45	60	80	95	132	140	170	220	280	320	420	3/8"
						61	85	102	130	154	182	200	424	450	474	484	1/2"
						101	130	187	170	199	234	240	466	480			3/4"
345							24	30	40	66	75	100	130	150	180	230	1/4"
							50	74	100	133	140	180	220	280	320	420	3/8"
							70	108	130	203	250	340	400	500	550	600	1/2"
							110	114	170	250	300	360	420	450			3/4"

Flow with accuracy class AC 20

DIVAL SERIES 700
DN 25 - 1"

OUTLET PRESSURE mbar (Pd)	Capacity in stmc/h (Natural gas)																OREFICE SIZE	
	INLET PRESSURE bar (Pu)																Inches	
	0,07	0,10	0,14	0,20	0,30	0,34	0,50	0,70	1,00	1,38	2,00	3,00	4,00	5,00	6,00	8,00		
400							25	25	55	50	75	100	130	150	180	230		1/4"
							50	80	105	95	140	180	220	280	320	420		3/8"
							70	110	140	190	260	320	420	500	600	650		1/2"
							100	180	217	252	330	420	500	600				3/4"
500							25	40	50	75	100	130	150	180	230		1/4"	
							85	95	90	140	180	220	280	320	420		3/8"	
							100	135	160	250	320	450	500	600	750		1/2"	
							170	220	250	340	420	500	600					3/4"
750								30	45	65	100	130	150	180	230		1/4"	
								90	80	120	180	220	280	320	420		3/8"	
								125	150	240	325	450	550	650	850		1/2"	
								200	250	350	400	500	600					3/4"
1000									40	60	100	130	150	180	230		1/4"	
									65	100	180	220	280	320	420		3/8"	
									144	225	340	460	600	700	950		1/2"	
									200	300	400	500	700					3/4"

Flow with accuracy class AC 20



Dival 700



> Pressure regulators

Capacity Tables

DIVAL SERIES 700

DN 40 - 1" 1/2

OUTLET PRESSURE mbar (Pd)	Capacity in stmc/h (Natural gas)																ORIFICE SIZE Inches	
	INLET PRESSURE bar (Pu)																	
	0,07	0,10	0,14	0,20	0,30	0,34	0,50	0,70	1,00	1,38	2,00	3,00	4,00	5,00	6,00	8,00		
20	10	12	15	17	20	25	30	35	45	60	75	100	130	150	180	230	1/4"	
	15	25	33	35	45	53	59	99	100	130	150	200	270	320	357	381	3/8"	
	25	30	43	50	67	78	90	140	165	197	248	270	300	350	400	430	1/2"	
	50	60	77	81	120	126	141	154	181	215	271	361	354	425				3/4"
	85	90	112	118	180	191	214	241	284	338	426							1"
100	110	124	130	136	141	158	250	290	350	440							1" 1/4	
50		10	15	18	25	25	30	35	45	60	75	100	130	150	80	230	1/4"	
		25	30	35	47	50	56	96	100	130	150	200	270	350	376	420	3/8"	
		30	40	49	70	73	83	140	165	195	245	325	337	400	472	500	1/2"	
		50	65	82	115	120	134	171	201	239	301	401	426	512				3/4"
		90	110	124	170	186	232	262	309	367	463	550						1"
	110	125	135	143	150	189	270	320	385	480							1" 1/4	
70			15	20	26	25	30	35	45	60	75	100	130	150	180	230	1/4"	
			30	35	46	48	53	93	100	130	150	200	270	320	380	443	3/8"	
			40	48	67	69	78	140	165	195	245	320	360	430	490	530	1/2"	
			70	83	111	115	129	182	214	254	321	420	460	569				3/4"
			100	120	170	180	245	276	325	387	488	570						1"
		125	138	148	157	211	280	329	392	490							1" 1/4	
100			10	15	26	25	30	35	45	60	75	100	130	150	180	230	1/4"	
			20	30	40	45	50	75	100	125	150	200	250	320	380	480	3/8"	
			40	47	61	63	71	140	165	195	245	330	390	470	510	550	1/2"	
			65	83	104	109	122	199	234	278	350	440	510	656				3/4"
			100	120	168	179	250	280	340	410	510	550						1"
		130	140	156	166	242	297	350	417	515							1" 1/4	
138				15	26	20	30	35	45	60	75	100	130	150	180	230	1/4"	
				30	40	41	46	86	100	120	150	200	270	320	380	480	3/8"	
				45	53	55	62	120	165	200	250	336	433	520	540	550	1/2"	
				85	95	101	113	200	259	308	388	517	580	700				3/4"
				120	160	173	240	260	350	420	530	550						1"
			150	165	178	270	320	360	430	540							1" 1/4	
300						10	26	30	40	55	75	100	130	150	170	230	1/4"	
						45	55	65	90	120	150	200	250	320	380	480	3/8"	
						60	72	90	160	200	250	350	400	460	550	700	1/2"	
						105	125	150	200	250	350	450	650	800				3/4"
						180	210	230	340	400	500	550						1"
					210	240	270	400	500	620							1" 1/4	

Flow with accuracy class AC 20

DIVAL SERIES 700
DN 40 - 1" 1/2

OUTLET PRESSURE mbar (Pd)	Capacity in stmc/h (Natural gas)																ORIFICE SIZE	
	INLET PRESSURE bar (Pu)																Inches	
	0,07	0,10	0,14	0,20	0,30	0,34	0,50	0,70	1,00	1,38	2,00	3,00	4,00	5,00	6,00	8,00		
345							25	30	40	50	75	100	130	150	162	230		1/4"
							55	67	90	115	150	200	250	300	380	480		3/8"
							75	88	130	200	240	250	400	470	550	750		1/2"
							137	156	210	260	350	450	730	876				3/4"
							210	230	340	400	540	550						1"
						250	285	400	500	680								1" 1/4
400							15	25	40	50	75	100	130	150	166	230		1/4"
							64	72	90	105	150	200	250	300	380	480		3/8"
							80	90	110	125	200	270	400	500	600	780		1/2"
							150	180	215	280	350	500	750	900				3/4"
							230	260	320	400	560	550						1"
						260	300	350	450	680								1" 1/4
500							25	40	50	75	100	130	150	180	230		1/4"	
							50	80	100	150	200	260	300	380	480		3/8"	
							100	115	130	190	320	426	511	620	800		1/2"	
							200	240	300	400	550	800	900					3/4"
							280	330	400	550	550							1"
						300	350	450	680									1" 1/4
750								30	45	65	100	130	150	180	230		1/4"	
								60	90	150	200	270	320	380	480		3/8"	
								100	140	220	350	450	550	650	800		1/2"	
								190	280	410	600	800	950					3/4"
								250	390	570	600							1"
							320	410	680									1" 1/4
1000								40	60	100	130	150	180	230		1/4"		
								80	140	200	270	320	380	480		3/8"		
								140	258	350	450	550	650	800		1/2"		
								210	370	600	780	950						3/4"
								310	520	600								1"
							410	680										1" 1/4

Flow with accuracy class AC 20



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> Pressure regulators

Capacity Tables

DIVAL SERIES 700

DN 50 - 2"

OUTLET PRESSURE mbar (Pd)	Capacity in stmc/h (Natural gas)																ORIFICE SIZE Inches	
	INLET PRESSURE bar (Pu)																	
	0,07	0,10	0,14	0,20	0,30	0,34	0,50	0,70	1,00	1,38	2,00	3,00	4,00	5,00	6,00	8,00		
20	10	12	15	17	20	25	30	35	45	60	75	100	130	150	180	230	1/4"	
	15	25	33	35	47	55	90	102	100	130	150	220	270	320	380	480	3/8"	
	25	30	43	50	67	78	128	144	170	197	250	270	300	350	400	539	1/2"	
	50	60	78	90	120	141	218	246	290	303	431	500	500	500				3/4"
	85	90	114	135	180	199	225	255	300	386	452							1"
100	110	135	160	200	227	217	250	290	378	440								1" 1/4
50		10	15	18	25	25	30	35	57	60	75	100	130	150	180	230	1/4"	
		25	30	35	60	65	89	100	100	130	150	220	290	320	415	480	3/8"	
		30	40	60	80	75	125	140	165	195	250	325	340	420	460	541	1/2"	
		50	65	100	120	135	205	230	270	302	400	550	560					3/4"
		90	110	125	170	190	235	265	315	391	475	600						1"
	110	130	157	205	235	250	300	330	385	480								1" 1/4
70			15	20	35	25	30	35	45	60	75	100	130	150	180	230	1/4"	
			30	36	60	65	87	99	100	130	150	220	280	320	380	480	3/8"	
			40	70	95	71	121	140	165	195	250	320	360	434	506	550	1/2"	
			70	85	120	127	189	214	252	302	378	420	460					3/4"
			100	120	170	180	247	280	330	396	495	600						1"
		125	146	215	250	266	348	355	390	490								1" 1/4
100			10	15	33	25	30	35	45	60	75	100	130	150	180	230	1/4"	
			20	30	40	45	60	75	100	130	150	220	250	320	380	480	3/8"	
			50	70	80	73	105	140	165	195	250	330	405	470	510	550	1/2"	
			65	90	127	135	170	205	275	315	410	440	510					3/4"
			100	120	180	190	250	280	340	410	510	600						1"
		130	140	220	240	265	325	350	410	515								1" 1/4
138				15	30	20	30	35	45	60	75	100	130	150	180	230	1/4"	
				35	60	62	70	79	100	130	150	220	295	320	380	480	3/8"	
				70	73	76	85	120	165	200	250	350	437	524	540	570	1/2"	
				95	135	144	161	200	283	336	424	500	580	700				3/4"
				120	190	202	240	260	350	420	530	600						1"
			140	225	236	270	320	360	430	540								1" 1/4
300						10	34	30	40	55	75	100	130	150	180	230	1/4"	
						45	55	65	90	120	150	220	250	320	380	480	3/8"	
						65	73	90	160	200	250	250	400	460	550	700	1/2"	
						105	125	150	200	250	350	450	650	800				3/4"
						180	210	230	340	400	500	600						1"
					210	240	270	400	500	620								1" 1/4

Flow with accuracy class AC 20

DIVAL SERIES 700
DN 50 - 2"

OUTLET PRESSURE mbar (Pd)	Capacity in stmc/h (Natural gas)																ORIFICE SIZE Inches	
	INLET PRESSURE bar (Pu)																	
	0,07	0,10	0,14	0,20	0,30	0,34	0,50	0,70	1,00	1,38	2,00	3,00	4,00	5,00	6,00	8,00		
345							35	30	40	50	75	100	130	150	180	230	1/4"	
							55	69	90	115	150	220	250	300	380	480	3/8"	
							79	93	130	190	240	250	400	470	550	750	1/2"	
							137	157	210	260	350	450	700	805				3/4"
							210	236	340	400	540	600						1"
							250	285	400	500	680							1" 1/4"
400							35	40	40	50	75	100	130	150	180	230	1/4"	
							64	72	90	105	150	220	250	300	380	480	3/8"	
							84	95	110	125	170	280	420	515	600	800	1/2"	
							150	180	215	280	350	500	750	900				3/4"
							230	260	320	400	560	600						1"
							260	300	350	450	680							1" 1/4"
500							30	40	50	75	100	130	150	180	230	1/4"		
							50	80	100	150	220	260	300	380	480	3/8"		
							100	115	130	185	320	450	530	640	800	1/2"		
							200	240	300	400	550	800	900				3/4"	
							280	330	400	590	600							1"
							300	350	450	680								1" 1/4"
750								30	45	65	100	130	150	180	230	1/4"		
								60	90	150	220	275	320	380	480	3/8"		
								100	140	220	350	450	550	650	800	1/2"		
								190	280	410	650	800	950				3/4"	
								250	390	570								1"
								320	410	680								1" 1/4"
1000								40	60	100	130	150	180	230	1/4"			
								80	140	220	278	320	380	480	3/8"			
								120	200	350	450	550	650	800	1/2"			
								320	483	725	800	950					3/4"	
								310	520									1"
								414	680									1" 1/4"

Flow with accuracy class AC 20

Dival 700

> Pressure regulators



Slam-Shut Valve

This is a device which stops immediately gas flow when, whenever downstream pressure exceeds given set-point. Device can be actuated also manually.

Incorporated LA/... Slam-Shut

Slam shut (see figure 3) can be incorporated on the standard regulator and on the in-line monitor.

The regulator with the incorporated slam-shut has flow rate value equal to the basic regulator.

A further advantage of the incorporated slam-shut valve is that it can be retro fitted at any time on a previously installed **Dival 700 series** without modifying the regulating unit (only with 4 ways body).

Further the slam-shut can be positioned in four different position (rotation on its axis) in such way to be fixed it in the most appropriated position versus the surrounding encumbrance if any.

The main features of this slam-shut device are:

- design pressure 20 bar for all the components;
- intervention for over pressure and/or under pressure;
- accuracy (AG): up to 5 for pressure increase, up to 15 for pressure decreasing;
- internal by-pass;
- manual push-button control;
- possibility of pneumatic or electromagnetic remote control;
- compact overall dimensions;
- easy maintenance;
- possibility of application of devices for remote signal (contact or inductive microswitches).

Table 4 shows the available pressure switches

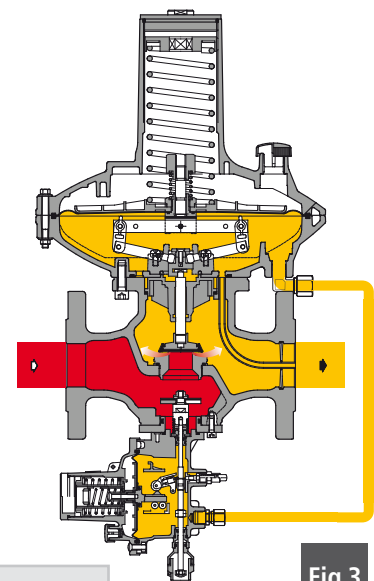


Table: 4 Slam-Shut pressure switches

Pressure switch	LA/BP	LA/MP	LA/TR
Set point range for Overpressure Wdo	0,030 ÷ 0,180	0,140 ÷ 0,450	0,25 ÷ 5,5
Set point range for Underpressure Wdu	0,006 ÷ 0,060	0,010 ÷ 0,240	0,1 ÷ 3,5

Values in bar



Dival 700



> Pressure regulators

Possible installation schemes

DIVAL SERIES 700 + LA/...

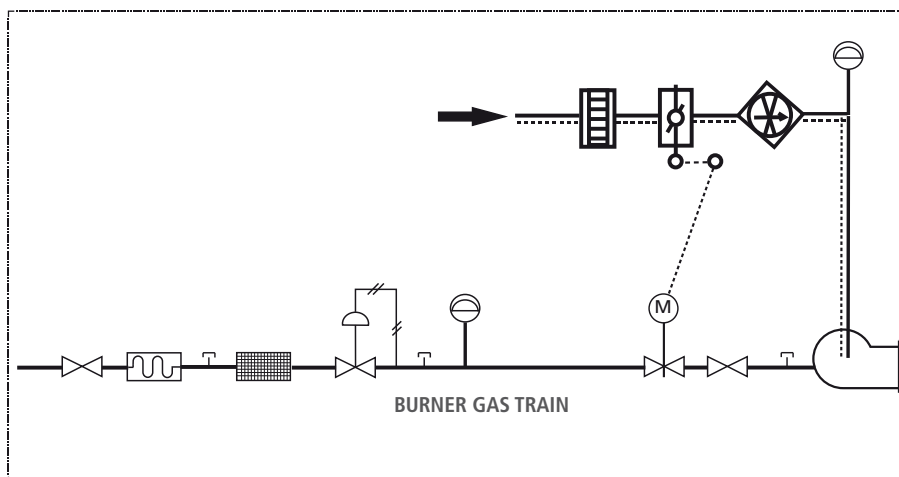
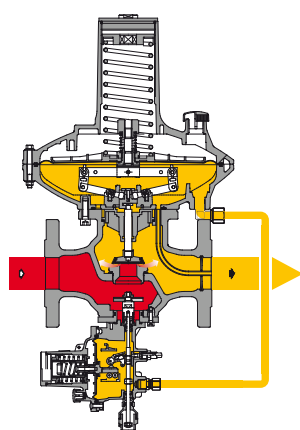


Fig.5

DILOCK 108 + DIVAL SERIES 700

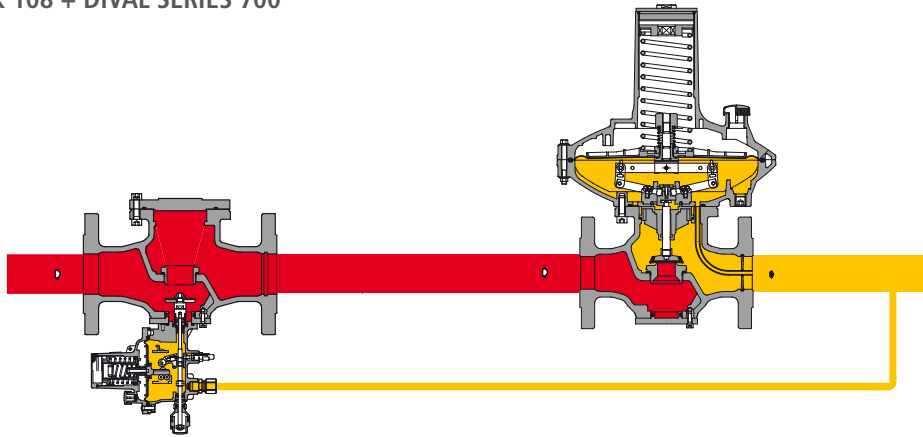


Fig.6

DILOCK 108 + DIVAL SERIES 700 + LA/...

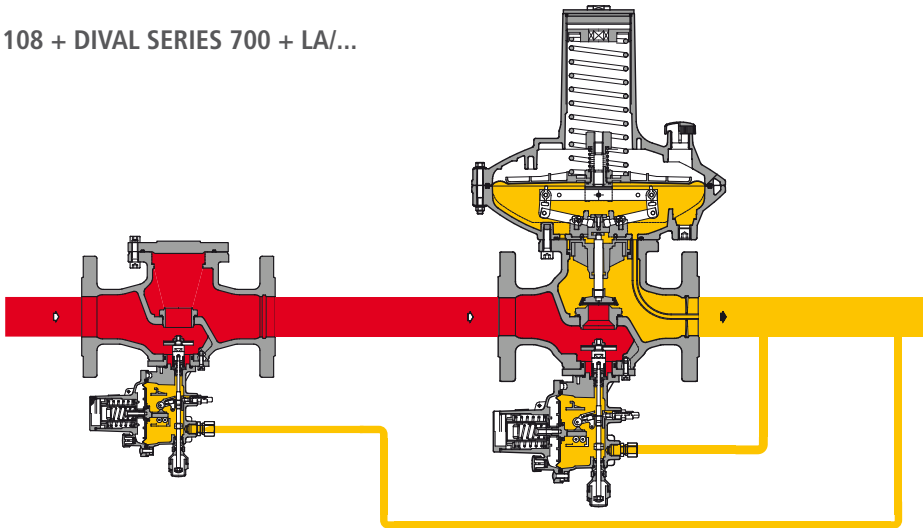
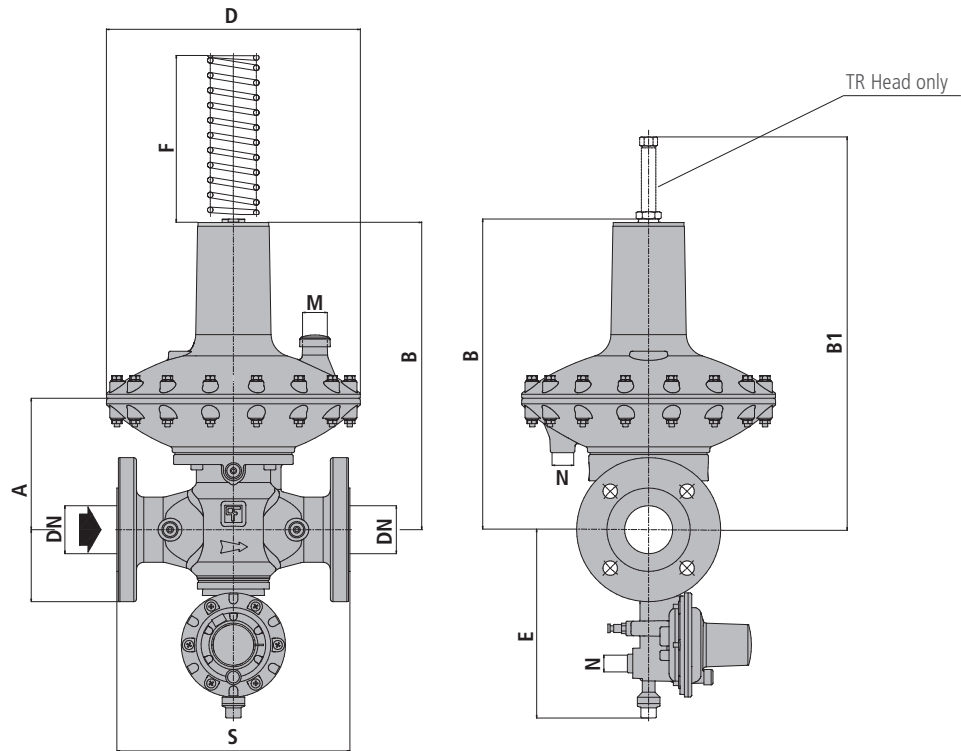


Fig.7

Dival Series 700

Overall dimensions in mm

Type	DN	S	A	B	B1	D	E	F	M	N
Dival 700	25x25	183	145	343	433	280	215	200	Rp ^{1/2"}	Rp ^{1/4"}
Dival 700	40x40	223	145	343	433	280	215	200	Rp ^{1/2"}	Rp ^{1/4"}
Dival 700	50x50	254	145	343	433	280	215	200	Rp ^{1/2"}	Rp ^{1/4"}
Dival 700	Rp 2"x2"	152,4	145	343	433	280	215	200	Rp ^{1/2"}	Rp ^{1/4"}

Weights in Kgf

Type	DN	Dival	Dival with slam-shut LA/...
Dival 700	25x25	15	16
Dival 700	40x40	17	18
Dival 700	50x50	20	21
Dival 700	Rp 2"x2"	18	19

Face to face dimensions S according to EN 334 and IEC 534-3