This file has been cleaned of potential threats.

If you confirm that the file is coming from a trusted source, you can send the following SHA-256 hash value to your admin for the original file.

bd78020d64c04faa133d8fa97f6ba1fafcb0e9837b3e8d33afa5c3e61b06a581

To view the reconstructed contents, please SCROLL DOWN to next page.



PRESSURE REGULATOR RTG 406





Introduction

RTG 406 regulators are of direct action type and are intended for low flow rates. These regulators are used for reducing and regulating the pressure of natural gases and LPG and they ensure constant maintenance of outlet pressure within the regulating class limits, irrespective of the variations of inlet pressure and flow rate. They are designed for natural gas transportation and distribution networks.

The pressure regulator can be optionally equipped with a shut-off valve.



Figure 1 – Functional diagram of RTG 406 regulator



RTG 406 regulator operation

The regulator operation is explained on the basis of the diagram in Figure 1.

RTG 406 regulator is of normally open type.

When the inlet pipeline is pressurized, the gas enters the regulator via the threaded inlet connection of the body (1) and reaches the lower chamber below the seat (2). The gas passes through the seat and reaches the body (1) upper chamber, then passes through the outlet connection.

At the same time, the gas enters the holder body (8) through the holes in the rod guide (6). The gas pressure in the holder body (8) acts on the control diaphragm (13) generating a force that opposes the force exerted by the adjustment spring (16).

The increase of the pressure under the diaphragm over a certain level triggers the movement of the control rod (11). This movement is transmitted to the pusher post (4) by means of the lever (9).

The movement of the assembly composed of the pusher post (4), holder and valve plate (3) determines the modification of the distance between the seat (2) and the valve plate (3). This results in gas flow fluctuation. When the regulated pressure increases over a certain value, the seat orifice is sealed and the gas flow rate in the regulator is null.

If the outlet pressure increases accidentally over a certain value (0.4 bar over the set value), the force exerted by the pressure under the diaphragm overcomes the force given by the relief spring (15), the control rod does not move, instead the set composed of the control diaphragm (13) and the relief seat (14) move. Consequently, the O-ring on the control rod (11) does not seal and the excess pressure is vented into the atmosphere through connection (20).



Technical characteristics

Design features:

- Normally open
- Closure with null flow

Table 1	– Main	characte	ristic
Table 1	– Main	characte	ristic

Main characteristics	RTG 406	
Body design pressure P _{ZUL} [bar]	64 (40)	
Inlet pressure P _e [bar]	$0.5 \div (40); 0.5 \div 64$ (depending on model)	
Outlet pressure P _a [bar]	$0.5 \div 6$	
Accuracy class AC	up to $\pm 10 \div 20$ %	
Lock-up pressure class SG	up to 20 ÷ 30 %	
Intervention accuracy class (AG)	 minimum up to 2.5% maximum up to 1% (depending on the control pressure) 	
Connection type – threaded	inlet G3/4", G1"; outlet G3/4", G1"	
Measuring line	internal or external	
Seat diameter [mm]	3; 4; 5; 6; 8; 10; 12	
Overall dimensions [mm]	$238 \times 115 \times 251$ (Figure 3)	
Working temperature [°C]	- 10 ÷ 60	
Ambient temperature [°C]	- 30 ÷ 80	

RTG 406 pressure regulators constructive variants

RTG 406 – simple variant – has only regulating functions;

RTG 406 D – incorporated relief valve – has regulating and overpressure protection functions;

RTG 406 SB – incorporated shut-off valve – has regulating and protection functions in case of pressure increase and decrease;

RTG 406 D SB – incorporated relief and shut-off valves – has regulating and protection functions in case of pressure increase and decrease.

Materials

Part	Material	
Bodies	Fgn; WCB; EN AW 6082T6 (SB 78)	
Seat	AISI 316	
Rod	CuZn39Pb2; X39Cr13	
Caps	Fgn; EN AW 6082T6	
Valve plate	Polyurethane	
Diaphragm	Rubber (NBR) with textile insert	
O-rings	Rubber (NBR)	
Internal parts	CuZn39Pb2; AISI 316; EN AW 6082T6	



Safety devices and optional accessories

- Incorporated relief valve
- External impulse

SB 78 shut-off valve operation

The shut-off valve operation is explained on the basis of the diagram in Figure 2. The working position of the SB 78 shut-off valve is normally open. The valve control pressure is applied through the lower cap (9) connection.



- 1. Seat
- 2. Body
- 3. Sealing o-ring
- 4. Internal ring
- 5. Valve plate
- 6. Spring holder
- 7. Spring
- 8. Rod guide
- 9. Lower cap
- 10. Ball chamber
- 11. Diaphragm holder
- 12. Cam
- 13. Control diaphragm
- 14. Balls
- 15. Upper rod
- 16. Spring seat
- 17. Spring cap
- 18. Minimum spring
- 19. Maximum spring
- 20. Minimum adjustment disk
- 21. Maximum adjustment disk
- 22. Protection cap

Figure 2 – Shut-off valve – Operating principle



The pressure acts on the control diaphragm (13). If the pressure increases above the set value, the assembly comprising the diaphragm, diaphragm holder (11) and cam (12) overcomes the force exerted by the maximum spring (19) and travels upwards. Consequently, at a certain moment, the balls (14) are released. The upper rod (15) travels under the action of the spring (7) and the O-ring (3) seals against the seat (1).

If the pressure decreases below the set value, the assembly comprising the diaphragm, diaphragm holder (11) and cam (12) travels downwards under the action of the minimum spring. At a certain moment, the balls are released and the valve intervenes.

Adjustment springs for RTG 406 and SB 78

Tables 2 and 3 list the springs that can equip RTG 406 regulator, SB 78 shut-off valve and the pressure ranges covered.

Regulator	Spring code	Setting range [bar]	
RTG 406	1450248	$0.2 \div 0.4$	
	1450249	$0.4 \div 0.8$	
	1450250	$0.7 \div 2$	
	1450251	$1.5 \div 3.5$	
	1450252	$2.5 \div 6$	

Table 2 – Adjustment springs for RTG 406 pressure regulators

Table 3 – Adjustment springs for SB 78 shut-off valves

	Minimum spring		Maximum spring	
Equipment	Code	Setting range [bar]	Code	Setting range [bar]
SB 78	1450205	$0.05 \div 0.1$	1450215	$0.4 \div 0.9$
	1450206	$0.09 \div 0.2$	1450216	$0.6 \div 1.1$
	1450207	$0.1 \div 0.3$	1450217	$0.9 \div 1.9$
	1450208	$0.3 \div 0.6$	1450218	$1.2 \div 2.7$
	1450209	$0.5 \div 1.2$	1450220	$2.3 \div 4.9$
	1450210	$1.2 \div 2.8$	1450374	$4 \div 8$



Overall dimensions



Figure 3 – RTG 406 – Overall dimensions

Regulator	Weight [kg]	
RTG 406	7.3	
RTG 406 SB	9.4	

The manufacturer reserves the right to make modifications without any prior notification.

CT No. 201 / 2009 / 01

TOTALGAZ INDUSTRIE

Nr. R.C.: J-22-3277/1994 Şos. Păcurari, nr. 128, CUI: RO6658553 IBAN: RO28BRDE240SV13842272400 B.R.D. G.S.G. laşi

laşi, cod 700545, România Tel. : 0040-232-216.391(2) 0040-232-215.983 Fax : E-mail: office@totalgaz.ro Web: www.totalgaz.ro

