

## 971 PRESSURE REGULATORS

### 1. Description

The 971 are pilot-loaded, pressure-balanced, plain-seat regulators. They are available in the following models with flanged connections from DN 25 to DN 300, ANSI 600: 971/: With actuator for high and medium pressures. 971-E/: Emergency monitor for installation on inlet side of regulator. Both models can be fitted with Series 79 or 80 pilots.

See Bulletin 0077 or 0078 for pilot operation and maintenance.

### 2. Installation

- Make sure that data on the regulator's plate are compatible with actual working conditions.
- Install regulator so that its position matches the flow direction shown by the arrow.
- Connect as shown in diagrams in Bulletins 0104 and 0108.

### 3. Start-up

- Gas flowing to regulator is to be properly filtered. Pre-heat gas if necessary.
- Slightly open the shut-off valve.
- Slightly and very slowly open the inlet shut-off valve.
- Wait for outlet pressure to stabilize.
- Slowly open inlet and outlet valves fully.

### 4. Troubleshooting

Irregular operation might also be caused by the auxiliary unite, i.e.. pilot and the mechanism. Consult Bulletins 0077 or 0078.

#### 4.1 Regulator does not open. Check:

- Inlet gas flow
- Feed to pilot.
- Broken regulator diaphragm.

#### 4.2 Outlet pressure decreases. Check:

- Insufficient feed flow.
- Demand greater than regulator capacity.
- Irregular pilot feed
- Clogged inlet filter.

#### 4.3 Outlet pressure increases. Check:

- Worn seal pad (27) or seat (25).
- Dirty seal pad preventing proper valve positioning.

#### 4.4 Hunting. Check:

- Improperly positioned impulse connections.
- Insufficient gas demand.
- Faulty setting of inlet and outlet adjustment orifices (see pilot Bulletin).

#### 4.5 Freezing. Check:

- Heating.
- Insufficient gas demand.

### 5. Periodic checks

**It is recommended that regulator and pilot be checked for wear regularly (see Bulletins).**

Slowly close the outlet shut-off and check fine pressure between it and regulator. A slight increase in pressure should be detected: this results from overload due to closing and is followed by pressure stabilization. If, however, outlet pressure continues to rise, then seal is defective.

Check if leak is coming from regulator or pilot, and service.

## 6. Maintenance

### 6.1 Important

**Servicing should be carried out by qualified, skilled personnel. For further information, please contact our Technical Assistance Department or our authorized dealers.**

Before servicing, shut off regulator inlet and outlet.

Make sure there is no gas under pressure in the regulator body by loosening inlet and outlet fittings. Upon completing maintenance, use soapy water to check proper sealing.

### 6.2 Replacing seal pad.

- Remove all connections holding down the covers and unscrew indicator bushing (45). Mark the position of the covers with respect to valve body.
- Remove nuts (20) and lift cover assembly straight up using eyelets (40).
- Remove pad retainer (23) and replace seal pad (27).
- Check seat (25). If worn or scored, use wrench to unscrew and replace. Check seal (24).
- Reassemble by reversing the above steps, taking care not to damage seal (17).

### 6.3 General maintenance.

- Remove all connections holding down the covers and unscrew indicator bushing (45). Mark the position of the covers with respect to valve body.
- To prevent release of spring (42), replace the two screws (41) with threaded rods and nuts. Remove the remaining screws and use nuts to gradually release spring. Remove cap (3) and slide out spring (42).  
**Note:** In those versions where cap (3) is welded to cover (9), use screws (37) to release spring tension.
- Remove screws (37) and cover (9).
- Lock stem (22) by inserting wrench into the proper grooves and unscrew nut (6). In the 971-E/, first unscrew small piston (50). **IMPORTANT:** For diameter equal to or greater than DN 150, first loosen dowel (53) and remove copper seal (52).
- Remove plates (10 and 12) and diaphragm (11), replacing the latter if worn.  
**IMPORTANT:** Stem (22) can now move freely and could come loose. Keep it in place by appropriate means.
- Fit stem (22) and spacer (30) together by means of nut (6), washer (8) and another spacer. Now unscrew nuts (20) and remove cover-stem-pad holder assembly (9-22-29).
- The assembly is to be set in place and secured so that stem axis (22) is horizontal. Unlock and slide out stem.
- Strip down all components.
- Clean with petrol and replace any worn or scored parts.  
 Only for diameters equal to or greater than DN 150, check guide bushings (54 and 55) and pad-retainer fins (23), replacing if worn or damaged.
- Replace pad (27) and check seat (25), replacing if scored or worn (see item 6.2).
- Check all seals and replace any, if necessary.

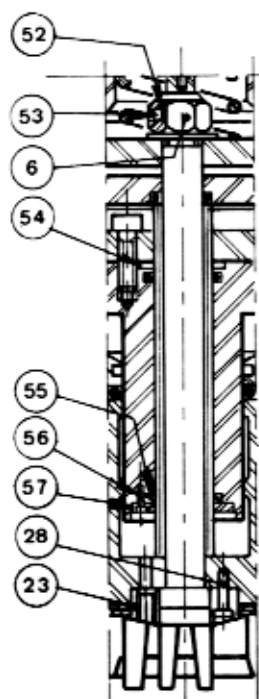
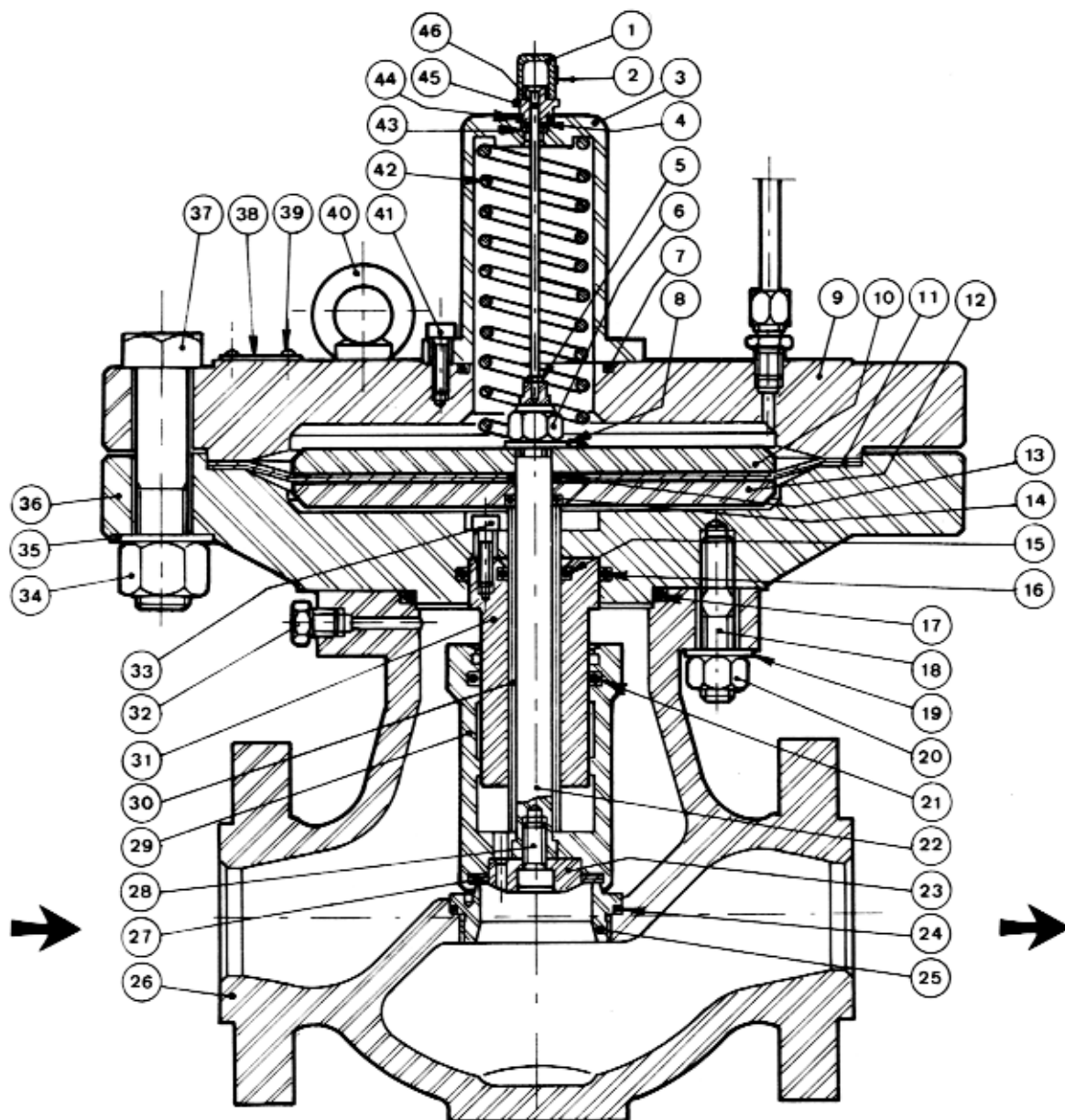
### 6.4 Reassembling

Lubricate all seals with MOLYKOTE 55 M and be very careful not to damage them when reassembling. Reassemble the parts by reversing the steps in 6.3 above. As you proceed, make sure that parts move freely and without friction. In addition:

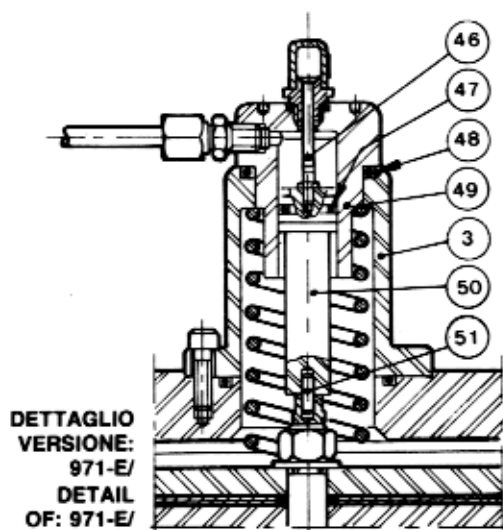
- Carefully reassemble cover-stem-pad holder assembly (9-22-29) and put it back in valve body, making sure not to damage seat seal surface (25).
- When tightening nuts (34), make sure that stem (22) stays locked in place, spacer (30) moves freely and pad (27) is fitted properly to seat (25).
- When fitting top cover (9), make sure diaphragm (11) fits properly in its seat.
- Tighten all screws uniformly to ensure proper sealing.
- Re-establish all connections.

### Setting

Carry out setting while in operation, using the pilot adjust screw: check pressure on outlet gauge. A small amount of gas must flow through the regulator during setting. To do this, slightly open inlet and outlet shut-off valves. If gas flow has been shut off for technical reasons, loosen an outlet fitting to create a small leak.



**DETTAGLIO**  
**VALIDO PER:**  
**971/ e 971-E/**  
**NEI DN 150-200-250-300**  
**DETAIL OF:**  
**971/ AND 971-E/**  
**FOR DN 150-200-250-300**



**DETTAGLIO**  
**VERSIONE:**  
**971-E/**  
**DETAIL**  
**OF: 971-E/**

<b>DATI DA FORNIRE PER LA RICHIESTA DI PARTI DI RICAMBIO</b>	<b>DATA TO BE SUPPLIED WHEN SPARE PARTS ARE REQUIRED</b>
APPARECCHIATURA TIPO .....	EQUIPMENT TYPE .....
MATR. N .....	SERIAL No .....
ATTACCO ENTRATA DN .....	INLET CONNECTION .....
USCITA DN .....	OUTLET CONNECTION .....
No PARTICOLARE .....	PART No .....
DENOMINAZIONE .....	NAME .....
ELENCO PARTICOLARI (riferito al Bollettino 1-1-0086-02/05/87)	PARTS LIST (referred to Bulletin GB-1-0086-02105/87)

N. PART PART No	DENOMINAZIONE	NAME	N. PART PART No	DENOMINAZIONE	NAME
1	Guaina	Sheath	31	Guida stelo	Steam guide
2	Targhetta indicatore	Indicator label	32	Tappo	Plug
3	Cappello	Cap	33	Vite	Screw
*4	O-Ring	O-Ring	34	Dado	Nut
5	Dado	Nut	35	Rondella	Washer
6	Dado autobloccante	Self-locking nut	36	Coperchio inferiore	Bottom cover
*7	O-Ring	O-Ring	37	Vite	Screw
8	Rondella	Washer	38	Targhetta	Data Plate
9	Coperchio superiore	Top cover	39	Rivetto	Rivet
10	Piattello superiore	Top plate	40	Occhiello	Eyelet
*11	Membrana	Diaphragm	41	Vite	Screw
12	Piattello inferiore	Bottom plate	42	Molla	Spring
*13	Guarnizione membrana	Diaphragm gasket	43	Rondella	Washer
*14	O-Ring	O-Ring	*44	O-Ring	O-Ring
*15	O-Ring	O-Ring	45	Raccordo indicatore	Indicator connection
*16	O-Ring	O-Ring	46	Indicatore	Indicator
*17	O-Ring	O-Ring	*47	O-Ring	O-Ring
18	Vite prigioniera	Stud bolt	*48	O-Ring	O-Ring
19	Rondella	Washer	49	Boccola di guida	Guide bushing
20	Dado	Nut	50	Pistoncino	Small piston
*21	O-Ring	O-Ring	51	Vite	Screw
22	Stelo	Stem	52	Guarnizione in rame	Copper gasket
23	Ferma pastiglia	Pad retainer	53	Vite	Screw
*24	O-Ring	O-Ring	54	Boccola superiore	Top bushing
*25	Sede	Seat	55	Boccola inferiore	Bottom bushing
26	Corpo	Body	56	Vite	Screw
*27	Pastiglia di tenuta	Seal pad	57	Anello di serraggio	Lock ring
28	Vite	Screw			
29	Porta pastiglia	Pad holder			
30	Distanziale	Spacer			

LE PARTI IN GOMMA INDICATE CON (*) VENGONO FORNITE NEL "KIT RICAMBIO" CONSIGLIATO COME NORMALE SCORTA MAGAZZINI.	RUBBER PARTS MARKED WITH (*) ARE SUPPLIED IN THE "SPARE PART KIT", RECOMMENDED AS STOCK.
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