



# R-125 RS-125

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## Medium pressure regulators for gas and shut-off valve for underpressure and/or overpressure

Installation and Service Instructions



To assure a proper and safe operation, as well as a long life of the regulator, the installation procedure and a periodical servicing are very important topics. Read carefully and keep in a safe place.

This item must be installed in compliance with the rules in force. All works must be executed by qualified technicians only.

The operators who will use the product must have read and understood this manual.

**IMPORTANT:** before proceeding with the installation, ensure that all the features of your system comply with the specifications of the regulator (connections, media type, pressure, flow rate, temperature range, etc.) and your request.

### DESCRIPTION

R series devices are direct-acting spring-loaded regulator type, controlled by a diaphragm and spring. Shut off valve system is independent from regulating device.

### TECHNICAL DATA

See regulator label. Abbreviations used:

P<sub>max</sub>: maximum inlet pressure for proper operation

PS: design pressure

P<sub>d</sub>: outlet pressure set by manufacturer

W<sub>ds</sub>: outlet pressure range with spring installed

B<sub>p</sub>: inlet pressure for proper working

W<sub>d</sub>: outlet pressure range available with different springs

AC: regulation accuracy class

SG: lock-up pressure class

TS: design temperature

With the suffix **O**, abbreviations described above refers to overpressure shut off valve.

With the suffix **U**, abbreviations described above refers to underpressure shut off valve.

e.g.:

P<sub>d</sub>o: overpressure shut off set by manufacturer

W<sub>dsu</sub>: underpressure range with spring installed

**Main connections:** threaded fl ISO 7.1

flanged PN16 – ISO 7005

threaded NPT ANSI-ASME B1.20

flanged ANSI-ASA-ASME B16.5 class 150

**Regulator and shut off valve sensing connection:** G1/4 ISO 228

**Media type:** air, NG, LPG (gaseous) (EN437 - fam. 1, 2 and 3)

**Inlet test pressure:** 1.5 P<sub>max</sub>

**Outlet test pressure:** 1.5 W<sub>d</sub> max

### CAUTION

Before proceeding with installation, commissioning, or maintenance, relevant personnel must:

a. Observe all plant, local, and state guidelines for installation

b. Obtain all necessary/required permits

c. Wear suitable personal protection equipment according to plant and national guidelines

d. Follow all state and local codes regarding the safe venting of flammable gases (e.g. venting to atmosphere; venting to a safe location; following ATEX guidelines)

### PRELIMINARY CHECKS

- ☒ Check the regulator carefully for signs of damage prior to installation. If damage is found, do not install the regulator.
- ☒ Choose a location suitable for maintenance access for installation of the regulator. The regulator must be adequately protected from rain, sunlight, and mechanical impact.
- ☒ A suitable filter is required upstream of the regulator.
- ☒ The regulator may be mounted on horizontal (with regulator spring well pointed "up") or vertical pipes (advisable flow direction from bottom to top).
- ☒ The arrow on the regulator body must correspond with the flow direction.
- ☒ The pipe must be suitable to support the weight of the regulator.
- ☒ Check correct alignment of connecting pipes and parallelism between flanges, if present.
- ☒ Verify that the piping upstream of regulator is free of impurities (e.g. dirt, welding slag, residues of paint).
- ☒ The pipe downstream of the regulator until impulse socket must be free of valves for correct working of impulse lines.

### INSTALLATION

- ☒ Remove the end caps and make sure no foreign body is entered into the regulator during handling.
- ☒ Position the sealing agent on threads or gasket on flanges. (Avoid excessive quantities of sealing agent which could enter in the regulator)
- ☒ Screw the regulator on pipe using a proper tool, do not use diaphragm cover as lever. In case of flanges, screw nuts tightening crosswise. Avoid overtightening and mount tension free.
- ☒ All regulators are set for external sensing line. Models R.3., R.34, ed R.4. have also internal sensing line, which is suitable for gas speed at outlet lower 20 m/s. If internal sensing line is used, connection of external sensing line must be plugged. In any case speed at outlet pipe must not be higher than 150 m/s.
- ☒ Shut off valve always required external sensing line.
- ☒ For external sensing line use stainless steel pipe Ø10 and observe distance of picture below.
- ☒ The fittings selected must be compatible with the use specified for the apparatus and the requirements of the system.
- ☒ Sensing line must be connected to main line at a point free of turbulence. Follow the distance notation shown in the diagram below. The connection must be welded on the top of pipe.
- ☒ All other system components (relief valve, manual valve, etc) must be installed at appropriate distances from the regulator, according to the diagram below.

INDUSTRIAL VALVE SOLUTION  
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Per assicurare un funzionamento idoneo e sicuro, ed una lunga vita del regolatore, le operazioni di installazione e manutenzione periodica sono un aspetto fondamentale. Leggere attentamente e conservare in un luogo sicuro.

Questo dispositivo deve essere installato in accordo con le leggi in vigore. Tutti i lavori devono essere eseguiti da personale qualificato. L'operatore che utilizza questo prodotto deve aver letto e compreso questo manuale.

**IMPORTANTE:** prima di procedere con l'installazione, assicurarsi che tutte le caratteristiche del vostro sistema siano compatibili con le specifiche del regolatore (connessioni, media tipo, pressione, flow rate, temperatura, etc.) e le vostre richieste.

### DESCRIZIONE

I dispositivi tipo R sono regolatori ad azione diretta con comando a membrana e molla.

I dispositivi tipo RS sono regolatori tipo R con una valvola di sicurezza integrata, che interviene in caso di pressioni d'uscita anomale. I meccanismi della valvola di blocco e quelli del regolatore sono indipendenti.

### DATI TECNICI

Vedi targhetta sul regolatore. Abbreviazioni usate:

P<sub>max</sub>: massima pressione in ingresso per funzionamento corretto

PS: pressione di progetto

P<sub>d</sub>: pressione di uscita impostata dal fabbricante

W<sub>ds</sub>: pressione di uscita impostabile con la molla installata

B<sub>p</sub>: pressione in ingresso per funzionamento corretto

W<sub>d</sub>: pressione d'uscita ottenibile con molte diverse

AC: classe accuratezza pressione d'uscita

SG: classe pressione di chiusura

TS: temperatura di progetto

Con il suffisso o, gli acronimi si riferiscono al blocco per sovrappressione.

Con il suffisso u, gli acronimi si riferiscono al blocco per sottopressione.

es:

P<sub>d</sub>o: limite di sovrappressione impostato dal fabbricante

W<sub>dsu</sub>: intervallo di valori del limite di sottopressione impostabile con la molla installata

### Connessioni principali: filettate fl ISO 7.1

flangiate PN16 – ISO 7005

filettate NPT ANSI-ASME B1.20

flangiate ANSI-ASA-ASME B16.5 class 150

### Connessione presa impulso per regolatore e blocco: G1/4 ISO 228

Tipo di gas: aria, Metano, GPL (gassoso) (EN437 - fam. 1, 2 e 3)

Pressione di test all'ingresso: <1.5 P<sub>max</sub>

Pressione di test all'uscita: <1.5 W<sub>d</sub> max

### ATTENZIONE:

Prima di procedere all'installazione, messa in servizio o manutenzione gli operatori devono:

a. Prendere visione delle disposizioni di sicurezza applicabili all'installazione in cui devono operare;

b. Ottenere le necessarie autorizzazioni ad operare quando richieste;

c. Dotarsi delle necessarie protezioni individuali;

d. Assicurarsi che l'area in cui si deve operare sia dotata delle protezioni collettive previste e delle necessarie indicazioni di sicurezza. In particolare se il gas utilizzato è infiammabile la zona circostante dev'essere classificata ATEX.

### CONTROLLI PRELIMINARI

☒ Eseguire una verifica del prodotto al momento della consegna per individuare danni subiti durante il trasporto. Se il prodotto è danneggiato, non può essere installato.

☒ Verificare che lo spazio d'installazione sia adeguato, anche per una successiva manutenzione agevole;

☒ Verificare che a monte del regolatore vi sia un filtro idoneo;

☒ Il regolatore può essere montato su tubazioni orizzontali (con molla principale verso l'alto) o verticale (consigliato flusso dal basso verso l'alto);

☒ La freccia sul corpo del regolatore deve corrispondere con la direzione del flusso;

☒ La tubazione deve avere supporti adeguati per il peso del regolatore;

☒ Verificare il corretto allineamento delle tubazioni ed il parallelismo delle flange, se presenti;

☒ Verificare che la tubazione a monte del regolatore sia pulita (assenza di sporco, residui di saldatura, residui di vernice...);

☒ Verificare che la tubazione a valle del regolatore fino alle prese di impulso sia priva di valvole di intercettazione;

☒ Verificare che la tubazione a valle del regolatore sia dotata di una valvola di intercettazione.

### INSTALLAZIONE

☒ Rimuovere i tappi protettivi ed assicurarsi che nulla sia entrato nel regolatore;

☒ Posizionare il sigillante sui filetti o le guarnizioni sulle flange (evitare eccessivo sigillante che può entrare nel regolatore);

☒ Avvitare il regolatore sulla tubazione usando un attrezzo opportuno, non usare il coperchio membrana come leva. In caso di flange, serrare i buloni in modo incrociato. Evitare serraggi eccessivi. Il regolatore deve essere privo di sollecitazioni dovute alle tubazioni.

☒ Tutti i regolatori sono predisposti per presa impulso esterna. I modelli R.3., R.34, ed R.4. hanno anche la presa impulso interna che permette un buon funzionamento se la velocità all'uscita del regolatore è inferiore a 20 m/s. Se viene usata la presa impulso interna, il foro di collegamento della presa impulso esterna deve essere tappato. In ogni caso la velocità all'uscita del regolatore non deve superare 150 m/s.

☒ La valvola di blocco necessita sempre dell'impulso esterno.

☒ Per la linea impulso esterna usare tubazioni in acciaio inox Ø10 e rispettare le distanze indicate nella figura sotto.

☒ I raccordi utilizzati devono essere compatibili con l'uso indicato dal produttore e con i requisiti del sistema in cui vengono installati.

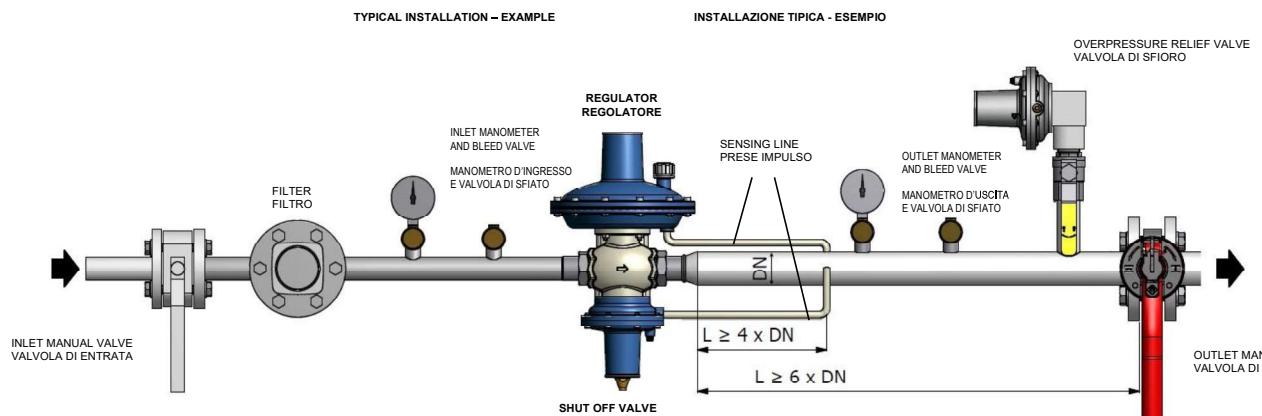
☒ Gli attacchi per le linee impulso devono essere saldati in un tratto di tubazione privo di turbolenze (es. lontano da curve o cambi di sezione), si devono rispettare le distanze indicate nella figura sotto e l'attacco va saldato nella parte alta della tubazione.

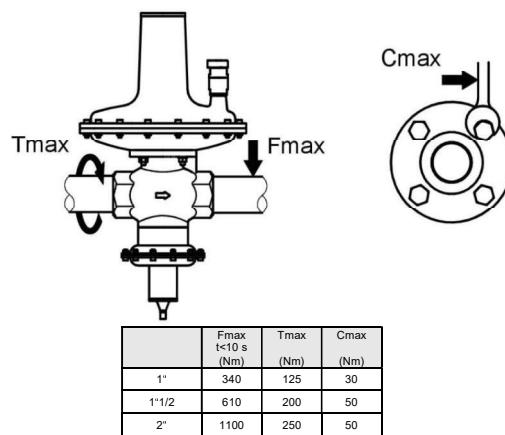
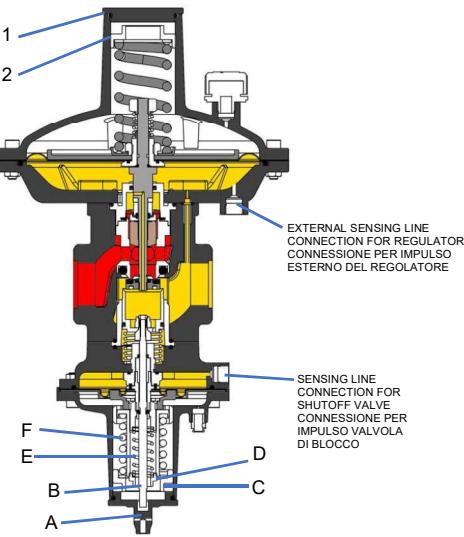
☒ Tutti gli altri componenti del sistema (valvole manuali, valvola di sfioro ecc) vanno installati rispettando le distanze minime dal regolatore, secondo quanto indicato nella figura sotto.

### TYPICAL INSTALLATION – EXAMPLE

### INSTALLAZIONE TIPICA - ESEMPIO

OVERPRESSURE RELIEF VALVE  
VALVOLA DI SFIORO





#### COMMISSIONING

**☒** Limit personnel to those strictly necessary for commissioning. Use signage to communicate to outside personnel of potential danger. Plan to mitigate the risks associated with discharging flammable or noxious gases into the atmosphere around the installation. If the installation is on a distribution network, also consider the risk of formation of potentially explosive mixtures inside the piping.  
THE STEPS LISTED BELOW DESCRIBE A GENERAL COMMISSIONING SEQUENCE, BUT EVERY INSTALLATION MUST BE EVALUATED IN CASE A CHANGE TO THIS SEQUENCE IS NECESSARY TO PREVENT A DANGEROUS SITUATION.

- ☒** Check that manual shut-off valves at inlet and outlet are closed.
- ☒** SLOWLY open inlet valve so that inlet and outlet pressure can be read on manometers, then close inlet valve. If necessary open the shut off valve (see next paragraph).
- ☒** Verify external tightness, using a gas detector and/or bubbling agent to detect leaks.
- ☒** If there is no leak, slowly open the inlet manual valve;
- ☒** If necessary, open the shut off valve and verify that it remains open.
- ☒** Slowly open the outlet manual valve.

#### OPENING THE SHUT OFF VALVE

Opening the shutoff valve is easier when outlet manual valve is closed.

- ☒** Unscrew the lower cap (A);
- ☒** Screw it upside-down to the rod (B);
- ☒** Pull the rod slightly downward until the internal by-pass opens. Wait a few moments, then pull the rod downward until it stops;
- ☒** if outlet pressure is between under pressure (UP) and over pressure (OP) limit, the valve will stay open;
- ☒** Unscrew cap from the rod and screw the cap in the cover in its initial position.

If valve does not stay open:

- check outlet pressure;
- check UP and OP limit as described below;
- if necessary, reset outlet pressure, UP and OP limit.

#### SETTING THE OUTLET PRESSURE

- ☒** Remove cap of main diaphragm of regulator (1)

Turning clockwise the set nut (2), outlet pressure increases. If you need lower outlet pressure, turn counter clockwise.

- ☒** When outlet pressure is set, replace the cap.

If necessary, it is possible to change the spring.

**CAUTION:** the new spring must belong to the same range family as the old spring (LP, MP or HP, see Wd on label).

See product datasheet for springs available.

To change the spring:

- remove cap (1)
- unscrew set nut (2) (pay attention to antifriction washer under the nut)
- remove the original spring
- insert the new spring
- reassemble with reverse sequence. Pay attention that antifriction washer is installed under the nut.

Set the outlet pressure as described above.

#### CHECK AND SET THE SHUT OFF VALVE:

- ☒** Close the manual valves at inlet and outlet;

Connect a controlled auxiliary pressure source to the inlet and outlet pipe of the regulator;

Set auxiliary pressure at the outlet pressure value of the regulator;

- ☒** Open the shutoff valve (see paragraph above);

**☒ To check the intervention for over pressure (OP):** slowly increase the pressure from the auxiliary source and check the point at which the valve trips.

FOR OUTLET PRESSURES UP TO 500 mbar: do not use auxiliary pressure more than 2x the outlet pressure set-point (e.g. Pds 120 mbar, auxiliary pressure lower than 240 mbar).

FOR OUTLET PRESSURE GREATER THAN 500 mbar: do not use auxiliary pressure more than 1.5x the outlet pressure set point (e.g. Pds 0.8 bar, auxiliary pressure lower than 1.2 bar).

If necessary, adjust the OP ring nut (C-external): screw it clockwise to increase the value or unscrew it to decrease the limit.

Typically OP limit is set at:

- until 200 mbar, 1.75x outlet pressure set point
- until 400 mbar, 1.5x outlet pressure set point
- until 2 bar, 1.35x outlet pressure set point

**CAUTION:** The OP set point (limit) must be set in compliance with the rules in force in the installation location.

**☒ To check the trip value for under pressure (UP):** slowly decrease the auxiliary pressure and check the point at which the valve trips. If necessary, adjust the UP ring nut (D-internal): screw it clockwise to increase the value or unscrew it to decrease it.

Typically UP limit is set at 0.5x outlet pressure set point.

**CAUTION:** The UP set point (limit) must be set in compliance with the rules in force in the installation location.

If under pressure shutoff is not necessary, unscrew completely the UP ring nut and remove the UP spring.

It is good practice to repeat 3 times the check of OP and UP limits to be sure of good operation (typically intervention values differ less than 10%).

When necessary, it is possible to change the UP spring (E) and/or OP spring (F).

**CAUTION:** The new spring must belong to the same range family as the old spring (LP, MP, or HP, see Wd and Wdo on label).

See product datasheet for springs available.

To change UP or OP spring:

- unscrew completely the set nut (C or D)
- remove the old spring
- insert the new spring
- set the new limit as described above.

#### RESIDUAL RISKS

In every installation it is necessary to evaluate:

- Corrosion over time;
- Mechanical impact/damage to regulator;
- Tripping of shut-off mechanism due to strong vibration;
- Over-tightening of fasteners during installation, damaging regulator body.

#### Maintenance

- ☒ At least, once per year:**

Check the external conditions of the regulator: clean dust or other deposit;

Check the absence of external leakage with foam (see Commissioning section);

Check value of outlet pressure with and without flow;

**☒ Check correct working of under-overpressure shutoff valve as described above;**

Check that regulator and shut off caps are in correct position.

**☒ Recommended service life: 10 years;**

Contact our Technical department or install a new regulator in case of improper working or when service life is finished.

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