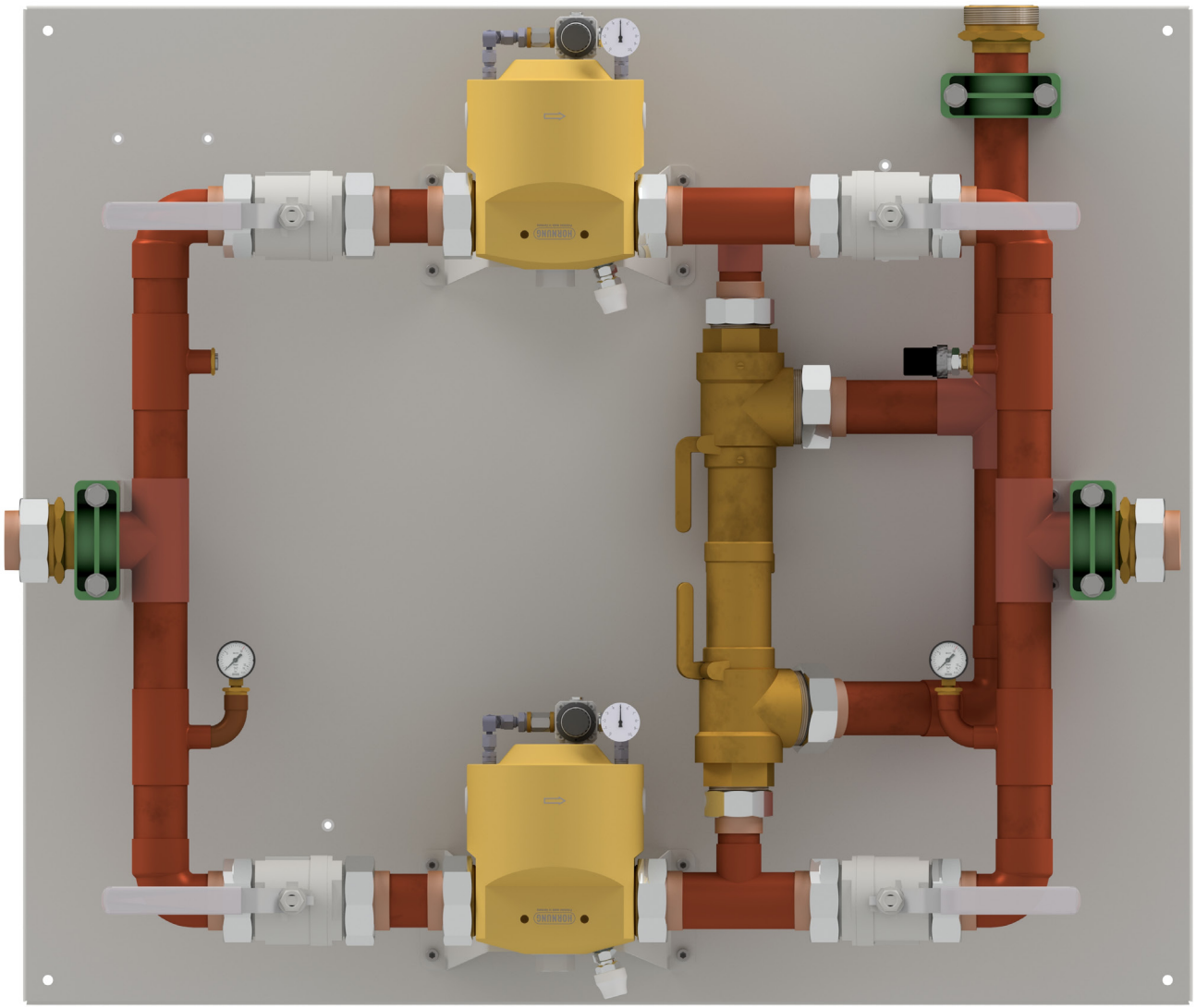
qmt tech care science

CE 0044

Operating & Maintenance manual
Line pressure regulator

2103313



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Contents

General instructions

These instructions are for the users to receive information about the line pressure regulator unit function and design.

Read the instructions with the line pressure regulator in place so that you can quickly and easily find all the controls.

The line pressure regulator is part of the medical gas pipeline system, and it is therefore subject to the inspections and controls specified in EN ISO 7396-1 and national standard SIS HB 370.
It may not be put into operation until a safety inspection has been carried out and a commissioning of medical use has been issued.

Make sure that the instructions are easily accessible, if necessary, more copies can be ordered from Qmt-tech. If something is unclear, you can also call us at 0480-440200.

Ensure the following

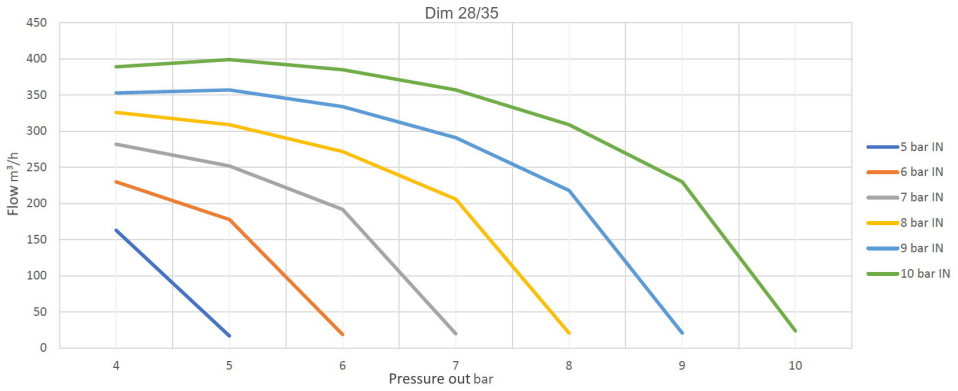
- The medical gases must not come into contact with oil, grease. These substances become extremely flammable on contact with certain gases and can start explosive fires.
- Hands, tools and equipment must be clean and grease-free.
- In order for Qmt-tech's warranty terms to apply, the cleanliness requirements must be maintained.
- Leak detectors used on gas fittings must be free of substances that can react with oxygen. It must also not contain ammonium compounds (ammonia) as these can cause cracking in brass details.
- Settings and repairs must be performed by technicians from Qmt-tech ab.
- According to SIS HB 370 and EN ISO 7396-1, alarms must be installed to the line pressure regulator.

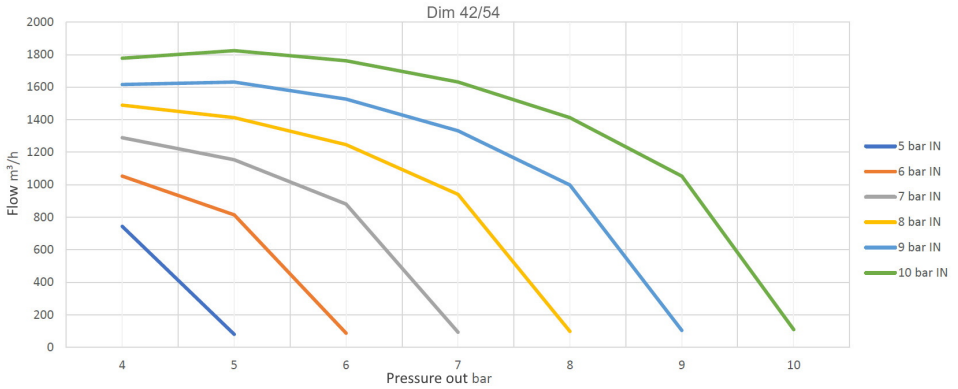
Line pressure regulator principle

Qmt-tech's line pressure regulator (pressure stabilizing unit) is intended to regulate the pressure of medical gases from nominal supply system pressure to nominal distribution pressure. According to the principle of single fault condition*, the unit contains two mutually independent operating circuits. One is intended for normal operation and the other as a reserve during, for example, service and inspection. This means that it is possible to replace regulators and safety valves during operation. Pressure transducer for outlet (nominal distribution) pressure is standard. Pressure transducer for inlet (nominal supply system) pressure is option. Optionally contact gauges can be fitted instead of pressure transducers. The unit is equipped with safety relief valves on the outlet pressure side for each circuit. These are equipped with a common relief gas pipe. The gas outlets are used as a measuring point.

** Single fault condition: Situation in which a single component, which is to protect against a safety risk in an equipment, is defective, or when a single external, abnormal circumstance is present.*

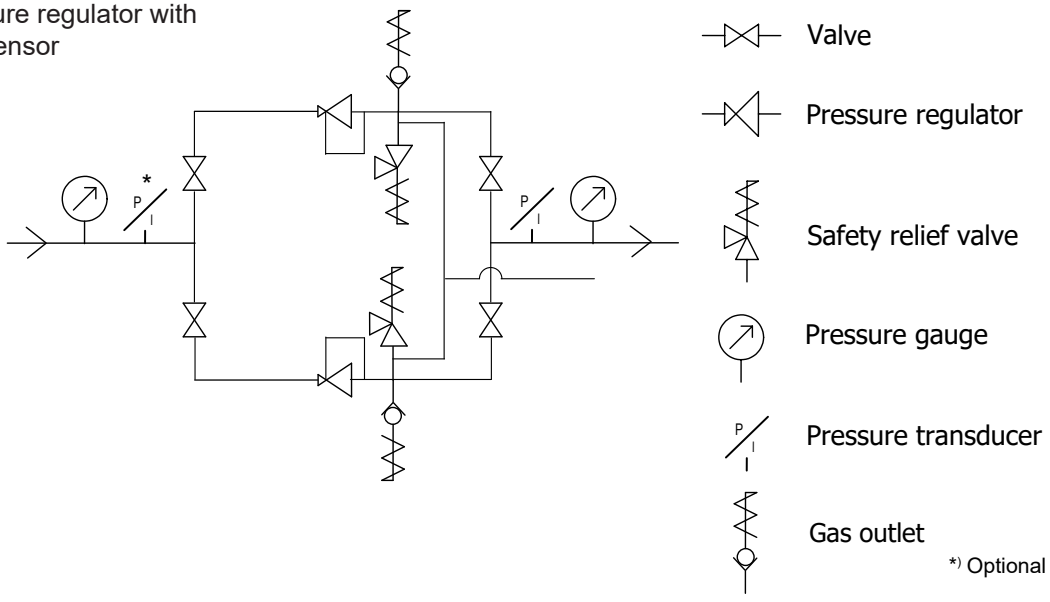
Flow data





Flow chart

Line pressure regulator with pressure sensor

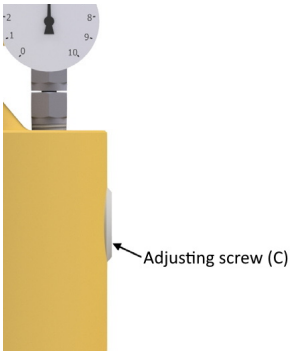


Line pressure regulator principles

The inlet valves (3) must normally be open, the handles set in a vertical position. The outlet valve (5) should normally be open for the circuit in operation, the handle set in a vertical position. You can select the operating side by opening one outlet valve and closing the other outlet valve. Set the desired alarm limits on the alarm, see the hospital's and alarm unit's instructions.

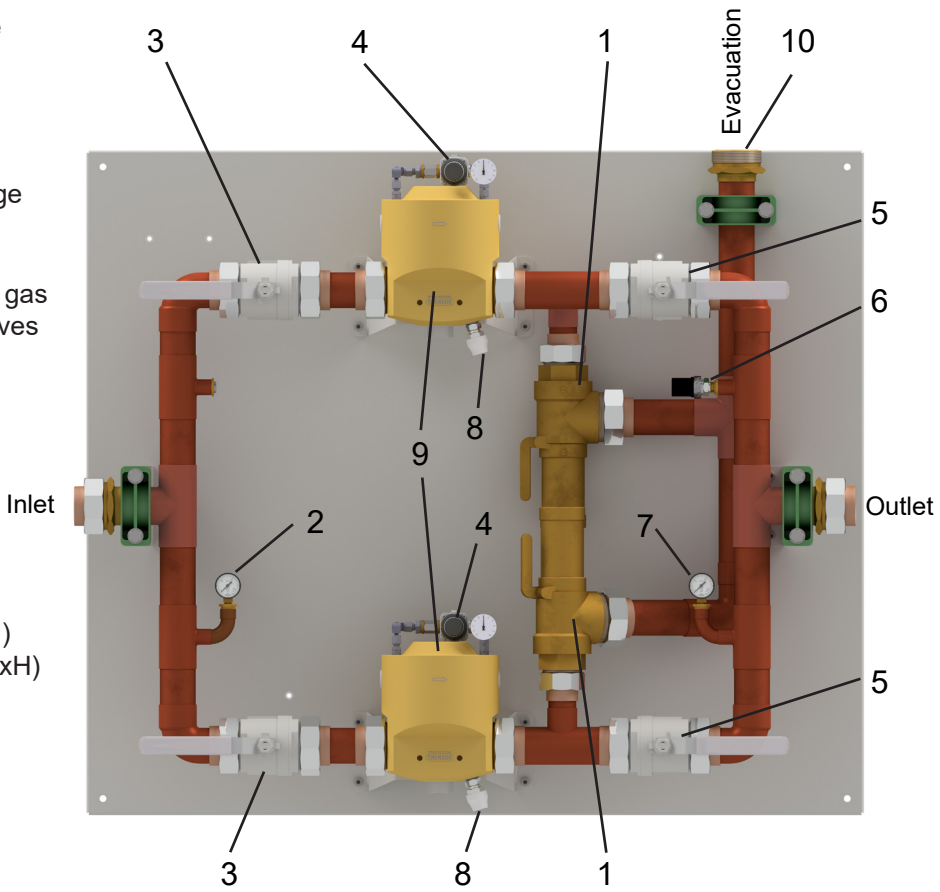
Self-venting regulator:
The operating pressure is adjusted by pulling the knob on the pilot regulator outwards and turning it clockwise to increase or counterclockwise to reduce the pressure. Read the pressure on the pilot regulator's pressure gauge. Remember to adjust carefully, the pressure drops slowly about 0.5 bar / min. Check the operating pressure against the outlet pressure gauge. When the adjustment is complete, lock the adjustment knob by pressing it down again. NOTE! Never turn the regulator adjusting screw (C).

Non-self-venting regulator (reserve gas system only):
Increase the operating pressure by pulling the knob on the pilot regulator outwards and turning it clockwise. Check against the pilot regulator pressure gauge and the outlet pressure gauge. Lower the operating pressure by carefully opening the adjusting screw (C) on the regulator outlet side until a low hissing sound is heard. Turn the control knob on the pilot regulator counterclockwise to a lower pressure than operating pressure. Close adjusting screw (C) on the outlet side of the regulator and then increase to the correct operating pressure by turning the pilot regulator clockwise. Check against the pilot regulator's pressure gauge and the outlet pressure gauge that the correct operating pressure has been reached. If the correct operating pressure is not reached, repeat the procedure. When the adjustment is complete, lock the adjustment knob on the pilot controller by pressing it down again. Do not touch the adjusting screws marked A, B and D.



Reference diagram

1. Safety relief valve
2. Inlet pressure gauge
3. Inlet valve
4. Pilot regulator
5. Outlet valve
6. Pressure transducer
7. Outlet pressure gauge
8. Gas off-take
9. Pressure regulator
10. Connection for relief gas from safety relief valves



Dimensions (mm)
Dim 28/35 734x773 (BxH)
Dim 42/54 1070x1000 (BxH)

Operating instructions: Alarm

The pressure transducers sends a signal to the alarm unit which sounds an alarm when the pressure rises above or decreases below set thresholds.

When the alarm sounds, take the following steps:

1. Acknowledge the alarm.
2. Check whether the alarm indicates high or low pressure. If the indicated pressure is correct, can be a malfunction to the alarm system or the pressure has returned to normal operating pressure.
3. If the pressure is not correct: Check if the inlet pressure is correct. Change the operating side. Fault trace according to local routines.

Operation and Maintenance

The line pressure regulator must be exercised annually and tested for safety. If no abnormal inertia, leakage or malfunction is detected, the device is approved for another year. In the event of a leak, replace the O-rings at the connection or valve body, after which a new safety test takes place. Safety testing takes place in accordance with national standard SIS HB 370.

Note that oil, grease and other contaminants must not come into contact with the product.
Regulators and safety valves can be serviced or replaced without interruption, by isolating the circuit to be serviced with the shut-off valves. Note that during service during operation, a circuit must always be kept open.

At annual safety test:

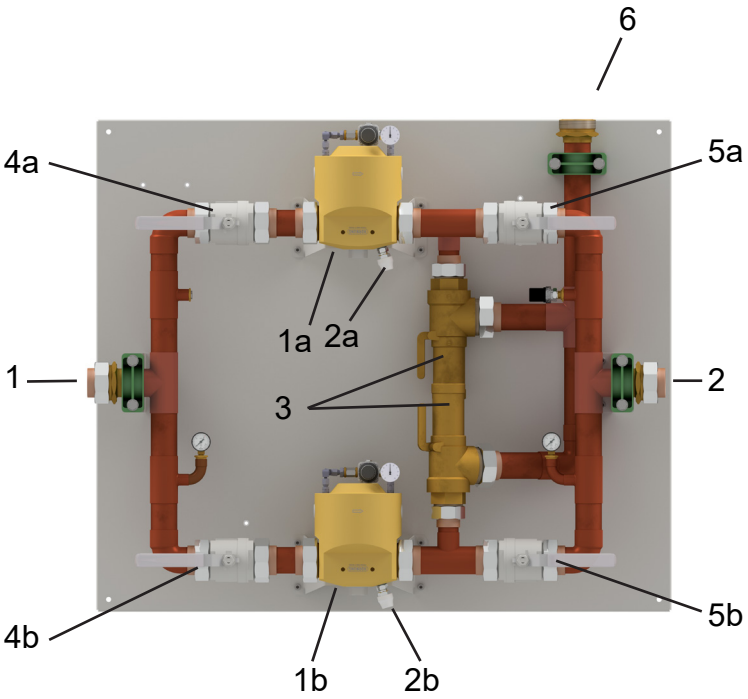
- The safety valves are checked to open at the set pressure. Also test the valve by pulling the relief device on the side of the valve.
- The pressure gauge must be checked to show the correct pressure.
- O-rings are replaced if necessary.
- The function of the gas outlets must be tested.

After maintenance and service, the system must be leak tested. This is done by pressurizing the system and then checking that the system is leak tight with the help of leak spray.
Settings, repairs and service must be performed by Qmt-tech technicians or by technicians authorized by this company.
At product end, the unit is returned to an authorized recycling company.

Installation instructions

Mounting:

- Fasten the bottom plate to the wall with required screws (4 pcs).
- For all gases except Air and AIR for driving surgical tools, the outlet pipe from the safety relief valves must be evacuated to the outside of the building according to EN 7396-1 and SIS HB 370.
- When brazing the inlet connection (1), shielding gas can be connected through connection (1a) or (1b). NOTE! Remember that valves (4a) and (4b) must be open.
- When brazing the outlet connection (2), shielding gas can be connected through gas outlets (2a) or (2b). NOTE! Remember that valves (5a) and (5b) must be open.
- When brazing the outlet pipe (6) from the safety valve (3), shielding gas can be connected through gas outlets (2a) or (2b). NOTE: Remember that valves (5a) and (5b) must be open and that at least one of the relief valves of the safety valves must be kept open ,for example with a wedge.



Note

- Install the line pressure regulator in such a way that it is protected against mechanical damage. Also note that electricity must be kept separate from gas pipelines according to current standards, see SIS HB 370.
- The installer must have the required product knowledge and certificatin for shield gas brazing and have undergone brazing certification in accordance with EN 13585 and EN 13134. Brazing must take place with shielding gas, without flux and with silver phosphor copper with a minimum of 5% silver content, article number QMT 7200812.
- The components of the line pressure regulator must not be exposed to temperatures exceeding 100 ° C.
- The installer must ensure that the correct gas and function are achieved through safety testing and that the system complies with EN 7396-1 and national standard SIS HB 370.
- The system must be inspected for safety before commissioning in accordance with current standards.

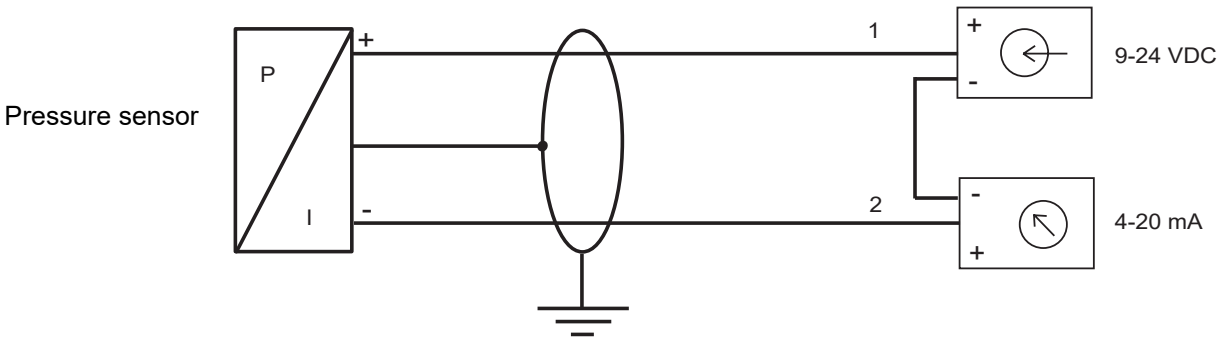
Warning

The use of shielding gas in medical gas systems must be carefully planned and separated from the rest of the system. After brazing and testing is completed, the system is flushed with the medical gas (= drug) to be contained in the system, to prevent personal injury. See SIS HB 370 and the hospital's instructions.

The components of the brazing pressure regulator must not be exposed to temperatures exceeding 100 ° C, either during installation or operation. Should this happen or suspect that this has happened, the components must be replaced and the system cleaned. In the event of fire, the affected section must be separated and decontaminated immediately before operation. Sealing plugs, packaging or protective packaging must not be removed until at the time of installation, as there may be a risk of damaging or contaminating the product.

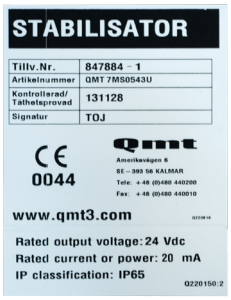
Wiring diagram

Each pressure transducers and contact gauges is equipped with a 3 m long cable.



Labeling / Manufacturing control

Each individual is marked with a data plate containing the serial number, date and the tester's signature. The marking can be found on the mounting plate. See picture to the right.



Spare parts

QMT article number for		
Reulators	QMT 78500XX	XX indicates connection diameter
Valves	QMT 7611XXX	XXX indicates connection diameter
Pressure gauges	QMT 7200013	
Transmitter	QMT 70TRG-A	
Gas outlet	QMT 716ORGX	X indicates gas type
Safety relief valves	QMT 76SÄKXXYY	XX indicates connection diameter, YY indicates opening pressure

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