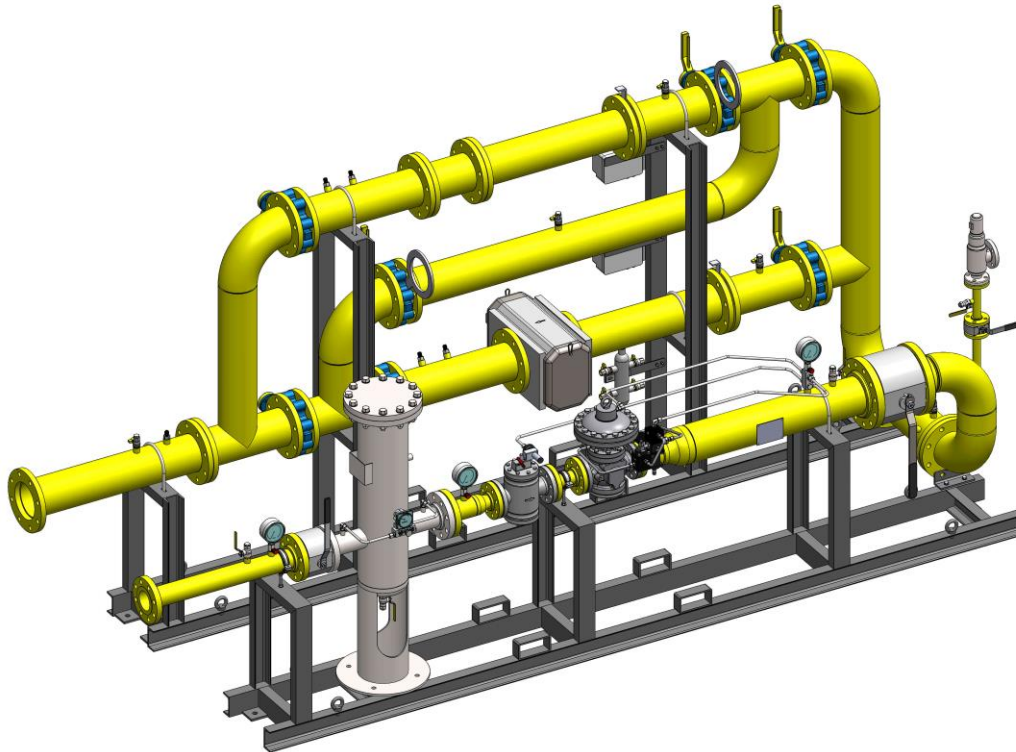


FILTRATION, REDUCTION AND MEASURING SYSTEM FOR NATURAL GAS & LPG

GR3 FAMILY

MODULE H



USER AND MAINTENANCE MANUAL

Edition 09.2022 Rev.3

3	UKCA references inserted	S.C.	M.C.	20/09/22
2	Change and integration	S.C.	M.C.	01/06/18
REVISION	DESCRIPTION	DRAWN UP BY	APPROVED BY	DATE



	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family
	INSTRUCTIONS FOR USE AND MAINTENANCE	Doc. GR3MU001/3
		Sheet 2 of 14

TABLE OF CONTENTS

1.	INTRODUCTION.....	3
1.1.	<i>FOREWORD AND IMPORTANT WARNINGS</i>	3
1.2.	<i>UPDATES OF THE USER MANUAL.....</i>	4
1.3.	<i>COPYRIGHT</i>	4
1.4.	<i>DESCRIPTION OF PICTOGRAMS AND SYMBOLS</i>	5
1.5.	<i>INTENDED USE OF THE SYSTEM</i>	6
2.	OPERATION OF THE SYSTEM	6
2.1.	<i>GENERAL DESCRIPTION</i>	6
3.	GENERAL SAFETY NOTES	8
3.1.	<i>RISKS ARISING FROM THE SYSTEM OPERATION</i>	8
4.	TECHNICAL SPECIFICATIONS	8
4.1.	<i>SYSTEM LABELLING</i>	8
4.2.	<i>TECHNICAL DATA</i>	9
5.	TRANSPORT, INSTALLATION AND ASSEMBLY	9
5.1.	<i>TRANSPORT AND HANDLING.....</i>	10
5.2.	<i>STORAGE</i>	10
5.3.	<i>ASSEMBLY AND CONNECTIONS</i>	11
6.	COMMISSIONING AND MAINTENANCE	11
6.1.	<i>COMMISSIONING</i>	11
6.1.1.	<i>GENERAL WARNINGS FOR THE CORRECT OPERATION OF THE SYSTEM</i>	11
6.1.2.	<i>COMMISSIONING THE SYSTEM</i>	11
6.1.3.	<i>CHECKS AND CONTROLS</i>	12
6.2.	<i>ADJUSTMENTS AND MAINTENANCE.....</i>	12
7.	COMPLIANCE.....	13
8.	DISMANTLING	13
9.	ATTACHED DOCUMENTATION	13
9.1.	<i>LIST OF ATTACHED DOCUMENTS</i>	13
10.	DECLARATION OF CONFORMITY FOR THE MODEL	14

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family
	INSTRUCTIONS FOR USE AND MAINTENANCE	Doc. GR3MU001/3
		Sheet 3 of 14

1. INTRODUCTION

1.1 FOREWORD

The **USER & MAINTENANCE** manual describes the operation and how to correctly perform the main operations and routine and periodic maintenance of the system.

The information contained in this manual is intended for a professional user who must have specific knowledge of how to use the system, must be authorised, educated and appropriately trained in the correct use and commissioning of the system to ensure the safety and continuity of operations.

It is therefore advisable to read it carefully before commissioning the system. This professional must keep the manual safe on board the system or in an easily accessible location, protected from damage and made available at all times for future reference.


This manual must be complete and legible in all its parts. Every operator in charge of using the system or in charge of maintenance or adjustments must be familiar with its location and must be able to consult it at all times.

If it is damaged or lost, a copy should be requested from the system manufacturer. If the equipment is transferred, the manual must be handed over to the new user.
The manual is considered an integral part of the system.

For all components and equipment manufactured by third parties, please follow the instructions in the related manuals.

The manual is designed to provide the user with the information required to use the equipment safely, from transport to disposal.

The instructions in this User & Maintenance Manual are supplementary to the accident prevention regulations in force in the country of use of the system (the instructions are complementary to the regulations and/or safety requirements of individual countries)

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family
	INSTRUCTIONS FOR USE AND MAINTENANCE	Doc. GR3MU001/3
		Sheet 4 of 14

1.2 UPDATING THE MANUAL

The information, descriptions and illustrations in this manual are at the level of the state of the art at the time when the system was placed on the market.

The manufacturer reserves the right to make changes to the system types at any time for technical or commercial reasons. Such changes will not bound the manufacturer to make changes on the systems sold up to that time or to consider this publication inadequate.

Any additions that the Constructor deems appropriate to provide at a later date must be kept together with the manual and deemed an integral part thereof.

Although this manual contains the most up-to-date information, there may be minor differences between your system and those described in this booklet.


If you find printing errors or unclear indications, or if you have any other doubts, please refer to your supplier.

1.3 COPYRIGHT

The copyright of this manual belongs to the manufacturer of the system.

This manual contains texts, drawings and illustrations of a technical nature that may not be disclosed or passed on to third parties, in whole or in part, without the written authorisation of the machine manufacturer.

Manufacturer of the system
PEGORARO GAS TECHNOLOGIES S.R.L.
Registered office: via A. Meucci, 77
36057 Arcugnano (VI) - Italy

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family Doc. GR3MU001/3
	INSTRUCTIONS FOR USE AND MAINTENANCE	Sheet 5 of 14

1.4 DESCRIPTION OF PICTOGRAMS AND SYMBOLS

The following symbols will be used in the manual to highlight instructions and warnings of particular importance:



CAUTION

This symbol indicates accident prevention regulations for the operators and/or any exposed persons



WARNINGS:

This symbol indicates that there is a possibility of damage to the product and/or its components.



NOTE:

This symbol indicates useful information.



CAUTION

Read the instruction manual before performing any operation

MANDATORY

Use PPE (personal protective equipment)



Helmet



Ear



Safety shoes



Gloves



Face



Goggles



Over



Safety



DANGER

Explosion with pressurised shrapnel




DANGER

Potentially explosive atmosphere



DANGER

Electric voltage

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family Doc. GR3MU001/3
	INSTRUCTIONS FOR USE AND MAINTENANCE	Sheet 6 of 14

1.5 INTENDED USE OF THE SYSTEM

The system is designed to filter, reduce and measure the pressure of compressed natural gas supplying household or industrial users.

The company PEGORARO GAS TECHNOLOGIES s.r.l. declines all responsibility for any damage to property or persons in the case of:

- Handling, installation, commissioning, gas supply, maintenance of individual devices installed and dismantling by unqualified personnel;
- improper use of the system;
- modifications, welding or damage;
- failure to comply with applicable safety and accident prevention regulations;
- operation at temperatures and pressures higher than those specified on the nameplate;
- Modification or removal of safety protection components (electrical, electronic, electropneumatic, electromechanical).
- Removal, painting over or covering warning and identification plates and symbols.
- installation errors;
- lack of proper maintenance;
- failure to observe the contents of this instruction manual

2. OPERATION OF THE SYSTEM

2.1 GENERAL DESCRIPTION

The system was designed and built to filter, reduce pressure and measure natural gas or LPG transported by tank trucks or tanks feeding distribution networks, industrial and household transmission networks.

The system can be generically divided into the following sections:

- a) Inlet
- b) Filtration
- c) Preheating (if any)
- d) Pressure regulation
- e) Flow rate measurement (if any)
- f) Outlet

a) Inlet

The system is usually supplied, unless specifically requested otherwise, with the inlet connection flanged, with bare pipe or with welded dielectric joints. The general upstream shut-off valve is placed at the inlet.

b) Filtration

After entry, the gas passes into the filtration section, where impurities in the gas are filtered out by a Filter. The filtration line can be a single line with by-pass or a double line.

c) Preheating

Always by adjusting the shut-off valves located downstream and upstream of the filtration components, the gas arrives at the preheating section, if provided. The gas generally arrives at the inlet at a temperature of not less than 5°C. To avoid further lowering of the gas temperature (dangerous for the equipment) after pressure reduction, the gas passes through a pre-heater.

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family
	INSTRUCTIONS FOR USE AND MAINTENANCE	Doc. GR3MU001/3
		Sheet 7 of 14

The gas is heated by passing through hot water heat exchangers, using water produced by an integrated electric heating element or by an external source.

d) Pressure regulation

After the filtration or preheating phase, if any, the gas passes into the pressure control section, where the pressure is reduced to a value as desired by the user.

The pressure reduction section can have different configurations and safety devices, depending on the system type:


- Regulation + Monitoring
- Regulation + Blocking valve
- Regulation + Monitoring + blocking valve

e) Measurement (if any)

The system can be equipped with a measuring section to meter consumption.

f) Outlet

After reduction, the gas is ready to be sent to consumers at the required pressures.

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family Doc. GR3MU001/3
	INSTRUCTIONS FOR USE AND MAINTENANCE	Sheet 8 of 14

3. GENERAL SAFETY NOTES

3.1 RISKS ARISING FROM THE OPERATION OF THE SYSTEM

The system lowers the natural gas pressure from a high/medium pressure to a medium/low output pressure. It can therefore give rise to the following main risks:

- Explosion/fire, resulting in a potential leak of natural gas (lighter than air) due to failure of components or their mechanical connections;
- Ejection of elements related to mechanical components and/or their connections; resulting in structural failure of the seals (e.g., gaskets and nuts and bolts);
- Risk of mechanical crushing of limbs or body parts originating during installation/removal of the system;
- Risk of burns in the exchanger section. Although well thermally insulated, removal and/or damage to the insulation can expose surfaces containing hot water at a temperature over 50°C;
- Risk of electrocution due to the presence of an electrical system in the exchanger section.
- Risk of noise that may originate from the pressure reducer under particular gas velocity conditions (due to the pressure drop and the gas flow rate, as well as the possible presence of foreign bodies in the opening section of the reducer);

4. TECHNICAL CHARACTERISTICS

4.1. SYSTEM LABELLING

The nameplate (Fig.4.1), bearing the system's marking data, is affixed in the appropriate location near the pipes or supports. The nameplate must always be intact and clearly visible. It is strictly forbidden to remove and/or tamper with even part of the data therein.

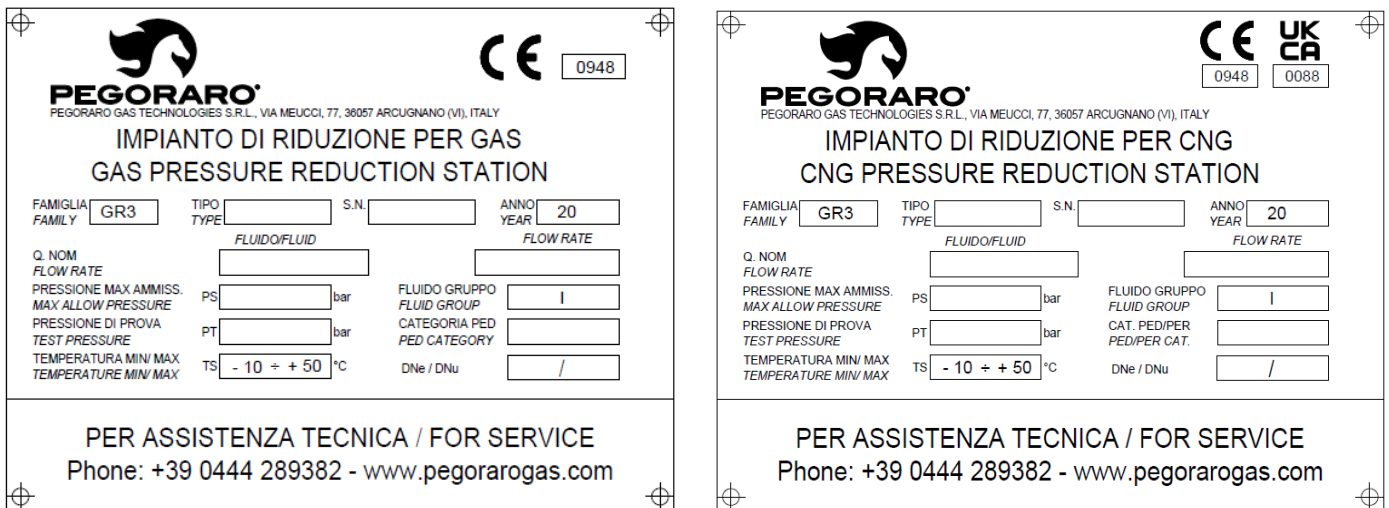



Fig. 4.1: Nameplate example

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family Doc. GR3MU001/3
	INSTRUCTIONS FOR USE AND MAINTENANCE	Sheet 9 of 14

4.2. TECHNICAL DATA

The technical data of each individual system are shown on the system's identification plate.

DATI DI PROGETTO - DESIGN DATA				
Description		U.M.	Value	Notes
Design pressure	PS	Bar	-	See nameplate
Design temperature	TS	°C	-10/+60	
Operating pressure		Bar	-	See nameplate
Operating temperature		°C	-10/+60	
Inlet diameter	DNin		-	See nameplate
Outlet diameter	DNout		-	See nameplate
No-load weight	P	Kg	-	See nameplate
Hydraulic test pressure	PT	Bar	-	See nameplate*
Flow rate	Q	Sm ³ /h	-	See nameplate
Fluid	Fluid type		-	See nameplate
	Physical state		Gas	
	Type of fluid		Flammable	
	Specific weight		-	
Calculation method			(BS)EN 13445	
Class as per Directive 2014/68/EU (PED) - S.I. 2016:1105			-	See nameplate
*In the absence of a nameplate value, assume PT = PS. 1.5				
Electric power supply	V	Volts	-	See nameplate
Installed electric power	P	kW	-	See nameplate
Dimensions			BxLxH	See Drawing

5. TRANSPORT, INSTALLATION AND ASSEMBLY

5.1. TRANSPORT AND HANDLING

The system can be transported and handled in two ways:

- If the system is supplied complete with a supporting base, cables or ropes with a load-bearing capacity appropriate to the weight to be supported must be attached to the appropriate eyebolts (1) or forklift supports (2) located on the base.
- If the system does not have the above-mentioned base, the system must be lashed with cables or ropes with a load-bearing capacity suitable for the weight to be supported, which must be attached at the points provided, according to the structural configuration of the system to be installed and indicated by the appropriate signs indicating the lifting points.



CAUTION

It is good practice to use lifting equipment with a sufficient load-bearing capacity to support the load of the system plus approximately 20%. It is strictly forbidden (unless expressly indicated otherwise) to attach oneself to the pipes with ropes or to lean on them with ropes during lifting.

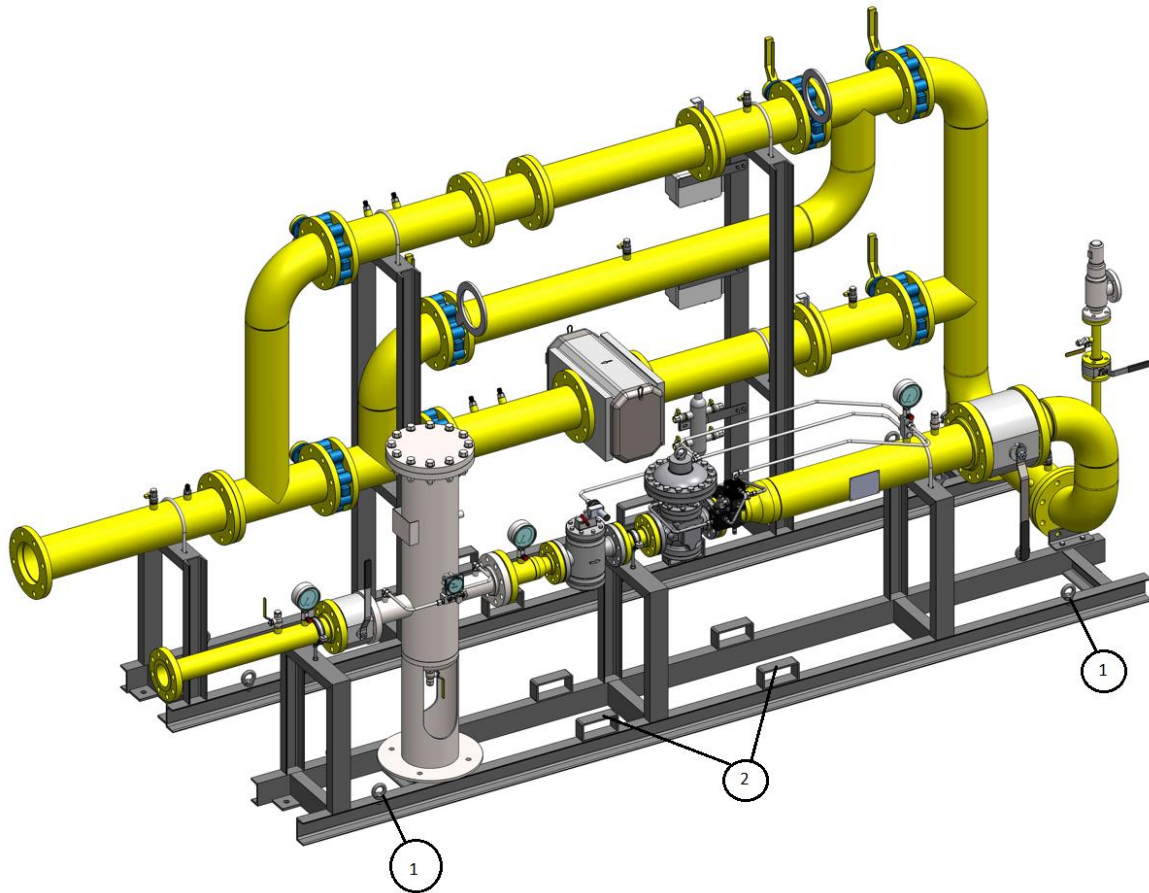


Fig. 5.1: Handling

5.2. STORAGE

Before using the system or if not used for a long time, the system must be stored indoors, protected from rain, moisture and dust in order to guarantee its integrity and perfect functioning.




WARNING

The system is supplied painted. However, during installation, accidental knocks could cause the paint to lose its effectiveness, triggering a slow process of oxidation (rust). Therefore, it is recommended to protect it from the weather using a canopy or to place it inside a special cabinet. It is recommended to restore the original protection with paint or cold galvanising.

5.3. ASSEMBLY AND CONNECTIONS

- The system should be installed in an open area or in a ventilated cabinet, in a protected area.
- The applicable directives and safety regulations of the country of installation must be observed.
- **Earthing: The system must be effectively earthed.**
- Installation, assembly and commissioning must only be carried out by qualified personnel who must issue certificates of correct installation in accordance with the applicable directives.

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family
	INSTRUCTIONS FOR USE AND MAINTENANCE	Doc. GR3MU001/3
		Sheet 11 of 14

- Check that all connection connections are intact and that there are no leaks before commissioning.
- The venting of the safety valve must be routed to a safe place and at a height that complies with current standards.



CAUTION

Pegoraro Gas Technologies S.r.l. declines all liability for any property damage or bodily harm caused by the installation or maintenance of the equipment by unqualified personnel.

6. COMMISSIONING AND MAINTENANCE

6.1. COMMISSIONING

6.1.1. GENERAL WARNINGS FOR THE CORRECT OPERATION OF THE SYSTEM



CAUTION

During commissioning, absolutely avoid smoking or using open flames. Danger of explosion.

Before commissioning the system, make sure that the inlet supply valve and the valve on the outlet reduction unit are tightly closed. Failure to do so may result in serious damage to the reduction system.

Pegoraro Gas Technologies S.r.l. declines all liability for any property damage or bodily harm caused by failure to comply with these instructions.

During commissioning, it is recommended:

- Not to subject the system to static or dynamic loads and bending movements.
- Installation must be carried out by suitable personnel.
- The system is handed over to the client after acceptance and leakage tests. However, during transport and handling, some connections may come loose, which is why it is necessary to:
 - Check the mechanical connection between the individual parts;
 - Carry out a pressure test with air and check for leaks with a leak detector (foam) from both flanges and fittings.

6.1.2. COMMISSIONING


Act as follows:

- Before supplying the reduction unit with gas, check that the inlet valve (1) and the outlet valve (2), when present, are perfectly closed;
- Make sure that the electrical control panel that manages the devices (if provided) is adequately powered.
- If the filters are provided with purge taps (3), open them to facilitate cartridge cleaning;
- **Slowly** open the inlet supply valve to the system and follow the sequence of valves thereafter;



CAUTION

In the event that one or more of the reduction valves (4) get blocked, the reset valve of the blocked reduction valve must be operated in order to eliminate the cause of the blockage. For details of this operation, please refer to the specific instruction manuals enclosed with this documentation.

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family Doc. GR3MU001/3
	INSTRUCTIONS FOR USE AND MAINTENANCE	Sheet 12 of 14

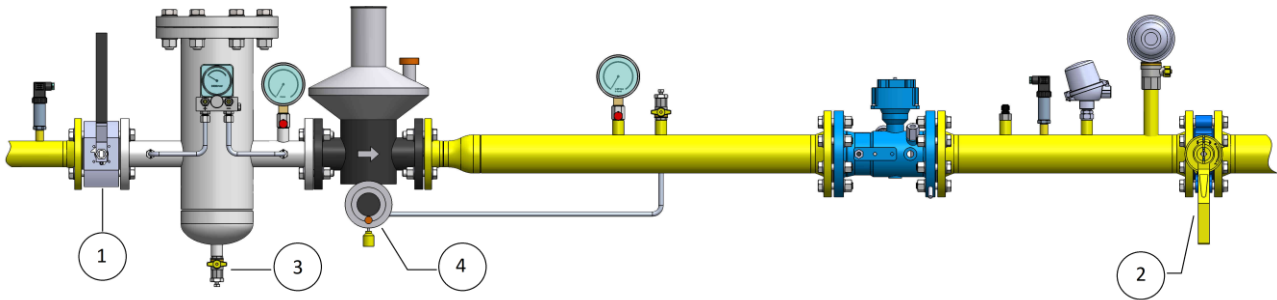


Fig. 6.1 - Reduction line example

- If the filters are provided with purge taps, close them a few seconds after the gas has entered;
- Check joints and fittings for leaks (wet the connections with soapy water: any bubble formation reveals a gas leak);
- Check the calibration of the pressure reducers
- **Slowly** open the valve at the system outlet (if present) to allow gas to flow to the consumer.

6.1.3. CHECKS AND CONTROLS

Check all system connection points for leaks using the appropriate instrumentation.
 In case there are leaks:

- close the shut-off valve at the system inlet and, if present, also the outlet valve,
- if the filter is provided with a purge tap, release the pressure in the filter,
- eliminate leaks,
- repeat the commissioning operations as indicated in section 6.1.2

6.2. ADJUSTMENTS AND MAINTENANCE



CAUTION

During maintenance works, absolutely avoid smoking or using open flames. Danger of explosion.

Have the equipment and connections checked by experienced and qualified personnel. NEVER attempt to repair or restart the equipment yourselves.

Pegoraro Gas Technologies S.r.l. declines all liability for any property damage or bodily harm caused by improper repairs conducted on the devices by unqualified personnel.

As for details for operation and maintenance, please refer to the local regulations in force and to the manuals for the individual pieces of equipment that make out the system, which are enclosed with this documentation.

	TECHNICAL DOCUMENTATION Pursuant to DIRECTIVE 2014/68/UE – S.I.2016:1105	GR3 Family
	INSTRUCTIONS FOR USE AND MAINTENANCE	Doc. GR3MU001/3
		Sheet 13 of 14

7. COMPLIANCE

The filtration, reduction and pressure measuring system for natural gas and/or LPG is made by the manufacturer in accordance with Directive 2014/68/EU PED - S.I. 2016:1105 (PER) and certified and CE/UKCA-marked if required.

As an appendix to this manual, the manufacturer provides a facsimile copy of the declaration of conformity accompanying this product.

8. DISMANTLING

At the end of its useful life, reference will be made to the regulations applicable in the country where the system is installed.


9. ATTACHED DOCUMENTS

9.1. LIST OF ATTACHED DOCUMENTS

List of annexes:

- Instruction manual for valves / pressure reducers (where applicable);
- Instruction manual for filters (where applicable);
- Instruction manual for safety valves and overflow valves (where applicable);
- Instruction manual for pressure and flow measuring equipment (where applicable);
- Instruction manual for exchangers (where applicable)
- Dimensional drawing

10. DECLARATION OF CONFORMITY EXAMPLE



PEGORARO
PEGORARO GAS TECHNOLOGIES S.R.L.
Via Meusol, 77, 38057 Arcozate (VI), Italia
Tel: +39 0444 285032

DICHIARAZIONE DI CONFORMITA' UE / UKCA
In accordo all'allegato IV della direttiva 2014/68/UE e Schedule 11 della S.I. 2016/1105
EU / UKCA DECLARATION OF CONFORMITY
In accordance to annex IV of directive 2014/68/UE and Schedule 11 of S.I. 2016/1105

N. 001/22


Io sottoscritto, nella figura di rappresentante autorizzato, dichiaro sotto la mia esclusiva responsabilità che la progettazione, la fabbricazione, i controlli e le prove delle attrezzature a pressione sotto specificate sono conformi alle disposizioni applicabili della direttiva 2014/68/UE - S.I. 2016 No.1015
I undersigned, in the figure of authorized representative, declare under my responsibility that the design, manufacture, inspections and testing of pressure equipment specified below comply with the applicable provisions of Directive 2014/68/UE - S.I. 2016 No.1015

Descrizione Insieme Assembly description	INSIEME DI RIDUZIONE PER GAS GAS PRESSURE REDUCTION ASSEMBLY		
Famiglia/ tipo Family/ type	GR300X	N. fabbrica Serial no.	G300X
Pressione max ammissibile PS Max allowable pressure PS	16 bar	Temperatura min/ max TS min/ max temperature TS	-10/+50°C
Fluido gruppo Fluid group	1	Categoria PED/PER PED/PER category	III
Procedure di valutazione della conformità utilizzate Conformity assessment procedures used	Modulo H		
Ente notificato CE EU Notified body	TUV Italia S.r.l. - (Nr. 0348) Via Carducci, 125 - ed.23 - 20099 Sesto San Giovanni (MI)		
Ente notificato UKCA UKCA Approved body	LLOYD'S REGISTER QUALITY ASSURANCE LTD (Nr. 0088) 1 Trinity Park, Sickenhill Lane - Birmingham B37 7ES - UK		
Modulo Module	H	Certificato n. Certificate n.	PED-0948-GSH-522-18 Rev.2 - XXX -
Norme tecniche utilizzate Technical standards used	EN 13445 Ed. 2014 - BS EN 13445 Ed. 2014 EN 13480 - BS EN 13480 D.M. 16/04/08 - UNI CIG 8827, 10390, 10519		
Altre direttive applicate Other directives applied			

Altre Attrezzature marcate CE/UKCA Other equipment with CE/UKCA mark	Costruttore Manufacturer	Ente di notifica Approved body	Numero di serie Serial number	Nr. Certificato Certificate Nr.	Modulo Module	Norme Usate Used Standard
LPG Piping						
Manometro D63 AISI304 0-2,5 bar DN 1/4" G Pressure gauge D63 AISI304 0-2,5 bar DN 1/4" G						
Rubinetto a spillo DN 1/4" MF GRC PN50 Needle valve DN 1/4" MF GRC PN50						
Rubinetto a spillo DN 1/2" MF GRC PN50 Needle valve DN 1/2" MF GRC PN50						
Valvola a farfalla G40 THESIS DN50 PN16 Butterfly valve G40 THESIS DN50 PN16						
Valvola a farfalla G40 THESIS DN40 PN16 Butterfly valve G40 THESIS DN40 PN16						
Valvola a sfera WAFER LF2/AISI DN25 PN16 Ball valve WAFER LF2/AISI DN25 PN16						
Valvola a sfera WAFER LF2/AISI DN40 PN16 Ball valve WAFER LF2/AISI DN40 PN16						
Valvola a sfera ottone FB DN 1" Ball brass valve FB DN 1" MF MOPS						
Valvola a sfera FB AISI DN 1/2" M BPT PN100 Ball valve FB AISI DN 1/2" M BPT PN100						
Vaporizzatore GPL ECOVAP Vaporizer GPL ECOVAP						

Lugogo e data
Location and date

Venezia, 00/00/2022



Pegoraro Gas Technologies Srl
Via Meusol, 77
38057 Arcozate (VI)
Italy

Draft Declaration of Conformity according to Directive 2014/68/UE PED/UKCA