NUOVA FIMA

Industrial instrumentation for Pressure and Temperature

User Guide

MGS BOURDON TUBE PRESSURE GAUGES, ATEX VERSIONS 2G2-2D2-2D0-2M2-2N2-2N0 ZONES 1, 2, 21, 22

MI-MGS-2G2-2D2-2D0-2D5-2D6-2M2-2N2-2N0 ENG_7 02/2021

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1. Safety notes

- The safest ambient conditions for the instrument to operate properly depend on the correct selection and installation of it in the system, as well as on compliance with the maintenance procedures set out by the manufacturer. The user is entirely responsible for correct installation and maintenance.
- This manual is supplied with the instrument and should be properly stored. It is advisable to read it carefully before using the instrument.
- To specify the functional and constructive characteristics of the instruments, it is recommended to consult the most updated version of the catalogue and data sheets which are available on the website www.nuovafima.com
- An improper use may damage the instrument and the operator or the entire plant.
- The operators responsible for the selection, installation and maintenance of the instrument should be aware of the environmental conditions that may negatively affect the instrument's operational activity and which may lead to its premature failure. Therefore, only technically qualified and trained staff should carry out the procedures established by the plant regulations.

2. Directives

The MGS pressure gauges conform to the Essential Health and Safety Requirements laid down in European Directive 2014/34/EU Group II, Category 2G or 2GD equipment in the T6…T1 temperature class

VERSION	MARKING
2G2 (gases)	CE Ex **II 2G Ex h IIC T6…T1 Gb -20°C ≤ Ta ≤ 60°C**
2D2 (gases and dusts)	CE Ex **II 2G Ex h IIC T6…T1 Gb II 2D Ex h IIIC T85°C…T450°C Db -20°C ≤ Ta ≤ 60°C**
2D0 (gases and dusts)	CE Ex **II 2G Ex h IIC T6…T1 Gb II 2D Ex h IIIC T85°C…T450°C Db 0°C ≤ Ta ≤ 60°C**
2D5 (gases and dusts)	CE Ex **II 2G Ex h IIC T6…T1 Gb II 2D Ex h IIIC T85°C…T450°C Db -53°C ≤ Ta ≤ 60°C**
2D6 (gases and dusts)	CE Ex **II 2G Ex h IIC T6…T1 Gb II 2D Ex h IIIC T85°C…T450°C Db -60°C ≤ Ta ≤ 60°C**
2M2 (gases)	CE Ex **II 2G Ex h IIB T6…T1 Gb -20°C ≤ Ta ≤ 60°C**
2N2 (gases and dusts)	CE Ex **II 2G Ex h IIB T6…T1 Gb II 2D Ex h IIIB T85°C…T450°C Db -20°C ≤ Ta ≤ 60°C**
2N0 (gases and dusts)	CE Ex **II 2G Ex h IIB T6…T1 Gb II 2D Ex h IIIB T85°C…T450°C Db 0°C ≤ Ta ≤ 60°C**

This instrument is NOT suitable for ZONES 0 and 20.

EMC Directive **2014/30/EU** on electromagnetic compatibility does not apply to this product.
Under the terms of directive **PED 2014/68/EU**, NUOVA FIMA pressure gauges are classified into 2 categories:
- PS <=200 bar These instruments do not need to meet the essential safety requirements but are just designed and manufactured by "Sound Engineering Practice";
- PS > 200 b These instruments must comply with the essential safety requirements prescribed by the PED, are classified as Category 1 and are certified according to Form A.

3. Standards

NUOVA FIMA's instruments are designed and manufactured to comply with the safety requirements required by the international regulations in force some of which are reported in this manual. To perform the installation and commissioning of the instruments, it is necessary to know and comply fully with the following standards: **EN837-1, EN837-2, ASME B40.1, UNI CEI EN ISO 80079-36, UNI CEI EN ISO 80079-37, UNI EN 1127-1, UNI EN ISO 15156-3/MR0175.**
All instruments are subjected to calibration concerning national and/or international samples according to regulations established by the UNI EN ISO 9001:2015 quality management system.

4. Operating principle

The sensing bourdon tube element moves linearly according to the pressure applied. The tube is connected to a movement by a tie rod which transforms the linear movement into a rotary movement by transmitting it to a pinion. The rack on the indicator arm is fastened to the pinion, allowing it to show pressure on a graduated scale printed on a dial whose range is ≥ 270°.

5. Materials

The parts that come into contact with the process fluid are manufactured in AISI 316L stainless steel, INCONEL 625 and Monel 400. The housing is manufactured in AISI 304 or AISI 316 L stainless steel. The gaskets, vent and filler caps are manufactured in EPDM, VITON or SILICONE RUBBER. The window is manufactured in safety glass or plastic. The dial and indicator are manufactured in aluminium.

Mod. MGS	*DN*	*Wetted parts*
18-19-20-21-44	100-150	AISI316L
22	100-150	AISI316L/DUPLEX
14-24	100-150	INCONEL 625
36-40	100-150	MONEL 400

6. Data-sheet

Detailed information about the construction and the operating characteristics, as well as the drawings showing the overall dimensions are available in the catalogue sheets about **MGS** pressure gauges, **ATEX** versions: 2G2 and 2M2 for gases and 2D2, 2D0, 2D5, 2D6, 2N2 and 2N0 for gases and dusts

7. Function

The instrument is designed to measure the relative pressure locally and also remotely employing a capillary. This instrument cannot cause fires when operating in normal conditions or when not in use. Operation within the operating limits is recommended. All misuse of the instrument should be prevented.

8. Intended use limit

Maximum surface temperature – It may be produced by the fluid temperature only. The temperature resulting from the combination of the ambient temperature and the process fluid temperature should be lower than the ATEX temperature class so as not to affect the instrument's operating functioning.
The process fluid temperature (Pt) must, therefore, be kept within the limits shown in the table below:

Class (Tmax)	*Pt (°C)*	
	Instrument case: Dry / Not fillable	*Instrument case: Vented / Filled*
T6 (85°C)	70	65
T5 (100°C)	85	
T4 (135°C)	120	
T3 (200°C)	150	
T2 (300°C)		
T1 (450°C)		

Ambient temperature – This instrument is designed to be used in safe conditions at the following ambient temperatures:
0°C…60°C (2D0 and 2N0 version)
-20°C...60°C (2G2, 2D2, 2M2 and 2N2 version)
-53°C…60°C (2D5 version)
-60°C…60°C (2D6 version)

Model - According to EN 837-1, in systems containing compressed gas, it is advisable to select an instrument equipped with an adequate safety device. In the event of an unexpected failure of the measuring element, the safety device allows the compressed gas to escape outside the case, thereby preventing the instrument from fracturing. The safety patterns employed on NUOVA FIMA instruments are designated type **S1** when they consist of a release valve which opens when the pressure inside the airtight case exceeds a certain safety limit, putting the instrument in communication with the outside. They are designated type **S3** when safety is ensured by an entire blow-out back and an added baffle wall separating the measuring element from the clear solid front, providing further protection for the operator. The tables below may help in selecting an instrument with an adequate level of protection (EN837-2):

Measured fluid LIQUID								
Case filling	Nothing				Damping liquid			
DN	<100		≥100		<100		≥100	
Range (bar)	≤25	>25	≤25	>25	≤25	>25	≤25	>25
Safety	0	0	0	0	**S1**	**S1**	**S1**	**S1**

Measured fluid GAS or VAPOUR								
Case filling	Nothing				Damping liquid			
DN	<100		≥100		<100		≥100	
Range (bar)	≤25	>25	≤25	>25	≤25	>25	≤25	>25
Safety	0	S2	**S1**	**S3**	**S1**	S2	S1	**S3**

0= gauges without blow-out device
S1= gauges with blow-out device
S2= safety pattern gauge without baffle wall
S3= safety pattern gauge with baffle wall

Operating pressure – This instrument is designed to operate at a static pressure of up to 100% of the scale range (75% for the MGS44 model). When dynamic or pulsating pressure is involved, pressure should stay within 90% of the scale range (66% for the MGS44 model). For fields < 1 bar, precautions must be taken to prevent that vacuum occurs accidentally exceeding the absolute value for the instrument's operating range.
When gaseous fluids are involved, it is advisable to use a nominal scale range that is twice the operating range.

Chemical compatibility – The degree of chemical compatibility between the process fluid and wetted parts material, and between the atmosphere and the exposed parts materials should be verified. An IP65/67 protection level for better protection should be used. This instrument should be used only when the process fluid and the wetted parts material are compatible. In all other cases, pressure gauges fitted with fluid separators in which wetted parts are manufactured in suitable materials are recommended.

Overpressure – The maximum overpressure values are shown in the table below for each model:

Mod. MGS	*Overpressure % (1)*		
	≤10 bar	*≤100bar*	*≤1000 bar*
14-18-20-24-36-40	30	30	30
19-21	400	300...200	200
44	25	25	15
(1) regarding the full-scale value			

Ambient pressure – This instrument is designed to work at an atmospheric pressure ranging between 0,8 and 1,1 bar A.

Maximum Allowable Operating Pressure of an Assembly - The maximum allowable pressure (AP) of an Assembly is determined by the AP of every component. To calculate the AP of an assembly, simply select the lowest value of each component. For safe operation, the AP of the assembly should not be exceeded.
To determine the maximum allowable pressure of a standard product, please consult the datasheet available on the website www.nuovafima.com. For products not included in the NUOVA FIMA catalogue, please refer to the contractual documents.

Protection level - CEI EN 60529 standard. It refers to hermetically sealed ring conditions, with properly positioned built-in caps. Values are shown in the table below:

Version	**IP rating** *(instrument case)*
2G2-2M2	IP 55 *(Dry)* *(Not fillable PN≤6bar)*
2D2-2N2	IP 65/67 *(Filled)* *(Not fillable PN>6bar)*
2D5	IP 65/67 *(Vented)*
2D0-2N0-2D6	IP 65/67 *(Filled)*

Liquid-filled Cases - Liquid filling is generally used to dampen the vibrations of moving parts due to vibrations and pulsations. Particular care must be taken in choosing the damping liquid for instruments that are intended to be used with oxidising media such as oxygen, chlorine, nitric acid, hydrogen peroxide, etc. In the presence of oxidising agents, the instrument may explode because of a chemical reaction.
In this case, 20-21-40 models should be used, and fluorine or chlorine-based filling liquids should be chosen. To prevent leakage of fluid from the case, instruments are manufactured and delivered properly sealed. Particular care must be taken in selecting the filling liquid used as well as the relevant use limitations in terms of ambient temperature.

Filling liquid	*Ambient temperature*
Glycerine 98 %	0°C...60°C
Silicone oil	-20°C…60°C
Low temperature silicone oil	-60°C…60°C
Fluorinated fluid	-20°C...60°C

Temperature application - Regardless of the assembly material or welding between the connection and the process and between the Bourdon tube and the final part, it is not advisable to use pressure gauges at temperatures exceeding 65°C. It is recommended to use a syphon when the pressure gauge is used with steam or high-temperature liquid media. A syphon or similar device should always be mounted near the instrument and filled with condensed fluid before pressurising the system, to prevent the hot fluid from reaching the instrument when pressure is risen for the first time. The fluid should not be allowed to freeze or crystallise inside the measuring element. However, if the instrument is used for measuring high-temperature points, it is advisable to use a hose with an inner diameter measuring at least 6 mm to connect it to the pressure coupling. A hose which should be about 1.5-2 metres long, reduces the operating temperature to the ambient temperature. If a small section hose cannot be used because of the process fluid type, it is often necessary to insert a diaphragm seal between the process fluid and the instrument, provided that the transmission fluid is compatible with the temperature of the process fluid.

9. Improper uses

The following applications must be considered as potentially dangerous:

- Systems containing compressed gas **(1) (7)**
- Systems containing oxygen **(2)**
- Systems containing corrosive fluids in a liquid or gaseous state **(3)**
- Systems subject to dynamic or cyclical pressures **(4)**
- Systems in which overpressures may accidentally be applied or in which low-pressure gauges may be installed on high-pressure couplings **(1)**
- Systems in which interchangeable pressure gauges may give rise to dangerous contamination **(2)**
- Systems containing toxic or radioactive fluids in a liquid or gaseous state **(2)**
- Systems which produce mechanical vibrations **(5)**
- Systems containing combustible/inflammable fluids **(7)**

Overpressure Failure (1) - When internal pressure is higher than the rated limits of the measuring element and when a low-pressure gauge is installed on a high-pressure system, a failure may occur the effects of which are generally more serious and unpredictable in compressed gas applications because the instrument may explode and fragments may be projected in all directions. The opening of the case safety device cannot always prevent the fragments from being projected all around.
It is generally accepted that an instrument provided with a solid front and blow-out back prevents fragments from being projected toward the operator standing in front of the instrument. Overpressure pulses of short duration (spikes) may occur in pneumatic or hydraulic systems, especially when valves are opened or closed. The amplitude of such pulses can be much higher than the operating pressure. Since spikes are extremely fast it is unlikely for the operator to read them on the instrument so he cannot be aware of them. As a result, the instrument may be damaged permanently or a permanent zero error may occur.
Explosion Failure (2) – When a violent release of

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thermal energy due to a chemical reaction, such as adiabatic compression of oxygen in the presence of hydrocarbons occurs, the instrument may explode. It is generally accepted that the effects of this type of failure cannot be prevented. Even the use of solid-front instruments cannot prevent the fragments from being projected in all directions.
- Pressure gauges suitable for use with oxygen are marked "Oxygen - Use no Oil" and/or with a crossed oil can symbol on the dial. Instruments are supplied already washed and degreased and packaged in polyethylene bags. The user should take the necessary precautions to ensure that the connection and the elastic element are kept cleaned after unpacking the pressure gauge.

Corrosion Failure (3) - This condition may develop when the sensing element materials are subjected to a chemical attack coming from the substances composing the fluid to be measured or from the atmosphere surrounding the pressure system.
When this kind of failure occurs, fluid starts leaking locally in spots or a fatigue crack starts developing because of the material weakening. The sensing element is subjected to strong mechanical stress because it is usually quite thin. Therefore, it should be chemically compatible with the media to measure. None of the most common materials is immune from a chemical attack whose power can be influenced by concentration, temperature and the type of mix of chemical substances.
Fatigue Failure (4) – When the instrument is under mechanical stress because of pressure, a small crack from the inside to the outside, generally along the edge of the instrument, is produced. Such a failure is even more dangerous when the medium is a compressed gas rather than a liquid. Fatigue failures provoke a gradual release of fluid. Therefore, when pressure increases inside the case, the relief valve opens. When measuring high pressures, the process operating pressure gets closer to the maximum permissible stress limit and an explosion may occur.
Vibration Failure (5) – Most commonly, the instrument's parts in motion are completely worn out by vibrations which cause a progressive accuracy loss and, subsequently, the pointer stops working completely.
Fatigue Failure induced by vibrations (5) – Large amplitude vibrations may cause fatigue cracks in the structure of the measuring element. In this case, the fluid leakage may be slow, fast or even explosive.
Crack Failure (6) – When the instrument is used unproperly or the sensing element is cracked or broken, when the process fluid is combustible or inflammable, the instrument shouldn't operate because an explosive atmosphere may develop inside and around the instrument case so the worn-out parts of the instrument must be replaced preventing the fluid from leaking.
Temperature (7) – The temperature inside and on the surface of the instrument may increase significantly because of the rapid compression of the gas in the process or of an impact wave in the process liquid. Internal overheating caused by adiabatic compression or by an impact wave can lead to spontaneous combustion of the fluids measured, or to the ignition of the explosive atmosphere outside the case. The surface temperature should not exceed the correct limit set for the temperature class required in the area where the instrument is operating.

10. Transport

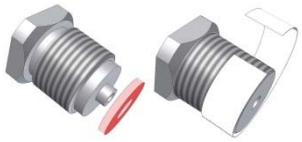
Although properly packaged, instruments' features might be affected during transport, a check before use is strongly recommended.
It is possible to check if the calibration is correct by isolating the instrument from the process through an interception valve and verifying that, after having the pipe drained, the pointer stops within the zero sign (unless the temperature is very different from 20°C)
If the pointer misses the zero it means that the instrument is severely damaged and has to be inspected.

11. Storage

Instruments must remain in their original packages until installation and should be stored indoors, in damp-proof places. When instruments are packaged in special containers such as tar paper-wrapped wooden boxes or moisture barrier bags, it is preferable to store them indoors, protected from the atmospheric agents. Containers' conditions must be checked every 3-4 months especially if they are stored outdoors. The storage area temperature should be between -20 and +65 °C unless otherwise specified in the relevant catalogue sheets.

12. Installation

MGS pressure gauges ATEX versions 2G2, 2D2, 2D0, 2D5, 2D6, 2M2, 2N2 and 2N0 must be installed in compliance with European Standard EN 837-2, and special care must be taken to prevent that mechanical connections are slack.
The instrument should be installed far from magnetic and electromagnetic induction, ionising radiation, ultrasound and sunlight to prevent the increase of the instrument's surface temperature.
It is advisable to install a shut-off valve between the pressure gauge and the plant to remove the instrument for maintenance more easily. The pressure connection must be airtight. If the pressure connection is provided with a cylindrical thread, tightness is ensured using an O-ring clamped between the two flat sealing surfaces, one on the pressure connection and the other on the instrument process connection. If the pressure connection has a tapered thread, the tightness is ensured by simply screwing the connection onto the coupling, through the mating of the threads. It is common practice to wrap PTFE tape around the male thread before coupling (see Fig).



In both cases, the torque must be applied using two hexagonal spanners, one on the flat faces of the instrument/process coupling and the other on the pressure connection.
Do not tighten with force on the case as this may damage the instrument.
When pressuring the system for the first time, it is advisable to check that the connection is airtight. All instruments must be mounted in a vertical position so that the dial remains vertical unless otherwise specified on the dial itself.
Effect of liquid columns - The user should be aware that, if the instrument is loaded by a liquid column, calibration is required to compensate for this effect. This may occur when the instrument is mounted above or below the pressure connection. When gas or steam is involved, this condition does not develop. However, installing the instrument above the pressure connection is advisable.
Ventilation – The case must be ventilated as specified in the instructions shown on the sticking tag supplied with the instrument.
Temperature – If the process fluid temperature exceeds the maximum limit, a syphon or similar device should always be mounted close to the instrument and filled with condensed fluid before pressurising the system to prevent the hot fluid from reaching the instrument when pressure is raised for the first time. No fluid that might freeze or crystallise should be in contact with the sensing element. However, if a high temperature has to be measured, the use of a hose the internal diameter of which is at least 6 mm to connect the instrument to the pressure coupling is recommended. A pipe of about 1,5 – 2 mm in length, reduces the actual operating temperature to approximately the same as the ambient temperature. If a small section hose cannot be employed because of the fluid type, it is necessary to add a diaphragm seal between the process fluid and the instrument, provided that the transmission fluid can resist the temperature of the process fluid.
Adiabatic compression – For gaseous fluids which may compress rapidly, the range of pressure variation must be lowered until the maximum surface temperature decreases to the allowed range. When working with gaseous fluids pressure should be increased as slowly as possible. Suitably sized bottlenecks or shock absorbers should be installed until 1 sec. raise time is reached through pressure steps at 80% of the full range value. In case of great fluctuations in pressure on the line, a suitable pressure-limiting device should be installed upstream of the pressure gauge.
Mechanical stress - Pressure gauges should not be subjected to mechanical stress. If the installation points receive mechanical stress, the instrument should be installed remotely and connected through flexible hoses.
- The instruments selected should be of surface, wall or panel mount type.
Vibrations - When the pressure gauge support receives vibrations, different solutions may be considered, such as:
a) the use of liquid-filled gauges and process connection threading > 1/2"; b) if vibrations are strong or irregular, the instruments should be mounted remotely and connected using a flexible hose or tubing.
When vibrations occur, the pointer moves continuously producing irregular fluctuations.
Dynamic and cyclical pressures – This condition generally occurs when instruments are fitted on pumps and/or when gaseous fluids are involved reducing the lifespan of the sensing element significantly and the pressure gauge's amplification movement, and producing excessively high surface temperatures. These types of pressure are generally detected by the wide movement of the pointer. Pulsating pressures should be reduced by installing shock absorbers or bottlenecks between the pressure source and the instrument, especially when working with combustible or inflammable fluids. Filling the case with a damper liquid may also reduce the harmful effect of pulsations on the parts in motion of the pressure gauge. If large fluctuations in pressure occur, a pressure-limiting device between the shut-off valve and the pressure gauge is required.
Overpressure – Overpressure produces stress on the measuring element, reducing its accuracy and life. It is therefore always advisable to choose an instrument which full-scale pressure is wider than the maximum operating pressure to withstand overpressures and pressure spikes. Pressure spikes can be controlled in the same way as pulsating pressures. Overpressures of longer duration can be controlled by installing a pressure-reducing valve on the pressure gauge line. Even one single overpressure episode may affect the instrument permanently.
Equipotentiality – The instrument has to be made equipotential to the system where it is installed through an ohmic contact between the threaded process connection and the system connection which has to be a metal one and connected to the ground.

13. Accessories

Diaphragm seals - They are required for transmitting the pressure produced by corrosive, hot, high viscosity or crystallisable process fluids.
Adjustable overload protection device – These devices are required on systems that may generate high excess pressures, as they automatically exclude the pressure gauge at a pre-set pressure, and automatically include them in the circuit again once the process pressure has been normalised. Valves, loops, blow-out vents, pipe fittings, connection piping, and pressure stabilisers are also available.

14. Use

The user must be aware of the risks related to the chemical and physical characteristics of gases, vapours, and/or powders in the system, and carry out a thorough preliminary check before commissioning.
Commissioning – Commissioning of the instrument should always be performed with extreme care to prevent pressure spikes or sudden temperature changes.
Shut-off valves must therefore be opened extremely slowly.
Intermittent measuring activity – It is advisable to perform the measuring by opening the shut-off valve slowly and then closing it again once the reading has been performed. This procedure ensures a long life to the instrument and safety conditions during operation.
It is not advisable to use the instruments for measuring pressures near zero, as in that range, the accuracy tolerance may represent a significant percentage of the pressure applied. For this reason, these instruments should not be used for measuring residual pressures inside large containers such as tanks, surge tanks, and alike. Such containers may retain pressures that could be dangerous for the operator, even if the instrument shows zero pressure. The installation of a ventilation device on tanks is recommended to achieve pressure zero before removing covers or connections or performing similar tasks.
It is not advisable to install new instruments on systems working with different operating media to prevent chemical reactions that may cause explosions because of contamination of the wetted parts.
Caps – The filling and vent caps must not be removed during the operation of the system.

15. Possible malfunctions

- **No indication** (pointer on zero): Root valve closed.
- **Indication steady on the same value**: Pressure pipes clogged. The root valve closes.
- **Indication steady beyond the graduated scale**: Overpressure – temporary or permanent reading error.
- **Indication error exceeds the error declared for the instrument**: Calibration altered.
- **Pointer oscillating rapidly**: destructive pulsations of the process fluid. Destructive mechanical vibrations.
- **Ejection of the safety cap**: OverTemperature: Possible Breaking/cracking of the sensing element.

16. Maintenance

A specific maintenance programme should be drawn up to perform proper maintenance of the instrument and its original features. Mechanical components must be maintained and protected from high temperatures. The risk of fire and explosion due to malfunctions should be prevented.
General check – The window should be intact, without cracks. The filling plug and blow-out vent should be placed in the right position. The pointer should be within the graduated scale.
Routine check - Instruments used on plants operating in severe working conditions (vibrations, pulsating pressures, corrosive or combustible/flammable fluids) should be replaced according to the maintenance programme. The state of the sensing element should be checked every 3/6 months, as well as the indication accuracy, the level of corrosion of the sensing element (for fluid diaphragm) the seal on the gaskets, and the presence of condensation inside the case. If the instrument does not operate properly, an extra check is advisable.
Dust deposits on the instrument should not be thicker than 5mm otherwise they must be removed and the instrument cleaned using a cloth soaked in a water and soap solution.
Removal – The instruments should be isolated from the system by closing the root valve, and pressure inside the instrument must be reduced to zero by opening the vent in the system. The process fluid left in the instrument process connection must not be disposed of in the environment, in order not to cause pollution or harm people. Dangerous and toxic fluids must be handled with care.
Detailed check - The testing fluid should be compatible with the fluid to be measured in the pressurised system. Fluids containing hydrocarbons must not be used when the process contains oxygen or other oxidising substances. To ensure that the sensing element is undamaged, fit the instrument on a pressure generator provided with a shut-off valve placed between the two devices. Submit the instrument to the maximum pressure allowed and disconnect it from the pressure source by closing the shut-off valve. If leaks occur on the sensing element, the pointer will slowly return to zero. To check the accuracy of the indication, a stable pressure should be generated in the laboratory and applied to the instrument and to a laboratory pressure gauge or primary pressure gauge. The accuracy of the latter must be 4 times higher than the nominal accuracy for the instrument being checked. The values shown by the two instruments during the pressure rise and fall allow us to establish the non-linearity, the hysteresis, and the repeatability of the instrument under test.
Check the condition of the gaskets and the IP protection level.
Recalibration – If after the calibration check measured values are different from the nominal values shown in the catalogue, the instrument should be recalibrated. The instrument has to be returned to NUOVA FIMA for recalibration through the **Product Return service**.

NUOVA FIMA does not accept any responsibility for the misuse of the instruments or for instruments operating in non-authorised working conditions. In this case, the CE Declaration of Conformity and Contractual Guarantee is null and void.

17. Disposal

Before disposal, windows and caps should be removed and disposed of as aluminium and stainless steel. The fluid remaining inside the instrument may be dangerous or toxic.

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