INSTALLATION, SERVICE AND MAINTENANCE INSTRUCTIONS

ANNEX FOR EC ATEX REGISTERED EQUIPMENT UNDER DIRECTIVE 2014/34/EU:

4100 Ex SERIES IN-LINE MIXER

The contents of this Annex complements the information included in the instruction manual. The instructions of this Annex must be observed whenever equipment registered under Directive 2014/34/EU is used.

This Annex is to be added to the manuals of the ATEX registered components that form part of the assembly (e.g. motors, etc.).

Manual Original

03.400.30.01EN

(D) 2023/05

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(A) 2023/05

EU Declaration of Conformity

We,

INOXPA, S.A.U.
Telers, 60
17820 – Banyoles (Girona)

Hereby declare under our sole responsibility that the machine

INLINE MIXER

Designation
ME 4100

From serial number **IXXXXXXXXX** to **IXXXXXXXXX** (1)

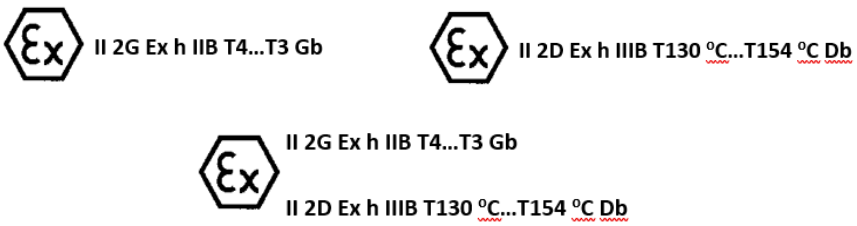
Is in compliance with applicable provisions of the following directive:

Directive ATEX 2014/34/EU

Applicable harmonized standards:

EN ISO 80079-36:2016
EN ISO 80079-37:2016
EN 1127-1:2019
EN 13237:2012
EN15198:2007
EN IEC 60079-0:2018

This Declaration of Conformity covers equipment with the following ATEX marking:



(1) Where X is a numeric character

The technical documentation referenced 019134/17 is on file with the notified body INERIS, Parc Technologique Alata BP 2 F-60550, Verneuil-en-Halatte, France. Reference num. 0080.

The person authorized to compile the technical documentation is the signer of this document.

Banyoles, 2023

David Reyero Brunet
Technical Office Manager

(1) Where X is a numeric character

1. Safety

1.1. INSTRUCTIONS MANUAL

The shipment should be checked in accordance with the instructions included in the manual. Also, the EC ATEX mark inscribed on the manufacturer's plate should be checked in order to verify that it matches the requirements of the order.

1.2. START-UP INSTRUCTIONS

This Annex to the instruction manual, together with the manual, contains the basic indications which should be fulfilled during the installation, starting and maintenance. Consequently, it is indispensable that prior to the installation, the installer as well as the technical personnel responsible for the plant read this Annex to the instruction manual and that this remains permanently available in the proximity of the corresponding mixer or installation.

Not only should the safety instructions indicated in this chapter be observed and fulfilled, but so should the special measures and recommendations included in the other chapters of this manual.

1.3. SAFETY

1.3.1. Warning symbols

The safety instructions contained in this Annex, whose non-fulfilment could cause a risk for persons or for the machine and its operation, are expressed through the symbols indicated in the following:

This sign will identify all the safety instructions given in this Annex concerning the danger of the development of explosive atmospheres as well as the creation of sources of ignition in potentially explosive atmospheres when failure to comply with those instructions can threaten your safety.

1.4. GENERAL SAFETY INSTRUCTIONS

1.4.1. During installation

To reduce the risk of static electricity, the assembly must be earthed to ensure electrical continuity between the pipes and the mixer.

1.4.2. During operation

The limits of the operating conditions in explosive atmospheres must not be exceeded.

The mixer was selected according to the operating conditions specified by the user; therefore, INOXPA will not be responsible for damage caused by Using the mixer in conditions different to those expressed in the order.

1.4.3. During maintenance

Danger! Important instructions for protection from explosions.

1.4.4. Compliance with the instructions

Any non-fulfilment of the instructions may result in a risk for the operators, the environment, the machine, and the installations, and may result in the loss of your right to claim damages.
This failure to comply may create the following risks (in addition to those already indicated in the manual):
- Creation of explosive atmospheres and the risk of explosion.

1.4.5. Guarantee

Any guarantee will be cancelled immediately and as a matter of law and, in addition, we will require compensation for any claims of civil liability presented by third parties, in case (in addition to the conditions already indicated in the manual):
- The material has been badly used or has not been used according to the operating conditions in the classified area, operating in a different classified area, temperature or pressure conditions, and/or with a different substance.

The operating conditions can only be changed with prior written authorisation from INOXPA.

2. Table of Contents

Sections printed in italics include changes with respect to the manual. The indications of such sections must be observed in addition to those of the mixer manual.

3. General information

3.1. DESCRIPTION

The motors of the 4100 Ex series in-line mixers must be suitable for operating in explosive atmospheres.

3.2. OPERATING PRINCIPLE

This sign will identify all the safety instructions given in this Annex concerning the danger of the development of explosive atmospheres as well as the creation of sources of ignition in potentially explosive atmospheres when failure to comply with those instructions can threaten your safety.

APPLICATION

The mixer was selected for specific working conditions in explosive atmospheres at the time the order was placed. INOXPA will not be responsible for any damage which may be caused if the information provided by the buyer is incomplete or incorrect (type of liquid, viscosity, RPM, classification of the potentially explosive zone, gas generated by the potentially explosive atmosphere, etc.).

HYGIENE

3.5 CONSTRUCTION MATERIALS

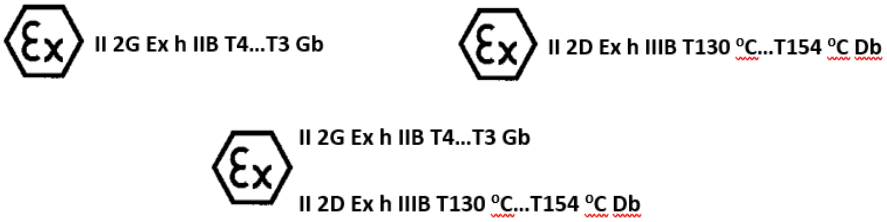
4. Installation

4.1. RECEIVING THE MIXER

The received mixer must be checked to ensure that it corresponds to the operating conditions in the classified area and the conditions stated in the order.

4.1.1. Mixer identification

The shipment should be checked in accordance with the instructions included in the manual. Also, the EC ATEX mark inscribed on the manufacturer's plate should be checked in order to verify that it matches the requirements of the order.



CE ATEX mark inscribed on the manufacturer's plate.

If the equipment mark does not correspond to the order, INOXPA should be immediately informed of the situation.

The temperature class and the maximum surface temperature depend on the temperature of the product to be pumped and the ambient temperature.

Temperature class for explosive gas atmospheres

Temperature class	Product temperature	Room temperature
T3	Will be T3 if product temperature ≤ 120 °C	-20 °C to +40 °C
T4	Will be T4 if product temperature ≤ 103 °C	-20 °C to +40 °C

Maximum surface temperature for explosive dust atmospheres

Maximum surface temperature	Product temperature	Room temperature
T147 °C	Will be T147 °C if product temperature ≤ 120 °C	-20 °C to +40 °C
T130 °C	Will be T130 °C if product temperature ≤ 103 °C	-20 °C to +40 °C

Notations

- For explosive dust atmospheres, take into account the temperature limitations indicated in Standard EN 60079-14:2014: the maximum temperature of the equipment surface must not exceed 2/3 of the minimum ignition temperature in ºC of the dust-air mixture in question:

Tmax ≤ 2/3 TCL
where TCL is the minimum ignition temperature of the explosive dust atmosphere.

- For explosive dust atmospheres, take into account the dust layer thickness limitations indicated in Standard EN 60079-14:2014: when the equipment is not marked with a dust layer thickness as part of the T classification, it is You must apply a safety factor taking into account the thickness of the dust layer as:

  up to 5 mm thick:
  The maximum surface temperature of the equipment must not exceed a value of 75 °C below the minimum ignition temperature for the 5 mm thick layer of the dust in question:

  Tmax ≤ T5 mm – 75 °C
  where T5 mm is the minimum ignition temperature of the 5 mm dust layer.

4.2. TRANSPORT AND STORAGE

If the mixer is not used immediately, it must be moved twice a week to ensure that the impeller and mechanical seal do not become trapped.

4.3. LOCATION

Place the mixer near a drain on the floor. Note that the handling of inflammable fluids can create an area classified as Zone 0 in the drain area and therefore all the appropriate safety indications must be observed.

The motors used must be CE marked in accordance with Directive ATEX 2014/34/EU and with the instructions of the manufacturer and the applicable national and local regulations.

When handling inflammable or explosive liquids, a proper connection must be used. Connect the parts of the assembly with the earth connections in order to reduce the risk of static electricity.

Depending on the fluid to be handled, high temperatures may be reached inside and around the mixer:

Note that the surface temperature of the mixer in normal operating conditions is determined by the fluid it pumps. Therefore the table of temperature classes and maximum surface temperature in section 1.1 must be taken into account.

It should be ascertained that there is air circulation for the mixer motor to cool. Make sure there are no other equipment or surfaces near the drive that may radiate additional heat or affect the cooling of the motor. See the drive's instructions manual.

Bedplate

The bedplate must always have a cam for connecting it to. Have the earth connection properly fitted to the bedplate.

4.4. PIPES

Before starting up the mixer, make sure that the suction and discharge valves of the mixer are open.

Before closing the suction and discharge valves, make sure that the mixer is switched-off and has stopped.

4.5. SHUT-OFF VALVES

Use valves that are EC marked in accordance with the Directive ATEX 2014/34/EU and in with the manufacturer's instructions and the applicable national and local regulations.

4.6. PRESSURISATION TANK

In the case of a pressurization tank for the double mechanical seal, it must be ensured that the tank is always pressurized at a minimum of 1.5 to 2.0 bar over the operating pressure of the mixer when the latter is in operation, including when it is started up or stopped.
See instructions manual for the mechanical seal and pressurisation can.
Check that the instrumentation on the pressurisation tank is adapted to the work area.

4.7. ELECTRICAL INSTALLATION

Before connecting an electric motor to the system, check local regulations regarding electric safety, as well as standards EN 60204-1 and EN 60079-14.

Follow the motor manufacturer's indications at all times.

Automatic circuit-breaker

The possibility of automatic switches having to work in a potentially explosive atmosphere must be considered. This is why those marked EC ATEX will be selected in accordance with Directive 2014/34/EU if necessary.

The control equipment should comply with the regulations in effect, as is stipulated by the electric safety standard, as well as the indications established by the ATEX motor manufacturer.

Connection

Before connecting the motor to the system, consult the supplier's instruction manual. This motor should be ATEX with adequate protection for the work environment in which it operates.

Also install protection against engine overload suitable to the nominal power of the motor.

If necessary, install an independent fan, taking into consideration the atmosphere in which this fan will operate (potentially explosive atmosphere).

The electrical equipment, terminals and components of the control systems may still contain electric current when switched off. Contact may place the operator or installation in danger or cause irreparable damage to the material. The supplier's instructions for the safe opening of the motor should be followed at all times.

Safe work permits should be issued for any handling of equipment in potentially explosive atmospheres, with it being advised to carry out this type of work in unclassified atmospheres (there should not be an explosive atmosphere where the mixer is located during handling).

Single mechanical seal

If this single mechanical seal works in dry conditions, the maximum operational temperature may be exceeded
. This is why a simple mechanical seal cannot work under any circumstances in dry conditions.

- Regularly check that the single mechanical seal is functioning correctly.
- Check that the hydraulic part of the pump is always free of liquid when functioning.
- Avoid pumping fluids that contain large amounts of gas.

The end user must ensure that there is a constant flow to the mixer by using a flow control/flow-meter or any device in the mixer inlet to ensure that there is no increase in the surface temperature.

- Cooled mechanical seal option

- Check the level of supply reserve.
- Check the temperature of the washing liquid.
- Check the condition of the washing liquid by inspecting it: change the washing liquid if it is contaminated by an external liquid.

Frequent contamination is indicative of an unacceptable leak in the sealing system that must be repaired.

- Double mechanical seal option

- Check the level of supply reserve.
- Check the temperature of the washing liquid.
- Check the pressure.

Caution: the washing liquid must always be below the pressure when the mixer is functioning.

- Check the conditions of the washing liquid: change the washing liquid if it is contaminated by an external liquid.

Contamination of the liquid means that the pump is not functioning properly and it must be inspected. For example, the sealing system may have leaks in the middle or be open due to insufficient pressure of the washing liquid.

5. Start-up

5.1. START UP

Explosive atmospheres may be generated during the start-up of the mixer, for which safe work permits should be issued and this work should only be carried out by qualified or trained personnel.

Before starting up the mixer, make sure that the suction and discharge valves of the mixer are open.

If there is a risk that the mixer is operated in vacuum (i.e. with no fluid), it is recommended that a flow-detection sensor is fitted in the suction side of the mixer.

7. Maintenance

7.1. GENERAL

An incorrect assembly or disassembly may cause damage in the operation of the mixer, resulting in high repair costs, an extensive period of in-operation and even invalidate the protection systems of the equipment.

INOXPA is not responsible for accidents or damage caused as a result of the non-fulfilment of the instruction manual and this Annex.

The maintenance work of any equipment intended for use in potentially explosive atmospheres can only be carried out with the appropriate safe work permit, as specified by EU Directive 1999/92/EC.

Environment
The working environment should be clean. Some parts are very fragile and others have low tolerance levels.

The possibility of the presence of an explosive atmosphere must also be considered. Therefore, these jobs can only be carried out after the appropriate safe work permit has been issued.

Tools
Use technically adequate tools for the maintenance and repair work. In case the zone is not declassified, all the tools should be explosion-proof and safe work permits should be issued.

Safety
In addition to the instructions included in the manual, the instructions of the motor's manufacturer must also be followed strictly in order to open the motor safely.

7.2. CLEANING

The user is responsible for establishing a cleaning or disinfection plan that suits their needs. This programme must consider all the applicable laws, regulations and the standards on protection of public health and safety in the use and disposal of chemical products.

Outside cleaning

Do not spray the hot parts of the mixer with water, since some parts might crack and handled fluid could spill into the environment, thereby generating a potentially explosive atmosphere.

An external cleaning of the equipment should be carried out to prevent the excessive accumulation of combustible or explosive powder on the outside surface of the equipment. Under no circumstances should it be allowed to accumulate to a thickness in excess of 2 mm.

7.3. DISASSEMBLY / ASSEMBLY OF THE MIXER ME-4101/4103/4105/4110

7.3.1. Mixer housing and stator

CAUTION! Fluid might spill out when the mixer housing is removed and a potentially explosive atmosphere might develop.

7.4. DISASSEMBLY / ASSEMBLY OF THE MIXER ME-4125 / 4130

7.4.1. Mixer housing and stator

CAUTION! Fluid might spill out when the mixer housing is removed and a potentially explosive atmosphere might develop.

8. Technical Specifications

8.1. TECHNICAL SPECIFICATIONS

Temperature range. See section 1.1.

Standard: Single mechanical seal

The client must ensure that, using a flow meter, flow detector or any other safety device, there is a constant flow to the mixer and prevent it from operating in dry conditions.

Mechanical seal materials	Type of mechanical seal			
	Single interior	Cooled	Double (atmosphere side)	Double (product side)
Stationary part	Graphite			Silicon carbide
Rotary part	Silicon carbide			

- Cooled mechanical seal option This must be protected by means of a washing liquid control system.

- Option for a double mechanical seal. This must be protected by means of a washing liquid control system.

8.4. MIXER ME-4101/4103/4105/4110
8.5. MIXER ME-4125/4130

This 4100-Ex series in-line mixer may not use an engine shroud.