ATEX and IECEx certification
Vacuum Cleaners-Centralized Vacuum Systems–Dust Extraction Plants Manual

Operator's Additional Instructions - Use and Maintenance Manual Supplement

Key:

Zone	Atex category	Type of machine: Nilfisk-CFM	Additional instructions	Vacuuming unit
All	-	-	**A - G - H**	-
Z21 Combustible dust	II 2D	Compressed air, D version: A Series	**B**	Compressed air supply
Z1 Flammable gasses	II 2G			
Z1/21 Combustible dust and Flammable gases	II 2G/D			
Z22 Combustible dust	II 3D	With side blower: 30 – 31 – 33 35 – 37 – 39 – T37 – CTS series 15 ATEX	**C**	With side blower (dust)
Z2 Flammable gasses	II 3G			With side blower (gas)
Z21 Combustible dust	II 2D	With side blower: 30 – 31 – 33 35 – 37 – 39 Series CTS	**D**	With side blower (dust only)
Z21 Combustible dust	II 2D	MAG - CTT series MAG series MAG DEX CTT	**E**	Motor + turbine belt drive
Z1 Flammable gasses	II 2G			
Z1/21 Combustible dust and Flamable gases	II 2G/D			
Z22 Combustible dust	II3D	Centralized Vacuum Systems and Dust Extraction Plants	**F**	With side blower, vaned pump (dust only)

N.B.: the following also applies to IECEx certified machines.

A) : General prescriptions and precautions for using vacuum cleaner systems in areas with explosive atmospheres

B) : Additional prescriptions for ATEX compressed air machines
II 2D - II 2G - II 2G/D suitable for zones 1, 21 and 1/21

C) : Additional prescriptions for ATEX machines with side blower
II 3D (dust) – Z22 or II 3G with side blower (gas) – Z2

D) : Additional prescriptions for ATEX machines with side blower
II 2D (dust only) used in Zone 21

E) : Additional prescriptions for ATEX MAG series and CTT machines
II 2D – II 2G – II 2G/D (dust only - gas only - gas and dust) for Zones 21, 1 and 1/21

F) : Additional prescriptions for Centralized Vacuum Systems and Dust Extraction Systems - II 3D (dust only)

G) : Marking

H) : Maintenance and check registrations

NB : hereinafter, the vacuum cleaners, centralized vacuum systems and dust extraction systems are referred to as “machines”

Instructions:

A) General prescriptions and precautions for use in areas with explosive atmosphere

These vacuum cleaners comply with the 94/9/CE (ATEX) Directive.

The user must be informed about the dangers related to electric current and static electricity, and the risks deriving from the physical and chemical properties of the substances in the work area.

The user must be informed about the environmental characteristics of the area where the machine is installed and in will it be used.

In accordance with Directive 1999/92/EC, in the presence of combustible gases and/or flammable gases in the workplace, the Employee must classify the Area, and choose a machine in the appropriate Category (in accordance with the definitions of Directive 94/9/EC).

Prior to using:

Check that the data on the machine's identification plate correspond to the Zone classification and to the maximum allowable temperature to avoid dust ignition in the work area.

Check that the vacuum cleaner specifications have not been modified, otherwise the Declaration of Conformity is no longer valid.

Static electricity can cause sparks, with the consequent risk of explosion! Therefore, make sure the electrical socket and plug (the earth cable supplied, on compressed air models) are connected to earth.

Use an Ohmmeter to check the electrical continuity of the earth connection from the inlet to the end of the vacuum pipe (and on the antistatic connecting hose on air compressed models): the resistance must be under 1,000,000 (10^6) Ohms.

Check the continuity of the ground and equipotential cables (green-yellow protective conductors) and make sure that they are in perfect conditions.

Check for loose electrical or mechanical connections.

The machine must be turned off before connecting it to an energy source. Connect the machine to an energy source outside the ATEX Zone (unclassified zone). If the machine has an ATEX electrical plug certified for the area it is used in, it can be connected to an ATEX certified socket in the same type of zone with the same rating, after the machine has been turned off.

During operation:

Check that the data on the machine's identification plate correspond to the Zone classification and to the maximum allowable temperature to avoid dust ignition in the work area.

Only use antistatic flexible hoses (avoid using superficially antistatic ones), and only use original Nilfisk-CFM spare parts.

When replacing the filter, only install original CFM antistatic filters.

Do not use insulating coupling or dust collection hoses.

Do not remove hoses during operation, always wait until the machine has stopped.

Do not use plastic bags for the container, but only original Nilfisk-CFM "**8 40828 – 8 40874 – 8 40832**" antistatic plastic bags.

If a preseparator must be used, check that it is well grounded. Only use antistatic hoses, both for suction and connecting the preseparator. Do not use the machine to suck up large objects or particles because they can knock against each other, causing sparks.

Do not rub or hit the floor with steel tools, as they can produce sparks under friction. Only use collectors and suction caps that can be replaced with original Nilfisk-CFM antistatic spare parts to clean the floor.

Check the vacuum indicator periodically, to prevent the filter clogging.

Always empty the container, most of all after vacuuming wet vegetal particles or fluids, so as to prevent the accumulation of fermentation gases.

To avoid changing the classification of the work area, the dust bag must be emptied outside the zone (zone without ATEX classification). Unhook the bin, and only empty it when you are outside the zone.
On centralized dust extraction plants, the user must observe procedures, use methods and accessories for emptying the bin that prevent any alteration of the classification in the Zone where the plant is installed. Only replace accessories supplied by the manufacturer with original spare parts.
In the case of non-observance of the above, the Declaration of Conformity is void.

Specific maintenance and other precautions

Always perform the service operations and checks described in the standard instruction manual of the vacuum cleaner being used. Check regularly, and in particular while emptying the dust container, that the filters are in good condition (including the metallic safety filter, if fitted), to prevent breakage, wear, damage and/or tearing of the filter cloth, which may result in dust dispersion from the outlet. This may generate dangerous clouds. Check the filter is intact before using the machine as follows: vacuum fine inert dust (e.g.: talc, chalk, scagliola…) and make sure it isn't blown out of the outlet.

Periodically clean the motor cooling fan to prevent the motor overheating.

Use antistatic suction hoses suitable for the type of material to vacuum. The hoses should not produce sparks or create electrostatic charges caused by the tube rubbing.

Only use original Nilfisk-CFM antistatic hoses and accessories.

The antistatic hoses must be earthed to prevent electrostatic charges. Using an ohmmeter, check for the correct galvanic connection (electrical continuity) between the hoses and the accessories being used. This is to prevent the operator being exposed to fire hazards and the risk of electric shocks.

B) : Additional prescriptions for ATEX compressed air machines
II 2D - II 2G - II 2G/D suitable for zones 21, 1 and 1/21

Nilfisk-CFM Models: **Compressed air, D version: A Series…. (A15 , A17 , A …)**

Standards of reference:

These machines comply with EN 1127-1, EN 13463-1 Standards

Warning: observe the prescriptions of the above standards

Designed to be used in explosive atmospheres classified as Zone 21 and 22, in Zone 1 and 2 and in Zones Z 1/21 and Z 2/22 with the simultaneous presence of dust and gas **for a max. time of 1,000 hours/year**.

Never use the vacuum cleaners in Zone 20 and/or 0.

These vacuum cleaners are designed to vacuum wet and dry particles when cleaning places and machines, especially in the foodstuffs, chemical, pharmaceutical and textile industries.

They are not designed to be used in the presence of ST3 explosion class dust or dust considered explosive (ISO 6184/1 – BGIA classification: http://www.dguv.de/bgia/en/gestis/expl/index.jsp) and with an ignition energy of under 1 mJ.

They can be used in zones with gases belonging to groups up to IIB group (ethylene) but they are not designed to vacuum fluids with a low flash point or incendiary substances (T < 135°C).

For these models, as well as following the instructions in the use and maintenance manual of the standard vacuum cleaner, specific precautions and maintenance are also required.

Identification plate marking: “  II2D (T 100°C) T 60°C “ for Zone 21 ; “  II2G c IIB (T4, T5) “ for Zone 1;

“  II2GD c IIB (T4, T5)T6 - (T 100°C) T 60°C “ for Zone 1 and Zone 21 present simultaneously.

See example of marking in paragraph G)

Corrosion can be a real danger. The vacuum unit is made of aluminium. Do not vacuum gases, vapours and/or fluids that can corrode this metal.

All the above prescriptions, precautions and service operations must be observed, or the **Nilfisk-CFM Warranty II 2G/D – II 2G - II 2D for the ATEX machine is void, the Nilfisk-CFM ATEX Declaration of Conformity is no longer valid and the User is entirely responsible for the use of the vacuum cleaner.**

Warning: any maintenance and cleaning must be done with the vacuum cleaner turned off and with the compressed air disconnected.

C) : Additional prescriptions for ATEX machines with side blower
II 3D for use in Zone 22 or II 3G side blowers used in Zone 2

Nilfisk-CFM Models: **Side blowers: 30 – 31 – 33 – 35 – 37 - 39 - T37 – CTS Series**

These machines comply with EN 1127-1, EN 13463-1, EN 61241-0, EN 61241-1, (Z22 dust), EN 60079-14 (Z2 gas) Standards

Warning: observe the prescriptions of the above standards

They are designed to be used in Zone 22 and Zone 2 classified areas, **for a maximum time of 10 hours/year**.

Never use the vacuum cleaners in Zones 20, 21 and/or Zone 0 or 1.

These vacuum cleaners are designed to vacuum wet and dry particles and clean places and machines occasionaly, especially in the foodstuffs, chemical, pharmaceutical and textile industries.

They are not designed to be used in the presence of ST3 explosion class dust or dust considered explosive (ISO 6184/1 – BGIA classification: http://www.dguv.de/bgia/en/gestis/expl/index.jsp) and with an ignition energy of under 1 mJ.

They are not designed to vacuum fluids with a low flash point or incendiary substances (T < 200°C).

For these models, as well as following the instructions in the use and maintenance manual of the standard vacuum cleaner, specific precautions and maintenance are also required.

Identification plate marking: “  II3D Ex tD A22 IP55 T 125°C“ for Zone 22 (dust only, IP 55), “  II3G IIB T4“ for Zone 2 (gas only); “  II3D Ex tD A22 IP54 T 125°C“ only for model 15 ATEX for Zone 22 (dust only, IP 54).

When vacuuming combustible dust with conductive properties (e.g. metallic) the Protection Class must be IP6X:

 II3D Ex tD A22 IP65 T 125°C (for conductive dust: IP 65)

See example of marking in paragraph G)

In case of abnormal noise or faulty motor or side blower, bearings, stop the machine immediately. The operator must not try to dismantle, tamper with and/or service the turbines.

Turbine corrosion can be a real danger. **The turbine** of this vacuum cleaner is made of aluminium alloy. Do not vacuum gases, vapours and/or fluids that can corrode aluminium alloys.

Warning: in case of bearing noise, stop the machine immediately and check the bearings. Contact the After-Sales Service Center for the above maintenance operations. Do not start the vacuum cleaner again, as this could cause an explosion!

Check that the electric panel and the grommets (Pg) are efficient to prevent dust infiltrations.

Check that the hose clamps are correctly tightened.

Check that the by-pass valve (vacuum limiter) is installed and efficient: start the machine and close the suction hose completely. The valve should open and a squealing noise should be heard. This valve stops the turbine overheating in case of clogging.

In case of breakage, only use original Nilfisk-CFM spare parts. Any parts that need replacing must be replaced by trained personnel. Never perform any kind of disassembly, tampering and/or maintenance on the safety systems.

The motor and turbine ball bearings and the protective filter of the safety valve must be serviced by a Nilfisk-CFM Service Center every 10,000 working hours or every 2 years. The operator must not dismantle, tamper with and/or service the turbines.

Turbine corrosion can be a real danger. The turbines of these machines are made of aluminium alloy. Do not vacuum gases, vapours and/or fluids that can corrode aluminium alloys.

Warning: in the case of abnormal noise, faulty bearings or faulty rotating parts, stop the machine immediately, as there is the risk of explosion!
Repairs must be done by Nilfisk-CFM Service Centers.

Periodically clean the motor cooling fan to prevent the motor overheating.

In case of breakage, only use original Nilfisk-CFM spare parts. Any parts that need replacing must be replaced by trained personnel. The operator must not try to dismantle, tamper with and/or service any parts of the machine.

All the above prescriptions, precautions and service operations must be observed, or the Nilfisk-CFM ATEX II 3D and/or II 3G Warranty is void, the Nilfisk-CFM ATEX Declaration of Conformity is invalid, and the user is responsible for the use of the vacuum cleaner.

D) : Additional prescriptions for ATEX machines with side blower
II 2D for explosive dust, suitable for zone 21

Nilfisk-CFM Models: **Side blowers: 30 – 31 – 33 – 35 – 37 – 39 - CTS Series**

Standards of reference:

These machines comply with EN 1127-1, EN 13463-1, EN 61241-0, EN 61241-1 Standards

Warning: observe the prescriptions of the above standards

These machines have been designed to be used in explosive atmospheres classified as Zones 21 and 22 for environments with a presence of combustible dust **for a max. time of 1,000 hours/year**.

They must never be used in Zone 20 and/or in Zones 0, 1, 2 in the presence of Flamable Gases.

These vacuum cleaners are designed to vacuum dry and wet particles and clean places and machines, especially in food, chemical, pharmaceutical, textile industries, and they are suitable for collective use in hotels, schools, hospitals, factories, shops, offices and residences.

They are not designed to be used in the presence of ST3 explosion class dust or dust considered explosive (ISO 6184/1 – BGIA classification: http://www.dguv.de/bgia/en/gestis/expl/index.jsp) and with an ignition energy of under 1 mJ.

They are not designed to vacuum fluids with a low flash point or incendiary substances (T < 200°C).

For these models, as well as following the instructions in the use and maintenance manual of the standard vacuum cleaner, specific precautions and maintenance are also required.

Identification plate marking: "  II2D Ex tD A21 IP65 T 125°C" for Zone 21

See example of marking in paragraph G)

As for 3051 - 3101 – 3151 - 3051T – 3101T – 3151T - 3997 – 3997W models, ground the supplied green/yellow cable.

Check that the electric panel and the grommets (Pg) are efficient to prevent dust infiltrations.

Check that the hose clamps are correctly tightened.

Check that the by-pass valve (vacuum limiter) is installed and efficient: start the machine and close the suction hose completely. The valve should open and a squealing noise should be heard. This valve stops the turbine overheating in the case of clogging.

In case of breakage, only use original Nilfisk-CFM spare parts. Any parts that need replacing must be replaced by trained personnel. Never perform any kind of disassembly, tampering and/or maintenance on the safety systems.

The motor and turbine ball bearings and the protective filter of the safety valve must be serviced by a Nilfisk-CFM Service Center every 10,000 working hours or every 2 years. The operator must not try to dismantle, tamper with and/or service the turbines.

Turbine corrosion can be a real danger. The turbines of these machines are made of aluminium alloy. Do not vacuum gases, vapours and/or fluids that can corrode aluminium alloys.

Warning: in the case of abnormal noise, faulty bearings or faulty rotating parts, stop the machine immediately, as there is the risk of explosion!
Repairs must be done by Nilfisk-CFM Service Centers.

In case of breakage, only use original Nilfisk-CFM spare parts. Any parts that need replacing must be replaced by trained personnel. The operator must not dismantle, tamper with and/or service the safety filters (bypass valve filter and safety metallic filter).

All the above prescriptions, precautions and service operations must be observed, or the Nilfisk-CFM ATEX II 2D Warranty is void, the Nilfisk-CFM ATEX Declaration of Conformity is invalid, and the user alone is responsible for the use of the vacuum cleaner.

E) : Additional prescriptions for ATEX MAG series and CTT machines
II 2D - II 2G - II 2G/D suitable for zones 21, 1 and 1/21

Nilfisk-CFM Models: **Motor + turbine belt drive**
MAG- MAG DEX - CTT Series

Standards of reference:

These machines comply with EN 60079-14, EN 1127-1, EN 13463-1, EN 61241-0, EN 61241-1 Standards

Warning: observe the prescriptions of the above standards

These machines have been designed to work in areas with explosive atmosphere. These areas are classified as Zones 21 and 22 (dusty environments), Zones 1 and 2 (areas with a presence of gas) and Zones 1/21 and 2/22 (areas with a presence of both dust and gas) **for a max. time of 1,000 hours/year**.

Never use the vacuum cleaners in Zone 20 and/or 0 (areas with Flamable gases).

These vacuum cleaners are designed to vacuum dry and wet particles and clean places and machines, especially in food, chemical, pharmaceutical, textile industries, and they are suitable for collective use in hotels, schools, hospitals, factories, shops, offices and residences.

They are not designed to be used in the presence of ST3 explosion class dust or dust considered explosive (ISO 6184/1 – BGIA classification: http://www.dguv.de/bgia/en/gestis/expl/index.jsp) and with an ignition energy of under 1 mJ.

They are not designed to vacuum fluids with a low flash point or incendiary substances (T < 200°C).

For these models, as well as following the instructions in the use and maintenance manual of the standard vacuum cleaner, specific precautions and maintenance are also required.

Identification plate marking: " II2D - Ex tD A21 IP65 T 125°C" for Zone 21, " II2G IIB T4" for Zone 1, " II2GD IIB T4 - Ex tD A21 IP65 T 125°C" for Zone 1 and Zone 21 both present at same time.

See example of marking in paragraph G)

The motor and turbine ball bearings and the transmission belt must be serviced by a Nilfisk-CFM Service Center every 10,000 working hours or every 2 years. The operator must not dismantle, tamper with and/or service the turbines.

MAG series: this machine has an antistatic transmission belt. In case of breakage, only use original Nilfisk-CFM spare parts. Any parts that need replacing must be replaced by trained personnel. Adjust the belt tension so the belt stretches by 1% (e.g. measured on a section of the belt 100 mm long – see fig. 1 and 2).

CTT series: observe the above for the MAG series; follow the instructions in the basic use and maintenance manual to check the belt tension

Turbine corrosion can be a real danger. The turbines of these machines are made of aluminium alloy and galvanized steel. Do not vacuum gases, vapours and/or fluids that can corrode these metals.

Depending on the quantity of dust present in the area or, in any case, every six months, clean the motor plate regularly so as to remove any dust deposit. Check the transmission belt tension and wear and, if necessary, replace it with an original spare part.

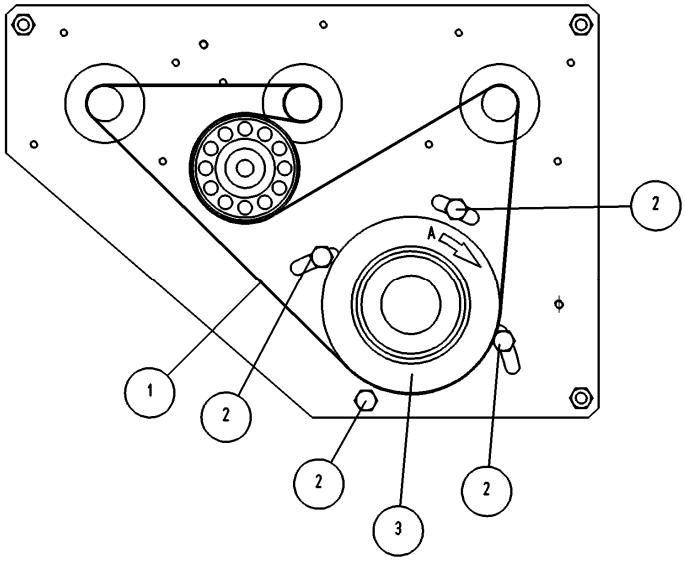
Warning: MAG1-2-3 and CTT vacuum cleaners for dust only, Cat. II 2D: in case of bearing noise, stop the machine immediately and check the bearings. Contact the After-Sales Service Center for the above maintenance operations. Do not start the vacuum cleaner again, **as this could cause an explosion!**

Warning: MAG1-2-3 and CTT vacuum cleaners for gas, for gas and dust, Cat. II 2G – II 2G/D: if the machine stops and the red bearing overheating indicator lights, check the condition of the bearings. Contact the After-Sales Service Center for the above maintenance operations. Do not start the vacuum cleaner again, **as this could cause explosions!**

All the above prescriptions, precautions and service operations must be observed, or the Nilfisk-CFM ATEX II 2G/D – II 2G – II 2D Warranty is void, the Nilfisk-CFM ATEX Declaration of Conformity is invalid, and the user alone is responsible for the use of the vacuum cleaner.

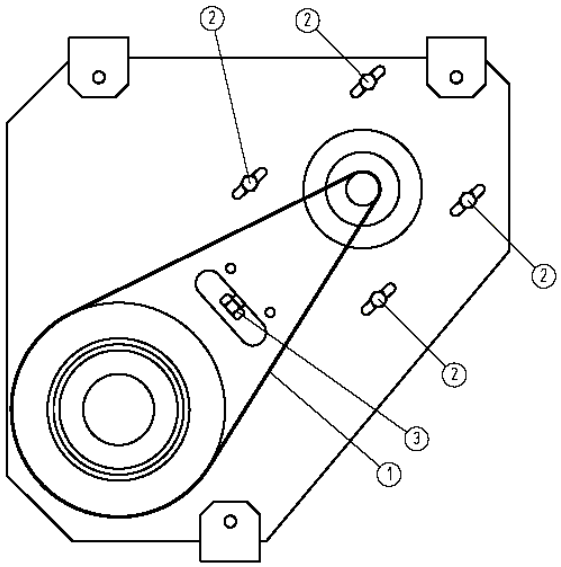
MAG 3307 – 3557: Transmission belt adjustment (Fig. 1) - **WARNING!!** To stretch the belt, loosen the 4 screws (2) and turn the pulley (3) and the electric motor in the direction of the arrow (A) as shown in Fig. 1. To loosen the belt, turn them in the opposite direction.

Fig. 1



MAG 3156 – 3306: Transmission belt adjustment (Fig. 2) - **WARNING!!** To stretch the belt, loosen the 4 screws (2) and turn the screw (3) clockwise. To loosen the belt, turn it counterclockwise.

Fig. 2



F) Additional prescriptions for Centralized Vacuum Systems and ATEX Dust Extraction Plants II 3D

Nilfisk-CFM Models:

Automated vacuum units with or without wheels; with or without electrical board; with or without filter unit; with or without containment silos with manual or automated emptying; with or without emptying accessories; with or without level sensors, flow control, product present; with or without product transfer pipes; with or without product sockets with or without control system (sensors and/or microswitches)

Standards of reference:
These machines comply with EN 1127-1, EN 13463-1, EN 61241-0, EN 61241-1, (Z22 dust) Standards

Warning: observe the prescriptions of the above standards

Automated vacuum unit
Refer to the instructions for machines with the same type of motor and designed to be used in **Zone 22 for all remaining use and maintenance requirements and markings.**

Other parts of the plant
To avoid altering the ATEX classification of the plant, parts should only be replaced with original Nilfisk-CFM spare parts. In particular the flexible hoses must be antistatic.

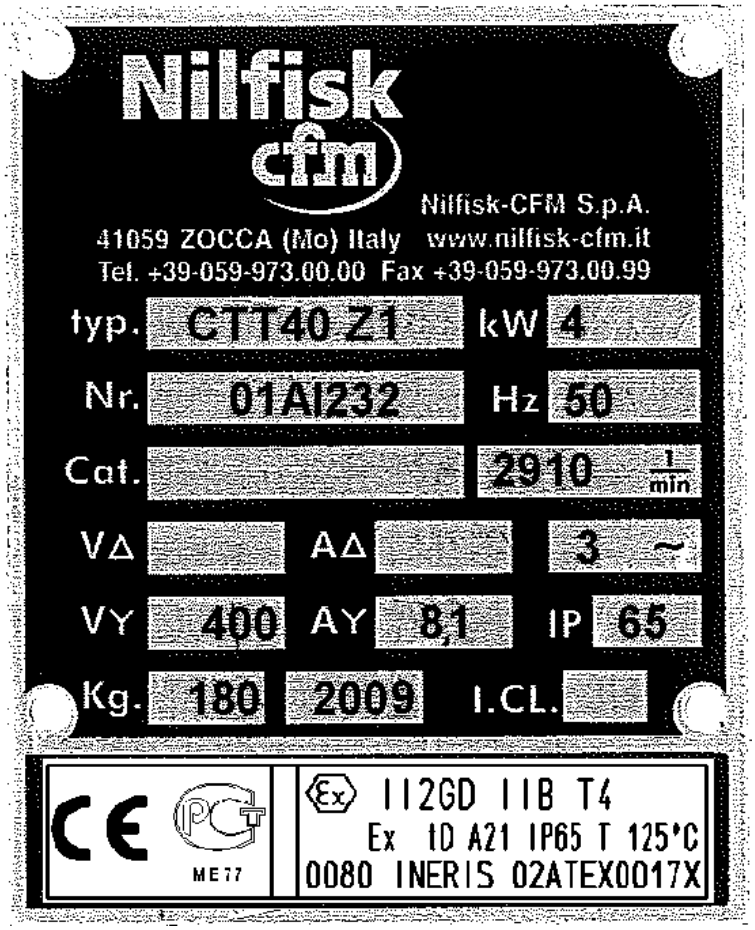
Proper and Improper Use :
The metallic parts of the plants (silos, hoppers, hoses and pipes) may be made and supplied in various materials (galvanized steel, stainless steel, plastic, rubber, etc..). The type, nature and materials of construction are used on the basis of the materials to vacuum and/or transport, as declared by the Customer in the order.

These elements are taken into consideration by Nilfisk-CFM in the ATEX risk assessment phase for the specific plant:

1. Nilfisk-CFM is therefore not responsible for any risks, danger or damage caused by any other use of the plant not described and indicated in the Nilfisk-CFM Order Confirmation.
2. Furthermore, Nilfisk-CFM is not responsible for the consequences of any other substances or materials being vacuumed and/or transported, which are not indicated in the Nilfisk-CFM Order Confirmation.

N.B.:
In the case of non-observance of the above **the Nilfisk-CFM ATEX Declaration of Conformity is void and the user is the sole responsible for the use of the machine.**

G) Example of an identification plate marking:



H) Maintenance and check registrations

Example of the table used to register and document the maintenance work and checks:

Model:	Purchase date:	Serial number:

Date	Performed maintenance and checks	Stamp/Signature