

AUTOMATED MAGNETIC SEPARATOR AND PERIPHERAL OPTIONS

1 PRESENTATION de la GAMME :

The range of magnetic separators is available as a standard with three sections. The different sections are defined to capture the ferrous particles in a flow (m³ / h) of product by gravity transport :

Type :

350x200 – pour débit 100 m³/h

650x200 – pour débit 200 m³/h

950x200 – pour débit 300 m³/h



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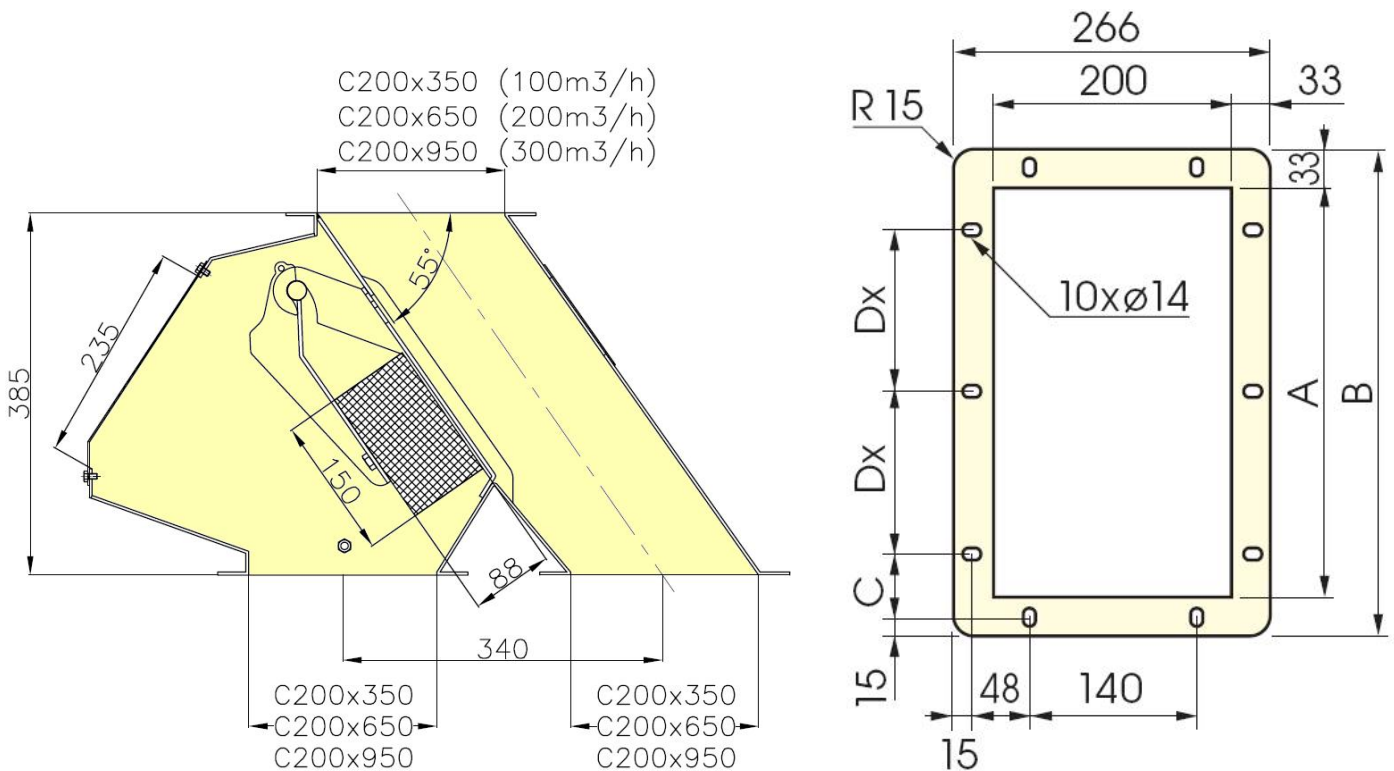
2 USE:

- 1) The automated magnetic separator is used to separate any unwanted ferrous metal element from a continuous flow of non-ferrous powder product.
- 2) It is designed to be an integrated component in the circuit. It should be connected to the power supply and output lines observing the requirements of machine safety and protection of upper limbs ((EN ISO 13857).
- 3) The design of the magnetic separator intends it to be used with the product moving vertically downwards by gravity.
 - The automated magnetic separator must be controlled according to an alternating cycle of work and degaussing waste. The movement of the flap may be ensured by a pneumatic command.
 - The positions of the flap can be recognised by position sensors.

3 DESCRIPTION OF THE DEVICE:

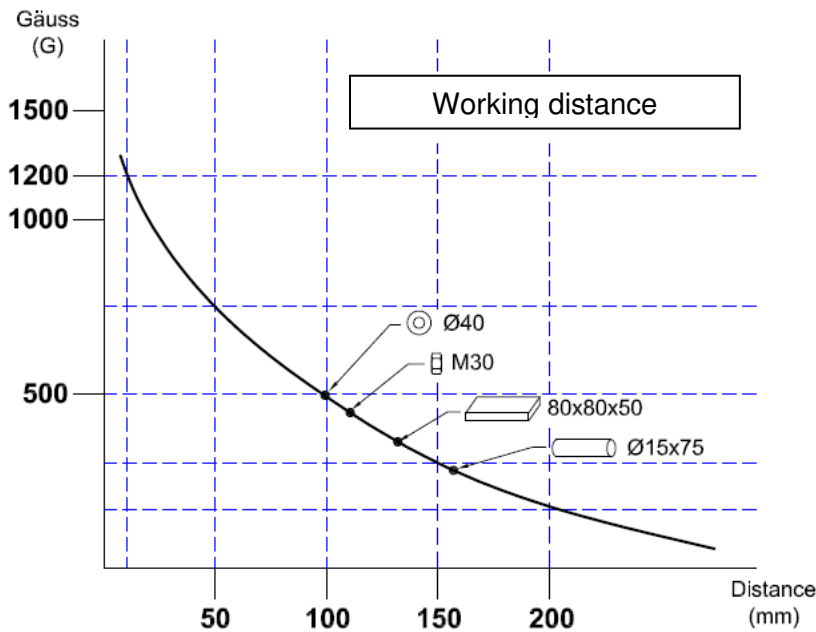
The body of the magnetic separator is manufactured in 304L stainless steel of a thickness of 3mm for all models.

The magnetic base component is a ferrite C8 permanent magnet of dimensions 150x300x88, with a power of 3800 Gauss on contact and a layer control of about 50 mm.



Section	A mm	B mm	C mm	Dx	Flow rate m ³
200 x 350	350	416	53	2 x 140	100
200 x 650	650	716	58	3 x 190	200
200 x 950	950	1016	68	5 x 170	300

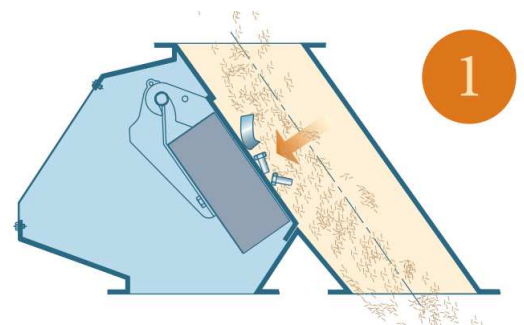
The performance of the magnet can be characterised by the diagram below.



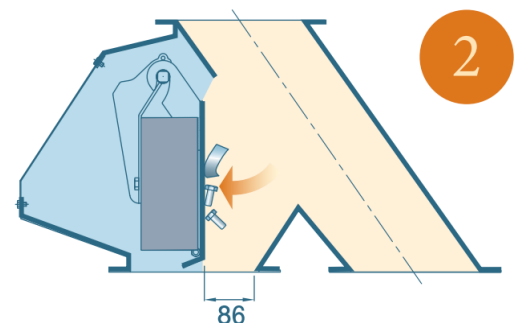
4 OPERATION:

The magnetic separator is fitted with a stainless steel flap behind which a ferrite permanent magnet is placed (option: Néodyme FerBore).

- 1 In normal operation, the flap is in closed position, the product flowing downwards onto this flap. The metal particles are retained by the magnet, and the remaining product continues to flow.



- 2 When the product supply is stopped, the flap and magnet switch to the vertical of the "waste" exit, carrying with them the metal waste.

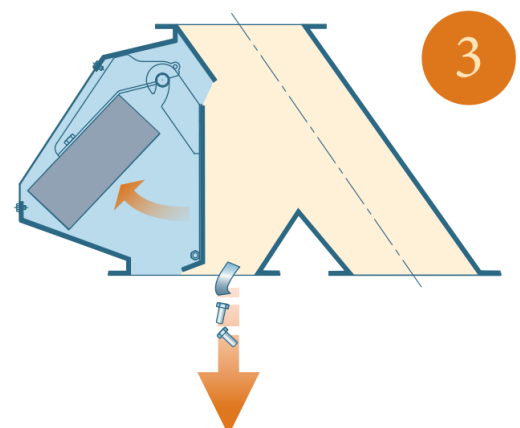


- 3 With the flap remaining vertical, the magnet continues to move away, thus freeing the metal waste to the "waste" exit.

After allowing time for the waste to fall, the magnet can return to contact with the flap and the flap in closed position.

The product can again move and a new cycle can resume.

- The flow of product must be stopped during the separation phase, otherwise, "good grain" will go into the "waste" pipe.



5 REGULATORY REFERENCES :

The automated magnetic separator is considered as a quasi-machine according to the Machinery Directive 2006/42 / EC according to Annex VII, Part B. This quasi-machine can not be put into service until the assembly in which it is intended to be incorporated will not have been declared to comply with the provisions of this Directive.

6 STORAGE:

The automated magnetic separator should be protected and stored away from shocks and chemical aggression, so it can undergo no deformation or deterioration of its components.

7 INSTALLATION:

Inspection prior to installation :

The installer will check before assembly that the delivered material has not been deformed or damaged.

If the magnetic separator is intended to be installed in the ATEX zone, the installer must check that the electrical components correspond to the category of the ATEX zone for operating the equipment.

Assembly:

The automated magnetic separator must be installed by qualified personnel.

The magnetic separator is designed to work on a gravity pipe, it could not be installed neither on pneumatic circuit nor just below elevator head outlet.

During assembly, the installer shall take care that the automated magnetic separator suffers no force from the supply and drainage pipe.

To ensure there are no forces on the automated magnetic separator, a no-load test of the automated magnetic separator is required.

The connections with the automated magnetic separator must be carefully sealed by the installer to avoid any leakage.

Installation cautions:

When handling, sharp edges on the appliance can cause injury. The handling shall be by lifting slings and with suitable gloves.

The weight of the automated magnetic separator, 50 kg to 150kg unequipped depending on the models, may lead to a fall and severe bruising. Workers should protect themselves with helmets and safety footwear.

Flap movements:

- Do not leave the " waste" outlet without a sufficiently long pipe or anti-intrusion device to comply with the provisions of machine safety and protection of the upper limbs (EN ISO 13857).
- Do not insert your hands into the automated magnetic separator without taking appropriate safety precautions.
- Never operate the flap or cause the flow of product without the protective casings.

For automated magnetic separators installed at a height, the workers should protect themselves with appropriate safety means to prevent falls.

Before using the automated magnetic separator, the installation foreman must check the earthing of the pipes on which the automated magnetic separator is located, to avoid all risks associated with static electricity.

Important: If the automated magnetic separator is used in conditions contrary to the precautions described in this instruction manual, STIF disclaims any liability for damage caused to humans, animals, environment and material goods.

Precautions related to magnets

Do not bring the magnets close to a heat source, as this can damage the magnetic properties, sometimes irreversibly.

Do not bring the magnet near video or audio tapes, recording heads, TV, speakers, credit cards, magnetic compasses, watches or any other objects liable to be totally or partially damaged by magnetic fields.

Using permanent magnets are particularly inadvisable for persons with pacemakers.

Store the magnets in a dry place and away from heat sources.



8 MAINTENANCE:

All maintenance operations are to be performed by qualified personnel.

The maintenance of the automated magnetic separator is linked with the frequency of its use.

- It is monthly for magnetic separators which operate all year round,
- It is done at the beginning and the end of the season for others.

Maintenance includes the following points:

- Cleaning of dust deposits on the automated magnetic separator and its control and detection accessories.
- Check of the condition of the flap and the absence of residual waste.
- Examination of the tightening of the mounting bolts.

If the flap is at the limit of wear, it is then possible to change it with a new flap available as a spare part. The change is through the "waste" exit. The flap must first be moved by the pneumatic control. In the open position, block the flap and cut off the supply of compressed air to secure the manoeuvre. Unhook the flap from its shaft and replace it with the new one. Release the flap and turn the compressed air supply back on. Your appliance is ready to operate again.

For safety reasons, it is advisable to change the automated magnetic separator as soon as its wear rate reaches 50% on metal parts.

Note: before working inside the automated magnetic separator, please disconnect the appliances related to the action of the flap.

9 DISCARDING :

The user should make sure the automated magnetic separator is dumped properly, and should give the components to specialised collection centres following their nature (plastic, steel, rubber, magnets, etc.).

10 PERIPHERAL EQUIPMENT OF THE MAGNETIC SEPARATOR

- The automated magnetic separator can be equipped with several types of controls (pneumatic) and flap position detector(s). For fitting, it is essential to use the attached instruction manuals for each piece of equipment.
- The peripheral equipment must be fitted, connected and started by qualified personnel. Staff must know the protection classes, regulations and provisions concerning equipment in explosive areas. See whether the classification (marking on the appliance) is appropriate for the application.

The equipment whose ATEX level is the lowest determines the classification of the whole.

10.1 Pneumatic control :

The actuator and its accessories are factory fitted by us on the body of the separator and have undergone an operational test. The actuator is double acting type, ie. it has no home position. If the pneumatic supply is cut off, then the actuator will maintain its position of before the cut-off.

The size of the actuator is related to the size of the automated magnetic separator at 5.5bar.

Section of the separator	200x350	200x650	200x950
Actuator torque (N.m)	101	146	2x 101

10.2 Spool valve Electro distributeur :



To optimise the actuator control, it is recommended to use the electro-distributor in its 5/2 1EV "monostable effect" version. The home position is the position "closed flap", ie. in case of electrical power failures, the system will go into "closed flap" position.

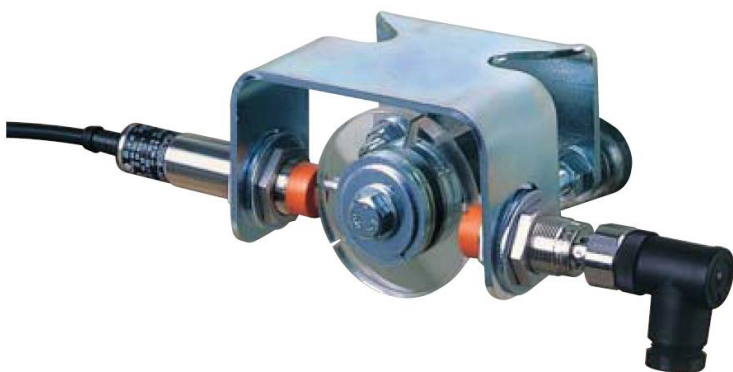
Check that the electrical coil of the electric distributor corresponds with the power supply of the installation before any connection. As a standard, the coil voltage is 48 V AC.

Before starting the separator for the first time, the exhaust reducers must be adjusted to avoid damaging the flap by too violent movements.

For the starting up and using of the appliance, please carefully read the recommendations described in the instruction manual attached to the electro-distributor.

For maintenance and disposal, please refer to chapters 8 and 9 of this manual.

10.3 Inductive end of movement:



The automated magnetic separator is designed to accommodate inductive detectors ø18. Inductive sensors are delivered with M12 connectors, or pre-wired on 2 metres in HZ ATEX or pre-wired on 10 metres Z22 and Z21.

- 1) To signal the faulty flap movement efficiently. Position the sensor at the limit of detection with the notch of the Plexiglas disk.
- 2) For the starting up and using of the appliance, please carefully read the recommendations described in the instruction manual attached to the inductive sensors.

For pneumatically controlled separators of type 200x350 and 200x650, all movement limiters will be mounted on the side opposite the command. For the 200x950 type, being equipped with 2 rotary actuators, all movement limiters will be mounted on one of the two actuators.

For maintenance and disposal, please refer to chapters 8 and 9 of this manual.