MB CONVEYORS SOLUTIONS

MB Conveyors

METAL IMPURITIES

ENG

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METAL DETECTORS **MB CONVEYORS**

METAL DETECTORS *ARE INSTALLED ON MB CONVEYORS USED FOR RECOVERING PLASTIC MATERIAL*

MISSION:

- *Detecting the presence of metallic impurities on the conveyor.*
- *Protecting the cutting/shredding blades from damage.*
- *Preventing the granulated/shred plastic from being contaminated.*

SOLUTION:

MB CONVEYORS PROPOSES TWO METAL DETECTOR MODELS:

1. *PLATE METAL DETECTORS.*
2. *TUNNEL METAL DETECTORS.*

PLATE METAL DETECTOR

MD

0. MESUTRONIC plate metal detector

0. MESUTRONIC PLATE METAL DETECTOR

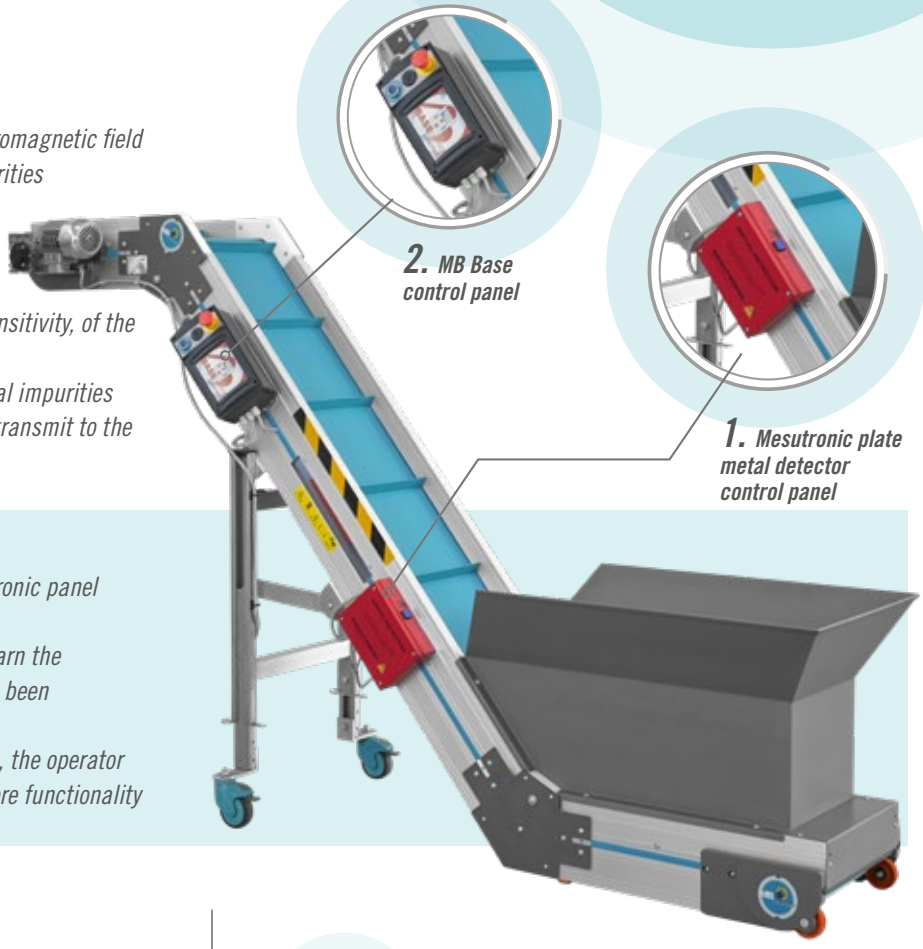
The plate (or antenna) generates an electromagnetic field (see position 3) able to detect metal impurities

1. MESUTRONIC PANEL

- Regulates the intensity, thus the sensitivity, of the electromagnetic field
- Detects interference caused by metal impurities and converts them into a signal to transmit to the MB Base Control panel

2. MB BASE CONTROL PANEL

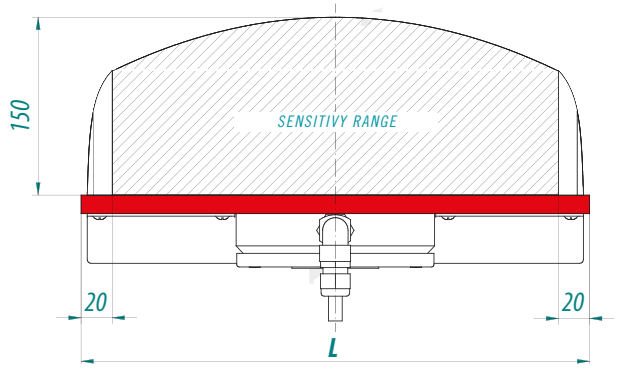
- Receives the signal from the Mesutronic panel
- Stops the conveyor
- Emits an audible alarm signal to warn the operator that metal impurities have been detected and must be removed
- After removing the metal impurities, the operator must press the reset button to restore functionality



2. MB Base control panel

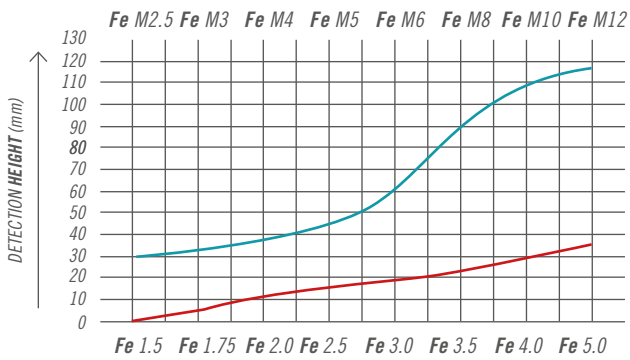
1. Mesutronic plate metal detector control panel

3. DIMENSIONS DIMENSIONS OF MAGNETIC FIELD PLATE METAL DETECTOR



SENSITIVITY DIAGRAM:

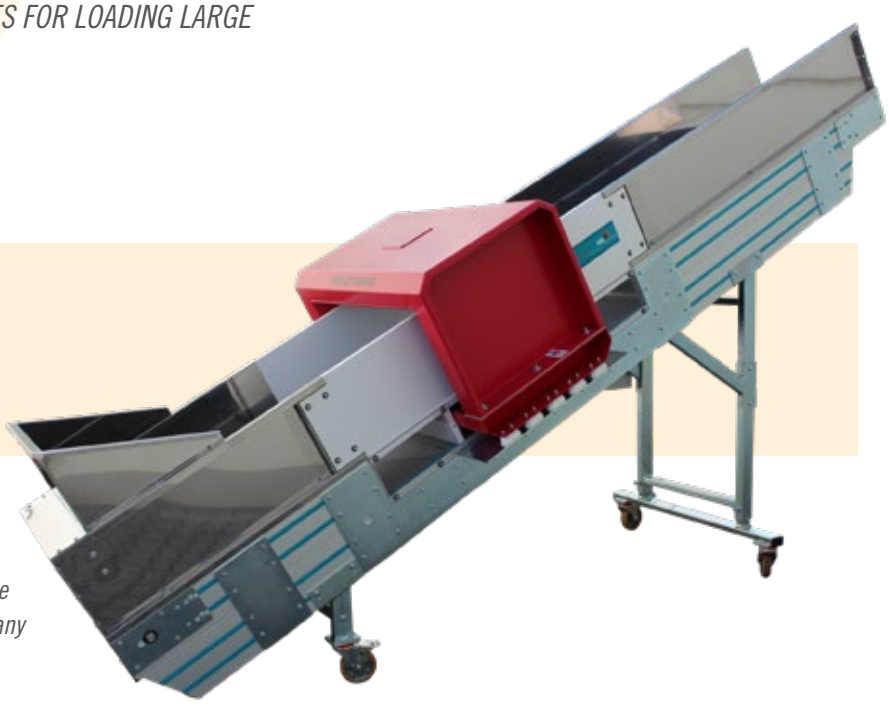
IRON NUT →



IRON BALL →

MD | TUNNEL METAL DETECTOR

TUNNEL METAL DETECTORS ARE INSTALLED ON CONVEYORS USED IN PLASTIC RECYCLING INDUSTRIES FOR LOADING LARGE GRANULATORS AND SHREDDERS.



0. MESUTRONIC TUNNEL METAL DETECTOR

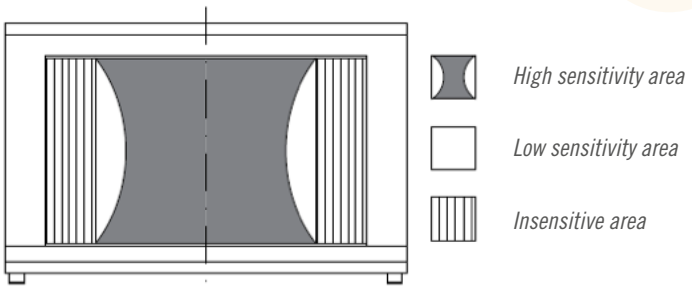
An electromagnetic field is generated inside the tunnel (see position 3) so as to detect any metal impurities

Thanks to its tunnel conformation, the Metal Detector is able to accurately check all the material as it transits along the conveyor

1. THE MESUTRONIC CONTROL PANEL PROCESSES THE SIGNAL INDICATING THAT METAL HAS BEEN DETECTED AND TRANSMITS IT TO THE MB CONTROL PANEL WHICH:

- Stops the conveyor
- Emits an audible signal to warn the operator that metal impurities have been detected and must be removed.
- After removing the metal impurity, the operator must restore the operating conditions of the conveyor by pressing the RESET button.

2. SENSITIVITY DISTRIBUTION

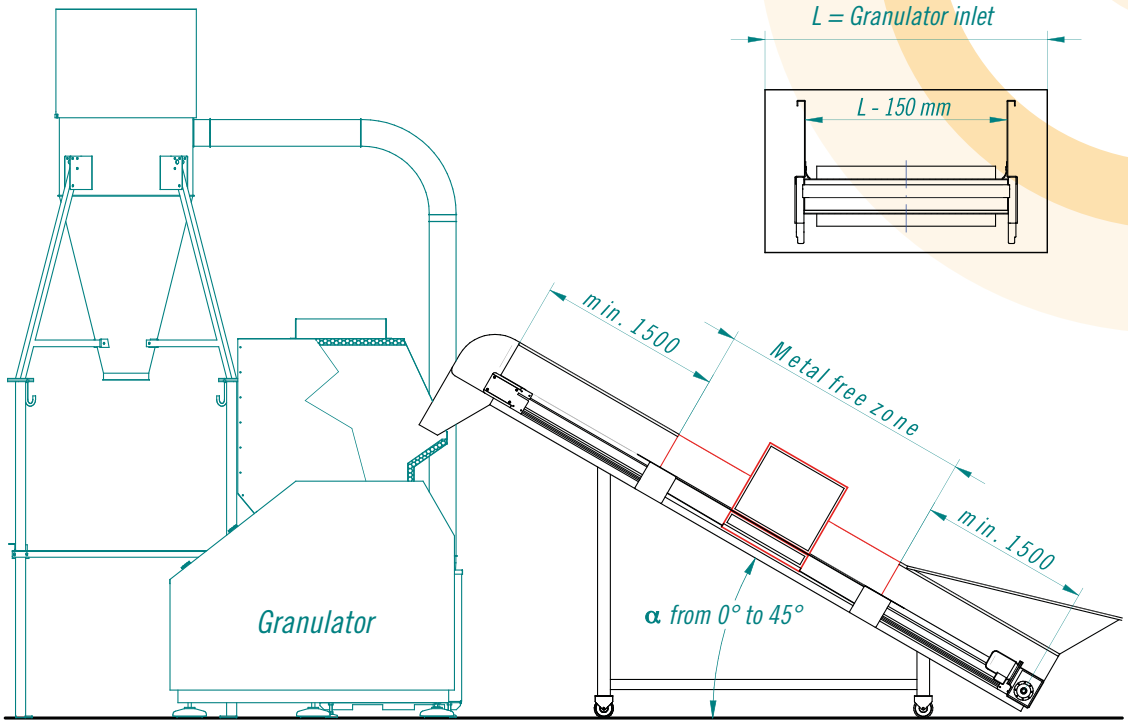


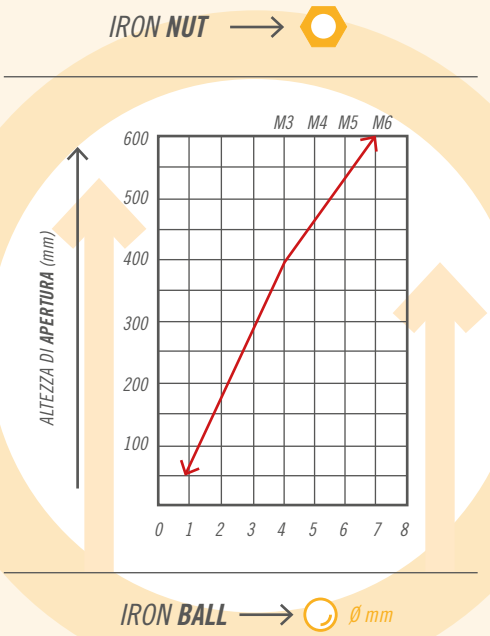
SENSITIVITY SPECIFICATIONS

Bear in mind that the coil does not produce a uniform electromagnetic field: there are differences in sensitivity inside the compartment through which the material passes.

The most sensitive area is in the central position with respect to the through compartment.

APPLICATION EXAMPLE





DETECTING SENSITIVITY DEPENDS ON THE HEIGHT OF THE OPENING OF THE METAL DETECTOR: THE LOWER THE HEIGHT THE GREATER THE SENSITIVITY.
The sensitivity of the metal detector can be adjusted, while the effectiveness of the magnetic field remains constant inside the tunnel, in the ways and to the degree indicated in the table alongside.

3. SENSITIVITY DIAGRAM

DEPENDING ON THE HEIGHT OF THE OPENING, AT THE CENTRE OF THE CONSIDERED HEIGHT: the smaller the opening, the greater the sensitivity.

SENSITIVITY FOR OTHER NON-FERROUS METALS:

- *Stainless steel: sensitivity is calculated by multiplying the value of the FE ball by a factor ranging from min. 1 to max. 2, depending on the type of alloy*
- *Cu, Al, Brass: sensitivity is calculated by multiplying the value of the FE ball by a factor ranging from 1.2 to 1.8, depending on the type of metal*

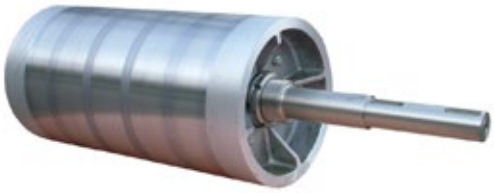
POSITIONING: *GREAT CARE MUST BE TAKEN TO ENSURE THAT THERE ARE NO DISTURBING ELEMENTS NEAR THE METAL DETECTOR, SUCH AS:*

- *Control panels with high power circuits*
- *Electric motors of a certain power rating*
- *Transformers, alternators or other electrical machinery*
- *Equipment or elements that produce vibrations, since these prevent the Metal Detector from functioning properly*

MD | MAGNETIC ROLLER FOR DETECTING FERROUS IMPURITIES (carbon steel)

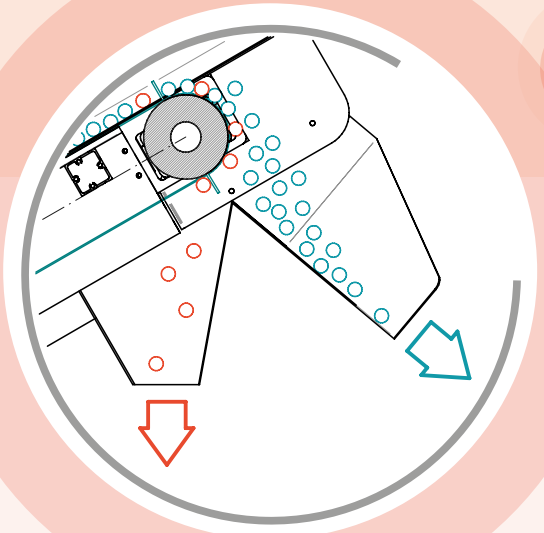
THE **MAGNETIC ROLLER** IS DESIGNED TO DETECT AND REMOVE **FERROUS MATERIAL** AS IT TRANSITS ALONG THE CONVEYOR.

The roller consists of several circular magnets fixed to a throughshaft. Thanks to this conformation, it is used on the conveyor as a driving roller.



THE MAGNETIC ROLLER INSTALLED BY MB IS A PULLEY, WHICH CAN BE MADE OF:

- **Ferrite:** this is the standard, and most widely used application since it is both economical and functional
- **Neodymium:** the field of attraction created by this material is more intense and has a greater depth of action. It should be proposed when small ferrous particles must be intercepted.



ADVANTAGES OF THE MAGNETIC ROLLER:

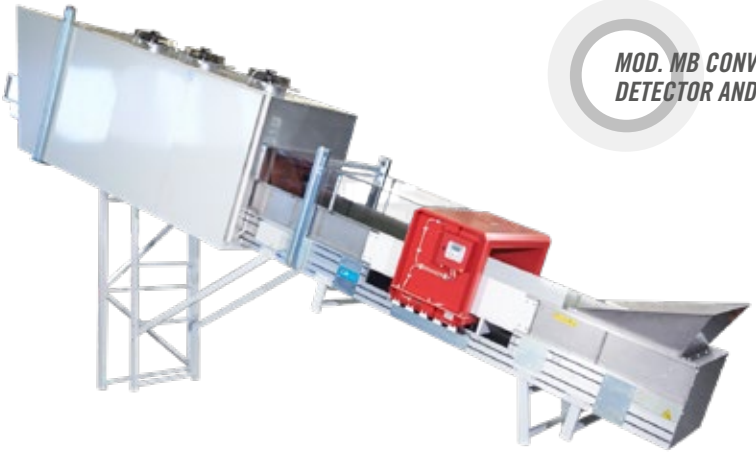
THE DIAGRAM ALONGSIDE ILLUSTRATES THE OPERATING PRINCIPLE OF THE MAGNETIC ROLLER.

- The roller captures the ferrous impurities and allows them to drop into a dedicated outlet chute beyond the inlet opening of the granulator
- The depth of the magnetic field created by the roller is 100 mm around its circumference
- The magnetic roller can be covered with high-grip material (e.g. rubber) up to 2-3 mm thick without this impairing the attraction power of the magnetic field.

APPLICATIONS

MOD. CP-TP PLASTIC CONVEYOR WITH PLATE METAL DETECTOR

Having no metal inserts, the plastic belt is ideal for use with a Metal detector since it will not affect the magnetic field.



MOD. MB CONVEYOR WITH TUNNEL METAL DETECTOR AND SOUNDPROOFED CASING

Besides installing a tunnel metal Detector, we can also fix a soundproofed casing to the structure of the granulator to protect the operator from the noise generated in the granulating compartment. This application includes three helicoid electric fans to cool the material in transit on the conveyor.

MOD. MB CONVEYOR WITH TUNNEL METAL DETECTOR AND FLAT UPPER SECTION

The flat upper section helps to channel large or long pieces of material into the inlet opening of the granulator.

The degree at which the elevator section slopes is established on the basis of the shape and characteristics of the conveyed material.

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