

GFR6000

Metal Detector for free-fall applications



- Metal separator for the inspection of coarse grained, flaky, light, fibrous, crumbly, and moist bulk materials
- Detects magnetic and non-magnetic metal contaminations
- Separation by way of swivel hopper
- Hygienic design for easy cleaning
- Complies with IFS and HACCP
- Separation unit and product-contacting metal parts completely made of stainless steel 1.4301 (AISI 304)
- Low mounting height guarantees easy integration of the metal separator in existing pipe systems
- Separation unit with large cleaning opening
- Auto-learn function with product compensation for optimal adaptation to the intrinsic conductivity of the product to be inspected
- Increased interference immunity to electromagnetic pollution and vibration
- Highest scanning sensitivity for all metals



Function

The GFR6000 metal separator is used for the inspection of bulk materials in free-fall conveyor pipes. It detects all magnetic and non-magnetic metal contaminations (steel, stainless steel, aluminium, ...) - even if such contaminations are embedded in the product. Metal contaminations are rejected by means of a swivel hopper.

The GFR6000 metal separator primarily is used in industries with high hygienic demands.

Application

- Incoming inspection (product purity and machine protection) of spices, ingredients, raw materials, etc. prior to the processing machine (e.g. mill).
- Quality inspection (product purity) of herbs, tea, fibres, etc. directly before filling in big bags and cartons.
- Quality inspection of breakfast cereals, noodles, chips, directly before a bag-forming, filling, and sealing machine.

Typical fields of application:

- Chemical industry
- Pharmaceutical industry
- Food industry

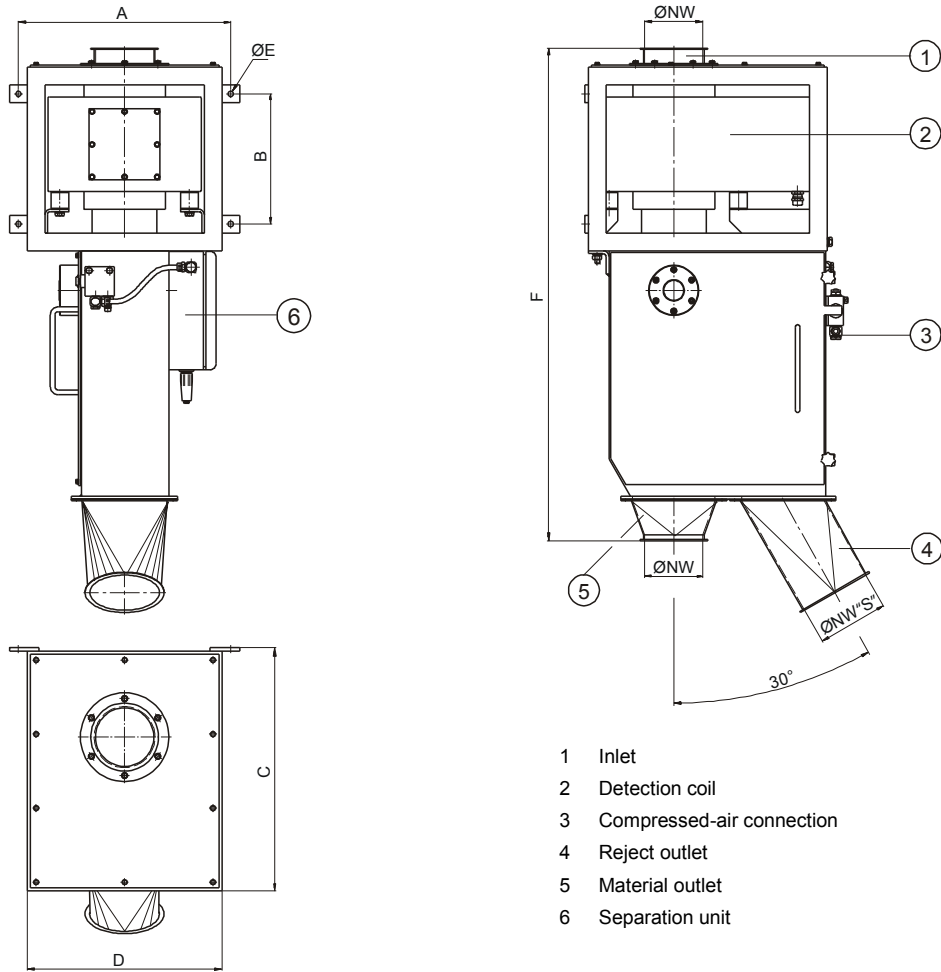
Control units

Two control units (Interact+ and SENSITY) with graded performance features are available.

Common features;

- Highest sensitivity for all metals (2-channel technology)
- Digital signal processing and quartz-stable search frequency
- State-of-the-art microprocessor technology with self-monitoring, auto-balancing, and temperature compensation
- Product compensation with auto-learn function
- Multi-product memory
- Password protection / access protection
- Special EMC combi filter for suppressing external interference

Dimensions GFR6000



- 1 Inlet
- 2 Detection coil
- 3 Compressed-air connection
- 4 Reject outlet
- 5 Material outlet
- 6 Separation unit

Technical Data GFR 6000

| Type | GFR6000/080 | GFR6000/100 | GFR6000/120 | GFR6000/150 | GFR6000/200 |
|---|-------------|-------------|-------------|-------------|-------------|
| Maximum sensitivity ¹⁾ Ø Ferrous ball | 0.45 | 0.57 | 0.60 | 0.77 | 0.95 |
| Max. throughput ²⁾ | 8000 l/h | 12000 l/h | 16000 l/h | 25000 l/h | 44000 l/h |
| Nominal width Ø NW System Jacob | 80 | 100 | 120 | 150 | 200 |
| Nominal width reject outlet Ø NW"S" | 120 | 120 | 120 | 150 | 200 |
| Weight [kg] | 80 | 80 | 80 | 138 | 158 |
| A | 360 | 360 | 360 | 440 | 540 |
| B | 220 | 220 | 220 | 310 | 425 |
| C | 405 | 405 | 405 | 495 | 658 |
| D | 330 | 330 | 330 | 410 | 470 |
| E | 9 | 9 | 9 | 11 | 11 |
| F | 839 | 832 | 832 | 1060 | 1404 |

All dimensions in mm unless stated

¹⁾ The stated detection sensitivity (ferrous ball Ø in mm) applies for non-conductive products at the standard operation frequency and refers to the centre of the detection aperture (most disadvantageous position). Products that show intrinsic conductivity due to moisture content, electrolytes or other conductive contents may reduce the sensitivity as well as variations of product temperature, environmental effects (mechanical shocks and vibrations, electromagnetic pollution) or the set product angle. The detectable size of metal particles depends on their nature, shape and position while passing the metal detector.

²⁾ The stated throughput rate is based on well pourable granules. The shape of the particles and thus the flow characteristic of the bulk material determine the throughput rate which can vary. Upstream installed magnet separators may also reduce the throughput rate due to reduction of the cross section

GRF 6000 Conditions of use

| | |
|---|---|
| Use: | For inspection of free falling bulk materials in the food industry, i.e. spices, herbs, noodles, chips, etc. or in the chemical and pharmaceutical industry for similar applications with high hygienic requirements. |
| Grain shape: | Powder, Granulations, Flakes |
| • Grain shape: | Fine-grained bulks, granules, fibres, flakes |
| • Max. grain size: | 0 – 20 mm, but also lumpy and fibred |
| • Pourability: | Good, medium, poor |
| • Attributes: | Dry, damp, not abrasive, product effects (material conductivity) can be compensated |
| • Material flow: | Free fall, falling height max 500 mm above top edge ¹⁾ (no back draft of material) |
| • Bulk material temperature: | Maximum +80° C |
| • Ambient conditions: | -10°C to +50°C, 25% to 85% rH, no condensation |
| • Storage and shipping conditions: | -10°C to +50°C, 25% to 85% rH, no condensation |
| • Max. conveying pipe pressure: | Maximum 0.1 bar |

Scope of delivery / design / Connections

| | | |
|---|---|---|
| Scope of delivery | Metal separator composed of detection and separation unit and separated control unit Interact+, inlet and outlets made according to Jacob pipe system | |
| Mechanical design: | Detection unit and electronics housing: | Stainless steel 1.4301 (AISI 304), bead blasted |
| | Separation unit complete: | Stainless steel 1.4301 (AISI 304) |
| | Scanning pipe: | PP (antistatic design see options / accessories) |
| | Parts in contact with product: | Stainless steel 1.4301 (AISI 304), PP |
| | Compressed air connection: | 5-8 bar; 6/8 mm hose connection |
| | Compressed air consumption: | Approx. 0.5 – 3.0 l / switching operation (depending on size) |
| | Electrical design: | Operating voltage: |
| Current consumption: | | Approx. 250 mA/115 VAC, approx. 120 mA/230 VAC |
| Mains cable: | | 1.8 m with safety plug |
| Connecting cable (device / control unit): | | 3 m |
| Ingress protection: | | IP 65, (rain shelter required if operated outdoor) |
| Eject duration (metal impulse): | | Adjustable from 0.05 to 60 sec |
| Self-monitoring system: | | Detection coil and outputs |
| Operation | See technical data sheet for control unit Interact+ | |

Accessories

- | | | |
|---|---|---|
| <input type="checkbox"/> Visual alarm | <input type="checkbox"/> Combination alarm (visual alarm and audible alarm) | <input type="checkbox"/> Push button for manual rejection in a separate housing |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Failure indication | <input type="checkbox"/> Push button for functional test in a separate housing |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Test samples |
| <input type="checkbox"/> Audible alarm | <input type="checkbox"/> Filter control valve | <input type="checkbox"/> UL/CSA certificate |
| <input type="checkbox"/> Failure indication | | |
| <input type="checkbox"/> Failure and metal indication | | |

Options

- | | | |
|--|--|--|
| <input type="checkbox"/> 5.7" colour touch-screen | <input type="checkbox"/> Ethernet interface (TCP/IP 100 Mbit/s, IP65, RJ45) | <input type="checkbox"/> Monitor system for separation unit |
| <input type="checkbox"/> Multi-frequency technology Duo | <input type="checkbox"/> WLAN interface (802.11 b/g) with integrated aerial | <input type="checkbox"/> Cable set for remote control unit 6m or 10m |
| <input type="checkbox"/> Serial interface RS232 with plug (IP65, 4-pole) | <input type="checkbox"/> USB interface (only in combination with touch-screen) | <input type="checkbox"/> Manual test facility |
| <input type="checkbox"/> Serial interface RS485 with plug (IP65, 4-pole) | <input type="checkbox"/> Antistatic coated scanning pipe | <input type="checkbox"/> US-power cable |
| | <input type="checkbox"/> Compressed-air monitor | |

Special versions / Supplementary systems

- | | | |
|---|---|---|
| <input type="checkbox"/> Design for bulk material temperatures up to 140° C | <input type="checkbox"/> Explosion-proof version ATEX | <input type="checkbox"/> Increased free fall height up to 1m |
| <input type="checkbox"/> Model with improved wear out protection | <input type="checkbox"/> Pipe transition pieces, customized flanges | <input type="checkbox"/> Magnet systems for pre-removal of ferrous metals |

If you have any more questions, require technical assistance or would like a quotation, please contact us.

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