



GFR Vario Metal Detector

Metal Detector for free-fall applications

- Detects and separates magnetic and non-magnetic metal contamination, even when enclosed in product
- Reduces expensive machinery failure and minimises production downtime
- Ensures product quality
- Prevents customer complaints
- Break even within a very short period of time
- Separation unit and product contacting metal parts completely made of stainless steel 1.4301 (AISI 304)
- Low installation height; the metal separator can be easily fitted into existing pipeline systems
- Separated detection and separation units:
 - Free-fall height can be individually adjusted on site
 - Position of waste reject unit can be turned to match position of collecting tray
- Learn automatic or manual product compensation allow flexible adaption to product conductivity
- Pre-installed parameters for simplified operation
- Enhanced signal-to-noise-ratio minimises electromagnetic pollution and vibrations



Scope delivery:

- Metal detector with material reject
- Control Unit Primus

Options/Accessories

- Audible and visual alarm systems
- Feed hopper and filler inlet
- Digital incident counter
- Air pressure monitor
- Magnet system to remove ferrous contaminants
- High temperature resistant
- Special design for abrasive bulk goods
- UL/CSA Certification
- ATEX design

Product Description

The GFR Vario Metal Separator is used to inspect bulk goods under free-fall conditions. It detects all magnetic and nonmagnetic metal contaminations (steel, stainless steel, aluminium) – even when enclosed in the product. Metal contaminations are rejected through the “Quick

Flap” reject unit. The GFR Vario is used mainly in industries with low hygiene applications.

Typical Application Areas

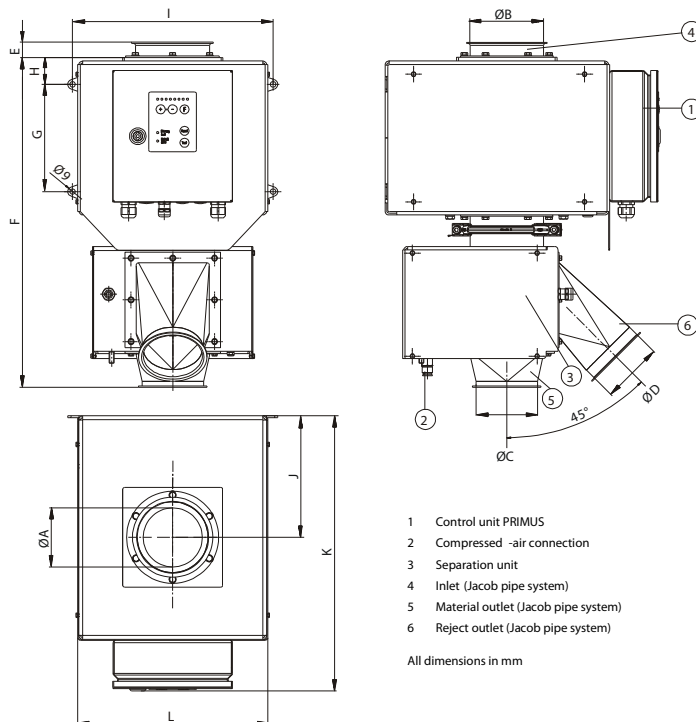
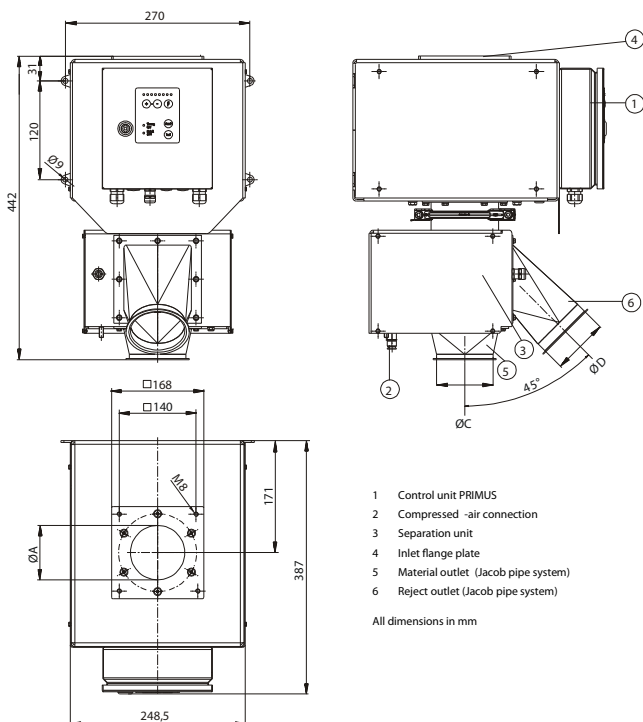
- Plastics industry, In-house recycling
- Recycling industry
- Wood industry
- Chemical industry
- Food industry
- Feed stuff industry

Application

- Machinery protection for extruders, blow moulding machines, fine grinding mills, after dosing (rotary valve, vibratory feed chutes)
- Quality control e.g. for final inspection of outgoing goods, granulate, reclaim, bagging stations, dryers and packing stations

GFRVario30-70

GFRVario100-150



Dimensions GFRVario30-70

Article number	Maximum sensitivity ¹⁾ Ø Ferrous ball	Maximum throughput ²⁾	Inlet flange plate effective ID of inlet pipe Ø A	Inlet, nominal width Ø B	Material outlet, nominal width Ø C	Reject outlet, nominal width D	Weight (kg)
GFRVario30	0.40	400l/h	27.2	/	78	78	26
GFRVario50	0.50	2000 l/h	44.0	/	78	78	26
GFRVario70	0.70	5000l/h	67.8	/	78	78	26

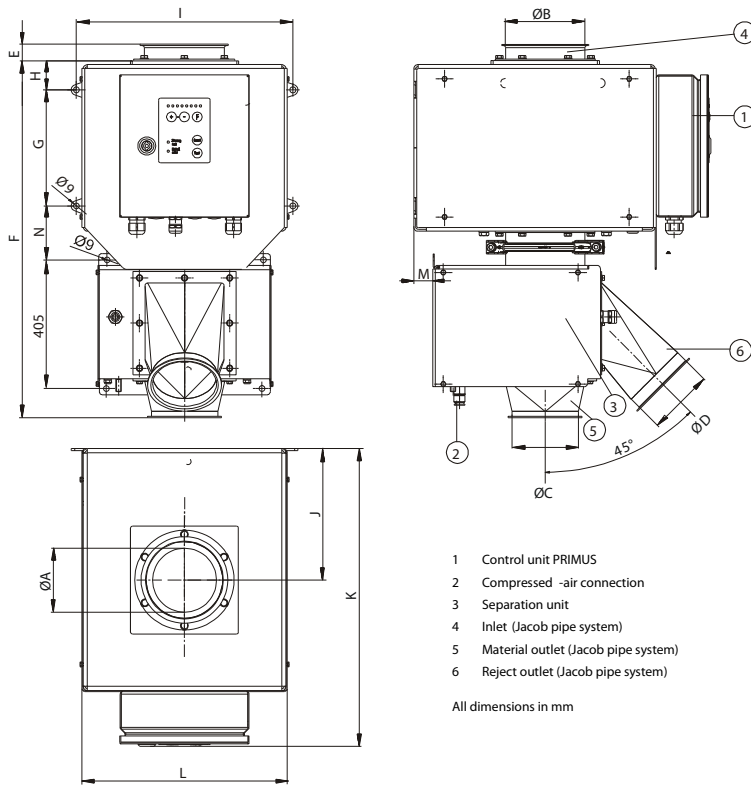
Dimensions GFRVario100-150

Article number	Maximum sensitivity ¹⁾ Ø Ferrous ball	Maximum throughput ²⁾	Inlet flange plate effective ID of inlet pipe Ø A	Inlet, nominal width Ø B	Material outlet, nominal width Ø C	Reject outlet, nominal width Ø D	Weight (kg)
GFRVario100	0.90	12000l/h	99	99	99	99	31
GFRVario120	1.00	16000 l/h	119	119	119	99	31
GFRVario150	1.50	25000l/h	149	149	149	149	40

Article number	E	F	G	H	I	J	K	L
GFRVario100	28	553	180	45	336	204	462	318.5
GFRVario120	28	553	180	45	336	204	462	318.5
GFRVario150	36	649	215	45	400	190	462	318.5

All dimensions in mm unless stated.

GFR Vario200-250



Dimensions GFR Vario 200-250

Article number	Maximum sensitivity ¹⁾ Ø Ferrous ball	Maximum throughput ²⁾	Inlet flange plate effective ID of inlet pipe Ø A	Inlet, nominal width Ø B	Material outlet, nominal width Ø C	Reject outlet, nominal width Ø D	Weight (kg)
GFRVario200	1.70	44000 l/h	188	199	199	199	57
GFRVario250	2.35	69000 l/h	234	249	249	199	63

Article number	E	F	G	H	I	J	K	L	M	N
GFRVario200	35	931	240	55	485	248	587	458.5	47	135
GFRVario250	48	1044	320	55	565	258	667	538.5	57	148

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.

Conditions of use

Use: For inspection free inspecting free falling bulk materials in the plastics industry and similar applications in other industries as well as applications with low hygienic requirements.

Bulk material classification:

- **Grain shape:** Powder, Granulations, flakes
- **Max. grain size:** Ball shape Ø< 8mm
- **Pourability:** Good, medium, poor
- **Attributes:** Dry, damp, not abrasive, product effects (material conductivity) can be compensated
- **Material flow:** Free fall, falling height max 500mm above top edge (No back draft of material), depressurized
- **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

Scope of delivery / design

Scope of delivery	Metal separator comprising two models, a detection model with the attached control unit PRIMUS and a separation module connected by a pull ring.	
Mechanical design:	Electronics housing: Detection unit:	Sheet steel, varnished, aluminium grey (RAL 9007) Nominal width 30-70, cover plate varnished, aluminium grey (RAL 9007) Nominal width 100-250 cover plate stainless steel 1.4301 (AISI 304), surface brushed
	Separation unit complete:	Stainless steel 1.4301 (AISI 304), bead blasted
	Scanning pipe:	PE-EL (electrical conductive to avoid false tripping)
	Parts in contact with product:	Stainless steel 1.4301 (AISI 304) PE-EL, Teflon POM
	Compressed air consumption:	GFRVario30 - 120: approx 0.5 l/switch operation GFRVario150: approx 0.5 l/switch operation GFR Vario200-250: approx 1.3 l/switch operation
Electrical design:	Operating voltage:	100-240 VAC (±10%), 50/60 Hz
	Current consumption:	Approx. 160mA/80 mA
	Mains cable	1.8m with plug
	Ingress protection:	IP 65, (rain shelter required if operated outdoor)
	Self-monitoring system:	Detection coil and outputs
	Eject duration (metal impulse):	Adjustable from 0.05 to 29 sec
	Scanning sensitivity:	Selectable with 8 adjustments
	Operation:	See technical data sheet for control unit PRIMUS

Accessories

- | | | |
|---|---|--|
| <input type="checkbox"/> Visual alarm | <input type="checkbox"/> Feed hopper | <input type="checkbox"/> Push button for functional test in a separate housing |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Adapter inlet nozzle | <input type="checkbox"/> Test samples |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Filter control valve | <input type="checkbox"/> UL/CSA certificate |
| <input type="checkbox"/> Audible alarm | <input type="checkbox"/> Counter (Detection counter) in a separate housing | <input type="checkbox"/> Hopper magnets |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Push button for manual rejection in a separate housing | <input type="checkbox"/> Magnet systems Extractor ER-SE |
| <input type="checkbox"/> Failure and metal indication | | <input type="checkbox"/> Increased free fall height up to 1m |
| <input type="checkbox"/> Combination alarm (visual alarm and audible alarm) | | |
| <input type="checkbox"/> Failure indication | | |
| <input type="checkbox"/> Failure and metal indication | | |

Options

- | | | |
|---|---|--|
| <input type="checkbox"/> Compressed -air- monitor | <input type="checkbox"/> Explosion-proof version ATEX | <input type="checkbox"/> Cable set for remote control unit: 3m, 6m, 10m, 15m |
| <input type="checkbox"/> Monitor system for separation unit | <input type="checkbox"/> US-power cable | |

Special versions

- | | |
|---|---|
| <input type="checkbox"/> Special varnishes | <input type="checkbox"/> Model with improved wear out protection in plastics applications |
| <input type="checkbox"/> Special supply voltages | <input type="checkbox"/> Pipe transition pieces, customised flanges |
| <input type="checkbox"/> Design for bulk material temperatures up to 140°C | <input type="checkbox"/> Magnet systems for pre-removal of ferrous metals |
| <input type="checkbox"/> Design suitable for direct contact with food stuff | <input type="checkbox"/> Inline magnet |
| | <input type="checkbox"/> Magnet drum separator |



GFR4000

Metal Detector for free-fall applications

- Detects and separates magnetic and non-magnetic metal contamination, even when enclosed in product
- Reduces expensive machinery failure and minimises production downtime
- Ensures product quality
- Prevents customer complaints
- Break even within a very short period of time
- Separated detection and separation units:
 - Free-fall height can be individually adjusted on site
 - Position of waste reject unit can be turned to match position of collecting tray
- Learn automatic or manual product compensation (not pre-adjusted) to improve adaption to product and conveyor belt conductivity
- Pre-installed parameters simplify operation
- High scanning sensitivity to all metals
- Minimal waste through "Quick-Flap" rejection system
- Low installation height, the metal separator can be easily fitted into existing pipeline systems
- Standard adaptor system "Jacobs" enables quick, hassle-free installation
- Increased signal-to-noise-ratio towards electromagnetic pollution and vibrations

Scope of delivery

- Metal separator with separated detection and separation units (installation via "Jacob" fastener)
- Control Unit Interact+

Options/Accessories

- Optical and acoustic signal system
- Feed hopper and filler neck
- Digital incident counter
- Air pressure monitoring
- Magnet system enables pre-rejection of iron
- High temperature resistant
- Special design for abrasive bulk goods
- Control unit Interact+ for higher scanning sensitivity
- ATEX design
- UL/CSA Certification
- Removable control unit

Product Description

The metal separator GFR4000 is used to analyse bulk goods in free-fall conveyor pipes. It detects all magnetic



and non-magnetic metal contaminations (steel, stainless steel, aluminium) – even if enclosed in the product. Metal contaminations are rejected through the "Quick Flap" reject unit.

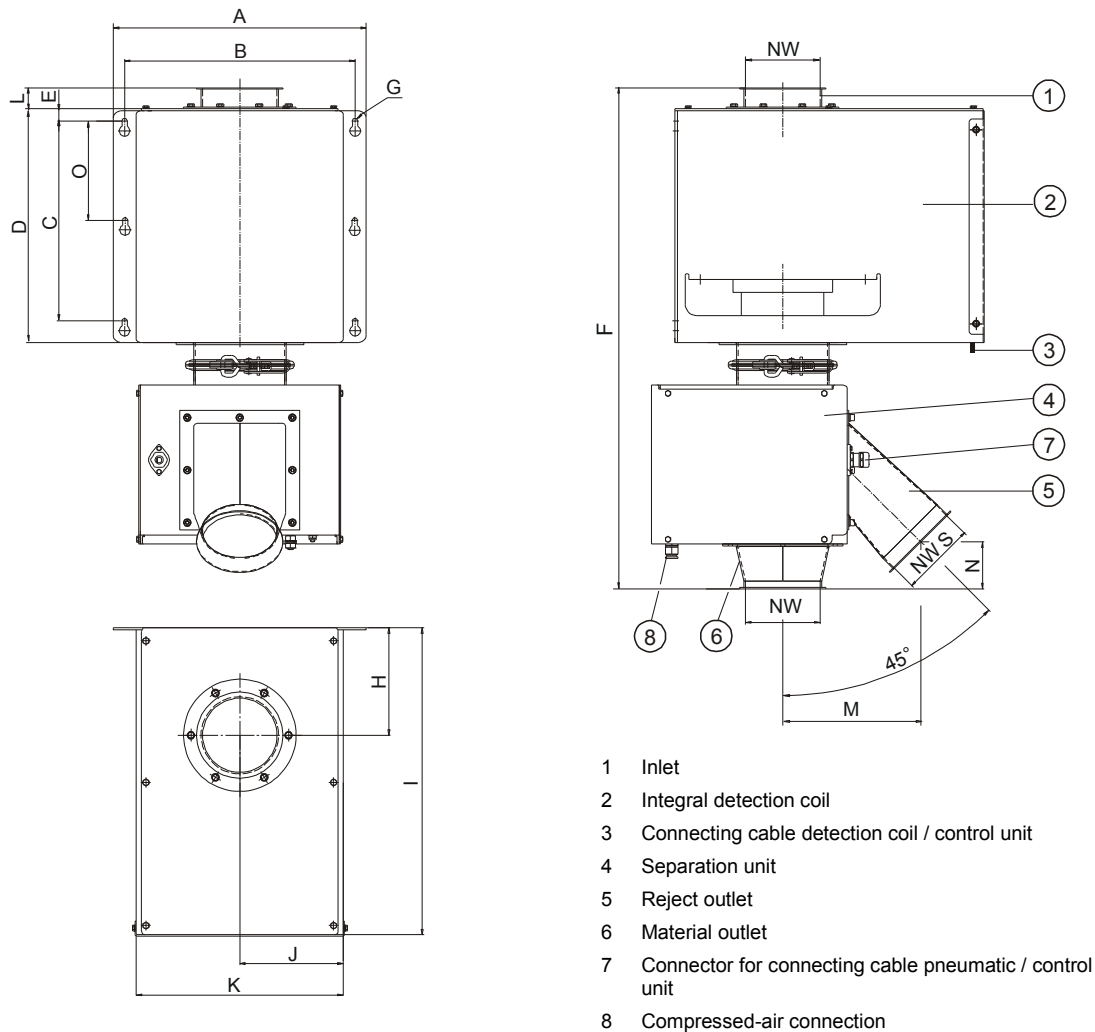
The metal separator GFR4000 is mainly used in industries with low hygienic requirements.

Typical Application Areas

- Plastics industry, In-house recycling
- Recycling industry
- Wood industry
- Chemical industry
- Food industry
- Feed stuff industry

Application:

- Machinery protection for extruders, blow moulding machines, fine grinding mills, after dose units (rotary valve, vibro chamfer)
- Quality control e.g. for pre-delivery inspection of new goods, granulate, furnish, reclaim before octabins, big-bag stations, dryers and packing stations



Technical Data GFR4000

	Nominal passage Ø NW System Jacob	Nominal passage reject outlet Ø NW "S" System Jacob	Maximum scanning sensitivity ¹⁾ Ø Fe-ball	Maximum throughput ²⁾	Weight (kg)
GFR4000/080	80	80	0.45	8000 l/h	65
GFR4000/100	100	100	0.57	12000 l/h	70
GFR4000/120	120	100	0.60	16000 l/h	75
GFR4000/150	150	150	0.77	25000 l/h	95
GFR4000/200	200	200	0.95	44000 l/h	145
GFR4000/250	250	200	1.20	69000 l/h	180

	A	B	C	D	E	F	G	H	I ³⁾	J	K	L	M	N	O ^{*)}
GFR4000/080	337	307	267	312	16.5	639	7	143.5	411.5	138	276	35	app.158	app.38	/
GFR4000/100	337	307	267	312	16.5	660	7	143.5	412.0	138	276	28	app.183	app.50	/
GFR4000/120	337	307	267	312	16.5	660	7	143.5	412.0	138	276	28	app.183	app.50	/
GFR4000/150	416	386	400	475	32.0	882	9	175.0	475.0	168	336	36	app.207	app.60	200
GFR4000/200	520	490	560	640	29.0	1272	9	210.0	543.0	220	440	37	app.340	app.100	280
GFR4000/250	580	540	710	809	29.0	1490	9	255.0	635.5	245	490	48	app.340	app.118	355

All dimensions in mm unless stated

Larger types on request ¹⁾ starting from size 150

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.

³⁾ Observe the projection of the mechanical unit: NW 80 +21 mm, NW 100 and 120 +32 mm.



Conditions of use

Use ¹⁾: In unpressurized pipe systems for the inspection of gravity feed bulk materials in plastics processing lines as well as other industries with similar applications

Bulk material classification:

- **Grain shape:** Granulates, grinding stock, pellets
- **Max. grain size:** Ball shape Ø < 8mm
- **Pourability:** Good, medium
- **Attributes:** Dry, damp, not abrasive, product effects (conductivity) can potentially be compensated
- **Material flow:** Free fall, falling height max 500 mm above top edge (No back draft of material), depressurized
- **Material flow²⁾:** Free fall, fall height max. 450 mm above equipment top edge (No back draft of material)
- **Bulk material temperature:** Maximum +80° C
- **Ambient temperature:** -10° C to +55° C

¹⁾ In vertical mounting position

²⁾ The permissible drop height refers to standard overall heights. Larger drop heights also cause larger overall heights.

Scope of delivery / design / Connections

Scope of delivery	Compact unit with integrated metal detector, separation unit and remote control unit GENIUS+; Inlet and outlets designed according to the "Jacob" system	
Mechanical design:	Detection unit:	Stainless steel 1.4301 (AISI 304), glass bead blasted
	Control enclosure:	Stainless steel 1.4301 (AISI 304), glass bead blasted
	Separation unit:	Stainless steel 1.4301 (AISI 304), glass bead blasted
	Scanning pipe:	PE-EL
	Parts in touch with material:	Stainless steel 1.4301 (AISI 304), PE-EL, Teflon, POM
	Compressed-air connection:	5-8 bar, 6/8 mm tube connection
	Compressed-air consumption	approx 0.5 - 3.0 litre / switch operation (depending on the size of the unit)
Electrical design:	Control unit:	Detached, cable length 3 m
	Operating voltage:	100-240 VAC (±10%) 50/60 Hz
	Current consumption:	app. 200 mA/230 VAC or 400 mA/115 VAC
	Type of protection:	IP 54
	Eject duration (metal impulse):	Adjustable from 0.05 to 60 sec
	Self monitoring:	Detection coil and outputs
	Scanning sensitivity:	Selectable with 8 adjustments
	Operation:	See technical data sheet for Control Unit SENSITY

Accessories Accessories

- | | | |
|---|---|--|
| <input type="checkbox"/> Visual alarm | <input type="checkbox"/> Failure indication | <input type="checkbox"/> Dual frequency technology to optimise sensitivity (used in case of significantly different product effects) |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Failure and metal indication | |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Compressed-air monitor | <input type="checkbox"/> UL/CSA certificate |
| <input type="checkbox"/> Audible alarm | <input type="checkbox"/> Filter control valve | <input type="checkbox"/> US-power cable |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Monitor system for diverter | <input type="checkbox"/> Test samples |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Cable set for remote control unit: 6m or 10m | <input type="checkbox"/> Increased free fall height up to 1m |
| <input type="checkbox"/> Combination alarm (visual alarm and audible alarm) | <input type="checkbox"/> 5.7" Colour Touch-Screen | |

Options

- | | | |
|---|---|--|
| <input type="checkbox"/> Compressed -air- monitor | <input type="checkbox"/> Explosion-proof version ATEX | <input type="checkbox"/> Cable set for remote control unit: 3m, 6m, 10m, 15m |
| <input type="checkbox"/> Monitor system for separation unit | <input type="checkbox"/> US-power cable | |

Special versions / Supplementary systems

- | | | |
|---|--|---|
| <input type="checkbox"/> Design for bulk material temperatures of up to 140° C | <input type="checkbox"/> Explosion-proof version ATEX depending on zone | <input type="checkbox"/> Magnet systems for pre-removal of ferrous metals |
| <input type="checkbox"/> Design suitable for direct contact with food products | <input type="checkbox"/> Interfaces RS232, RS485, Ethernet, WLAN, USB | <input type="checkbox"/> Hopper magnet |
| <input type="checkbox"/> Model with improved wearout protection in use range plastics | <input type="checkbox"/> Software for logbook filling | <input type="checkbox"/> Inline magnet |
| <input type="checkbox"/> Pipe transition pieces with flanges | <input type="checkbox"/> Navigator or INSIGHT.Net central data management system | <input type="checkbox"/> Inline chute magnet system |

- Metal separator for the inspection of powdery and fine-grained bulk materials
- Detects magnetic and non-magnetic metal contaminations
- Separation by way of stainless steel reject flap
- Hygienic design without any corners and edges in the separation unit
- 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
- Separate detection and separation units:
 - The free-fall height can be adapted on site
 - The position of the reject outlet can be swivelled to match the position of the collecting container
- Quick and minimum-effort installation due to standard Jacob connection system
- 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 GFR5000 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 the separation unit ("Quick Flap").

The GFR5000 metal separator primarily is used in industries with very high hygienic demands.

Application

- Incoming inspection (product purity and machine protection) of raw spices, ingredients, raw materials, etc. prior to the processing machine (e.g. mill).
- Quality inspection (product purity) of herbs, tea, spices, chemical additives (e.g. ascorbic acid, surfactants), etc. directly before filling in big bags and silos.
- Quality inspection of milk powder, flour, sugar, etc. directly before a bag-forming, filling, and sealing machine.

Control units

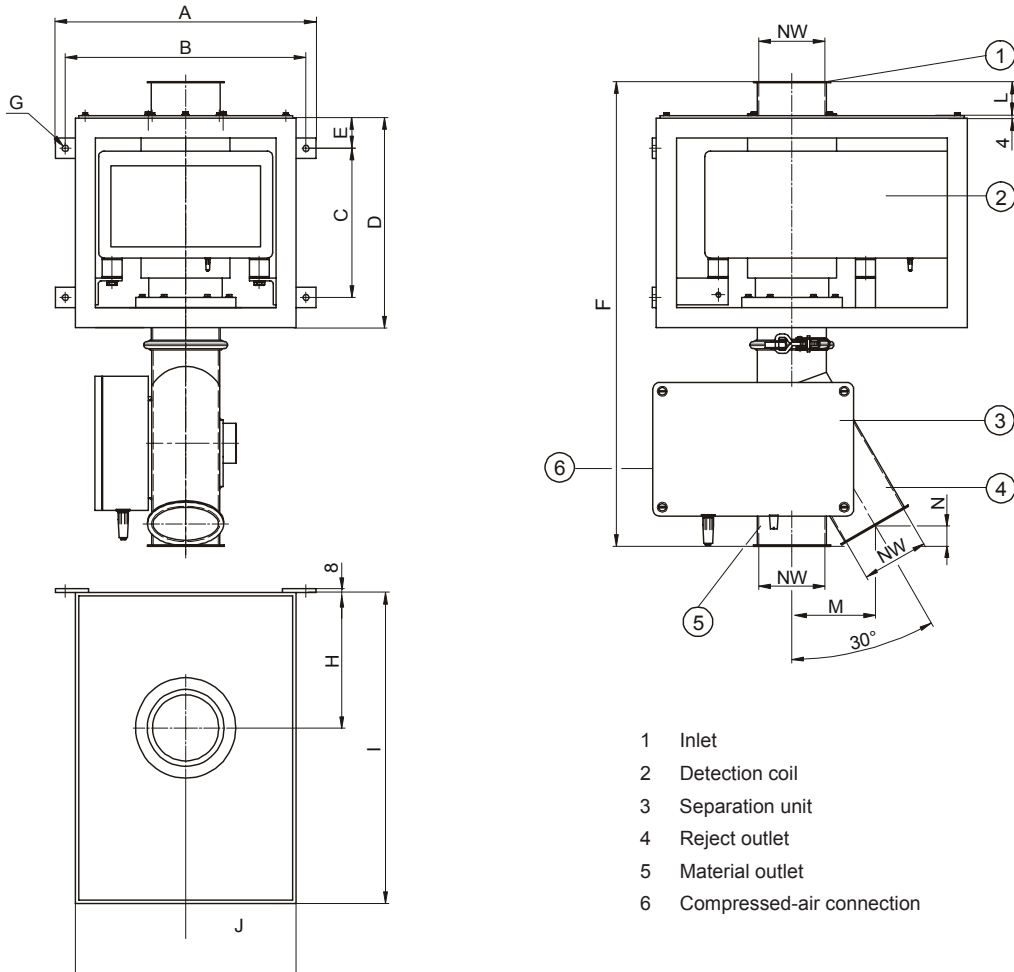
- Two control units (Interact+ and SENSITY) with graded performance features are available.

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 combifilter for suppressing external interference

Typical fields of application

- Chemical industry
- Pharmaceutical industry
- Food industry



Technical Data GFR5000

	Nominal width Ø NW System Jacob	Maximum sensitivity ¹⁾ Ø Ferrous ball	Max. throughput ²⁾	Weight (kg)
GFR5000/80	80	0.45	8000 l/h	75
GFR5000/100	100	0.57	12000 l/h	75
GFR5000/120	120	0.60	16000 l/h	75
GFR5000/150	150	0.77	25000 l/h	125
GFR5000/200	200	0.95	44000 l/h	145
GFR5000/250	250	1.20	69000 l/h	190

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
GFR5000/80	390	360	203	293	55	615	9	221.0	496	165	330	51	app. 108	app.23
GFR5000/100	390	360	223	313	45	695	9	202.5	471	165	33	51	app. 124	app.30
GFR5000/120	390	360	238	328	45	749	9	215.0	496	165	033	51	app. 148	app.43
GFR5000/150	470	440	375	465	45	947	11	240.0	540	205	410	51	app.175	app.51
GFR5000/200	570	540	450	600	75	1183	1	265.0	590	245	490	37	app.228	app.68
GFR5000/250	640	610	650	800	75	1482	1	320.0	708	280	560	42	app.272	app.75

All dimensions in mm unless stated

Larger types on request

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



Conditions of use

Use: For inspection of free falling bulk materials in the food industry, i.e. spices, herbs, grain, flour, milk powder, etc. or in the chemical and pharmaceutical industry for similar applications with high hygienic requirements.

Bulk material classification:

- **Grain shape:** Powder, fine-grained bulks, granules
- **Max. grain size:** Ball shape Ø < 8mm
- **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 edge¹⁾ (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

¹⁾ The permissible drop height refers to standard overall heights. Larger drop heights also cause larger overall heights

Scope of delivery / design / Connections

Scope of delivery	Metal separator composed of detection and separation unit connected together by a pull ring 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 coating see options)
	Parts in contact with product:	Stainless steel 1.4301 (AISI 304), PP, NBR
	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:	100-240 VAC (±10%), 50/60 Hz
	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 GENIUS+

Accessories

- | | | |
|---|---|---|
| <input type="checkbox"/> Visual alarm | <input type="checkbox"/> Digital counter | <input type="checkbox"/> Air pressure regulator with filter |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Compressed-air monitor | <input type="checkbox"/> Manual test facility |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Monitor system for diverter | <input type="checkbox"/> Semi-automatic test facility |
| <input type="checkbox"/> Audible alarm | <input type="checkbox"/> Button for manual ejection | <input type="checkbox"/> Test samples |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Antistatic coated scanning pipe | <input type="checkbox"/> Central data management system |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Drop height above 500 mm | <input type="checkbox"/> INSIGHT II (only RS232 or RS485) |
| <input type="checkbox"/> Combination alarm (visual alarm and audible alarm) | <input type="checkbox"/> Cable set for remotet control unit | <input type="checkbox"/> Insight-Net (Ethernet or WLAN) |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Length 6 m <input type="checkbox"/> Length 10 m <input type="checkbox"/> Length 15 m | <input type="checkbox"/> UL/CSA certificate |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Interfaces | |
| | <input type="checkbox"/> RS232 <input type="checkbox"/> RS485 <input type="checkbox"/> Ethernet <input type="checkbox"/> WLAN | |

Special versions / Supplementary systems

- | | |
|---|---|
| <input type="checkbox"/> Explosion-proof version ATEX | <input type="checkbox"/> Pipe transition pieces with flanges |
| <input type="checkbox"/> Pharmaceutical version on request | <input type="checkbox"/> Different temperature range for environment and product on request |
| <input type="checkbox"/> Low wear version for highly abrasive bulk material | |

- 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:

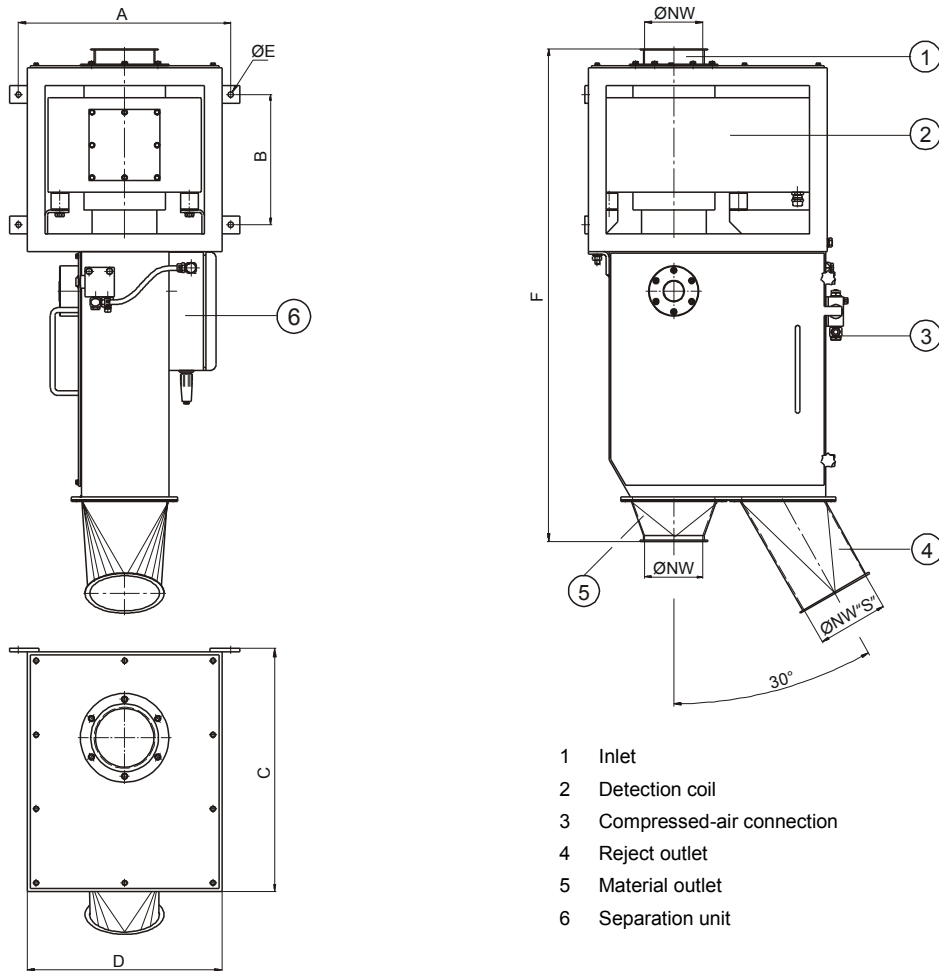
- Chemical industry
- Pharmaceutical industry
- Food industry

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



- 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:	100-240 VAC (±10%), 50/60 Hz
	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 |

- Metal separator for the inspection of powdery, fibrous and chunky bulk materials
- Detects magnetic and non-magnetic metal contaminations
- Separation by way of swivel hopper
- Dust-proof reject outlet design
- 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 even with large nominal widths guarantees easy integration of the metal separator in existing pipe systems
- Quick and minimum-effort installation due to standard Jacob connection system
- Auto-learn function or manual product compensation (no fixed setting) for improved 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 GFR8000 metal separator is used for the inspection of bulk materials in free-fall conveyor pipes starting from a nominal width of 200 mm. 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 reject outlet is of dust-proof design during normal operation.

The GFR8000 metal separator primarily is used in the food industry in applications with high hygienic demands.

Application

- Incoming inspection (product purity and machine protection) of coarse spices with a high dust content, bulk materials with coarse to fine-grained contents, ingredients, raw materials, etc. prior to the processing machine (e.g. mill).
- Quality inspection (product purity) of food powders, sugar, salt, chemical additives (e.g. ascorbic acid, surfactants), etc. directly before filling in big bags and silos.

Typical fields of application:

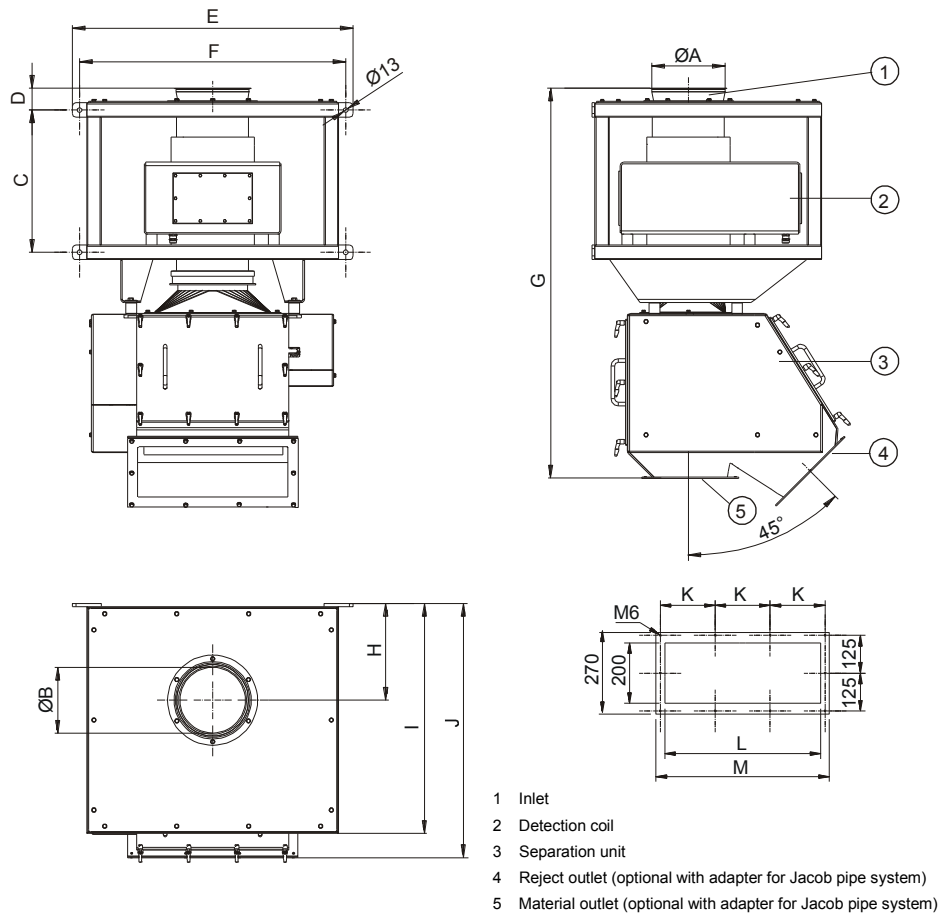
- Chemical industry
- Food industry
- Animal feed industry

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



	Maximum sensitivity ¹⁾ Ø Ferrous ball	Maximum throughput ²⁾	Nominal width System Jacob Ø A	Rectangular flange inside dimension	Inlet, effective ID of Inlet pipe Ø B	Weight (kg)
GFR8000/200	0.95	44000 l/h	200	416 x 200	182	app.220
GFR8000/250	1.20	69000 l/h	250	416 x 200	237	app.235
GFR8000/300	1.59	100000 l/h	300	516 x 200	297	app.260
GFR8000/350	2.91	136000 l/h	350	516 x 200	338	app.290

	C	D	E	F	G	H	I	J	K	L	M
GFR8000/200	465	61	780	740	1154	268	688	704	150	416	474
GFR8000/250	465	72	780	740	1165	268	688	704	150	416	474
GFR8000/300	600	79	880	840	1287	338	858	774	182	516	574
GFR8000/350	600	79	880	840	1287	338	858	774	182	516	574

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.



Conditions of use

Use: For inspection of free falling bulk materials in the food industry, i.e. spices, herbs, grain, flour, milk powder, etc. or in the chemical and pharmaceutical industry for similar applications with high hygienic requirements.

Bulk material classification:

- **Grain shape:** Powder, fine grained bulks, granules, fibres, flakes
- **Max. grain size:** 0-20mm, but also lumpy and fibres
- **Pourability:** Good, medium, poor
- **Attributes:** Dry, damp, not abrasive, product effects (material conductivity) can be compensated
- **Material flow:** Free fall, falling height max 500mm 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

¹⁾The permissible drop height refers to standard overall heights. Larger drop heights also cause larger overall heights

Scope of delivery / design

Scope of delivery:	Metal separator composed of detection and separation unit and separated control unit Interact+, inlet according to Jacob pipe system, outlets with rectangular flange
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 coating) Parts in contact with product: Stainless steel 1.4301 (AISI 304) PP, EPDM Compressed air connection: 5-8 bar 6/8 mm hose connection Compressed air consumption: Approx. 1.7 - 3.0 l/switching operation (depending on size)
Electrical design:	Operating voltage: 100-240 VAC (±10%), 50/60 Hz Current consumption: Approx. 250 mA/115 VAC, approx. 120 mA/230 VAC Mains cable: 1.8m with safety plug Ingress protection: IP 65, (rain shelter required if operated outdoor) Self-monitoring system: Detection coil and outputs Eject duration (metal impulse): Adjustable from 0.05 to 60 sec Scanning sensitivity: Detection coil outputs Operation: See technical data sheet for control unit Interact+

Accessories

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

Options

- Interact+ Touch with USB interface
- Multi frequency technology duo
- Serial interface RS232 with plug (IP65, 4-pole)
- Serial interface RS485 with plug (IP65 4-pole)
- Ethernet interface (TCP/IP 100 Mbit/s, IP65, RJ45)
- WLAN interface (802.11 b/g) with integrated aerial
- USB interface (only in combination with touch - screen)
- Compressed air monitor
- Adapter for the outlets according to Jacob pipe system
- Monitor system for separation unit
- Cable set for remote control unit 6m or 10m
- Manual test facility
- US-power cable

Special versions/supplementary systems

- Design for bulk material temperatures up to 140°C
- Model with improved wear out protection
- Explosion-proof version ATEX
- Pipe translation pieces, customized flanges
- Magnetic systems for pre-removal of ferrous metals
- Increased free fall height up to 1m



GFR Dual

Metal Detector for free-fall applications



- Detects and separates magnetic and non-magnetic metal contamination, even when enclosed in product
- Reduces expensive machinery failure and minimises production downtime
- Ensures product quality
- Prevents customer complaints
- Break even within a very short period of time
- Minimum space requirement and can be easily fitted into existing pipeline systems
- Standard Jacobs adaptors for inlet and outlet ensure quick, hassle-free installation
- Separation unit and enclosure in stainless steel
- Minimal loss of good material through "Quick Flap" reject system
- Vertical, barrier free material throughput; reject angle 40°
- Pre-installed settings allow easy operation
- Teach-in mode or manual product compensation (not pre-adjusted) for better adaption to product conductivity
- Drop height 700mm

Product Description

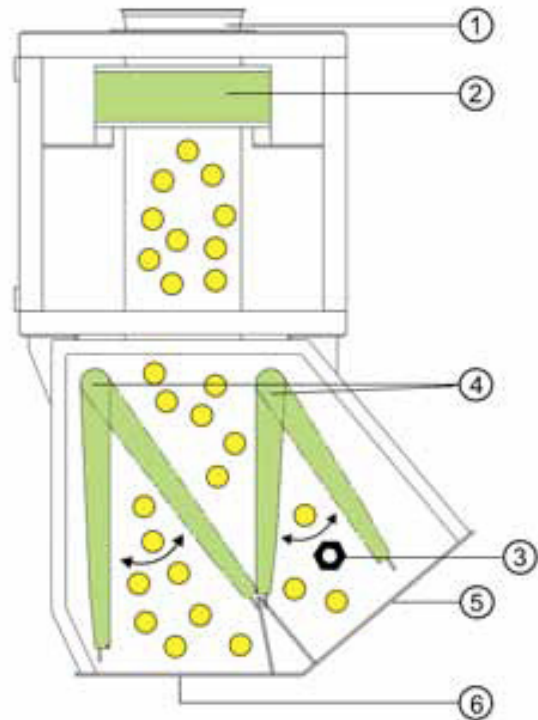
The metal separator GFR Dual is used to inspect slowly moving bulk material such as foil flakes, wooden pellets, etc. as well as large streams in free-fall pipelines.

It detects all magnetic and non-magnetic metal contamination (steel, stainless steel, aluminium) – even when enclosed in the product. Metal contaminations are rejected through the "Quick Flap" reject unit with dual separation flap.



Metal separator GFR DUAL used for machinery protection during wood pellet production

Function Chart



1) Infeed 2) Detection coil 3) Metal contaminant
4) Dual separation flap 5) Rejected material 6) "Good" material

Scope of delivery

- Compact system with integrated detection system and separation unit
- Control unit PRIMUS

Options/Accessories

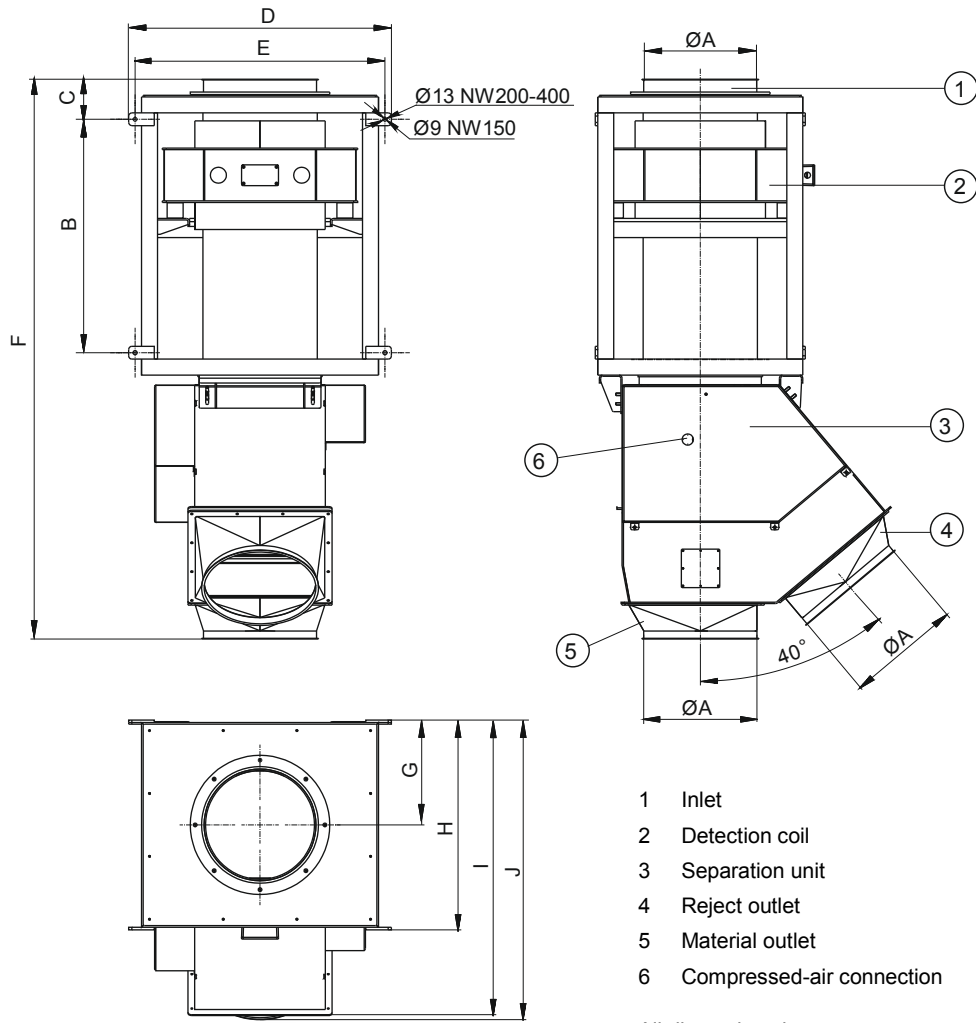
- Audible and visual alarm systems
- Feed hopper and filler inlet
- Magnet system to remove ferrous contaminants
- Filter and regulator valve
- Air pressure monitor
- UL/CSA certification
- Removable control unit
- Control unit SENSITY for higher sensitivity

Typical Application Areas

- Plastics industry, In-house recycling
- Recycling industry
- Wood industry
- Chemical industry
- Feed stuff industry

Application

- Machinery protection for extruders, fine grinding mills, hackers, pellet presses, after dosing (rotary valve, vibratory feed chutes)
- Quality control e.g. for pre-delivery inspection of incoming goods, granulate, reclaim stations or bagging stations



Dimensions GFRDual/150-400

	GFRDual/150	GFRDual/200	GFRDual/250	GFRDual/300	GFRDual/350	GFRDual/400
Nominal width $\varnothing A$ Jacob system connector	149	199	249	299	349	399
Effective ID of inlet pipe \varnothing	141.8	187.6	234.6	299	349	392
B	220	523	523	730	730	780
C	85	123	123	125	125	125
D	390	680	680	820	820	950
E	360	640	640	780	780	910
F	831	1450	1450	1750	1750	1870
G	173	287	287	328	328	433
H	338	574	574	656	656	866
I	429	781	781	920	920	1084
J	515	818	837	910	933	1145
Maximum sensitivity ¹⁾ \varnothing Ferrous ball	1.5	1.8	2.5	3.0	4.0	5.0
Maximum throughput ²⁾	25.000 l/h	44.000 l/h	69.000 l/h	100.000 l/h	136.000 l/h	180.000 l/h
Weight (kg)	100	125	175	250	300	400

All dimensions in mm unless stated

Conditions of use

Use:	To analyse free-falling bulk materials such as granulates, foil flakes, wood chips and others
Bulk material classification:	
Grain shape:	Granulates, Pellets, Flakes
Max. grain size:	Ball $\varnothing < 8$ mm, cylinder $\varnothing < 8$ mm length 20mm, flake 100x100x10 mm
Pourability:	Good, medium, bad
Attributes:	Dry, damp, not abrasive, product effects (conductivity) can potentially be compensated
Material flow:	Free fall, fall height max. 700 mm above equipment top edge (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: 25 mbar

Scope of delivery:	Complete system with integrated detection coil, separation unit (double flap) and remote control unit Interact+; feeder and outlets for good and reject material with "Jacob" connector.																		
Mechanical design:	<table> <tr> <td>Detection unit and control enclosure</td> <td>Sheet steel, varnished, aluminium grey (RAL 9007)</td> </tr> <tr> <td>Separation unit</td> <td>Stainless steel 1.4301 (AISI 304), bead blasted</td> </tr> <tr> <td>Scanning pipe</td> <td>PE-EL</td> </tr> <tr> <td>Parts in contact with product:</td> <td>Stainless steel 1.4301 (AISI 304), PE-EL, Teflon, POM</td> </tr> <tr> <td>Compressed air connection</td> <td>5-8 bar, 6/8 mm hose connection</td> </tr> <tr> <td>Compressed air consumption</td> <td>GFR DUAL-P 150-250: 1.7 litre / switch operation GFR DUAL-P 300-400: 2.7 litre / switch operation</td> </tr> </table>	Detection unit and control enclosure	Sheet steel, varnished, aluminium grey (RAL 9007)	Separation unit	Stainless steel 1.4301 (AISI 304), bead blasted	Scanning pipe	PE-EL	Parts in contact with product:	Stainless steel 1.4301 (AISI 304), PE-EL, Teflon, POM	Compressed air connection	5-8 bar, 6/8 mm hose connection	Compressed air consumption	GFR DUAL-P 150-250: 1.7 litre / switch operation GFR DUAL-P 300-400: 2.7 litre / switch operation						
Detection unit and control enclosure	Sheet steel, varnished, aluminium grey (RAL 9007)																		
Separation unit	Stainless steel 1.4301 (AISI 304), bead blasted																		
Scanning pipe	PE-EL																		
Parts in contact with product:	Stainless steel 1.4301 (AISI 304), PE-EL, Teflon, POM																		
Compressed air connection	5-8 bar, 6/8 mm hose connection																		
Compressed air consumption	GFR DUAL-P 150-250: 1.7 litre / switch operation GFR DUAL-P 300-400: 2.7 litre / switch operation																		
Electrical design:	<table> <tr> <td>Control unit</td> <td>Detached, cable length 3m</td> </tr> <tr> <td>Operating voltage</td> <td>100-240 VAC ($\pm 10\%$), 50/60 Hz</td> </tr> <tr> <td>Current consumption</td> <td>Approx 160 mA / 115 V, approx. 80 mA / 230 V</td> </tr> <tr> <td>Mains cable</td> <td>1.8 m with plug</td> </tr> <tr> <td>Ingress protection</td> <td>IP 54</td> </tr> <tr> <td>Eject duration</td> <td>Adjustable from 0.05 to 29 sec</td> </tr> <tr> <td>Self-monitoring system</td> <td>Detection coil and outputs</td> </tr> <tr> <td>Scanning sensitivity</td> <td>Selectable with 8 adjustments</td> </tr> <tr> <td>Operation</td> <td>See technical data sheet for Control Unit PRIUMS</td> </tr> </table>	Control unit	Detached, cable length 3m	Operating voltage	100-240 VAC ($\pm 10\%$), 50/60 Hz	Current consumption	Approx 160 mA / 115 V, approx. 80 mA / 230 V	Mains cable	1.8 m with plug	Ingress protection	IP 54	Eject duration	Adjustable from 0.05 to 29 sec	Self-monitoring system	Detection coil and outputs	Scanning sensitivity	Selectable with 8 adjustments	Operation	See technical data sheet for Control Unit PRIUMS
Control unit	Detached, cable length 3m																		
Operating voltage	100-240 VAC ($\pm 10\%$), 50/60 Hz																		
Current consumption	Approx 160 mA / 115 V, approx. 80 mA / 230 V																		
Mains cable	1.8 m with plug																		
Ingress protection	IP 54																		
Eject duration	Adjustable from 0.05 to 29 sec																		
Self-monitoring system	Detection coil and outputs																		
Scanning sensitivity	Selectable with 8 adjustments																		
Operation	See technical data sheet for Control Unit PRIUMS																		

Accessories

- | | | |
|---|--|--|
| <input type="checkbox"/> Visual alarm | <input type="checkbox"/> Compressed-air monitor | <input type="checkbox"/> Cable set for remote control unit: 6m, 10m, 15m |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Filter control valve | <input type="checkbox"/> UL/CSA certificate |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Monitor system for diverter | <input type="checkbox"/> US-power cable |
| <input type="checkbox"/> Audible alarm | <input type="checkbox"/> Counter (number of detections) | <input type="checkbox"/> Test samples |
| <input type="checkbox"/> Failure indication | <input type="checkbox"/> Push button for manual rejection | |
| <input type="checkbox"/> Failure and metal indication | <input type="checkbox"/> Special varnishes | |
| <input type="checkbox"/> Combination alarm (visual alarm and audible alarm) | <input type="checkbox"/> Control Unit SENSITY for higher sensitivity | |
| <input type="checkbox"/> Failure indication | | |
| <input type="checkbox"/> Failure and metal indication | | |

Special versions/ Supplementary systems

- | | |
|---|---|
| <input type="checkbox"/> Model with improved wearout protection | <input type="checkbox"/> Magnet systems for pre-removal of ferrous metals |
| <input type="checkbox"/> Pipe transition pieces with flanges | <input type="checkbox"/> Hopper magnet |
| <input type="checkbox"/> Explosion-proof version ATEX | <input type="checkbox"/> Inline magnet |
| | <input type="checkbox"/> Inline chute magnet |