



METAL SHARK® GF

Metal detection for free-falling products



Features

- Reliably detects metals in free-falling goods
- Simple assembly due to mounting frame and quick release rings
- Autokalibration and teach assistant for intuitive control and easy installation
- Balance and calibration are automatically controlled, reducing periodic maintenance.
- BRC-Kit option: Conformity with the Global Standard of the British Retail Consortium (BRC) for food safety

Highlights

- 4-quadrant technology allows for maximum search performance with high reliability
- Simple setup with TeachAssistant, preset product types like salty, sweet, wet, dry etc.
- Memory for up to 250 products
- Easy to use with intuitive and multilingual menus
- 4-level password system, automatic log out after time lapse
- Documentation of all events and metal messages
- IFS and HACCP reports available on the display at the touch of a button
- Optional: Data transfer to USB interface or connection to the company network via SHARKNET® software
- Cyclical function monitoring with Performance Validation System (PVS)



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Overview

- Monitoring of loose, free-falling or compressed air conveyed products in pipelines
- Quality assurance for incoming goods, outgoing goods or during running production
- Machine protection, e.g. for mills or extruders

Industries

- Food processing
- Chemicals and Pharmaceuticals
- Plastics

System Includes:

- Detection unit including mounting frame
- Controller METAL SHARK®
- Reject unit (also available without rejection unit)
- Pipe extension for metal-free zone including quick clamping rings

Accessories & Extras

- High temperature version
- Versions for hose cleaning (LPW) or cleaning with high-pressure cleaning (HPW) possible
- SHARKNET® connection for automatic documentation according to HACCP, IFS or BRC standard
- Separate mounting of the control unit (e.g. wall mounting)
- Signalling devices (optical/acoustic)
- ATEX
- BRC-kit for a fail-safe system (MD failure, ejection failure, ejection box full, air pressure failure) including product jam monitor, required covers, rejection, container and compressed air monitoring, product counter etc.

Function

The METAL SHARK® GF (Gravity Feed) is used for pipelines with free-falling products to detect metal contaminants in continuously flowing granulates or powders such as sugar, flour, grain or spices. The sensitive sensors detect even the smallest metal contaminants, and a reactive reject device removes them directly from the product stream without interrupting production.



METAL SHARK® GF
Twin Installation for
particularly high flow rates



METAL SHARK® GF
in a mobile frame for
use at several locations





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Specifications

METAL SHARK® GF is available in three configurations: standard, compact and TD-R. METAL SHARK® GF standard and compact are also available as complete solutions including ejection mechanism/separation flaps. All versions are supplied as standard with the current METAL SHARK® control unit.

| | |
|--|--|
| Electronics | Digital signal processor, digital frequency generation, digital balance control, automatic calibration, digital noise filters, integrated flexible control functions |
| Input | 2 analog 0...10 VDC (Option: 4-20 mA) ; 8 freely configurable 24 V DC signals, e.g. for reject confirmation |
| Output | 2 floating: "error" and "metal" ; 8 freely configurable 24 V DC signals, e.g. for metal or acoustic alarm |
| Inspection Method | High-frequency magnetic field, multi-channel operation, symmetrical receiver coils |
| Metal Detection | Ferrous, non-ferrous (e.g. aluminum or copper) and stainless steel |
| Product Compensation | 250 memory locations |
| Enclosure Rating | IP65, with optional IP66 |
| Environmental Conditions for Controller | -30 °C to +40 °C / -22 °F to 104 °F, UL version: -20 °C to +40 °C / -4 °F to 104 °F Rel. humidity 20 % up to 90 % (non-ondensing) Option: -40 °C / -40 °F or +55 °C / 131 °F |
| Environmental Conditions for Sensor | -30 °C to +60 °C / -22 °F to 140 °F Option: Up to +90 °C / 194 °F |
| Temperature of Goods Inspected | Standard: -30 °C up to 55 °C / -22 °F up to 131 °F Option: -40 °C / -40 °F or up to 120 °C / 248 °F or up to 180 °C / 356 °F |
| Power Supply | One phase 110-230 V AC +/-5 %, typ. consumption 20 W (max. 60 W) |
| Interface | RS232, provides documentation according to HACCP- and IFS-standard, USB- or ethernet option |
| Maintenance | Maintenance-free, self calibrating sensors |
| Diagnostics | Integrated diagnostic software, automatic self-test |

METAL SHARK® GF Standard

METAL SHARK® standard is the ideal design for various types of products or environments. The device is designed for optimal detection results and is supplied with all necessary parts for direct installation in your production line:

- Mounting frame
- Metal-free tube for reliable detection (depending on model including weldable terminations)
- Quick release fasteners

| Ø d (inches) | Ø d (mm) | Typ. Material Flow | | Approx. Sensitivity (Ø mm @ 300 kHz) | | |
|--------------|----------|--------------------|--------|--------------------------------------|-----|-----|
| | | cu ft/hr | l/h | FE | Al | SS |
| 2" | 50 | | | 0,3 | 0,5 | 0,6 |
| 3" | 70 | | | 0,4 | 0,6 | 0,7 |
| 4" | 100 | 700 | 20000 | 0,5 | 0,7 | 0,8 |
| 5" | 120 | 1000 | 28000 | 0,7 | 0,9 | 1,0 |
| 6" | 150 | 1500 | 43000 | 0,8 | 1,0 | 1,2 |
| 7" | 175 | | | 1,0 | 1,3 | 1,6 |
| 8" | 200 | 2600 | 74000 | 1,2 | 1,6 | 1,8 |
| 10" | 250 | 4000 | 115000 | 1,5 | 2,0 | 2,3 |
| 12" | 300 | 5800 | 165000 | 1,9 | 2,4 | 3,0 |





METAL SHARK[®] GF

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METAL SHARK[®] GF Compact

METAL SHARK[®] compact can be used where space is limited. It is also supplied with the following assembly parts.

- Mounting frame
- Metal-free tube for reliable detection (depending on model incl. weldable terminations)
- Quick release fasteners

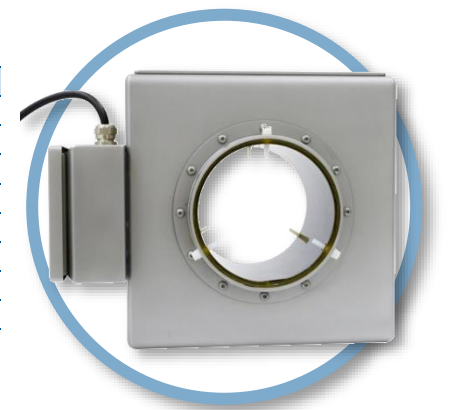
| Ø d (inches) | Ø d (mm) | Typ. Material Flow | | Approx. Sensitivity (Ø mm @ 300 kHz) | | |
|-----------------|-------------|--------------------|--------|---|-----|-----|
| | | cu ft/hr | l/h | FE | Al | SS |
| 2" | 50 | | | 0,5 | 0,7 | 0,9 |
| 3" | 70 | | | 0,6 | 0,8 | 1,0 |
| 4" | 100 | 700 | 20000 | 0,7 | 1,0 | 1,1 |
| 5" | 120 | 1000 | 28000 | 1,0 | 1,2 | 1,4 |
| 6" | 150 | 1500 | 43000 | 1,1 | 1,5 | 1,8 |
| 7" | 175 | | | 1,4 | 1,8 | 2,2 |
| 8" | 200 | 2600 | 74000 | 1,6 | 2,2 | 2,4 |
| 10" | 250 | 4000 | 115000 | 2,0 | 2,7 | 3,1 |
| 12" | 300 | 5800 | 165000 | 2,0 | 3,2 | 4,1 |



METAL SHARK[®] GF TD-R

METAL SHARK[®] TD-R is specially designed for use with vertical form-fill-seal packaging machines.

| Ø d (inches) | Ø d (mm) | Typ. Material Flow | | Approx. Sensitivity (Ø mm @ 300 kHz) | | |
|-----------------|-------------|--------------------|--------|---|-----|-----|
| | | cu ft/hr | l/h | FE | Al | SS |
| 4" | 100 | 700 | 20000 | 0,8 | 1,1 | 1,3 |
| 5" | 120 | | | 0,9 | 1,2 | 1,4 |
| 6" | 150 | 1500 | 43000 | 1,0 | 1,3 | 1,5 |
| 7" | 180 | | | 1,2 | 1,5 | 1,7 |
| 8" | 200 | 2600 | 74000 | 1,3 | 1,6 | 1,9 |
| 8.7" | 220 | | | 1,4 | 1,8 | 2,0 |
| 11" | 275 | | | 1,6 | 2,0 | 2,4 |
| 12" | 325 | 5800 | 165000 | 1,8 | 2,3 | 2,7 |





METAL SHARK® GF Accessories

Separation flaps, down pipes, self-monitoring

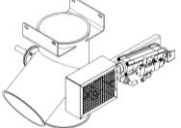


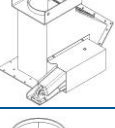
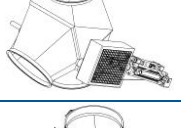
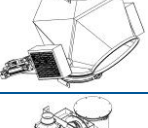



EX Reject for METAL SHARK® GF

The METAL SHARK® GF standard or compact can be combined with reject units for different applications. All EX reject flaps meet the following criteria.

- 100 % stainless steel housing for easy cleaning (IP65)
- Parts in contact with the product comply with FDA standard
- Product temperature up to 120 °C (optionally up to 200 °C)
- Different versions also for abrasive products, powder and granules, especially heavy products or the use in compressed air lines
- Easy mounting with quick release rings on the supplied downpipe
- Versions for cleaning with hose (LPW) or high-pressure cleaning (HPW) possible



| | Type | Properties |
|---|-------|---|
|  | EX-S | Standard Version. Fast reject, ideal for greater drop heights. GF Standard: 100 - 300 mm GF Compact: 100 - 300 mm |
|  | EX-P | For powders and granulates with additional sealing lip on the separating flap GF Standard: 100 - 300 mm GF Compact: 100 - 300 mm |
|  | EX-CB | For powders and granulates Cow bell design. effective rejecting without damaging the product (e.g. almonds, cashews) GF Standard: 150 and 200 mm |
|  | EX-K | For abrasive products robust mechanics, with additional sealing lip on the separating flap GF Standard: 100 - 300 mm GF Compact: Not available |
|  | EX-R | Heavy duty especially for heavy products (e.g. stones) especially robust design (30 mm shaft, 5 mm flap thickness) GF Standard: 250 mm, 300 mm GF Compact: Not available |
|  | EX-D | For use in line systems with compressed air GF Standard: 100 - 300 mm GF Compact: Not available |
|  | EX-A | For use in pipeline systems with compressed air no air pressure drop behind the separating unit during product ejection GF Standard: 100 - 150 mm GF Compact: Not available |



METAL SHARK® GF Accessories

Separation flaps, down pipes, self-monitoring



Down Pipes

In the detection area the downpipe must not be metallic. To ensure that the products can be analyzed cleanly and reliably, CASSEL supplies tubes made of suitable material: Food-safe, heat or abrasion resistant.

| Material | Colours | Properties |
|--------------------------|--------------|--|
| PVDF | White, black | FDA compliant, heat resistant up to 120 °C |
| PA6 / Nylon | Nature | Suitable for dry, abrasive products like sugar, salt |
| Werkstoff S (Material S) | Black | Antistatic/ATEX-compatible, FDA-compliant, can be used in ESD protection areas, temperature resistant -200 °C to 80 °C |
| Ceramics | White | Food safe, FDA compliant, suitable for abrasive and very hot products |
| PUR | Transparent | Flexible transport hose, FDA, -40 °C to +90 °C, typical application with GF TD-R when used with flow wrapping machines |



METAL SHARK® GF Self-Monitoring

Metal detectors are critical control points in every production and should be monitored continuously. The METAL SHARK GF comes with the following optional monitoring solutions. Note that test balls do come with every order.

| Material | Properties |
|----------------------------|--|
| Compressed Air Monitoring | Reports an error if the air pressure is too low for the functionality of the reject flaps. |
| Reject Monitoring | Warns if the reject flap has not switched correctly after metal detection. |
| Damper Position Monitoring | Monitors the flaps for complete switching to the good or not good position. |
| Check & Catch | Material for simple functional testing, consisting of an insertion flap, through which spherical test specimens can be inserted into the pipeline, and a catchment grille for the test specimen including removal flap. |
| Autotest | Functional test that does not require opening the product pipelines: Test pieces (FE/NFE/VA) are moved with compressed air through a separate test tube. The control unit indicates which sphere sizes are to be tested. Incl. push button for FE, NFE and VA testing, pneumatic valve, test specimen. |
| Test Balls | Test balls, diameter 10 mm made of plastic POM, with embedded metal ball made of iron, brass and stainless steel, certified. Ball size, metal type and certificate number are embedded in the test ball. |



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