

X-ray inspection systems Dymond S, DSV, D

Horizontal X-ray inspection for upright containers



! Benefits

- Reliable inspection with a high detection sensitivity
- Maximum safety through multi-sided radioscopy (Dymond D/DSV) opens up new possibilities in product design
- Seamless integration and installation
- Quick and easy cleaning thanks to the hygienic design

The Dymond sideshooters offer reliable detection of foreign bodies in tall, upright packaging. The compact hygienic design, interfaces and reliable image processing at high speeds allow for efficient integration into automated production processes.

Uncompromising safety for canned goods, Tetra Paks, glass jars & more

- ! For **maximum product quality and safety** the Dymond series offer reliable detection of foreign objects, such as metal, glass, stone and various plastics.
- ! **Flexible communication** across SPC@Enterprise, OPC-UA, Modbus and Ethernet supports **Industry 4.0** processes.
- ! Features also include **fill level monitoring and separation** of damaged packaging.
- ! The compact size and hygienic design ensure **easy installation, operation, maintenance and cleaning.**

The right solution for all of these applications:



Statistics



Fill quantity control



Foreign object detection

Technical specifications

X-ray inspection systems Dymond S, DSV and D



The Dymond S, DSV and D series offers you a choice to suit your needs. The four models with different X-ray sources, detectors as well as power levels cover almost every requirement.

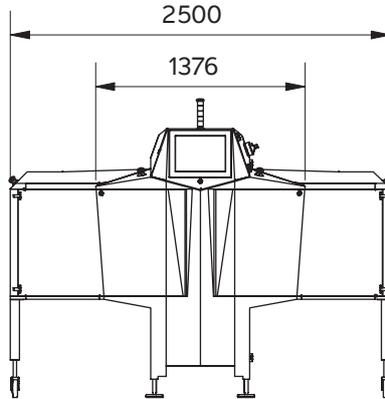
| Parameters | Dymond S | Dymond DSV | Dymond D (Monoblock) | Dymond D (Tube) |
|--------------------------------------|--|--|--|---|
| Beam Design | Single Beam Single Detector | Single Beam Double Detector | Double Beam Double Detector | Double Beam Double Detector |
| X-ray Power | 80 kV, 6 mA (480 W) | 80 kV, 6 mA (480 W) | 2x 80 kV, 6 mA (480 W) | 2x 90 kV, 9 mA (1000 W) |
| Detector Resolution | 0.8 mm (standard) / 0.4 mm (optional) | 0.4 mm | 0.4 mm | 0.4 mm |
| Max. Belt Speed for Detector | up to 90 / 50 m/min | up to 60 m/min | up to 45 / 30 m/min | up to 45 m/min |
| Product Spacing | 10% of product diameter (20 mm recommended) | 10% of product diameter (20 mm recommended) | 1x product diameter | 1x product diameter |
| Inspection tunnel width* | 198 mm | 198 mm | 198 mm | 198 mm |
| Approvals | CE, UL508A | CE, UL508A | CE, UL508A | CE, UL508A |
| Safety Locks | SIL 3. Category IV PL E, magnetic | SIL 3. Category IV PL E, magnetic | SIL 3. Category IV PL E, magnetic | SIL 3. Category IV PL E, magnetic |
| Human Interface | 15 inch touchscreen | 21.5 inch touchscreen | 21.5 inch touchscreen | 21.5 inch touchscreen |
| Operating Temperature | +5°C to 38°C | +5°C to +40°C | +5°C to +35°C | +5°C to +35°C |
| Machine Cooling | 1100 W Cabinet A/C | 1500 W IP34 Cabinet A/C (standard) or 1900 W Nema 4x Cabinet A/C (optional) | Pfannenbergl 1900 W Nema 4x Cabinet A/C | 1500 W IP34 Cabinet A/C (standard) or 1900 W Nema 4x Cabinet A/C (optional) 4,3 kW external water cooler (closed circuit) |
| Relative Humidity | 20% to 90% non condensing | 20% to 90% non condensing | 20% to 90% non condensing | 20% to 90% non condensing |
| Digital Outputs | available | available | available | available |
| Digital Inputs | available | available | available | available |
| USB Port | yes | yes | yes | yes |
| Network Port | Ethernet | Ethernet | Ethernet | Ethernet |
| Compresses Air | 5.5 to 6.9 bar (for rejector) | 4 to 6.9 bar (for rejector) | 4 to 6.9 bar (for rejector) | 4 to 6.9 bar (for rejector and shutter) |
| Radiation Safety | FDA CFR 21 part 1020,40 (contact factory for other regional certifications) | FDA CFR 21 part 1020,40 (contact factory for other regional certifications) | FDA CFR 21 part 1020,40 (contact factory for other regional certifications) | FDA CFR 21 part 1020,40 (contact factory for other regional certifications) |
| International Protection Rating | Outer body: Nema 4X Inspection tunnel: IP65 | Outer body: IP34 (standard), Nema 4X (optional) Inspection tunnel: IP65 | Nema 4X Inspection tunnel: IP65 | Outer body: IP34 (standard), Nema 4X (optional) Inspection tunnel: IP65 |
| Electrical Input | 230 VAC ±10% 50/60Hz // max. 25 A | 230 VAC ±10% 50/60Hz // max. 25 A | 230 VAC ±10% 50/60Hz // max. 41 A | 230 VAC ±10% 50/60Hz // max. 41 A |
| Weight (with standard configuration) | 700 kg | 850 kg | 1400 kg | 1400 kg |
| Line height | 800 +- 100 mm (other on request) | 800 +- 100 mm (other on request) | 800 +- 100 mm (other on request) | 800 +- 100 mm (other on request) |
| Options | Remote Control Acoustic Signal Device Connection to SPC@Enterprise OPC-UA interface Variant without shicane in case of existing construction Construction of a shicane incl. cover (customer specific) Turn-key installation solution with reject mechanism and more (customer specific) Service contracts Extended warranty | | Remote Control Acoustic Signal Device Connection to SPC@Enterprise OPC-UA interface Variant without shicane in case of existing construction Construction of a shicane incl. cover (customer specific) Turn-key installation solution with spacing device, reject mechanism and more (customer specific) Service contracts Extended warranty | |

*Actual product width is smaller due to guides and tolerance. Please see product dimensions in table below.

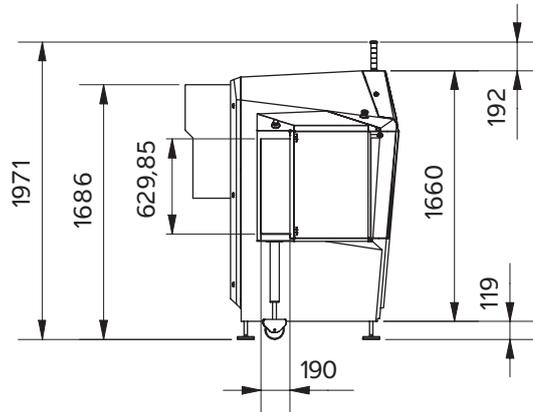
Technical diagrams

Dymond S

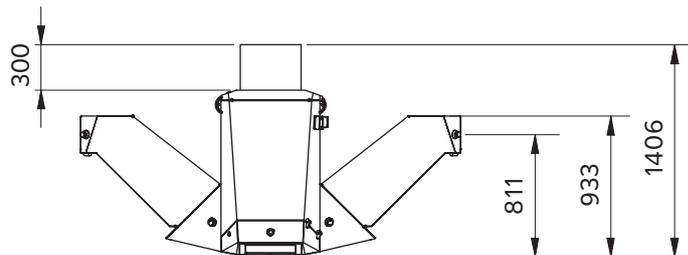
Front view



Side view

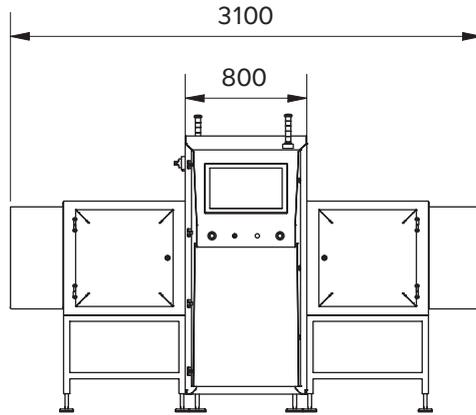


Top view

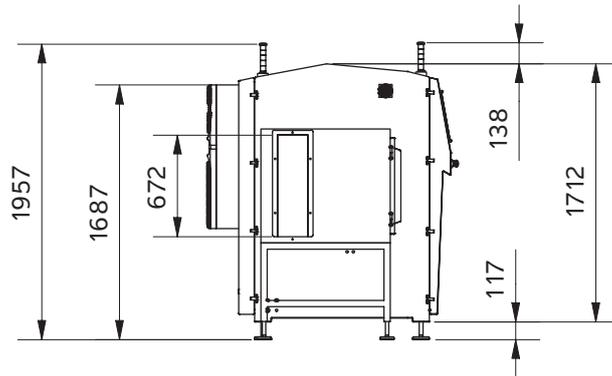


Dymond DSV

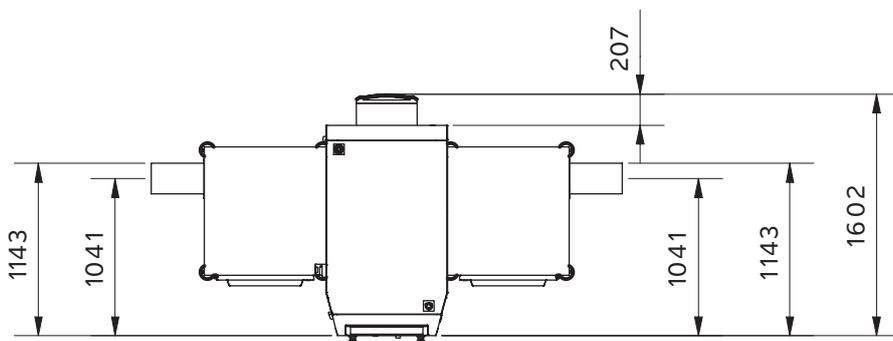
Front view



Side view

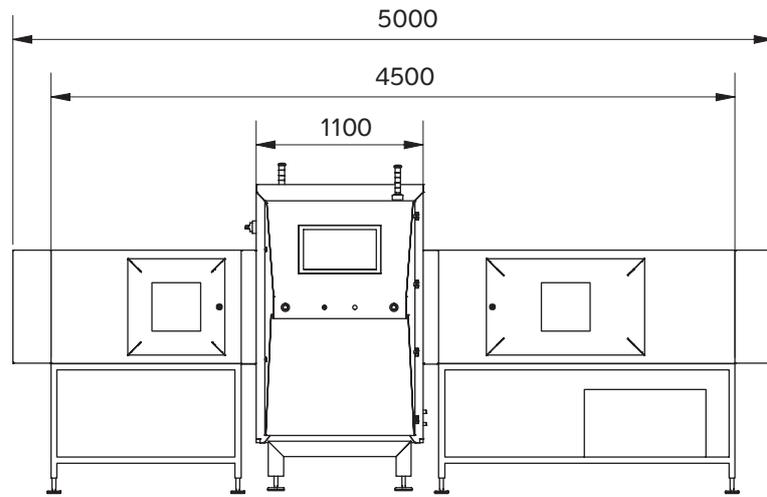


Top view

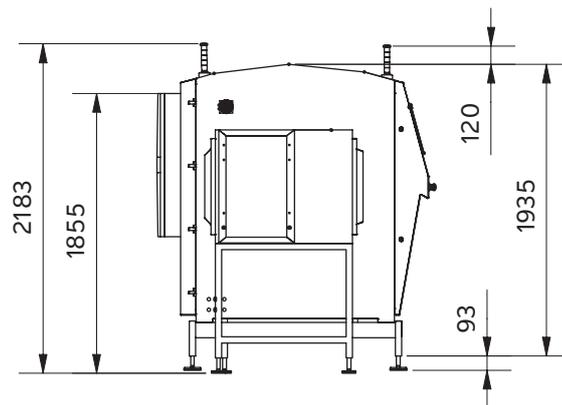


Dymond D

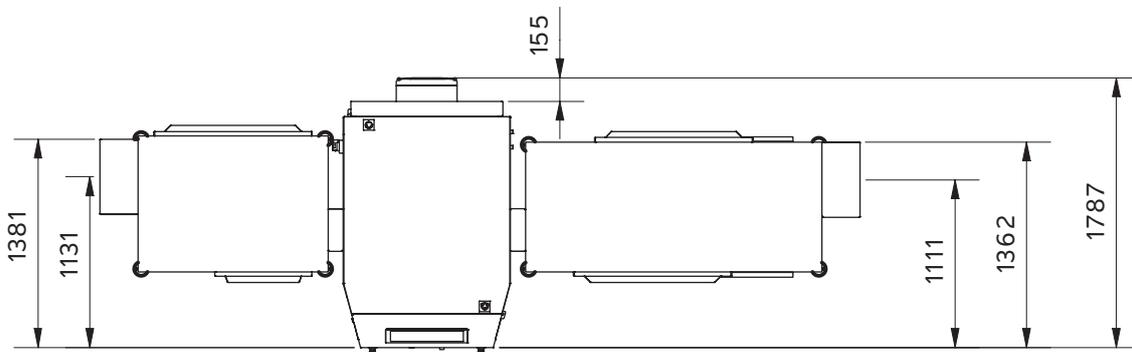
Front view

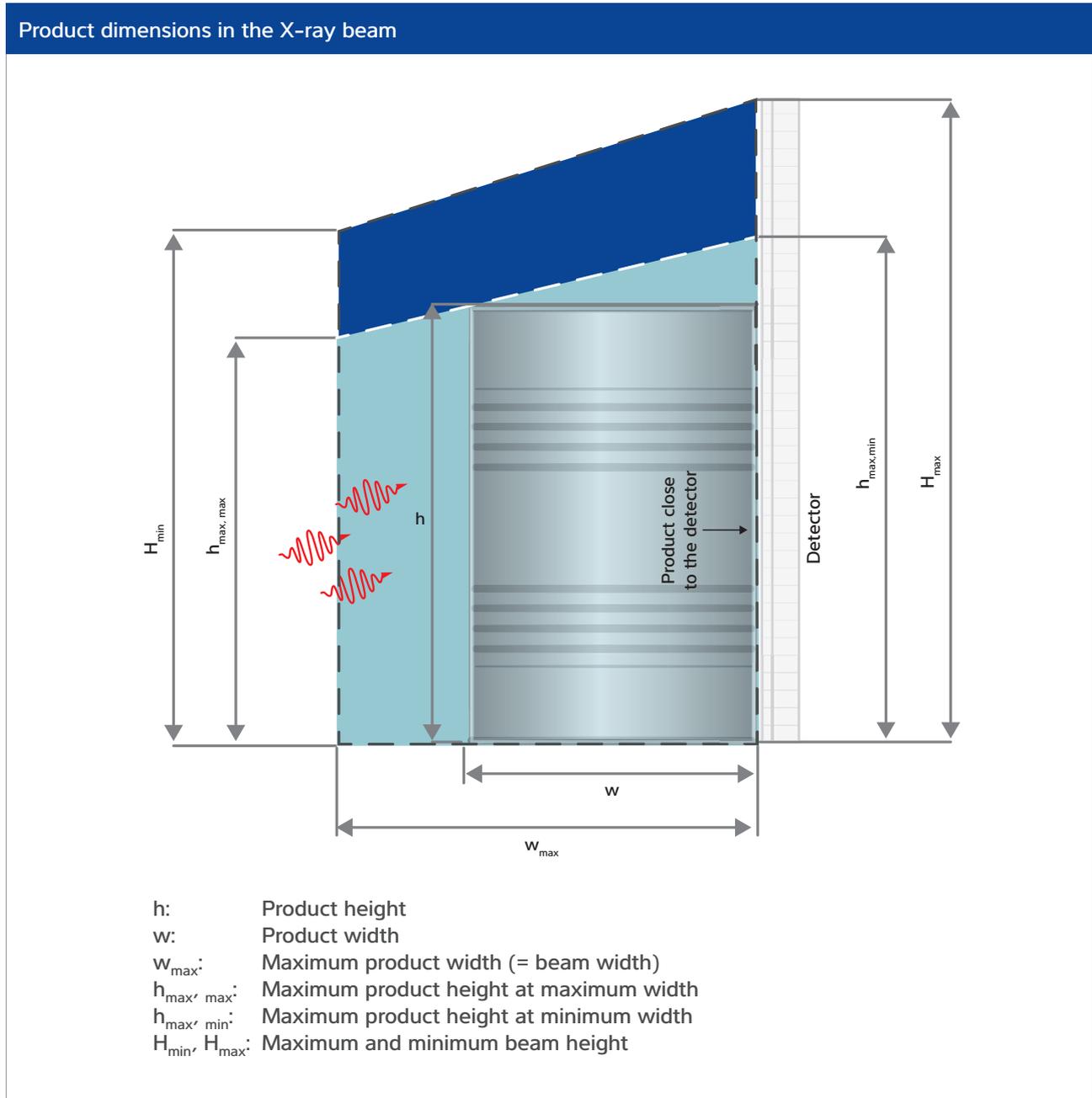


Side view



Top view





The values in the table below are considered as the maximum possible dimensions of a product that can physically pass through the inspection tunnel. Best practice is to keep a tolerance of 10% to prevent non centered products getting jammed and to reach a fully reliable inspection result.

| Parameters | Description | Dymond S | Dymond DSV | Dymond D (Monoblock) | Dymond D (Tube) |
|-----------------------|---|----------|------------|----------------------|-----------------|
| w _{max} | Maximum product width (= beam width) | 180 | 185 | 185 | 185 |
| h _{max, max} | Maximum product height at maximum width | 250 | 212 | 176 | 254 |
| H _{min} | Minimum beam height | 275 | 220 | 190 | 255 |
| h _{max, min} | Maximum product height at minimum width | 363 | 333 | 316 | 320 |
| H _{max} | Maximum beam height | 395 | 320 | 300 | 350 |

In-line inspection for product quality and integrity

The Dymond side shooters ensure reliable horizontal inspection and come with additional quality assurance functions. Foreign objects made of metal, glass, stone, bone and various plastics are detected in product packaging and eliminated from the production line. In addition, a wide range of standard features ensure product integrity and quality, such as:



Completeness check



Separation of damaged packaging



Fill level monitoring

Increased safety thanks to multi-sided radioscopy

The Dymond side shooters eliminate blind areas and screening uncertainties thanks to advanced technologies, enabling you to ensure the safety of the inner volume, bottom and side walls of your products.

Critical positions of foreign bodies in products

Dymond S
full safety inner volume

Single beam for upright composite cartons, cans, pouches or plastic bottles.

Dymond DSV
full safety inner volume, inner side walls and increased safety raised bottom

Single beam with Dual Split View (DSV) for upright composite cartons, cans, pouches, plastic bottles and glass jars.

Dymond D
fully safety for inner volume, side walls and raised bottom

Double beam optimized for glass-in-glass detection and all upright containers at higher speeds.

Raised bottoms

Large thin foreign bodies

Inspection along the glass wall

Options

X-ray inspection systems Dymond S, DSV and D

A wide range of options increase your possibilities

- Remote servicing
- Acoustic signal emitter
- Connection to SPC@Enterprise
- OPC UA interface
- Variant without chicane for existing customer designs
- Chicane with cover (custom-built)
- Turnkey solution with segmentation, separators and more (custom-built)
- Service contracts
- Extended warranty

Connectivity

Ready for Industry 4.0

Available with OPC UA and connection to SPC@Enterprise (optional)

For systematic monitoring and analysis of machine and line output, side shooter range systems can be quickly and easily integrated into your production process.

We offer interfaces for

- SPC@Enterprise
- OPC UA
- Modbus
- Ethernet



OPC UA
upgradable



SPC@Enterprise by Minebea Intec converts metrics into valuable information which helps to ensure product quality and safety and an increase in productivity.

The products and solutions presented in this data sheet make major contributions in the following sectors:



Food and beverages



Pharmaceutical



Chemistry



Cosmetics

The technical data given serves as a product description only and should not be understood as guaranteed properties in the legal sense.

Specifications subject to change without notice.
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