Eagle™ Pipeline
X-ray Inspection System

The Eagle Pipeline delivers superior contaminant detection of metal, bone, stone, glass and dense materials in pipeline applications.

The Eagle Pipeline x-ray inspection system is designed to specifically address the unique requirements posed by products flowing through a pipe, as well as helping manufacturers comply with stringent HACCP protocols and food safety requirements.

The overall Eagle Pipeline design promotes systematic product flow and delivers optimal detection of contaminants by using active product tracking, while reducing the amount of product rejected.

Eagle Pipeline's x-ray inspection manifold design provides a uniform area to maximize detection capabilities at 2.5", 3", 4" and 6" pipe diameters.

The Eagle Pipeline is constructed using durable stainless steel, with a IP69 ingress protection for maximum environmental protection suitable for most facilities. This rugged construction is combined with easy front access for fast maintenance and cleaning, making the Eagle Pipeline the right choice for high performance inspection applications.

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The Eagle Pipeline inspects and rejects piped product prior to packaging or processing. This inspection leads to fewer wasted packaging materials, creates less rework and greatly reduces product loss caused by the removal of contaminants after packaging. By removing contaminants earlier in the process, it decreases the potential for expensive downtime events caused by contaminants that damage downstream equipment, such as grinders.

Typical applications include:

- Ground meat (beef, pork, poultry)
- Whole muscle such as chicken breasts
- Slurries, soups and sauces
- Ice cream
- Baby food
- Fruit purees and jams

Eagle's Advantage

Applications such as ground meat, slurries, liquids and other raw food ingredients can be challenging for standard metal detector systems to detect contaminants that are not ferrous metals and do not have magnetic properties. Eagle's proven x-ray systems overcome these challenges with easy to use detection algorithms resident within our SimulTask™ PRO imaging software that discriminates contaminants by density. This enables the Eagle Pipeline x-ray inspection system to clearly identify foreign body contaminants contained within the product flow for a broader range of detection for either metal, bone, stone, glass or dense materials.

Software and Reports

Eagle's SimulTask PRO imaging software is available in 19 different user interface languages and is included as a standard feature for the Pipeline series.

Additional features include full product imaging, on-screen diagnostics and safety system status. The Eagle Repository™ allows convenient review of production statistics for rejected and manually-saved images through its user interface. Information can be transferred to a PC or network via USB memory stick and reports are made viewable by using a standard internet browser. All Eagle Pipeline machines are network capable, allowing remote access by expert technicians if needed to quickly diagnose and often correct issues without dispatching for on-site service.

Reject Mechanisms

A 3-way automatic reject valve ensures contaminants are removed from the production process and keeps the removal of good product to a minimum. This not only cuts the risk of a substandard product reaching end consumers, but also protects the downstream processing equipment and minimizes product waste, which protects profits and enhances efficiency.
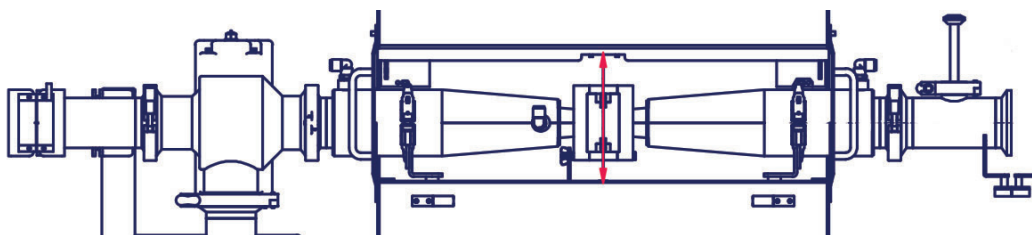

Figure 1: Eagle™ Pipe Manifold Inspection Area, front open cabinet view

Eagle™ Pipeline Features and Benefits

- Unique active product tracking ensures accurate contaminant removal and reduces waste.
- The rectangular manifold inspection area promotes uniformity of inspection and maximizes contaminant detection.
- Excellent reject accuracy due to dynamic flow speed adaptation.
- Eagle's SimulTask PRO image processing software provides advanced image analysis, is easy to use and delivers high performance inspection results.
- Efficient cleaning and maintenance for maximum uptime.
- CAT 3/PLd safety circuit with system status visualization is included as a standard feature.
- TraceServer™ option manages critical inspection data remotely on a PC or Network database.
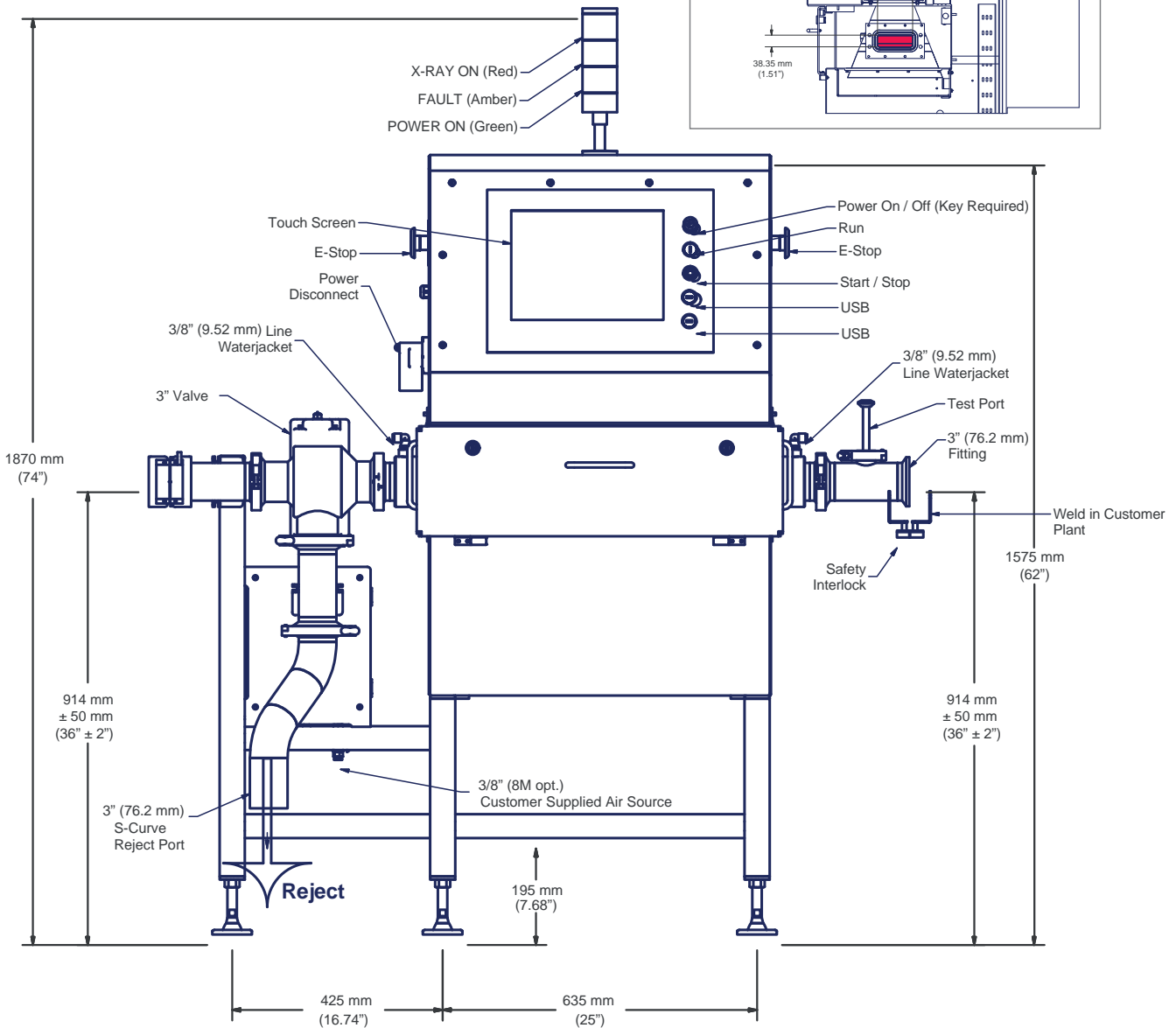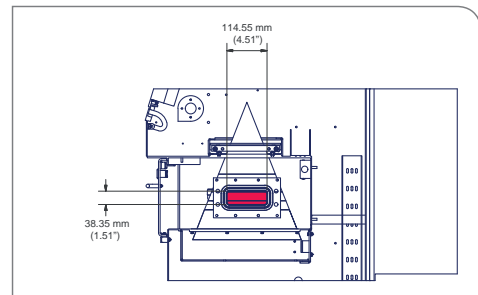
Beam Geometry Diagram

Figure 2: Eagle™ 3" Pipeline with rejector option typical dimensions

Specifications

Model	Eagle™ Pipeline
Pipeline Diameter (OD)	2.5", 3", 4", 6"; Q-line fittings standard, others available upon custom request
Pipeline Height	Available in line heights from 29" (737 mm) to 55" (1397 mm); special heights available upon request
Maximum Product Speed	30 meters per minute (65 feet per minute)
X-ray Power	70kV @ 3mA maximum, adjustable to optimize inspection performance for each product set-up
X-ray Type & Emissions	Single beam; x-ray emissions <1μSv/h>; compliant to 21 CFR 1020.40, 21 CFR 179.21, EUROTAM EU nationalized standards
Detector Resolution	0.8 mm pitch single energy
Display & Operating System	15" TFT color touch screen, 250GB memory, Windows Embedded 8, Eagle SimulTask™ PRO imaging software available in 19 different user interface languages
Safety	(2) E-stops, LTO main disconnect, Category 3 (EN954), PLd (EN13849) safety circuit with system visualization via machine user interface. A Hazard Based Risk Assessment compliant with ISO EN 12100:2010 is available.
Communications	(2) USB 2.0 ports, (2) Ethernet 10Mbit, 100Mbit, 1Gbit Base-T/100 mbps port, (1) RS232 serial port
I/O	I/O board with up to (4) input signals, (4) reject output signals, (5) PLC monitoring signals:reject detect, system processing, system calibrating, fault condition, x-rays on
Ingress Protection & Finish	IP69 ingress protected control cabinet; externally mounted IP56 air conditioner assembly; 304 stainless steel bead blasted enclosure
Operating Range	0°C to 40°C (32°F to 104°F) 25% to 90% relative humidity non-condensing
Power Requirements	230 VAC, +10/-15%, Single Phase 50/60 Hz, 16 Amp fused, single phase
System Cooling	4000 BTU (1.1kW) wash-down capable air conditioner
Air Requirements	5.5 bar (80 psi), 3/8" (8mm opt.) line, dry & filtered when supplied with rejecter
Water Specification	Plant water supply 2 gpm (7.61 liter/min) when waterjacket option is used
Reject	24VDC Signal; 3-way ball valve reject, tri-clamp fittings
Options & Accessories	TraceServer™ software, low air pressure sensor, waterjacket for applications containing fat, general purpose water chiller
Remote Diagnostics	Radmin and TeamViewer service tools supplied as standard for remote machine diagnostics and product set-up services

Eagle Product Inspection

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