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TapTone Package Inspection Systems **An Overview**

T100 Compact, Affordable Container Inspection System The TapTone 100 on-line inspection system incorporates various sensors for detecting defects in cans, bottles and jars. The compact design requires minimal line space and no floor space, which is especially important for crowded production lines.



T500 Simplified Control/Versatile Inspection The TapTone 500 provides complete inspection of containers for fill level, pressure and vacuum inspection as well as cap and closure defects. The TapTone 500 is a cost effective solution for inspection of your plastic, metal and glass containers.



TapTone Model Number	T100	T500
Container Types	Glass	Glass
	Metal	Metal
		Plastic
Number of Primary Inspections	1	3
Primary Inspection Type	Vacuum	Vacuum
		Pressure
		Fill Level
Number of Optional Inspections	6	7
	Cap Inspection	Cap Inspection
	Code Inspection	Code Inspection
	Label Inspection	Label Inspection
	Foil Presence	Foil Presence
	Tamper Band	Tamper Band
Control Interface	Alpha/Numeric LCD Display	Graphical LCD Display
Password Levels	1	1
Stored Product Set-ups	50	10
Communications Capability	RS-232 Serial	RS-232 Serial
Multi-Language Display	Yes	Yes
Controller Exposure Rating	NEMA 4X IP 65	NEMA 4X IP 65
Sensor Mounting	Floor/Conveyor	Floor/Conveyor
Sensor Construction	Stainless Steel	Stainless Steel
Inspection Speed	2,000 Containers/Minute Maximum	2,000 Containers/Minute Maximum
Reject Capability	Single Rejector	Dual Rejector

T4000 Advanced Control/Versatile Inspection The TapTone 4000 is a full feature package inspection system capable of inspecting glass, metal, and plastic containers for fill level, leaks, pressure and vacuum, as well as cap and closure defects. The system combines an intuitive user interface, proven technology, and a long standing record of high reliability.



T4000-Compression Versatile Inspection/Advanced Control The TapTone 4000 Compression system inspects 100% of your flexible containers at production line speeds. The TapTone 4000 Compression system will detect pin-hole leaks in plastic containers and tubes.



T4000-Dual Sensor Compression Advanced Leak Detection for Flexible Plastic Containers The TapTone 4000-DSC system can inspect a wide variety of flexible containers for micro leaks. The design incorporates our patented dual sensor technology and high speed compression belts for improved accuracy and container handling.



NON-PRESSURIZED CONTAINERS

T4000	T4000 C	T4000 DSC
Glass	Plastic	Plastic
Metal	Tubes	Tubes
Plastic	Pouches	Pouches
3	4	4
Vacuum	Leaks ($\geq .508$ mm/.020 in)	Leaks ($\geq .152$ mm/.006 in)
Pressure	Fill Level	Fill Level
Fill Level		
4	4	4
Cap Inspection	Cap Inspection	Cap Inspection
Code Inspection	Code Inspection	Code Inspection
Label Inspection	Label Inspection	Label Inspection
Foil Presence	Foil Presence	Foil Presence
Tamper Band	Tamper Band	Tamper Band
25 cm (10 in) Color Touch Screen	25 cm (10 in) Color Touch Screen	25 cm (10 in) Color Touch Screen
10	10	10
16	16	16
Ethernet	Ethernet	Ethernet
Yes	Yes	Yes
NEMA 4X IP 65	NEMA 4X IP 65	NEMA 4X IP 65
Floor/Conveyor	Floor/Conveyor	Floor
Stainless Steel	Stainless Steel/Aluminum	Stainless Steel
2,000 Containers/Minute Maximum	1.5 m/sec (300 ft/min) Maximum	1.5 m/sec (300 ft/min) Maximum
Dual Rejector	Dual Rejector	Dual Rejector

T4000-Plastic Bottle Inspection System - Advanced Leak Detection for Flexible Plastic Containers

The TapTone 4000-PBI system can inspect a wide variety of flexible containers for micro leaks. The design incorporates our patented dual sensor technology. The systems extended length allows for the highest inspection sensitivity.



T4000-Force On-Line Pressure Inspection The TapTone 4000-F system will detect leaks and low pressure in LN2 dosed and carbonated containers with internal pressure up to 3.1 bar (45 psi). When combined with optional sensors, the T4000-F will also perform fill level inspection, cap inspection and label detection.



T4000-Force Stainless High Speed High Pressure Inspection The TapTone 4000-FS system will detect leaks and low pressure in LN2 dosed and carbonated containers and aerosol cans with internal pressure up to 11 bar (160 psi). The TapTone 4000-FS is manufactured with a stainless steel transport deck and reinforced frame for extra rigidity in high pressure applications.



PRESSURIZED CONTAINERS

T4000 PBI	T4000 F	T4000 FS
Plastic	Plastic	Plastic
Tubes	Metal	Metal
Pouches		
4	4	4
Leaks (≥ 0.076 mm/.003 in)	Pressure Maximum 3.1 bar (45 psi)	Pressure Maximum 11 bar (160 psi)
Fill Level	Fill Level	Fill Level
4	4	4
Cap Inspection	Cap Inspection	Cap Inspection
Code Inspection	Code Inspection	Code Inspection
Label Inspection	Label Inspection	Label Inspection
Foil Presence	Foil Presence	Foil Presence
Tamper Band	Tamper Band	Tamper Band
25 cm (10 in) Color Touch Screen	25 cm (10 in) Color Touch Screen	25 cm (10 in) Color Touch Screen
10	10	10
16	16	16
Ethernet	Ethernet	Ethernet
Yes	Yes	Yes
NEMA 4X IP 65	NEMA 4X IP 65	NEMA 4X IP 65
Floor	Floor/Conveyor	Floor
Stainless Steel	Stainless Steel/Aluminum	Stainless Steel
1 m/sec (200 ft/min) Maximum	1.5 m/sec (300 ft/min) Maximum	2.67 m/sec (525 ft/min) Maximum
Dual Rejector	Dual Rejector	Dual Rejector

Technologies

Acoustic Technology

Available with T500, T4000

Acoustic technology is used to measure pressure or vacuum in containers with metal closures that do not have a measurable lid deflection. The sensor works by applying a "tap" to the top of each container lid using an electromagnetic pulse which excites the closure. The lid vibrates at a natural resonant frequency "tone" based on internal pressure or vacuum. The resultant "tone" signal is sensed by a microphone. The Digital Signal Processor (DSP) produces a real-time signal spectrum and calculates the resultant frequency of the "tone" for that lid. The frequency is then compared to user set limits. Containers with a frequency outside these limits are rejected.

Compression Technology

Available with T4000

Compression technology detects and rejects leaking and damaged flexible containers. As a container passes through the system, dual parallel belts apply force to the sidewalls of the container. This action compresses the headspace of the container which allows a sensor to take a force measurement at the discharge of the system. Utilizing DSP technology, the controller analyzes the measurement and assigns a merit value to each container. If the merit value is outside of the acceptable range, a reject signal activates a remote reject system.

Dual Sensor Compression

Available with T4000

Dual Sensor Compression technology detects and rejects leaking and damaged flexible containers at production line speeds up to 300 feet/minute (1.5 meters/second). The system is designed with dual parallel belts suspended over the customer's existing conveying system. As the container passes through the system, the dual parallel belts apply force to the sidewall of the container. This action compresses the headspace of the container that allows a comparative measurement to be taken at both the infeed and the discharge of the system. Comparing readings on the same container at the infeed and discharge of the system eliminates the effects of typical product and container variations.

Force Technology

Available with T4000

Force technology is designed to find leaks and low pressure in LN2 dosed or carbonated containers. As a container passes through the system, dual parallel belts transport the container past a sensor that measures the tension on the sidewall of the container. This action allows the system to measure the pressure inside the container and automatically reject all containers that fall below or above the acceptable pressure range.

Laser Technology

Available with T4000

Laser technology is used to measure pressure or vacuum in containers with non-metallic closures by measuring the lid deflection. The laser sensor produces a pinpoint visible beam, and then measures the reflected light. Similar to the proximity sensor the laser sensor signal is digitally sampled and the profile value is then compared to user set limits where containers with lid deflection outside these limits are rejected.

Optical Technology

Available with T100, T500, T4000

The Optical sensor is an electro-optical sensor that uses a special emitter/receiver infrared wavelength tuned to the absorption band of water. The sensor is used to measure the fill level of water based liquid products such as liquor, beer, milk, shampoos, conditioners, lotions, sauces, and other water based products. The beam is powerful enough to pass through most types of plastic and glass containers but will not pass through water based liquids.

Proximity Technology

Available with T100, T500, T4000

Proximity technology measures pressure or vacuum in containers with metal closures by measuring the lid deflection. The sensor produces a continuous magnetic field that monitors the distance between the sensor and the metal lid. The continuous signal is digitally sampled to produce a merit value of the lid profile. The profile value is then compared to user set limits. Containers with lid deflection outside these limits are rejected.

Vision Technology

Available with T100, T500, T4000

The Vision sensors are used for a variety of inspections including high cap, cocked cap, missing cap, missing label, and missing bar code or date code. The sensor is designed with a high speed digital camera and a LED light source contained in a stainless steel housing. The Vision sensor is "taught" the image of the acceptable container, label, code, or closure. The containers with a pattern or image that does not match the acceptable container pattern or image are rejected.

X-ray Technology

Available with T500, T4000

The X-ray sensor is used to measure the fill level in steel, aluminum, glass, plastic and paper containers. An x-ray beam is focused to look through the container in the expected fill level region. As the x-ray beam penetrates the container, it is attenuated by the amount of product blocking the beam. The attenuation is proportionate to the fill level of the container.

Proven Technologies, Industry Expertise

With over 30 years of experience in the packaging industry, Teledyne TapTone can help you stay competitive in today's changing economic climate. TapTone systems allow you to accurately detect defective packaging before it reaches your customers; saving time, money and your brand image. With a global focus on quality and cost control, there has never been a better time to add a TapTone inspection system to your production line.

TapTone has package inspection options for:

- Glass, Metal, and Plastic Containers
- Leak, Vacuum/Pressure, Fill Level, Cap, and Label Inspection
- Individual Containers or Cases

Rejectors

PNEUMATIC RAM REJECTORS

12 mm and 25 mm (1/2 inch and 1 inch) high speed stroke rejectors TapTone high speed rejectors provide reliable rejection of up to 2,000 containers per minute and are available with a fixed stroke length of 12 mm or 25 mm (0.5 or 1.0 in). Designed for tight production spaces, these systems can be conveyor or floor mounted, and withstand water wash down.

200 mm (8 in) stroke rejector for cases and large containers TapTone Case and Large Container Rejectors provide reliable rejection at speeds up to 150 containers per minute. Designed for tight production spaces, these systems are conveyor or floor mounted and withstand wash down. The adjustable stroke length, 0–20.3 cm (0–8 in), will accommodate full cases and large containers constructed of plastic, glass and metal.

STANDING REJECTORS

100 mm and 150 mm (4 inch and 6 inch) Finger Style Rejection, Sorting and Distribution System for Glass, Plastic and Metal Containers The finger style rejector system is an all-purpose sorting and distribution system for standing displacement of containers made of plastic, glass and metal. The system can reject at line speeds up to 800 containers per minute. Single rejection segments or “fingers” are activated sequentially generating an arced path that guides the rejected container off the production conveyor. The rejection segments are returned to the neutral position as the container passes. For multiple rejects or container diverting the segments stay in the activated position. TapTone offers two configurations of the finger style rejector that will displace containers with diameters up to 150 mm (6 in).

Elliptical Wheel Style Rejection, Sorting and Distribution System for Round Glass Containers The rejector uses a rotational ellipse to displace round glass containers in a standing position. As a selected container passes in front of the system, the elliptical wheel rotates one half revolution. The wheel contacts the body wall of the container displacing it from the production conveyor. This servo-driven system can reject or sort round glass containers at line speeds up to 1,500 containers per minute.

Case Systems

The Case TapTone II CTT-2000 - The Case TapTone II is a non-contact inspection system designed for checking pressure or vacuum loss of individual containers inside cases and shrink wrapped trays. The system also inspects the case for missing or damaged containers. The system uses multiple acoustic inspection heads and a digital signal processing technique to compare the acoustic response of the container lid with a reference signature of a good container to determine seal integrity. This case system incorporates a universal conveyor mount sensor bridge providing easy fit to most conveyor models.

Case Tracker CTR-2000 - The Case Tracker is a non-contact inspection system designed for checking pressure or vacuum loss of individual containers inside cases and shrink wrapped trays. The system also inspects the case for missing or damaged containers. The system uses multiple proximity sensor inspection heads to measure lid curvature of each container which corresponds directly with a loss of vacuum or pressure. A digital signal processing technique compares the measured lid curvature with a reference signature of a good container to determine seal integrity. The Case Tracker incorporates a universal conveyor mount sensor bridge providing easy fit to most conveyor models.



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Note: Features and specifications subject to change without notice.