



# TapTone

## APPLICATION NOTES

News and information from Teledyne TapTone, a leader in the package inspection industry.

### Leak detection in low profile containers

**Application:** Low profile and single service containers such as flexible baby food tubs and pharmaceutical saline vials

**Inspection:** Leak detection

**Tested with:** Low Profile T4000-DSC (T4000-DSC-LP)

Convenience packaging is a growing trend in consumer products. The production of smaller and single serve packaging is increasing. In addition, brand specifiers are lightweighting packaging to reduce cost and post consumer waste. The need for inspection systems that can reliably inspect these products for leakage and seal integrity is critical to consumer safety as well as brand image.

Teledyne TapTone has modified the inspection capabilities of its most popular T4000-DSC system with a Low Profile (LP) transport deck that is designed to meet the challenges of testing these smaller, low profile packages for leaks.



Flexible containers (pharmaceutical saline) also suitable for inspection on the T4000-DSC-LP.

### TECHNOLOGY CORNER *How it works*

**Dual Sensor Compression** - The T4000 DSC-LP system finds and rejects leaking and damaged flexible tubs and smaller size containers at production line speeds up to 300 feet per minute. The system is designed with dual, low profile, parallel belts suspended over the customers 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 the container to itself between the infeed and discharge of the system, eliminates typical variations seen in the production environment (Fill Level, Product Temperature, and Container Density).

Utilizing advanced DSP technology the T4000 controller analyzes the comparative 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.



T4000-DSC-LP Low Profile Dual Sensor Compression System. Sensor has a cantilever design that suspends over the existing conveyor.



## Test Review

Good samples were tested multiple times to generate a base line for non-leaking samples. Leaks were then created in the film lid stock samples by using a precision drill bit. Testing was done at room temperature.

To establish a baseline for good containers, non-leaking samples were tested multiple times each. This process generated multiple data points from which an average was calculated. The average leak value reading for good, non-leaking containers was 870. The average entry sensor value was 397. Small leaks are detected using the leak value, which compares the entry sensor to the exit sensor. Large leaks or gross leaks can be detected by comparing the entry or exit sensor values.

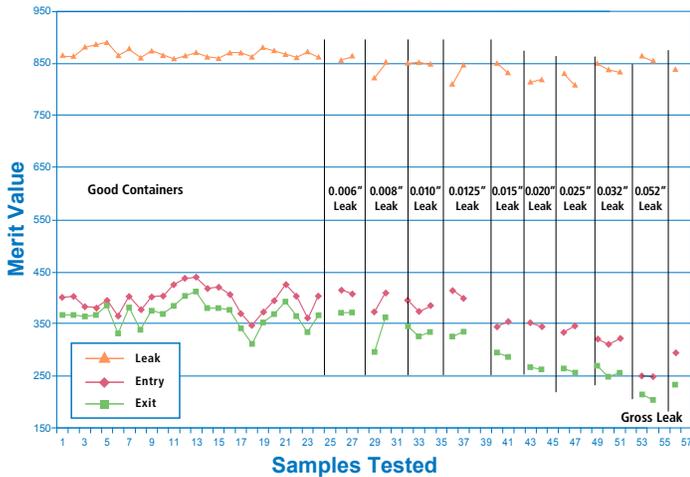
Leaking containers were made using a precision drill bits to drill holes through the foil seal. Multiple drill sizes were used in the test; 0.006 inch, 0.008 inch, 0.010 inch, 0.0125 inch, 0.015 inch, 0.020 inch, 0.025 inch, 0.032 inch, 0.052 inch and gross leaks.

As the leak gets larger, the values of the entry and exit sensors drop and the leak values increase.

## Test Summary

The T4000-DSC-LP was successful detecting leaks in the .012" - .020" size range.

*Test results achieved in the test laboratory may be different from results seen in the production environment.*



View of sample in the Dual Sensor Compression LP system. Note the opposing low profile 12mm belts.



49 Edgerton Drive • North Falmouth, MA 02556 USA

P: +1 508.563.1000 F: +1 508.564.9945 E-Mail: [taptone@teledyne.com](mailto:taptone@teledyne.com)

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