



# TapTone

## APPLICATION NOTES

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

### LEAK DETECTION ON STAND-UP POUCHES

**Tested:** Stand-up pouch container without gusset.

**Inspection:** Inspection of seal integrity.

TapTone's PRO Series DSC-TB pouch inspection technology finds and rejects leaking containers caused by defects in the seams or fitment closure.

DSC-TB technology can be used for leak inspection on the following flexible pouch types:

- |                    |                   |
|--------------------|-------------------|
| <b>Containers:</b> | <b>Closures:</b>  |
| • Stand-up Pouches | • Plastic Fitment |
|                    | • Induction seal  |

**Equipment:** TapTone PRO Series DSC-Twin Belt Pouch Inspector



Stand-Up Pouch

### TECHNOLOGY CORNER *HOW IT WORKS*

The TapTone PRO Series Pouch Inspector system finds and rejects leaking and damaged pouches at production line speeds up to 200 feet per minute. The patented system is designed with dual pairs of parallel belts suspended over the customers' existing conveying system. As the pouch passes through the system, the dual pairs of parallel belts apply force to the sidewall of the pouch. This action increases the internal pressure of the pouch, evacuating a small amount of product out any leak areas, thus allowing a comparative measurement to be taken at both the infeed and the discharge of the system. Comparing the pouch to itself eliminates typical variations seen in the production environment (Fill Level, Product Temperature, and Seal width).

Utilizing advanced DSP technology the TapTone PRO Series controller analyzes each of the individual sensors as well as their comparative measurement and assigns three resulting merit values to each pouch. If any merit value is outside of the acceptable range, a reject signal activates a remote reject system.



▲ TapTone PRO Series Pouch Inspector



# LEAK DETECTION ON STAND-UP POUCHES

**Tested:** Stand-Up Dairy Pouch

## Sour Cream Pouch Testing

The purpose of this test was to prove the effectiveness of the DSC-TB pouch inspection sensor in testing flexible pouches for leaks. Leaking pouches can offer contamination a point of entry into your product, which can cause product spoilage and potential health concerns for your consumers. The DSC-TB sensor can test stand-up or gusseted pouches either hot or cold filled. Then DSC-TB Sensor is ideal for finding potential leakers in flexible drink pouches in the seams or fitment closure before they leave your processing plant.

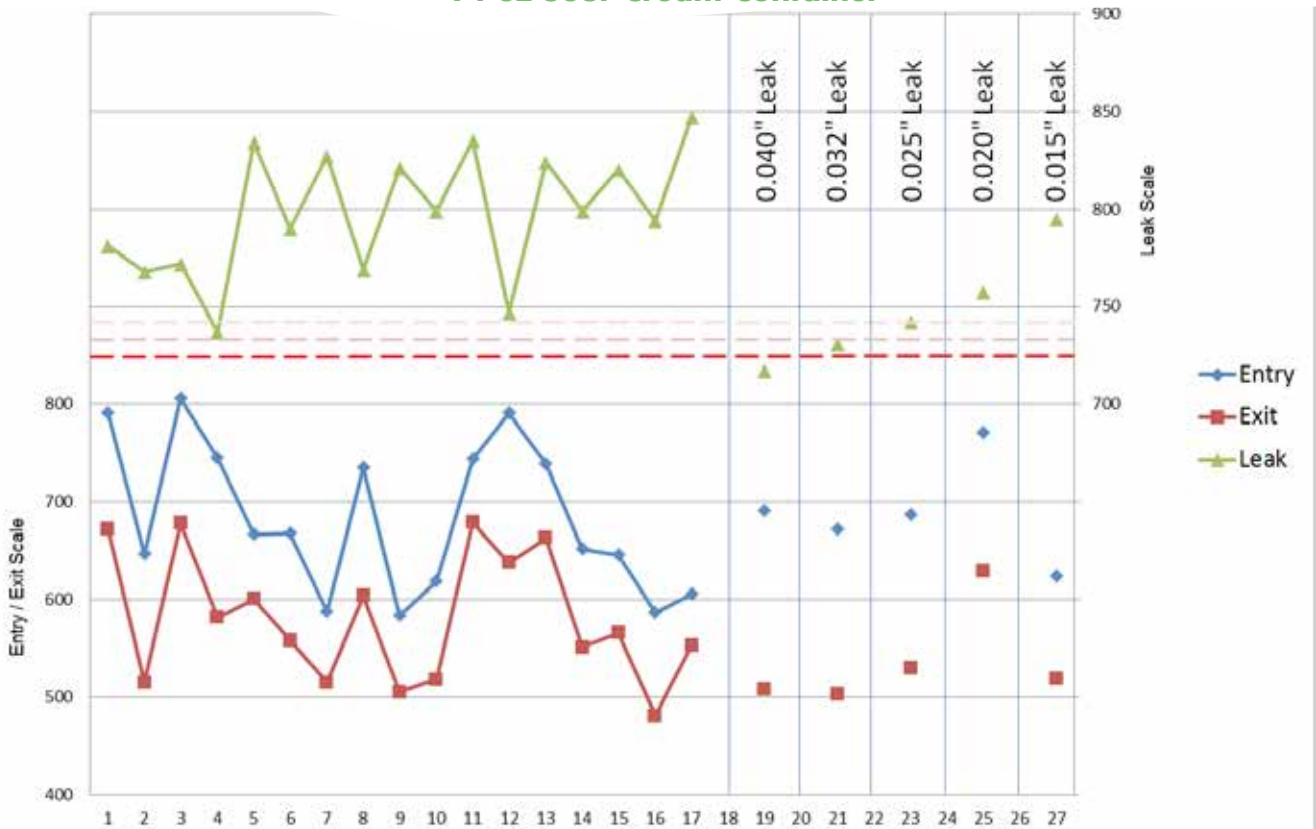
The customer supplied 6 cases of pouches of sour cream for leak evaluation. The cases were delivered in a chilled, insulated package so each case was allowed to come to room temperature prior to testing.

The pouches are seated in pucks, 2 pouches per puck, to be tested by the TapTone PRO Series Pouch Inspector. The system is set up to analyze each pouch individually although they are transported in pairs in the pucks. All tests were performed at a production speed of 100fpm.

Although the product is thick and viscous it was determined that at a certain squeeze pressure the surface tension of the product will be overcome and leaks can be effectively detected.

After determining the optimal squeeze setting, two additional cases of product were tested. Containers were sent through the system, 2 to a puck and a normal population was characterized. Leaks were then introduced into the system primarily in the 'tri-seam' area of the pouches ranging from 1/8" to 0.015" diameter holes. Each container was tested singularly before and after each hole-size was created, giving a pre and post-leak value for offline comparison.

14 oz Sour Cream Container



## Conclusions & Recommendations

The testing was done individually with 1 leak pouch in 1 puck. All testing was done at room temperature. Due to the increased sensitivity of the Pouch Inspector there was an increased range of the ENTRY/EXIT merit values for the general population however the leak calculation, being a comparative inspection on a single container was able to clearly identify 0.040" leaks consistently and reliably. At the ideal settings determined by the initial tuning procedure the pouches are experiencing between a 3 psi and 4 psi internal pressure.



▲ Customer-supplied product being inspected in PRO Series Pouch Inspector.



▲ Gauge showing the low internal pressure during inspection.

## SUMMARY

The focus of this test was wet leaks in the 'tri-seam' area of the pouch. It is expected that dry, head space leaks will find a leak size of 0.025" easily. The Tap Tone DSC-TB can find a leak size of 0.015" but the merit value is close to the "good" pouches.

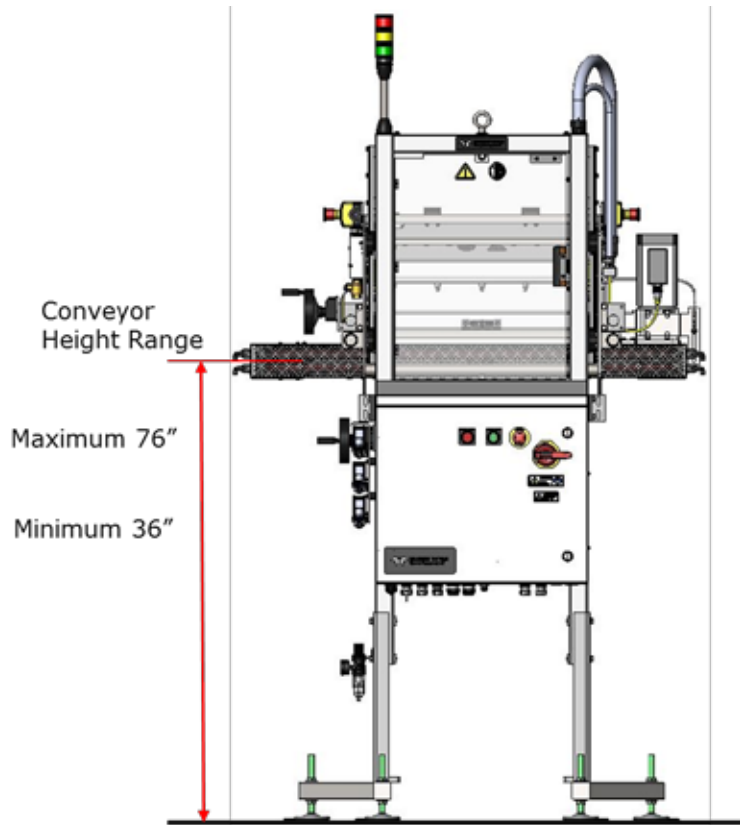
It is important to note that the DSC-TB sensor requires the pouches to enter in a specific orientation. Sample testing is required for each product application to determine which set of merit values are to be used in detecting leaks because results may vary between products as seen in testing.



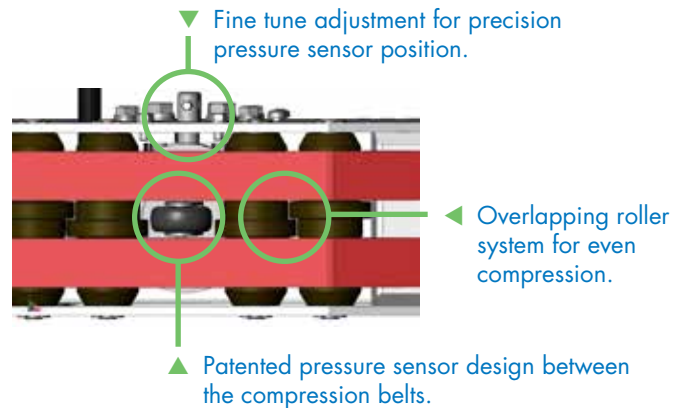
▲ Product inspected by PRO Series Pouch Inspector.

## PRO Series DSC-TB Specifications

- Stand-up pouches
- 4" (101mm) minimum pouch height
- 17" (432mm) maximum pouch height
- 5" (127mm) maximum pouch width
- Belt Speed 25 - 350 feet/minute  
7 - 106 meters/minute
- 1,500 pouches per minute maximum
- Variable speed belts
- 36" to 76" conveyor height
- 230VAC or 460VAC Power
- 15psi pressure sensor calibration
- NEMA 4X, IP65 Washdown, 304 Stainless Steel



◀ The Twin Belt (TB) conveyor set is designed specifically for stand-up pouch inspection.



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