



APPLICATION REPORT

Incisive Surgical selects Cleveland Vibrator Turbomite vibrators



"The Cleveland Vibrator CVT-P-10 requires no training, no maintenance, no oil, no lubrication, and consumes very little air. It saves us energy."

- Lawrence Moore
Senior Manufacturing Engineer,
Plastics Products, Incisive Surgical

APPLICATION ENVIRONMENT:

Medical Device Manufacturing



FEATURED PRODUCT:



Cleveland Vibrator Co.
Turbomite CVT-P-10
turbine vibrators



- Higher force outputs with low air consumption
- Acetal plastic body
- 304 Stainless steel exterior
- Low noise level, below OSHA standards
- Permanently lubricated bearings

CHALLENGE

Incisive Surgical, a developer of mechanical solutions for skin closure, invented the INSORB® Absorbable Skin Stapler and Staple. The company holds eight patents for the method, absorbable staple and the mechanical stapler and has received several prestigious awards, including the Wall Street Journal 2006 Technology Innovation Award in the medical device category. Since that time, surgeons have begun to rely on this technology for a wide range of procedures, including vascular, thoracic, and orthopedic operations. Incisive Surgical sought a way to ensure the manufacture of these staples could run non-stop to keep the pipeline for surgeon and patient demand filled.

SOLUTION

The CVT-P-10 miniature turbine vibrator from Cleveland Vibrator Company was selected for the Incisive Surgical INSORB staple manufacturing site, where injection molding machines produce eight fasteners per cycle time and a robot then transfers the small parts from the mold into 3/4" diameter and 35" long tubes with rails inside. A Cleveland Vibrator Company CVT-P-10 turbine vibrator is installed on each of these tubes and runs 24/7, reliably enabling the material flow of the staples with no down time.



Incisive Surgical relies on the CVT-P-10 pneumatic vibrator to assist the material flow of INSORB Staples from a molding machine through a 35" tubes where they are stored, and later moved to another location.



The CVT-P-10 miniature turbine vibrator enables non-stop production of 1 million INSORB Staples per month. To date, Incisive Surgical has manufactured 20 million of these fasteners.



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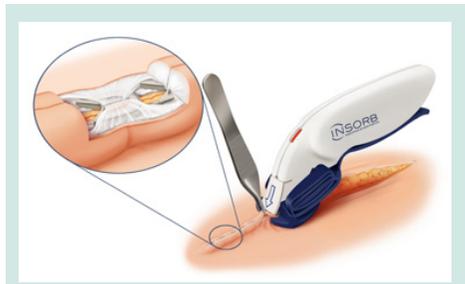
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Vibratory Screeners
Vibratory Conveyors
Tailored On Demand



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For Incisive Surgical, Inc., the path from patent to patients had to be constructed quickly and effectively to answer growing surgical and patient demands. Use of the company's INSORB® stapler and staples replaces the long and tedious process of a surgeon placing sutures, and reduces the number of sutures by as many as 50 to 80 percent for some procedures, reducing operative and anesthesia time.

For patients, the INSORB staple combines the comfort, convenience and cosmetic result of absorbable suture with the rapid closure times associated with metal skin staplers, while eliminating the need to remove metal staples post-operatively and the characteristic railroad track style scars left behind.



The INSORB Absorbable Skin Stapler offers the speed of metal skin staplers with the cosmetic results and comfort of absorbable sutures. The INSORB Stapler uses biodegradable staples that are placed underneath the skin and dissolve in the body within a matter of months. The staples break down naturally, thereby eliminating the anxiety, pain cost and inconvenience of post-operative staple removal.

According to Lawrence Moore, Senior Manufacturing Engineer of Plastic Products for Incisive Surgical, the INSORB system is used for surgeries when there is a significant incision involved, or one with 14 to 21 cm of incision, such as Caesarean section, hip replacement or transplant surgery. "The fastener dissolves after three days and after 21 days it loses its strength," explained Moore. "This modality

replaces metal staples. For wound sutures, the staple, also referred to as a fastener, looks like a horseshoe. To date more than 500,000 patients have had INSORB staples, and the demand for INSORB staples is ongoing."

Vibrator critical to 24/7 care-free maintenance

Moore oversees the manufacture of INSORB staples at the Incisive Surgical plant in Plymouth, Minnesota, where injection molding machines produce eight fasteners per cycle time and a robot then transfers the small parts from the mold into 3/4" diameter and 35" long tubes with rails inside. "There is a Cleveland Vibrator Company CVT-P-10 turbine vibrator on each of these tubes. Vibrators go on just before the robot arrives at the tubes, and stay on for a second

after the robot has deposited the parts to effectively move the staples down the rails within the tubes," clarified Moore. "Total on time is 2.5 seconds, occurring every eight seconds. The vibrators never really stop as they coast off during off time."

Because INSORB molds in a Class 6 cleanroom, the process required vibration products that were also clean. "The CVT-P-10 is made from acetal plastic body with stainless steel laser etching on its exterior, making them perfectly suited to an aseptic environment where greater force, low noise and low air consumption is critical," added Moore. "There is no need to take extra measures to put overwraps on anything, and these products last a long time, approximately one year."

Plus, Moore found that the CVT-P-10 turbine vibrators have permanently lubricated bearings and have a single bolt body style. The products are easily controlled with a simple hand valve or two-way solenoid valve and regulator. Based on these findings, the CVT-P-10 was first installed at Incisive Surgical in August of 2007.

"The CVT-P-10 is a unique product in the marketplace," summarized Moore. "We run the CVT product at the edge of specification. It is a low noise product, less than OSHA standards, and the product comes ready to go out of the package. Only one screw needs to be secured to hold the product in place. The Cleveland Vibrator CVT-P-10 requires no training, no maintenance, no oil, no lubrication and consumes very little air. It saves us energy." With eight or ten vibration products going at once, 24/7, energy use was a constant concern at Incisive Surgical. "We produce 1 million staples per month," claimed Moore. "Our technicians start the CVT-P-10 products in the morning, and they run all night. We tried other vibratory products, but the tested products took our compressor over its limit."

According to David Strong, Product Development Engineer at Cleveland Vibrator Company, the turbine vibrator is approximately 1-5/8" (4.1 cm) wide by 1-9/32" (3.3 cm) high by 15/16" (2.4 cm) deep. All exposed parts are 304 stainless steel and the acetal plastic body is consistent with FDA and USDA guidelines for food applications. With inlet air pressure at 50 psi, force output of the CVT-P-10 product is approximately at 22.7 pounds of force at 20,000 rpm with a bearing life of 8,000 hours.

"The CVT-P-10 is a great product and Cleveland Vibrator Company is a great company to deal with. Their Engineering Support and customer service is outstanding. They go over and above what I need. I would consult with them at any opportunity," stated Moore.

About Cleveland Vibrator Company

Since 1923 Cleveland Vibrator Company has been designing, manufacturing and supplying vibratory products and offering services to meet material handling needs. Our diverse products and knowledge ranges from the precise challenges of fine powder screening to the most rugged equipment feeder and conveyor applications. In addition to our breadth of capabilities, we differentiate ourselves with a unique focus on quality, integrity and customer service that has made us a partner with more than 15,000 organizations around the world throughout our 88 year history. Our comprehensive line of industrial vibrators includes unique air-piston vibrators, rotary electric vibrators, electromagnetic vibrators, turbine vibrators and ball vibrators used for bins, hoppers, railcars, foundry applications; rollover and core machine vibrators and more – in many sizes and varieties. Cleveland Vibrator fabricated products include air and electric powered vibratory feeders, screeners, ultrasonic screeners, conveyors and tables for light, medium, and heavy duty industrial applications.