



APPLICATION

Automobile electrical wire access chute
- Dispensed-Foam-Gaskets (DFG)

Objective

Build a turnkey automated dispensing system to apply two liquid silicone foam seals onto wire access chutes.

Major Benefits

1. **Greatly reduce the costs** of manually placed seals/gaskets with the automated application of dispensed-foam-gaskets (DFG).
2. Fixturing and handling for precise and repeatable foam seals on complex-shaped **plastic parts**.
3. **Improved seal adhesion quality** by altering the part surface tension.



Turnkey DFG system (operator part loading station at front, center)

Material

Liquid silicone foam

- > Two-part expanding material
- > Heat-cured

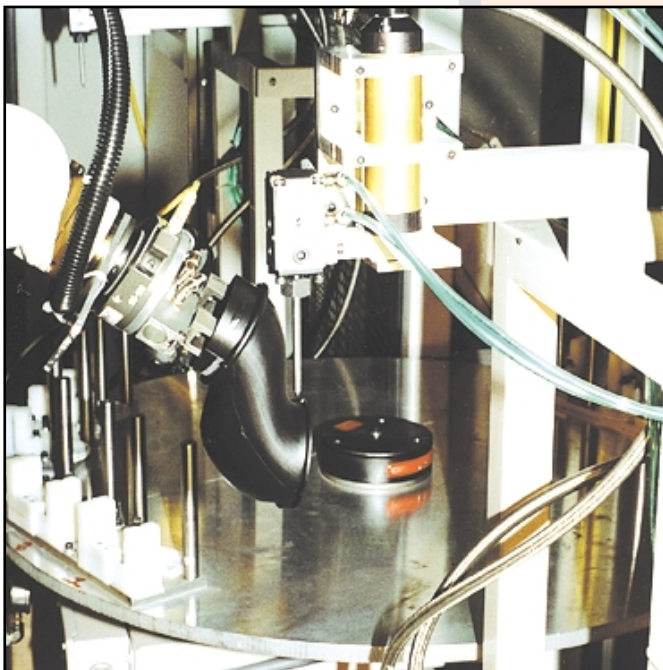
Part

Blow-molded HDPE (high-density polyethylene) electrical wire access chute

- > Right- and left-hand versions
- > Low surface-tension & poor adhesion to silicone foam (pre-treatment)
- > Complex shape not conducive to common fixturing solutions

Key System Features

- > **Custom workcell** with two 6-axis robots
- > Three-dimensional surface treatment system for adhesion promotion
- > Custom part fixturing and robot grippers
- > Modular Robotics, Inc. two-zone oven with cooling zone
- > Two-position dial table with multiple part fixturing; includes part-presence & load-fault sensors



Each robot moves the parts under the dispense guns



Dial table with right- and left-hand parts loaded

Systems & Support

Robotics, Inc. has decades of experience designing and building automated dispensing systems. We provide complete system solutions, including start-up and installation assistance, training, field service support, and complete documentation. Dependent on your specific project considerations, Robotics Inc. staff will design and build a system that is right for you.

Information

Robotics, Inc. has designed and built hundreds of dispensing systems for a variety of industries. For more information on this application or other products and services, contact a Robotics Inc. Sales Representative:



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Sequence of Operations

1. Operator places parts onto surface treatment system conveyor.
2. Operator places treated right- and left-hand parts (two each) onto dial table fixture.
3. Operator presses "Cycle Start" button. Dial table indexes and the fully-automated dispense-cure-collection-shuttle process begins.
4. Automatically and simultaneously, the arm robots pick up the parts and manipulates them under the dispense guns as the liquid material is applied. (As this operation is performed, the operator places more parts on the other station of the two-station dial table).
5. The robots then place the dispensed parts on the oven conveyor for curing of the DFG gasket.
6. Fan-cooled parts are collected in shipping containers (right- & left-hand segregated). Shuttle automatically removes filled containers and moves new containers into place for part collection.

Process Specifications*

Part	HDPE wire access chute (right- & left-hand parts)
Part Treatment	Three-dimensional surface treatment
Part Surface Tension	31-32 dynes/cm (pre-treatment) 70 dynes/cm (treated)
Material	Two-part liquid silicone foam
Mix Ratio	1.0893:1 by volume; 1:1 by weight
Bead Dimensions & Tolerance	Bead 1: 6.60 mm dia. ± 1.20 mm, 24.13 cm long Bead 2: 5.00 mm dia. ± 1.20 mm, 32.39 cm long
Robot Cycle Time	20 seconds per part per robot
Cure Time/Temp.	5 minutes at 68°C (Oven Zone 1) 5 minutes at 75°C (Oven Zone 2)
Production Rate	360 parts per hour
Required Volume	7,200 parts / 20 hour day

* Values are based on customer's specific requirements and do not necessarily indicate optimum values. Call for further information regarding system capabilities and product specifications.

Since 1971, Robotics Inc. has designed, built, and supported automated dispensing around the world!

