

The Problem

Coming up with ways to quickly connect products to test instruments and still maintain leak-tight seals is a common challenge facing test engineers.

The question becomes: “How do I get my product hooked up to the tester in a way that’s fast, simple to control, leak tight, and within my budget?”

Integrity testing by its very nature means connections must allow no leakage. Also, connecting products to the measuring instrument must be made in a way that can be controlled by the tester and not slow down the test operation.

The Solution

Uson recommends using a line of sealing devices known as autocouples. These devices generate leak-tight seals on smooth tubes and even on rough and irregular surfaces.

Because the seal is activated by air pressure, the tester can easily control the clamping.

Diverse sizes and configurations for both inside and outside sealing are available. Autocouple devices are perfect for connecting products to the tester in a wide range of test situations.

How It Works

1. Coupling time is set on the tester’s parameter setup screen. Coupling time is set as the delay interval before fill and after test time. The coupling valve latches between intervals to maintain clamp pressure.
2. Clamp pressure is typically set with a regulator mounted on the tester’s back. This separate regulator controls the pilot air supplied to the PrexSeal. (Figure 2)
3. After the start button is pressed, coupling time begins and clamp pressure is applied to the seal before fill time begins. This ensures test parts are secure before filling with test air.
4. At the end of the test time, clamp pressure stays on for the coupling interval while air is vented from the product.

Autocouple devices can be mounted remote from the tester, or attached directly to the tester as shown in Figure 1.



Figure 1
Autocouple Devices Mounted on a Sprint LC

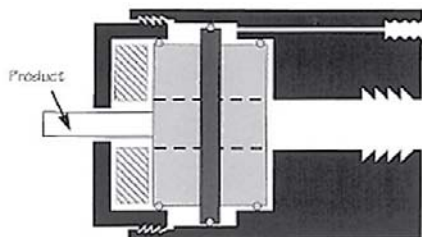


Figure 2
Autocouple In Open Position

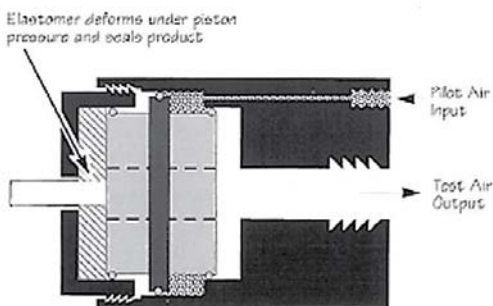


Figure 3
Autocouple in Closed Position

How Autocouple Devices Work

1. Sealing devices described in this Application Note consist of a hollow metal piston inside a hollow chamber. The piston has O-rings at each end and in the center to isolate pilot and test air.

Seal material such as neoprene or urethane is formed in the shape of a thick washer. Product is inserted through the hole in the seal.

2. When pilot air is supplied to the autocouple, the piston is forced against the one-piece seal. The elastomeric seal deforms under pressure and presses against the product to generate a leak-tight closure. Clamping is regulated by the level of pilot air delivered to the autocouple.
3. Autocouple devices depicted in this Application Note are outside-diameter models. Other configurations are available that provide inside diameter clamping as well as clamping around square, hexagonal, and other shapes.

Autocouple devices disassemble quickly for seal and O-ring replacement by backing out a set screw and unscrewing the nose from the body section.

Applications

Consider using an autocouple device when testing products that are relatively small (under 6 inches in diameter) and fairly uniform.

PrexSeal devices work well with the following:

- Small-diameter, smooth wall tubing
- Threaded and smooth pipe
- Internal and external threads
- Barbed plastic and metal fittings
- Expanded or flared end fittings
- Smooth holes in metal or plastic
- Threaded holes in metal or plastic
- Medical luer and luer-lock fittings

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