



GloveFIT – insertion of test lid

Barrier systems have met with increasing popularity in the pharmaceutical industry, to protect products from contamination during the filling process, or to protect operators from toxic products. An important component of a barrier system is the glove ports. Regularly inspecting the integrity of glove ports and gloves is required to guarantee the safety and security of the barrier system.

The challenge of glove integrity testing

A hole in the tube of a bicycle tire is easy to locate using the 'bubble test'. Unfortunately, this method is inadequate for the regular inspection of barrier system gloves and too imprecise to meet the exacting requirements of the pharmaceuticals industry.

A pressure decay test is already in widespread use, in which the glove under inspection is inflated to an initial pressure. After a certain amount of time, the pressure is measured again and the difference in pressure is used to establish the leak rate of the glove. However, this method, and other more complex methods, have a critical disadvantage: the elasticity of the glove varies depending upon its "history" and this affects the measurement. The resulting imprecise measurement is not acceptable for pharmaceutical production, thus regulatory bodies require a visual inspection before any production run. In order to reduce the dependence upon qualitative visual inspections, regular physical inspections are nonetheless expected.

Picking up the Glove

The GloveFIT glove integrity testing system will detect even the smallest leaks.



GloveFIT ensures consistency

Bosch has developed a system which measures glove integrity precisely and with repeatability. Bosch GloveFIT (Glove Flexible Integrity Tester) uses a pressure-impulse method to neutralize the effects of glove history. This method involves pre-stretching the glove before the measurement. At the end of this pre-stretch phase, each glove – regardless of its history – is tested from a consistent starting point. The subsequent pressure-loss measurement is thus determined only by the glove leaks, without the influence of the glove membrane.

Micrometer-level precision

Comprehensive testing has shown that the GloveFIT system (patent pending) can reliably detect a leak of less than

100 micrometers in diameter. When used on specially strengthened glove types, the standard inspection pressure can be increased, enabling the system to reliably detect holes 50 micrometers in diameter. In order to track down even the smallest cuts in the glove membrane, it would be desirable to have even greater precision. However, due to the porosity of the glove material, this would lead to a false testing failure of gloves that have no actual holes.

Accuracy, ergonomics and flexibility

For the operator, the inspection requires little effort. Thanks to the “one-button” design and automation of the GloveFIT system, testing can be performed quickly with minimum operator action. Furthermore, when using multiple glove port in-

spection lids, testing can be conducted simultaneously, to even include testing all the gloves of a barrier system at the same time. Additional options, such as vacuum testing, integrated outlets and wireless glove identification, ensure all testing applications are covered. Numerous orders from Germany, Italy, Puerto Rico and the United States demonstrate how attractive the system is to the market.

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