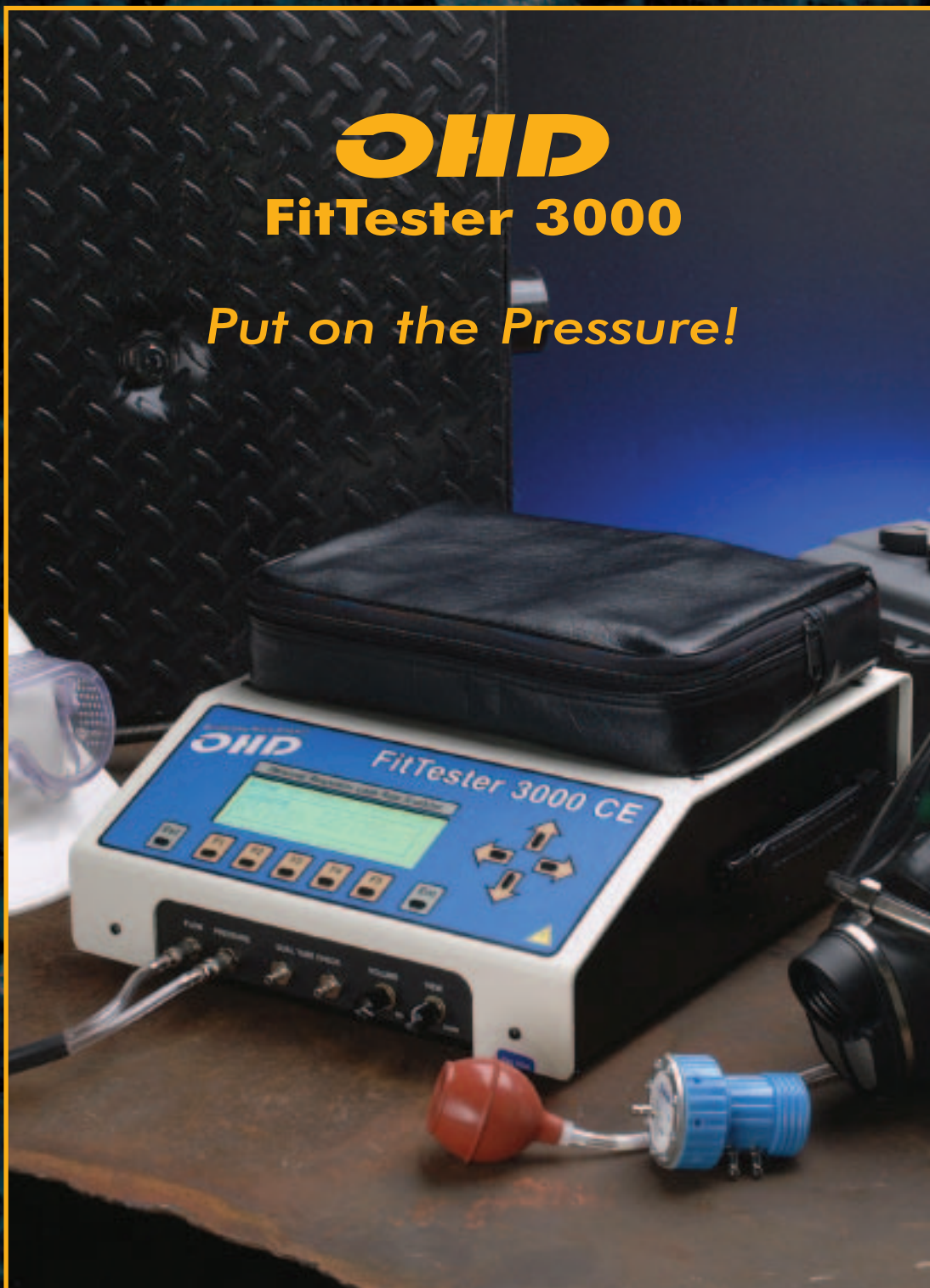


OHD

FitTester 3000

Put on the Pressure!



Occupational Health Dynamics

Here's how the FitTester 3000

works.

During a fit test, the respirator inlets are capped with test adapters, and the inhalation valves are removed from the mask. With the test subject holding his or her breath for no more than ten seconds, the FitTester 3000 then establishes and maintains a slight vacuum, or **controlled negative pressure**, inside the mask. Since the respirator inlets are sealed, all sources of leakage into the mask are through the face-to-facepiece seal. The volume of air drawn out of the mask by the FitTester 3000 during this short time period is equal to the leak rate into the mask through the face-to-facepiece seal.

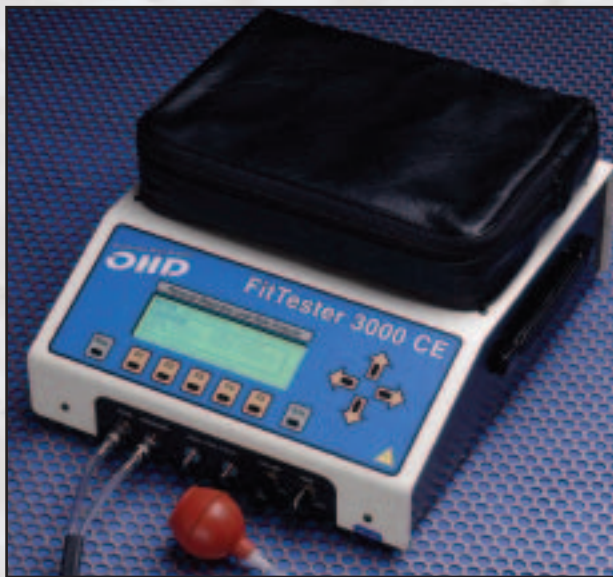
It's that simple...

The OHD FitTester 3000

Quantitative Respirator fit testing is a practice that has been around since the late 1960's. While there have been several ways in which to perform a respirator fit test, there were never any scientific studies to prove that these methods actually worked. These technologies have simply been "accepted" because they were the only way to do quantitative fit testing. The technology seemed to make sense, and at least it was better than nothing at all. Or was it?

Things changed in 1992 when the idea of Controlled Negative Pressure (CNP) was implemented in a whole new approach to fit testing... the FitTester 3000. This revolutionary way to perform a respirator fit test could be subjected to scientific scrutiny. The results? Unlike all other methods of fit testing, Controlled Negative Pressure was proven to quickly and accurately measure respirator leakage, which is the key to measuring respirator fit.

CNP technology was accepted by OSHA in



1998, and has quickly been adopted by industry to be the quickest and most accurate way to perform respirator fit testing.

While old technologies are sometimes hard to give up because, "we've just always done it that way," the OHD FitTester 3000 offers an impressive array of advantages that can dramatically improve your respirator program. Within the first ten seconds of testing, you will know whether the respirator user has a basic fit or not. And the OSHA-accepted CNP redon protocol takes as little as two to three minutes. When other quantitative fit test instruments measured accuracies of less than 40%¹, why put your employees at risk?

Controlled negative pressure has proven to be the fastest, most accurate, and most health protective fit test system available. The accepted redon test protocol allows you to quickly assess respirator fit based on three mask donnings. Given the FitTester 3000's speed and accuracy in measuring actual respirator leakage, why would you subject your employees to something that is less than the best? The OHD FitTester 3000 puts on the pressure!



Advantages of the Controlled Negative Pressure Method

- 1. Proven Technology** – The OHD FitTester 3000 is a highly specialized instrument which utilizes the scientifically-proven and patented “CNP” (Controlled Negative Pressure) technology to directly measure respirator leakage. The OHD FitTester 3000 is accepted by OSHA and appears in the Federal Regulations governing fit testing [29 CFR 1910.134]. The FitTester 3000 is also included in the Canadian Standards [Z94.4-02] and UK HSE Standards [EN132-149].
- 2. Fastest Fit Testing Available** – With the OSHA-approved CNP REDON respirator fit test protocol, a fit test can be performed in as little as two to three minutes. This protocol uses CNP technology’s superior speed and accuracy to help achieve the best respirator fit possible. The Redon protocol provides assurance that the worker knows how to don the respirator correctly each time he or she wears it. There is no “waiting period” for smokers. With Ambient Aerosol systems, smokers who have recently smoked must wait 45 minutes to one hour before being tested.
- 3. Most Health Protective** – Peer-reviewed scientific studies have shown that the OHD FitTester 3000 produces much more accurate, more health protective, and more believable fit test results than other systems. In studies where a known calibrated respirator leak is present, the OHD FitTester 3000 measured 98% of known calibrated leak. The aerosol-based system measured only 37% of known calibrated leak¹.
- 4. Direct Measurement of Leak** – The FitTester 3000 directly measures facepiece leakage. There are no specific conditions or environmental concerns when testing with the OHD FitTester 3000. The unit precisely measures leak rate (in cc/min) by determining the amount of air that leaks into the respirator during the fit test.
- 5. NIST Calibration** – The ability to calibrate the FitTester 3000 with generally available primary calibration systems assures a higher standard of test results (NIST traceable standard).
- 6. Easy to Maintain** – There are no messy alcohol wicks which need to be periodically changed. There are no internal optics which require cleaning once contaminated. Also, condensation droplets inside the sampling tubing cannot effect the accuracy of CNP measurements.
- 7. Most Rigorous Test** – The use of ambient air as a standard (non-varying), gaseous challenge agent provides a more rigorous test of mask fit than does an aerosol agent. If air leaks into a respirator, there is a chance for particles, vapors, or gas contaminants leaking in. When using aerosol-based systems, the test system can only see and measure some of the particles that might enter the respirator.
- 8. Enhanced Fit Test Precision** – Our CNP-based transducer has a $\pm 3\%$ flow measurement capability. Its increased level of precision and repeatability, coupled with its independence from in-mask sampling biases, make the CNP method capable of selecting the best fitting respirator for each individual worker from a variety of different respirator brands and sizes.
- 9. Precise Test Challenge Pressure** – The OHD FitTester 3000 has the ability to precisely set and control the test challenge pressure, which allows respirator fit to be tested at normal inspiratory pressures. A variety of challenge pressures can be used to simulate a variety of work and breathing rates ranging from rest to maximal exertion.
- 10. Easy to Use** – The FitTester 3000 is extremely easy to set up and use. There is no instrument warm-up period to worry about, and the instrument’s on-screen prompting guides the user effortlessly through the QNFT test protocol. If you have a poor mask fit, you know it in a matter of seconds.
- 11. Not Environmentally Dependent** – The testing environment is much less critical, and results (including the ability to actually get a result) are not dependent upon testing location. This is because the FitTester 3000 measures leakage directly by using CNP technology and does not rely upon minimum threshold levels of ambient air particle concentration for proper operation.
- 12. Flexible Data Management Software** – While the OHD FitTester 3000 can be used as a stand-alone unit, it can also perform fit tests through a personal computer using the included FitTrack software. FitTrack allows for easier testing, and dependable record keeping. FitTrack can print individual reports or summary reports in many configurations. Data can be imported and exported to meet various needs.

¹W Crutchfield, D Park, J Henshel et al: Determinations of Known Respirator Leakage Using Controlled Negative Pressure and Ambient Aerosol QNFT Systems. *Am. Ind. Hyg. assoc. J.* 56(1):16-23, 1995.

FitTester 3000 • Specifications

Selectable Test Model Parameters

Equivalent Fit Factors are calculated from actual measured respirator leak rates, based on the following "modeled" test parameters which are user selectable:

Inspiratory Work Rate

Measurement of energy expended by test subject in the normal working environment; indicated in thousands of calories per hour (K-Cal/hr). Selections include

- 100 (light activity)
- 200 (moderate activity)
- 300 (heavy activity) and
- 350 (extreme activity)

Mask Type

Selections for full-face or half mask respirator types.

Cartridge Type

Selections for low, medium, or high density cartridge types.

Subject Gender

Selections for male & female test subject gender.

Selection choices affect modeled CNP challenge pressure levels.

Selection choices affect modeled respiratory inspiration volume.

Dynamic Range

Leak Test Measurement

2 - 4500 cc/min

Fit Factor Computation

10 - 53,000

Pressure Sensor Parameters

Pressure Range

0 - 10 inches H₂O

Accuracy

+/- 0.5% full scale

Over-Pressure Limit

=/- 5%

Instrument Accuracy

Challenge Pressure

+/- 5%

Leak Rate Measurement

+/- 3% or +/- 3 ml/min
(from 10 - 4500 cc/min)

Liquid Crystal Display

Alphanumeric Mode

8 lines x 40 characters

Graphics Mode

64 vertical x 250
horizontal dot matrix.
Backlight with view angle
adjustment.

Digital Interface

One RS-232 serial port and
one Centronics-compatible
parallel interface standard.

General Specifications

Size

12.5" L x 5" H x 15" D
31.8 cm L x 12.7cm H x
38.1cm D

Weight

15 lbs / 6.88 kg.

Power

110/220 VAC
(User Configurable)
50 Watts, 50/60 Hz.

Warranty

Instrument Coverage

Two-Years Parts and Labor.

Technical Support

Free telephone technical
support to original owner
of instrument.

Standard Accessories

Soft Vinyl Accessory Pouch;
Power Cord (Country Specific);
Squeeze Bulb Assembly Probe;
Dual Tube Assembly;
Serial Null-Modem Cable
FitTrack Software with Manual
FitTester 3000 Manual

Optional Respirator Fit Test Adapters

3M Company
AO Safety
Bullard
Bacou/Dalloz
Cairns
 Draeger
Glendale
International Safety Inst.
Interspiro
Kemira
Lab Safety
Mine Safety Appliances
Moldex
North Safety
Protech
Racal
Respiratory Systems, Inc.
Scott
Survivair
US Safety
Willson

Call for information on additional respirator manufacturers & models.

FitTrack™ - Software for Windows 2000 or above

Minimum Requirements

Digital Interfaces

One standard RS-232 port
required for interfacing with
FitTester 3000.

Monitor/Display

VGA or better.

Hard Disk

25 MB or greater recommended. Actual requirements depend on file sizes and record quantities.

Printer

For various reports a printer supported by your operating system is required.

Windows 2000 or above

Pentium 133 MHz or better,
64 MB RAM or greater.



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