

# ChargeIT

## HELIUM CHARGING STATION

- A NEW ERA IN LEAK DETECTION TECHNOLOGY -



Specialist in leak testing since 1973

# nolek

- Leak Testing -



# HELIUM CHARGING STATION

**ChargeIT** is a multifunctional system with a user friendly touch screen interface that allows for easy selection and configuration of the various unique functions shown below. The ChargeIT unit is the first one of its kind and solves problems that many customers have today with leak detection. The pioneer Nolek technology will start a new era in leak detection technology. Functions are:

- Proof Test
- Pressure Decay
- Evacuation (vacuum pump)
- Vacuum Decay
- Helium Charging and Mixing
- Helium Recovery Management
- Cleaning and Back Fill
- PC control and Communication



## Product description

A product that needs to be leak tested with the use of tracer gases e.g. Helium or Hydrogen, later to be either Sniffed or detected by a helium leak detector (LD) has one big challenge; the gas has to be charged correctly into the (entire) product.

➡ **ChargeIT charges the (entire) product correctly; this is its main purpose.**

Furthermore, before the LD is used one have to check that the product does not have a gross leak. Otherwise the charged gas leak out in the surrounding atmosphere and will increase the gas background. This makes it practically impossible to test for a long while since helium is all around.

➡ **The ChargeIT conducts this gross leak test both with a pressure and vacuum decay test.**

Then one has to be sure that the gas enters the product correctly and completely and that all parts of the product is filled with the gas with equal concentration. This is very difficult when the product volume is at atmospheric pressure. It is therefore very difficult to guarantee correct filling without a charging station, which means one is not checking the integrity of the whole product and it is not considered as a valid leak test.

➡ **ChargeIT pumps vacuum in the product before filling it, which guarantees complete filling in the entire product.**

The thickness of the walls of the product can cause delays with the spreading of gases. Furthermore, the capillaries can take time to fill, up to a couple of minutes. When an operator fills a product manually he will never know how long he has to fill before the gas is spread entirely in the product and if he waits long enough to see the leaks.

➡ **ChargeIT solves this with pumping vacuum and having set time parameters for charging.**

To test products with 100% helium concentration is quite expensive, actually most products (leak rates) does not require 100% helium concentration.

➡ **ChargeIT enables you to mix the helium to the level you need for the specific leak rates of the product. It is possible to mix down to 10% helium.**

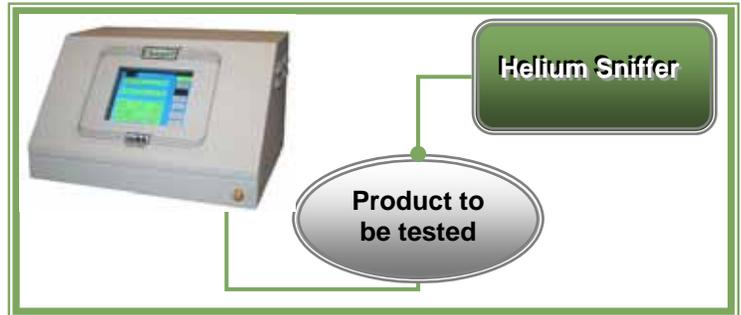
Generally companies have several different products that need to be tested which have different requirements and parameter settings. It is very time consuming to program these parameters every time one changes product to be tested.

➡ **The ChargeIT makes it possible to communicate with a PC and directly to a leak detector. This gives a lot of possibilities e.g. to program and save test parameters for all the different products, name the products. put the operator name. save test results etc.**

The ChargeIT was mainly developed to encompass helium leak detectors and/or sniffers which lack essential charging possibilities. The complete system turned out to do much more and today includes; Proof test, Pressure and Vacuum decay, helium mixing and recover capabilities, evacuation of test objects (vacuum pump), cleaning and back-fill and PC control and communication. The ChargeIT can be used both in sniffing and hard vacuum applications. Following system build-ups are possible:

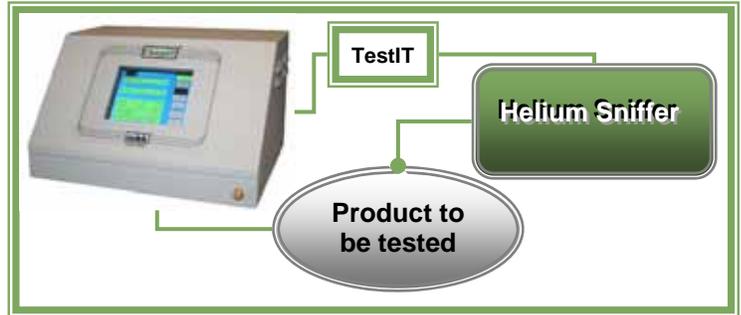
**1) Sniffer application without TestIT communication:**

The ChargeIT is connected to the test object and conduct all the steps including; Proof test, Gross leak test, evacuation, mixing and charging and recovery management. When ChargeIT indicates that it is ready, the operator uses the He Sniffer to detect helium outside the product. After completed test He is removed from the product by ChargeIT.



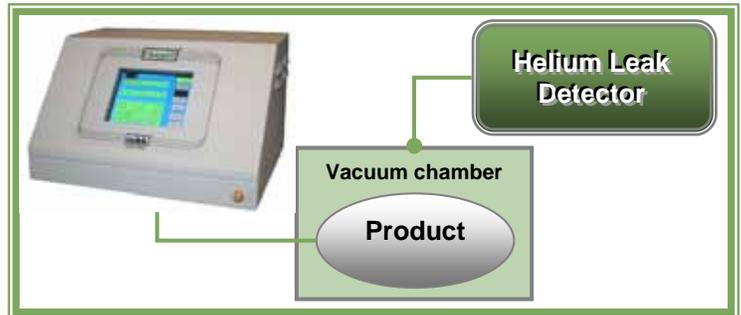
**2) Sniffer application with TestIT communication:**

As the example above (1) but with communication with Nolek's own developed PC software; TestIT. This enables the operator to program and save parametres for many different products, name the products in the program, from which he can pick from and save time and get a better overview of the tests. Test parametres can also be stored by TestIT.



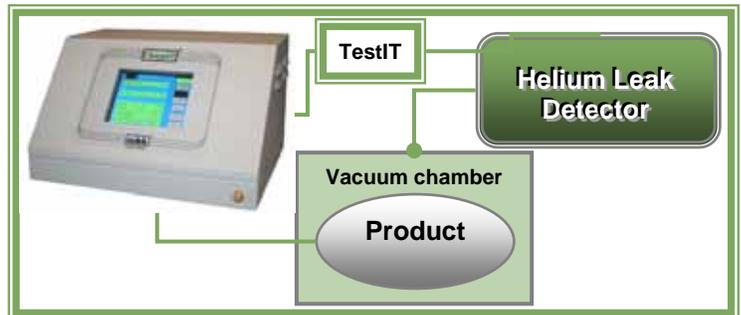
**3) Hard vacuum application without TestIT com.:**

The ChargeIT is connected to the test object which is placed in a vacuum chamber. It conducts all the steps including; Proof test, Gross leak test, evacuation, mixing and charging and recovery management. When ChargeIT indicates that it is ready, the operator start the He leak detector and it tries to detect helium inside the chamber. After completed test He is removed from the product by ChargeIT.



**4) Hard vacuum application with TestIT com.:**

As the example above (3) with added feature as example (2). The difference is that here the operator can set it so that when the ChargeIT is ready TestIT can start the He leak detector automatically. After the detector is finished ChargeIT removes the helium from the product and can recover it (option).



1

**Proof test**

The Proof Test function is a stress test during which the test part is pressurized to a specified positive pressure in relation to the part's standard operating condition.

2

**Pressure decay**

The Pressure Decay function is a check for gross leaks under positive pressure conditions. After the pressure specified in the Proof Test function is achieved, the test part is isolated and the internal pressure of the part is monitored for a specified period of time. If the pressure decay exceeds the specified limit an optional incremental pressure test is available to locate the leak(s). The test is done at incremental pressure levels using a 10% helium concentration.

3

**Evacuation (vacuum pump)**

The Evacuation function evacuates the test part to a specified vacuum level. Without evacuating the test part there are limitations to the helium concentration that can be achieved during the charging process. This function is also essential in assuring the proper charging of test parts with capillary channels.

4

**Vacuum decay**

The Vacuum Decay function is a check for gross leaks under vacuum conditions. After the vacuum level specified in the Evacuation function is achieved, the test part is isolated and the internal pressure of the part is monitored for a specified period of time. If the vacuum decay exceeds the specified limit an optional incremental pressure test is available to locate the leak(s). The test is done at incremental pressure levels using a 10% helium concentration.

5

**Helium Charging & Mixing**

The Helium Charging function charges the test part with helium. As a feature the charging function allows for the selection of the helium mixture that is charged into the test object. Although a certain mixture may be selected, the system will display the actual mixture charge into the test part depending on the selected evacuation level.

6

**Helium Recovery Management**

The Helium Recovery Management function controls and sets the parameters of the optional **RecoverIT** Helium Recovery System. With RecoverIT it is possible to recover up to 98% of the helium used depending on the allowed time for recovery.

7

**Cleaning and Backfill**

The Cleaning and Backfill function is a three step process by which the helium is removed from the part and can be back filled with the connected test gasses (commonly Air or N<sub>2</sub>).

**Pressure ranges:**

System is available with our without mixing capabilities in following three pressure ranges:

|          |                                 |
|----------|---------------------------------|
| Low –    | Up to 3 bar pressure (43 PSI)   |
| Normal – | Up to 16 bar pressure (230 PSI) |
| High –   | Up to 21 bar pressure (300 PSI) |

The **Factory options** are important to order together with the instrument. Some options are possible to add afterwards but not all. The **Aftermarket accessories** are options that are possible to add at any time, before or after an order.

Below is a description of the different options, answering three questions about each option: What is it? When is it required? And How to you use it? Please do not hesitate to ask if you need any further clarifications.

## A. NCHITVP VENTURI PUMP KIT



### What is it?

This is a small vacuum pump directly mounted on the instrument with maximum vacuum of -93kPa. There is also an extra valve inside the instrument that controls the pump.

### When is it required?

The pump is used to pump vacuum in the test object before it is filled with gas and the mixing sequence. After test the gas is pumped out with the same pump.

### How to use it?

It is directly mounted on the backside of the instrument, port 5 is air outlet with a restrictor to control the vacuum in small volumes.

## B. LARGE OR SPECIAL VOLUME CHARGING KIT



### What is it?

This is an adapter used to obtain separate pressure identification of the test object. As standard the pressure is measured in the same port as the charging.

### When is it required?

It is used with larger volumes to increase the sensitivity of test pressure and gas mixture measurement.

### How to use it?

The instrument has two (2) connections for the test object. Port 8 is used for the charging and port 2 is used for pressure identification.

The Aftermarket accessories can both be ordered at the time of instrument order, but can also be ordered after a purchase has been made.

Below is a description of the different options, answering three questions about each option: What is it? When it is it required? and How to use it? Please do not hesitate to ask if you need any further clarifications.

## 1. VACUUM PUMP CONNECTION KIT



### What is it?

It is a connection adapter to the vacuum pump (DN 25).

### When is it required?

It is used as a standard vacuum connection (DN 25) for connection to vacuum pumps.

### How to use it?

It is connected in the vacuum connection on port 3, on the backside of the instrument.

## 2. VACUUM PUMP KIT FOR LARGE VOLUMES



### What is it?

This is an external vacuum/ over pressure valve with larger flow that is controlled by the instrument.

### When is it required?

It is used at test of bigger volumes in need of shorter vacuum pumping time and if longer maintained vacuum is required.

### How to use it?

The valve is connected externally, directly between the vacuum pump and the test object. The control signal to the valve is connected to port 9 on the backside of the instrument.

## 3. REMOTE CONTROL BOX, WITH START AND RESET

Control box port, X →



### What is it?

This is an external remote control box for start, reset and abort.

### When is it required?

When user wants to start and reset the instrument externally, perhaps at a more ergonomic placement for the user. The box can be placed up to two meters from the instrument.

### How to use it?

Connect the control box with the included cable to port x (see pic left). It is then ready to be used.

## 4. SMALL VOLUME CHARGING KIT



### What is it?

This is two (2) uniquely designed needle valves that are used to reduce the flow of Helium and Nitrogen.

### When is it required?

It is required when testing small volumes to increase the sensitivity of test pressure and gas mixture.

### How to use it?

The two connection screws for the gas connection plate on the backside of the instrument are replaced by the two needle valves. Adjustment of the flow and the charging velocity are done according to a separate instruction.

## 5. INLET REGULATOR WITH FILTER



### What is it?

On the regulator a filter is placed to protect the instrument from unwanted pollution from the inlet air.

### When is it required?

It is used when there is a risk for contamination in the connected inlet air or if the pressure is higher than 6 bar.

### How to use it?

The regulator pressure is put to 5-6 bar.

## 6. TESTIT DATA COLLECTION SOFTWARE



### What is it?

This software enables the user to store test data, export it to Microsoft Access and/or Excel where they can view it, print it or save it. The software enables the use of a barcode reader.

### When is it required?

When the user wants to store data and use a barcode reader.

### How to use it?

See separate manual. Only available in English.

## 7. INLET REGULATOR W/O FILTER (FOR INLET N2/AIR)



### What is it?

This is a pressure regulator for setting the connection pressure with N2 or Air.

### When is it required?

It is used if the customer has not regulated the pressure to the instrument.

### How to use it?

The regulator is set to a pressure that is approximately 10% higher than the instruments working pressure.

## 8. INLET REGULATOR W/O FILTER (FOR HELIUM INLET)



### What is it?

The is a pressure regulator for setting the connection pressure with Helium.

### When is it required?

It is used if the customer has not regulated the pressure to the instrument.

### How to use it?

The regulator is set to a pressure according to instructions.

## 9. INSTRUMENT TRAINING



### What is it?

Training on the practical way of using the instrument.

### When is it required?

Recommended to all first time users or as a refreshment.

### How to use it?

Nolek offers a standard training course at the customer's location or at our facilities.

## 10. INSTALLATION



### What is it?

Installation of the instrument and a possible fixture.

### When is it required?

To all users who are not qualified to do this installation themselves.

### How to use it?

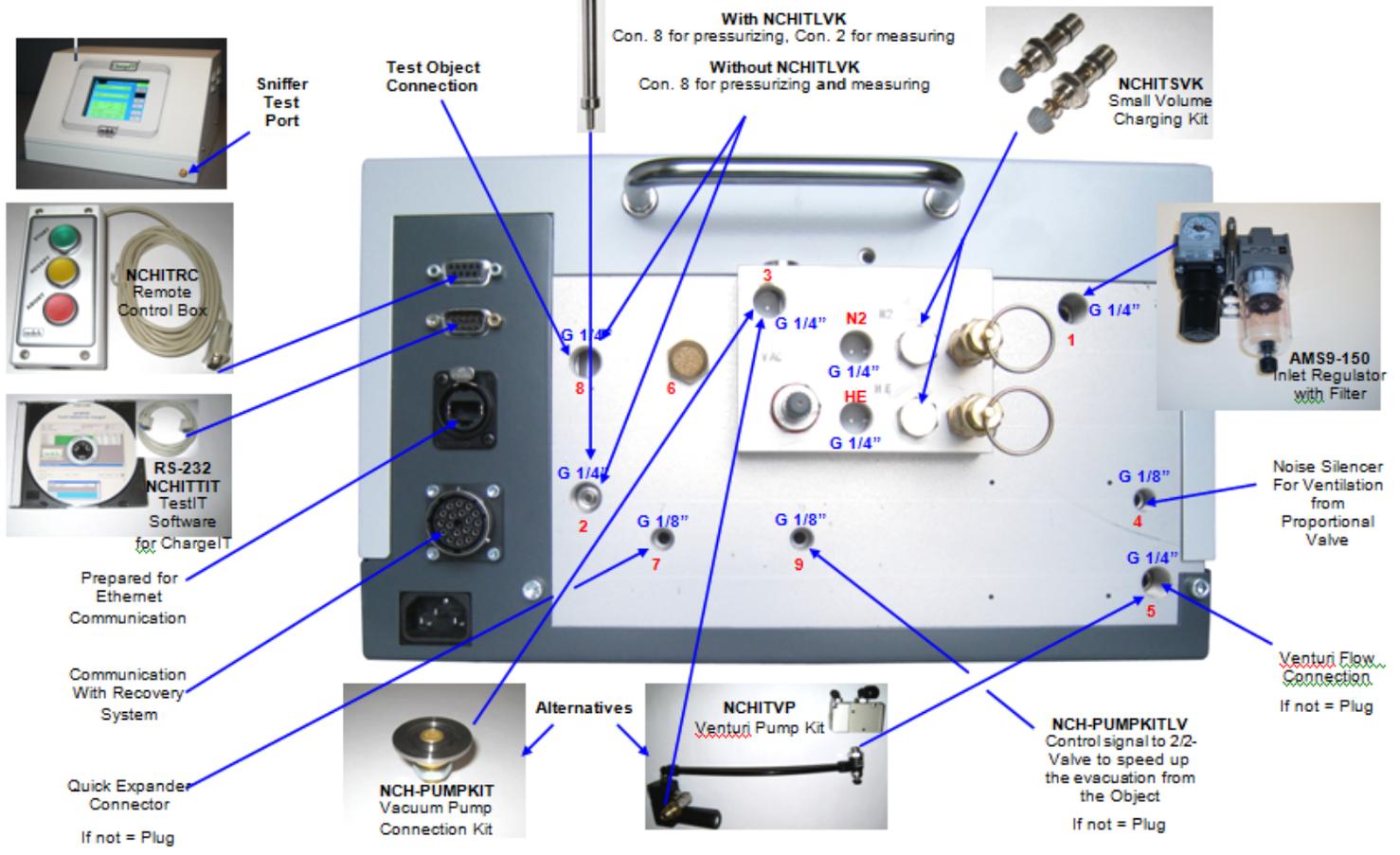
A Nolek service technician will come half a day and install the instrument and fixture and show the basics on how it is used. This is not as extensive as the Instrument Training.

### Standard features

- Touch screen for easy viewing and configuration
- Selectable universal pressure units
- Universal input power transformer: 100-240 VAC, 50-60 Hz
- Selectable operating language: Chinese, English, German, Korean, Spanish and Swedish
- Password protected parameter settings and function sequence
- Automatic pressure regulators for charging up to 21 bar (300 PSI)
- Quick connector valve port
- Controlled charging to assure the proper charging of a part with small capillaries
- Incremental pressure test to check a leaking test part
- Displays the actual helium mixture in the test part
- "Reference leak" to verify that the leak detector sniffer probe is functional
- Unique assembly design that minimizes the chance of internal leaks and allows for easy and quick maintenance

# CONNECTIONS:

## ChargeIT Connecting Instruction



**Without ChargeIT:**

- No vacuum before it is charged – one will not know if it is filled or not
- No gross leak test – Helium will destroy background, test will be impossible after.
- No evacuation of helium after test – will not know if helium is left in product to leak out afterwards and cause a increased background.

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