



**MARPOSS**  
TECNA

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**LEAK AND FLOW TESTING SOLUTIONS**

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## ABOUT US

**Since more than 35 years**, Tecna designs and produces **leak and flow testing solutions**.

Tecna was established in the early 80s in the “medical district” of Mirandola, Italy, along with the most important companies worldwide. Right from the start, Tecna designs electronics for industrial process control, specializing in production of leak testing equipment.

This is a relevant element, useful to guarantee quality in all production cycles, either automated or manual, in which it must be verified that the final product complies with specifications, after moulding, die-casting, welding, gluing and assembly.

Our several years of experience let us satisfy the most various requirements in all industrial segments. We work for medical, mechanical, automotive and home appliance sector, in a global market where production quality has become a critical key factor.

Starting from October 2016, Tecna becomes part of **Marposs group**.

Marposs, founded in 1952, is a leading company in measurement, inspection and process control on machine tools, in the most important industrial sectors. The group is present in **34 countries** with its own **sales and support facilities**, and more than 3700 employees.



With the entrance into the Marposs group, Tecna can count on the **technical and commercial support** of Marposs, with a constant and close presence anywhere in the world.

We are very proud to know that our solutions let an ever-growing number of users reach quality standards.

# FIELDS OF APPLICATION

Tecna has performed leak and flow tests over a several number of products in every industrial field. Many years of experience permit to satisfy almost every requirements in all industrial segments. We work for medical, mechanical, automotive, hydraulics and home appliance sector, other than aerospace, electronic and 3C sector, in a global market where production quality has become a critical key factor.



AUTOMOTIVE



MEDICAL AND  
PHARMACEUTICAL



APPLIANCES



MECHANICS



HYDRAULICS  
AND GAS



ELECTRIC AND  
BATTERY



COMPUTER, CON-  
SUMER ELECTRO-  
NICS, COMMUNI-  
CATION



AEROSPACE



## AUTOMOTIVE

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It involves everything related to the production of motor vehicles, and is one of the areas where quality and reliability in the tests are needed most. Typical tested products can be gearboxes, cylinder head valves, brake circuits, tanks.

## MEDICAL AND PHARMACEUTICAL

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The products range from "simple" disposable kits to complex equipment for dialysis or for assisted breathing. Bags for liquids and bottles are common to the pharmaceutical and cosmetic sector where, in addition to the typical leak or flow tests, also volume and resistance (burst tests) are checked.

## APPLIANCES

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Concerning common, daily-used products, we can mention coffee makers as well as washing machines and dishwashers, irons, pressure washers. Even in this case, the test pressure and the leakage limits are set depending on the materials involved and the specific application.

## MECHANICS

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It is the most generic sector in which we can consider all the products which require processing such as molding, casting, welding, gluing or assembly demanding a subsequent leak test. The materials involved are often cast iron, aluminum or iron alloys then typically rigid and resistant. Tests are normally carried out at low or medium pressures (1-6 bar).

## HYDRAULICS AND GAS

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Starting from the classic stove, which is tested for leaks as well as for flow rate of any single "cooker", passing through classic two-position valve, filters, rather than valves for boilers and tanks in general. Low pressures and selective leak limits are typical of this sector.

## ELECTRIC AND BATTERY

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In order to meet the high-quality requirements for an electrical device, both in mobile and stationary use, measurement and testing technology must have applied systematically in the production process. The electric industry has also recently extended to the automotive technology with hybrid and electric vehicles, where tightness is a basic requirements that must be ensured.

## COMPUTER, CONSUMER ELECTRONICS, COMMUNICATION

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Consumer electronics include a broad set of devices that provide several functionalities both for domestic and individual uses. The term firstly refers to the electronic devices which are set up or used almost in every house. However, they now include mobile and computing devices too, that can be carried outside the house (such as smartphones and tablets).

## AEROSPACE

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The aerospace industry requires up to millions of individuals parts for flight vehicles, that need to be tested. Pressurized and sealed aircraft cannot leak on orbit, so fluid and gas leakage rates requirements have to be properly established.

# OUR STRENGTHS



## WORLDWIDE NETWORK

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Tecna can count on the technical and commercial support of Marposs, with a constant and close presence anywhere in the world.



## PERIODICAL CALIBRATION

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Each equipment is accompanied by a calibration report, issued by the manufacturer. According to ISO9001 requirements, calibration must be verified at specified intervals against test masters. Tecna offers a complete scheduled calibration service, thanks to skilled personnel and certified instruments.



## TECHNICAL KNOW-HOW

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35 years experience knowledge to solve testing requirements and to respond to the global market needs. We strive for quality in order to constantly improve products and services, through technological research and innovation.



## WE ARE ISO9001 CERTIFIED

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We are certified to guarantee the utmost care we always give to each and every aspect of our business. We continuously improve our performance and the quality of our products and service. An effective management of human resources, infrastructures and working environment, helps to implement the strategies and achieve the targets required by the market.



## ASSISTANCE AND TRAINING

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Tecna assures an expert and fast assistance service on its equipment.

We offer pre and after sales consultancy service, technical support for the installation, commissioning and set-up.



## SOFTWARE MANAGERS AND DATA COLLECTION

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Dedicated software programs make possible to connect a single equipment, or a network of devices. They also allow to program test and operational parameters, collect data, save the performed results, implement an information system to document testing and operational procedures and record history for each product.



## TURNKEY SYSTEMS

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We provide tailor-made solutions to answer evermore specific and selective needs.

We deal with every single request to study a solution that fully satisfies quality specifications.



# OUR PRODUCTS



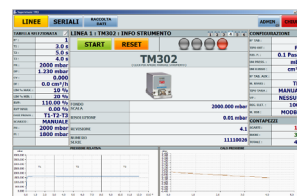
PROVASET T3L



DOSASET



DELTA TM3



SOFTWARE MANAGERS



PROVASET T2



CALIBRATOR AND  
LEAK SIMULATOR



LEAK MASTER



# PROVASET T3L

T3L is the ideal leak tester for every industrial production sector and quality lab, where maximum flexibility and accuracy are basic requirements.

## FEATURES

- Full color 7" LCD display - graphic test view
- Touchscreen with user friendly interface
- 300 test programs
- 300 test sequences
- Digital I/O interfaces for PLCs, USB for PC and serial lines RS232/RS485, Profinet, Profibus
- Test data storage on USB pen drive or LAN/Ethernet
- Real-time six-sigma statistical analysis
- Software Manager to collect and manage the tests data

## T3LP and T3LD

### Leak tests by absolute pressure decay or differential method

- Leak test up to 30 bar and in vacuum
- Resolution up to 0.1 Pa
- Calculation and visualization of the testing leakage in  $\text{cm}^3/\text{min}$  or  $\text{cm}^3/\text{h}$
- Electronic regulation (adjustment) of test pressure
- Specific programs for leak, volume, obstruction and burst tests, safety valves opening check also in sequential mode
- "In bell" tests for interception on sealed products
- Double channel models available for tests on multi-chamber products

## T3LPF

### Flow tests and leak tests by absolute pressure decay

- Flow measurement range from  $50 \text{ cm}^3/\text{min}$  to  $300 \text{ l/min}$
- Resolution: up to  $0.01 \text{ cm}^3/\text{min}$
- Leak test up to 6 bar - resolution: up to 0.1 Pa
- Peak pressure measurement for tests on safety valves

## T3LPQ

### Leak tests with direct measure of the leak flow rate

- Leak measurement up to  $100 \text{ cm}^3/\text{min}$
- Resolution up to  $0.01 \text{ cm}^3/\text{min}$
- Electronic regulation of the test pressure from 5 mbar to 2 bar
- Optimal pressure balance for tests that do not depend on the product volume



# DELTA TM3

## For the Automation



### TM3PD

#### Leak test by absolute and differential pressure decay

- Leak test up to 30 bar
- Resolution up to 0.1 Pa differential fullscale from 10 to 50 mbar
- Calculation of testing leakage in  $\text{cm}^3/\text{min}$  or  $\text{cm}^3/\text{h}$
- Leak test by differential or absolute pressure decay
- External proportional valve for electronic pressure regulation

### TM3P

#### Leak tests by absolute pressure decay

- Leak test up to 20 bar and in vacuum
- Resolution up to 0.1 Pa
- Calculation of testing leakage in  $\text{cm}^3/\text{min}$  or  $\text{cm}^3/\text{h}$
- Digital outputs to control external valves, exhaust valves and vacuum generator
- Management of external electronic pressure regulator

### TM3F / TM3PF and TM3PQ

#### Direct flow measurement for leak and/or flow rate testing

- Flow measurement range from  $25 \text{ cm}^3/\text{min}$  to  $160 \text{ l/min}$ , resolution up to  $0.01 \text{ cm}^3/\text{min}$
- Extremely fast tests, also in less than 1 second
- Different test methods:
  - measurement of pressure and flow in air
  - leak tests with direct measure of leak flow rate
  - safety valves opening check

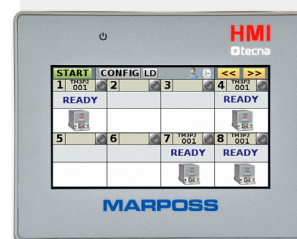
TM3 is designed to be used for leak or air flow tests on automated plants and turntables. Its small sizes allow a really close installation to the testing product; this helps to reduce testing times and enhances sensitivity.

### FEATURES

- Pneumatic and electronics fully integrated
- Up to 300 testing tables
- Digital I/O interfaces for PLC connection; USB, RS485 for programming and for data collection
- Software to collect and manage the tests data for PC
- Libraries available for PLC, HMI and Lab VIEW™ (National Instruments)

### HMI Terminal

HMI terminal can be provided with TM3 products in order to collect and manage data. It has several communication interfaces, two serial lines RS485/232, a USB host to connect an external device (e.g. barcode or printer) and an Ethernet interface. 7" touchscreen display, with its own free software, can handle up to 8 TM3 modules





# PROVASET T2

T2 is a reliable and compact equipment, especially suitable for leak tests on products with small and medium volumes.

Easy to use, it is the right instrument for the medical sector and clean-rooms.

## FEATURES

- Measurement by absolute pressure decay
- Leak tests up to 6 bar
- Resolution up to 1 Pa
- 3.5" colour LCD touchscreen display
- Up to 100 testing tables
- Digital I/O interfaces for the connection to a PLC
- RS485/232 and USB communication interfaces for the connection to a PC
- Test recording is available via Ethernet and through pen drive

## T2 EP option for obstruction test in continuous

The equipment works into a continuous mode, checking whether each small tube under test is free of occlusions. The test starts immediately and automatically after the tube is easily inserted by the operator into the test port.

Test result is immediately verified thanks to the green and red LEDs and an audible alarm.

Provaset T2 is a compact, versatile and extremely reliable instrument that applies the latest electronic and pneumatic technologies to offer the best performances.

The new Provaset T2 updates the previous Provaset 2P model, but it maintains the program and connection compatibilities. This instrument is designed for manual use on bench in limited areas, but it could be integrated on automatic systems managed by PLC.

Provaset T2 is able to communicate with server, PC, PLC, through Ethernet, USB host/slave and RS232/RS485 serial line interfaces, with Modbus RTU, and CSV. The test data collection is possible on USB and via Ethernet.

Provaset T2 is available with 2 bar or 6 bar full scale range models, with 1 Pa resolution on pressure reading. It is also available with a Staebli connector to relate it to a Leak Master.

The test pressure can be managed by a manual pressure regulator.

## AV10 - PNEUMATIC MODULE WITH AUTOMATIC START AND RELEASE FOR BLOOD LINES LEAK TESTING

The AV10 pneumatic module is supplied as an external accessory to be connected to air leak testing equipment.

Designed for blood lines leak testing in air, this version is equipped with a mechanism that automatically starts (start at the leak tester) the test when the operator connects the blood line, and automatically releases it at the end of the test if the test result is positive (good piece). The AV10 module can be used as a pneumatic connection interface between Tecna testing equipment and blood lines.

The internal valves of the AV10 module are used to advance or retract the release mechanism and are electrically controlled from the test equipment.

# LTC

## Calibrator and Leak Simulator

The LTC Leak Tester Control products line is designed to control the efficiency of the equipment used for leak and flow testing. They can also be used as pressure calibrators to verify and certify the equipment measurements.

Moreover, they can periodically be used as leak simulators to check whether the testing equipment can recognize and reject a leak with a given value in  $\text{cm}^3/\text{min}$  or  $\text{cm}^3/\text{h}$  on the tested objects.

Through LTC instruments, users can document and certify the performances of their testing equipment according to ISO9001.

LTC instruments help the user to choose more easily which testing parameters have to be programmed on the testing instruments.

Accessories included:

- Universal power supply with USB output, 5 Vcc, 1A
- USB cable with connectors USB type A and micro-USB
- USB pen drive with dedicated program to update the application software
- Carrying case
- Staubli® quick connector RBE03 to the leak tester
- "T" junction with Staubli® connector



LTC is the universal instrument for the periodical check and calibration of the testing equipment. Moreover, the integrated leak simulator allows to exactly verify the accuracy of the testing system.

## FEATURES

- Pressure and flow measurement
  - pressure up to 10 bar, resolution up to 0.1 Pa
  - flow up to  $950 \text{ cm}^3/\text{min}$ , resolution up to  $0.01 \text{ cm}^3/\text{min}$
  - vacuum full scales are available
- Full color 3.5" LCD display - real time graphs of the testing curves
- Touchscreen with user friendly interface
- High precision micro-valve for the leak simulation
- USB interface for PC connection
- Test data storage on USB pen drive
- Power supply with rechargeable lithium battery

# LEAK MASTER

Leak Masters are the ideal operational tools to check the testing systems. Each Leak Master guarantees a certified leak rate at a precisely defined testing pressure. Leak Masters have a convenient Staubli® connection and are available in a wide range of values.

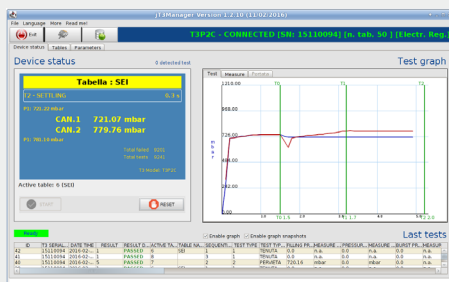
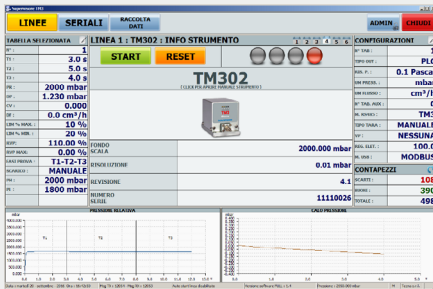


# SOFTWARE MANAGERS

## Test Data Collection and Process Statistical Analysis

## SOFTWARE MANAGER

- COMMUNICATION: through USB cable (only for TM3), serial line RS485 or through Ethernet (from the operator panel HMI); protocol: Modbus RTU.
- STATUS: visualization of each line functioning status.
- TEST/OPERATIONAL PARAMETERS: editing, backup and resetting on the equipment of the parameters saved on hard disk; it is possible to directly modify the parameters (only for TM3 and Dosaset).
- PROGRAMMABLE TEST SEQUENCE: it is possible to submit a table list to a module TM3 and to sequentially perform the tests.
- TEST DATA: test data saving and counter, test data searching by date, or by free filter (SQLite, MYSQL). It is possible to export statistics and data in CSV format.
- GRAPHS: graphs visualization in real-time, exportation and saving of the graph in a CSV format (only for TM3).
- BARCODE, QR CODE AND PRINTER: by using a barcode/QRcode reader it is possible to associate the serial number of the component, the batch code and the operator code to each test. In addition, each different product can be associated with a different test table: in this way, the equipment can directly select the correct parameters. At the end of the test, the printer will release a label with the test data, even in multiple copies.
- ADMIN: users-management and handling of the respective access rules to the software functions, e.g. test program creation and management.
- CALIBRATION: calibration procedure for TM3 modules, including the equipment calibration steps saving in HTML.





## **jT3 MANAGER**

Software for PC to manage Provaset T3 and collect data.

- Communication with a Provaset T3 equipment through USB or serial cable or through an Ethernet interface
- Modification of test parameters, backup and reset
- Real-time visualization of the equipment status
- Test data and results collection
- Export data in a file format compatible with Microsoft Excel
- Automatic creation of PDF report
- Java version 1.8 or higher is required

## **jSERVER**

Network system to collect Provaset T3, T3L and T2 tests data.

THE SYSTEM INCLUDES

- A server service that receives the tests data directly from the Provaset T3, T3L and T2
- A client software that can be installed on multiple PCs and that can visualize, search and export the saved data.
- Java version 1.8 or higher is required
- jServer can be expanded with optional modules. It can support data traceability, storage and electronic records, e.g. NET CFR(21) Part11, and customized applications to interface with the company ERP system.

## **jSERVER AND SUPERVISOR CAN BE EXPANDED WITH OPTIONAL MODULES**

They can support data traceability, storage and electronic records, e.g. NET CFR(21) Part11, and customized applications to interface with the company ERP system.

## **SWLAB TECNA DRIVER LABVIEW**

SWLAB Tecna Driver Labview Labview driver for remote management of T3L, T2, TM3, T3 product lines with Modbus protocol in Labview development environment.

The purpose of these drivers is to allow the customer to reduce development times in the implementation of software systems connected to Tecna leak tester.

They are therefore intended as a starting point and help for the production of a LabView interface software for our instruments.

# **OPTIONAL ACCESSORIES**

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- Printer, barcode and QRcode reader for tests traceability
- Remote controller
- 3-colours indicator light with alarm
- Pressure regulator
- Air filter
- External vacuum generator
- External valve for volume control and "in bell" tests
- External exhaust device
- Plates/holders for destructive testing of medical plastic bags



# DOSASET

## Solvent Dispenser

Dosaset is a dispenser for cyclohexanone or similar solvents, used for manual bonding of plastic medical equipment, tubes and joints.

Dosaset does not use porous elements or capillary holes or fluid pumps: its adapters are directly dipped in the solvent, reducing the clogging or obstruction problems.

Dosaset employs a new patented method, based on a rotating and vibrating system: the dispensing adapters are fitted to the circumference of a wheel turning inside a chamber where the solvent level is continuously controlled. The solvent is kept inside a sealed 250 ml external bottle and is automatically loaded from the bottle to the dispenser by a pneumatic micro-pump.

### DISPENSING WHEEL

The dispensing wheel supports the adapters for the tubes to be bonded. The adapters are removable cartridges that can be replaced by the operator without opening the dispenser body. These are locked by an inner spring and/or by a screw.

### CARTRIDGES FOR OUTER DIAMETER

Maximum length: 10 mm.

Standard length: 4 – 6 – 8 – 10 mm

Maximum available external diameter: 12.0 mm

Standard external diameters: 4.1 - 5.5 - 6.8 - 9.54 - 12.0 mm

External diameters upon request: range 4.1 ÷ 12.0 mm

### CARTRIDGES FOR INNER DIAMETER

Maximum length: 10 mm.

Standard internal available diameter: 3.0 mm

Internal diameters on request: range 3.0 ÷ 8.0 mm

### CARTRIDGES FOR INNER/OUTER DIAMETER

The cartridge includes the sponge cylinder, with a length on choice and the male pin. Standard internal diameter: 3.0 mm, length 8 mm. Standard external diameter: 4.1 mm, length 4 mm

### SOLVENT BOTTLE

The fresh solvent is contained in a small bottle with a graduated volume of 250 cc. When the pump inputs air in the bottle, the solvent is automatically pushed upwards through the output tube and it is loaded into the dispensing chamber

RS485 communication interface for data transmission.

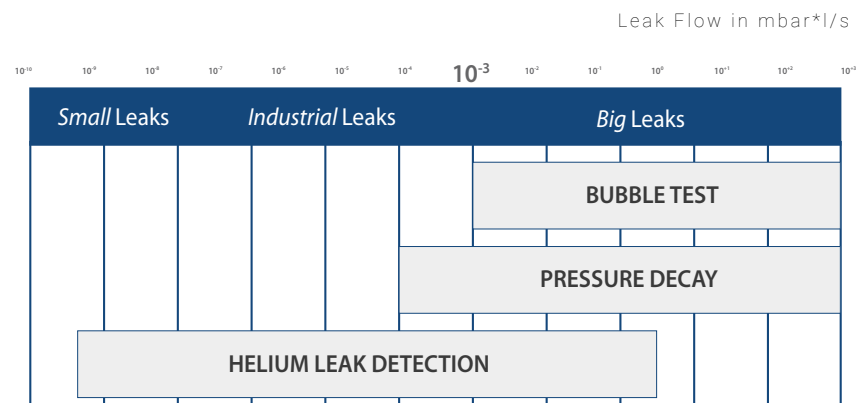
### PLC INTERFACE FOR AUTOMATION

Optocoupled I/O for automatic systems, with 4 in and 4 out.



## WHY AIR LEAK TEST?

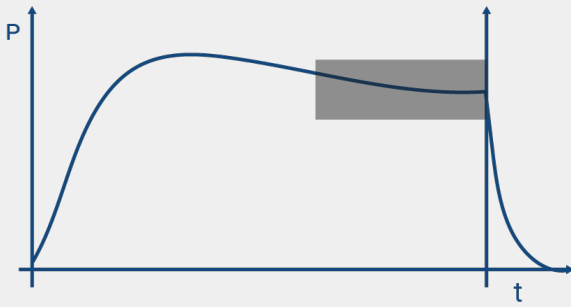
- Guarantee compliance with the quality criteria in the R&D production and QC processes.
- Are easy to be performed and do not need big investment.
- Are fast, accurate and clean.
- Equipment are small, can be placed close to the product under test.
- Resolution and performances are suitable for almost every manufacturing industries.
- Can be managed manually by the operator or automatically by the PLC.
- All tests data can be collected and managed by dedicated software manager.



## LEAK RATE CONVERSION BETWEEN PRESSURE DROP AND FLOW RATE (Q)

For a fixed pressure drop  $\Delta P$ , the leak rate  $Q$  does not depend on the test pressure, which is not mentioned in the formulas. If the test pressure increases, the pressure drop  $\Delta P$  and the leak rate increases too. Therefore, it is always necessary to indicate the leak rate  $Q$  together with the test pressure. For example: 2.41 cc/min at 2 bar.

## LEAK TESTS BY DIFFERENTIAL METHOD



### ADVANTAGES:

- High Precision
- High Resolution
- Fast Test
- Repeatability

The differential pressure method is to compare the product under test to a reference sample. During the test, both samples are filled to the same pressure. The test cycle is divided into three phases:

- FILLING (time T1): the product being tested is subject to the programmed rated test pressure.
- SETTLING (time T2): the equipment waits for the pressure to settle in the product being tested.
- LEAK MEASUREMENT (time T3): it is measured by the difference in pressure between the test piece and the reference sample: a pressure drop inside the test piece, caused by a leak, makes the pressure difference measured increase.

The system accuracy is about 0.1 cm<sup>3</sup>/min. It is preferable to use as master piece, a similar object to the tested one in volume and features; in this case, the settling of the objects will be very similar.

It will be possible to obtain a significant settling time reduction, measuring the leak for comparison between the two parts, which behave in a very similar way.

## INDIRECT PRESSURE MEASUREMENT IN SEALED BELL

### ADVANTAGES:

- High Pressure
- Fast Test
- High Sensitivity
- Sealed Products

The indirect pressure variation method (also known as interception method) permits the leak measurement of an object inserted inside a test chamber, by measuring the pressure variation in the chamber.

This method is used to perform test on sealed components or to test at high pressure where safety needs to be assured. The system allows a sensitivity 10 times higher compared to the traditional decay pressure methods, allows tests at very high pressures and is very fast compared to other methods.

During the settling time it is performed a volumetric test, to protect the tested object from large leaks and volumetric defects, that could impair the test result.



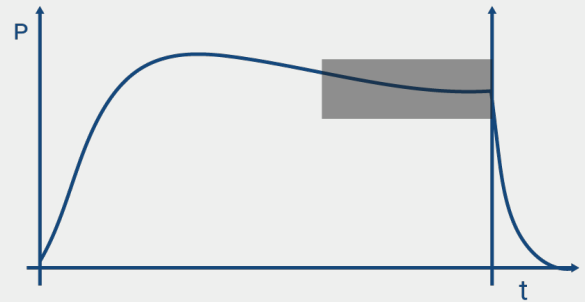
# LEAK TESTS BY ABSOLUTE PRESSURE DECAY

The tested product is filled to the programmed test pressure and after a settling period, pressure variation is measured over the testing time; this method can be also applied under negative pressure. The test cycle is divided into three phases:

- **FILLING (time T1):** the test equipment fills the product being tested to the programmed rated test pressure, with an electronic controlled pneumatic circuit, then the air flow is stopped.
- **SETTLING (time T2):** the equipment waits for the pressure to settle in the product being tested, checking that the pressure is inside the specified tolerance range.
- **LEAK MEASUREMENT (time T3):** the pressure drop is measured in the product being tested; the test is passed if the drop value is lower than the specified limit, otherwise it is failed.

During the leak measure, the pressure drop is measured with reference to the end of the settling phase.

The test is considered to be passed if the pressure drop in the tested product is lower than the specified limit. Otherwise, it is considered to be failed whenever it is higher.



## ADVANTAGES:

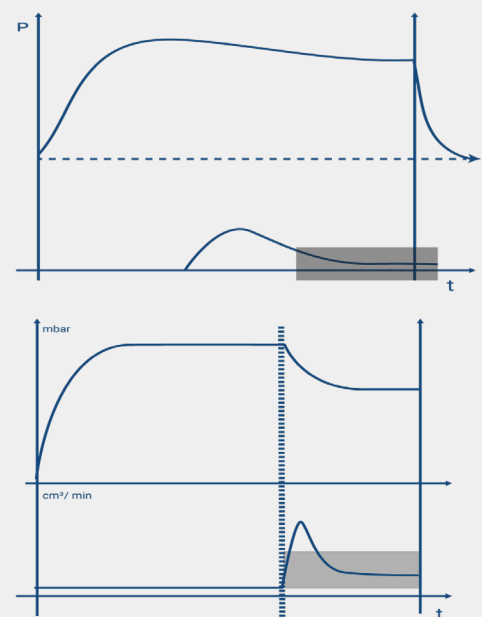
- Affordability
- Reliability
- Wide-spread

# LEAK TESTS WITH DIRECT MEASURE OF THE LEAK FLOW RATE

By using an internal volume, the instrument can measure the leak rate and also control the volume of the tested product. It is used for small volumes.

## ADVANTAGES:

- Test <1 second
- Preregulation
- High sensitivity



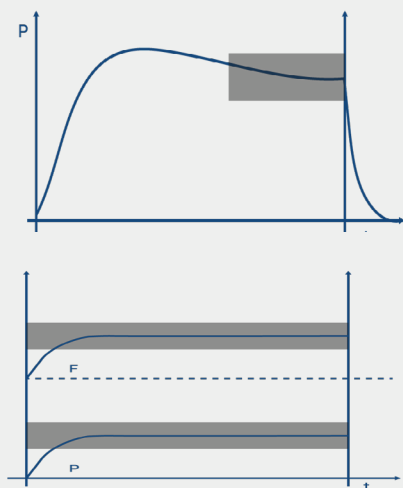
## MEASURING THE LEAKAGE FLOW

### ADVANTAGES:

- Flexibility
- Test time reduction

At the end of the phases of filling and settling, the pressure is maintained constant by the internal electronic controller. The flow that originates therefore corresponds to the flow required to maintain the product under test at the programmed test pressure and thus corresponds to the leakage flow.

## DIRECT MEASUREMENT OF FLOW



The instrument directly controls and measures pressure and flow rate on the product being tested. An electronic pressure regulator assures constant test conditions. The direct flow rate method with a “mass flow” sensor is very effective and flexible, and it allows a sensitive reduction of the test time.

### ADVANTAGES:

- Direct Measurement
- Fast Test
- High Sensitivity

## TESTING METHODS AND SPECIAL FUNCTIONS

- VOLUMETRIC TEST (e.g. sealed parts)
- 2 CHAMBERS LEAK TEST (e.g. hot and cold faucet chambers; oil, water, gasoline engine chambers)
- BLOCKAGE TEST
- MULTIPLE OBSTRUCTION TEST
- BURST TEST (e.g. medical disposable bags)
- CHECK-VALVES OPENING TEST
- You can find the answer to your requirements thanks to these and other testing functions.





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