



**MARPOSS**  
TECNA

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**LEAK AND FLOW TESTING INSTRUMENTS**

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## ABOUT US

**Since more than 40 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. 3C sector, in a global market where production quality has become a critical key factor. 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**.



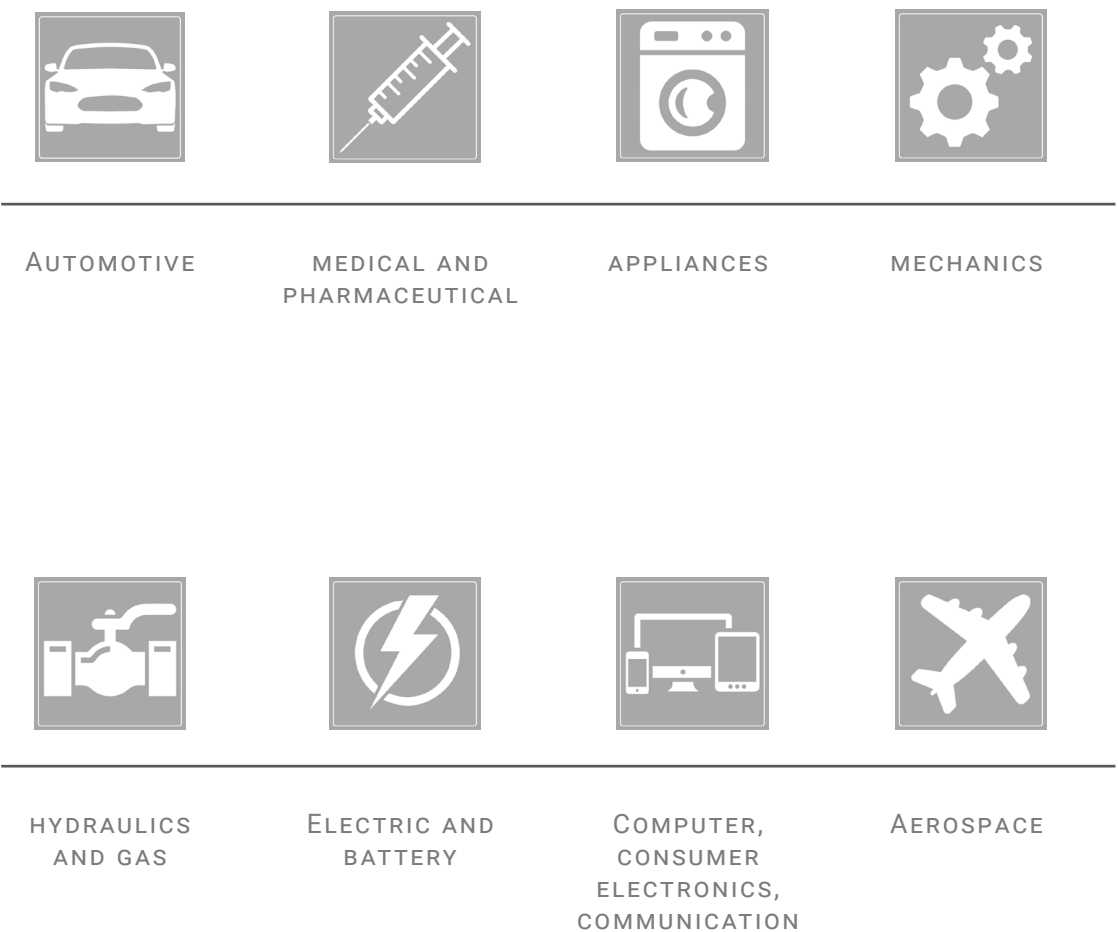
Marposs, founded in 1952, is a leading company in measurement, inspection and process control on machine tools, in the most important industrial sectors. The group is present in **34 countries** with its own **sales and support facilities**, and more than 3500 employees.

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.



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

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

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

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

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

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

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

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

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

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



## PERIODICAL CALIBRATION

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

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

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

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

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.



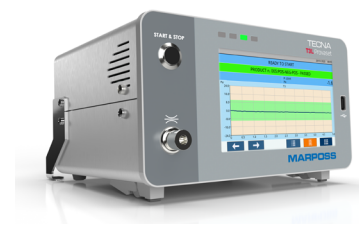
## TURNKEY SYSTEMS

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



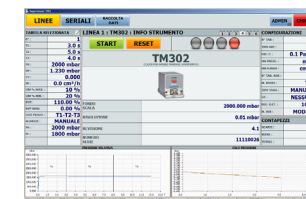
T3L



DOSASET



TM3



SOFTWARE MANAGERS



T2



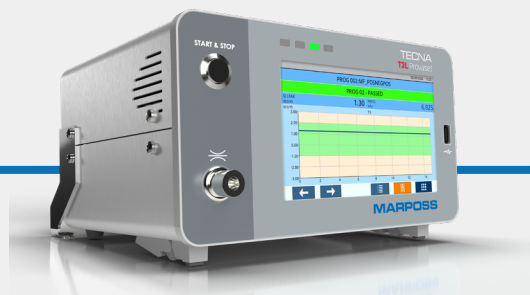
2SEAL



CALIBRATOR AND  
LEAK SIMULATOR

LEAK MASTER





## T3L

### T3LP and T3LD

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

- Leak test up to 40 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 for tests on multi-chamber products

### T3LPF

#### Flow and leak tests combined together

- Flow measurement range from 20 l/min to 300 l/min, res. up to 0.01  $\text{cm}^3/\text{min}$ ; to test "open" components which should grant a certain fluid passage / flow rate.
- Leak test up to 6 bar, resolution: up to 0.1 Pa; to test components and verify their tightness.

### T3LPQ

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

- Leak measurement  $\geq 2 \text{ cm}^3/\text{min}$  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 1 bar, 2 bar depending on test conditions
- Optimal pressure balance for tests that do not depend on the product volume ( $\geq 10 \text{ cc}$  to 2 liters).

### T3LMF

#### Leak tests based on high performance mass-flow method

- Small leaks on large volumes
- Tests in positive and negative pressure
- Flow measurement range in the range of vacuum and 6 bar,  $\pm 50 \text{ cm}^3/\text{min}$
- Resolution 0.01  $\text{cm}^3/\text{min}$

## 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, LAN/Ethernet or serial lines
- Software Manager to collect and manage the tests data

## TM3

### For the Automation

### TM3PD

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

- Leak test up to 40 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  $\text{cm}^3/\text{h}$
- External proportional valve for electronic pressure regulation
- Leak test by differential or absolute pressure decay

### 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

### 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 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.



## T2

For medical industry and labs

Very compact dimensions and unpainted anodized aluminium case make it suitable for use in controlled environment such as clean room and laboratories

Programming backward compatibility with Provaset 2P

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

The new 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.

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.

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

The test pressure is managed by the manual pressure regulator.

### AV10 - 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.

## 2SEAL

For mechanical industry

New materials and geometries  
for maximum robustness and durability

Extra keyboard designed for heavy-duty use  
in industrial environments

Programming backward compatibility with Provaset 2P

2SEAL is the new Tecna Marposs leak testing instrument.

This leak tester combines the experience in the design and production of air testing instrumentation and the knowledge of the production needs of the "heavy" industry.

In particular, the robustness of the painted steel case makes it resistant to use in mechanical production environments and its integrated fixing system allows it to be installed on manual or automatic benches.

The electronic is equipped with a touch screen which makes programming the instrument parameters and test tables, quick and easy. The essential and robust keyboard simplifies the daily operation for its users.

A reliable and precise pressure regulator completes the most important features of 2SEAL.

2SEAL is designed for manual bench use but can easily be integrated into systems managed by PLC.

### ACCESSORIES

- Remote control keypad
- 3-colours indicator light with loud sound alert
- Air filters
- "T" fitting, external, with Staubli® connector
- Certificated Leak Master to be inserted in the Staubli® connector on "T" fitting
- Dust caps included



### FEATURES

- Leak test up to 6 bar
- Resolution 1 Pa (0.01 mbar)
- 3.5" colour LCD display, touch screen
- Extra keyboard
- Ethernet and USB
- Backward compatibility of programming with Provaset 2P

### FEATURES

- Measurement by absolute pressure decay
- Leak tests up to 6 bar
- Resolution 1 Pa
- 3.5" colour LCD touchscreen display
- Up to 100 testing tables
- Tests log on USB data collection is available
- 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

#### 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.





## LTC

### Calibrator and Leak Simulator

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 40 bar, resolution up to 0.1 Pa
  - flow up to 950 cm<sup>3</sup>/min, resolution up to 0.01 cm<sup>3</sup>/min
  - vacuum full scales are available
- Environment Temperature, Humidity and Digital chronometer visualization and calibration through external certificates.
- 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.

## DOSASET

### Solvent Dispenser



#### 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.

#### ACTIVATION BY PEDAL

Dosaset can be configured for the activation by an external pedal.

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.

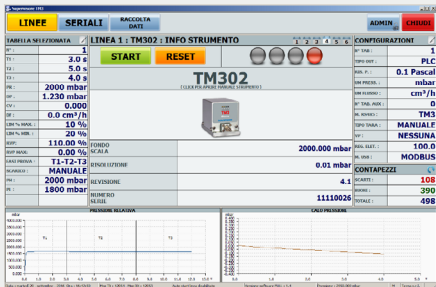
Dosaset employs a new patented method, based on a rotating and vibrating system: the dispensing adapters are fitted to the circumference of a wheel turning inside a chamber where the solvent level is continuously controlled. The solvent is kept inside a sealed 250 ml external bottle and is automatically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

# SWM SOFTWARE MANAGERS

## Test Data Collection and Process Statistical Analysis

### SOFTWARE MANAGER

- **COMMUNICATION:** through USB cable (for TM3), serial line RS485 or through Ethernet via Modbus TCP/IP (from the operator panel HMI).
- **PLC:** Software Manager can communicate with a PLC via Modbus TCP/IP on Ethernet and via Modbus RTU on the RS485 serial line.
- **WEBSERVER:** the graphic interface allows to remotely view, via a web browser, the status of the supervisor.
- **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).
- **TEST SEQUENCE:** it is possible to select a test recipe list to be performed sequentially (TM3P).
- **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 and USER:** users-management and handling of the respective access rules to the software functions, e.g. test program creation and management.
- **MAINTENANCE COUNTERS:** a summary table including all the configuration parameters and the current number of enabled "maintenance" counters.
- **CALIBRATION:** calibration procedure for TM3 modules, including the equipment calibration steps saving in HTML.



### jSERVER

Network system to collect T3, T3L, T2, 2SEAL tests data.

#### THE SYSTEM INCLUDES

- A server service that receives the tests data directly from T3, T3L, T2, 2SEAL.
- A client software that can be installed on multiple PCs and that can visualize, search, export the saved data and check the instruments status in real time.
- jServer can be expanded with optional modules. It can support data traceability, storage and electronic records, or customized applications to interface with the company ERP system.

### NET CFR on jSERVER AND SOFTWARE MANAGER

- define users with password.
- define a database of the users, thorough password or barcode.
- associate the instrument operator with different reserved access to the instrument policy.  
(example : can do a test start but can't change parameters).
- set a timeout on the autentications.
- track on a database main operations executed by each operator on the instrument and each user on the SWM.
- visualize/export the data about the tests and the audit trail.

## INSTRUMENTS OPTIONAL ACCESSORIES

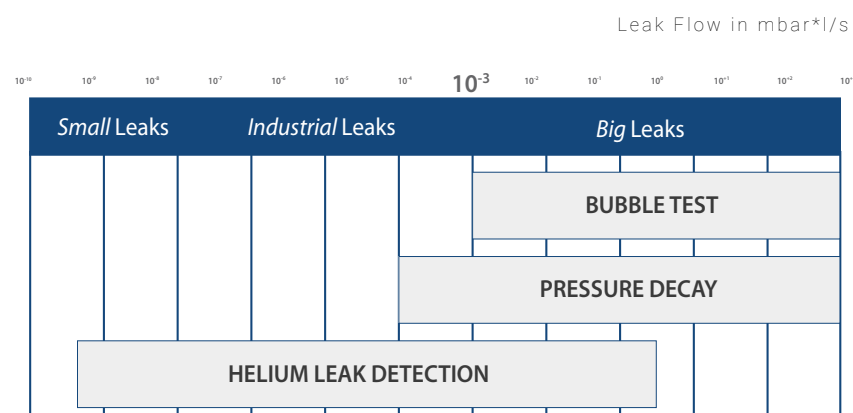
- Bells and fixtures for sealed components
- Plates/holders for ND and burst tests
- Y valve for dedicated test cycles, volume control and "in bell" tests
- Internal and external vacuum generator
- Accessories for external discharge
- Printer, barcode and QRcode reader for tests traceability
- Remote controllers
- 3-colours indicator light with alarm
- Pressure regulators
- Purifier air filters





## 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.

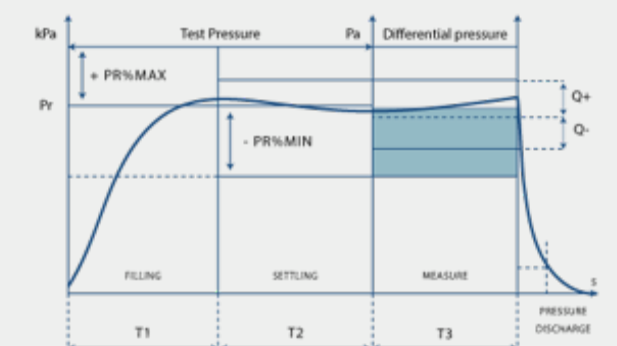
# LEAK TESTS BY DIFFERENTIAL METHOD

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.



## ADVANTAGES:

- High precision
- High leak resolution
- Repeatability

# INDIRECT PRESSURE MEASUREMENT IN SEALED BELL

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.

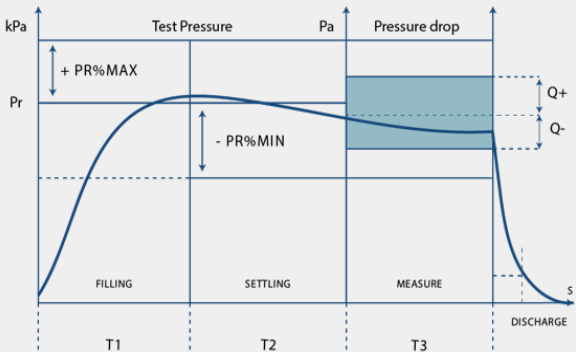
This method is used to perform test on sealed components or to test at high pressure where safety needs to be assured. The system allows a sensitivity 10 times higher compared to the traditional decay pressure methods, allows tests at very high pressures and is very fast compared to other methods.

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.

## ADVANTAGES:

- High sensitivity
- High leak resolution at high test pressure
- Fast test
- Sealed Products test

# LEAK TESTS BY ABSOLUTE PRESSURE DECAY



### ADVANTAGES:

- Common
- Competitive
- Easy
- Low maintenance

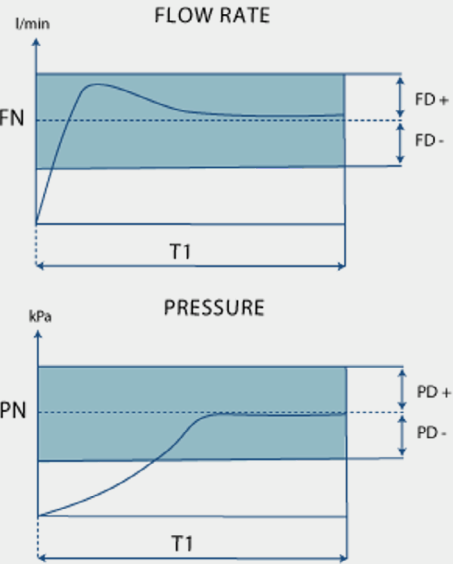
The tested product is filled to the programmed test pressure and after a settling period, pressure variation is measured over the testing time; this method can be also applied under negative pressure. The test cycle is divided into three phases:

- 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.

## FLOW TESTS



The integrated high-precision flow sensor, measures the mass of air passing through a component. By monitoring the airflow at a specified pressure and over a precisely defined time period, the device ensures reliable and consistent performance.

### ADVANTAGES:

- Fast Result
- High flow rate scales available

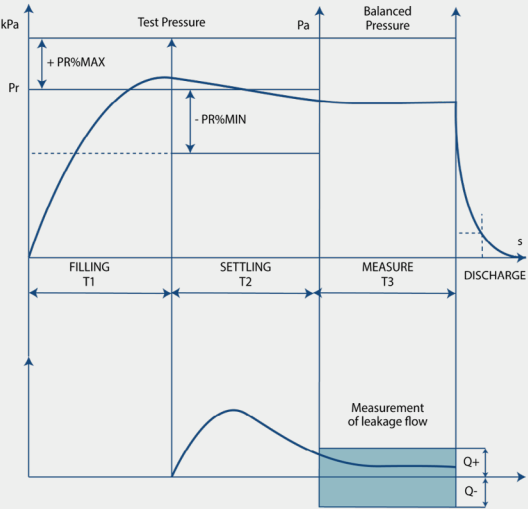
# DIRECT MEASURE OF THE LEAK FLOW RATE

The product under test is first filled to a predetermined pressure and then allowed to stabilize to ensure accurate measurements.

During the measurement phase, the system utilizes a highly sensitive mass flow sensor to precisely monitor the air flow. This reading directly correlates to the leakage rate of the component under test.

By detecting even minor variations in air flow, the system ensures reliable leakage detection.

The advanced design of the mass flow sensor allows for efficient testing, ensuring both precision and reduced testing time.



## CONTINUOUS FLOW OR TRANSFER FROM PRE-FILLING VOLUME

The component can be tested using two different methods, depending on the specific requirements or needs of the testing process.

It can either be filled through a continuous flow of air or through a pre-filled volume, which allows for greater control and faster stabilization.

The two modalities offer flexibility in testing, enabling the user to choose the method that maximizes performance based on the application.

### ADVANTAGES:

- Fast and reliable test results
- Simple programming
- Lower variability of test parameters

## 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
- 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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