Purpose:
To establish minimum standards for static and dynamic test benches. The test bench is designed to be a tool for maintenance specialists and people supporting the specialists in the day to day work, servicing and maintaining respiratory protection equipment.

Type:
The automatic test bench shall be capable of testing the following respiratory equipment:
Full face masks, lung governed demand valves, self-contained compressed air breathing apparatus (SCBA), chemical protective suits (CPS) and closed circuit breathing apparatus (CCBA).

The test bench shall be computer controlled. The computer shall be integrated. The test bench shall be operated via an integrated touch screen. The test bench shall be ergonomically designed as a console device. The specimen shall be tested according to the manufacturer requirements. Test head and medium pressure connections shall be easily accessible. The test bench shall be offering the capability of being upgradeable with further modules to extend test capabilities at a later point of time.

The test bench shall be equipped with an automatically inflated test head. The test head shall have measuring points in the eye and mouth.

The test bench shall be able to test in the low, medium and high pressure range.

The test bench shall offer dynamic test capabilities with an adjustable artificial lung. The lung shall be future safe to adapt to upcoming changes in international standards (i.e. ISO).
The software shall be part of the scope of delivery. The software shall contain automatic testing, manual testing, selective testing, a clear structure of devices, a pre-installed equipment data base, address management, item administration (i.e. spare parts), administration of outgoing devices and invoicing. The software shall be capable of being upgradeable with further software modules.

The test bench and the software shall offer network capabilities.

The test bench shall have dimensions between 600 x 370 x 470 mm and 700 x 600 x 370 (W x D x H) including the test head depending on the chosen modules. The weight shall be between approximately 23 and 50 kg.

Necessary Test	No	Yes
Full Face Masks		
Mask leak test with negative pressure	O	O
Mask leak test with positive pressure	O	O
Mask opening pressure of the exhalation valve with 10 l/min flow rate	O	O
Mask inhalation resistance with 10 l/min flow rate	O	O
Mask dynamic breathing resistance test	O	O
Mask visual tests freely definable	O	O

Necessary Test	No	Yes
Lung Governed Demand Valves (LGDV)		
LGDV leak test with negative pressure without medium pressure	O	O
LGDV leak test with positive pressure without medium pressure	O	O
LGDV leak test with medium pressure	O	O
LGDV switch over (activation) pressure (positive pressure)	O	O
LGDV opening pressure (negative pressure)	O	O
LGDV static pressure (positive pressure)	O	O
LGDV dynamic inhalation resistance test	O	O
LGDV dynamic inhalation resistance test within residual pressure	O	O
LGDV visual tests freely definable	O	O
Self-Contained Compressed Air Breathing Apparatus (SCBA)		
SCBA high pressure leak test	O	O
SCBA static medium pressure test	O	O
SCBA static medium pressure leak test	O	O
SCBA dynamic medium pressure test	O	O
SCBA dynamic medium pressure test within residual pressure	O	O
SCBA test of opening pressure warning signal	O	O
SCBA gauge comparison with varying system pressure	O	O
SCBA gauge comparison documentation with image via camera	O	O
SCBA maintenance: adjustment of warning signal	O	O
SCBA maintenance: adjustment of medium pressure	O	O

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Necessary Test	No	Yes
Self-Contained Compressed Air Breathing Apparatus (SCBA)		
SCBA safety valve opening pressure test	O	O
SCBA safety valve closing pressure test	O	O
SCBA visual tests freely definable	O	O
Chemical Protective Suits (CPS)		
CPS stabilising pressure	O	O
CPS leak test with positive pressure	O	O
CPS valve leak test with negative pressure	O	O
CPS visual tests freely definable	O	O
Closed Circuit Breathing Apparatus (CCBA)		
CCBA inhalation valve check	O	O
CCBA exhalation valve check	O	O
CCBA stabilising pressure	O	O
CCBA leak test	O	O
CCBA surplus valve check	O	O
CCBA constant dosage check	O	O
CCBA visual tests freely definable	O	O

Specification of the Test Bench	No	Yes
Test bench shall be a table top unit	O	O
Separate adapters for : Full face masks, lung governed demand valves, self-contained compressed air breathing apparatus (SCBA), chemical protective suits (CPS) and closed circuit breathing apparatus (CCBA) tests	O	O
Accuracy class of the pressure sensors according EN 13274-3:2001 Respiratory protective devices - Methods of test – Part 3: Determination of breathing resistance	O	O
Medium pressure connection with EURO coupling and nipple	O	O
Measurement range of the test bench: High pressure: 0 to 320 bar Medium pressure: 0 to 25 bar Low pressure: -60 to +40 mbar	O	O
Integrated pump for constant flow tests with up to ±10 l/min	O	O
Test head pneumatically inflatable (automatic), measuring point in eye and mouth	O	O
Tests with the test bench: option of full-, semi-automatic or selective test sequences	O	O
Integrated device identification using RFID technology 125 kHz	O	O

Specification of the Internal Computer & Touch Screen	No	Yes
Operating system MS Windows 7	O	O
Processor min. 1 GHz	O	O
Working memory 1 GB	O	O
Hard disk 160 GB (two)	O	O
Network interface card on board max. 1 Gbit/s Ethernet port RJ 45 (minimum 1 port)	O	O
Graphics board on board 2048 x 1536 QXGA	O	O
15" – TFT monitor with touch screen 1024 x 768	O	O
Keyboard (on-screen keyboard)	O	O
USB 2.0 (minimum two ports)	O	O

Specification of the Internal Computer & Touch Screen	No	Yes
PS/2 two ports for external keyboard and mouse	O	O
Serial interface (COM) (1 port)	O	O
Monitor port DVI-I (1 port)	O	O

Specification of the Software	No	Yes
Software for testing of full face masks, lung governed demand valves, self-contained compressed air breathing apparatus, chemical protective suits and closed circuit breathing apparatus.	O	O
Full face masks, lung governed demand valves, self-contained compressed air breathing apparatus are single components. With the software these can be merged into one unit and tested as such. The evaluation and data storage is done on the component level.	O	O
The software and test access is only possible via encrypted pass word	O	O
For operation of the software different rights can be allocated for each user	O	O
Selection of devices via transponder reader and or barcode reader	O	O
The software and database is fully client / server network - compatible. Possibility to work at several test stations of the same series connected to one central database. Capability of using the software on work stations without test bench.	O	O
Free data base selection (Firebird/Microsoft SQL/Oracle) with single instance compatibility on the data base server. All data needs to be organized within one database instance.	O	O
The user can define test cycles on his own and arrange the test sequences	O	O
Reference and tolerance values of test values are deposited in the data base and can be changed by the user (who has the necessary authorisation).	O	O
Acoustic and optical notification with test errors	O	O
Interruption, repetition and continuation of tests if the software has recognised an error with the specimen.	O	O
Single tests of devices without connection to a required test cycle i.e. leak test for an undefined time (free testing)	O	O
Print of test results in an A4 format. Test result in details or in a short form with evaluation and in combination with recorded pictures during testing procedure.	O	O

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Specification of the Software	No	Yes
Address administration with entry of: mailing address, several contact persons, bank details and link to documents	O	O
Entry of services (i.e. charge of cylinder, cleaning of mask)	O	O
Stock administration with option to link the material to a device and monitoring replacement intervals/serial numbers for device specific material	O	O
Alignment of prices of the stored material via a CSV file	O	O
Creation and printing of shipping notes	O	O
Creation and printing of invoices	O	O
Printing of devices due for testing	O	O
Retrospectively printing of tested devices	O	O
Printing of statistical data (i.e. tested devices in a period…) with graphical illustration	O	O
Export of data as PDF, MS Excel- or MS Word-file	O	O
Detailed search function throughout all existing fields	O	O
Logging of personal data when changing data records (Log file)	O	O
High-level online service and update support via the Internet, minimising the need for visits by a service technician	O	O
Optional		
Selection of devices via barcode reader	O	O
Upgrade Package I:		
Free device structure (maintenance shop is deposited)	O	O
Defect notification	O	O
Interval notification within the software with planning tool to identify future workload	O	O
Upgrade Package II:		
Integrated inventory management	O	O
Portfolio management	O	O
Stock-taking	O	O

Specification of the Software	No	Yes
Optional		
Upgrade Package II:		
Requisition note	O	O
Order constitution	O	O
Additional Add-Ons: (These optional features can only be used in combination with upgrade packages I or II.)		
Mobile management (laptop) with complete synchronisation of the database	O	O
Free selection of database system (ORACLE, Microsoft SQL)	O	O
Interfaces to test benches of other manufacturers available	O	O

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