MSA
The Safety Company

Operating Manual

Multitest plus Console and Multitest plus Console 230 V

CE

Order No. 10092330/00

MSA AUER GmbH
Thiemannstrasse 1
D-12059 Berlin

Germany

Declaration of Conformity

The manufacturer or his in the community established authorized representative

MSA AUER GmbH
Thiemannstrasse 1
D-12059 Berlin

declares that the product:

Multitest plus Console

is in conformance with the EMC Directive 2004/108/EC.

EN 61000-6-2:2005 and EN 61000-6-3:2007

Dr. A. Schubert

MSA AUER GmbH
Dr. Axel Schubert
R&D Instruments

Berlin, May 2009

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EN 61000-6-2:2005 and EN 61000-6-3:2007

We further declare that the product complies with the provisions of LVD Di-rective 2006/95/EC, with the following harmonized norms or normative documentation:

EN 61010-1:2002-08

Dr. A. Schubert

MSA AUER GmbH
Dr. Axel Schubert
R&D Instruments

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1 Safety Regulations

1.1 Correct Use

The MSA test device Multitest plus Console and Multitest plus Console 230 V [hereinafter referred to as test device] are designed for testing full face masks, lung governed demand valves and static medium pressure of compressed breathing apparatus.

Chemical protective suits can be tested only with special adapters.

It is imperative that this operating manual be read and observed when using the product. In particular, the safety instructions, as well as the information for the use and operation of the product, must be carefully read and observed. Furthermore, the national regulations applicable in the user's country must be taken into account for a safe use.

Danger!

This product is supporting life and health. Inappropriate use, maintenance or servicing may affect the function of the device and thereby seriously compromise the user's life.

Before use the product operability must be verified. The product must not be used if the function test is unsuccessful, it is damaged, a competent servicing/maintenance has not been made, genuine MSA spare parts have not been used.

Alternative use, or use outside this specification will be considered as non-compliance. This also applies especially to unauthorised alterations to the product and to commissioning work that has not been carried out by MSA or authorised persons.

1.2 Liability Information

MSA accepts no liability in cases where the product has been used inappropriately or not as intended. The selection and use of the product are the exclusive responsibility of the individual operator.

Product liability claims, warranties also as guarantees made by MSA with respect to the product are voided, if it is not used, serviced or maintained in accordance with the instructions in this manual.

1.3 Safety and Precautionary Measures

The test device is built and tested in accordance with DIN 57411 Part 1/VDE 0411 Part 1, protection measures for electronic measuring equipment and was released from the factory in a perfectly safe condition. In order to maintain this condition, and to ensure safe operation, the user must observe the instructions and warning notes which are contained in these instructions for use.

Connection to the Supply Voltage

Prior to switching on, please ensure that the set operating voltage and mains voltage on the test device concur. The mains connector can only be connected to a socket with sealed contact. The protective effect must not be removed by an extension without protective wire.

Protective Wire

Any disconnection of the protective wire, inside or outside the test device, or loosening of the protective wire connection, can make the test device dangerous. Intentional disconnection is not permitted.

Opening Covers

When opening covers or removing parts, live parts may be exposed. Even connection points could be live. The device must be disconnected from all voltage sources before adjustment, maintenance, corrective maintenance or the replacement of parts.

If, after adjustment, maintenance or repairs on an opened live test device are unavoidable, these may only be carried out by experts who are fully aware of the related hazards.

Fuses

Only the stipulated type of fuses with the given rated amperage can be used as a replacement. Do not use patched fuses or short-circuit the fuse holder.

Errors and Unusual Stresses

If it is ascertained that safe operation is no longer possible, the test device must be shut down and secured against unintentional switching on. Error recovery must be performed by the manufacturer's customer service or by qualified and authorised personnel.

2 Description

2.1 Scope of Delivery

- Test device Multitest plus Console / Multitest plus Console 230 V
- Test head with stand base, clamp and filling line
- Test line with standard thread connector for mask tightness test
- Closing cap for exhalation valve of full face masks
- Closing cap for medium pressure line of lung governed demand valve
- Power cord [only Multitest Console 230 V]
- 1 battery size D [only Multitest Console]
- Stopwatch
- Silicone spray
- User manual

2.2 Overview

The test device is designed for testing full face masks, lung governed demand valves and static medium pressure of compressed air breathing apparatus.

Chemical protective suits can be tested only with special adapters.

The basic version of the device permits testing of negative pressure devices with standard thread connector. With suitable accessories tests can also performed on positive pressure lung governed demand valves and masks, as well as on chemical protective suits of various manufacturers.

Following tests are possible:

- Tightness test and opening pressure of exhalation valve of masks
- Tightness test, opening pressure and closing pressure of lung governed demand valves
- Static medium pressure of pressure reducer
- Tightness tests and valve test of protective suites

Power supply is realised:

- for test device Multitest plus Console by 1 battery and
- for test device Multitest plus Console 230 V by 230 V AC

To perform the tests a compressed air connection is not required. The compressed air required to inflate the test head can be taken from a compressed air breathing apparatus or a compressed air line.

The test pressures required for the tightness and function tests are generated by the pump built into the case. They are indicated on the low pressure gauge.

The medium pressure of the compressed air breathing apparatus is indicated on the medium pressure gauge.

Inflating of chemical protective suits or the test head is done with the push button of the filling line which is equipped with a plug nipple that fits the safety plug-coupling.

The test head can be fixed on the work bench by means of a clamp.

2.3 Operating Elements

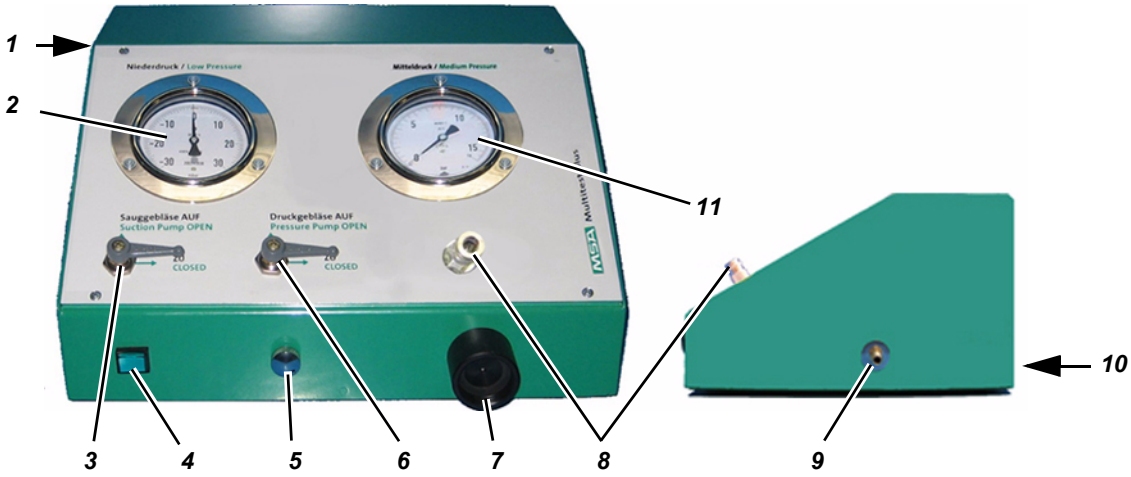


Fig. 1 Test Device Multitest Console / Multitest Console 230 V

1	*ON / OFF button [only 230 V]*	7	*Standard thread connector for lung governed demand valve and test line*
2	*Pressure gauge [+/- 30 mbar]*	8	*Medium pressure coupling for lung governed demand valve*
3	*Stop valve suction pump*	9	*Medium pressure connector for SCBA*
4	*Push button for pump*	10	*Battery compartment / Power cord connection [Rear Side]*
5	*Pressure relief valve*	11	*Pressure gauge [16 bar]*
6	*Stop valve pressure pump*		

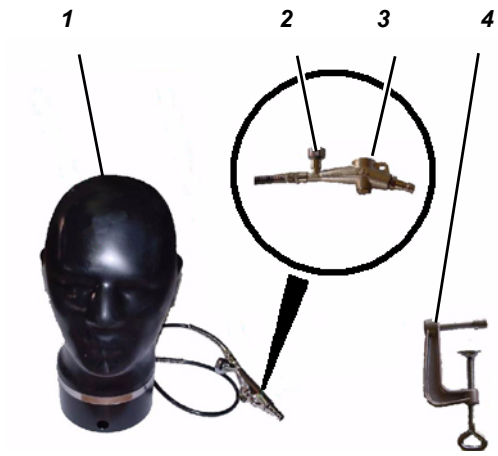


Fig. 2 Test Head

1	*Test head*
2	*Pressure relief valve for test head*
3	*Push button valve*
4	*Clamp*

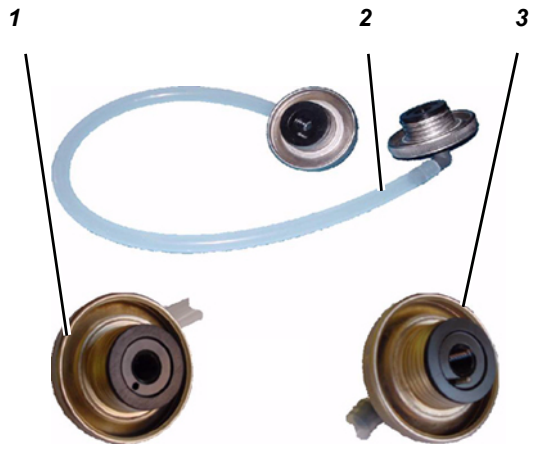


Fig. 3 Test Line

1	*Standard thread connector for lung governed demand valve and test line*
2	*Mask test line*
3	*Standard thread connector for mask with peg*

For masks/lung governed demand valve that do not have a standard thread connector, respective adapters are required [→ chapter 9]

2.4 Test Head

In order to use the test head for optimum mask tests, it must be inflated to a normal size head shape [→ Fig. 4].

This is done via the filling line that has a push button valve [→ Fig. 5] which can be connected to a medium pressure supply source [e.g. medium pressure line of a compressed air breathing apparatus]. Inflating the head is done by pushing the push button.

Attention!

If the test head is inflated excessively the rubber part can be damaged.

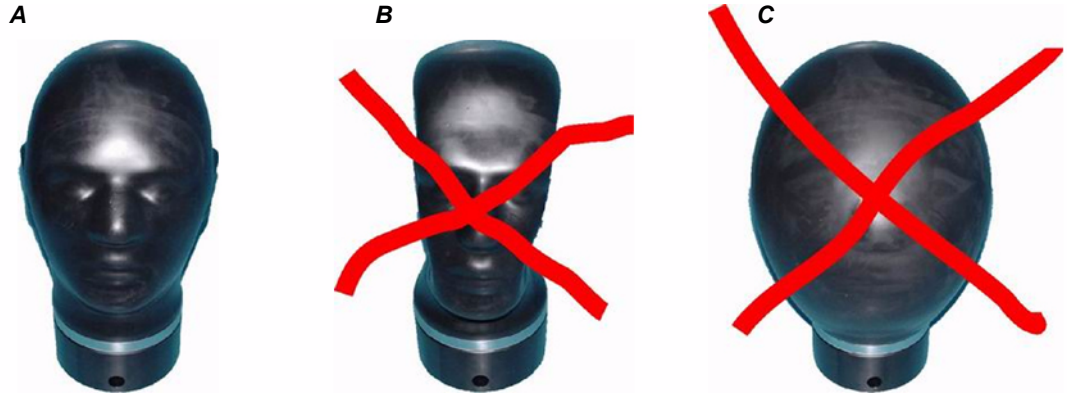


Fig. 4 Inflating the test head

A Ideal head shape for mask tests

B Test head inflated insufficiently

C Test head inflated excessively

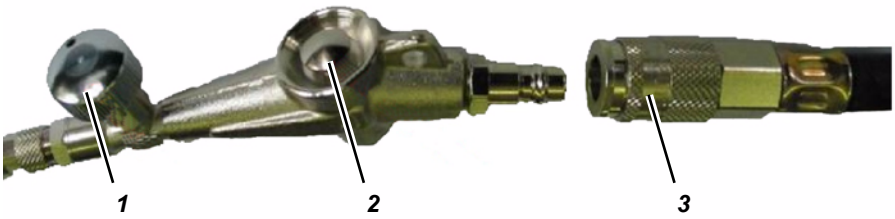


Fig. 5 Push button valve

1 Pressure relief valve

2 Push button

3 Medium pressure line

Inflating the test head

Procedure:

(1) Connect push button valve to medium pressure line.

(2) Close pressure relief valve of push button valve.

(3) Briefly activate push button to inflate the head. Observe that the head is not inflated too much.

(4) In case it was inflated too much, reduce pressure with pressure relief valve.

(5) Disconnect push button valve from medium pressure line.

2.5 Test Head Maintenance

In order to protect the test head from premature ageing inflate test head only up to normal head shape and protect against sun radiation.

In case it is not in use, keep the test head covered.

Once a week thoroughly spray the test head with silicone spray [→ chapter 9.3] and leave it on overnight [uncovered].

3 Use

3.1 Device Test

The required test criteria and intervals for tightness and function tests are specified in the operating manuals of each manufacturer and the respective European standards.

Attention!

The specifications in the operating manual for the devices to be tested apply.

There are no differences for testing with Multitest plus Console and Multitest plus Console 230 V.

3.2 Activation

Multitest plus Console 230 V

To activate the test device connect the power supply and switch On the device [ON / OFF button] and the device is ready for use.

Multitest plus Console

To activate the test device one battery Size D [Mono] is required. The battery compartment is built into the right side of the test box inside the case or the back side of the console.

Proceed as follows to insert, resp. replace batteries.

(1) Open cover of battery compartment by counter-clockwise rotation with screw driver or coin.

(2) Remove cover of battery compartment.

(3) Remove battery, if available.

Attention!

Observe the proper polarity of the battery.

(4) Insert or replace the battery.

(5) Attach cover on battery compartment.

(6) Close cover of battery compartment by clockwise rotation with screw driver or coin.

4 Testing Negative Pressure Devices

Close the stop valves “suction pump” and “pressure pump“ before beginning any test procedure.
Otherwise your test result can be incorrect or you may damage the test device.

4.1 Lung Governed Demand Valve – Tightness Test without Medium Pressure

The tightness test includes a negative and a positive pressure tightness test.

Using Test Device Multitest plus Console

Negative Pressure Tightness Test

(1) Connect lung governed demand valve to test connector.
(2) Close connecting nipple of lung governed demand valve.
(3) Open valve lever “suction pump”.
(4) Push and hold the button for pump.
(5) Set to slightly above required test pressure and then close valve lever.
(6) Release button for pump.
(7) Slowly adjust pressure to test pressure with pressure relief valve.
(8) Measure according to manufacturer instructions.

Positive Pressure Tightness Test

(1) Connect lung governed demand valve to test connector.
(2) Close connecting nipple of lung governed demand valve.
(3) Open valve lever “pressure pump”.
(4) Push and hold the button for pump.
(5) Set to slightly above required test pressure and then close valve lever.
(6) Release button for pump.
(7) Slowly adjust pressure to test pressure with pressure relief valve.
(8) Measure according to manufacturer instructions.

4.2 Lung Governed Demand Valve – Tightness Test with Medium Pressure

Attention!

Absolutely observe sequence!

Otherwise your test result can be incorrect or you may damage the test device.

(1) Close valve levers “suction pump” and “pressure pump”.

(2) Disconnect lung governed demand valve from test connector.

(3) Connect compressed air breathing apparatus to medium pressure connector.

(4) Connect lung governed demand valve to medium pressure adapter [case-version] or to medium pressure connector at the test device [console].

(5) Open cylinder[s].

(6) Connect lung governed demand valve to test connector.

(7) Slowly open valve lever “pressure pump”.

(8) Push and hold the button for pump.

(9) Set to slightly above required test pressure and then close valve lever quickly.

(10) Release button for pump.

(11) Slowly adjust pressure to test pressure with pressure relief valve.

(12) Measure according to manufacturer instructions.

4.3 Lung Governed Demand Valve – Opening Pressure

Attention!

Absolutely observe sequence!

Otherwise your test result can be incorrect or you may damage the test device.

(1) Disconnect lung governed demand valve from test connector.

(2) Connect compressed air breathing apparatus to medium pressure adapter.

(3) Connect lung governed demand valve to medium pressure adapter [case-version] or to medium pressure connector at the test device [console].

(4) Open cylinder[s].

(5) Connect lung governed demand valve to test connector.

(6) Slowly open valve lever “suction pump”.

(7) Push and hold the button for pump.

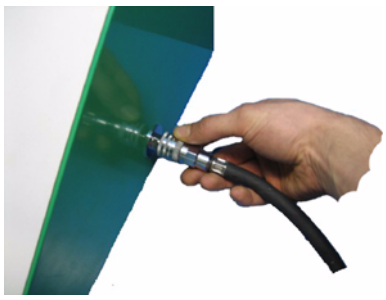
(8) Measure according to manufacturer instructions.

4.4 Medium Pressure – Tightness Test

Attention!

Absolutely observe sequence!

Otherwise your test result can be incorrect or you may damage the test device.



(1) Disconnect lung governed demand valve from test connector.

(2) Connect compressed air breathing apparatus to medium pressure connector.

(3) Connect lung governed demand valve to medium pressure coupling.

(4) Open cylinder[s].

(5) Wait until pressure has stabilised.

(6) Close cylinder[s].

(7) Briefly release pressure with lung governed demand valve.

(8) Measure according to manufacturer instructions.

4.5 Mask - Tightness Test

(1) Fit mask onto the test head.

(2) Connect test line to test device and mask [connector with peg into mask].

(3) Open valve lever “suction pump”.

(4) Push and hold the button for pump.

(5) Set to slightly above required test pressure and then close valve lever.

(6) Release button for pump.

(7) Slowly adjust pressure to test pressure with pressure relief valve.

(8) Measure according to manufacturer instructions.

5 Testing Positive Pressure Devices

Close the stop valves “suction pump” and “pressure pump“ before beginning any test procedure.
Otherwise your test result can be incorrect or you may damage the test device.

5.1 Lung Governed Demand Valve – Tightness Test without Medium Pressure

Attention!
Switch off positive pressure.
When the positive pressure is not switched off, you will unintendedly set air free.

Choose correct Transition Adapter lung governed demand valve from chapter 9.1.

The tightness test includes a negative and a positive pressure tightness test.

Using Test Device Multitest plus Console

Negative Pressure Tightness Test

(1) Switch off positive pressure.
▷ The lung governed demand valve is in standby position.
(2) Connect lung governed demand valve to test connector.
(3) Close connecting nipple of lung governed demand valve.
(4) Open valve lever “suction pump”.
(5) Push and hold the button for pump.
(6) Set to slightly above required test pressure and then close valve lever.
(7) Release button for pump.
(8) Slowly adjust pressure to test pressure with pressure relief valve.
(9) Measure according to manufacturer instructions.

Positive Pressure Tightness Test

(1) Switch off positive pressure.
▷ The lung governed demand valve is in standby position.

(2) Connect lung governed demand valve to test connector.

(3) Close connecting nipple of lung governed demand valve.

(4) Open valve lever “pressure pump”.

(5) Push and hold the button for pump.

(6) Set to slightly above required test pressure and then close valve lever.

(7) Release button for pump.

(8) Slowly adjust pressure to test pressure with pressure relief valve.

(9) Measure according to manufacturer instructions.

5.2 Lung Governed Demand Valve – Tightness Test with Medium Pressure

Attention!

Absolutely observe sequence!

Otherwise your test result can be incorrect or you may damage the test device.

(1) Disconnect lung governed demand valve from test connector.

(2) Switch off positive pressure.
▷ The lung governed demand valve is in standby position.

(3) Connect compressed air breathing apparatus to medium pressure connector.

(4) Connect lung governed demand valve to medium pressure coupling at the test device.

(5) Open cylinder[s].

(6) Connect lung governed demand valve to test connector.

(7) Open valve lever “pressure pump”.

(8) Push and hold the button for pump.

(9) Set to slightly above required test pressure and then close valve lever quickly.

(10) Release button for pump.

(11) Slowly adjust pressure to test pressure with pressure relief valve.

(12) Measure according to manufacturer instructions.

5.3 Lung Governed Demand Valve – Closing Pressure

(1) Disconnect lung governed demand valve from test connector.

(2) Switch on positive pressure.

▷ The lung governed demand valve is in positive pressure position.

(3) Close connector of lung governed demand valve with the palm of the hand.

(4) Connect lung governed demand valve to medium pressure adapter [case-version] or to medium pressure connector at the test device [console].

(5) Connect compressed air breathing apparatus to medium pressure adapter.

(6) Open cylinder[s].

▷ Exhaust port in direction of transition adapter.

(7) Connect lung governed demand valve to transition adapter.

(8) Briefly release pressure with pressure relief valve for about 15 s.

(9) After 15 s close the pressure relief valve.

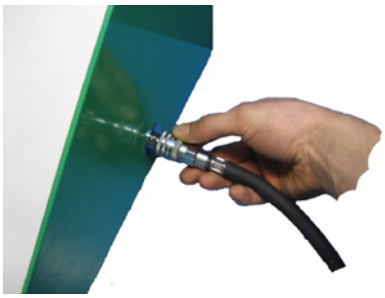
(10) Measure according to manufacturer instructions.

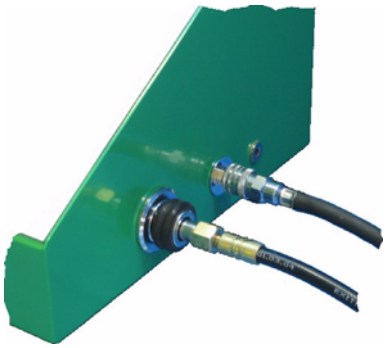
5.4 Medium Pressure – Tightness Test

Attention!

Absolutely observe sequence!

Otherwise your test result can be incorrect or you may damage the test device.





(1) Disconnect lung governed demand valve from test connector.

(2) Switch off positive pressure.

▷ The lung governed demand valve is in standby position.

(3) Connect lung governed demand valve to medium pressure adapter [case-version] or to medium pressure coupling at the test device [console].

(4) Connect compressed air breathing apparatus to medium pressure adapter [case-version] or to medium pressure coupling at the test device [console].

(5) Connect medium pressure adapter to test connector.

(6) Open cylinder[s].

(7) Wait until pressure has stabilised.

(8) Close cylinder[s].

(9) Briefly release pressure with lung governed demand valve.

(10) Measure according to manufacturer instructions.

5.5 Mask - Tightness Test

Choose correct Transition Adapter lung governed demand valve from chapter 9.1.

(1) Fit mask onto the test head.

(2) Connect test line to test device and mask [connector with peg into mask].

(3) Open valve lever “suction pump”.

(4) Push and hold the button for pump.

(5) Set to slightly above required test pressure and then close valve lever.

(6) Release button for pump.

(7) Slowly adjust pressure to test pressure with pressure relief valve.

(8) Measure according to manufacturer instructions.

5.6 Mask - Opening Pressure of Exhalation Valve

(1) Fit mask onto the test head.

(2) Connect test line to test device and mask [connector with peg into mask].

(3) Open valve lever “pressure pump”.

(4) Push and hold the button for pump.

(5) Measure according to manufacturer instructions.

6 Testing Chemical Protective Suit

For testing chemical protective suits special accessories may be necessary.
For detailed information see chapter 9.2 and operating manual of the manufacturer.

6.1 Preparation

(1) Spread out chemical protective suit on suitable place.
- e.g. work bench or clean floor

(2) Remove all angled prechambers.

(3) Remove all exhalation valve discs.

(4) Connect test line to exhalation valve.

(5) Connect test line with test device.

(6) Connect filling line.

(7) Close all remaining exhalation valves.

6.2 Stabilising the Chemical Protective Suit

Attention!

Do not exceed the required stabilizing pressure since the seams and the glued sections of the suit may be damaged.

(1) Connect test line to test device.

(2) Connect push button valve of filling line to a clean compressed air source
- e.g. compressed air breathing apparatus, pressure reducer, etc.

(3) Set the stabilising pressure with the push button valve.
- Stabilise according to manufacturer instructions.

(4) Measure according to manufacturer instructions.

6.3 Chemical Protective Suit – Tightness Test

Attention!

Stabilisation of the chemical protective suit must have been performed prior to the tightness test!

Otherwise the test result is incorrect.

(1) Disconnect push button valve of the filling line of the air supply source.

(2) Reduce pressure in the chemical protective suit according to manufacturer instructions to the required test pressure with the push button valve of the filling line.

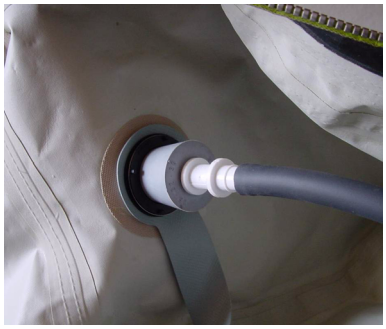
(3) Measure according to manufacturer instructions.

6.4 Chemical Protective Suit – Valve Test

Attention!

The following procedure must be performed for every single suit valve!

The valves must be ready for use.



(1) Close valve of the chemical protective suit from the inside with plug for the valve tightness test.

(2) Connect test line to exhalation valve.

(3) Connect test line to test device.

(4) Open valve lever “suction pump”.

(5) Push and hold the button for pump.

(6) Set to slightly above required test pressure and then close valve lever.

(7) Release button for pump.

(8) Slowly adjust pressure to test pressure with pressure relief valve.

(9) Measure according to manufacturer instructions.

7 Test Criteria for MSA Respiratory Protection Apparatus

The test criteria given below serve only as basis for evaluation.

The actual required test criteria are specified in the instruction manuals of the manufacturers!

Apparatus	Test	Test Criteria	Remarks
Negative pressure lung governed demand valve	Tightness test with positive and negative pressure	At ±7.5 mbar, pressure change 1.0 mbar in 1 minute	Lung governed demand valve unpressurised
	Opening pressure [initiating pressure]	< -3.5 mbar	Lung governed demand valve with medium pressure 10 bar
Positive pressure lung governed demand valve	Tightness test with positive pressure	At +7.5 mbar, pressure change 1.0 mbar in 1 minute	Lung governed demand valve unpressurised
	Closing pressure	2.0 mbar to 3.9 mbar	Lung governed demand valve with medium pressure in positive pressure position
Negative pressure full face mask	Tightness test mask with exhalation valve with negative pressure	At -10 mbar maximum 1 mbar pressure change in 1 minute	Valve disc moist
Positive pressure full face mask	Tightness test with mask and exhalation valve with negative pressure	At -10 mbar maximum 1 mbar pressure change in 1 minute	Valve disc moist
	Opening pressure exhalation valve	> 4.2 mbar	
Chemical protective suit	Tightness test with positive pressure	At 16 mbar maximum 2 mbar pressure change in 3 minutes	Filling pressure for stabilizing 18 mbar. For Chempion 25 mbar
	Tightness test suit valves with negative pressure	At -10 mbar maximum 1 mbar pressure change in 1 minute	Valve disc moist

8 Technical Data

	Multitest plus Console	Multitest plus Console 230 V
Dimensions [W x H x D] in mm	420 x 210 x 400	420 x 210 x 400
Power Supply	1 battery size D [mono]	230 V/50 Hz, 100 W
Weight	10 kg	8 kg
Pressure gauge measuring range		
- Low pressure	± 30 mbar	
- Medium pressure	0 – 16 bar	
Pressure gauge precision class		
- Low pressure	1.6 %	
- Medium pressure	1.0 %	

9 Ordering Information

9.1 Transition Adapters Mask / Lung Governed Demand Valves

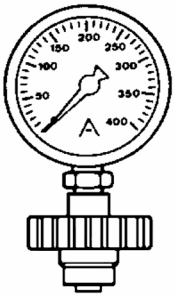
Description	1	2	Part No.	
			Lung governed demand valve [1]	Mask [2]
Transition Adapter MSA AUER LA96-AS			D4080891	D5175536
Transition Adapter MSA AUER AutoMaXX			10031901	10089532
Transition Adapter Dräger Steck			D5175512	D5135537
Transition Adapter M45 x 3			D4074833	D5175538
Transition Adapter ESA			10037962	

9.2 Transition Adapter for Chemical Protective Suit

Description		Part No.
Transition Adapter for Chemical Protective Suit – Dräger		D5175521
Transition Adapter for Chemical Protective Suit – Koch		D5175522
Transition Adapter for Chemical Protective Suit - Trelleborg		D5175523

9.3 Accessories

Description	Part No.
Test Line for testing chemical protective suits 	D5175532
Filling Line for testing chemical protective suits 	D5175518
MSA AUER **sealing cap** to close valves on Auer chemical protective suits and 3S negative pressure masks 	D5135047
Valve test device for MSA AUER chemical protective suits 	D5175533
Barcode Scanner 	10025433

Description	Part No.
Barcode Labels for using inside [masks] or outside [SCBA or cylinders] 100 pieces 	
Barcode Labels – outside	10025420
Barcode Labels – inside	10025422
Test Gauge For testing pressure of compressed air cylinders 200 bar and 300 bar. 	D4080929
Silicone spray	10017461
Disinfectant For disinfecting instruments, masks and others.	on request
Ultrasonic Washing Machine for 9 masks 	D5175709

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