Operating Manual

Vautex Elite S,

Vautex Elite S Expert

Chemical Protective Suit Type 1a EN 943 - 1:2002

Ordering No.: D3020053/08

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Contents

1. Safety Regulations

1.1. Correct Use

The chemical protective suit Vautex Elite S or Vautex Elite S Expert (hereinafter referred to as protective suit) is particularly intended to protect the wearer's skin from danger caused by liquid or gaseous toxic agents. As total encapsulating protective clothing it is worn over working clothes and the protective breathing apparatus. It offers excellent protection in emergencies, decontamination work, securing leaks or similar.

The protective suit does not provide protection against heat or cold and is not itself a complete breathing protection apparatus. It must be worn in conjunction with the following series of compressed air breathing apparatus:

- BD N
- BD 283
- BD 296 N
- DA 300
- DA 300-2
- BD AE
- BD ESA
- BD AutoMaXX AS
- BD 88/96 AS
- BD AirMaXX
- BD AirGo

The protective suit described in this operating manual comply with the European Directives 89/686/EEC and 94/9/EC (→ Section 7.1).

The EC type examination was carried out by the DEKRA EXAM GmbH, (Dinnendahlstraße 9, D-44809 Bochum).

- Reference number of the organisation concerned: 0158
- EC prototype certificate No.: 1883A/97/84 PSA

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 these specifications 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.

2. Description

2.1. Design of the Protective Suit

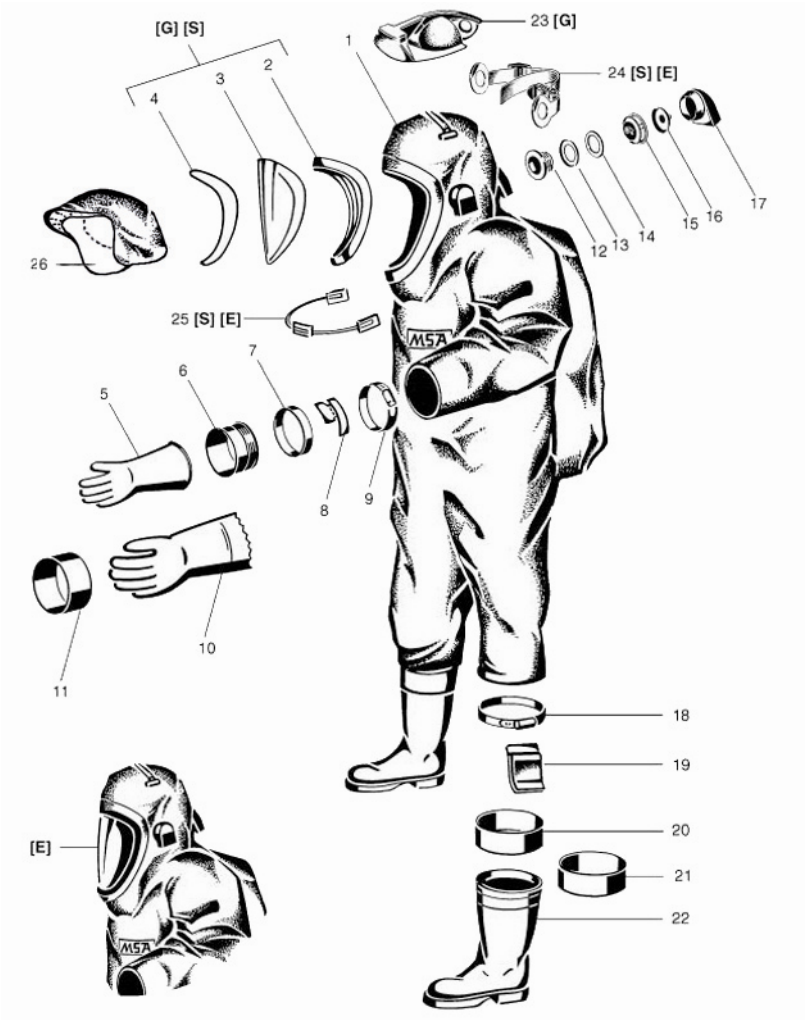


Fig 1 Design of the Protective Suit

[S]	*Standard model*	*12*	*Threaded ring*
[G]	*Model for GALLET helmet*	*13*	*Slide ring*
[E]	*Model Expert*	*14*	*Gasket*
1	*Suit shell*	*15*	*Valve housing*
2	*Profiled lens seat*	*16*	*Valve disc*
3	*Lens*	*17*	*Valve chamber*
4	*Lens arrestor*	*18-22*	*Safety high boot*
5-11	*Gloves*	*18*	*Clamp for boots*
5	*Inner Gloves*	*19*	*Clamp protector*
6	*Rubber ring*	*20*	*Tube sleeve for boots*
7	*Tube*	*21*	*Support ring for boots*
8	*Clamp protector*	*22*	*Boot*
9	*Clamp*	*23*	*Head plate*
10	*Outer glove*	*24*	*Head strap (on the inside of the suit)*
11	*Cuff tube*	*25*	*Spacer*
12-17	*Suit valve*	*26*	*Helmet cover as visor holder*

The one-piece suit is made of a composite material and has a replaceable lens; firmly attached and replaceable gloves and safety high boots, firmly attached but replaceable, three suit valves and a completely gas-tight zipper. The zip is located on the front, running from the right leg up to the head section.

The protective suit has a spacer, located under the visor, which increases the mobility of the wearer of the protective suit.

The helmet cover as visor holder provides added comfort to the protective suit. It fixes the visor of the protective helmet (only MSA GALLET Helmets F1S, F1SA, F1E and F1SF).

The composite material consists of a woven fabric, a multi-layer-film-laminate and an elastomer coating. This combination results in a special outside appearance, different to that of Vautex SL. The Vautex Elite is not smooth but has an uneven surface. This does not affect the quality or the protection characteristics of the protective suit.

Attention!

Wearing a protective suit and a compressed air breathing apparatus will put a physical strain on the wearer. Wearing the protective suit for extended periods can cause heat stress. The wearer must, therefore, be suited to wearing the protective suit (good health, possibly carry out a preventive medical examination first). Moreover, when in use, regional guidelines and accident prevention regulations must be observed.

The operating time must be limited in accordance with specific national regulations.

The back part is prepared for wearing a compressed air breathing apparatus under the protective suit.

The head part in the protective suit is spacious enough to allow a protective helmet (→ Section 3.1) to be worn under the protective suit. In order to adapt to different helmet sizes an adjustable head strap is fitted to the inside of the suit between the three rear suit valves.

The inhalation air flows from the connector of the mask past the inhalation valve to the inside of the lens (thus keeping the lens fog-free) and then through the check valves into the nose cup. The exhalation air passes through the exhalation valve of the mask into the inside of the suit and then through the suit valves into the ambient atmosphere.

The protective suit is equipped with transponder technology for protective suits. The transponder is an electronic data carrier on which a code is saved. The code is read contactless with the AUER transponder reader (→ Section 8) and thus enables a clear identification of the chemical protective suit. In order to show, and to further process the code, a PC or MSA Proficheck and the corresponding MSA / TecBos software is required in conjunction with the AUER transponder reader.

The service life of the protective suit is at least 10 years when correctly serviced and stored and does not apply to use.

3. Use

3.1. Safety Instructions

Attention!

In order to prevent electrostatic load when entering explosive atmospheres the chemical protective suit must be moistened with water on the outside and kept moistened whilst in the explosive area.

Attention!

The protective suit is not suitable for firefighting.

Before donning the suit, the wearer must check that there are no missing parts (e.g. suit valves, gloves and boots).

Furthermore, the lens on the inside of the suit and the lens on the outside of the mask should be treated with anti-fog agent MSA klar-pilot. Alternatively, the anti-fog lens can be clipped on. In this case only the outside of the mask lens needs to be treated with MSA klar-pilot.

When using in the colder environments heat insulating clothing is recommended.

As clothing under the protective suit the following is recommended:

- cotton underwear and socks,
- cotton gloves,
- e.g. one-piece overall with legs and sleeves that can be closed tightly or a firefighting protective suit,
- protective helmet (e.g. DIN firefighting helmet MSA Linesman, MSA GALLET: F1S, F1SA, F2 or F2 XTREM,
- protective helmets with helmet cover as visor holder (MSA GALLET F1S, F1SA, F1E, F1SF) (→ Section 3.2).

3.2. Helmet cover as visor holder

The helmet cover as visor holder is available for the helmets MSA GALLET F1S, F1SA, F1E, F1SF.

Pulling on the helmet cover as visor holder

(1) Pull the helmet cover as visor holder over the visor.

(2) Pull the helmet cover as visor holder completely over the bottom edge of the helmet.

3.3. Preparation

Before donning the protective suit the following instructions must be followed:

(1) Spread the protective suit on the floor.

(2) Align the sleeves and legs of the protective suit ensuring there are no twists.

(3) Open the zip fully and carefully in stages.

(4) Treat the suit lens on the inside and the lens of the respiratory protective mask on the outside with the anti-misting agent MSA klar-pilot.

(5) Place the safety high boots upright and expose the boot openings.

(6) Check the compressed air breathing apparatus and full face mask in accordance with the corresponding operating manual and check the sealing.

3.4. Donning the Protective Suit

When donning the protective suit a second person (assistant) is required to help.

Donning respiratory protection

(1) Put the compressed air breathing apparatus and full face mask on in accordance with the corresponding operating manual.

(2) Open cylinder valves fully.

(3) Don the protective helmet and put on the cotton gloves.

Attention!

Ensure that the mask is properly tightened since it could slip as a result of the wearer's increased sweat when wearing the protective suit.

Adjusting the head strap

(4) The assistant adjusts the head strap so that the head section is set to the optimum size for the size of the helmet.

Donning the boots

(5) Stand next to the protective suit, remove footwear.

(6) Step into the suit.

(7) Step into the right, followed by the left, boot.

Attaching the support belt

(8) Roughly adjust the length of the support belt from the crotch of the protective suit.

(9) Pull the protective suit up to crotch.

(10) Attach the support belt to the waist belt of the compressed air breathing apparatus.

(11) Adjust the length of the support belt.
The belt must be attached tightly whilst ensuring freedom of movement.

Pulling the left glove over fully

(12) The assistant holds on to the loose hanging sleeves of the protective suit at the support ring of the left glove system and pulls the sleeve without creases to the side.

(13) Pull the left sleeve on fully whilst ensuring that the glove system fits properly.

Pulling the protective suit on

(14) The assistant raises the protective suit over the compressed air cylinders.

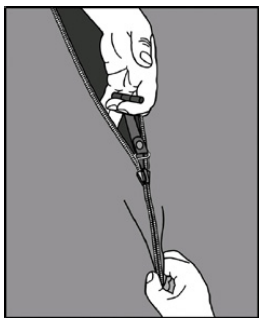
(15) Hold the lens up by the bottom edge using your left hand.

(16) The assistant places the head part over the helmet.

Pulling the right glove over fully

(17) The assistant holds on to the support ring of the right glove system and pulls the sleeve without creases to the side.

(18) Pull the right sleeve on fully whilst ensuring that the glove system fits properly.



Attention!

Carefully close the zip by gently pulling. As the zip slider moves downwards, hold on to the suit material at the same level.

Pulling with excessive force can lead to irreparable damage and to the zip opening when in use or losing its sealing.

Make sure that both halves of the chain are located parallel to each other without lateral load.

Closing the protective suit

(19) Stretch your right arm gently backwards and downwards and use your left hand to hold the lens upwards by the bottom edge to ensure that the zip is freely accessible and tight for closing.

(20) The assistant gently closes the zip in stages until reaching chest height.

(21) The assistant connects the automatic lung mechanism.

(22) The assistant gently fully closes the zip in stages.

Attention!

In order to prevent the penetration of toxic agents the zip must be fully closed. In order to verify this, the assistant must look through the lens from the outside to the zip end. If any light can be seen the zip must be closed up to the end chamber.

Check readiness for use

(23) Check the freedom of movement of the head, arms and legs.

(24) Indicate readiness for use.

3.5. Removing the Protective Suit

Attention!

If the protective suit is heavily soiled a preliminary cleaning should be carried out by an assistant before removing to ensure that toxic agents are removed from the protective suit. Whilst doing so the protective suit remains fully donned and closed. The assistant must wear the appropriate personal protection equipment when doing this e.g. protective gloves, respiratory protection, protective suit.

The preliminary cleaning is, if possible, performed using water with suitable detergent additives.

When removing the protective suit, avoid any contact with the soiled outside of the suit. To avoid any impurities from reaching the inside the assistant must ensure that he does not come into contact with them.

The removal of the protective suit is performed in reverse order from the donning procedure:

Attention!

Carefully open the zip by pulling gently.
As the zip slider moves downwards, hold on to the suit material at the same level.

Opening with excessive force can cause long-lasting damage.

(1) Pull your arms from the sleeves and hold on to the lens from the inside.

(2) Open the protective suit carefully.

(3) Pull the protective suit off.

(4) Drop off helmet.

(5) Remove the compressed air breathing apparatus.

(6) In order to protect the inside of the suit from contamination fully close the zip of the removed protective suit.

(7) For transport of the protective suit, e.g. loosely fold the suit and pack into a polythene bag or similar.

3.6. Disposal

The protective clothing itself does not require any special handling with regard to disposal. However, the disposal of contaminated protective suits is carried out in accordance with local legislation depending on the extent of the contamination through toxic waste.

4. Cleaning, Disinfection

4.1. Cleaning

The protective suit must be cleaned after each use. To do this remove the valve discs of the suit (→ Section 5.3) and unbutton the rucksack reinforcement. These parts must be cleaned separately and fitted back only after they have been dried.

Attention!

The use of cleaning and disinfection materials, or the use of cleaning and disinfection processes, which are not permitted by MSA, can damage the protective suit and can destroy its protective properties (e.g. the use of a washing machine and drier).

Do not clean the protective suit using hard, sharp or pointed instruments.

Do not use organic solvents for cleaning such as nitro thinner, alcohol, spirit, petrol.

The protective suit is to be cleaned as follows:

(1) If the protective suit is not too badly soiled wash it once by hand at 30°C using a mild detergent. If badly soiled repeat the washing procedure.

(2) Then rinse twice in clear water.

Attention!

To ensure full tightness the zip links must be free from foreign bodies such as bristles, hairs, threads and other impurities.

(3) Thoroughly clean the zip separately with water and a soft brush.

(4) Then hang the protective suit by the boots to dry.

Attention!

The protective suit and the removed parts must not be dried in radiant heat (e.g. sunlight, radiators) to prevent destroying the structure of the protective suit.

When using a drying cabinet, the temperature may not exceed 40°C.

(5) After cleaning the protective suit disinfect it e.g. with the disinfectant AUER 90 (→ Section 4.2).

(6) Then rinse thoroughly with water!

(7) After each use and cleaning/ disinfection, a tightness test of the protective suit and its valves is performed (→ Section 5.2).

(8) Grease the zip (→ Section 5.5).

4.2. Disinfection

Disinfection should only be carried out as follows using disinfectant AUER 90 only:

(1) Dilute the disinfectant AUER 90 with water (water temperature max. 30°C).

(2) Immerse the parts to be disinfected directly in the disinfectant solution or apply the solution with a rag and allow it to work.

(3) Then rinse all parts thoroughly with water.

Concentration and working times of the disinfectant AUER 90:

	Concentration	Working Time
Normal disinfection	2.0%	15 Minutes

Attention!

The safety instructions on the bottle or container of the disinfectant AUER 90 must be observed.

5. Maintenance

5.1. Maintenance Intervals

The maintenance work shall be carried out by qualified service engineers or technicians. The corresponding seminars can be ordered at MSA.

All maintenance work carried out must be noted on the appropriate inspection plate. The maintenance periods specified below refer only to protective suits.

Task to be Performed	Before Use	After Use	Half-Yearly	Every Two Years
Cleaning, Disinfection		X		
Maintenance		X	X	
Function test and tightness test		X	X	
Valve disc replacement		X		X
Sealing ring replacement				X
Control by wearer	X			
Service zip		X	X	

5.2. Tightness Test of the Protective Suit

After each use, after each cleaning / disinfection, after each maintenance / repair or on a half-yearly basis, a tightness test of the protective suit must be performed. In order to do so use the MSA suit tightness tester kit with the valve leak test adapter.
The valves can be tested using a mask testing instrument in conjunction with the valve leak test adapter and the compensation container.

The test instruments can be ordered separately at MSA (→ Section 8).

Only inflate the protective suit with clean oil-free compressed air (breathable air quality in accordance with EN 12021) to ensure that after the tightness test there are no residues left in the suit.

In order to avoid erroneous measurement perform the test in a draught-free room.

Test according to EN 464:

(1) Remove the valve discs and angled prechambers, close the valve bodies with the valve closing cap (this can act simultaneously as a test and/or filling connection).

(2) Inflate the suit to 18 mbar positive pressure. Whilst doing so the pressure must be held for 10 minutes at 17.0 ±0.5 mbar.

(3) Reduce positive pressure to 16.5 ±0.3 mbar (test pressure). The maximum permitted pressure drop in 6 min: 3 mbar.

(4) At the end of the test, reassemble the valve discs and the angled prechambers.

(5) Then perform a valve tightness test (→ Section 5.4).

In practice the following maintenance test has divergently been tried and tested:

(1) Remove the valve discs and angled prechambers, close the valve bodies with the valve closing cap (this can act simultaneously as a test and/or filling connection).

(2) Inflate protective suit 18 ±0.5 mbar positive pressure.

(3) Stabilising time approx. 3 min.

(4) Reduce positive pressure to 16 ±0.5 mbar (test pressure). The maximum permitted pressure drop is in 3 min: 2 mbar.

(5) At the end of the test reassemble the valve discs and angled prechambers.

(6) Then perform a valve tightness test (→ Section 5.4).

In the event of doubt, check in accordance with EN 464 (see above).

Checks in case of leaks

If leaks are detected during the tightness test it must be checked whether

- the test instrument is tightly connected to the valve,
- the zip is fully closed and tight,
- the valves are properly assembled.

5.3. Replacing the Suit Valves

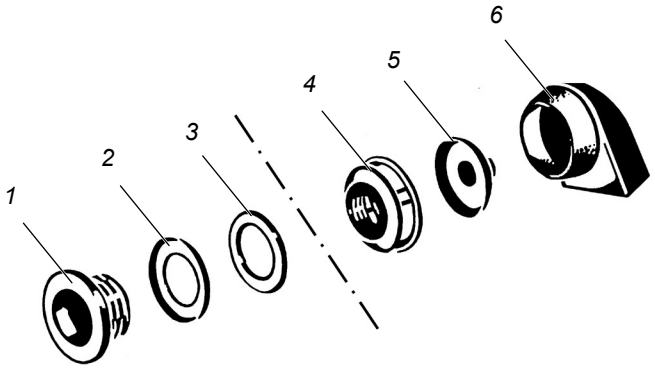


Fig 2 ***Suit Valve***

1	*Ring nut*	*4*	*Valve housing*
2	*Slip ring*	*5*	*Valve disc*
3	*Gasket*	*6*	*Prechamber*

Removing the suit valves

(1) Pull off the angled prechamber of the valve to be removed.

(2) Open the suit and lay out the inside to allow access to the valve.

(3) Use one hand to grip the valve housing from the outside and the other to unscrew the ring nut from the valve housing inwards using a valve spanner.

Reassembling the suit valves

(1) Insert the ring nut with the slip ring correctly fitted from inside through the head strap hole, the gasket opening and the valve hole on the suit shell.

(2) Screw the valve housing onto the ring nut from the outside.

(3) Use one hand to grip the valve housing from the outside and the other to screw on the ring nut from the inside to the valve housing using a valve spanner.

The torque must be 250 Ncm.

(4) Fit the valve disc

(5) Mount the prechamber by overstretching whereby the angled part is pointing in the direction of the boot.

5.4. Tightness Test of the Valves

After each use and cleaning / disinfection and after each maintenance / repair task or every half-year, a tightness test of the suit valves must be carried out. The tightness of the suit valves is to be checked using e.g. the MSA valve leak test adapter in connection with the compensation container and the mask tightness test instrument (→ Section 8):

- create a negative pressure of 10 mbar.
- max. pressure change within one minute must not exceed 1 mbar.

If a leak is detected, either the valve disc or the entire suit valve assembly must be replaced (→ Section 5.3).

The valve discs and gaskets must be replaced every two years (→ Section 5.1).

5.5. Zip

Fig 3 Zip Area to be treated with Grease

1 Grease film *2 Zip links*

After each use, after each cleaning or disinfection or every half year (→ Section 5.1) the zip should be lubricated using a grease pencil or it should be sprayed using a zip grease spray. This applies a thin film of grease to the zip links.

5.6. Visual Control of the Protective Suit

The protective suit must be checked for irregularities. These include:

- scratches or abrasion points,
- breaks in the suit material
- swollen or brittle material
- and damaged seams.

Visible changes to the outside of the suit material such as slight abrasion and / or slight discolouration do not impair its protective effectiveness against chemicals.

The discharge of ageing inhibition agents during storage does not impair the quality of the safety high boots.

Please ensure that when using the ASV (Automatic Switch Valve) none of the internal air supply hoses are buckled and that they have been securely connected.

5.7. Maintenance of the Spacer

The spacer does not require maintenance. If the spacer does not work properly, the hose will need to be replaced. Remove one end of the hose from the end casing and pull the entire hose out of the hose casing. Replace with a new one.

5.8. Repair

The repair of suit material, seams or the replacement of zips may only be carried out by MSA or MSA authorised customer service.

Before submitting the protective suit for maintenance and/or repair purposes, it must be fully decontaminated, cleaned and disinfected. Confirmation of this is given on the maintenance and repair form (→ Section 8).

Only MSA original spare parts can be used for repairs.

5.9. Replacing the Lens

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The replacement of the lens can be carried out by trained persons, authorised workshops or by MSA customer service.

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The Instructions for use come along with the spare part kit (→ Section 8).

5.10. Replacing the Gloves

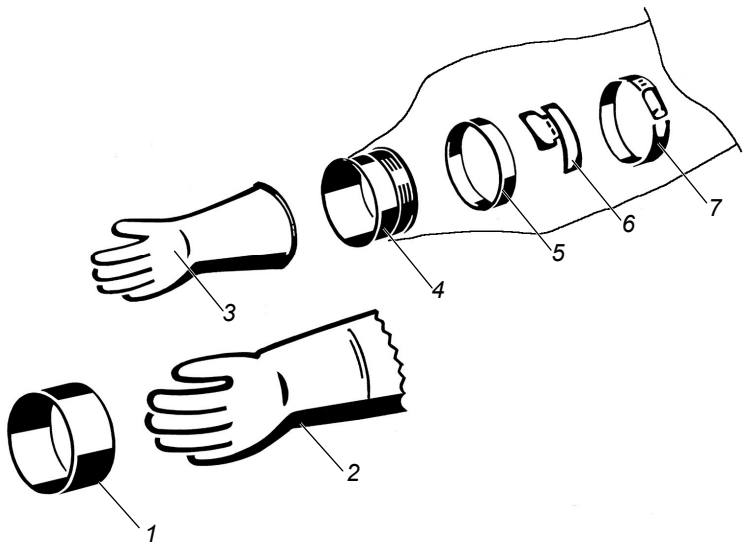


Fig 4 Gloves

1	*Cuff tube (protective rubber) for outer glove*	*5*	*Rubber ring*
2	*Outer glove*	*6*	*Clamp protection*
3	*Inner glove*	*7*	*Screw and nut clamp*
4	*Tube piece*		

Disassembling the outer gloves

(1) Pull off cuff tube.

(2) Pull off outer glove.

Disassembling the inner gloves

(1) Open zip fully.

(2) Turn the sleeves of the protective suit inside out.

(3) Loosen screw and nut clamp (SW7).

(4) Pull out tube piece with glove.

(5) Pull glove off tube piece.

Reassembling the inner gloves

Attention!

In order to guarantee full tightness, check the tightness of the suit after each glove replacement before fitting the outer gloves (→ Section 5.2).

(1) Insert tube piece into glove cuff.

(2) Insert tube piece and glove into the sleeve.

(3) Align glove.

(4) Fit the screw and nut clamp on.

(5) Fit clamp protector under clamp.

(6) Turn clamp lock on the screw clamp on the seam.

(7) Tighten screw and nut clamp with SW7, tightening torque: 400 ±30 Ncm.

(8) Push inner glove to the outside.

Ensure that the clamp lock is on the seam and that the clamp protector covers the clamp lock.

Reassembling the outer gloves

(1) Takes place only after successful tightness test of protective suit.

(2) Pull the outer glove over the inner glove.

(3) The inner roll of the outer glove must be fitted into the groove of the tube piece.

(4) Then assemble the cuff tube.

5.11. Replacing the Safety High Boots

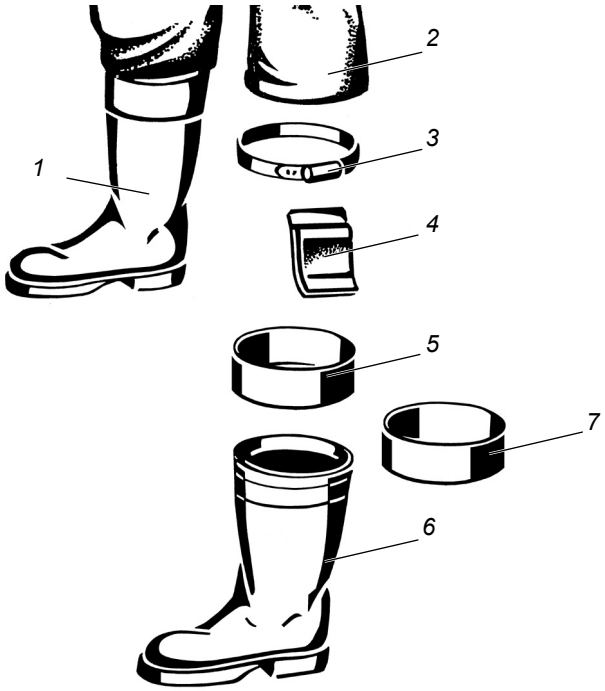


Fig 5 Safety high boots

1	*Safety high boot complete*	*5*	*Tube piece*
2	*Protective suit leg*	*6*	*Safety high boot*
3	*Screw and nut clamp*	*7*	*Cap tube (protective rubber) for safety high boot*
4	*Clamp protection*		

Removing the safety high boots

(1) Remove cap tube from the boot shaft.

(2) Open protective suit zip fully.

(3) Turn protective suit legs inside out.

(4) Loosen and remove screw and nut clamp (SW7).

(5) Pull out tube piece.

(6) Remove safety high boot from the protective suit leg.

Reassembling the safety high boots

Attention!

In order to guarantee full tightness, check the tightness of the suit (→ Section 5.2) after each replacement of the safety high boots before the cap tube is fitted over the shaft of the boot.

(1) Push safety high boot into the suit leg that was turned inside out.

(2) Align suit leg and boot.

(3) Insert tube piece in the boot shaft.

(4) Fit the screw and nut clamp on.

(5) Turn clamp lock towards the rear.

(6) Fit clamp protector under clamp.

(7) Tighten screw and nut clamp with SW7, tightening torque: 500 ±30 Ncm.

(8) Clamp protection must cover the clamp lock.

(9) Push safety high boot to the outside.

(10) After tightness test, fit cap tube over shaft of boot.

6. Transport and Storage

Attention!

When storing the protective suit on vehicles or containers abrasion through permanent friction with the contact surface has to be avoided.

Attention!

In order to prevent damage to the protective suit, the material, seams, and zip must not be forcibly kinked or folded!

The zip should remain closed during storage.

The suit can, for example, be loosely folded as a large package.

The protective suit is supplied folded and pressure-free. Storage must be in a loosely folded pack in clean and dry conditions in a normal atmosphere free from toxic substances, protected from direct sunlight and temperature changes (according to DIN 7716 and ISO 2230).

The operational life can change as a result of environmental influences, such as UV light, heat, humidity. The storage room must be cool, dry, dust-free and well ventilated.

The storage temperature is between -5 °C and +25 °C. The optimum storage temperature is between +15°C and +25°C, since in the long-term there could otherwise be a change in the physical properties or a shortening of the service life.

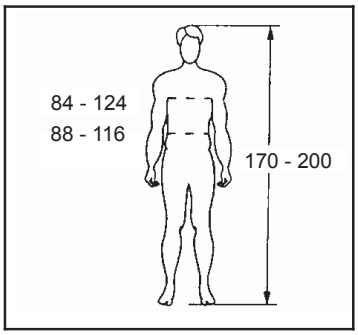
The relative air humidity is best at under 65%.

7. Technical Data

7.1. Approvals

PPE Directive	89/686/EEC
	EN 943-1:2002 - Type 1a
EC type examination:	DEKRA EXAM GmbH, Zertifizierungsstelle, Dinnendahlstr. 9, 44809 Bochum
Surveillance acc. Article 11B	DEKRA EXAM GmbH, Zertifizierungsstelle, Dinnendahlstr. 9, 44809 Bochum
CE	0158

7.2. General Characteristics of the Protective Suit

Weight of the complete protective suit, excluding breathing apparatus and full face mask.	approx. 9 kg
Size according to EN 340 	Universal Size
Gloves	Size 10
Safety high boots according to S5 EN 345 HRO	 Size 11½ (46/47) (standard) Size 10 (45) Size 9 (43/44)
Operating temperature	-30°C to +60°C
Storage temperature	optimal +15°C to +25°C
Life span (with appropriate maintenance and storage and without emergency use).	at least 10 years

7.3. Mechanical Characteristics of the Suit Material

Mechanical Characteristics	Class
Abrasion according to EN 530	6
Blocking behaviour according to ISO 5978	2
Flexural crack resistance according to ISO 7854	5
Flexural crack resistance at low temperatures (-30° C) according to ISO 7854	2
Flexural crack resistance at low temperatures (-60°C) according to prEN 943-2	2
Further crack resistance (Trapezoid process) according to ISO 9073-4	5
Bursting strength according to ISO 13938	6
Tensile strength to EN ISO 13934-1	6
Cutting resistance according to EN 863	3
Resistance to ignition according to EN 13274-4	3
Seam resistance to EN ISO 13935-2	6

7.4. Chemical Characteristics of the Suit Material

Resistance to permeation of chemicals.

Test Chemical	Suit Material	Suit seams	Inner Gloves	Lens	Boot	Zip
	Class	Class	Class	Class	Class	Class
Acetone	5	5	4	5	3	2
Acetonitrile	6	6	6	6	4	3
Ammonia (Gas)	6	6	6	6	6	6
Chlorine (Gas)	6	6	6	6	6	6
Hydrogen chloride (Gas)	6	6	6	6	6	6
1.2 Methylene chloride	3	3	2	4	2	1*
Diethylamin	6	5	1*	6	5	2
Ethyl acetate	6	4	2	6	4	1*
n - Heptane	6	6	6	6	6	6
Carbon disulphide	6	3	6	6	3	4
Methanol	6	6	6	6	6	6
Caustic soda 40%	6	6	6	6	6	6
Sulphuric acid 96%	6	6	6	6	6	6
Tetrahydrofuran	6	5	1*	5	4	2
Toluol	6	3	6	6	5	1*

* Note: Not suitable for use with these chemicals under continuous exposure.

Manufacturer recommendation: using in accordance with the scope of delivery with over glove results in class 2 of the glove components for both chemicals after tests. Without impairing the tightness with regard to the tested chemicals it can lead to material changes depending on the operating conditions.

The evaluation of the retention behaviour is classified as follows in accordance with the European standard EN 369:

Class	Breakthrough Time
6	> 480 min
5	> 240 min
4	> 120 min
3	> 60 min
2	> 30 min
1	> 10 min

8. Ordering Information

Description	Article Number
Protective suits	
Chemical Protective Suit Vautex Elite S	D3020826
Chemical Protective Suit Vautex Elite S Expert	D3020867
Gloves	
Replacement gloves, inner size 9	10068292
Replacement gloves, inner size 10	10068293
Replacement gloves, inner size 11	D3022721
Replacement gloves, outer size 9 (Multigrip)	10092112
Replacement gloves, outer size 10 (Multigrip)	10092113
Replacement gloves, outer size 10 (Tricotril)	10092114
Replacement gloves, outer size 11 (Tricotril)	10092115
Replacement gloves, outer size 14 (K-MEX Gigant N)	10092116
Textile gloves (Packet with 5 pairs)	D3022719
Cuff tube glove (unit)	D0008866-SP
Safety high boots	
Boot size 11½ (46/47)	D3022705
Boot size 10 (45/)	10053172
Boot size 9 (43/44)	10053171
Tube cap boot (pair)	D3020063
Spare Parts	
Suit valve for all CSA	D5135924
Valve seal cap	D5135047-SP
Replacement Lens Kit	D3022713
O-ring for suit valve 40 x 30 x 1 (4 pieces)	D3022076-SP
Spacer (only for Vautex Elite S)	10015854
Accessories	
Helmet as visor holder - MSA GALLET F1S, F1SA cover	GA1108A
Helmet as visor holder - MSA GALLET F1E cover	GA1108B
Helmet as visor holder - MSA GALLET F1SF cover	GA1108C
Maintenance and repair form	D3022085
Grease pencil for zip	D3022050
Syntheso W zip lubricant spray	D3022180
AUER 90 disinfectant, 2l.	D2055765
AUER 90 disinfectant, 6l.	D2055766
Antimist agent klar-pilot spray	10032164
Hanger for chemical protective suit	D3022908
Transport case for chemical protective suit	D0120831
Storage bag PE 2300 x 750 mm with slide lock	D3022213
Valve spanner suit valves	D 2055 038
Transponder reader	upon request
Apparatus management software	upon request

Accessories Tightening Test, Testers	
Tightness tester kit for chemical protective suits	D3022800
Valve lock cap	D5135039-SP
Valve lock cap	D5135047-SP
Mask tightness tester	D6063705
Valve leak test adapter	D5065989
Compensation container	D3022717
Multitest Plus test case	D5175743
Multitest Plus test console	D5175744
CPS test line for Multitest	D5175532
CPS valve test mechanism for Multitest	D5175533
Computer-supported testers	upon request

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