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INSTRUCTION AND MAINTENANCE MANUAL

CENTURION TYPE-2

BIS APPROVED(IS 10245 Part.II : 1994)

**AUTOMATIC FIRST BREATH
POSITIVE PRESSURE
BREATHING APPARATUS**



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**USER HAND BOOK OF
AUTOMATIC POSITIVE PRESSURE
BREATHING APPARATUS
Operation And Instruction Manual**

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IMPORTANT POINTS TO NOTE

PLEASE READ CAREFULLY

Should you have any doubt or require clarification of the instructions given in this manual, please contact Vijay Sabre Safety Ltd. or an approved distributor.

1. The instructions for care and use given in this manual must be carefully followed and should be understood before the apparatus is put to use.
2. The following warnings are given in accordance with certifying authority requirements and apply to the use of breathing apparatus in general.
 - i) In toxic atmospheres, where the contaminations is likely to exceed certian levels, reference should be made to IS 9626 for guidance.
 - ii) The wearing of beards, sideburns or spectacles may adversely affect sealing of the mask to the wearer's face.
 - iii) At a very high work rates, pressure in the face mask may become negative at peak inhalations .
 - iv) To comply with the requirements of IS 10245 Pt 2 manually operated supplementary flow device is provided, which admits a continuous flow of air to the mask when required, independent of normal operation for the demand valve.
- 3 For marine and other applications necessitating the use of a life line, a special lifting harness must be added to the apparatus.
- 4 Always ensure that the facemask is hung about the neck and that the demand valve is switched off (depress on button) before turning on the cylinder valve.
- 5 In the event of a free flow condition occuring, the wearer should adopt the following procedure to regulate the high flow of air from the demend valve to a breathable level.
 - i) Turn off the cylinder valve fully and then partially reopen the valve until the free flow into the facemask is reduced to a breathable level.(approximately 1/4 turn)
 - ii) The wearer should retire immediately to fresh air.

GENERAL DESCRIPTION

The **Vijay Sabre Centurion Type 2** is a self contained open circuit compressed air breathing apparatus conforming to the requirements of IS10245 Pt. 2 1994, EN 136, EN 137, DIN 58645 Pt. 1 and As1716.

A positive pressure is maintained within the facemask during use, thus providing a very high degree of protection by the prevention of inward leakage.

The apparatus comprises of a high pressure air cylinder which may be any supply pressure upto 300 bar, carried on a contoured backplate by means of a padded webbing harness which is fully adjustable for comfort. The flow of air from the cylinder to the facemask is controlled by a two-stage pressure reduction system consisting of a simple piston pressure reducer and a high performance demand valve mounted to the mask by a bayonet connection.

The demand valve incorporates a first breath actuating mechanism to facilitate donning and testing procedures and a manually operated bypass valve which admits a continuous flow of air to the mask when required.

The facemask is produced in non-dermatitic materials and is retained by a fully adjustable head harness. It incorporates a speech transmission diaphragm and an inner mask to reduce carbon dioxide dead space and prevent misting of the wide angle panoramic visor.

Attached to the pressure reducer by a stainless steel reinforced hose is a chest mounted assembly of a cylinder pressure gauge and warning whistle which indicates where approximately 20% of the air supply remains.

Connection of the regulator to the cylinder valve outlet is by means of a hand tight coupling which has been designed to fit both 200 and 300 bar cylinder valve outlets.

A range of cylinder types and capacities are accommodated on the backplate by the appropriate use of one of two sizes of cylinder bands, as indicated in the following table:-

FREE AIR CAPACITY (LITRES) WATER CAPACITY	CHARGING PRESSURE	MATERIAL	CYLINDER SPECIFICATION	DURATION (minutes)		CYLINDER DIAMETER (mm)	WEIGHT OF CHARGED APPARATUS (Kgs.)	WHISTLE SETTING (Bar)
				EFFECTIVE	WORKING			
6 Lt.	200 bar 20.7 MPa 3000 lbf/in ²	Steel	BS 5045 Pt.1	30	20	140	12.00	55±5
6 Lt.	300 bar 30.0 MPa 4350 lbf/in ²	Steel	BS 5045 Pt.1	45	35	140	15.5	55±5
6.8 Lt.	300 bar 30.0 MPa 4350 lbf/in ²	C.C.	EN 12245	50	40	146.56	10.5	55±5

NOTES :

- 1 bar = 14.5 lbf/in² (approximately 1 Atmosphere)
- 2 The nominal working duration is derived by taking the effective duration (based on a consumption of 40 litres per minute) and subtracting a reserve period of 10 minutes as follows:-

$$\frac{\text{Cylinder capacity (free air) in litres}}{\text{Wearer consumption (rated at 40 litres / min)}} = \text{Effective Duration}$$

$$\text{Effective Duration} - \text{Reserve Period} = \text{Nominal Working Duration}$$

For example :

$$\frac{1200 \text{ litres}}{40 \text{ litres/min}} = 30 \text{ minutes Effective Duration}$$

$$30 \text{ minutes} - 10 \text{ minutes} = 20 \text{ minutes Nominal Working Duration}$$

PRESSURE REDUCING VALVE



The supply of air to the demand valve is regulated by a simple piston pressure reducer. When air is released from the cylinder valve it passes through a seat in the reducer body to an outlet-port which leads to the demand valve. The resulting rise in pressure at the outlet is transmitted through ports in the position to the closed area of the piston cap where it bears on the piston head pushing the piston against the spring until a resilient seal in the piston seals against the seat and flow ceases. The pressure at which the valve closes is determined mainly by the spring load. When air is taken from the demand valve pressure at the reducer outlet (and in the cap) falls and the spring pushes the piston away from the seat releasing more air from the cylinder. The operation of the reducer is completely Automatic and self-regulating and requires no adjustment whatever. As required by the standards a restrictor is incorporated in the pressure reducer body to limit the flow from the pressure gauge hose port in the event of a failure in the hose or gauge.

PREPERATION AND PRE-USE CHECKLIST

1. FITTING CYLINDER



Fit the cylinder to the back frame.

IMPORTANT :

The apparatus must not be put to use until the following tests have been successfully completed.

2. SWITCH OFF DEMAND VALVE



Reset the demand valve depressing the reset button.

3. CYLINDER PRESSURE AND LEAK TEST CHECK

Open cylinder valve slowly observing the pressure gauge to check that cylinder is fully charged, see cylinder label for correct pressure. Close cylinder valve. Gauge reading should not fall more than 10 bar per minute.



4. WHISTLE TEST

Operate bypass very slightly to vent air from the system slowly and check that the whistle sounds clearly at the correct pressure.



DONNING PROCEDURES

1. DON APPARATUS



1.1 With shoulder straps and waist belt fully slackened, don the apparatus and adjust the shoulder straps until the cylinder is held snugly on the back hang facemask strap around neck.



1.2 Fit waistbelt and adjust as required.



1.3 Check that demand valve is switched off (depress reset button) and turn on cylinder valve slowly. Check cylinder contents by reading pressure gauge.



- 1.4 With thumbs inside head harness straps, put chin into mask first and pull straps over head.



- 1.5 Position mask so that chin fits snugly into chin-cup and then gently tighten head harness, lower straps first. Do not over tighten

Note:

The first inhalation, which will require noticeable effort will switch the demand valve on. Subsequent respiration will be effortless.

2. CHECK POSITIVE PRESSURE

2.1 Gently lift mask seal away from the cheek and ensure a good outward flow of air from the mask showing that mask pressure is positive. Allow mask to re-seal.



3 CHECK FACE MASK LEAKAGE

3.1 Close cylinder valve, continue to hold handwheel and breathe normally. Check that the whistle sounds at the correct setting for the cylinder in use.



3.2 When pressure guage shows Zero and the mask is pulled gently onto the face hold breath for 10 seconds. Any leakage will be indicated by the mask moving away from the face. If a leak is detected open cylinder valve readjust facemask and harness and repeat test.



3.3 If no leak is detected open cylinder valve fully and check operation of bypass for a good flow of air.

Note: In addition to opening the cylinder valve FULLY it is important to “NIP” the valve into the fully open position at the end of the thread run.

4 RE-CHECK CYLINDER PRESSURE

4.1 With cylinder valve fully opened check that cylinder is full breath normally and proceed.

If any of the above tests fail, make a note of faults and attach to apparatus return the apparatus for servicing.



AFTER USE INSTRUCTIONS

WARNING: Apparatus must not be removed until the wearer is clear of the hazard area.



1 Switch the demand valve OFF by depressing the reset button.



2 Hold break momentarily. slacken head harness and remove facemask.



3 Close cylinder valve



4 Unfasten waist belt, slaken shoulder straps



5 Take off apparatus, Release any remaining air in the system by opening the bypass valve. Return bypass to closed position.

AFTER USE CLEANING AND TESTING

Warning: Do not immerse whistle warning unit or demand valve in water.

1. CLEAN FACEMASK

Disconnect demand valve from mask. Wash mask in cool to warm soapy water. Use soap not detergent. Rinse thoroughly in clean running water, paying particular attention to flush out the exhale valve.

1.2 After washing shake the mask vigorously to remove excess water and allow to dry away from direct heat or sunlight. To avoid scratching the visor do not place the mask face down on rough surfaces.

WARNING:

If the apparatus is likely to be stored at temperatures below freezing, the mask must be thoroughly dried and dusted lightly with french chalk, paying particular attention to the valves.

NOTE:

Where further disinfection due to heavy contamination is required, follow the following procedure :

After rinsing in 1.1 above immerse the mask in a 0.1% solution of Chlorhexidine gluconate in water for one hour. Rinse the facemask thoroughly in clean water. dry the mask as described above.

1.3 When dry, polish the visor inside and out with a clean lint free soft cloth.

1.4 Fully slacken the head harness ready for use.

2. CLEAN APPARATUS

Fully slacken shoulder straps and waist belt. Clean off any dirt with a stiff brush or sponge. Ensure that the pressure gauge glass is clean.

NOTE:

If it is necessary to clean the exterior of the demand valve, extreme care should be taken not to allow water to enter the demand valve. A protective cover is available on request.

3. CHECK APPARATUS

Check apparatus throughly for signs of wear or damage.

4. FIT FULLY CHARGED CYLINDER

Fit the cylinder by passing the valve outlet through the cylinder support. Secure connection to cylinder valve outlet, ensuring that the hand nut is screwed fully home. Engage cylinder band with toggle latch is properly clipping in.



5. FIT CLEAN FACEMASK

Fit clean facemask to demand valve first ensuring that quick fit O-ring is in good order and lightly greased if necessary.

6. LEAKAGE APPARATUS

Carry out cylinder pressure and leak test in accordance with the instructions. If a leak is indicated check all joints and whistle flute using a soap and water bubble solution.

7. CHECK POSITIVE PRESSURE

Pull head harness inside out over visor. Hold facemask to face, inhale and operate the first breath mechanism. Hold breath and gently lift facemask seal away from cheek to ensure a good airflow from facemask. Close demand valve by depressing reset button and remove facemask.

8. CHECK BYPASS

Check bypass operation the red knob on the demand valve supply hose on and off.

9. CHECK WHISTLE SETTING



Check whistle setting by closing the cylinder valve and opening bypass very slightly to vent air from the system. Slowly check that the whistle sounds clearly at the correct pressure. If necessary reset whistle.

10 RE-CHECK CYLINDER PRESSURE

Open cylinder valve and recheck cylinder is full. Close cylinder valve and release remaining air in the system by opening the bypass. Return bypass to the closed position.

11. CHECK DEMAND VALVE

Check that the demand valve is correctly secured to mask and is switched off ready for use, by depressing the reset button.

12. WIPE OUT FACEMASK

Wipe out facemask with suitable antiseptic cloth.

13. STORE APPARATUS READY FOR USE

The apparatus should be stored in a clean dry area protected from direct sunlight and extremes of temperature.

14. RECORD DETAILS OF TEST

Record details of test in appropriate register.

PERIODIC MAINTENANCE SCHEDULE

1. MONTHLY

The breathing apparatus should be subject to the tests detailed in the PRE-USE CHECK LIST once a month.

2. SIX MONTHLY

The breathing apparatus should be subject to the tests detailed in the PRE-USE CHECK LIST. REDUCED PRESSURE TEST and POSITIVE PRESSURE TEST once every six months.

3. ANNUALLY

It is recommended that components are replaced in accordance with the maintenance schedule for inspection and or requirement of parts or more frequently if as a result of the monthly or six monthly inspection it is consider necessary.

The above schedule details the minimum recommended inspection programmes which may be carried out more frequently if required. In the event of the apparatus being dismantled the tests detailed in paragraph 2 above should be carried out prior to use.

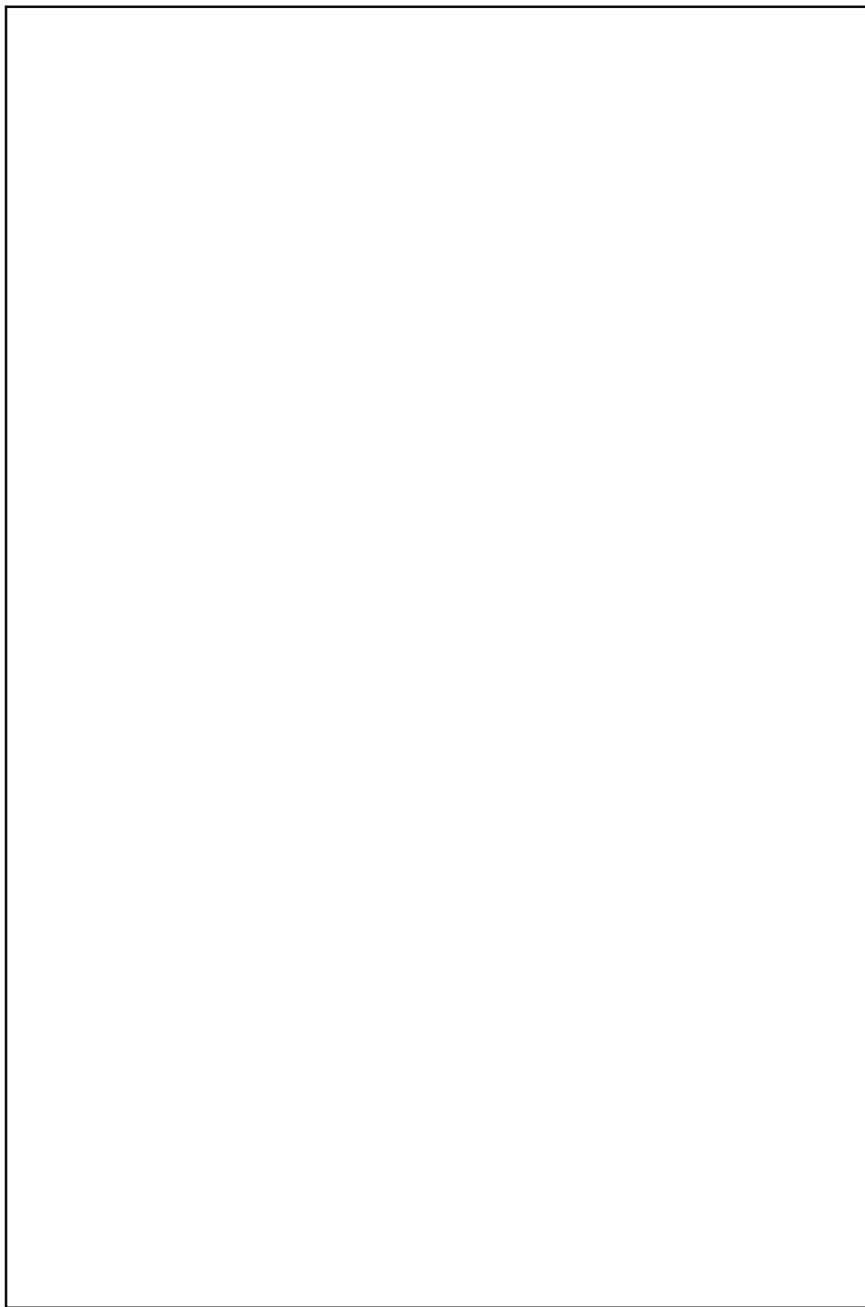
NOTE:

this breathing apparatus must be maintained at least once a month, a copy of the report of each such examination must be signed by the persons conducting the examination, and the report itself kept available for inspection.

Article 3 of the Breathing Apparatus, etc. (Report on Examination) Order 1961 specifies the particulars relevant to breathing apparatus that must be contained in the report as follows:-

- i) The name of the occupier of the factory.
- ii) The address of the factory.
- iii) Particulars of the type of apparatus and of the distinguishing number or mark together with a description sufficient to identify the apparatus and name of the maker.
- iv) The date of the examination and by whom it was carried out.
- v) The condition of the apparatus and particulars of any defect found at the examination.
- vi) The pressure of air in the supply cylinder.

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