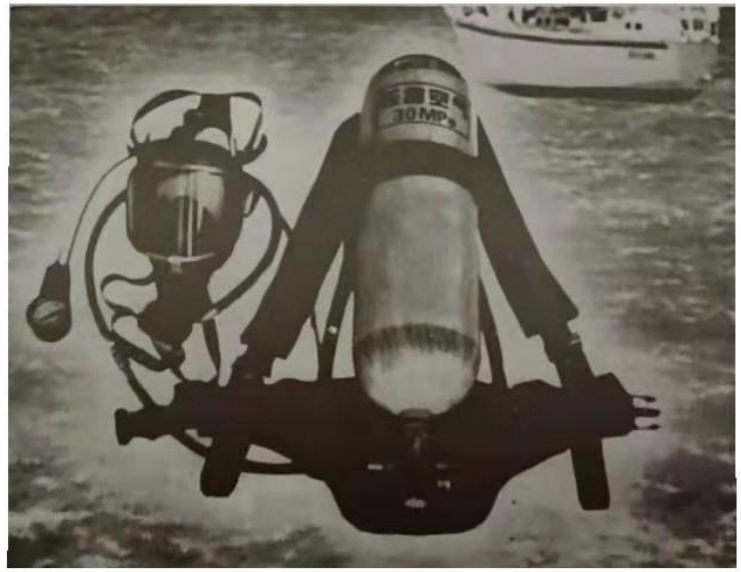
RHZK Positive Pressure Air Breathing Apparatus

DIRECTION FOR USING AND MAINTAINING PICTURE OF RESPIRAOTR



Chapter 1 General

1. Main application and condition

1.1 Main application

RHZK positive pressure fire-fighting air respirator is a new model of self supporting open respirator, which is widely used in fire-fighting chemistry industry fired Petroleum industry smelt mine and transportation. It is a high-performance Positive device designed for fireman and special trained person when trapper in the with smoke pollution hot vapor and/or hypoxygen,to perform the extinguish,

ambulancc.

1.1Condition

a.The atmosphere Is polluted by smoke poisonous gas or/and hot vapor,or In the hypoxygen situation.

b.In the atmosphere of -30 ~+60 , at 0~100% relative humidity and 70KPa~125KPa atmosphere pressure.

2.Main performance index

Table 1

Model	Working Pressure (Mpa)	Volume (L)	Air Deposit (L)	Using Term (min)	Alarm Pressure (Map)	weight (Kg)	Packing (mm)
RHZK 5/30	30	5	1500	40~50	5.5±0.5	≤18	755X460X310
RHZK 6/30	30	6	1800	50~60	5.5±0.5	≤20	755X460X310
RHZKF6.8/30	30	6.8	2040	50~60	5.5±0.5	≤16	755X460X310
RHZKF 9/30	30	9	2700	80~90	5.5±0.5	≤18	755X460X310

Chapter 2 Structure and technical note

1.Structure(See figure 1)

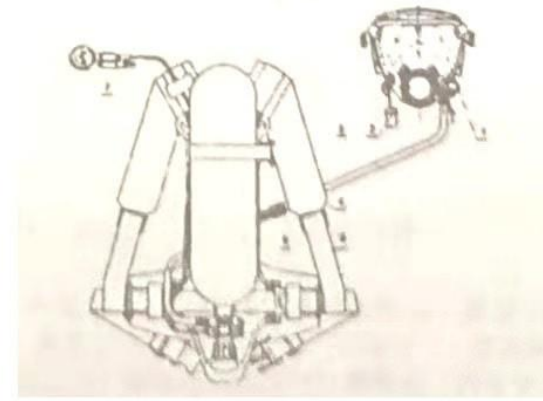


Figure 1-Structure

Figure 1- Structure of RHZK positive preasire Fire-fighting Air Respiralor

1-full race mask 2-spply valve 3-cylinder 4-backboard

5- Pressure neducer 6-cylindre valve 7-repssure gage alrrnm

2.Technical note(see Figure)

2.1Cylinder

There are two types of cylinder: steel cylinder and cylindrical carbon fibre composite cylinder. Different cylinders with different volumes are provided,such as 5L 6L 6.8L and 9L,whose rated working pressure is 30Mpa. As the shell of cylindrical carbon fibre avoided when using the cylinder in order not to break the carbon fibre. Once the scratch is found,the cylinder cannot be used any more. Check its term of validity before using cylinder, it is forbidden to use on expire. Cylinder's hydrostatic test must be taken every three years, and it must be retaken over three years, only when the water pressure is up to standard, can it be put to use. The term of validity of the ultra-high tensile cylinder is twelve years and composite cylinder is fifteen years.

2.2Cylinder valve

Cylinder valve can open and close gas resource. It is equipped with overvoltage pretectivc diaphram. When the inside pressure exceeds rated working pressure by about 25%, the pressure will be released automatically.

After being composed,the cylinder takes nominal operating pressure air-tight test,so,every connection is air-tighted. Don?t disassemble is wicfully. If it needs to be disassembled for repair. 30Mpa air pressure test should be taken after being reassembled.

When using cylinder, in order to sufficiently supply gas to the respirator, cylinder valve's handle bar should be turned over two circles.

2.3Pressure reducer

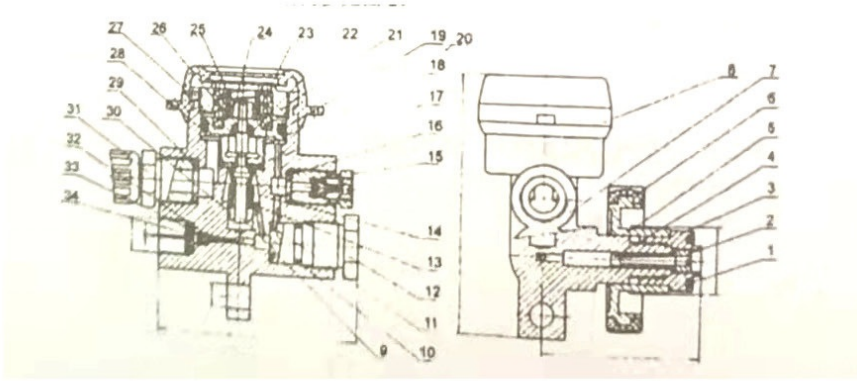


Figure 2-Structure of pressure reducer

1-O-ring washer 2-Pressure reducer 3-Tic-in 4-Filter net 5-conector nut
6-handwheel 7- shell of pressure reducer 8-Latex cap 9-Clipue pule
10-O-ring washer 11-O-ring washer 12-astinfled head 13-O-ring washer
14-O-ring washer 15-Safety valve 16-Washer 17-Washer 18-valve seal
19-O-ring washer 20-Block net 21-Booster 22-washer valve bandte
23-O-ring washer 24-Connector nut 25-Small pressure reducer spring
26-Big pressure reducer spring 27-Nut 28-Piston 29-Washer
30-Valve core 31-Hit press canal 32-Clolander 33- Tip silk 24-Washer

Pressure reducer can reduce 30Mpa high pressure air into(0.65±0.2)Mpa median pressure air for the wearer. Also, pressure reducer is equipped with median pressure safe valve.

b . Technical parameter of pressure reducer

(1)Input pressure: 30Mpa

(2)Inside pressure: (0.65±0.2)Mpa

(3)Output pressure: (0.65±0.2)Mpa

(4)Maximum outflow: ≥300L/min

(5)Stare pressure of valve: 1Mpa ~ 1.2Mpa

(6)Stare pressure of alarm: 5.5±0.5Mpa

Tone of alarm: ≥90db

c.Safe valve

Safe valve is set to avoid the damage caused by the direct outflow of high pressure air whose pressure has hot been reduced as the pressure reduced does not work properly(such as pressure reducer spring diaphragm or valve break down). Under normal conditions, the inside pressure cannot go beyond 0.85Mpa and safe valve is closed. When pressure reducer does not work well so that the inside pressure goes too high, the safe valve will open and release air automatically. When such trouble appears, the pressure reducer must be detected.

d.Alarm

When the air inside the cylinder is consumed to 5.5±0.5Mpa, alarm will be grveo out which will not be less than 90dB, in order to warm the user that there's only 16% air in the cylinder at most.

2.4backboard

Backboard is consisted of back supporting left waist belt, right waist belt, left and right shouider be its and cylinder fixed racks. The structure of backboard see figure 3

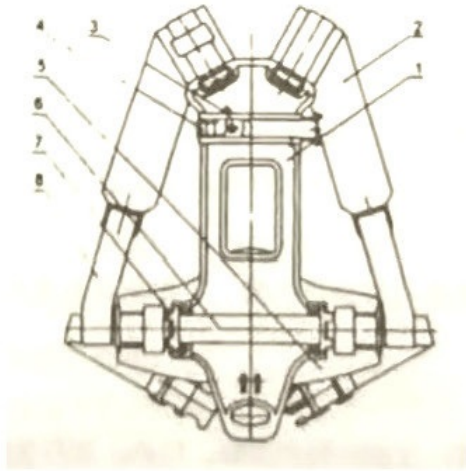


Figure 3-Structure of backboard

1-back supporting 2-shoulder belts 3-Flask seat 4-Cylinder fixed racks
5-Waist mat 6-Waist belt 7-Fold 8-Adjust cincture

a.Back supporting

Back supporting is the basic part of backboard, whose frame and fixed device are welded with stainless steel, so that is has good intensity and bearing capacity. Its surface, which is make of rubber plastic, direct touches wearer's back,and is very soft and comfortable. Back supporting, which is designed on the basis of man's physical characteristic, can make the total weight mainly affect the buttocks so as to reinforce the moving capacity of wearer's of wearer's shoulders and arms .

b.Left and right waist belts

Waist belts fasteners and connectors are made of light weight carbon fibre which is advmces at the moment by injection moulding, so they have good flexibility and intensity and are elegant and in good taste. The looseness and tightness of waist belts can be adjusted freely and conveniently.

c.Left and right shoulder belts

Shoulder belts are enwindcned and lined with sponge rubber cushion which can well distribute the pressure the shoulders bear. The two ends are consisted of stainless steel rings which make the adjustment of belts more simply and conveniently.

d.Cylinder fixed racks

Cylinder fixed racks are consisted of stands, adjusting belts and locking. Stands and locking are made of light weight carbon fibre by injection moulding. lockings are euippest with self-locking device which are right and firm.

2.5pressure gage

Pressure gage which can be moved,are multi-angle,easy to be read and clear.

2.6Supply valve

The gas outlet of the supply valve connects with the whole mask, and the gas inlet connects with the medium-pressure duel. The supply valve can supply the user with airflow above 300L/min. The diaphragm moves down to pres the opening lever the user draws a breath,thus the valve inside is opened to supply air to the user.

The red push-button on the supply valve is an opening switch. Ordinarily, this button should be pushed down to be in a state of "closed". Before operation,the user should engage in specialized training. Please see also Wearing Methods(Section Four)when operating and see also Wearing Methods(Section Five)after operation.

In the supply valve, the volume of supplying air is controlled by the reciprocating motion of the diaphragm. The air can be supplied to the user according to his inhaling capacity.

2.7Full face mask

Full face mask which is made of silicon rubber, is flexible, comfortable,fits the face very well and has a wide vision.

2.8Median pressure pipe and quick disconnector

The two ends of quick disconnector connect with A median pressure pipe and B median pressure pipe respectively. Quick disconnector is equipped with locking device. When connecting, the locking turn counter clock wisely and back to the original position. After connecting, the locking tum clock wisely and back to the original position. Thus, the safting during the course of wearing is strengthened.

Chapter 3 Test prior to use

1.Check full face mask's eyepicces, belts sealings, inhalation valves, exhalation valves and the connections of supply valves. Every part must be cleaned so that is isn't covered with dirt or polluted by acid,ackali,oil or harmful matter. The eyepieces must be rubbed.

2.Check the supply valve to see if it can be opened or closed freely, and if the connection is firm with median pressure pipe.

3.Check the gas source pressure gage to see if it can indicate the pressure nomally.

4.Check the backb

2Map

8.Check the matching between the full cover and the supply valve, close the inlet valve of the supply valve, wear the full cover to inhale, and the inlet valve of the supply valve shall open automatically.

9.The above items shall be inspected regularly according to the service conditions. When the air respirator is not applicable, the above items shall be inspected once a month.

Chapter 4 Ways of standard wasring

1.Pull out quick diseonnector(to avoid the harm to the mask),put the respirator on the back(keep the cylinder valve downward),and adjust the waigt belts and shoulder belts according to the baty.

2.Insert quick disdconneelor and lock it. Put the mask on the chest. So as to be convenient to wear whenever necegaary .

3.Open inhalation valve of supply valve and cylinder valve, observe the reading on the gage and cleulate the performance time.

4.Wear the mask(need not to tighten up the bands), breathe deeply for 2~3 times. No sound of

"si" oeeurs and supply valve shall stop supplying gas when holds of breathes. Then,tighten up the mask bands and makc the mask, thc mask and head face fit well and be air-tight.

When putting on the mask , don't over tighten up the bands. It should be comtortalbe and not have conspieuous tendemess. Aftcr the mask well fits the head and face,and being air-tight,breathe deeply, the inhalation valve of supply vale should be open automatically.

5.When a work is completed, loose the bands, separtc the fire-lighting head harness from the mask, take down the mask and shut off the inhalation valve of supply valve at the same time.Take off respirator and shut off cylinder valve.

a.On hearing the alarm,finish the work in dangerous zone and leave there.

b.Pressure gage is fixed on the shoulder belts of respirator, the remained air inside cylinder can be judged by observing the reading on gage .

c.Don't pull out quick diseonneetor till cylinder valve is shout off and the remained air inside pipes is completely released.

Chapter 5 Post-use management

When work is

Valve Finnally, dry the unit in air.

2.Take off the cylinder from backboard. Wipe the oil and dirt off the equipment and eocamine it to see if there's any damage.

3.Charge the cylinder.

4.Connect the re-chanaged cylinder to the pressure reducer and fix it on the backboard.

5.Examine the respirator according to the requests of using preparation.

6.Ways of charging cylinder

(1)Shut off cylinder valve and take off the cylinder from backboard.

(2)Connect cylinder to the output connector of air compressor. Don't forget to check cylinder's term of hydrostatic pressure. Check to see any scratch or cut on the cylinder surface. Do not use the cylinder when any spoilage is detected unless it is repaired in time and passed a re-examination.

(3)Open cylinder valve, the power of air compressor, perform the cylinder charge to 30Mpa.

(4)Cool the cylinder in air and re-charge it to 30Mpa.Don't over-press the cylinder.

(5)Shut off cylinder valve, release the remained air inside pipes, then take off cylinder from charging device.

(6)Install cylinder in backboard or put it away.

Chapter 6 Check and maintenance

1.Routine check and maintenance

1.1Air-tight test of whole set

Shut off inhalation valve of supply valve, open cylinder valve for 2min, then shut off the valve. Observe the reading on the gage for 1min,the drop in pressure must be less than 2Mpa. It the drop is over 2Mpa in 1min. Air-tight test should be taken to the parts and connectors respectively.

1.2Alarm pressure

Open cylinder valve and shut off the valve when the reading on the gage is up to over 7Mpa. Observe the gage, the alarm pressure should be at the range of 5.5±0.5Mpa. If the alarm pressure goes out of the rage, the alarm must be taken off and every part must be checked. The part must be replaced when any spoilage is detected.

1.3Match test of supply valve and full face mask.

Shut off inhalation valve,wear the mask and open cylinder valve,the sound of"is"can be head when inhaling. When brealhing and holding breathe, air supply shou

till they are up to standard.

2.Routine attention

2.1Cylinder and cylinder valve

(1)Don't knock,scrape or beat the cylinder, forbid the cylinder to be left in sunshine, hot or coll condition repaint the surplus if the old paint peeled off; prevent from corrosion formation on outside of cylinder wall.

(2)Cylinder should be used in the term signed on ti . And the user must have the cylinder examined accordingly at least every three years. Only when is passes the examination,can it be put into use.

(3)Do not use up the air in the cylinder. The limit remained pressure of 0.05Mpa must be kept in the cylinder.

(4)When cylinder valve is reinstalled ind cylinder, do not use it unless it is passed 28Mpa~30Mpa air-tight examination.

2.2 Pressure reducer

Do not disassemble pressure reducer willfully during the course of using. When safe valve leaks, the user must have the pressure reducer's inside pressure and safe valve examined.

2.3 Full face mask

When respirator is disused, put the full face mask into packing. It can't be pressed and shall be stored in clean and dry warehouse. Forbid the mask to be left in sunshine or be polluted by poisonous gas and dirt .

2.4 Supply valve

Under normal conditions, it is forbidden to disassemble supply valve. After repair. It should be reassembled according to the sample. DO not use it is passed a re-examination.

3.Matters needing attention

(1)Forbid the respirator to be left in sunshine to avoid aging of the rubber.

(2)Contamination on/in respirator is stricken forbidden.

(3)Principe should be set up on respirator's storage,maintenance and using.

(4)Do not charge the cylinder with oxygen,or is will explode.

(5)A complete examination of the respirator should be taken every mouth .

(6)Do not use the respirator as diving respirator.

(7)Correct the pressure gage every year.

(8) The compressed-air for breathing must be clean,and meet the requirements as follows:

CO no more than 5.5mg/m³

CO^2 no more than 900mg/m³

Oil on more than 0.5mg/m³

Water no more than

Chapter 7 Decide and release of disorders

Table 2

Problems	Causes	Release Procedure
The net preamire when exhalation valve is open beyond the standanl or over resistance during exhalation	The valve block of breathing valve become sticky	Clean or replace valve block
Leakage at the point contacting cylinder valve and pressure reducer	Thread connector loose or wearing tear of O-ring washer	Tight the knob of pressure reducer of replace O-ring washing
Leakage in the connector of cylinder valve and cylinder	Wear and tear or aging of O-ring washer	Replace O-ring washing
Air leakage of cylinder valve	Valve pad spoiler wear and tear of aging of O-ring washer	Replace O-ring washing washer
Pressure gage out of work	Bad pressure gage leaks High pressure pipes obstructed	Replace the pressure gag Dredge pipes or replace
Pressure gage out of work	Air leakage of high pressures pipes Leakage in the connector or high pressure pipes and pressure gage	Them Replace sealing
Leakage in the connector of supply valve and mask	Dirty or damaged gasket	Clean or replace sealing
Leaky full face mask	Colloid aging or connector loose	Replace full face mask or tight connector
Supply valve can not be opened and closed freely	Parts stick or damaged	Clean pasts or replace them
Others back supporting,waist belt. Shoulder belt, fastener etc.	Damaged	Repair or replace

Chapter 8 Complete set of air respirator

Complete sct

1. RHZK air respirator 1
2. Packing spare part 1
2. Packing special tool 1
4. Inner packing box of air respirator 1
5 . Outside packing box of air respirator 1
6. Direction of air respiralor 1