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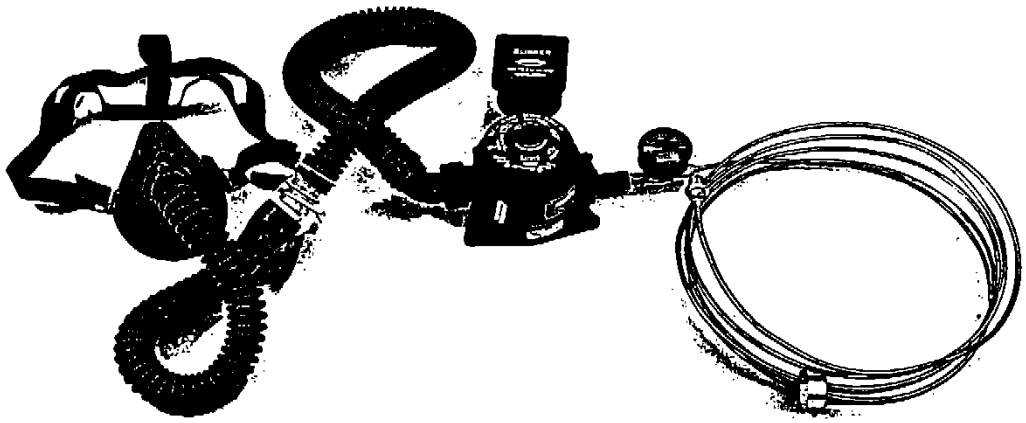
A-1210 WIEN
TEL. 222 33 67 01

A14A HIGH ALTITUDE OXYGEN SYSTEM

by PIK Pacific
1231 Second Street
Manhattan Beach, CA 90266

The A14A High Altitude Oxygen System is based on the utilization of the A14A regulator. The A14A regulator is a diluter-demand, pressure breathing oxygen regulator that was developed for high altitude flying by the military.

The operation of the A14A oxygen system during flight mainly requires the pilot to visually monitor the oxygen blinker and cylinder pressure gauge. No adjustments to the regulator are made unless the pilot exceeds 30,000 feet whereupon he should manually switch the pressure control knob to the SAFETY position. The oxygen blinker indicates whether you have flow or not and is activated each time you breathe. The cylinder pressure gauge indicates the supply of oxygen available. The regulator automatically delivers the proper mixture of oxygen and ambient air from sea level to approximately 30,000 feet altitude. Above this altitude, the regulator supplies 100% oxygen and allows no dilution. The pressure control knob on the top of the regulator must be positioned with higher altitudes for the proper delivery of oxygen.



The A14A High Altitude Oxygen System consists of a A14A regulator with oxygen blinker, cylinder pressure gauge and breathing hose, a Scott 659 mask with breathing hose, a 22 cu.ft. oxygen cylinder (not pictured), and a 9 foot high pressure line. Other cylinder size and line length can be arranged with an appropriate price adjustment to the package price. The hardware and its operation is outlined in the following paragraphs.

REGULATOR'S OPERATION

The A14A regulator is a diluter-demand regulator designed to permit adjusting, in flight, the spring load on the diaphragm so that positive pressure can be supplied. This demand valve spring is controlled manually by turning the pressure control knob, or dial, on the face of the regulator. Up to 30,000 feet altitude, the pressure control knob is set at NORMAL position and the diluter lever at NORMAL OXYGEN. The regulator automatically delivers the proper mixture of oxygen and ambient air from sea level to 30,000 feet altitude. Above this altitude the regulator supplies 100% oxygen and allows no dilution. Between 30,000 and 40,000 feet altitude, the pressure control knob should be set at SAFETY. This supplies oxygen to your mask at a pressure above that of the surrounding air, especially for protection against leakage of air into the mask. The dilution lever on the side of the regulator can be set at 100% oxygen at the lower altitudes, and the dilution function will be by-passed causing the regulator to supply 100% oxygen to the pilot.

The manually operated pressure demand knob can also be adjusted to supply oxygen under positive pressure by using the 41M, 42M, and 45M & above settings. The use of pressure breathing forces oxygen into the lungs under pressure. This mode of operation requires the use of an oxygen mask and harness/helmut designed for pressure breathing. Since the typical oxygen mask arrangement does not assure the proper fit for pressure breathing; use at altitudes requiring pressure breathing is not advisable. Note, the Scott 659 mask as furnished (pictured) is not configurated for pressure breathing.

It is strongly recommended that the A14A diluter demand system is for use to 36,000 feet and for only short times above that altitude. It is extremely important that advice, knowledge, and high altitude chamber training be gained before attempting any high altitude flights.

HARDWARE DESCRIPTION

The A14A regulator is World War II military hardware which has been refurbished and certified. The regulator, as typically sold, has a flow indicator (called an oxygen blinker) and a high pressure gauge (which indicates the cylinder pressure) mounted on its housing, and a 24-inch long breathing hose supplied with it. The oxygen blinker can also be removed and mounted elsewhere using a pressure line (line not provided). The oxygen blinker itself is contained in a 2-1/4 inch instrument case and has the typical instrument mounting arrangement; however, the back of the case must be accessable for the pressure line. Likewise, the high pressure gauge, which indicates cylinder pressure, is mounted at the inlet to the regulator; however, the gauge can be remotely mounted with the use of a high pressure oxygen line (line not provided). The basic A14A regulator can be purchased alone, however, it must not be flown without either an oxygen blinker or a high pressure gauge. The A14A regulator is provided with 24-inch long breathing hose to which the appropriate mask

hose assembly will be connected. The breathing hose attached to the regulator has a specially designed door on the end of the hose to keep dirt and other contamination from entering the breathing hose when not in use. Nevertheless, the regulator assembly should be treated with care and protected from abuse and contamination - your life depends upon it.

The oxygen supply valve at the cylinder should be closed after each flight to remove pressure on the regulator. The installation of a fill valve in the high pressure line between the regulator and the oxygen cylinder allows filling without disconnecting the high pressure line. Since the smallest of nicks or scratches on the fittings can be the source of a substantial leak, it is recommended a fill valve be installed and used.

SCOTT 659 MASK

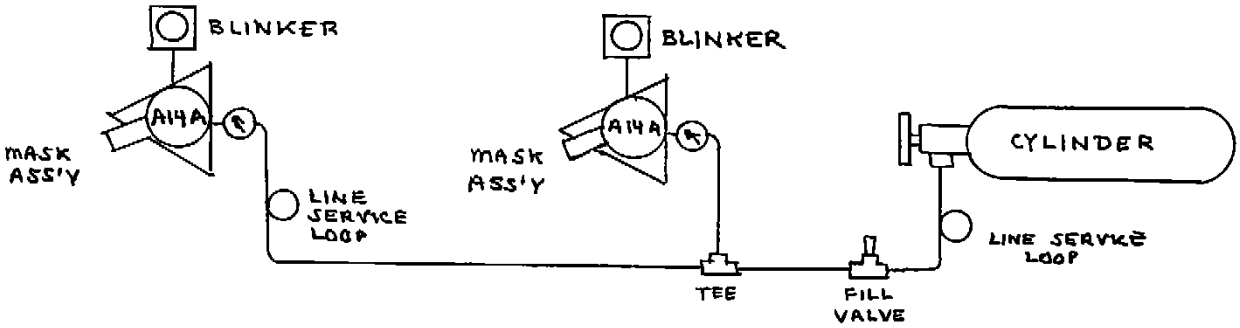
The A14A regulator requires the use of the proper mask, such as the Scott 659, for <u>diluter-demand use.</u> There are a number of medical masks, military surplus masks and other masks available which were either not intended for aviation usage or with the A14A regulator, and we cannot speak for their integrity.

The Scott 659 mask is a diluter-demand mask designed to be used with a diluter-demand regulator. The Scott 659 mask comes with an eighteen inch breathing hose. The mask hose has installed a quick disconnect with an integral accidental disconnect warning device; also, there is provision for connecting a "bailout bottle".

The Scott 659 mask is made of a silcone material, a elastomer superior to rubber. It is ageless, supple, nonsticking when wet, and impervious to ozone. It has a head harness made of nylon and nylon-elastic one-inch wide webbing. This mask harness allows the mask to be adjusted so the mask is held snugly to the face. This adjustment is important in assuring the proper amount of oxygen is delivered to the pilot by eliminating any leaks around the face/ mask interface. The breathing hose supplied with the A14A regulator and the Scott 659 mask is also made of a silcone elastomer. The hose is of a convolute, noncollapsible construction. The mask can be cleaned with a damp, clean lint-free cloth, or with a cloth dampened with isopropyl alcohol. No other cleaning agent is recommended. In either case, after cleaning, the mask must be thoroughly air dried before use.

The Scott 659 mask, as provided, does not have a microphone installed; however, it can be provided with a microphone installed so communication is available without mask removal. The Scott mask is so designed that the microphone can be retrofitted. The microphone can be purchased from PIK Pacific, and either installed by yourself or us.

TWO-PLACE INSTALLATION USING TWO A14A REGULATORS



Note: 1) Must use two A14A regulators for two persons.
2) Fill valve recommended.
3) Regulator will function without blinker or pressure gauge, but safety and FAR's demands their use.
4) Two cylinders can be tee'd together to increase system capacity.
5) Two complete systems could be installed (not shown).

NOTE: The above information is provided to the customer for a better understanding of the oxygen equipment offered by PIK Pacific. This information is no substitute for the information and training obtained through attending the High Altitude Train-ing Course (with chamber ride) offered by the FAA. It is strongly recommended that this course or a similar course be taken before any high altitude flights are made requiring oxygen. Also, it is strongly recommended that pilot review the aplicable FAR's to assure the oxygen system will meet the requirements for the intended flight.

PIK Pacific - 1231 Second Street, Manhattan Beach, CA 90266