

CHAPTER 9

NAVY COMBAT EDGE AIRCREW PROTECTIVE ASSEMBLY A/P22P-16

9-1. GENERAL.

9-2. The Navy Combat Edge (NCE) A/P22P-16 Aircrew Protective Assembly ([figure 9-1](#)) is designed to provide the aircrewmember with a pressure breathing for g (PBG) system for protection against the effects of positive acceleration (+4 to +9g) at altitudes up to 50,000 feet. The basic NCE concept is based on an advanced technology system developed by the United States Air Force. The Navy enhanced the USAF system with Navy unique features compatible with current life support, survival, and rescue equipment. The man-side components of NCE consist of the HGU-87(V)/P22P-16 Helmet and the HGU-89/P22P-16 Helmet, MBU-24/P22P-16 Oxygen Mask, CSU-21/P22P-16 Counter Pressure Vest, CRU-103/P Oxygen Regulator, and CSU-20/P22P-16 Anti-g Garment. The anti-g valve system installed in the aircraft senses the onset of positive g-forces and automatically provides pressurized air to the anti-g garment and oxygen regulator. Regulated oxygen is then supplied to the NCE assembly equipment to provide for vest and helmet bladder inflation and positive pressure breathing. See [figure 9-2](#) for functional diagram of the NCE system.

9-3. CONFIGURATION.

9-4. The HGU-87(V)/P22P-16 helmet is a modified HGU-68(V)/P. The modification provides for automatic tensioning of the mask required for anti-g (PBG) pressure breathing. It consists of an air bladder installed between the thermoplastic liner (TPL) and the energy absorbing liner in the lower rear portion of the helmet. A bladder air/oxygen supply hose passes through the helmet shell and is connected to the female side of a quick disconnect. The bladder is automatically inflated with the onset of positive

g-forces to keep the aircrewmember's mask tight to his face while the NCE system is providing positive pressure to the mask. The quick disconnect permits separation of the helmet and mask for maintenance and parachute descent procedures. The helmet visor is modified on the lower edge to fit snugly against the MBU-24/P oxygen mask. Refer to NAVAIR 13-1-6.7-3 for details of the HGU-87(V)/P helmet or HGU-89/P22P-16.

9-5. The CSU-21/P22P-16 Counter Pressure Vest Assembly is worn over the standard flight suit. The vest inflates with oxygen to a pressure determined by the automatic valve system installed in the aircraft to provide counter-pressure breathing to counteract g-forces. Refer to [Chapter 4](#), Anti-g Garments, for details of the CSU-21/P.

9-6. The CSU-20/P22P-16 is similar to the CSU-13B/P and CSU-15/P but provides a 40% increase in leg and abdomen coverage to further aid in restricting the flow of blood to the lower portion of the body. For details of the CSU-20/P, refer to [Chapter 4](#), Anti-g Garments.

9-7. The MBU-24/P22P-16 Oxygen Mask contains separate inhalation and exhalation valves. The MBU-24/P is specifically designed for use with the HGU-87(V)/P helmet and the NCE system. Refer to NAVAIR 13-1-6.7-3 for details of the MBU-24/P oxygen mask.

9-8. The HGU-89/P22P-16 Helmet is a modified HGU-85(V)/P. This modification provides for the use of MXU-810/U Night Vision System and can be modified to accommodate the AN/AVS-9 Night Vision Image Intensifier Set (NVIIS).

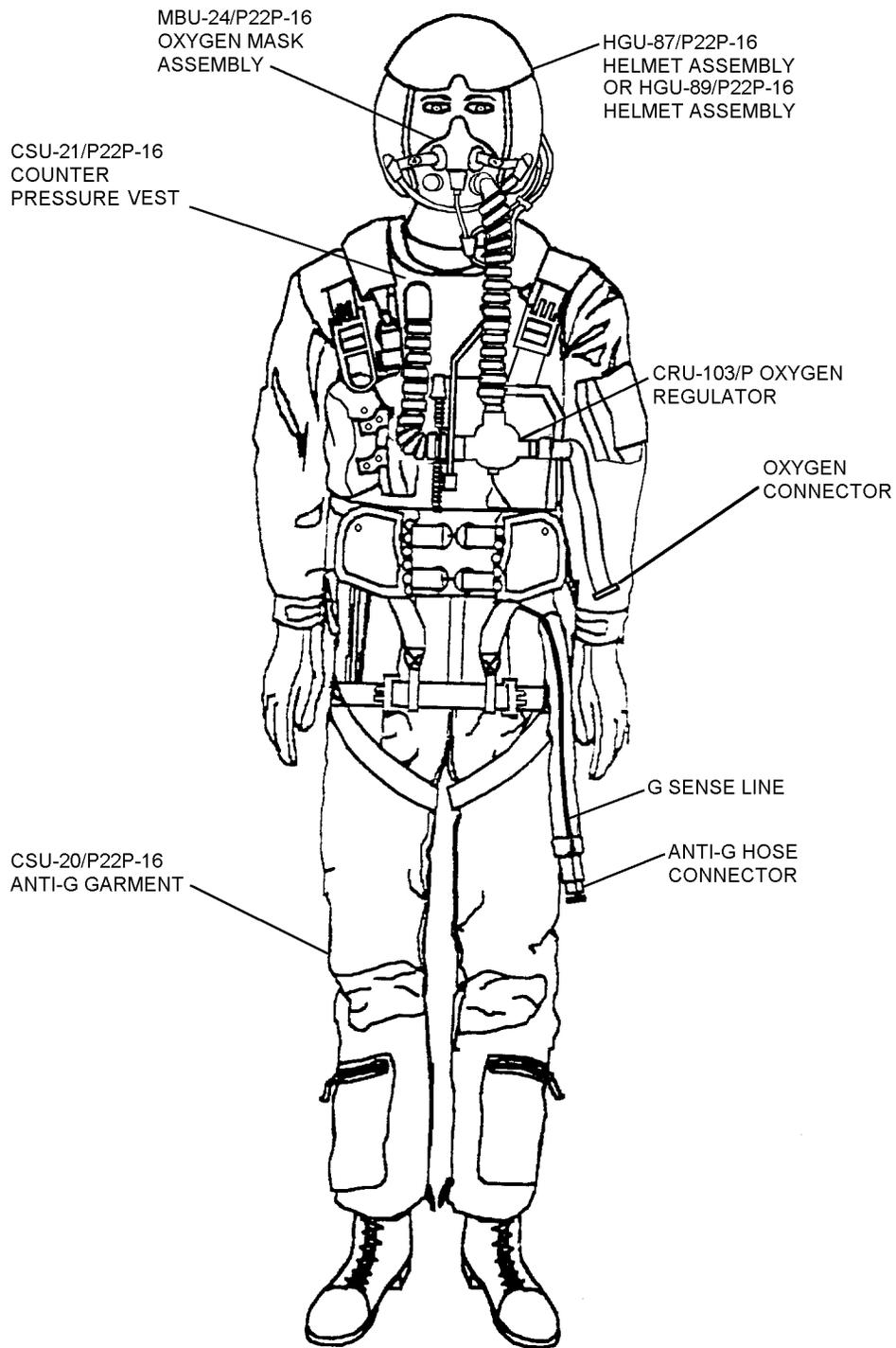


Figure 9-1. Navy Combat Edge A/P22P-16 Aircrew Protective Assembly

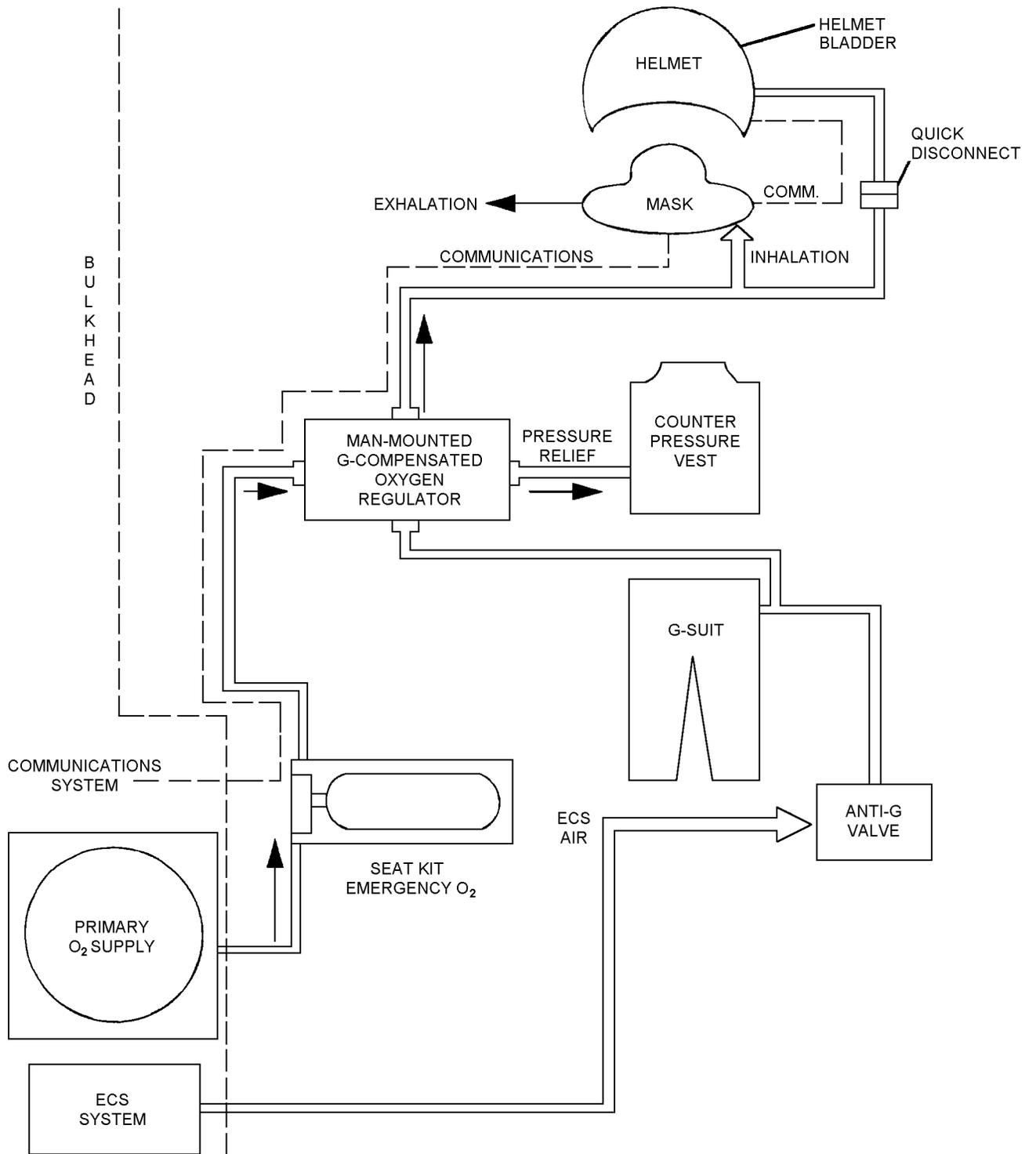


Figure 9-2. NCE A/P22P-16 Aircrew Protective Assembly Functional Diagram

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