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NASA TECH BRIEF

Langley Research Center

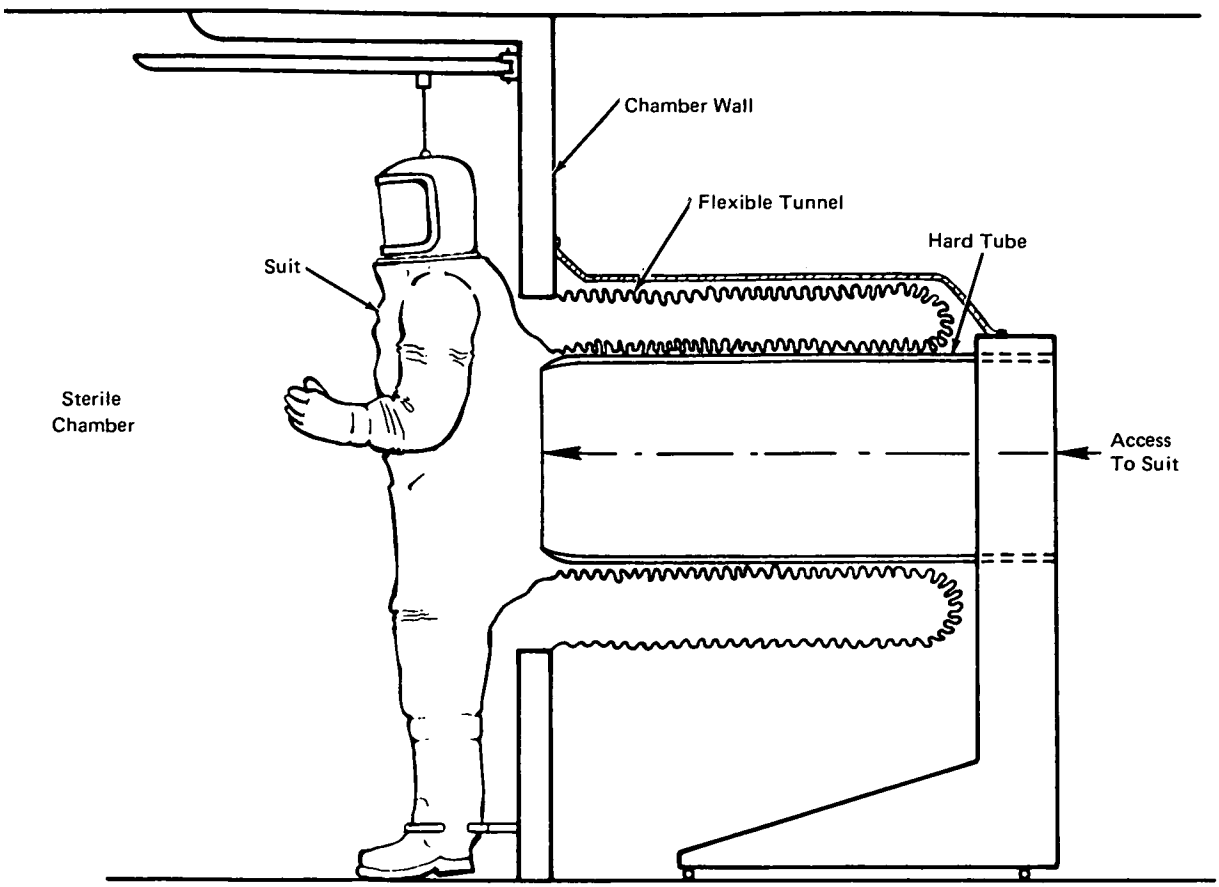
Sterile Chamber Operation with Bio–Isolator Suit System

The Bio-Isolator Suit System (BISS) was developed to meet the requirement for sterile repair and assembly of unmanned interplanetary spacecraft. The BISS permits work to be performed on objects within a sterilized chamber. It permits a man to effectively enter a sterilized area, through a sealed suit and tunnel system, without contaminating the sterile environment.

The Bio-Isolator Suit System consists of an outer suit and tunnel, an air cooling and distribution system, a communications system, and a support mechanism for the suit and suit tunnel.

The suit and flexible tunnel, shown in the figure, form a biologically impermeable membrane which is an extension of the sterile chamber wall. The suit consists of a main body with a detachable helmet and replaceable gloves and boots.

The cooling and air distribution system consists of an air-cooled undersuit, an air-conditioning unit, and tem-



Bio-Isolator Suit and Tunnel Configuration

(continued overleaf)

perature and flow controls for the air-conditioning unit.

The communications system is essentially a parallel-type system which permits each person on line to receive and transmit voice messages simultaneously.

The support mechanisms consist of a suit tunnel-support system and suit-donning devices such as boot holders, helmet hook, and the hard tube. The hard tube is a cantilevered aluminum tunnel through which the suit is entered and over which the tunnel of the suit is pulled. This reefing permits the suit to move forward and backward in the sterilized chamber.

Testing of the Bio-Isolator Suit System has revealed that although some people can function as BISS operators and do heavy lifting, ladder climbing, and assembly operations for a continuous 4-hour work period, there are others that cannot perform satisfactorily within the suit due to the psychological factor of claustrophobia.

Note:

Inquiries concerning this device may be directed to:
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Reference: TSP72-10547

Patent status:

NASA has decided not to apply for a patent.

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