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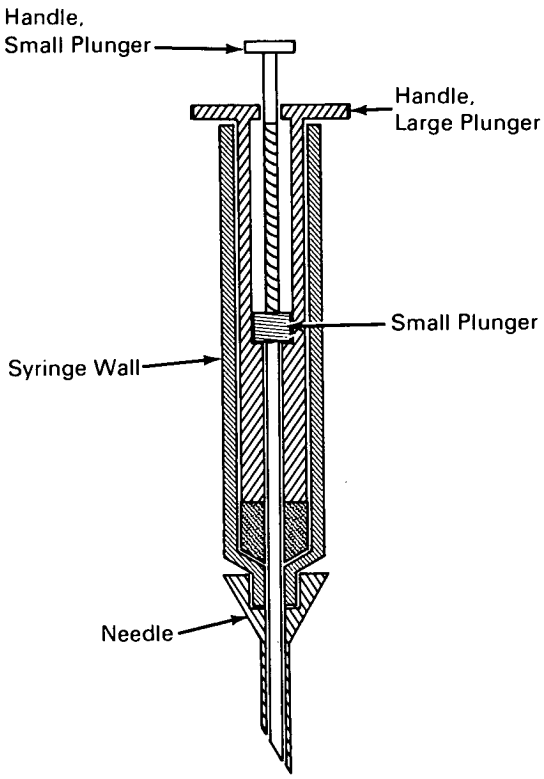
NASA TECH BRIEF

Combination Syringe Provides Air-Free Blood Samples



Air-Free Syringe

This syringe combines a standard syringe and a spinal needle in a new and unique manner to secure air-free samples of blood. Current practice to minimize the effects of small air bubbles requires the use of a very small needle which contains a solution such as heparin prior to drawing out the blood. However, this latter technique can result in contamination of the sample. Another method for avoiding air bubbles has been to fill the needle with oil to exclude air prior to obtaining the sample, but this presents the danger of oil embolism. The combination syringe obtains air-free blood samples because the air bubbles become insignificant when samples greater than 1 cc are drawn. Hospital research laboratories and manufacturers of automated laboratory and microanalysis equipment should be interested in this novel device.

Referring to the figure, the needle of the syringe is inserted into a vein in the standard manner. The handled small plunger is slowly drawn away from the inserted needle. During this procedure, the long, thin center section moves and allows blood to fill the needle. The action of this plunger is stopped when the inner small plunger enters the detent at the level of the second handled large plunger. The handled large plunger is then slowly pulled to fill the remaining portion of the syringe. To remove blood from the syringe, the handled large plunger is pushed forward.

Notes:

1. No venous blood sampling device presently used permits the initial drawing of a sample of blood without introducing a small air bubble. This technique could also be used to provide bubble-free fluids for other kinds of analyses.
2. No additional documentation is available. Specific questions, however, may be directed to:
   Technology Utilization Officer
   Manned Spacecraft Center, Code BM7
   Houston, Texas 77058
   Reference: B70-10545

Patent status:

No patent action is contemplated by NASA.

Source: Dr. Sam L. Pool
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(MSC-12320)

Category 05