

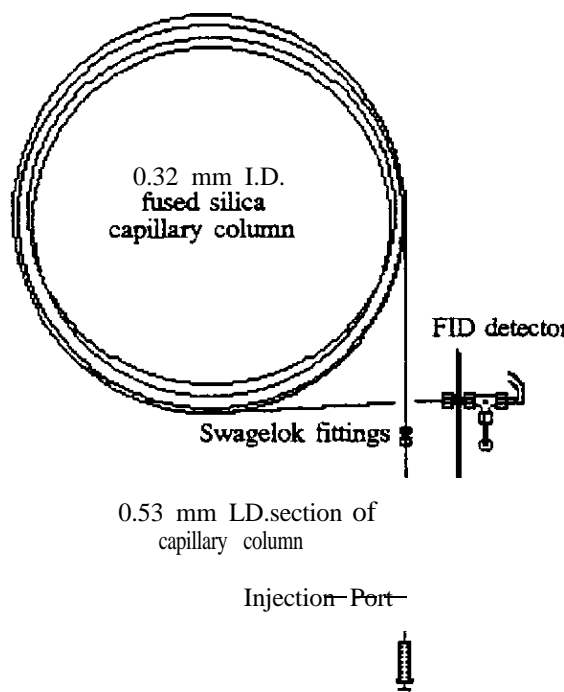
# SRI Application Note # 11

## TOPIC: INSTALLATION OF 0.32mm CAPILLARY COLUMNS

When the SRI model 8610 gas chromatograph is ordered with the flame ionization detector (FID) option, a general purpose stainless steel silica gel-packed column or a 0.53 mm I.D. fused silica capillary column is normally included. The chromatograph is tested and the chromatograms that accompany the unit are obtained with the silica gel column installed. If the purchaser specifies another type of column, the specified column is installed, tested and chromatograms are generated for the purchaser's review.

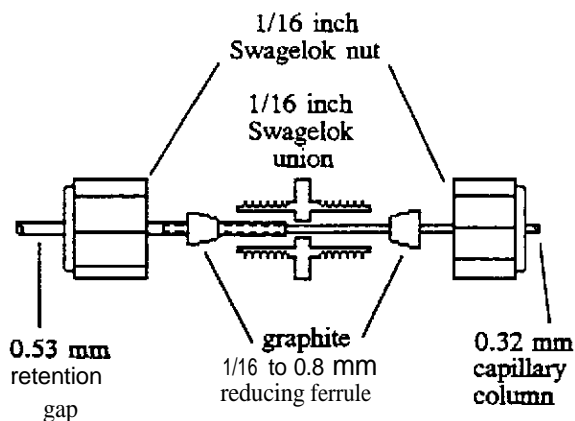
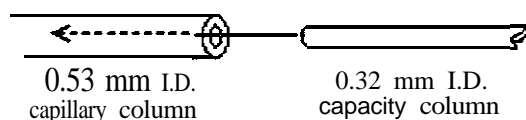
Most columns are easily installed in the chromatograph. In certain circumstances, such as when the purchaser specifies a 0.32 mm I.D. or similar capillary column without a heated split/splitless injector, special measures must be taken in order to properly install the column (see manual INJECTOR section for split/splitless information). Coupling of the column to the injection port and flame ionization detector jet assembly requires that special adapters and fittings be used. Dead space must be reduced to an absolute minimum if the peaks are to be resolved correctly. The fused silica capillary column is inherently fragile, and the reduced size of the smaller capillary columns requires that all connections be made with great care and precision. These columns are flexible but delicate.

The 0.32 mm I.D. fused silica capillary column is of such a small internal diameter that direct, on-column injection is not possible. A special adapter must be installed between the injection port and the column in order to permit the insertion of the needle into the injection port without contacting the 0.32 mm column while permitting the delivery of sample to the column. To effect this connection, a section of 0.53 mm I.D. fused silica capillary column (megabore) is employed as a retention gap. Two benefits are derived from this arrangement. First, the internal diameter of the 0.53 mm capillary column permits the insertion of the 0.32 mm capillary column with a tight fit. This connection is made within a Swagelok union with graphite ferrules in order to secure the two sections of column. Dead space is practically eliminated, avoiding possible peak trailing encountered when dead spaces exist within a system. The second benefit obtained is the creation of a retention gap. A retention gap assists in the separation of the solvent peak from the sample peaks, making the resultant chromatograms easier to quantitate. Two meters of 0.53 mm capillary column are used for this purpose. At the FID jet end of the column, a graphite ferrule is used to secure the 0.32 mm column in the jet. The end of the column is positioned in the jet so that the delivery of carrier is in close proximity to the detector flame and collector electrode.



COLUMN CONNECTION OVERVIEW

0.32 mm capillary column is inserted into 0.53 mm capillary column. A tight fit is obtained, and dead space is avoided



DETAIL OF COLUMN COUPLING  
0.32 mm to 0.53 mm capacity column