

Close to the movable spray-holder two R_F -meters made from elastic bands are fixed. These graduated bands can be adjusted by means of a screw, so that they follow the variations of the solvent front on the chromatogram. The R_F values of the single spots are read off by moving the spray-holder horizontally adjacent to the spots. On the glass frames there are several horizontally movable nylon threads. If required, one thread at a time can be adjusted to the appropriate R_F -level in order to obtain an R_F -network. This is very useful, provided that the solvent fronts on all chromatograms placed on one and the same frame have migrated the same distance.

Movable U.V.-lamps, placed in front of the glass frames allow the fluorescing spots to be studied in the darkroom before and after the spraying of the reagents.

In order to facilitate the exchange of the spraying solutions, a rack with flasks containing reagents is placed near the apparatus. These flasks, which have a capacity of ca. 15 ml, can be fixed directly on the sprayers.

A ventilation arrangement is connected with that part of the rack where the sprayers are placed.

The dimensions of the whole device are: height 255 cm, width 183 cm and depth 94 cm.

The device for spraying paper chromatograms has also proved to be a useful observation frame for radioautographic films, X-ray plates etc., without any rearrangement.

The author is greatly indebted to Svenska Aktiebolaget Philips, The X-ray Department, Stockholm, for placing their alternator at his disposal for this work.

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¹ L. REIO, *J. Chromatog.*, 1 (1958) 338.

Received August 3rd, 1960

J. Chromatog., 5 (1961) 86-88

Water-cooled sample injection port for high temperature gas chromatography

In conventional gas chromatography instruments the liquid sample injection port is attached directly to the flash heater and both are at about the same temperature. When the flash heater is operated above 250°, ordinary rubber septums used in the sample injection port gradually decompose. This causes leaks in the carrier gas system and contamination problems in the chromatographic column. Further complications are encountered with capillary columns. Small fragments of decomposed septum material are swept into the carrier gas stream. These particles lodge at the entrance of the capillary column, restricting or even completely cutting off the flow

J. Chromatog., 5 (1961) 88-89

of the carrier gas. High temperature rubber or silicone septums have other undesirable features. Relatively thick material must be used, and the septums formed are inherently stiff. Often the hypodermic needle will bend or kink before it penetrates the septum.

To eliminate these difficulties, a water-cooled adapter for the liquid sample injection port has been developed. While the adapter was designed specifically for either the Barber-Colman Model 10 or Model 20 gas chromatograph, with minor modifications it can be used with most commercial gas chromatographic instruments.

The adapter consists of a threaded fitting that replaces the knurled knob furnished with the instrument (Fig. 1). The fitting is fabricated from a 1-in. diameter bar of stainless steel $1\frac{3}{8}$ in. long. A portion of the fitting is machined out and sealed with a sleeve. The machined portion is used as a water jacket; $\frac{1}{4}$ -in. copper tubing is welded to the sleeve for the water inlet and outlet. A soft rubber septum is held

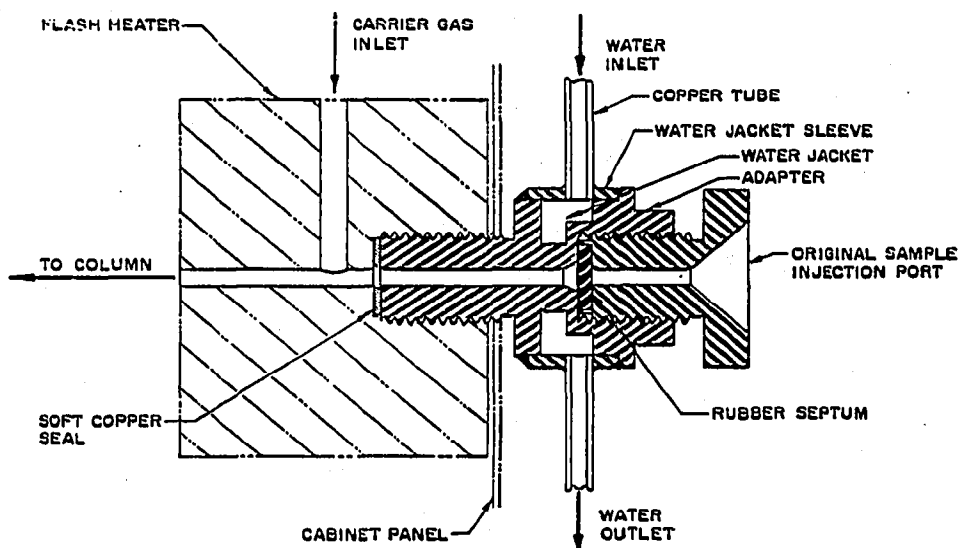


Fig. 1. Water-cooled adapter for sample injection port.

in place by threading the original knurled knob into the front end of the fitting. The effective overall increase in length of the liquid sample injection port is somewhat less than 1 in., so that Hamilton syringes with sealed needles reach well into the heated zone of the flash heater.

With the water-cooled adapter, a soft thin rubber septum can be used since it is located in the cool portion of the adapter. The flash heater may be operated at full heat without danger of disintegrating the rubber. A coolant water flow of 2 or 3 ml per min is sufficient to maintain the adapter at room temperature when the flash heater is heated to 350° .

The water-cooled adapter does not affect the retention times or the peak shapes of compounds having boiling points even in excess of 400° .

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Received August 3rd, 1960