

THE MEASUREMENT OF PROTON-PROTON DIFFERENTIAL CROSS-SECTION IN
THE ANGULAR REGION OF COULOMB SCATTERING AT THE ISR

Addendum to CERN/ISR/69-20

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In our proposal concerning the measurement of the elastic differential cross-section in the region of Coulomb scattering we did not specify the shape of the vacuum chamber which is required for this experiment.

In discussions with specialists of the machine (R. Calder and E. Fischer) we found a simple way for allocating the detectors near to the beam, which does not imply a modification of the standard parts of the vacuum chamber but only requires the insertion of particular pieces.

The detector in front of the first F magnet downstream of an even numbered intersection region is shown in Fig. 1. It consists of a mosaic of small scintillation counters arranged in sections.

The whole hodoscope is contained within the section of the standard vacuum pipe of the ISR which is 160 mm in diameter. The maximum detectable scattering angle ϑ is about 9 mrad.

A system, similar to this one but covering a much smaller interval of ϑ should be placed beyond the F magnet.

The special sections of vacuum chamber to be inserted in the standard one are schematically shown in Fig. 2. Counters will be allocated inside the small movable parts connected to the cylindrical pipe by means of bellows. Thin walls should be provided normally to the beam. The forces acting upon the upper and lower bellow compensate each other, by means of mechanical connections which are external to the pipe and have a variable length, so as to permit a variation of the vertical aperture left free for the circulating beam. A mechanism for positioning this aperture with respect to the beam has to be provided.

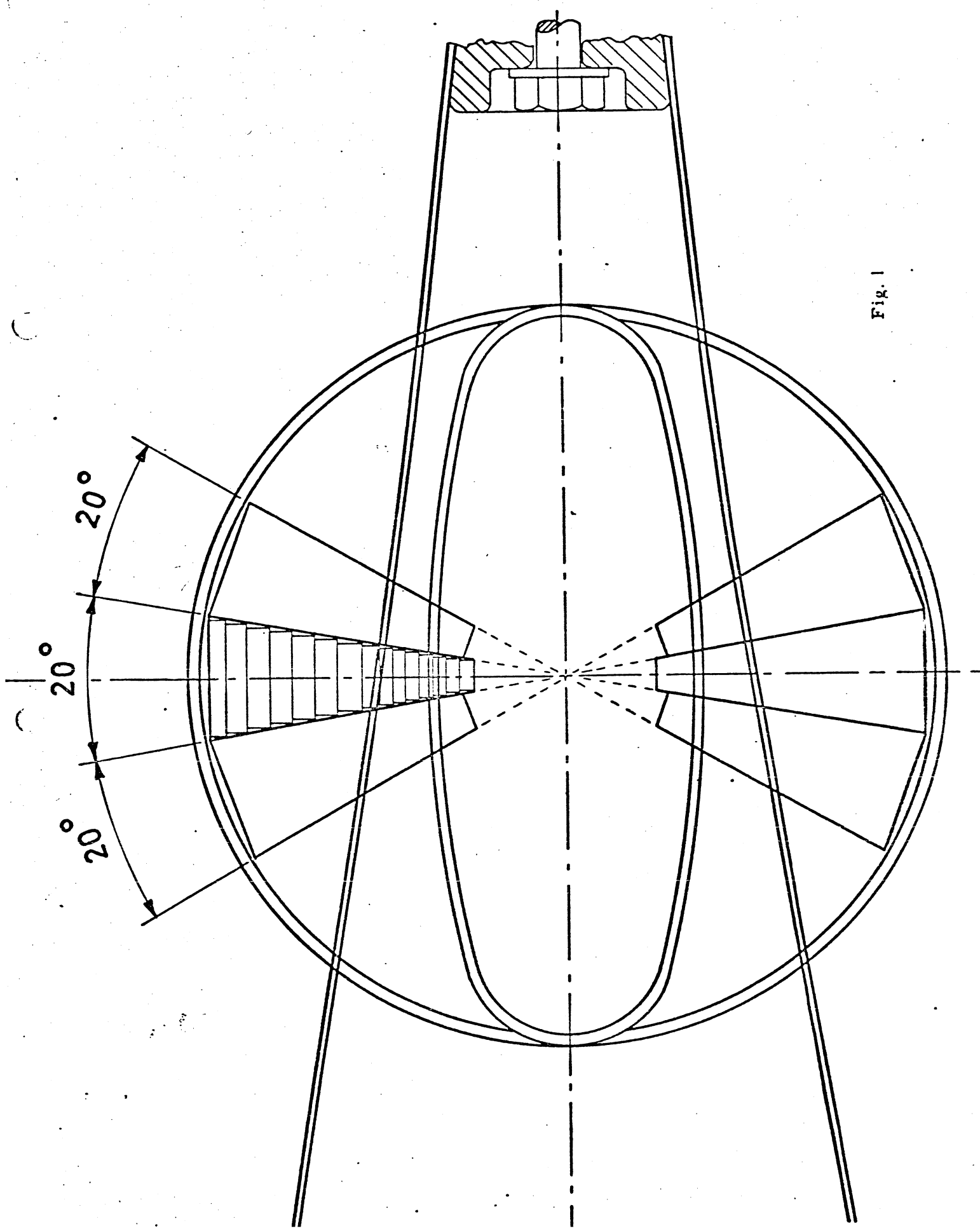
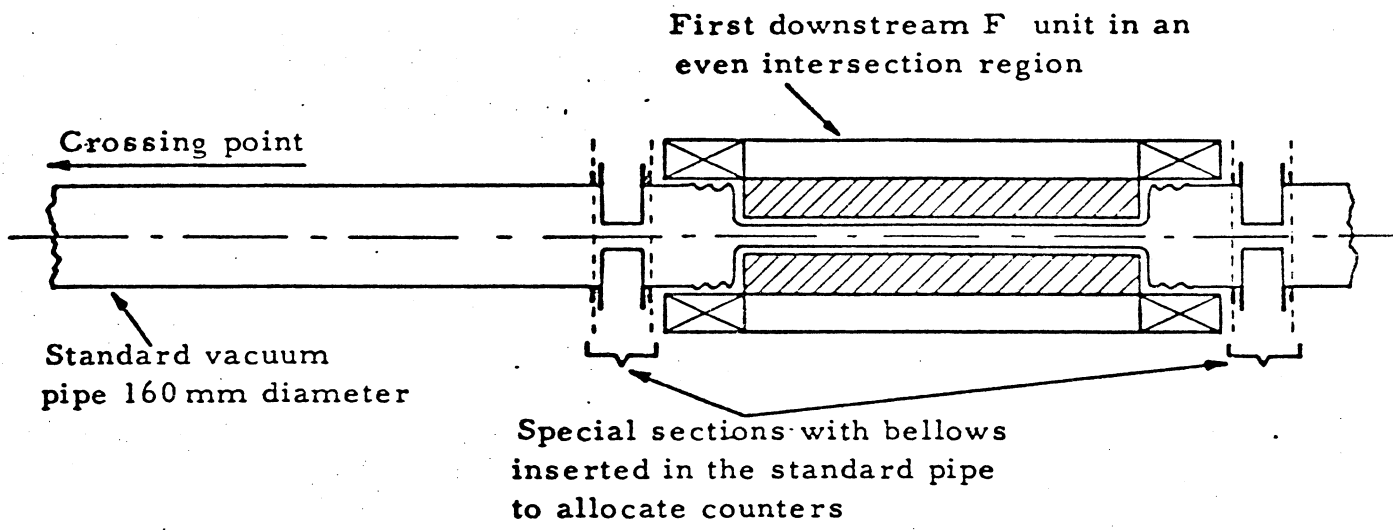


Fig. 1



Not to scale
 Dimensions in mm

Detail of a special section

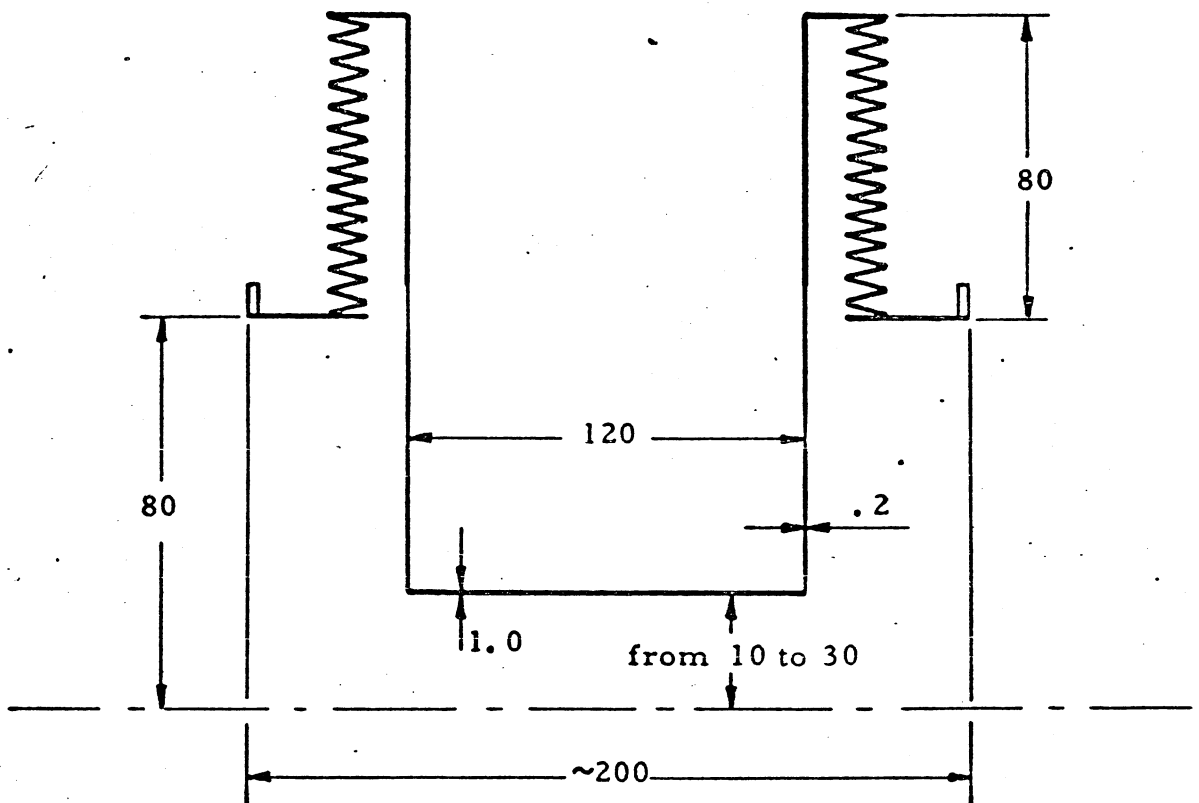


Fig. 2