DISCLAIMER

RADIATION THERAPY UPDATE

PUB-311

RADIOTHERAPY SECTION - BUILDING 55 PUB-311
LAWRENCE BERKELEY LABORATORY - UNIVERSITY OF CALIFORNIA, BERKELEY

Therapy Physics

In this issue we describe the specifications of the EMI-7070 CT scanner which will be used for therapy planning.

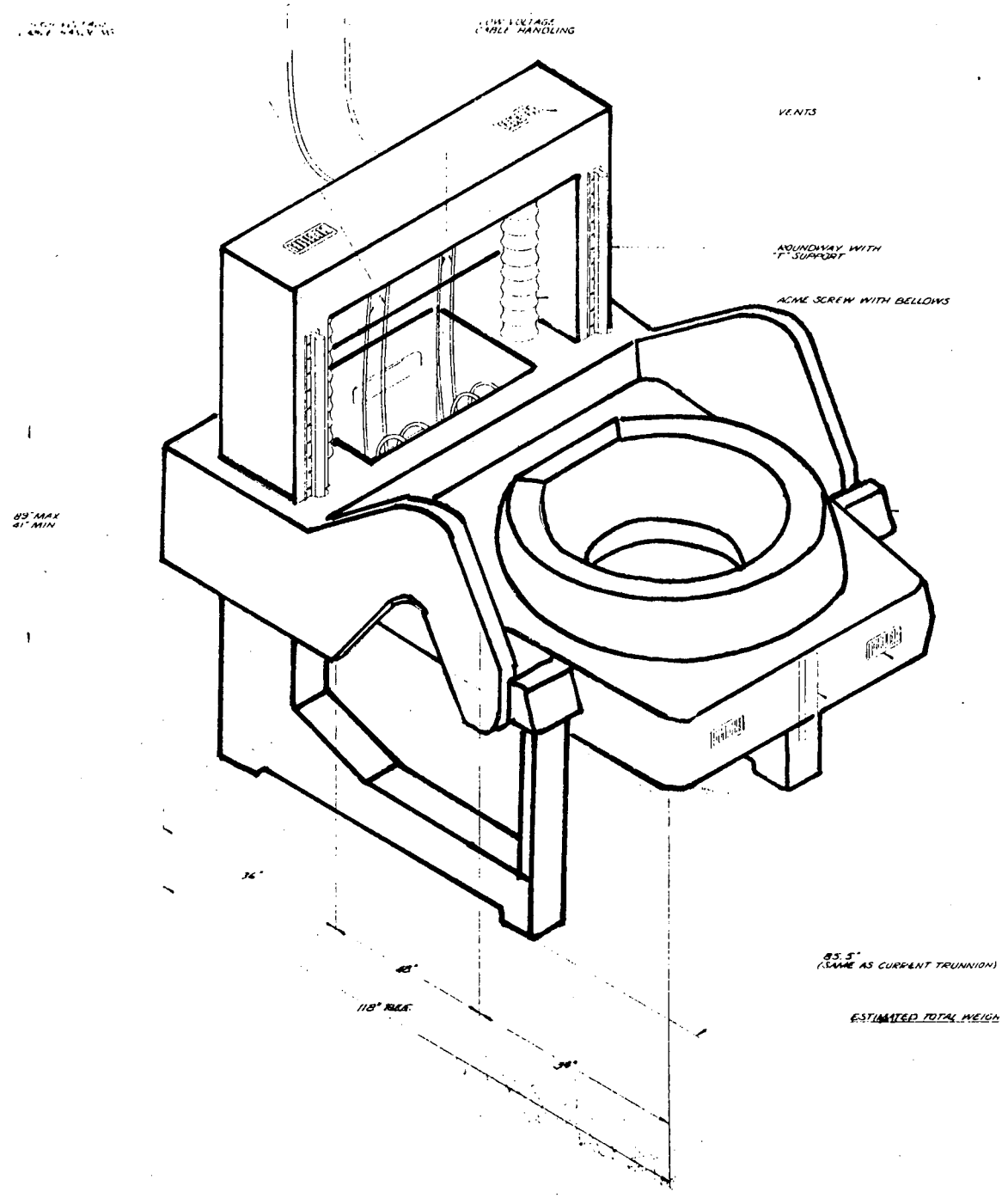
The EMI-7070 is a stationary ring unit with a scan speed of 3 seconds. The scanner has a specially designed trunion which allows the detector ring to be rotated from vertical to horizontal. With the detector plane vertical, the scanner may be used in the standard manner, where the patient lies on the scanner couch. With the detector plane horizontal (Fig. 1), scans may be performed with the patient either seated or standing. The majority of cancer patients treated with charged particles at LBL have been positioned upright, which is a natural isocentric orientation for a fixed horizontal therapy beam. With the patient upright, the detector assembly is raised and lowered to cover the area of interest. The scanner is capable of taking 2 mm slices every 15 seconds for 100 consecutive scans. The time per slice is 35 seconds for normal reconstruction and 90 seconds for beam hardening corrections. This scanner is identical to the machine specified by Dr. Michael Goitein for the Massachusetts General Hospital/Harvard Cyclotron Laboratory proton therapy project.

The EMI-7070 will also be provided with plain view reconstruction, which is performed by translating the patient past the detectors without x-ray tube rotation. This provides a plain view image useful in the interpretation of axial views and their positional relationship to conventional radiographs.

The physicians' viewing console will be used to enter target volumes in each axial slice. This information will be used to design three dimensional compensation to limit the high dose region to the target.

Efforts are underway to prepare for the scanner installation in the Research Medicine Building (Building 55) at LBL. The expected delivery date is February 15, 1980. A hardware data link will also be installed between the scanner and treatment planning computers (in the same building wing) to facilitate scan data transfer. Special CT compatible chairs and standing platforms will be needed to reproduce identical CT scan and treatment positions. Immobilization techniques will be improved to guarantee reproducibility of patient positioning from day to day, to allow for accurate placement of three dimensional compensation.

Patients may be referred for consultation and/or radiation therapy by phoning Joseph R. Castro, M.D. or Jeanne M. Quivey, M.D. (415) 486-6325 (FTS 451-6325) or by writing c/o Building 55, Room 105, Lawrence Berkeley Laboratory, Berkeley, California 94720.



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