PS/Int./MG/VA 60-35
13 October, 1960.

Note on additional quadrupoles in the octupole-lenses

Reason for those additional coils : Rotate the plane of the betatron-oscillations to the horizontal and vertical. They were up to now inclined at about 45°.

Coils : Each coil has 23 turns, made of Solflex B with 1 mm^2. The rectangular size of the coil is 100 mm. X 410 mm.

Installation in octupoles : According to Fig. 1, one coil is embracing the two poléfaces on top of the octupole, a second coil those two on bottom. They are fixed with nylon band on the four edges to the kicker windings in the octupoles.

Electrical connection : The current flows from the right terminal (Fig. 2) of the junction box on the lense to the lower coil (Fig. 1), from there to the upper coil (turned in opposite direction) and back to the left terminal.

Cabling for supply There are two circuits with separated supplies. One has all the octupoles between two focusing magnets (octupoles 5, 15, ... 95), the other one all the octupoles between two defocusing magnets (octupoles 4, 14, ... 94). Each of those circuits consists of two loops in parallel. Each loop has 5 octupoles in series (Fig. 3). The power supplies are installed in the power house in rack 29. The cable used is 2 x 4 mm^2 protected cable. It is laid along the outside cable channel of the ring. (See cable diagram 101-15-2 and wiring diagram 103-197-3 and 103-513-0).

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Supply : Solatron variable voltage transistor power supply - Type AS 758.2.

Measurements on those coils : The resistance of each loop is 7,32 Ω . The differences between two loops are less than 0,05 o/o (balancing resistances in rack 29 between 0 and 0,04 Ω). With a voltage of 11,0 V. on each loop - giving 1,5 A. -, the measured voltage drops for all the coils are :

Octupole No.	Voltage drop [V] for upper coil	lower coil	Octupole No.	Voltage drop [V] for upper coil	lower coil
4	0,63	0,64	54	0,63	0,64
5	0,62	0,65	55	0,62	0,63
14	0,64	0,63	64	0,63	0,63
15	0,64	0,64	65	0,65	0,65
24	0,64	0,65	74	0,61	0,61
25	0,64	0,64	75	0,63	0,63
34	0,63	0,62	84	0,64	0,65
35	0,65	0,64	85	0,64	0,63
44	0,64	0,64	94	0,64	0,64
45	0,63	0,63	95	0,64	0,63

The differences in the values are due to winding the coils with a different force (different coil size). In octupole 74 the cable used for both coils seems to be slightly different (there are the only two coils which are dark red). Only in octupole 5 is the difference between lower and upper coil bigger than 0,01 V.

Current : To-day, 1,5 A. (11,0 V.) is used. Maximum current 4,1 A. (30 V.). The indication of the current on the supply unit is twice the value because of the two loops in parallel.

W. RICHTER.

Distribution : (open)

Scientific Staff of Machine Group.

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PS/1999

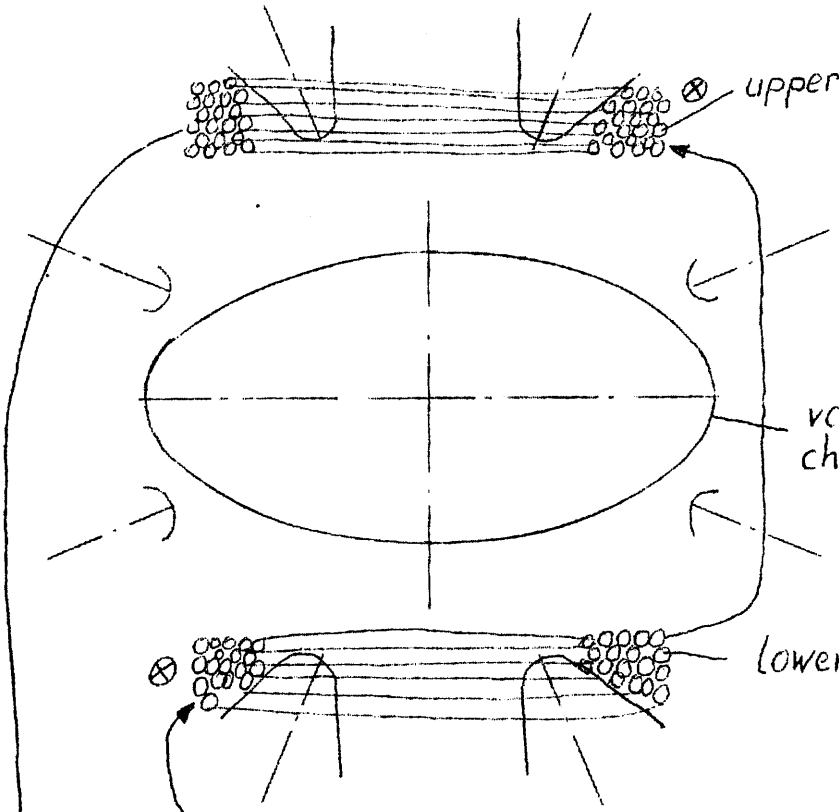

Fig. 1 looking in beam direction (downstream)

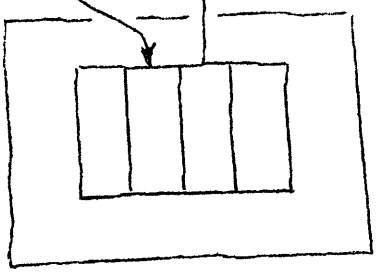

Fig. 2
junction box on the lense

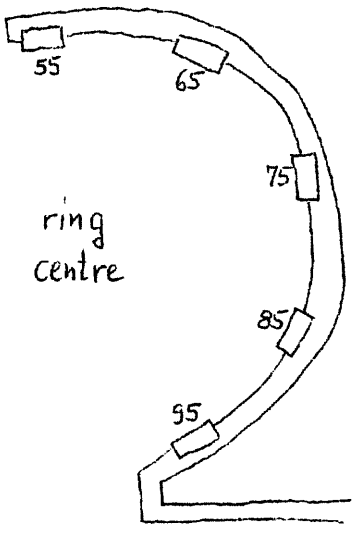

Fig. 3
one loop