

VISIT TO BBC, MANNHEIM on 25.5.1970

Discussion about Quadrupoles

with : Messrs. Klocke
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} part time

1. Delivery scheme

Because we have now four types of quadrupoles the scheme for delivery will be as follows :

1. Delivery 8 QF1 and 4 QDD
 2. " 8 QF2 " 4 QDU
- etc.

2. BBC points out that it will be extremely difficult to meet the agreed upon delivery time, in case the final length of the quadrupoles can only be given after measurements of the first quadrupole unit.

3. The first quadrupole unit will be of the QDD type.

4. Shim fabrication

In view of the big number of shims (about 1700 pieces) and their complicated shape, BBC will make them from cast steel or by hot pressing (magnetic characteristics must be measured).

The time for fabricating the tools will be too short and the shims will not be ready for the first delivery.

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CERN will therefore determine a shape allowing the pre-fabrication of shims for the first 12 quadrupole units. They will be machined to its final shape by CERN.

5. Bottom tension strap

The material of the required thickness is not available. It was agreed to use a thickness of 20 mm as originally specified. After machining a step of about 2.5 mm exists between tension strap and plates.

6. Lifting bar

All dimensions have been fixed except the total length.

7. Machining quality for feet and slots for target holders has been fixed to N7.

8. Endplate will probably be made by flame cutting and milling.

9. The cover for coil ends will be made from one piece with two removable plates on the sides. The internal diameter will be 164 mm.

10. Check of laminations

BBC demonstrated that the scheme of using microscopes with a magnification of 40 is not accurate enough.

The following scheme is proposed :

From the first 50 punched laminations 3 to 5 are selected and will be measured precisely (probably at CERN since no suitable instrument is at present available in Mannheim). These laminations are used for the calibration of the test equipment, which allows

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relative measurements of 3 points on each profile and distance of axes.

11. Testing of inter-turn insulation

Since we have only 2 turns per pole the detection of an inter-turn fault by using an oscillatory circuit is not feasible.

Before soldering the coil connections and before impregnation a d.c. voltage of 80 to 100 V can be applied between turns.

CERN will study the possibility of using a square pulse generator (the equipment would have to be supplied by CERN).

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BBC, Mannheim (2)