Specification for the Iron Yoke of the Superconducting Magnet PANDORA

General Particulars

The magnet consists of two split superconducting coils enclosed in an iron yoke. This yoke, which will also serve as a vacuum tank and safety vessel will have a shape as indicated isometrically by drawing TC-A0-059. The general arrangement of the yoke and superconducting coils is given by drawing TC-A4-061.

The purpose of this specification is to describe the iron yoke.

Description of the Iron Yoke

The iron yoke, which is in the shape of a box will consist of three main elements and different accessories. The main elements are shown on the following drawings:

1) "Manteau" Drg No. TC-A0-048
2) "Couvercle" Drg No. TC-A0-047
3) "Details" Drg No. TC-A1-049
4) "Bride pr. Tube à vide" Drg No. TC-A1-050
5) "Bride pr. Tube à vide" Drg No. TC-A1-051

All the elements requested must be made of low carbon forged steel, having the following magnetic characteristics after heat treatment:

Mild Steel:

- \( B = 1.7 \) Tesla \( H \leq 50 \) A/cm
- \( B = 2.0 \) " \( H \leq 210 \) "
- \( B = 2.1 \) " \( H \leq 320 \) "

With respect to the physical properties of this special steel, it is of the utmost importance that the manufacturer ensures that the material is not only homogeneous, but also non-porous in order to prevent serious trouble with the vacuum. During operation a vacuum of \( 10^{-5} \) Torr will be considered as a nominal value.

Due to the considerable stresses on the special bolts (Drg. No. TC-A1-049/3) the bolt material must be of high quality with excellent mechanical and physical properties which must be guaranteed by the manufacturer.
Tendering

All the above mentioned drawings represent the completely machined parts. However CERN is ready to consider separately, two types of tenders:

A) The delivery of the raw material having dimensions which allow for the final manufacturing process.

B) The delivery of the raw material and the manufacturing of the iron yoke.

A) The manufacturer should indicate:

1) The chemical analysis of the iron.

2) The mechanical and physical properties of the iron.

3) The individual weights and dimensions of the following elements:
   - "Manteau" - Drg TC-A0-048
   - 2 Couvercles - Drg TC-A0-047
   - 4 Plaques - Drg TC-A0-049 Pos.1

4) The manufacturer must give a guarantee of the magnetic characteristics and the mechanical and physical properties. These guaranteed characteristics and properties must be controlled by the manufacturer and samples must be delivered to CERN as follows:
   - 4 samples cut from the elements position 1, Drg TC-A0-047 (2 off each plate). These samples should be machined at the following dimensions 200 x 10 x 10 mm and delivered with the rest of the material.
   - 1 sample cut from each round bar used for the special bolts, and machined according to Drg. TC-A4-060. These samples must be delivered with the rest of the material.

5) Unit prices for the separate items mentioned under subpara A.3) above, the total net price for the complete iron yoke, packing costs, and separate prices for delivery ex-works and delivery to CERN.

6) The delivery time ex-works.

B) In addition to the information mentioned in para. A. above, the manufacturer should indicate:

1) Unit prices, for the machining of the elements referred to under sub-para A.3), and also for the following:
   - machining of pos. 1 Drg TC-A1-050
   - machining of pos. 1 Drg TC-A1-051
   - machining of the rest of the delivery.

The total net price for the completely machined iron yoke, packed and delivered ex-works, and in addition, the extra cost for transport direct to CERN site Meyrin.
2) The delivery time ex works.

   The manufacturer should take care of the following items:

3) After completion of machining, the separate elements must be
   checked by the manufacturer in the presence of a CERN repre-
   sentative.

   The final acceptance of the iron yoke will take place in CERN
   after assembling and completion of vacuum tests. The erection
   and tests will be carried out by CERN. Details of the test
   conditions will be discussed with the successful tenderer.

   Vacuum pumps and liquid nitrogen baffles will be supplied by CERN.

4) The samples requested under sub-para A.4 must be forwarded to
   CERN not later than 8 weeks after the order has been confirmed.

**Commercial terms valid for tenders A and B**

The tendered prices should be fixed prices. Guarantee terms and
terms of payment should be indicated. The tenderer must be prepared
to deposit a Bankers Guarantee amounting to 10% of the total value
of the material during the guarantee period.