

ADDENDUM NO 1 OF 31.3.69 TO SPECIFICATIONS NPA/INT. 68-12 OF 18.4.68

CERN desires to receive the magnets with all the necessary auxiliary equipment included as a complete assembly.

The auxiliary equipment includes the following items described below.

1. Adjustable Supports (one for each magnet)

Adjustable supports are required in order that the horizontal and vertical median planes of the magnet can conveniently be adjusted to the co-ordinates of the beam line. Facilities for fine adjustment in the axial direction are not required since it would lead to a complicated support arrangement.

Instead of making the magnet mobile in the axial direction, one uses 2 reference marks (2 alignment targets) located in the vertical median plane of the magnet and placed on a mobile rail which slides in between four wheels. These four wheels are held by supports accurately positioned on the alignment reference surfaces machined on top of the end plates. Drawing NPA 224-417-3 shows the alignment procedure. The magnet position is adjusted so as to make coincide after sliding of the rail the two references with the two theoretical points corresponding to the computed magnet position. One has then only a small axial translation error which is of no importance.

An outline of the magnet adjustable support arrangement is shown respectively in the following drawings :

NPA 224-359-1 for magnet L 70 - 1500  
NPA 224-412-1 for magnet L 30 - 750  
NPA 224-411-1 for magnet D 60 - 400

The deflecting magnet D 60 - 400 may be used as horizontal or vertical deflector as shown in drawing 224-419-1. It is therefore necessary to add an intermediate support to the adjustable support.

2. Optical Alignment Targets (one alignment set for each type of magnet)

Alignment targets with suitable fixing arrangement must be provided so that the horizontal and vertical median planes of the magnet can conveniently be aligned accurately to within  $\pm 0.1$  mm with the beam axis by means of normal optical survey instruments.

One alignment set comprises :

4 alignment targets	:	drawing NPA 224-292-4 A	(same drawing for the 3 types of magnet)
4 alignment wheels	:	drawing NPA 224-305-4	( " )
1 alignment rail	:	drawing NPA 224-413-3	( " )
2 target supports	:	drawing NPA 224-414-3	for L 70 - 1500
		drawing NPA 224-415-3	for L 30 - 750
		drawing NPA 224-416-3	for D 60 - 400

One complete alignment set with container box must be provided for each type of magnet.

List of Drawings (\*)

Quadrupole L 70 - 1500 - adjustable support	:	NPA	224-359-1
Quadrupole L 30 - 750 - adjustable support	:	NPA	224-412-1
Deflecting magnet D 60 - 400 - adjustable support	:	NPA	224-411-1
Adjustable support and alignment equipment (D 60 - 400 used as horizontal or vertical deflector)	:	NPA	224-419-1
Magnet alignment procedure	:	NPA	224-417-3
Alignment target	:	NPA	224-292-4 A
Alignment wheel	:	NPA	224-305-4
Alignment rail	:	NPA	224-413-3
Target support L 70 - 1500	:	NPA	224-414-3
Target support D 60 - 400	:	NPA	224-415-3
Target support L 30 - 750	:	NPA	224-416-3

(\*) All dimensions have to be checked after completion of the manufacturing drawings of the complete magnets.

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Finish

All items should be painted in the same colour as the magnet yokes.

Distribution : NPA Pulsed Beam Transport Group Members