

TECHNICAL SPECIFICATION FOR THE SUPPLY OF COMPONENTS FOR
PROTON COLLIMATORS

GENERALITIES

These collimators are used to control particle accelerator beams. They are subjected to an internal vacuum and operate in a radioactive environment.

1. SCOPE OF ORDER

This is essentially for the manufacture of mechanical components necessary for the construction of four collimator units. This manufacture will include machining and welding as well as cleaning where appropriate. Assembly and functional testing is not required. Certain raw material will be supplied by CERN, the rest either by CERN or the manufacturer. After delivery of the components assembly and functional testing will be carried out by CERN.

1.1 Manufacture required

Components are required for four complete collimator units, that is, for two complete vertical units according to drawing MPS-5B14-000-3 and for two complete horizontal units according to drawing MPS-5B15-000-3.

Each vertical unit is composed of the following sub-assemblies:

Two drive units	MPS-5B14-100-1
Two drive screws	MPS-5B14-200-3
Two piston units	MPS-5B14-300-1
One target support	MPS-5B14-400-1
Two end chambers	MPS-5B14-500-2

In addition there are the following detail components :

One body	MPS-5B14-001-1
Two collimator blocks	MPS-5B14-002-3
Four feet	MPS-5B14-003-4
One base plate	MPS-5B14-004-4

Each horizontal unit is composed of the following sub-assemblies :

Two drive units	MPS-5B14-100-1
Two drive screws	MPS-5B14-200-3
Two piston units	MPS-5B14-300-1
One target support	MPS-5B15-500-1
Two end chambers	MPS-5B14-500-2

In addition there are the following detail components :

One body	MPS-5B14-001-1
Two collimator blocks	MPS-5B14-002-3
One base plate	MPS-5B15-001-4

1.2 Complete component list

A complete list of all components to be manufactured together with their quantities is given in the Annex 1. Assembly drawings are supplied for reference only.

2. MANUFACTURING PROCESSES REQUIRED

All manufacturing processes required to produce components according to drawings listed in Annex 1, including principally :

- i) machining
- ii) welding
- iii) shot blasting
- iv) cleaning
- v) inspection

i) Machining

All tolerances and surface finish indications must be scrupulously respected. In general all components must conform strictly with the drawing.

Particular attention shall be observed concerning the instruction N6 vide

ii) Welding

All welds must be carefully executed and without porosity. Welds specified as vacuum tight ("étanche au vide") must be neither ground nor machined. A fine shot-blasting or wire-brushing is, however, permitted.

iii) Shot blasting

Where specified the interior of the vacuum end covers must be shot blasted using fine glass balls. If this is not possible the process can be carried out at CERN.

iv) Cleaning

The vacuum end covers as well as the main body, and collimator blocks must be degreased using normal commercial processes.

v) Limits for untoleranced dimensions

Machined dimensions shall conform to international standard ISO 2768-1973(E).

Sheet metal and plate work shall be good standard practice for this class of work.

vi) Inspection

All components must be checked to ensure that they conform to their drawings. A written statement to this effect shall be furnished by the supplier.

3. MATERIAL TO BE SUPPLIED BY CERN

The 200 mm thick aluminium alloy plates for the four bodies MPS-5B14-001-1 will be supplied by CERN.

Other raw material may be supplied by CERN depending on the practicability of such a procedure.

4. DELIVERY

All components must be packed to avoid damage during transport to CERN.

5. WORK CARRIED OUT AT CERN BY CERN

Final assembly and welding where appropriate. Vacuum testing of components, sub-assemblies and assemblies.

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A N N E X 1

List of components to be manufactured and their quantities.

<u>DRAWING TITLE</u>	<u>DRAWING NUMBER</u>	<u>POS</u>	<u>NO OFF</u>	<u>REMARKS</u>
Corps	MPS-5B14-001-1		4	Material supplied by CERN
Bloc	MPS-5B14-002-3		8	
Pieds	MPS-5B14-003-4		8	
Plaque	MPS-5B14-004-4		2	
Plaque	MPS-5B15-001-4		2	
Pignon	MPS-5B14-101-4	1	8	Gear blanks supplied
Pignon	MPS-5B14-101-4	2	8	Gear blanks supplied
Support moteur	MPS-5B14-102-3		8	
Entretoise moteur	MPS-5B14-103-4		8	
Accoup. bride	MPS-5B14-104-4	1	16	
Accoup. bride	MPS-5B14-104-4	2	16	
Accoup. croix	MPS-5B14-105-4		16	
Bride principale	MPS-5B14-106-4		8	
Protection	MPS-5B14-107-4		8	
Bride encodeur	MPS-5B14-108-4		8	
Goupille	MPS-5B14-109-4		8	Assembly & test not required

Eerou M.12	MPS-5B14-201-4	8
Entretoise	MPS-5B14-202-4	8
Logement	MPS-5B14-203-4	8
Vis M12	MPS-5B14-204-4	8
Bride	MPS-5B14-205-4	8
Cylindre mobile	MPS-5B14-301-2	8
Eerou M12	MPS-5B14-302-4	8
Chambre à vide	MPS-5B14-304-3	8
Clavette	MPS-5B14-305-4	8
Piston	MPS-5B14-306-2	8
Support bloc	MPS-5B14-307-3	8
Segment	MPS-5B14-308-4	8
Segment	MPS-5B14-309-4	8
Support microswitch	MPS-5B14-310-4	8
Tige " "	MPS-5B14-311-4	8
Micro-switch butée	MPS-5B14-312-4	8
Goupille losange	MPS-5B14-313-4	8
Cale	MPS-5B14-314-4	8
Meplat	MPS-5B14-401-4	4
Entretoise	MPS-5B14-402-4	2
Entretoise	MPS-5B14-403-4	2
Porte cible court	MPS-5B14-404-4	4
Entretoise No 1	MPS-5B14-405-4	4
Entretoise No 2	MPS-5B14-406-4	4
Entretoise No 3	MPS-5B14-407-4	4

Porte cible	MPS-5B15-501-4	4	
Rondelle	MPS-1A08-202-4	8	
Chambre à vide	MPS-5B14-500-2	8	
Bride rect.	MPS-5B14-501-3	8	} These 4 details make up one welded assembly MPS-514-500-2
Bride \emptyset 258	MPS-5B14-502-3	8	
Fond	MPS-5B14-503-3	8	
Coquille	MPS-5B14-504-3	8	