

**EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH
ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE**

CERN - PS DIVISION

PS/ CA/ Note 99-21 (Spec.)
Repl. PS/RF/Spec. 91-5 (Rev.)

**TECHNICAL SPECIFICATION
FOR CARBON-MASS RESISTOR DISCS
FOR FAST PULSE TERMINATORS**

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Geneva, Switzerland
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1. Application

The resistor discs will be assembled into spring loaded stacks to form termination resistors for high power pulses. Typical pulse rise/fall times are 30 ns, flat top duration 100-6000 ns, pulse amplitude 0-5000A.

The resistor disc assembly will be installed within a coaxial return conductor. Where power dissipation is important, forced oil cooling will be employed, the inlet oil temperature not exceeding 25°C and the flow such that the return/inlet differential does not exceed 5°C. The nominal spring force on the resistor assembly will be 2 kg/cm². Porous bronze washers, the faces of which have been previously ground to an acceptable degree of flatness, will be inserted between resistor discs to permit the radial passage of oil from the stack axis to the exterior.

If power dissipation is low enough to avoid forced cooling, the discs will be stacked without bronze washers. In this latter case, SF₆ may also be used as insulating medium.

The maximum voltage stress in any particular application will not exceed 10 kV/cm.

Typical mounting arrangements are shown in the attached drawings MPS 2A20.500.1 and extract of PS.2A58.302.2.

2. Specification

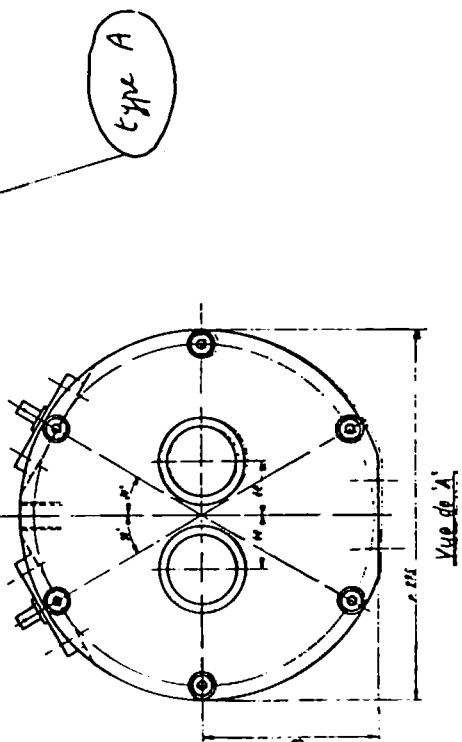
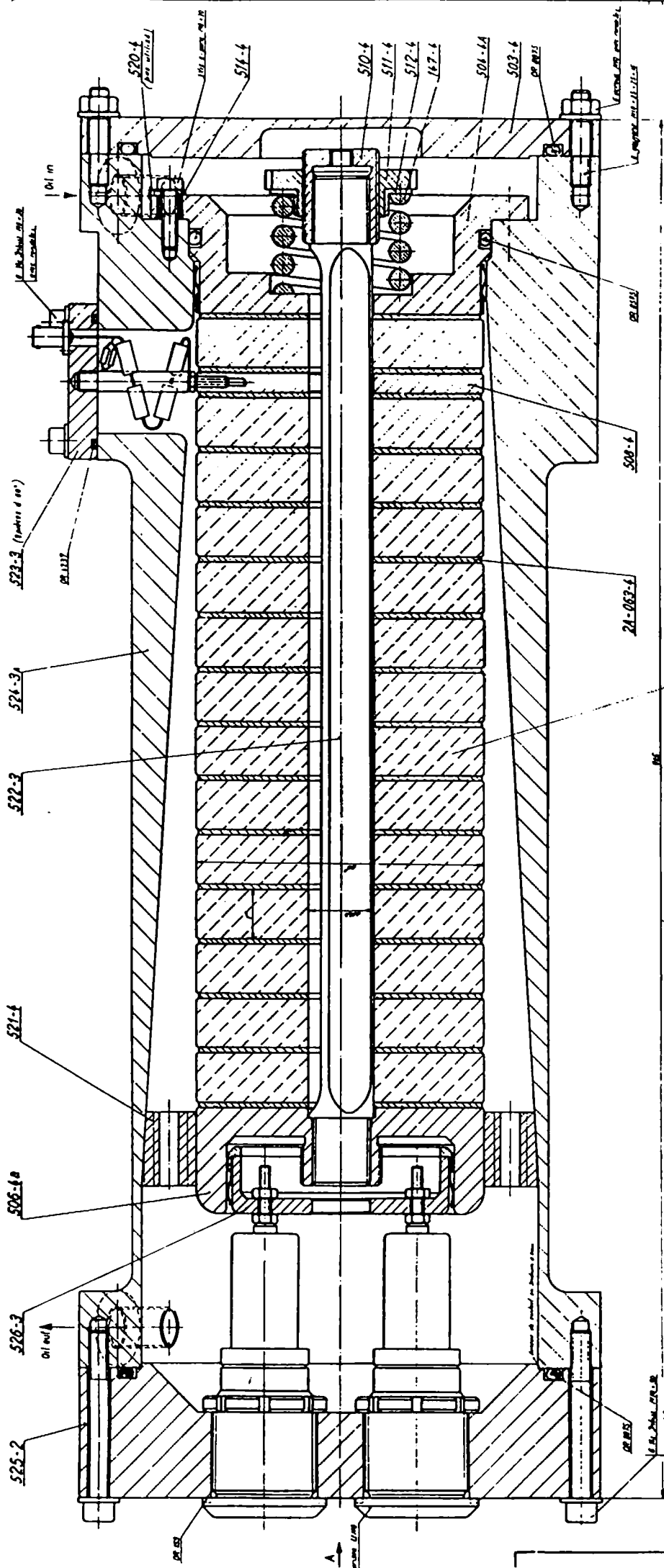
Discs are to meet the following specification:

a) Dimensions

Type	A	B	C
O/D mm	152 ⁰ _{.1}	132.6±1	>30.048 <31.750
I/D mm	34.2 ⁺¹ ₀	97±0.7	>10.922 <12.192
Thickness	25.4±0.5	25.4±0.5	25.4±0.5

Chamfer on outer diameters: 1 to 2 mm.

- b) Contact face flatness: better than 0.08 mm
- c) Contact face parallelism: better than 0.10 mm
- d) Resistance value
 - i) all discs specified for use in oil are to be provided oil-wetted and fully oil aged
 - ii) at least 70% of the discs of any specific nominal value must lie within $\pm 5\%$ of that value
 - iii) the remaining 30% of the discs must lie within $\pm 10\%$ of nominal
 - iv) of the total delivery of any nominal value, at least 30% must be above and 30% below that nominal value.
- e) Anti tracking surface treatment is not required nor accepted for oil use.
For SF₆ use silicon based U9 anti-track coating may be applied.
- f) The contact electrodes must be aluminium oversprayed with brass. The outer diameter chamfer should preferably not be metallized.
- g) Adequate quality control at the manufacturer's premises must eliminate all discs that fall outside the electrical and mechanical specification. Particular attention must be paid to the elimination of discs with chipped or damaged contact faces.
- h) CERN may survey the resistance values of the discs supplied for a period of six months from receipt at CERN and reserves the right to return, at the supplier's expense, any discs which have moved outside the resistance tolerance, for free replacement. Cern will re-immers pre oil impregnated discs as soon as possible upon receipt.
- i) Marking: resistor nominal value and tolerance, week/year of manufacture and the words OIL or SF₆ (the one which applies) will be stamped on the lateral face of the discs.



REVISIONS		DATE		BY	
1		10/12/68			
DRAWING INFORMATION					
TITLE	Endress (N 10000000)				
SCALE	1:1				
CHECKED	[Signature]				
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