

20 mars 1964

M e m o r a n d u m

To : G.L. Munday, K.H. Reich and L. Solinas
From : J.H.B. Madsen
On : Vacuum system for ejection from SS 58 and SS 62.

The following is a compilation of specifications given by K.H. Reich on the machine vacuum system for the future East area ejection system.

1. SS 56 : Under study : possibility to move RF cavity 1cm to the outside.
An injection-type quadrupole will be introduced. No detailed specs available yet.
2. 56 : Standard inflection type vacuum chamber, giving max. room and outside.
Length depends on arrangement in SS 56.
3. SS 57 : Chamber with cross-section similar to inflection type vacuum chamber.
Standard vacuum pump connections. Pick-up station to be removed or replaced.
4. 57 : Standard inflection type vacuum chamber.
5. SS 58 : Special tank.
The tank should be designed for housing a septum magnet with the following specs :
 - 5.1 Length septum : 1320 mm for iron yoke
80 " extra for coils
1400 mm total length
 - 5.2 radial position septum : $\Delta r = 45\text{mm to } 59\text{ mm}$
 Δr : distance central orbit edge septum to central orbit PS.
adjustments and reading : local, outside tank.

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5.3 vertical position hor. mid-plane septum : $\Delta z = \pm 7\text{mm}$

Δz : displacement with respect to hor. plane through central orbit PS.

adjustments and reading : local, outside tank.

5.4 rotation of septum magnet : $\pm 4^\circ$ around long-axis.

adjustments and reading : local, outside tank.

5.5 flexible electrical and water supply connections.

5.6 magnet insulated from earth.

5.7 TV screen, at front of septum and fixed, surrounding septum opening, viewing from outside.

5.8 septum should be easily demountable.

further specs for tank :

standard vacuum pump connection on tank, inside .

exit opening : see specs. for unit 58.

6. 58 : Special vacuum chamber, mechanical details should follow from :

6.1 outside, inside boundary ejected beam determined respectively by trajectories with the following initial conditions :

$\Delta r = 100\text{mm}$, 26mrad

$\Delta r = 55\text{mm}$, 17 mrad at entrance of field , table for magnet unit 58.

At the outside boundary a height of 35mm should be provided for.

6.2 for the PS circulating beam an inflection type vacuum chamber or the equivalent space, should be available.

6.3 shimming at the F part of the unit should be possible.

7. SS 59 : As SS 57 but there should be place for an injection type air-quadrupole. This system will work with the lens for the ejected beam near SS 59.
An arrangement should be studied to change the system from above for one with a standard machine quadrupole in SS 59 (shifting the ejection lens away). The change should have to be made in within 4 hr.
8. 59 : Standard inflection type vacuum chamber in unit with yoke turned to become open at outside.
9. SS 60 : Wide chamber, requires rearrangements on machine quadrupole which remains in SS (in quadrupole an aperture up to 100mm to outside of PS orbit) Standard vacuum pump connections.
10. 60 : Standard inflection type vacuum chamber.
11. SS 61: No detailed specs. yet. Depends on design of ejection quadrupole for SS 62 but chamber should fit to chambers in units 60 and 61.
12. 61 : Standard inflection type vacuum chamber.
13. SS 62: Special tank similar to one in SS 58.
14. 62 : Arrangements similar as in 58.

SPECIFICATIONS FOR THE VACUUM SYSTEM OF THE EJECTED BEAM :

The lay-out of the ejected beam has still to be provided .

Size of the ejected pipe between ejection magnets :

at least 60 mm inner diameter, up to 80mm acceptable.

Inside bending magnet : chamber should fit closely into opening (40mm height 75 mm width).

Inside quadrupole : in plane of max. beam width 60mm, dimension in other plane depends on chamber constructions.

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Please advise me of any corrections and additional details.

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