Adaptor 937D

Annex 9.4

This 937D adaptor is a metallic structure in the form of a truncated cone, with a diameter of 937 mm at the level of the spacecraft separation plane. It is attached to the reference plane (∅ 1920) by a bolted connector frame, and also provides for spacecraft separation.

The 937D adaptor has a mass of 75 kg.

The actual spacecraft pair of values (Mcu, X_G) must remain within admissible limits as defined in figure A9.4.1.

The spacecraft is secured to the adaptor interface frame by a clampband. This comprises a metal strip applying a series of clamps to the payload and adaptor frames. The clampband assembly comprises two half clampbands, connected by bolts which are cut pyrotechnically to release the clampband, which is then held captive by the adaptor assembly.

The clampband tension does not exceed 27 700 N at any time, it is defined to ensure no gapping between the spacecraft and adaptor interface frames in ground and flight environment.

The spacecraft is forced away from the launch vehicle by 4 springs part of the adaptor and bearing on supports fixed to the spacecraft rear frame.

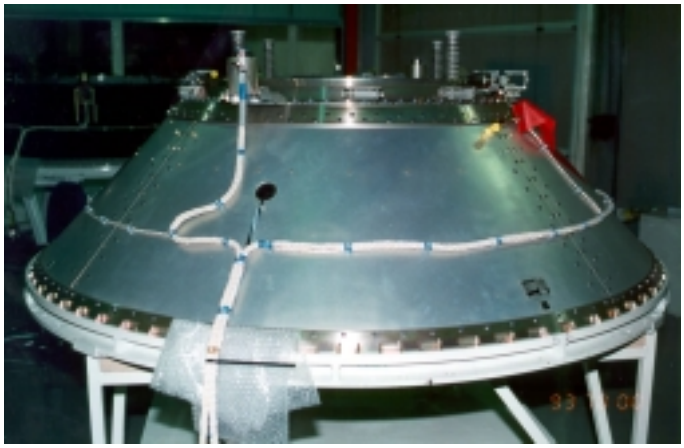
The relative velocity between the adaptor and the spacecraft is about 0.5 m/s.

The force exerted on the spacecraft by each spring does not exceed: 1 500 N.

Adaptor is equipped with internal springs.
The figure A9.4.3 and A9.4.7 defines the location and the design of L/V microswitches.

Umbilical connectors brackets: on the spacecraft side, the connectors brackets must be stiff enough to prevent any deformation greater than 0.5 mm under the maximum force of the connector spring.

Note: The adaptor cone is made of two parts: the cone itself and the upper frame. In order to ease the clampband installation, the upper frame can be dismantled from the cone. Mating of the spacecraft is, in that case, performed in two steps: clampband installation, and then bolting of the spacecraft and adaptor upper frame to the cone. To perform this operation, a stiffening tool is used which reduced the diameter of the inner usable volume to 650 mm (see figures A9.4.10 to A9.4.13).



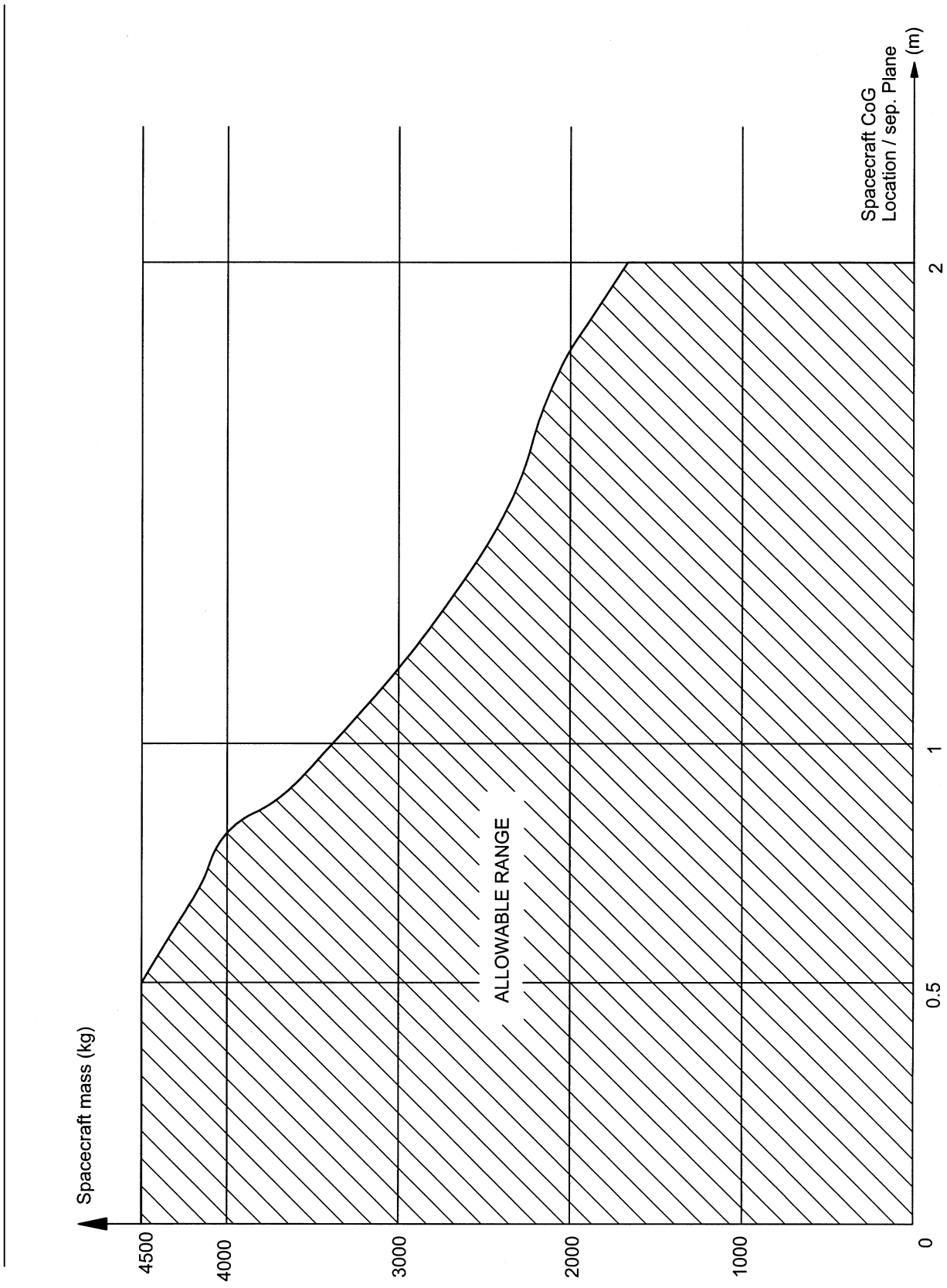


Fig. A9.4.1. – Limit loads of adaptor 937D at separation plane

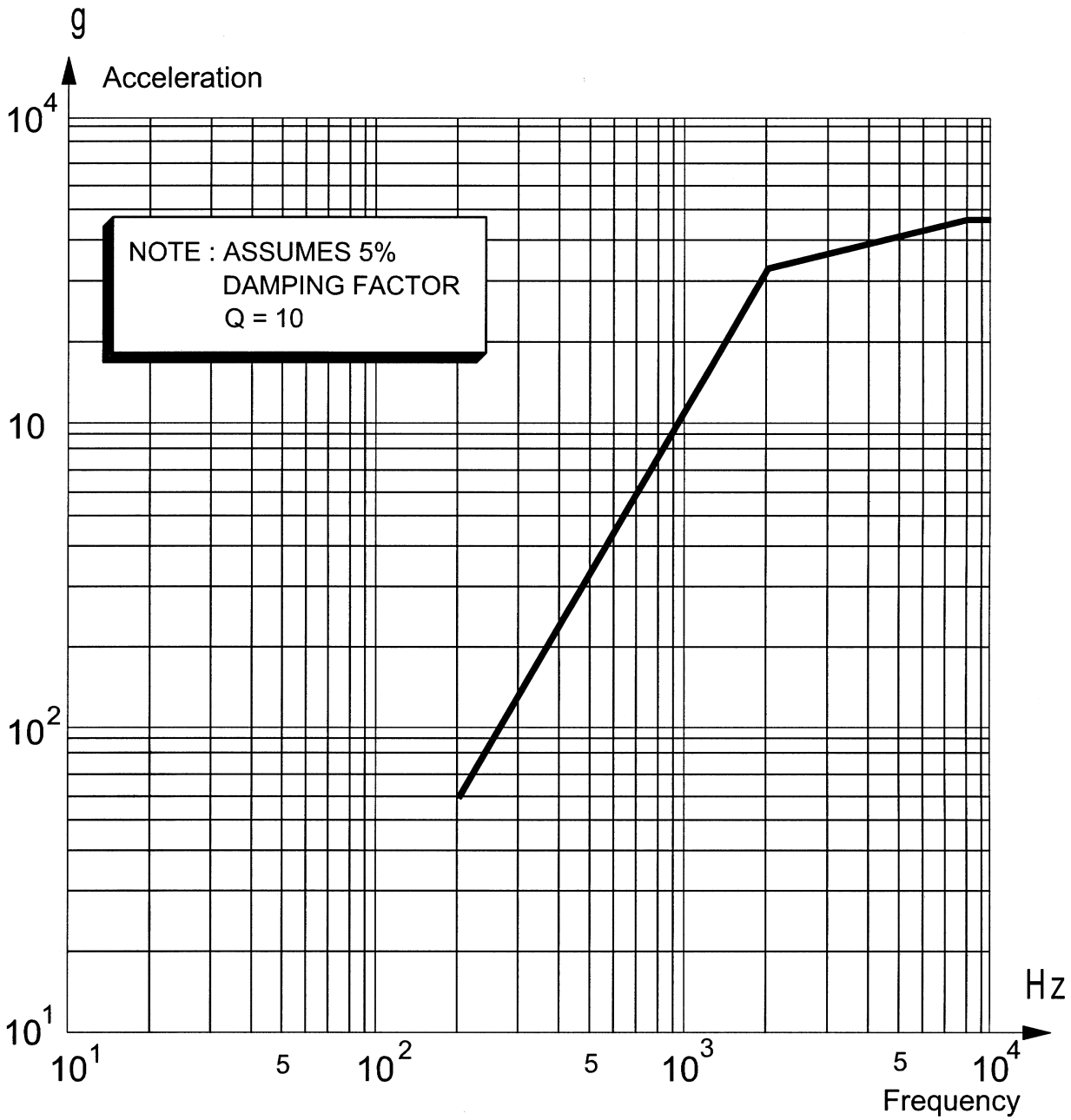


Fig. A9.4.2. – Adaptor 937D

Shock spectrum at separation plane

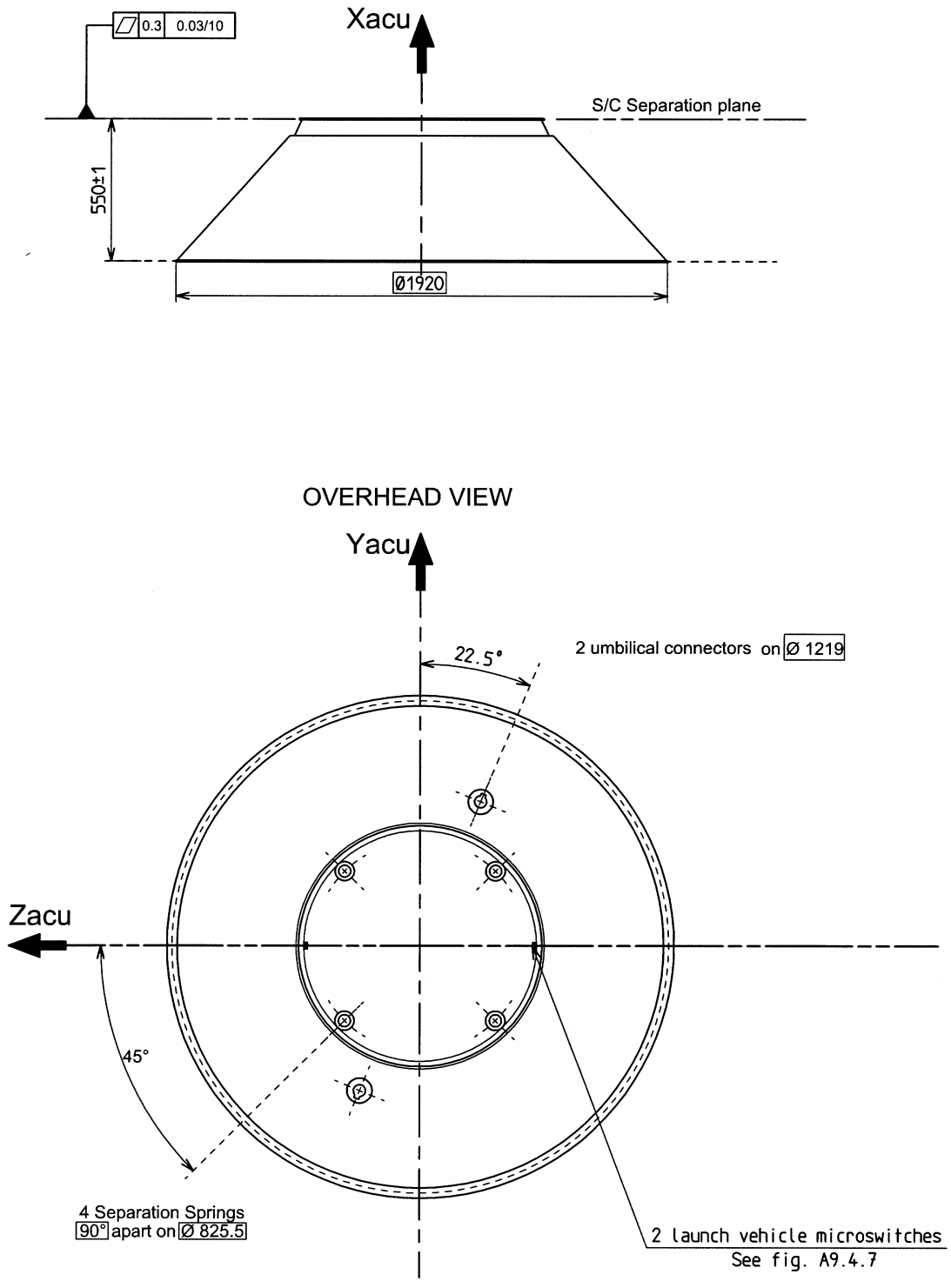


Fig. A9.4.3. – Adaptor 937D

General view and main characteristics

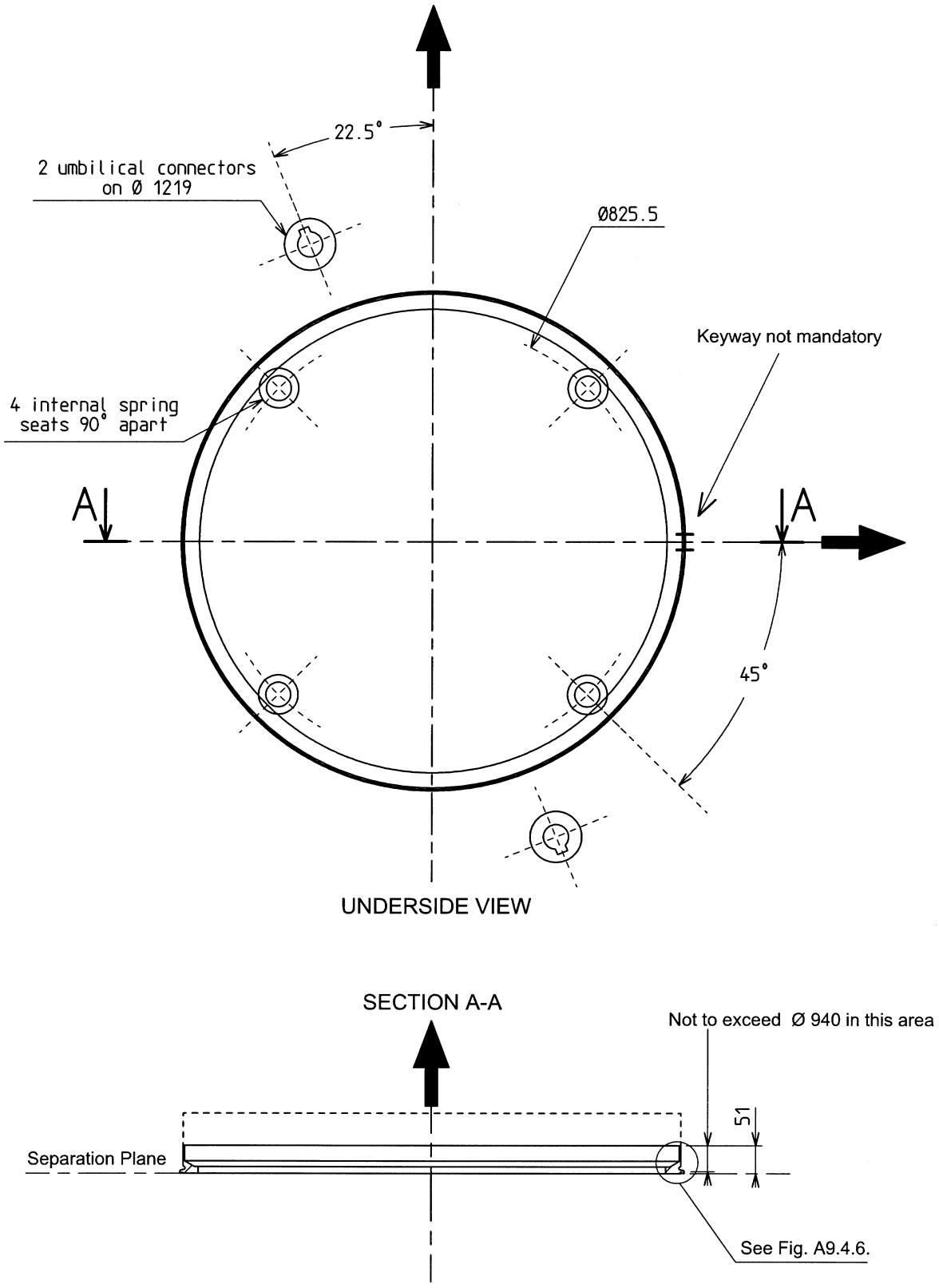
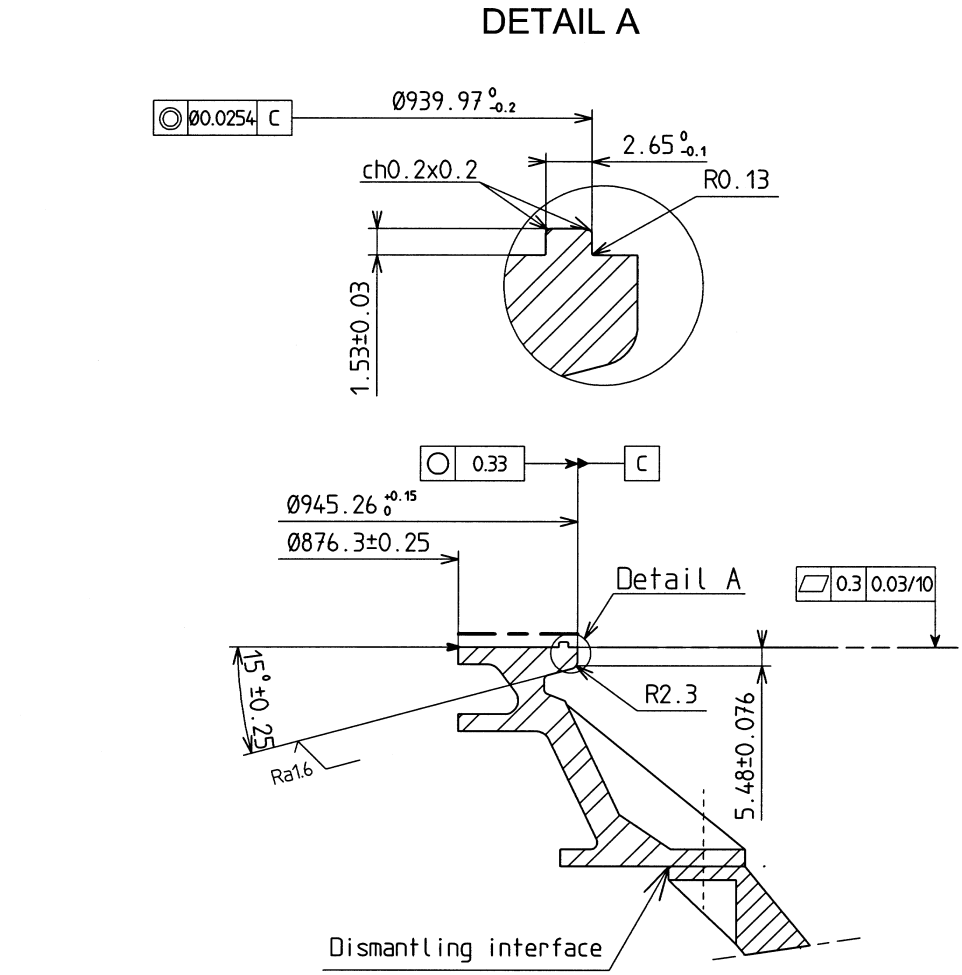


Fig. A9.4.4. – 937D spacecraft configuration

General view and main characteristics



Stiffness :

S = 1205 mm ²	S = 550 mm ²
Ixx = 580000mm⁴	Ixx = 40000mm⁴
Iyy =400000mm⁴	Iyy =42000mm⁴
applicable length = 64.1mm	applicable length = 25.4mm

Coating :
Chromic acid anodizing
Except A. 1200 on

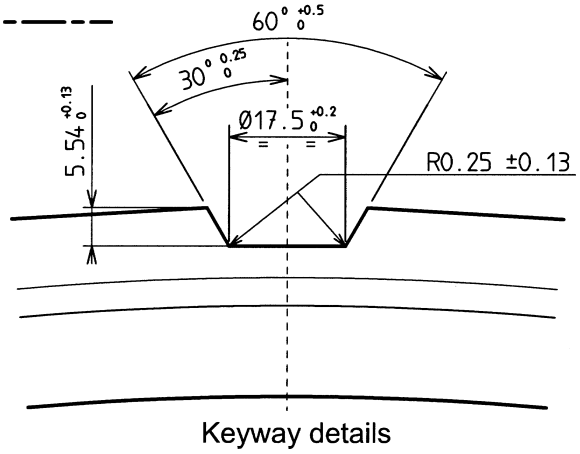
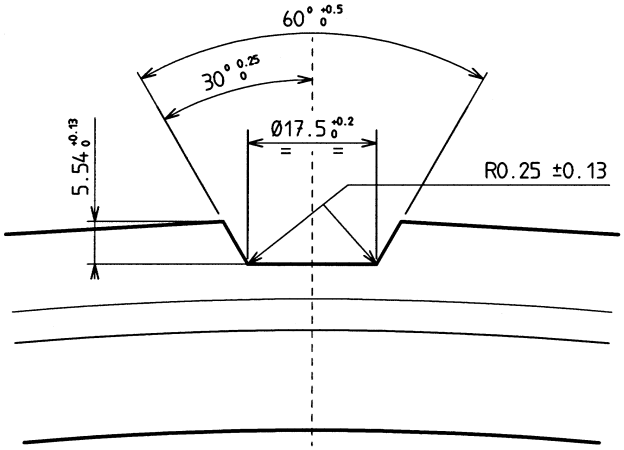


Fig. A9.4.5. – Adaptor 937D forward frame



Keyway Detail (Not Mandatory)

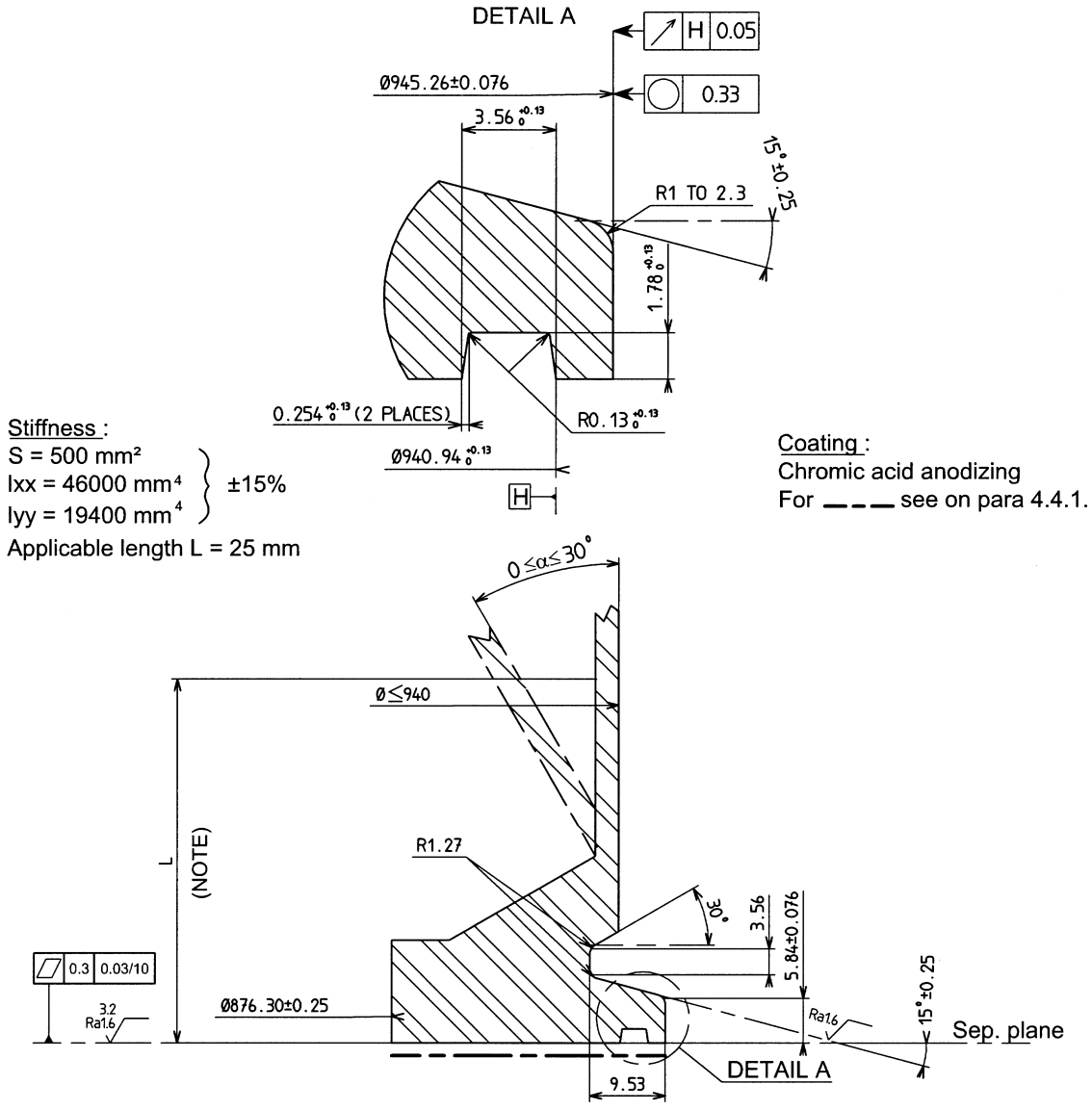
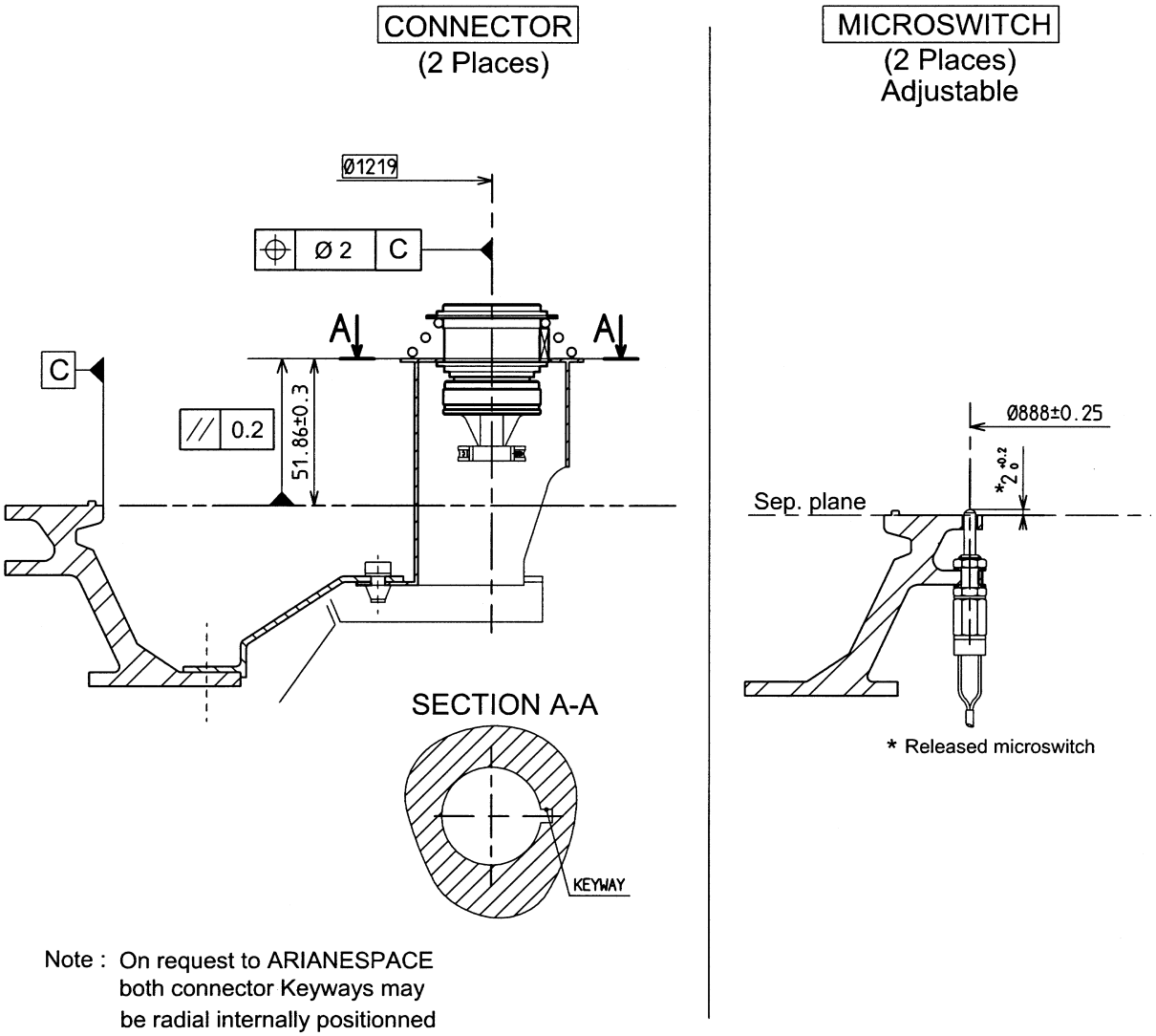


Fig. A9.4.6. – 937D spacecraft interface frame (details)



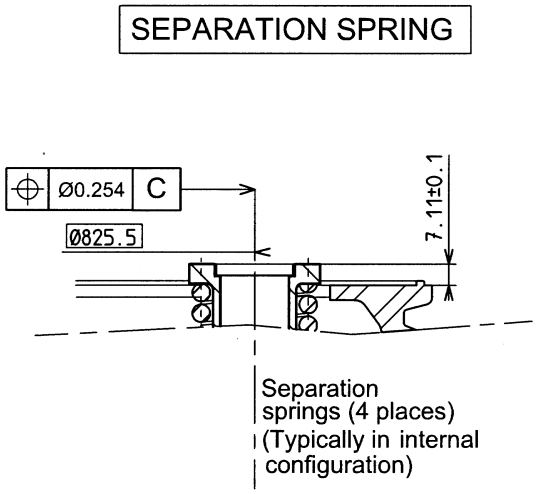
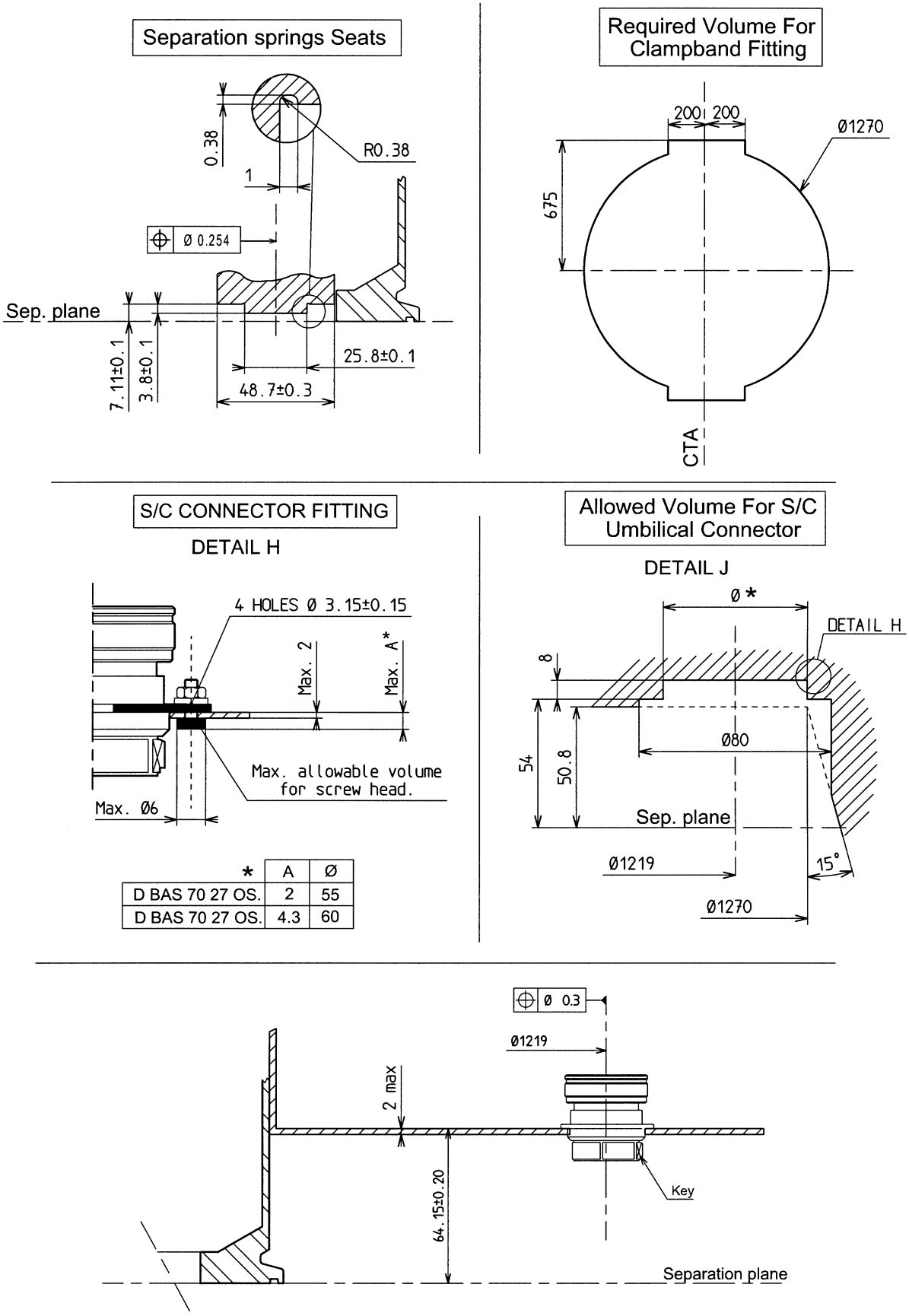


Fig. A9.4.7. – Adaptor 937D mechanical interfaces (details)



*	A	Ø
D BAS 70 27 OS.	2	55
D BAS 70 27 OS.	4.3	60

Fig. A9.4.8. – 937D spacecraft mechanical interface (details)

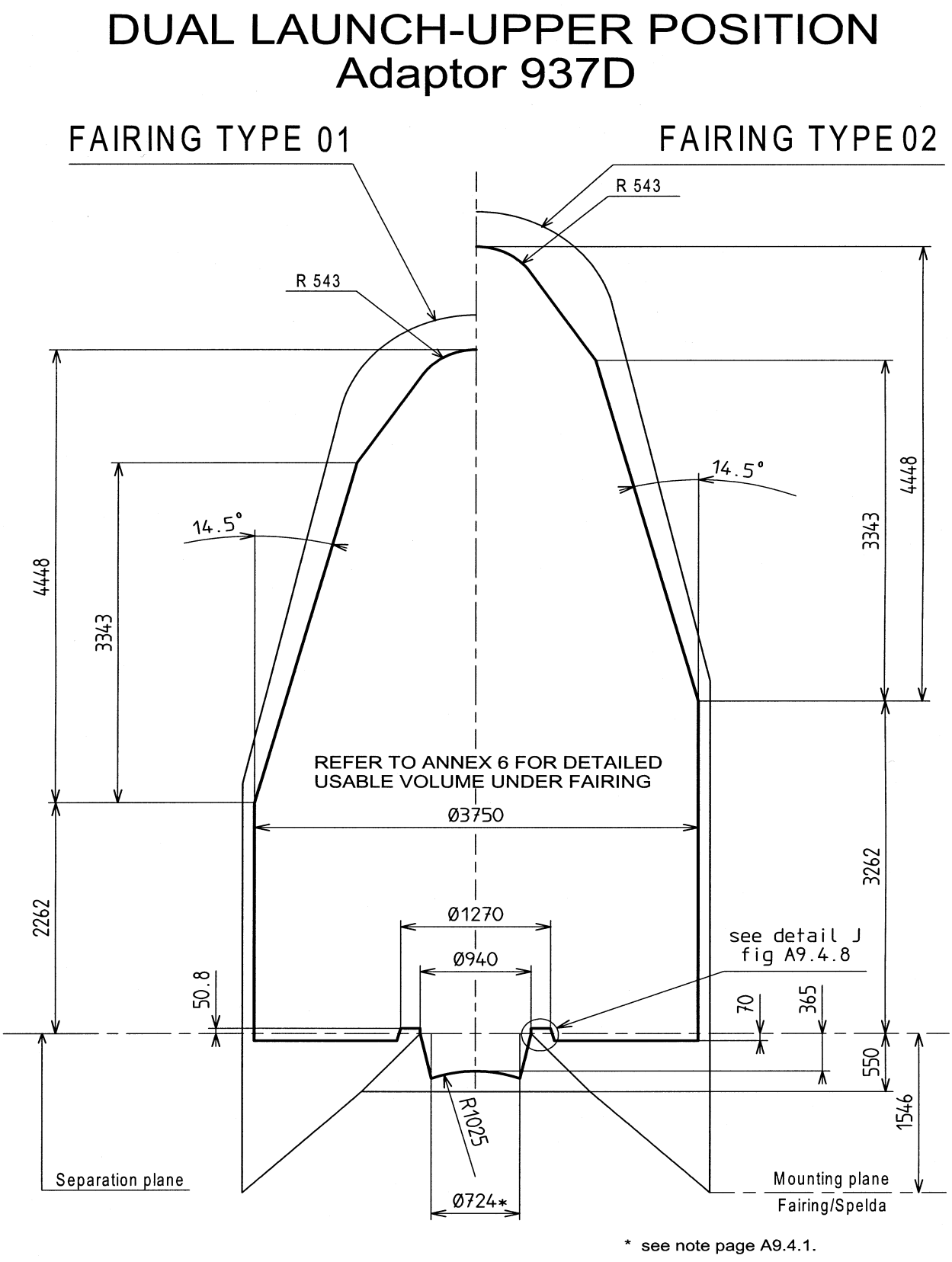


Fig. A9.4.9. – Usable volume beneath fairings 01 and 02

DUAL LAUNCH-INNER POSITION
Adaptor 937D

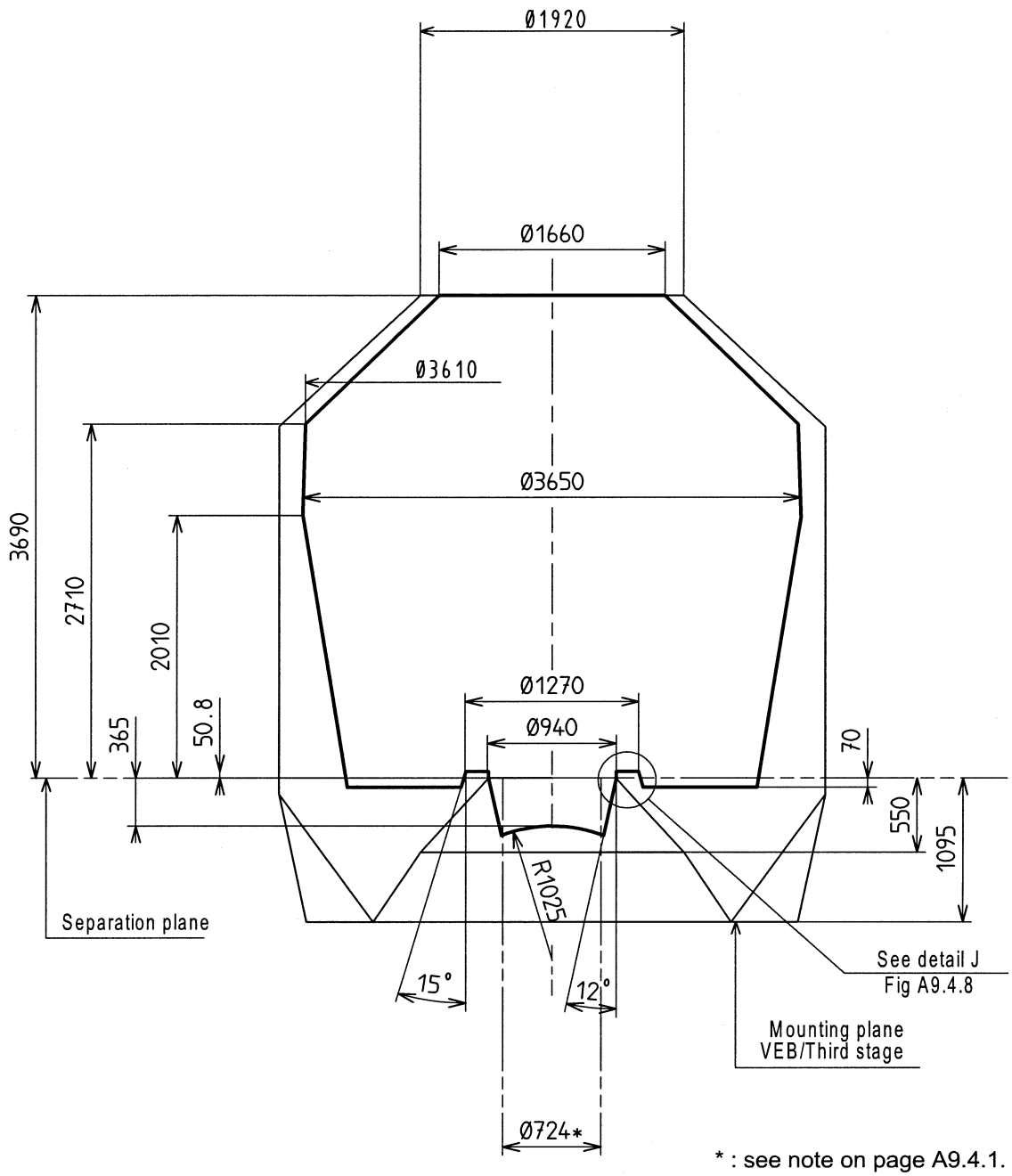


Fig. A9.4.10. – Usable volume beneath short SPELDA (type 10)

DUAL LAUNCH - INNER POSITION
Adaptor 937D

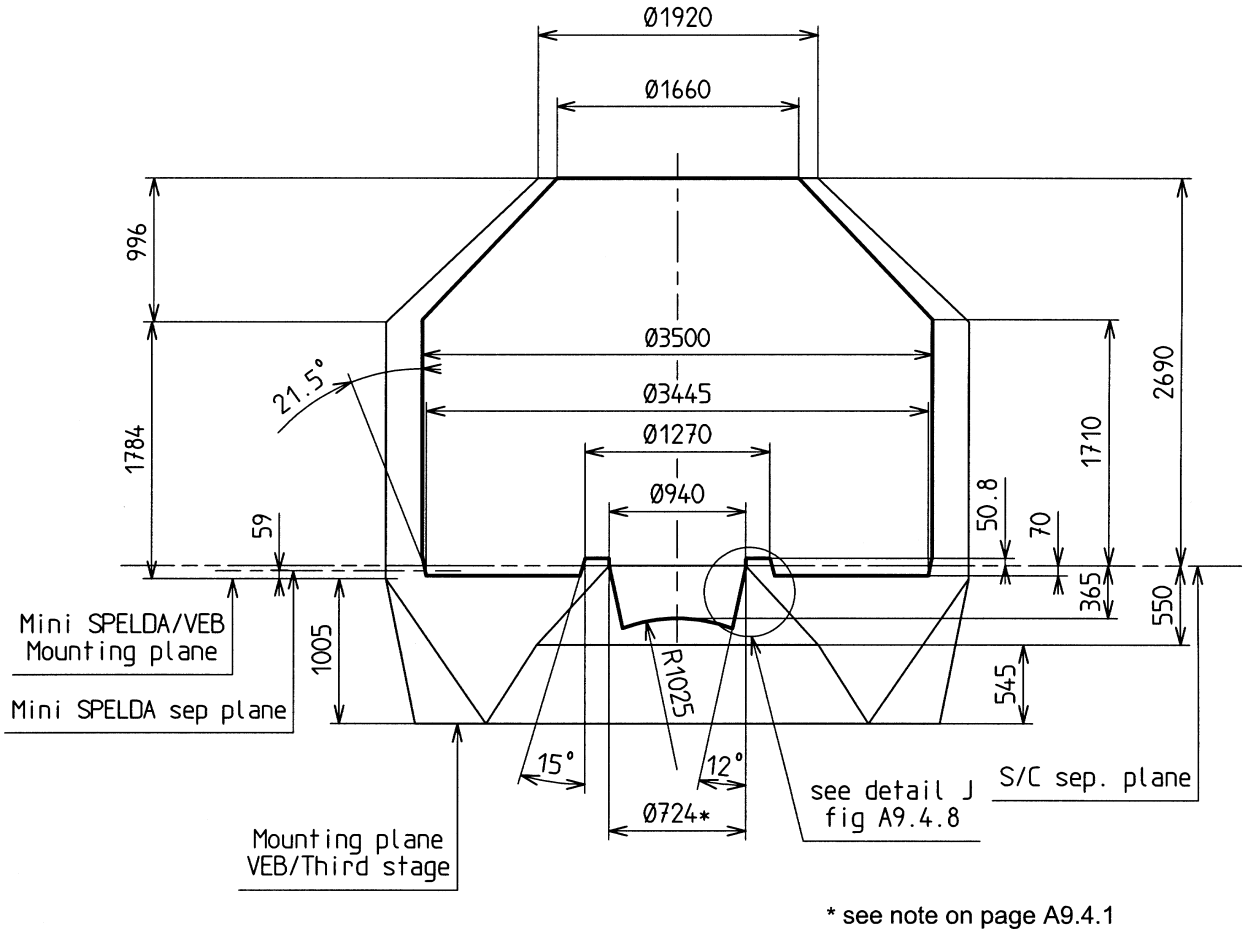


Fig. A9.4.11. – Usable volume beneath mini SPELDA (type 30)

DUAL LAUNCH - INNER POSITION
Adaptor 937D

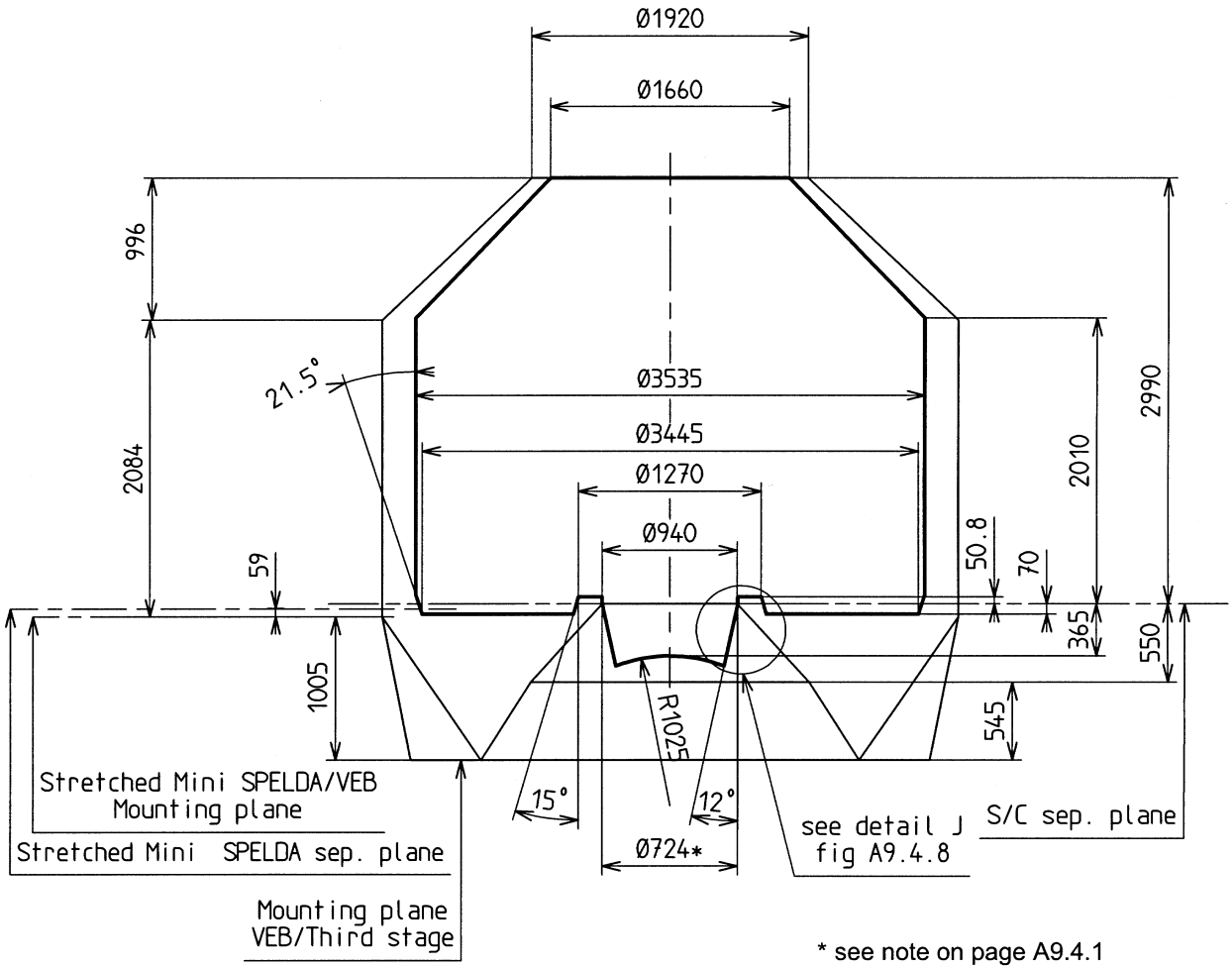


Fig. A9.4.12. – Usable volume beneath stretched mini SPELDA (type 40)