Adaptor 937V4

Annex 8.3

This 937V4 adaptor is a carbon fibre 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 (∅ 2624) by a bolted connector frame, and also provides for spacecraft separation.

This 937V4 adaptor has a mass of 77 kg.

The actual spacecraft pair of values (Mcu, X_G) must remain within admissible limits as defined in figure A8.3.1.

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 18 300 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 integral with 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: 900 N.

Adaptors are equipped either with external or internal springs on user request.

Two microswitches used to detect separation are located inside spring guides (see Fig. A8.3.7).

The adaptor assembly can provide bearing faces for the S/C microswitches aligned on the spring centre lines.

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 A8.3.11 to A8.3.14).

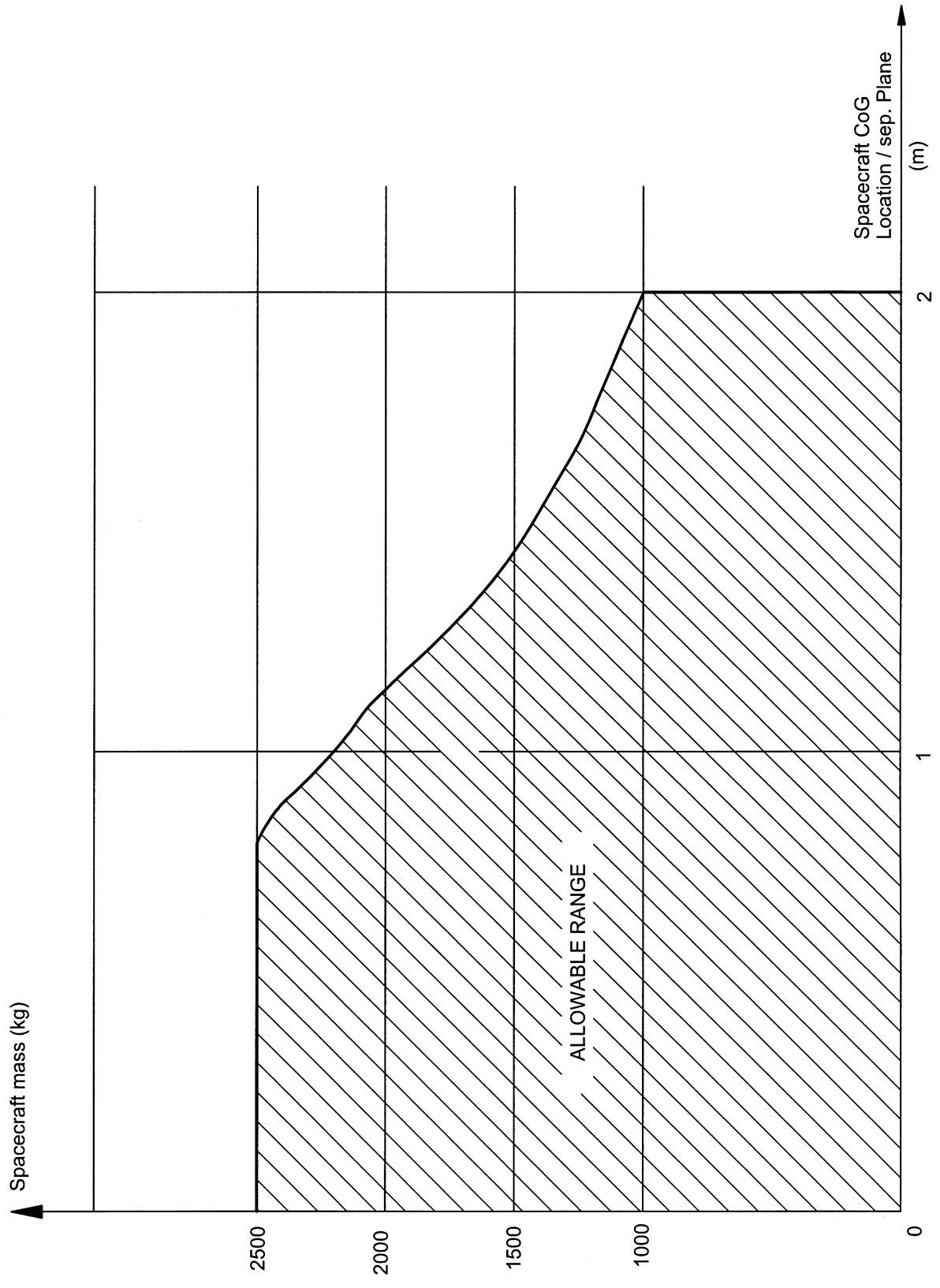


Fig. A8.3.1. – Limit loads of adaptor 937V4 at separation plane

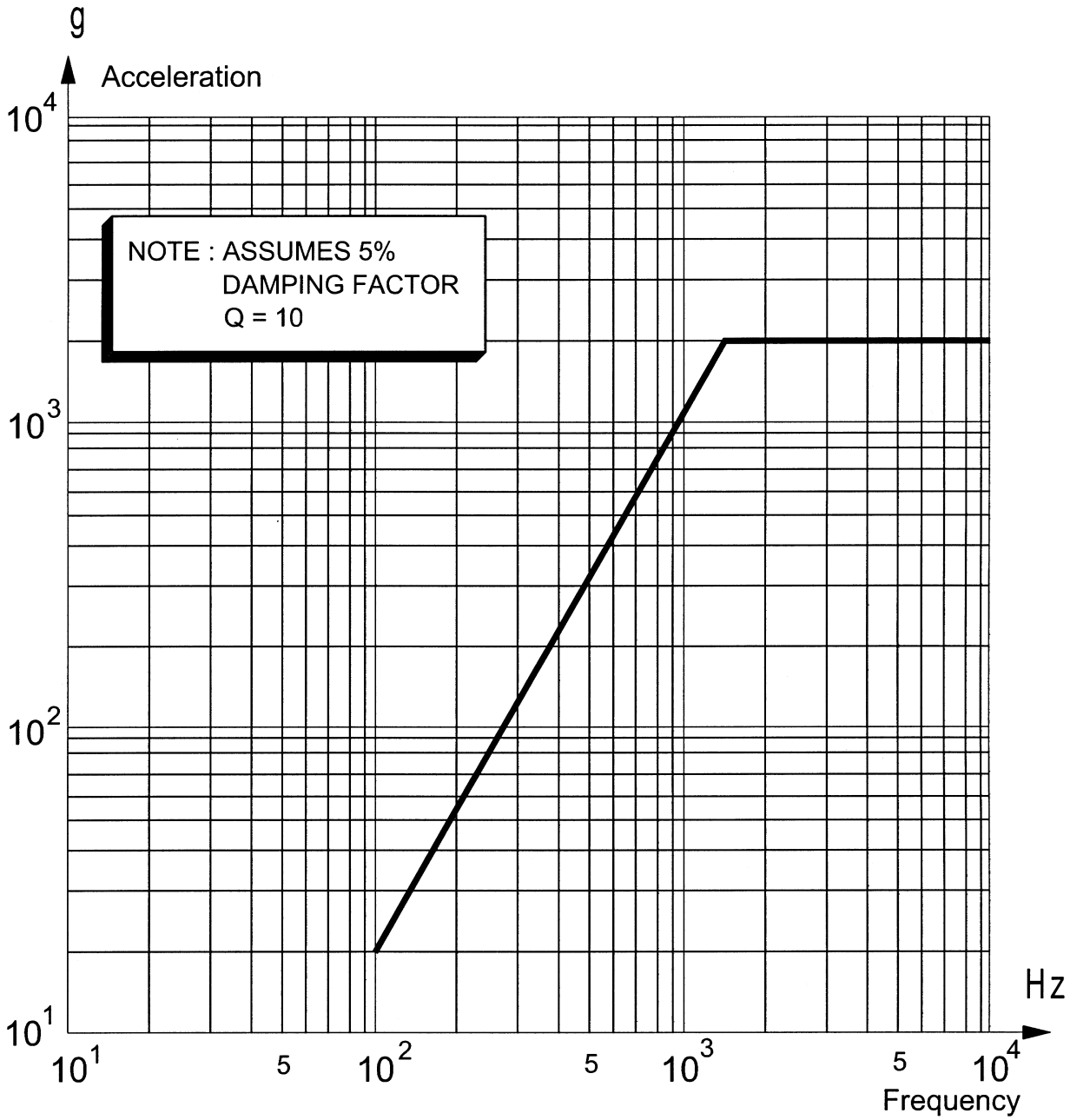


Fig. A8.3.2. – Adaptor 937V4

Shock spectrum at separation plane

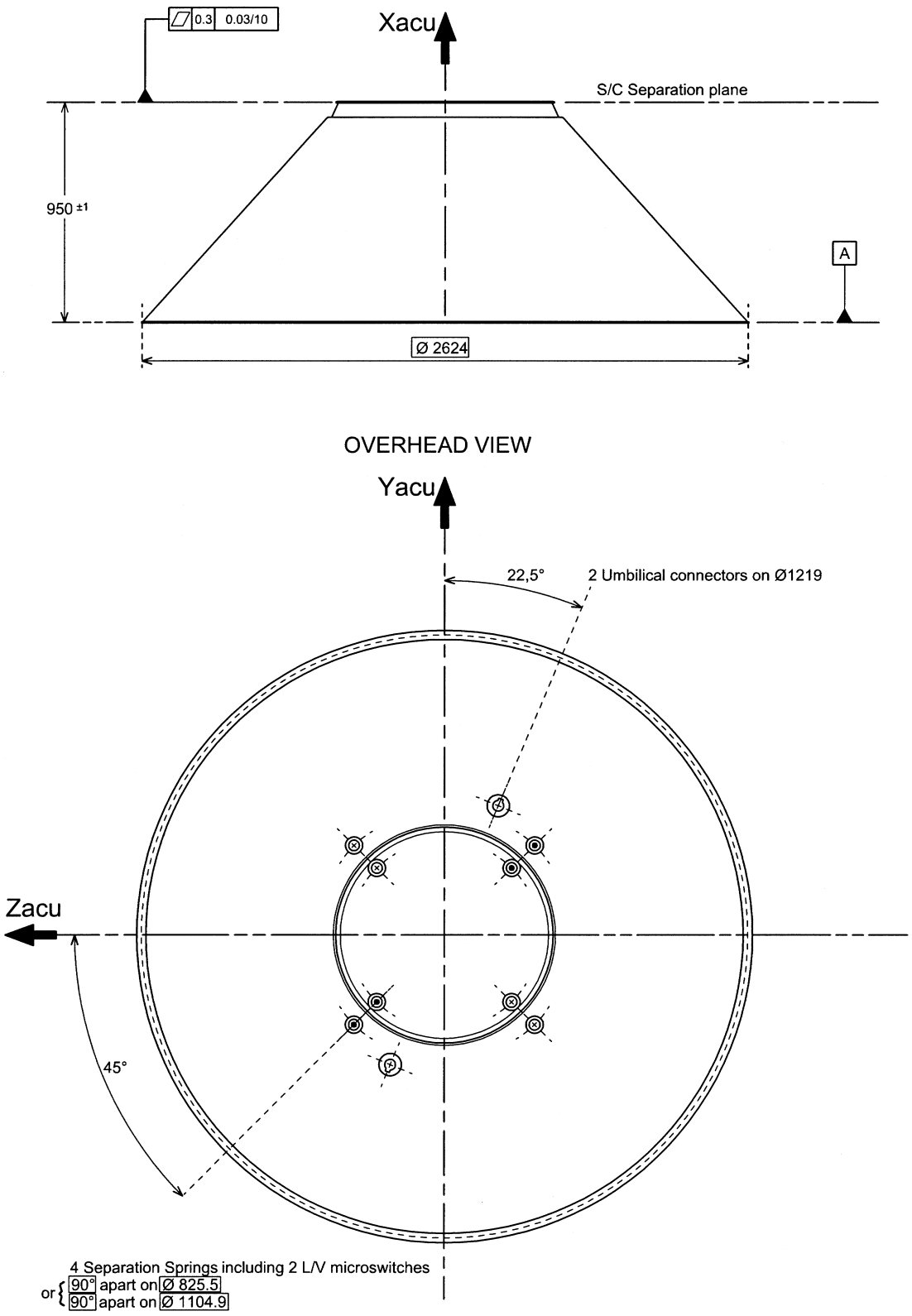


Fig. A8.3.3. – Adaptor 937V4

General view and main characteristics

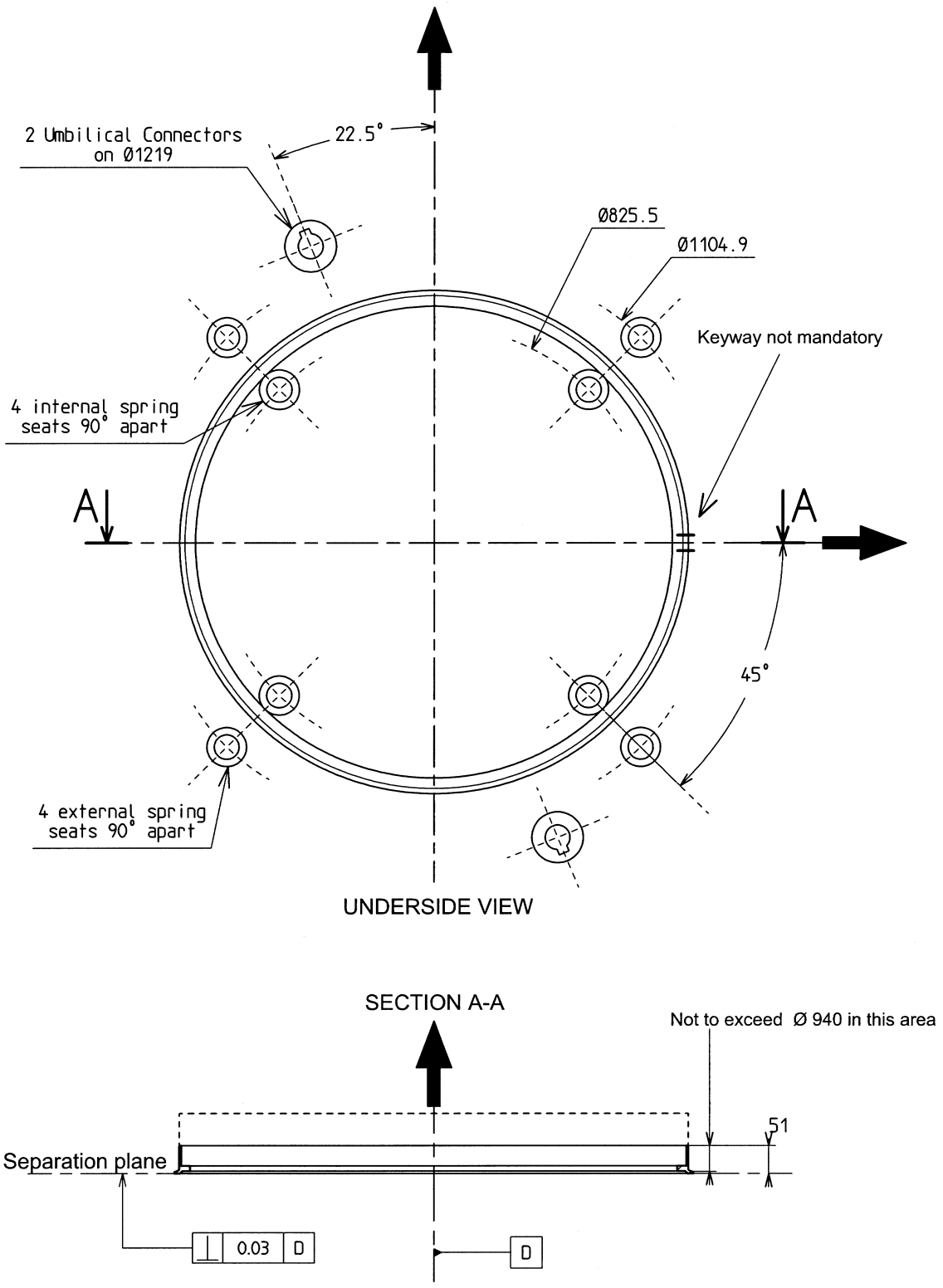
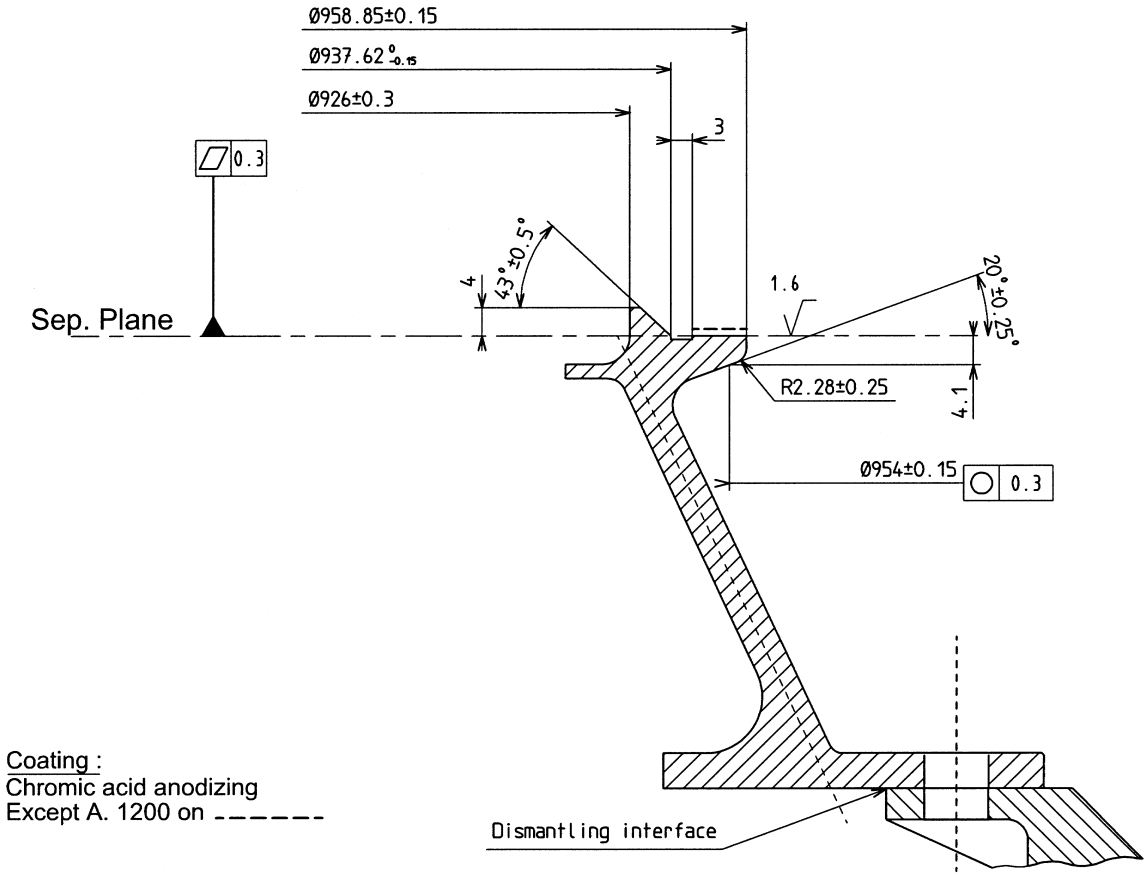
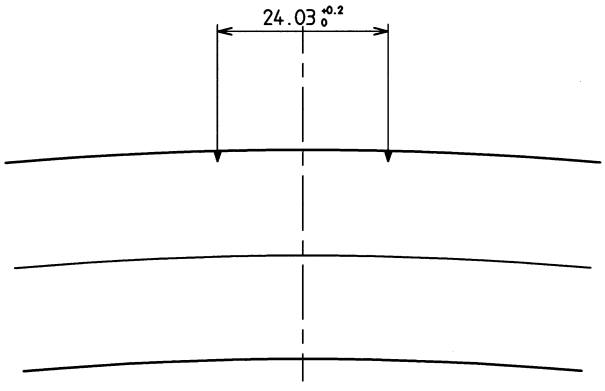


Fig. A8.3.4. – 937v4 spacecraft configuration view and main characteristics



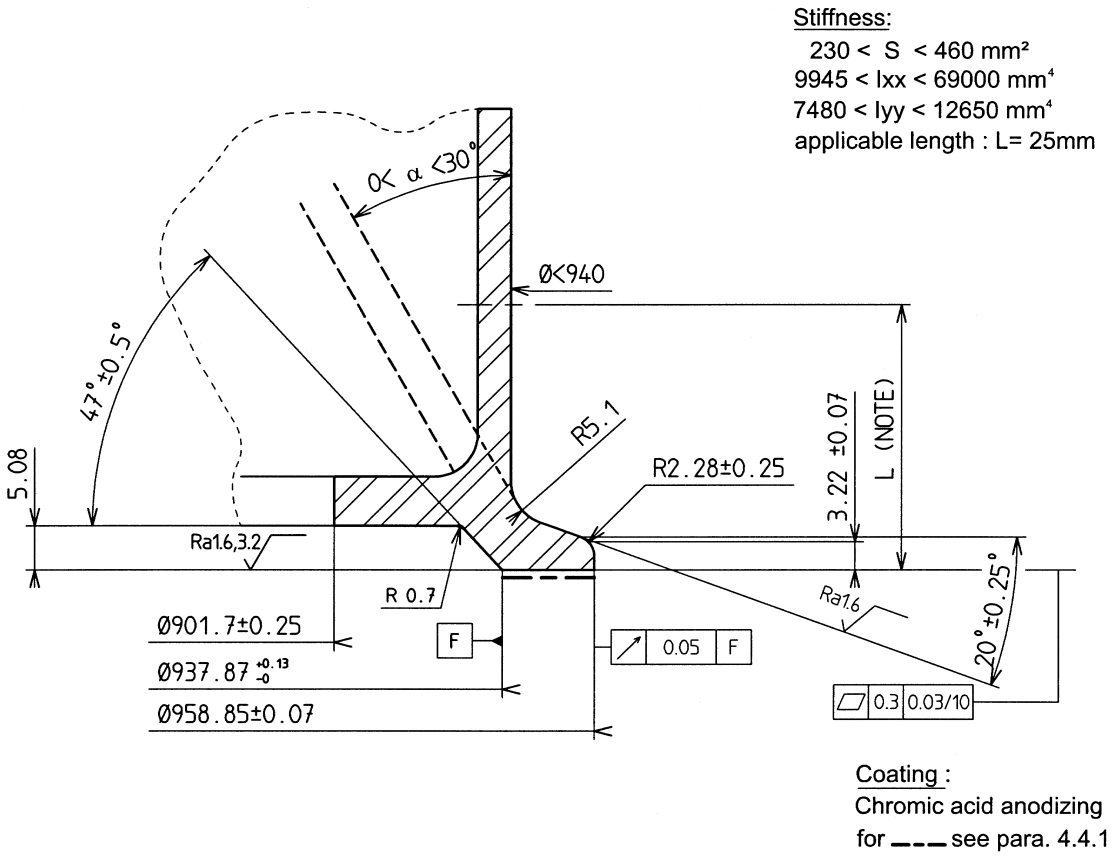
Coating :
Chromic acid anodizing
Except A. 1200 on ------

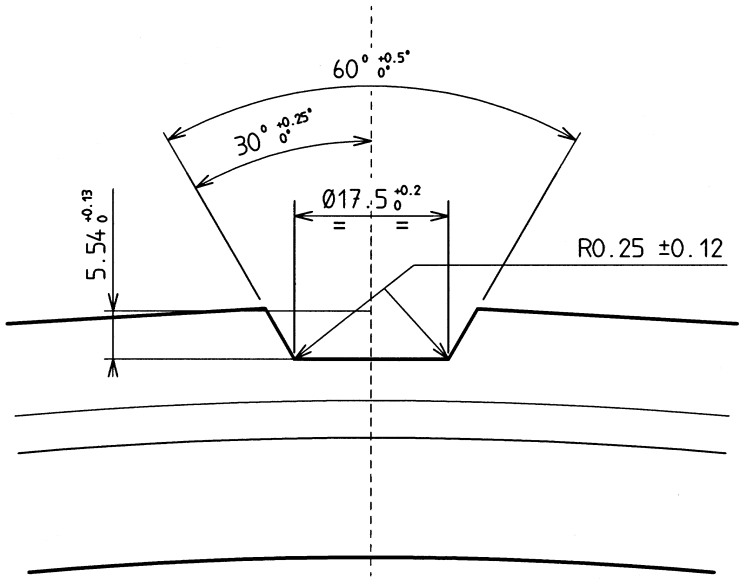
Stiffness :
S = 731.7 mm²
Ixx = 162800 mm⁴
Iyy = 404400 mm⁴
Applicable length = 64.1 mm (all section)



ACU ENGRAVED REFERENCE MARKS

Fig. A8.3.5. – Adaptor 937V4 forward frame





Keyway Details
(Not mandatory)

Fig. A8.3.6. – 937V4 spacecraft interface frame (details)

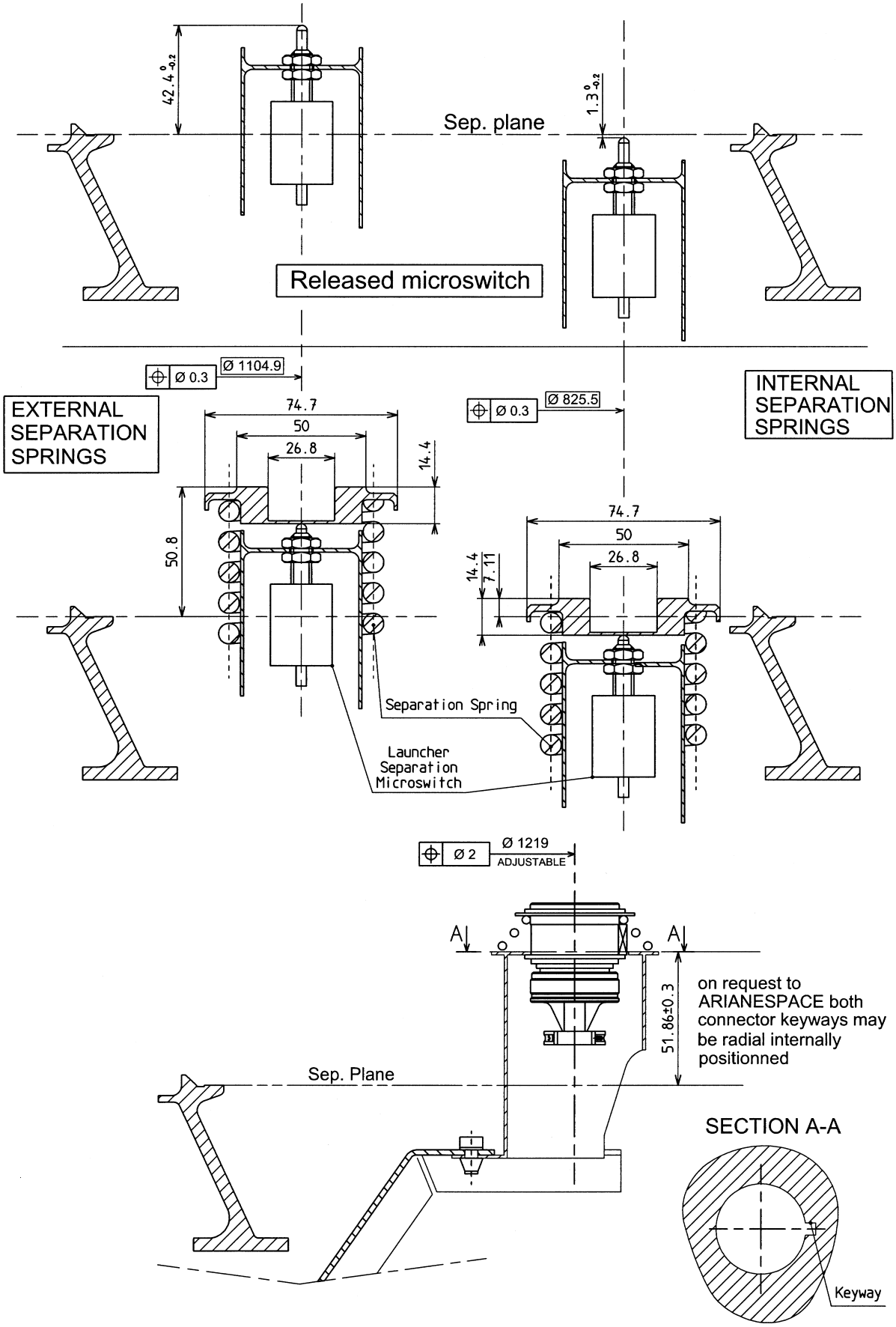
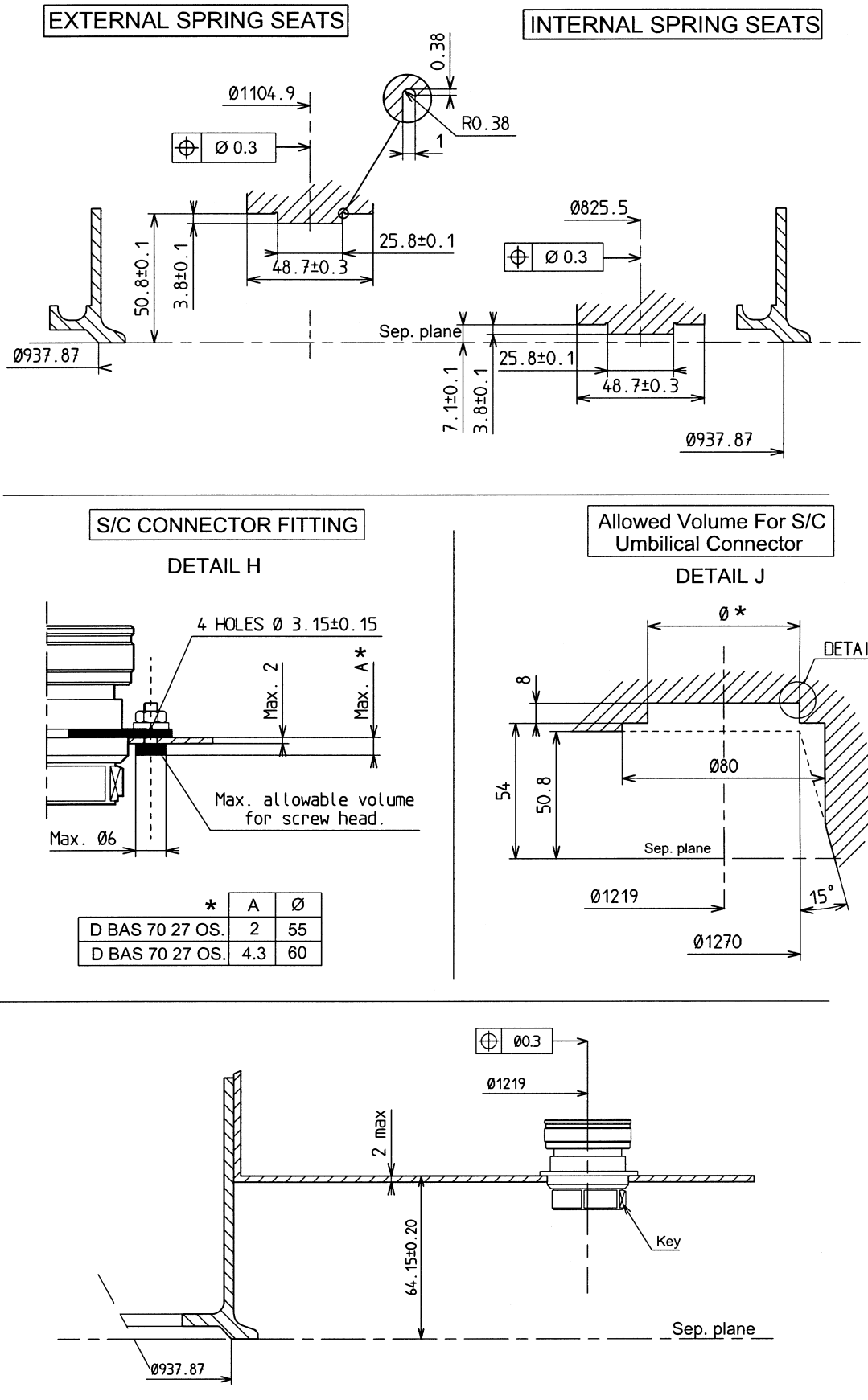


Fig. A8.3.7. – 937V4 adaptor mechanical interfaces (details)



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

Fig. A8.3.8. – 937V4 spacecraft mechanical interface (details)

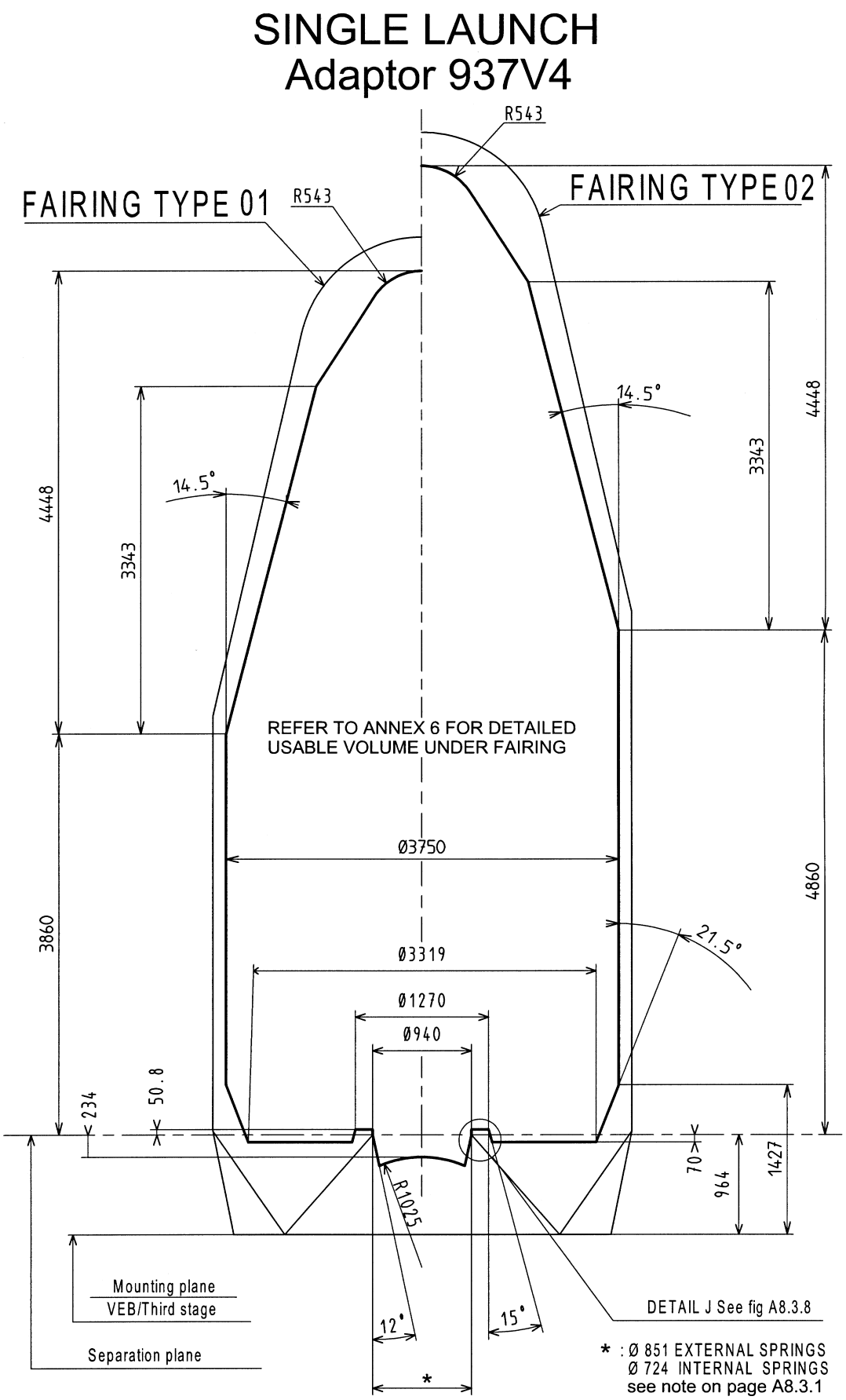


Fig. A8.3.9. – Usable volume beneath fairings 01 and 02

DUAL LAUNCH - INNER POSITION
Adaptor 937V4

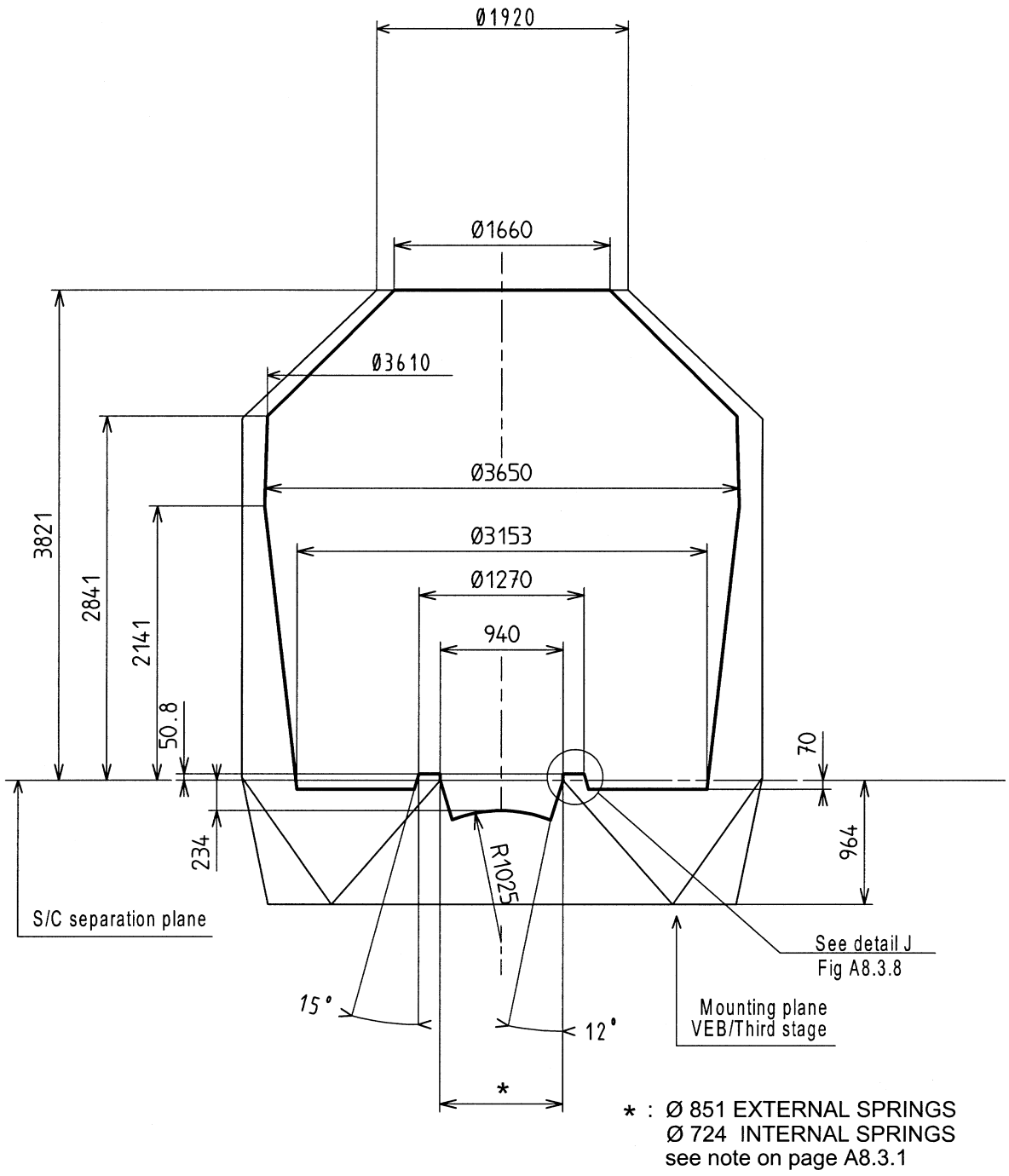


Fig. A8.3.10. – Usable volume beneath short SPELDA (type 10)

DUAL LAUNCH - INNER POSITION
Adaptor 937V4

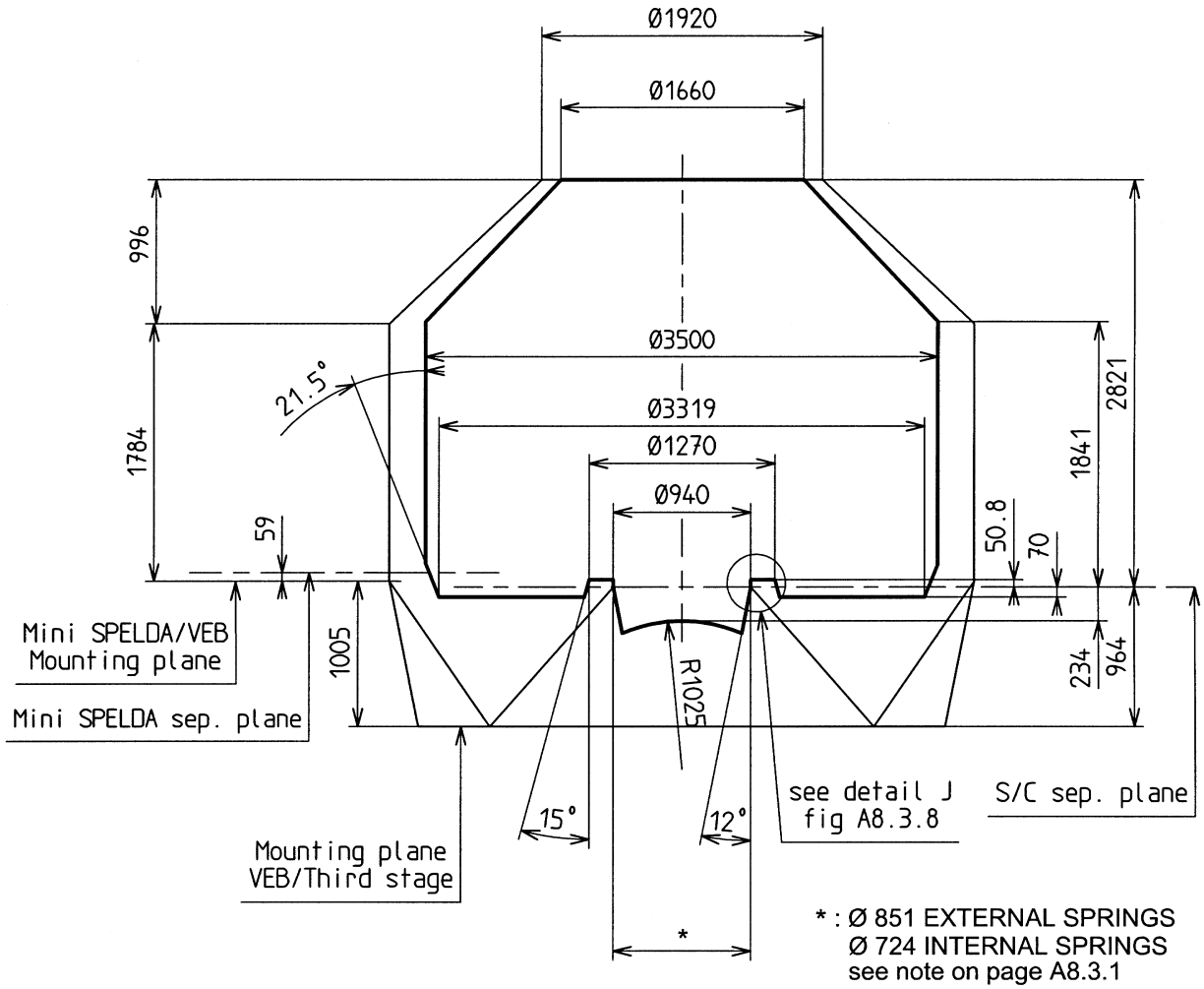


Fig. A8.3.11. – Usable volume beneath mini SPELDA (type 30)

DUAL LAUNCH - INNER POSITION
Adaptor 937V4

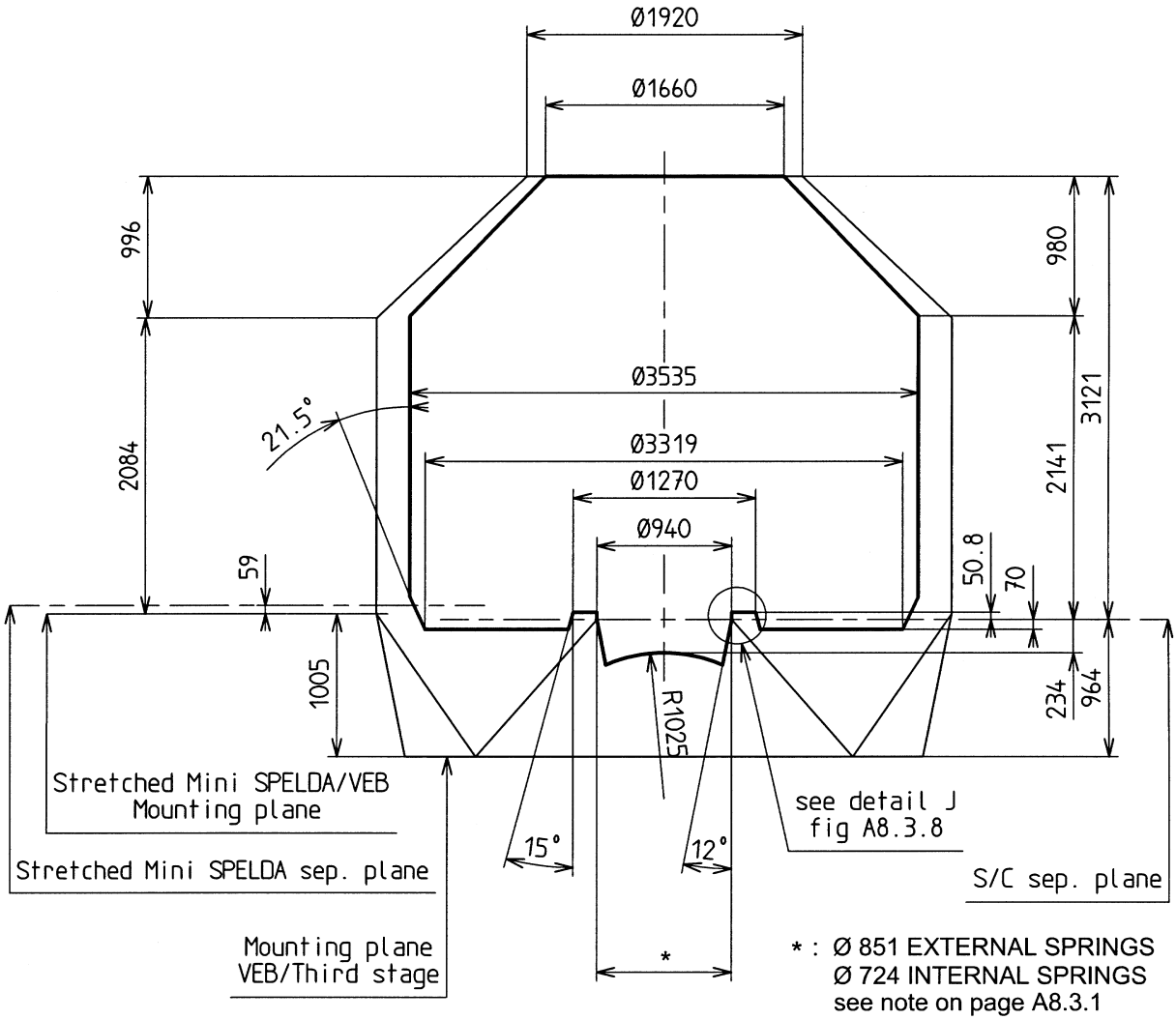


Fig. A8.3.12. – Usable volume beneath stretched mini SPELDA (type 40)