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## Adaptor 1666A

## Annex 12

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The 1666A spacecraft adaptor is an aluminium alloy structure in form of a truncated cone, with a diameter of 1666 mm at the level of spacecraft separation plane.

The spacecraft rests on the forward frame of the adaptor and is secured by a clampband. The latter consists of a metal strip which holds in place a serie of clamps hooked on to the spacecraft and adaptor frames. 12 of the clamps comprise a shear-pin for the shear loads transmission at the interface. At separation, the band is severed in two places by a bolt cutter mounted on the adaptor, the pieces remaining captive to the adaptor.

The spacecraft is forced away from the launch vehicle by a series of actuators (4 to 8) forming part of the vehicle and bearing on the spacecraft rear frame. The relative velocity between the adaptor and the spacecraft is about 0.5 m/s. Once the clampband is fitted, each actuator exerts a force of less than 1500 N on the rear spacecraft frame.

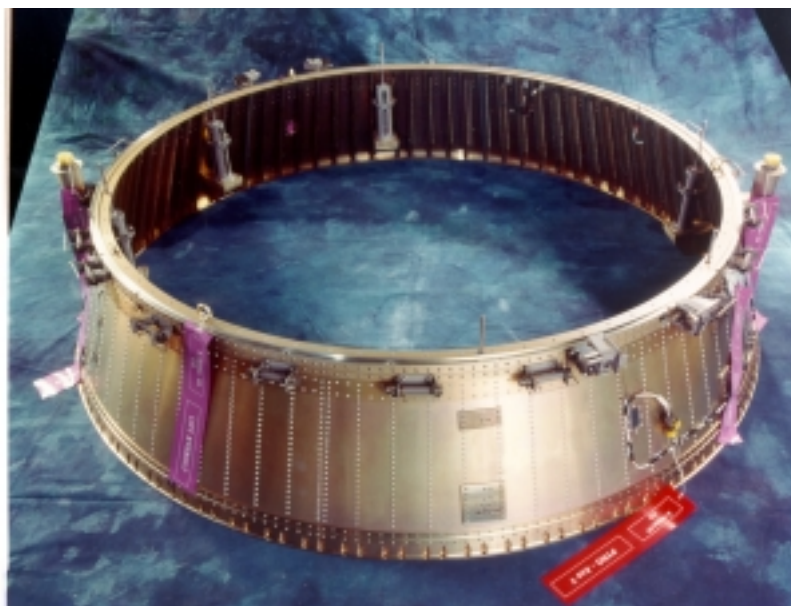
The clampband tension does not exceed 32 000 N at any time, it is defined to ensure no gapping between the spacecraft and adaptor interface frames in ground and flight environment.

The 1666A adaptor has a mass of 50 kg.

The actual spacecraft pair of values ( $M_{cu}$ ,  $X_G$ ) must be such that the forces on the adaptor spacecraft interface remain within admissible limits as [defined in Fig. A12.1](#) using the quasi-static load values indicated in paragraph 4.5.4 ([chapter 4](#)).

[Figure A12.6](#) gives the dimensions of the spacecraft-frame butt. Apart from correct observance of these dimensions, this frame must be manufactured in an aluminium alloy.

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.



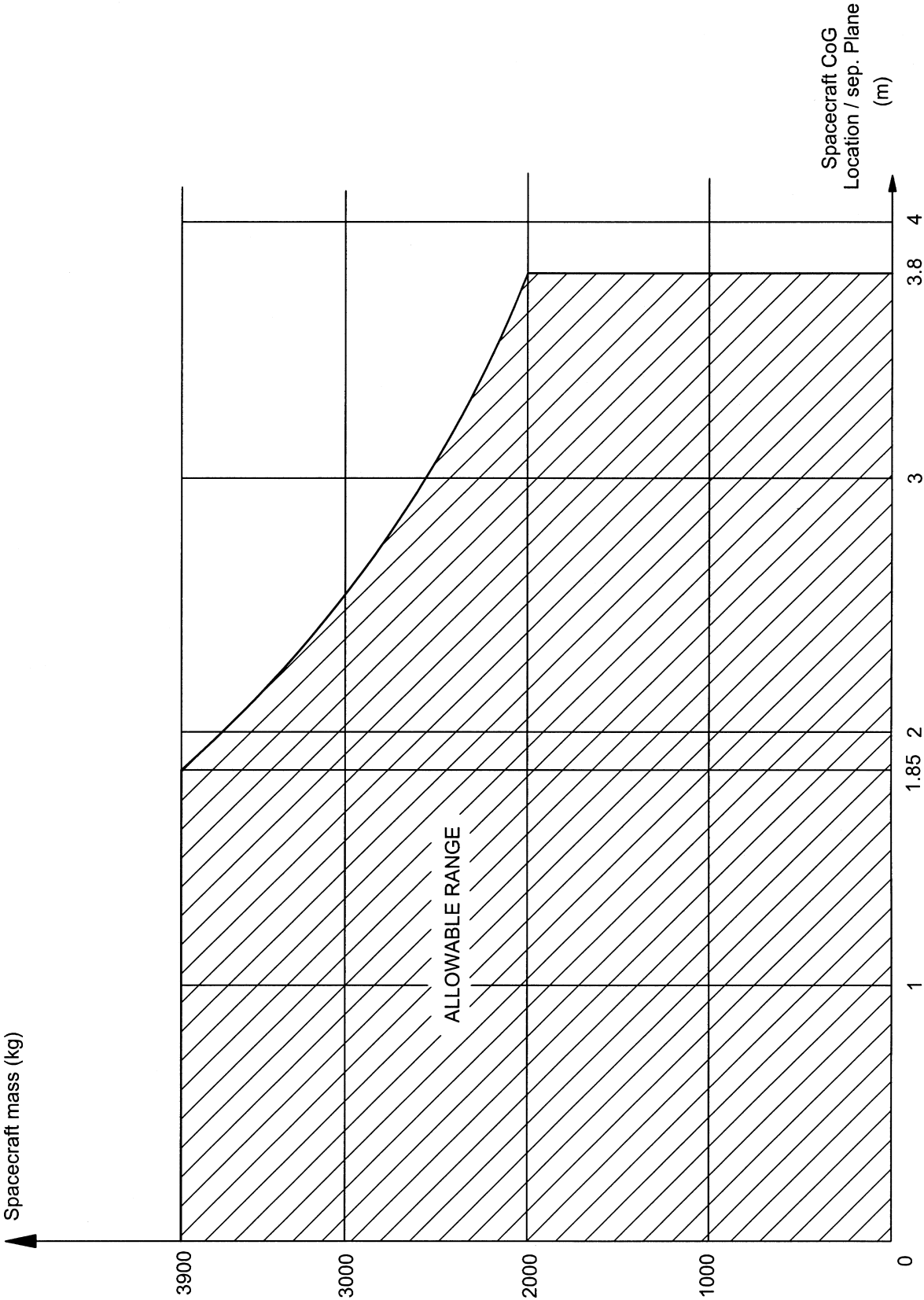


Fig. A12.1 – Limits loads of adaptor 1666A at separation plane

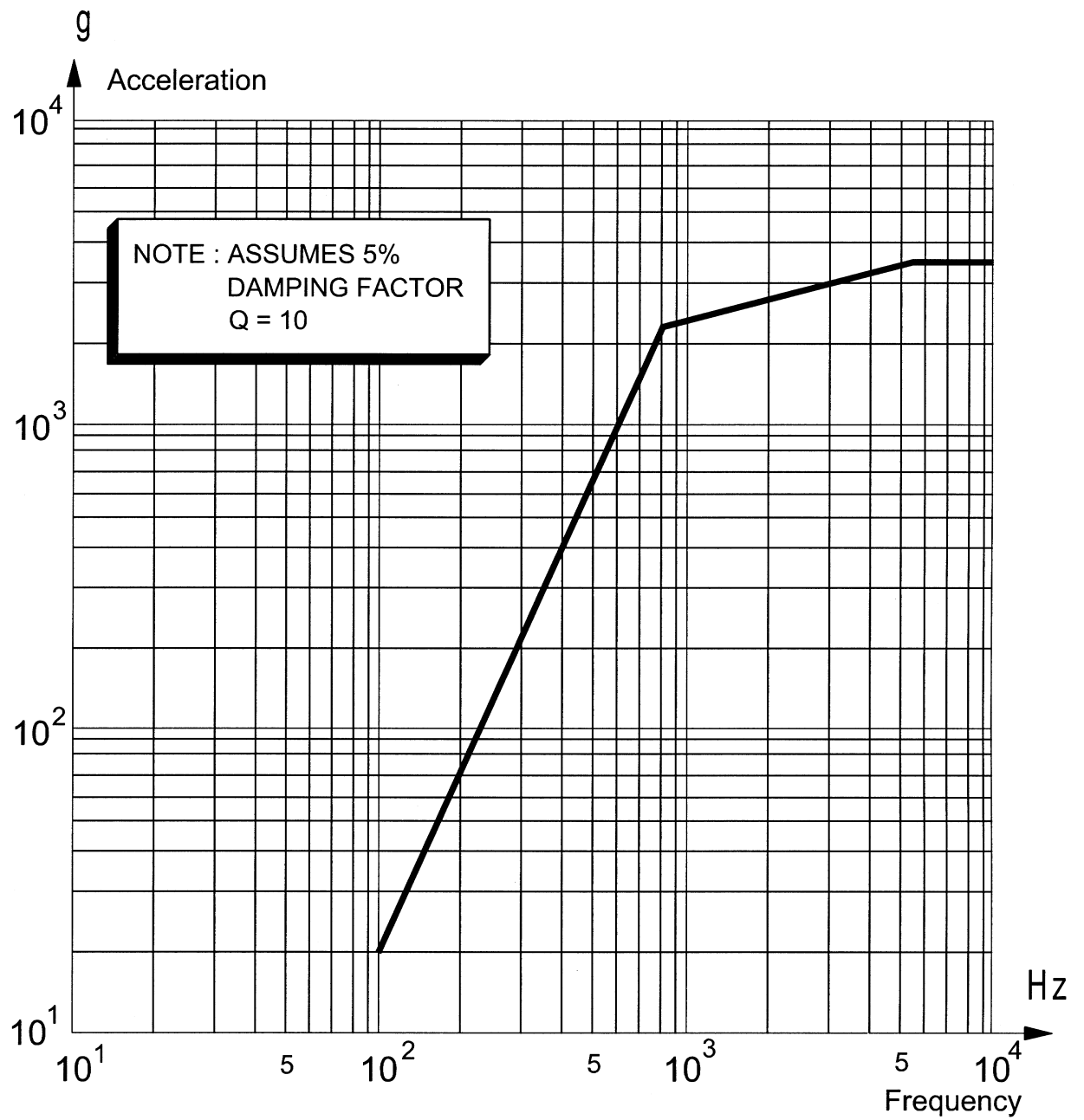


Fig. A12.2 – Adaptor 1666A

Shock spectrum at separation plane

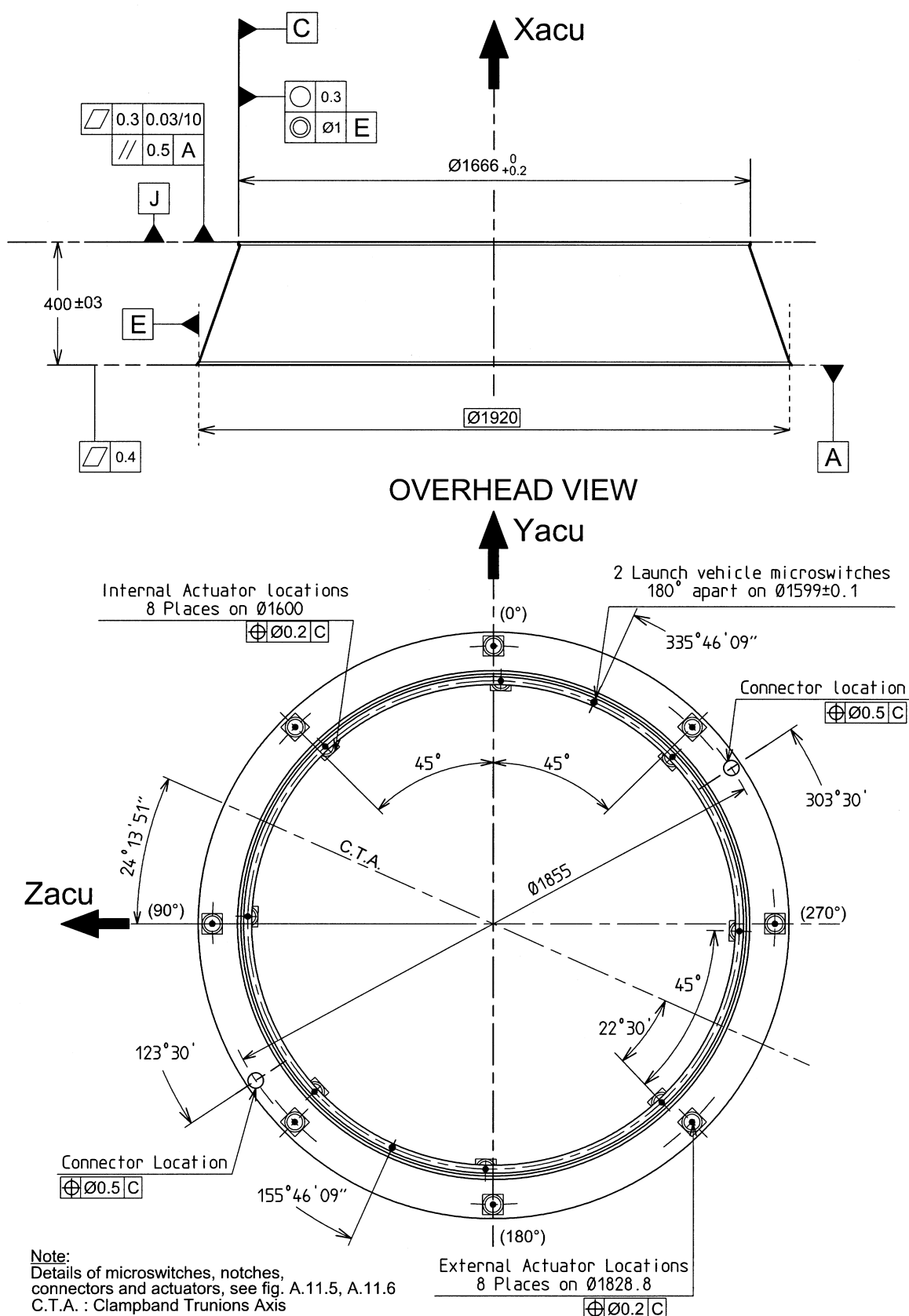


Fig. A12.3 – Spacecraft adaptor 1666A

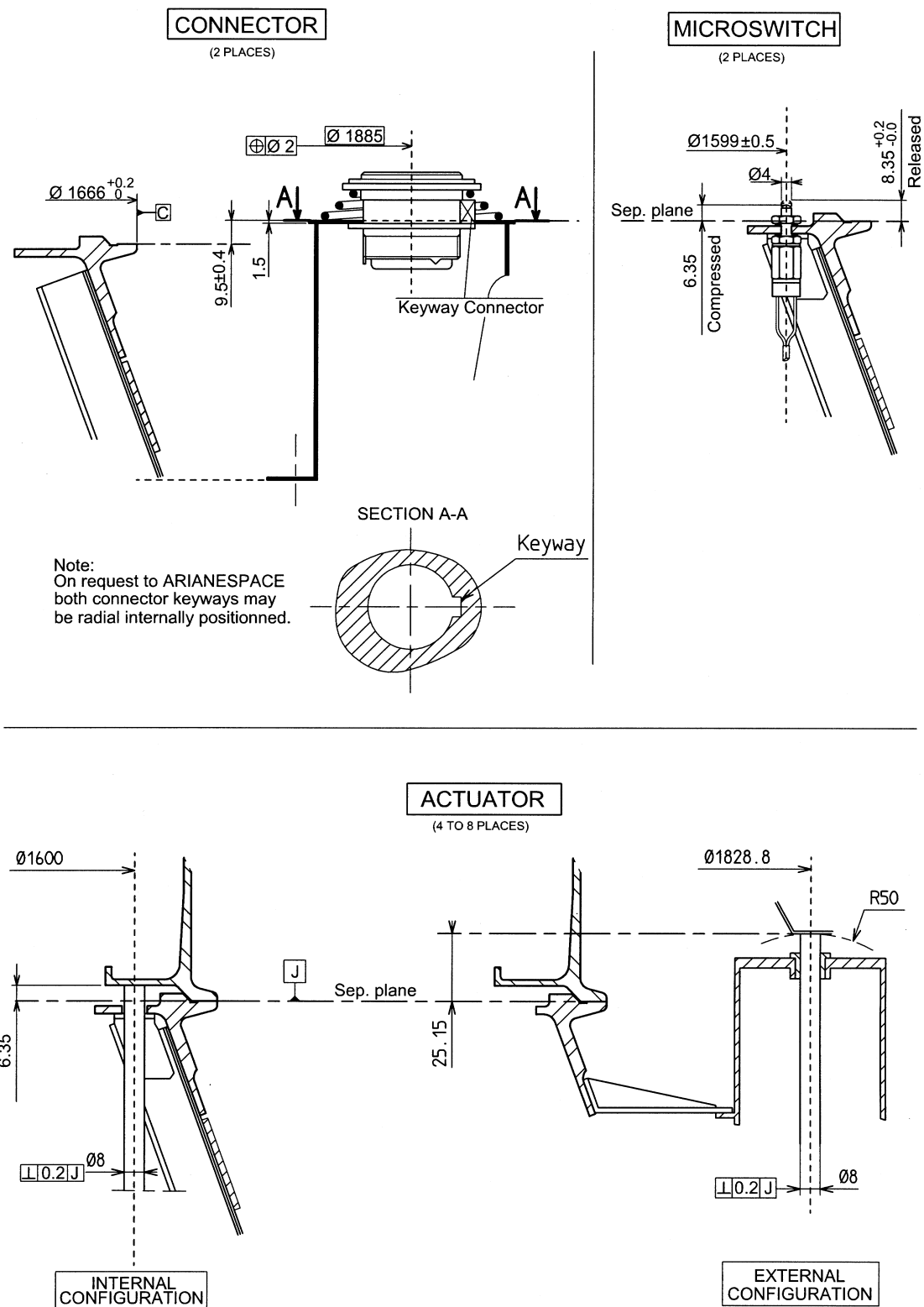


Fig. A12.4 – Adaptor 1666A (details)

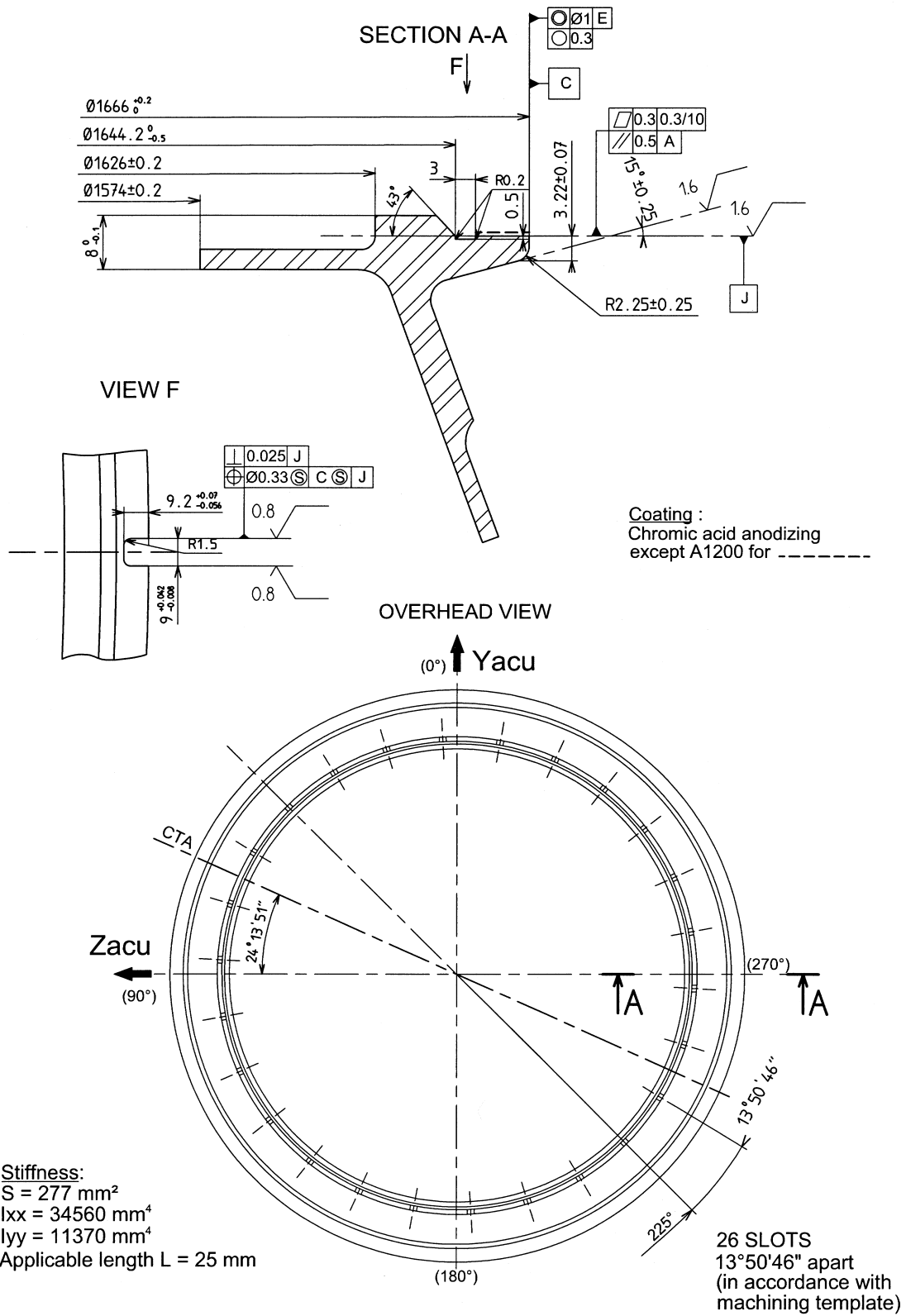
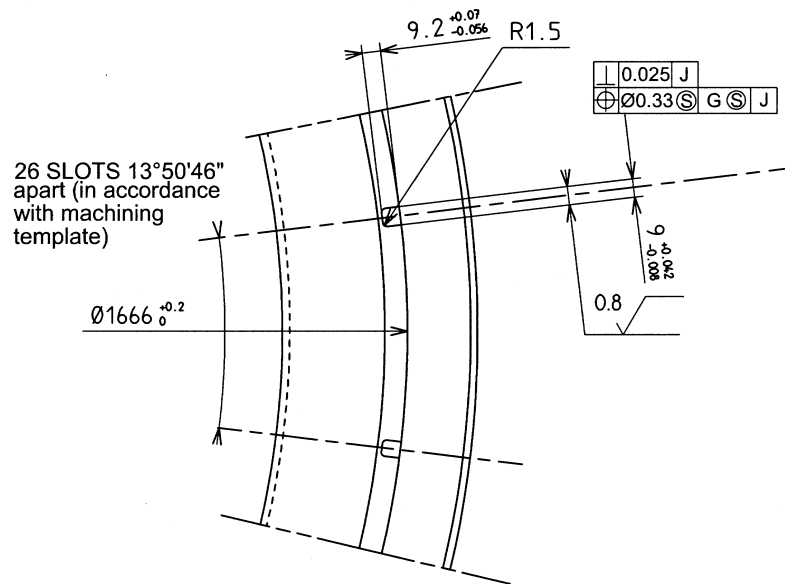


Fig. A12.5 – Adaptor 1666A – Forward frame

## VIEW F



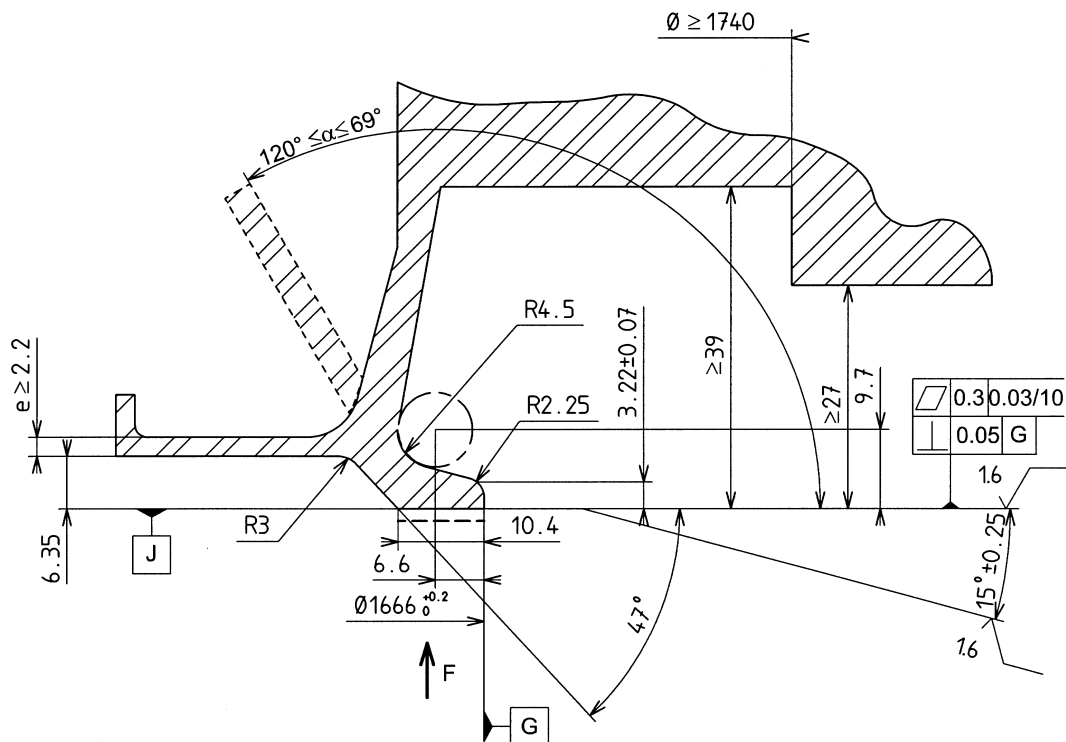
Stiffness :

$S = 570 \text{ mm}^2$   
 $I_{xx} = 307000 \text{ mm}^4$   
 $I_{yy} = 169000 \text{ mm}^4$

Applicable length = 60 mm

Coating :

Chromic acid anodizing  
For ----- see para 4.4.1.



**Fig. A12.6 – Adaptor 1666A – Spacecraft rear frame**

# SINGLE LAUNCH Adaptor 1666A

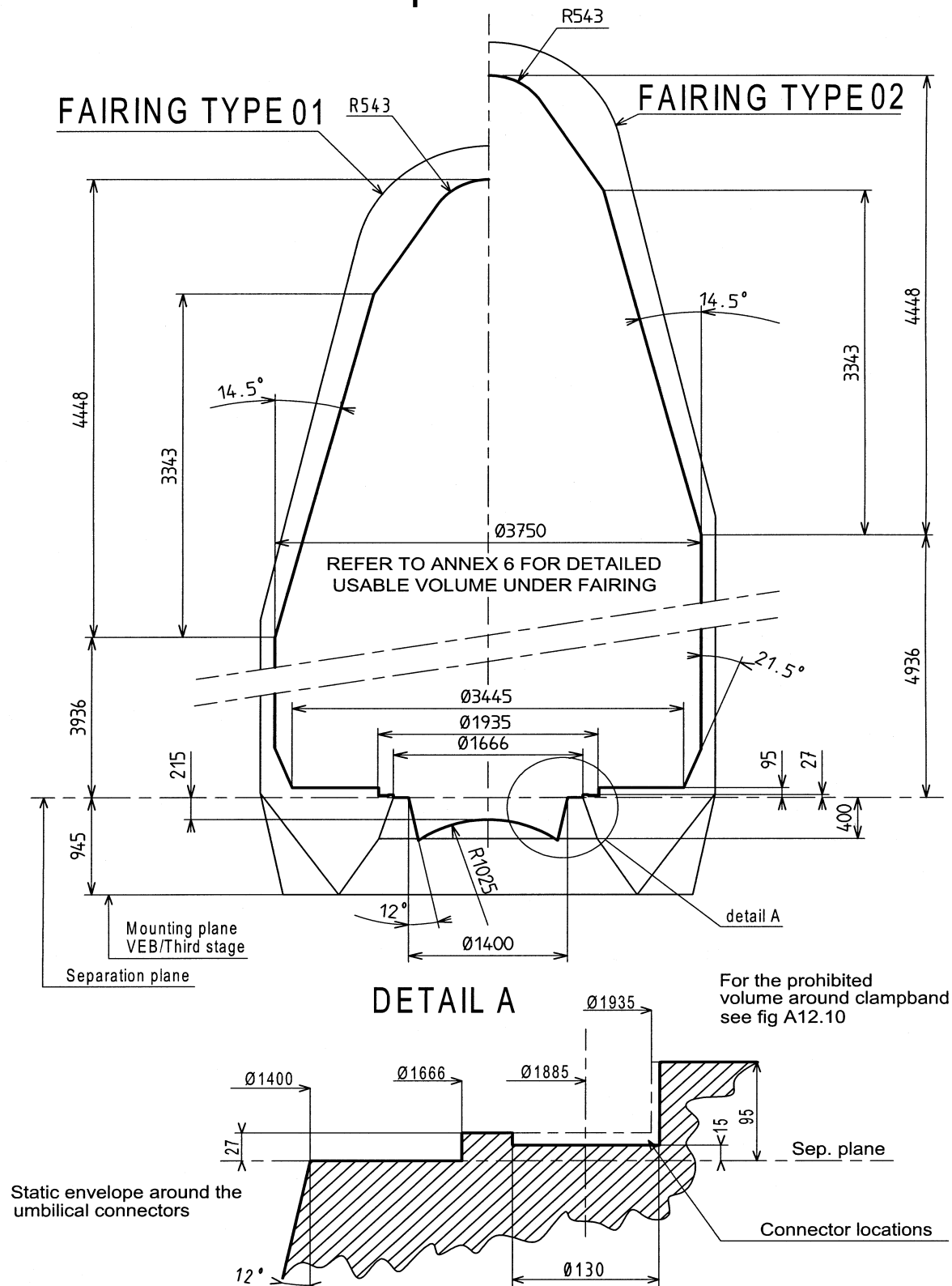
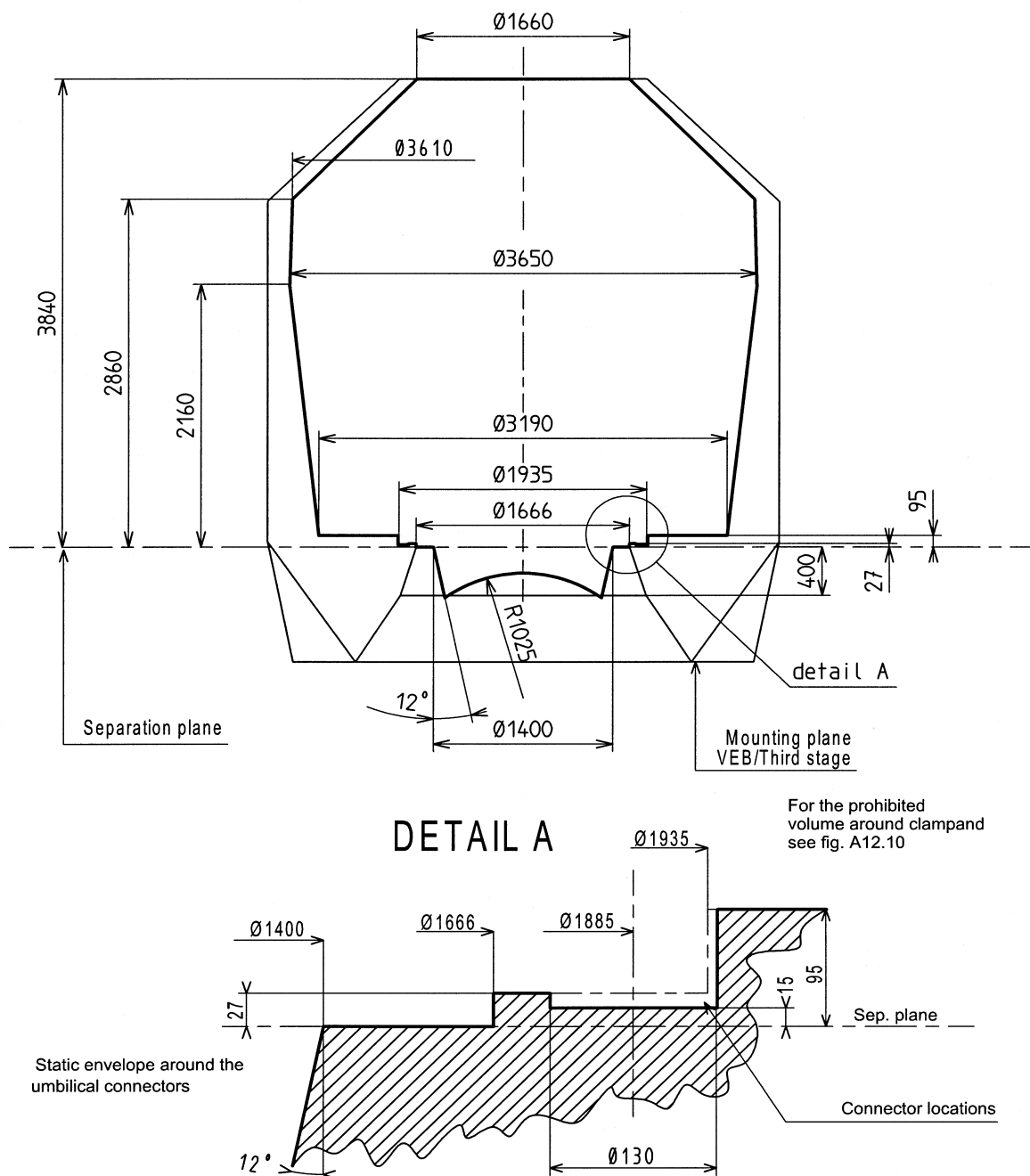


Fig. A12.7 – Usable volumes beneath fairings 01 and 02



# DUAL LAUNCH-INNER POSITION

## Adaptor 1666A



**Fig. A12.8 – Usable volume beneath SPELDA 10**

# DUAL LAUNCH-UPPER POSITION Adaptor 1666A

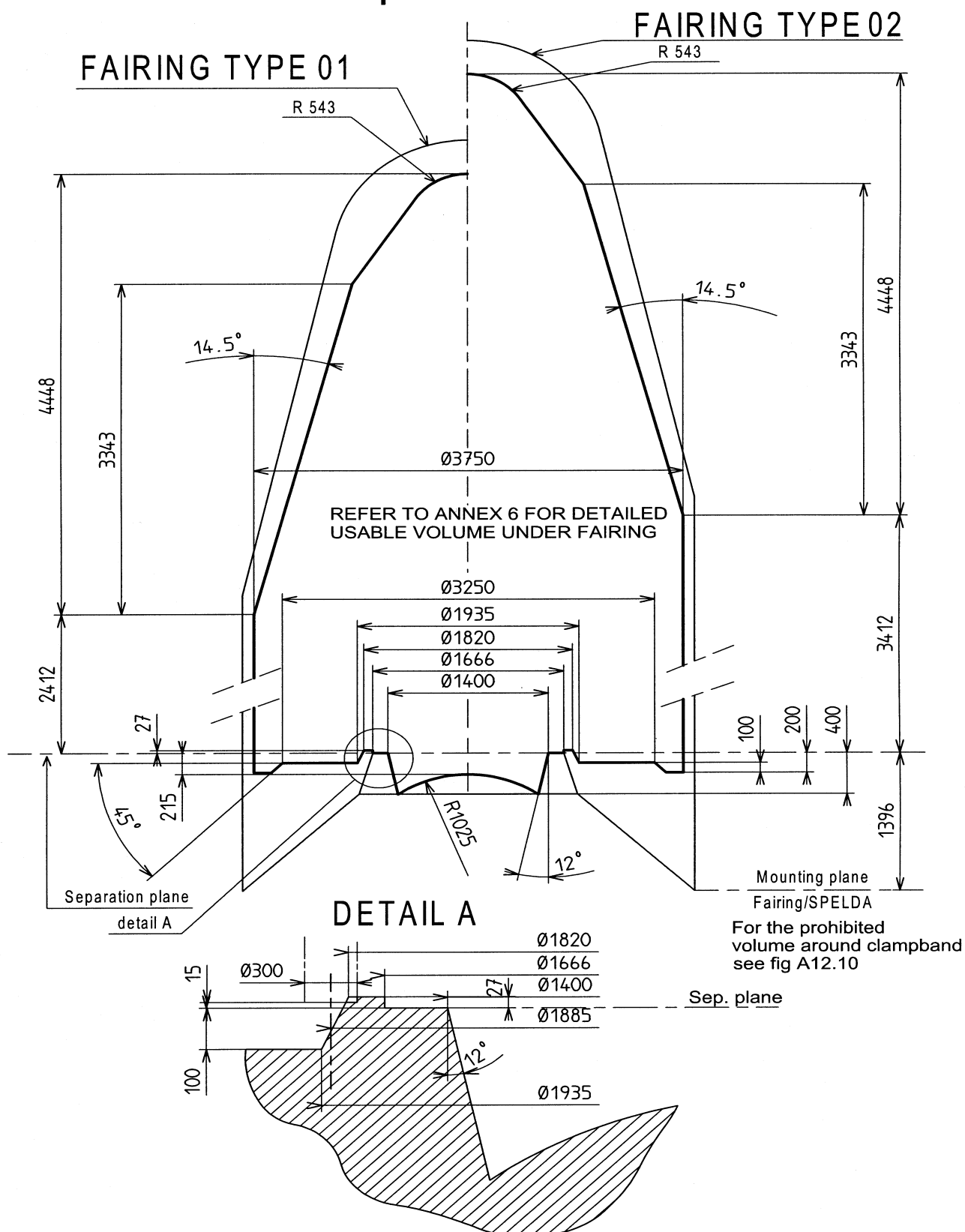


Fig. A12.9 – Usable volumes beneath fairings 01 and 02

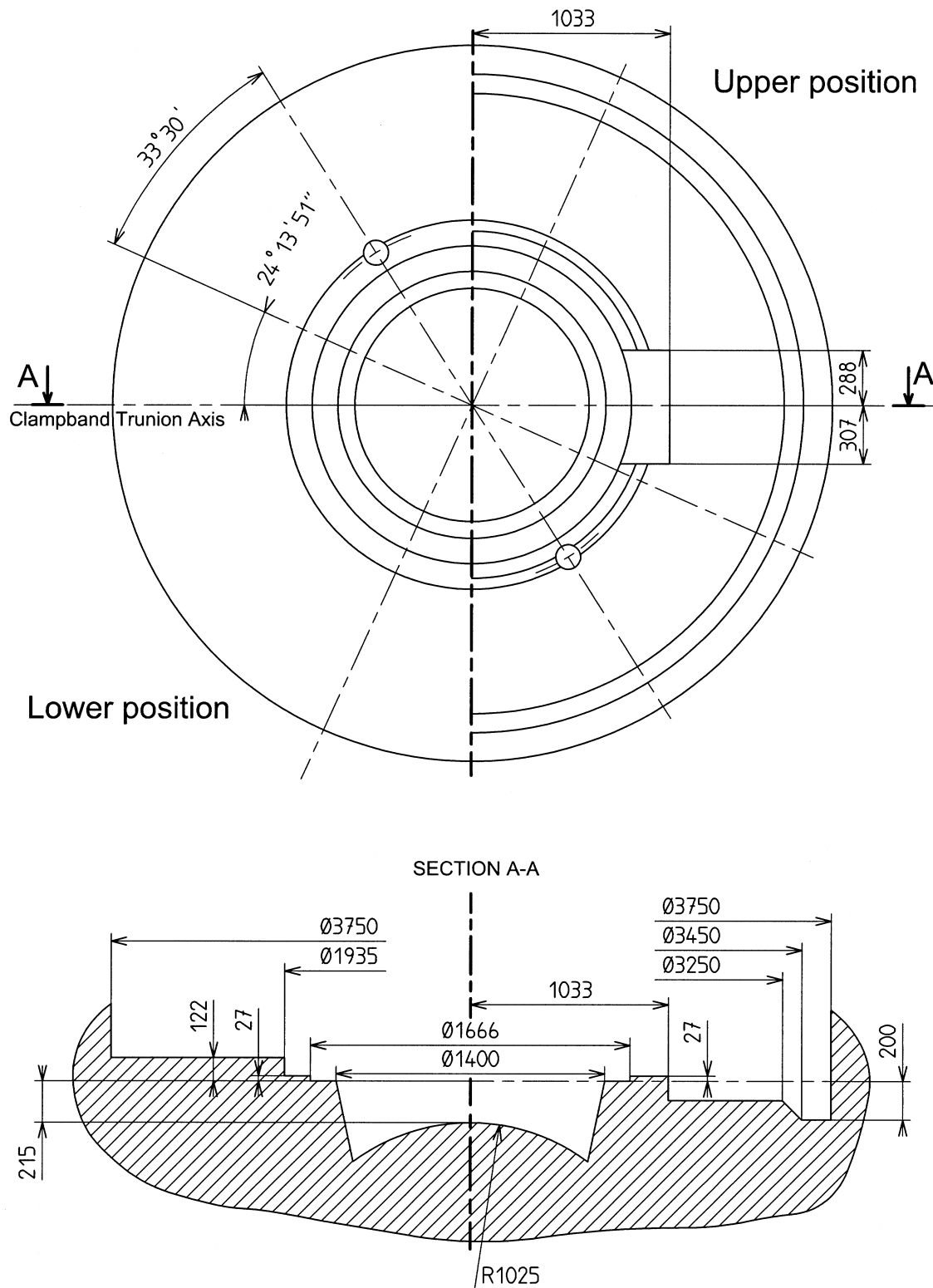


Fig. A12.10 – Static envelope around clampband in dual launch  
in upper and lower position