

NEXT100 Vessel

Nexus implementation from engineering drawings

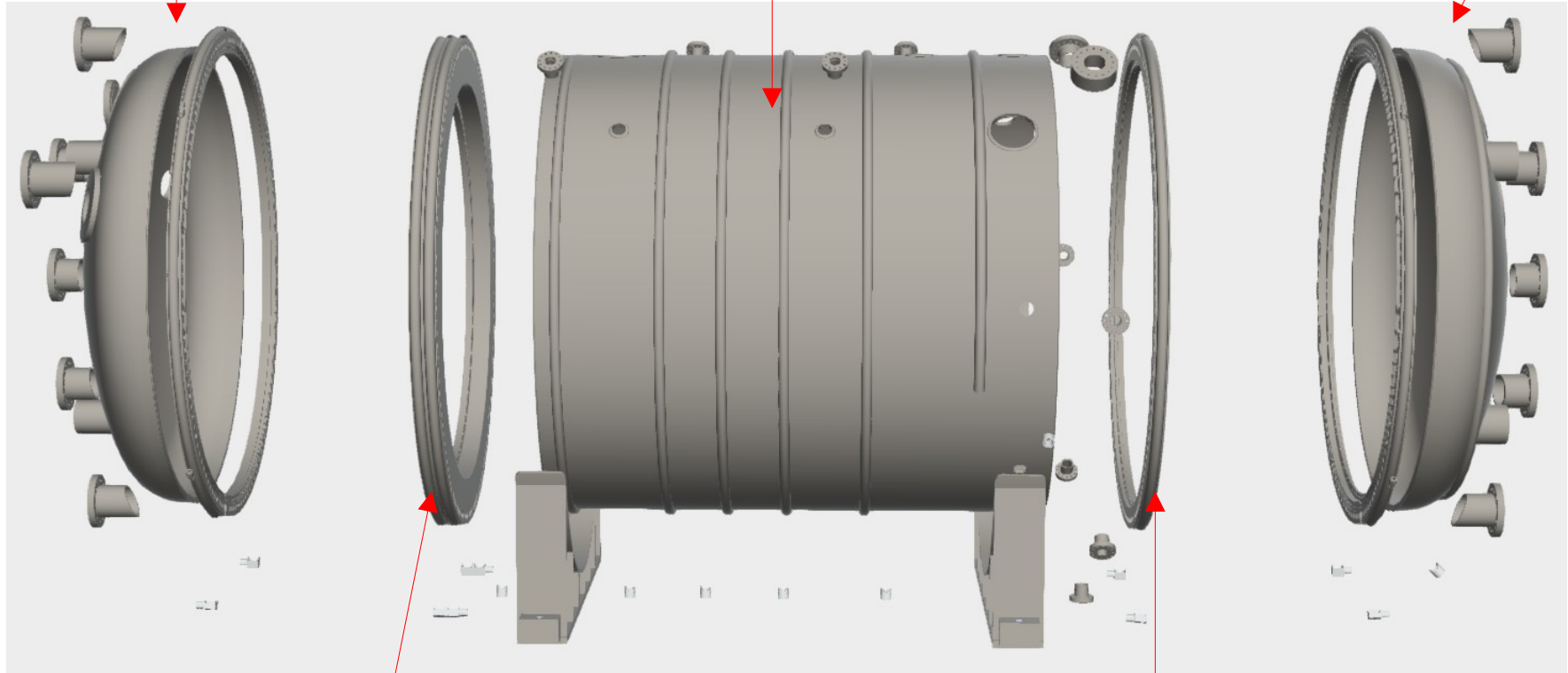
Gonzalo Díaz López

16/07/2021

EP Endcap

Body (00-03 Cylinder_3270)

TP Endcap

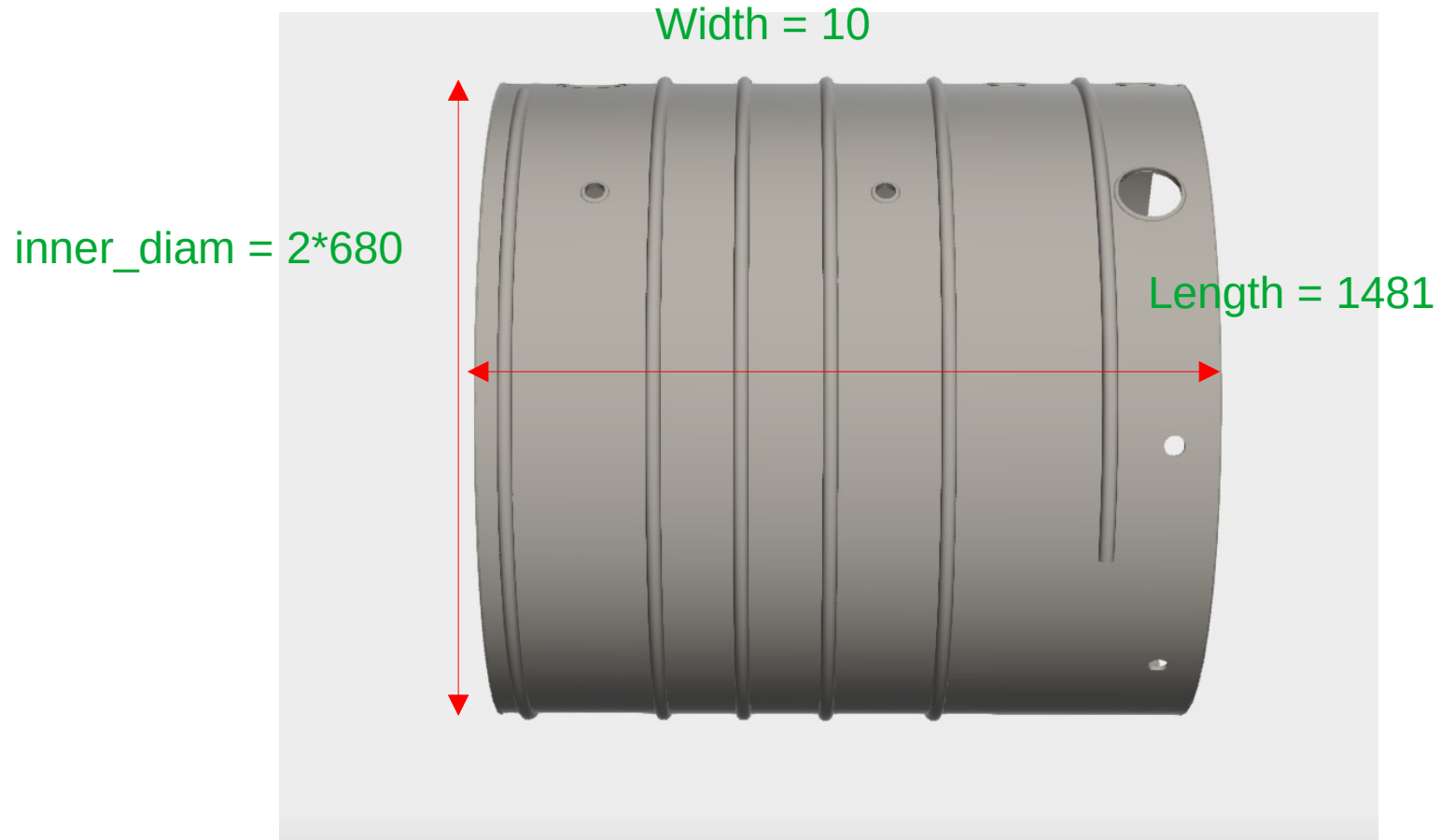


EP flange (00-02 Cylinder EP flange_3269)

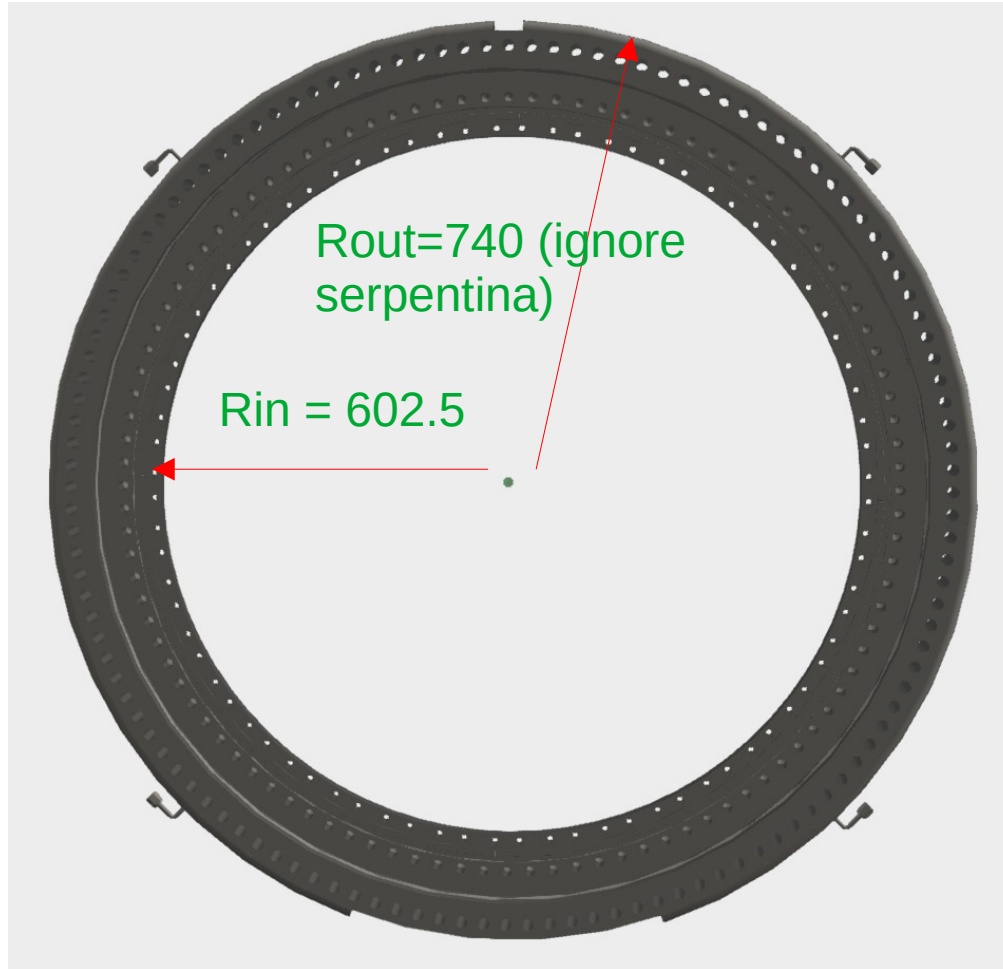
TP flange
(00-01 Cylinder TP flange_second option ...)

Body

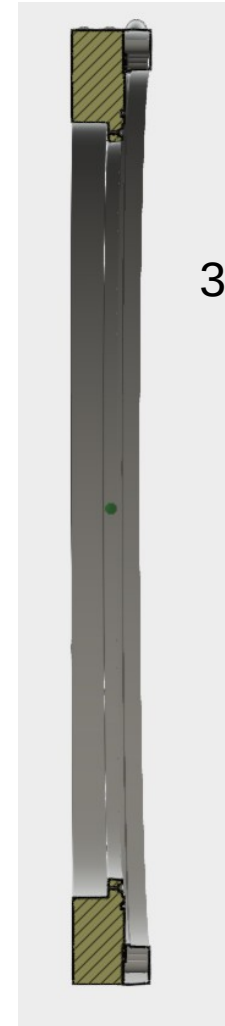
(dimensions in mm and approximate, verified with 2D drawings in green)



EP flange



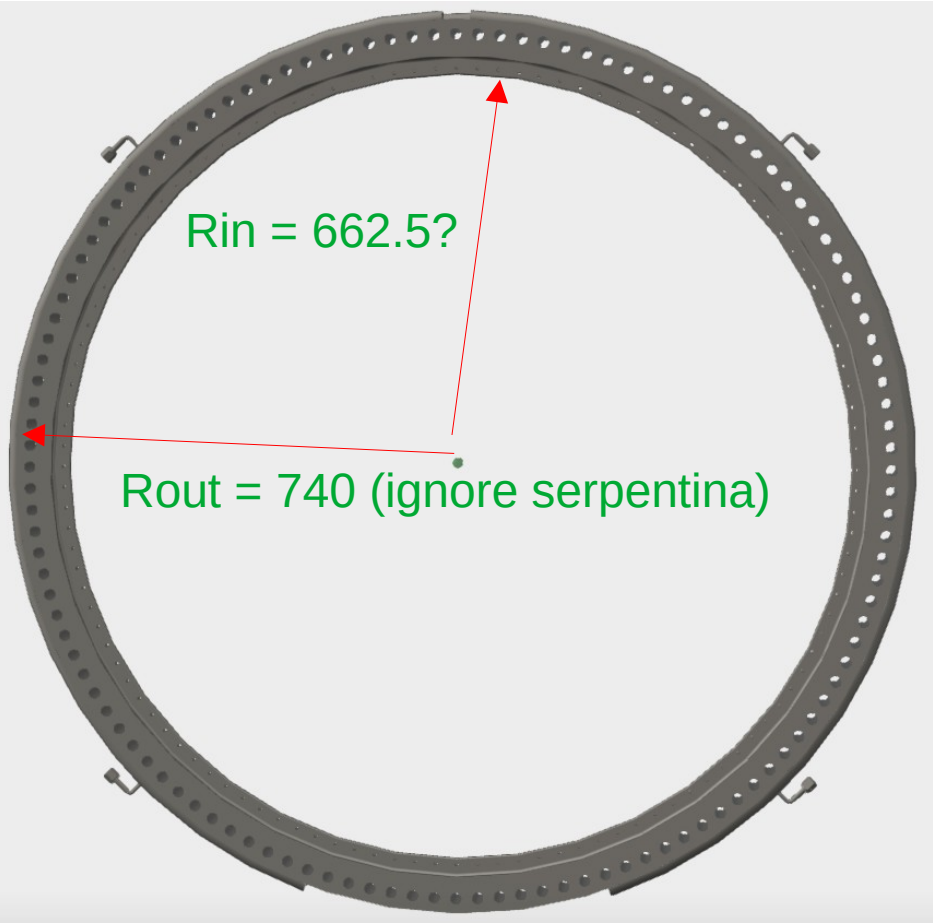
Width = 77.5



3 different radius!

TP Flange

Width=41.5



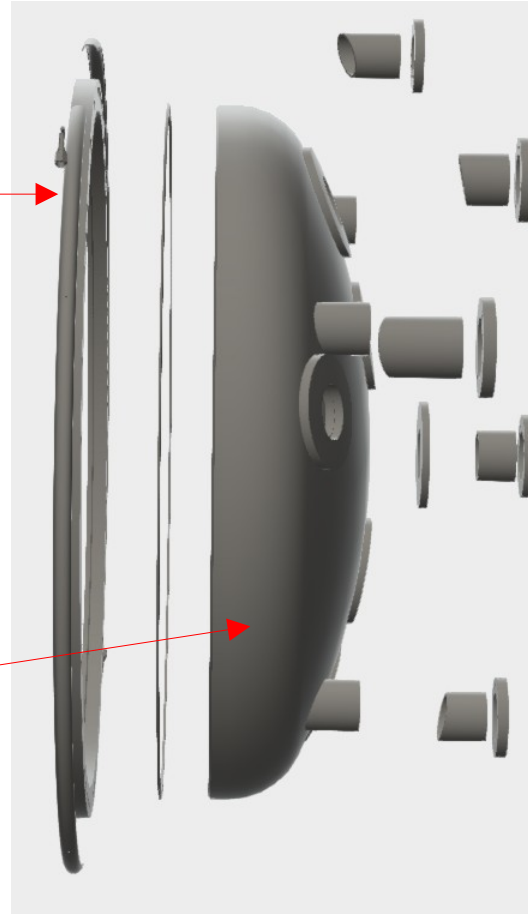
Rin = 662.5?

Rout = 740 (ignore serpentina)

Endcaps (same for TP and EP)

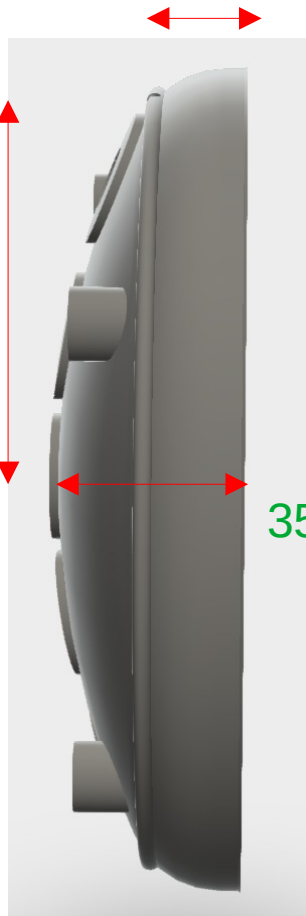
Added to the logical flange in nexus
Width = 41.5

Logical endcap



Endcap

$$193(\text{aprox}) - 41.5 = 151.5$$



A=601.1
(next slide)

endcap_in_body_

$$359 - 41.5 - 10 = 307.5$$

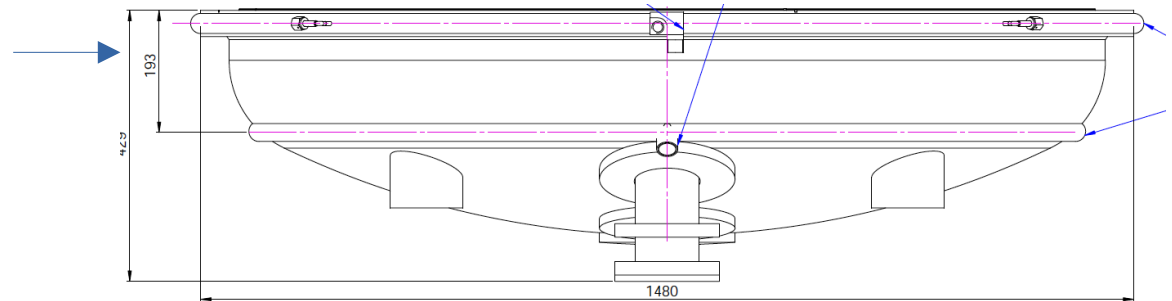
$$a^2 + b^2 = R^2$$
$$d + b = R$$

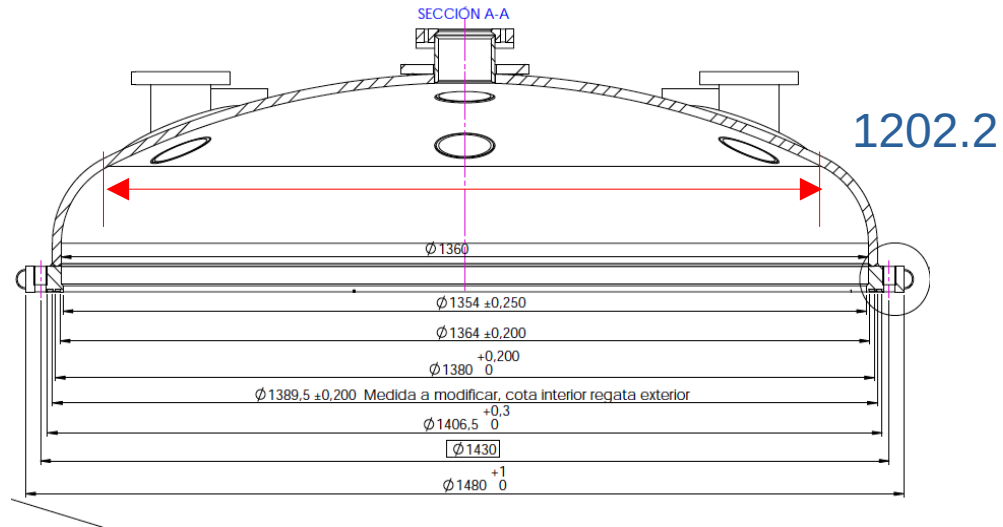
$$d = R - b = 307.5 - 151.5 = 156$$

(d = endcap_in_z_width_)

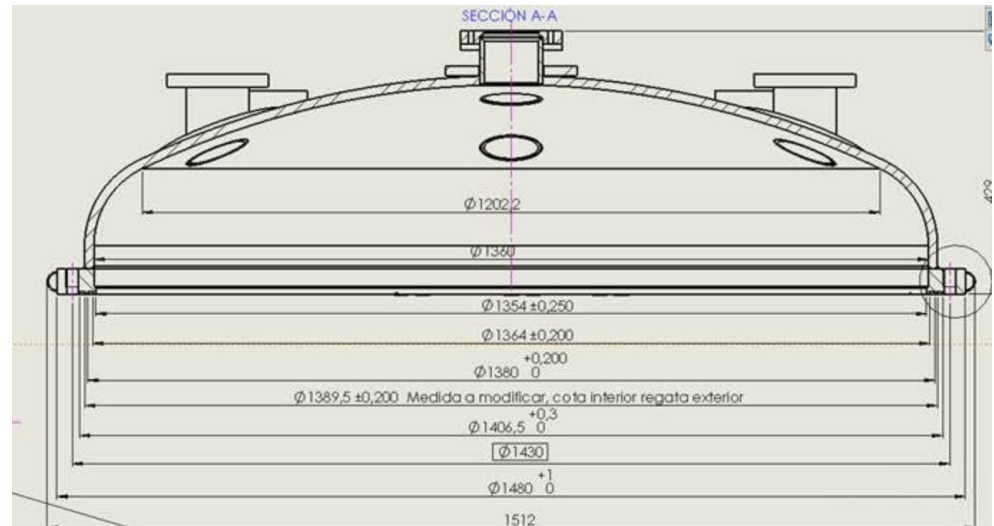
$$R = (a^2 + d^2) / 2d = 1236.08$$
$$b = 1080.08$$

$$\text{Angle} = \text{arctg}(a/b) = 29.1 \text{ deg}$$





Dimension not in drawings,
provided by Jordi



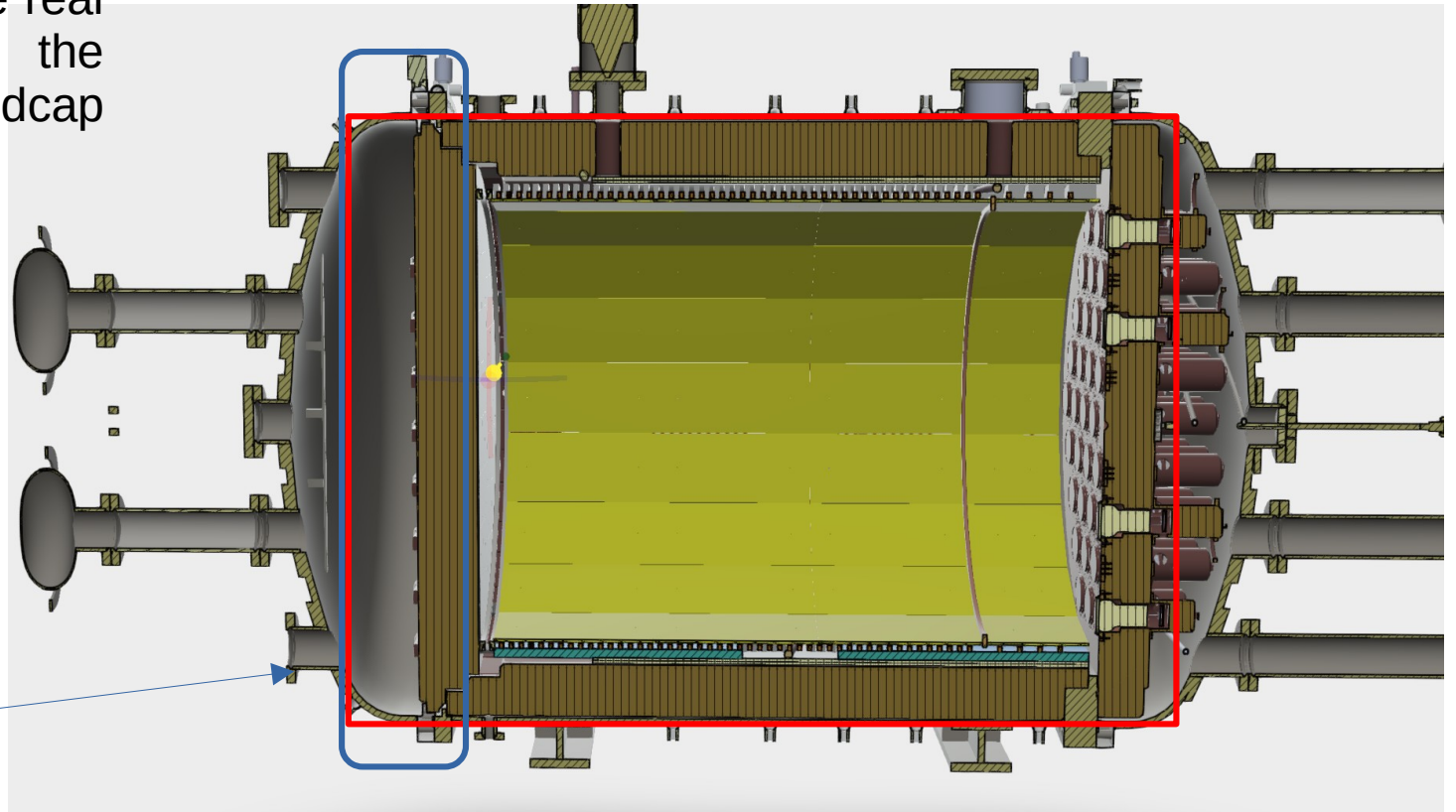
Conclusions

Important note

The Body is implemented as a G4Tubs with the real Body cylinder plus the flanges plus the endcap cylindrical part.

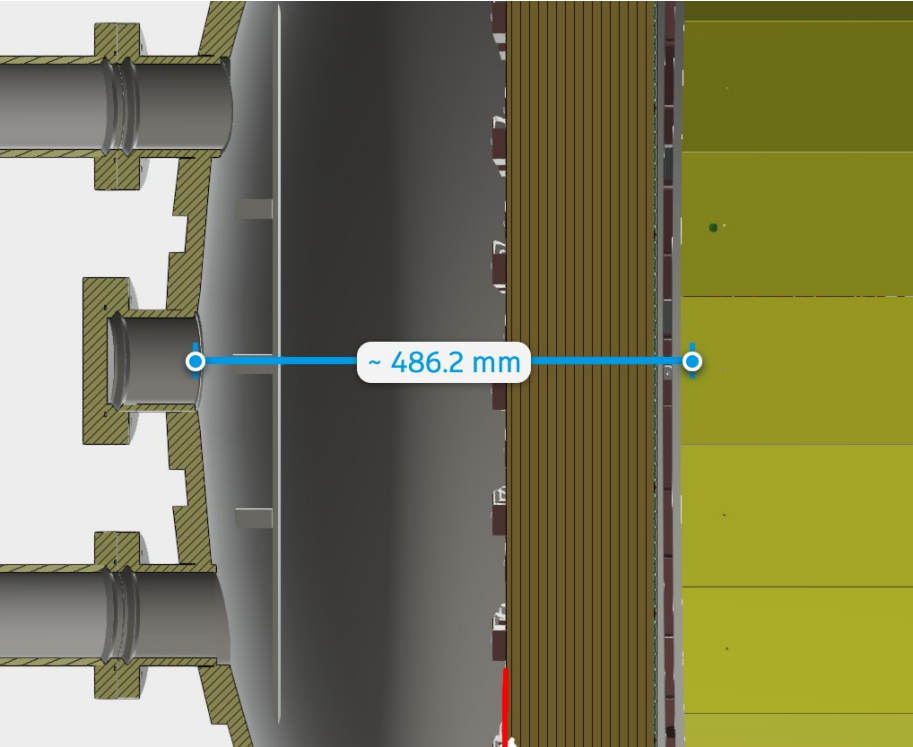
Body G4Tubs

Length = 1481 (body) + 41.5 + 77.5 (flanges) + 2x193 (endcaps)= 1986



Flange + endcap lengths are added to the Body

Approximate endcap-gate distance

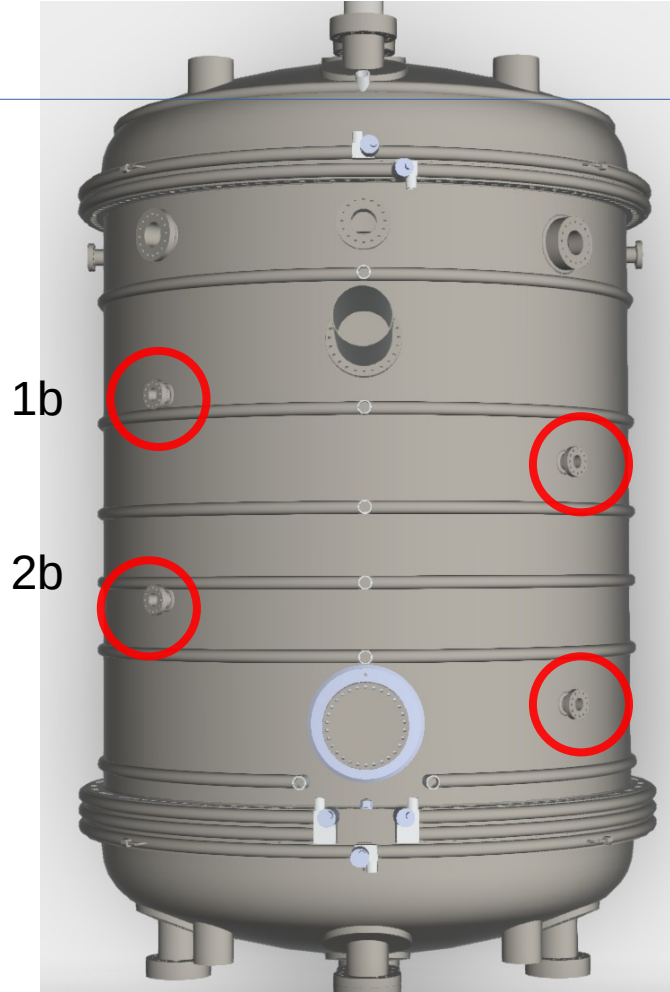


Calibration ports

TP

Port **distances** referenced from the Body as shown in the left plot, thus a +151.5 mm must be added to the distances below.

reference



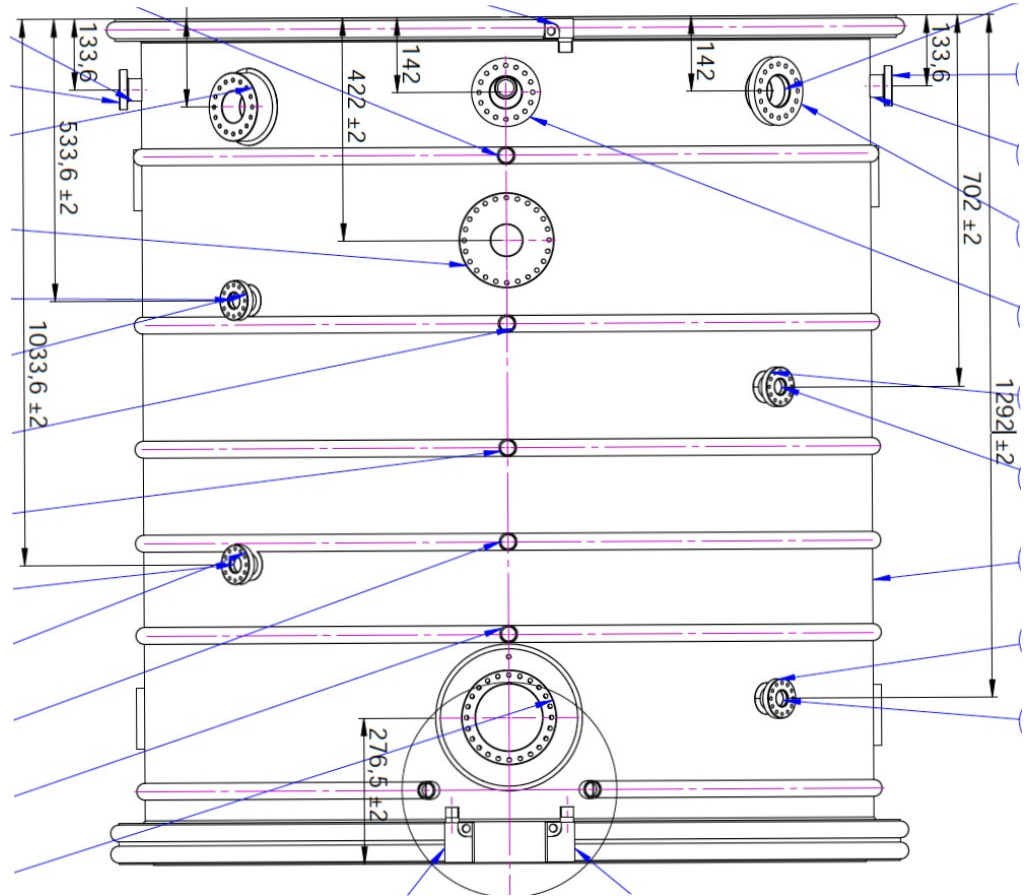
1b

2b

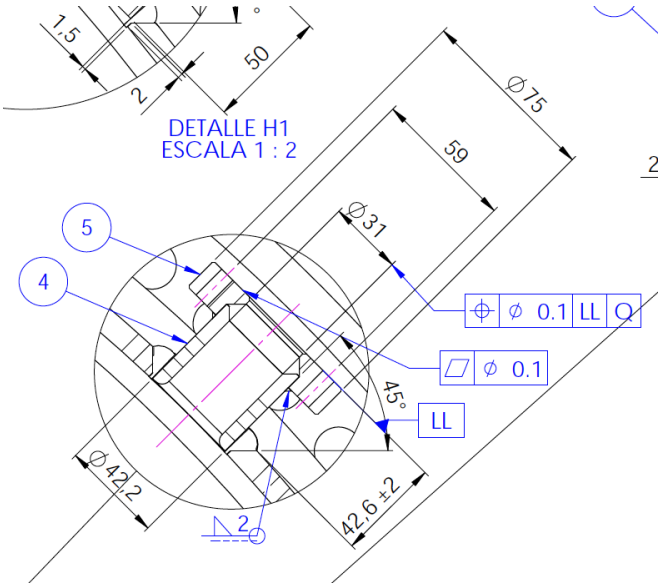
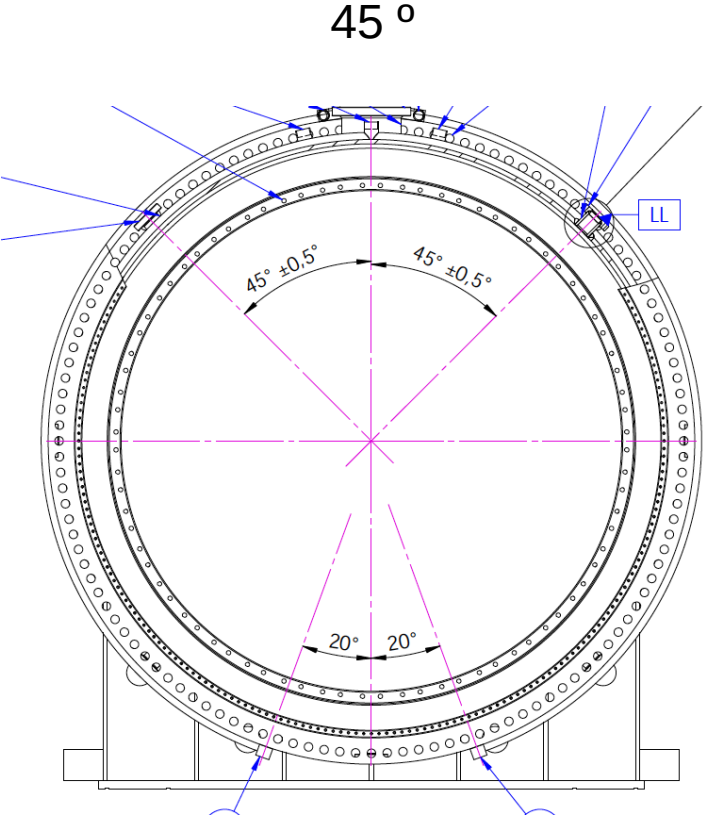
1a

2a

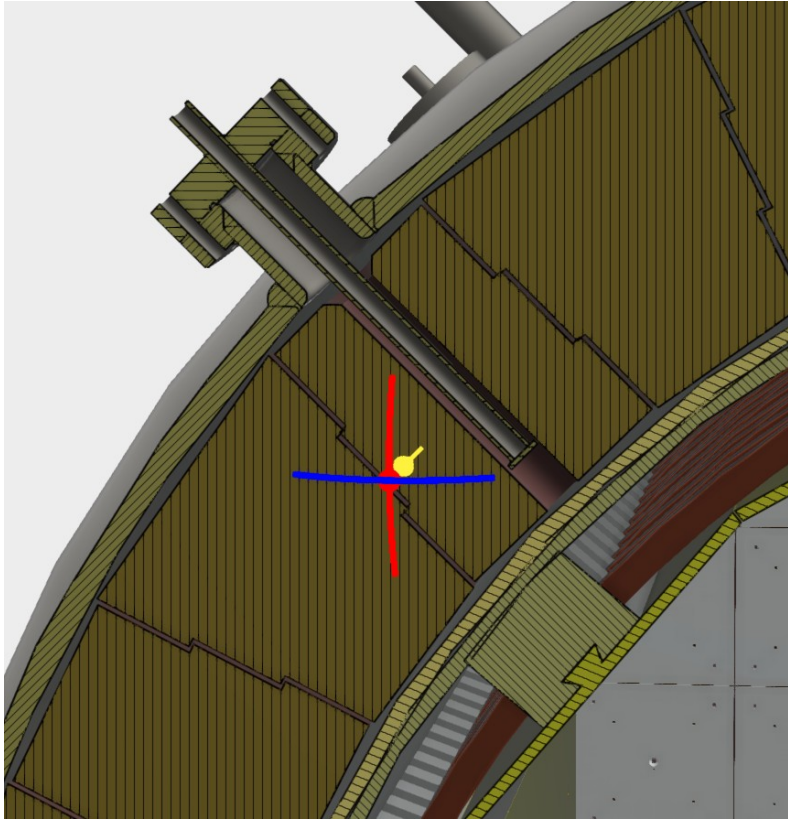
EP



Calibration ports



Calibration ports



Steel tube with air,
Thickness = 1.2 mm
Radius = 4 mm