Full Tube Cross Section.dxf

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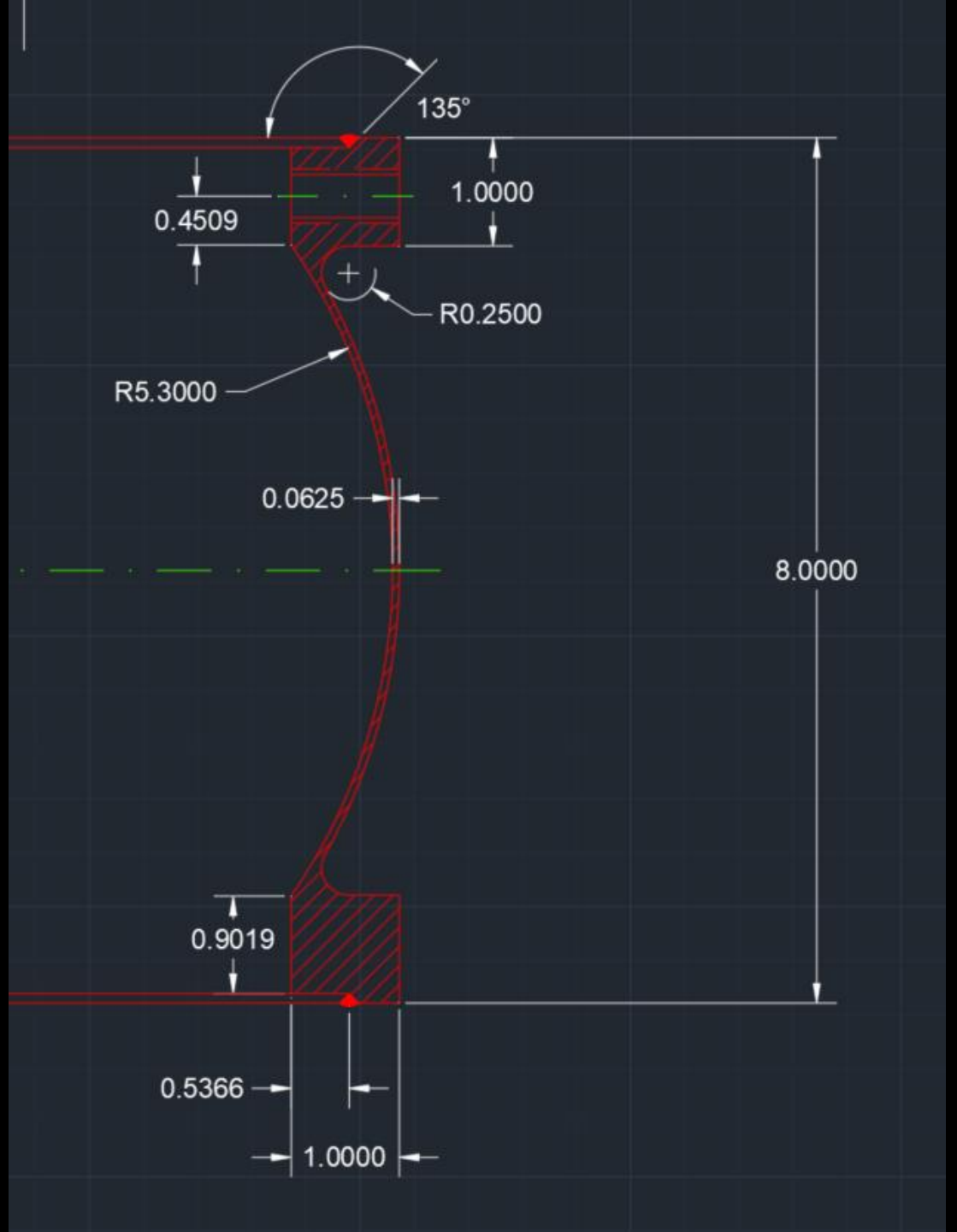
135°
1.0000
0.4509
R0.2500
R5.3000
0.0625
8.0000
0.9019
0.5366
1.0000

Mass of the vessel and magnet

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1. $M_{tube} = 2\pi r \cdot dr \cdot L \cdot \rho$
$r = 4" \times 2.54 = 10.16\ cm$
$dr = 1/8" = 0.3175\ cm$
$L = 200\ cm$
$\rho = 2.7\ g/cm^3$
$M_{tube} \approx$11 kg
2. Two end caps neglecting thin membrane

$dL = 1" = 2.54\ cm$
$r_{max} = 4$”*=10.16 cm*
$r_{min} = 3$”*=7.62 cm*
$M_{2caps} \approx 2\ kg$
3. Mass of gas
$\rho =$*1.96*$\times 10^{-3}\ g/cm^3$ $p = 1.25\ atm$
$M_{gas} \approx \pi r^2 \times L \times \rho \times p = 0.15\ kg$
4. Total tube mass:
11+2+0.15=13.15 kg $\approx 30\ lb$
5. Mass of 18 AWG Cu wires 2 layers $\approx 2kg$
6. Mass of the $\mu -$ metal shield ≈*3.7 kg*
7. Total mass of assembly: $\approx 18.85\ kg \approx 41.5\ lb$

8. Weight of tube supports (each) is 5.8 *lb* = 2.6 kg