

Atmo Leak estimation

Estimation of the hull surface to volume ratio based of what we know from the ISS, using the cylindrical shaped modules only and not accounting for the russian modules with their odd and very narrow shapes and big chunks of unpressurized volume. So we probably err on the side of less surface per volume here, but the error shouldn't be too big.

Module	Length	Diameter	Volume	# Ports	Port Surface	Surface
Quest Joint Airlock	5.50m	4.00m	59.25m ³	1	3.14m ²	91.11m ²
Harmony	7.20m	4.40m	95.79m ³	4	12.57m ²	117.37m ²
Tranquility	6.70m	4.48m	92.36m ³	2	6.28m ²	119.54m ²
Columbus	7.00m	4.50m	97.55m ³	1	3.14m ²	127.63m ²
Kibo	11.00m	4.39m	147.22m ³	2	6.28m ²	175.70m ²
Kibo logistics	4.21m	4.39m	54.49m ³	1	3.14m ²	85.19m ²
Destiny	8.40m	4.20m	101.77m ³	2	6.28m ²	132.26m ²
Leonardo	6.60m	4.57m	94.82m ³	1	3.14m ²	124.42m ²
Sum			743.25m³			973.22m²

Hull Thickness 11.00cm (guessed)
 Port Diameter 200.00cm (estimated)

ISS: see https://www.nasa.gov/pdf/179225main_ISS_Poster_Back.pdf and
<https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/20110012997.pdf>

ISS atmosphere loss is 0.227 Kg/day by 2010, however it's unclear which volume exactly the ISS had at the point in time when this number was given. The paper mentions a volume of 899 m³ by march 2011, so we are about one Destiny module worth of volume and surface area short. Let's account for that:

Sum with one extra Destiny Module: 845.01m³ 1105.48m³

Close enough for Kerbalism. ©

1 Kerbin day = 1/4th earth day	0,0568 kg/day
Total loss distributed over the surface...	0,0513352488 g/m ² /day
Accounting for N2 Density from CRP...	0,0410353707 units/m ² /day
Divided by 6*3600 seconds per day...	0,0000018997856809 units/m²/s