

START

Projectile, laser/rail shot, explosion, or beam damage tick hits the target's hull.

Modify all damage based on the target's resistances to the relevant damage types.

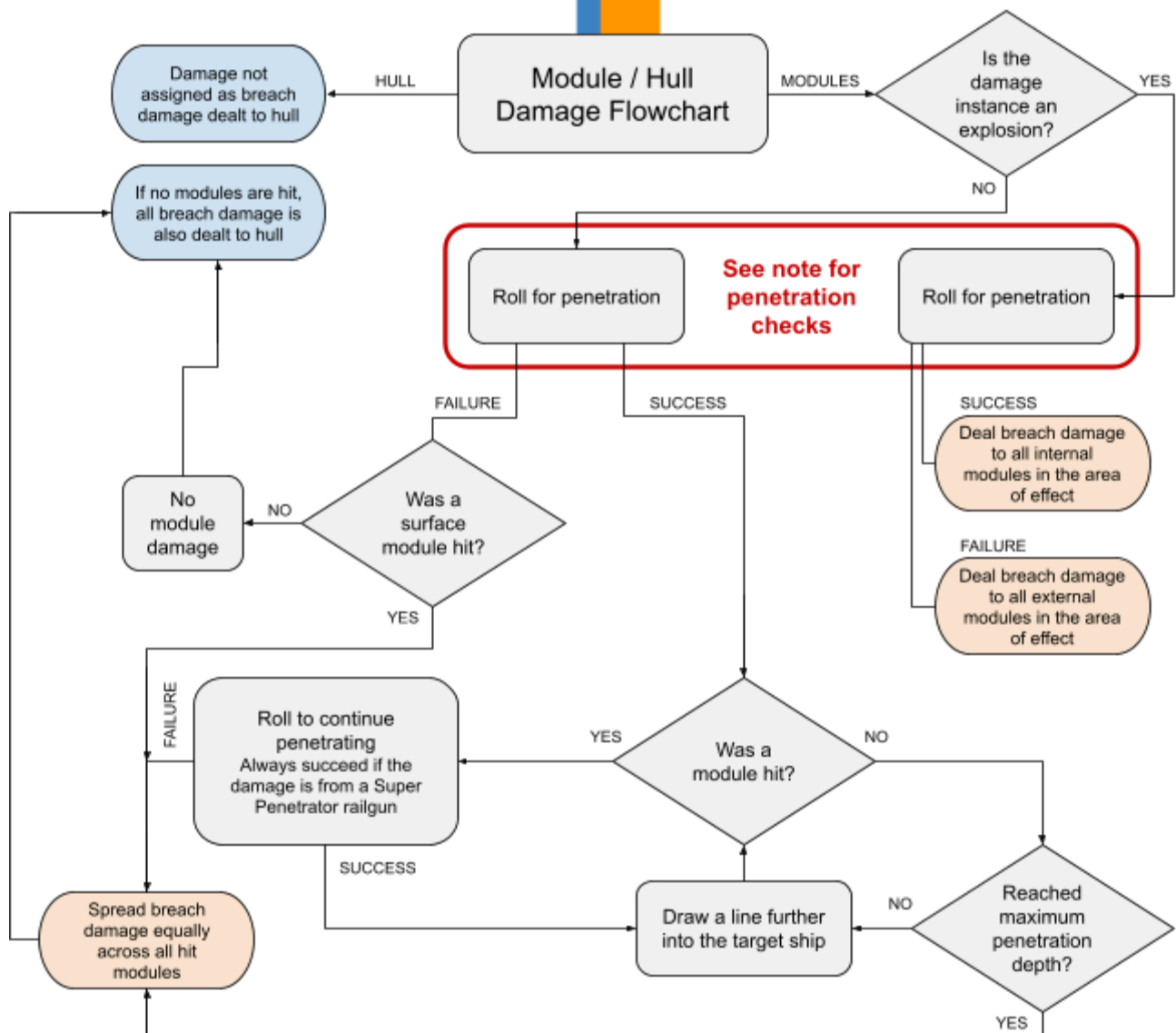
Corrosive Shell increases damage to an affected ship's hull and modules by 25%.

Modify all damage based on the damage instance's armor piercing value compared to the target's hull hardness. Damage is multiplied by a factor of (piercing)/(hardness), with a maximum of 1 - this step can only ever decrease damage.

Corrosive Shell causes all damage dealt to the affected ship to gain a flat 20 piercing. Hull hardness ranges from 20 on ships like the Sidewinder to 75 on the Type-10. PAs, rails, and torpedoes have extremely high piercing that ensures they overcome the hull hardness of any ship in the game.

Split damage into breach damage (to be dealt to modules), with the remaining per-shot/per-tick damage dealt directly to hull.

Breach damage is visible for each weapon in outfitting, though the listed damage is the value before damage reductions through resistances and hull hardness are applied.



Penetration notes:

All weapons have a “breach chance” statistic that determines the chance for a hull breach each damage instance. For most weapons, this scales from a minimum of 40% to a maximum of 80% chance, based on the target’s remaining hull %. This is unaffected by engineering or the weapon’s armor piercing stat (piercing is, confusingly, strictly for handling damage resistance due to hull hardness); the one exception is the Penetrator Munitions experimental for dumbfire missiles, which causes them to penetrate hull 100% of the time instead of 0% like most missiles.

Missiles and mines otherwise have a 0% chance of penetration, while torpedoes also have a 100% penetration chance. Cannons notably have increased penetration chances; they scale from 60% to 90% chance instead of the usual 40%-80%.

The maximum depth that a damage instance can penetrate through the ship’s hull is dependent on the weapon type and the ship being hit; the base value for this depth is usually about 75% of the height of the ship, further modified by the weapon dealing the damage. Railguns, notably, are capable of penetrating all the way through any ship they hit.

Explosive damage notes:

Explosive weapons (including High Yield cannons) deal area damage to modules. High Yield received a fairly large amount of player testing and is believed to use a narrow cone for hit detection on internal damage, while non-penetrating weapons deal damage in a sphere. Other penetrating explosives (Penetrator dumbfires and torpedoes) may also use the cone-shaped hit detection.

Also, a huge thank you to Mark Allen for his insight into damage calculations on the Frontier forums, as well as to all the people who did in-game research on this topic that I’m sure I’m forgetting :)

<https://forums.frontier.co.uk/threads/discussion-with-mark-allen-on-damage-and-defenses.170205/>