

# JUNK-PUNK TITAN: COMPREHENSIVE QA TEST SUITE

**Target Audience:** QA Testers, Game Designers, Playtesters

**Objective:** To rigorously validate every mechanical, economic, and psychological system in the final production build of Junk-Punk Titan.

**Rule of Testing:** If the "Expected Result" does not occur exactly as described, log a bug. There is zero room for interpretation.

## TEST SUITE 1: INITIALIZATION & THE "HYDRA" ROLES

**Goal:** Verify that the 3-player asymmetric class system restricts and empowers players exactly as designed.

Test ID	Action / Steps	Expected Result
1.01	<b>Role UI Pop-up:</b> Join a fresh server.	The player is frozen/blinded by a UI overlay demanding they select a role: Scrapper, Fixer, or Enforcer.
1.02	<b>Scrapper Identity:</b> Select "Scrapper". Walk around the map.	Movement speed is noticeably faster (1.4x base). No specialized tools are granted.
1.03	<b>Enforcer Identity:</b> Select "Enforcer". Check inventory.	Movement speed is standard. Player spawns with the Rusty Shotgun in their inventory.
1.04	<b>Fixer Identity:</b> Select "Fixer". Check inventory.	Movement speed is slightly slower (0.9x base). Player spawns with the Wrench in their inventory.
1.05	<b>Tool Restriction:</b> Have a Fixer drop the Wrench, and have an Enforcer attempt to	The Enforcer cannot use the Wrench. A "Role Restricted" UI

	pick it up and use it.	message/sound plays.
1.06	<b>The Legacy Buff:</b> In a 3-player server, have Player 3 disconnect.	The server registers PeakPlayerCount as 3, but current as 2. Players 1 and 2 silently receive the Legacy Buff (+25% Scrap Yield, +15% Interaction Speed).

## TEST SUITE 2: THE ECONOMY & BUILD SYSTEM (ZEIGARNIK & SCALING)

**Goal:** Verify the exponential cost "Wall" and the blueprint ghosting system.

Test ID	Action / Steps	Expected Result
2.01	<b>Ghost Placement:</b> Press '1' (Wall), '2' (Turret), or '3' (Drill). Click on a valid ground location.	A semi-transparent, non-collidable "Blueprint Ghost" appears snapped to the grid. No scrap is deducted yet.
2.02	<b>Invalid Placement:</b> Attempt to place a Ghost floating in the air or clipping inside the Titan Core.	The Ghost turns red and placement is blocked.
2.03	<b>Social Building:</b> Player A (Scrapper) places a Ghost. Player B (Fixer) walks up and holds 'E' to fund it.	The Ghost solidifies into a real building. Player B's (Team) Scrap is deducted.
2.04	<b>Exponential Cost (Math Check):</b> Check the Build Toolbar cost for a Turret (Base: 100). Build 1 Turret. Check the cost for the 2nd Turret. Build it. Check the 3rd.	Turret 1 costs 100. Turret 2 costs 115. Turret 3 costs ~132. The UI must instantly reflect this \$1.15^n\$ scaling.

## TEST SUITE 3: AUTOMATION & FIXER MAINTENANCE

**Goal:** Verify passive income generation and the Fixer's exclusive "Pressure Hiss" mini-game.

Test ID	Action / Steps	Expected Result
3.01	<b>Passive Income:</b> Build 1 Steam Drill. Do nothing for 10 seconds.	Team Scrap Bank increases by exactly 15 Scrap.
3.02	<b>Stability Degradation:</b> Monitor a newly built Drill for exactly 40 seconds.	Stability drops from 100% to 80% (1% every 2 seconds). Output remains at 100%.
3.03	<b>Efficiency Drop:</b> Let the Drill degrade below 80% (e.g., to 79%). Wait for the 10-second tick.	The Drill now only generates 50% Scrap (approx. 7 Scrap).
3.04	<b>Total Clog:</b> Let the Drill degrade below 20%.	The Drill generates 0 Scrap. Thick black smoke VFX emits from the Drill.
3.05	<b>Pressure Hiss (Success):</b> As the Fixer, equip the Wrench and click the smoking Drill. A UI needle bar appears. Click inside the "Sweet Spot".	+40% Stability is instantly restored. A heavy "Clank" and steam hiss audio play. The Drill gains a 30-second "Overclock" (1.2x output).
3.06	<b>Pressure Hiss (Failure):</b> As the Fixer, trigger the mini-game and click OUTSIDE the sweet spot.	The Drill suffers a 5-second "Clog Penalty." It produces nothing during this time, regardless of stability.

## TEST SUITE 4: THE SWARM & THEFT MECHANICS (LOSS AVERSION)

**Goal:** Verify enemy AI prioritizes economic damage and properly executes the "Theft and

Flight" sequence.

Test ID	Action / Steps	Expected Result
4.01	<b>Player Ignorance:</b> Stand directly in the path of a spawned Scrap Rat.	The Rat completely ignores the player and walks around them.
4.02	<b>Targeting Priority:</b> Place a cheap Wall, an expensive Drill, and the Titan Core. Spawn a Rat.	The Rat pathfinds directly to the Drill (most expensive finished building).
4.03	<b>Theft Timer:</b> Let the Rat touch the Drill. Observe the Near-Miss UI.	The Rat stops moving. A red progress bar appears over the Drill, taking exactly 8 seconds to fill.
4.04	<b>The Flight Phase:</b> Let the 8-second timer hit 100%.	The Drill instantly vanishes. The Rat gains a 1.2x speed boost, equips a "Scrap Bundle" visual on its back, and sprints toward the map edge.
4.05	<b>Permanent Loss:</b> Let the fleeing Rat reach the despawn hole at the edge of the map.	The Rat vanishes. The resource is lost forever.

## TEST SUITE 5: COMBAT, RECOVERY, & THE SCRAP TAX

**Goal:** Verify Enforcer mechanics, Loot Fountains, and the Death Penalty.

Test ID	Action / Steps	Expected Result
5.01	<b>Standard Kill:</b> Enforcer shoots a Rat during its approach or dismantling phase.	Rat dies. Screen shake + Muzzle flash. A small Loot Fountain (2-5 Scrap) explodes out and magnetically snaps to the

		player.
5.02	<b>Thief Recovery:</b> Enforcer shoots a fleeing Rat carrying a stolen building.	Rat dies. A massive Loot Fountain triggers. The team receives ~50% of the stolen building's original cost back to the Scrap Bank.
5.03	<b>The Scrap Tax (Death Penalty):</b> Ensure the Team Bank has 1,000 Scrap. Have a player die to an environmental hazard or rat attack.	The player respawns in 5 seconds. The Team Bank is instantly deducted by 15% (150 Scrap). A red "-15%" text floats on the HUD.

## TEST SUITE 6: THE RUST-TITAN OBJECTIVE & GAME OVER

**Goal:** Verify the core objective integrity and the loss condition.

Test ID	Action / Steps	Expected Result
6.01	<b>Titan Targeting:</b> Spawn a wave with ZERO buildings placed on the map.	All rats pathfind directly to the Titan Chassis in the center.
6.02	<b>Core Dismantling:</b> Let a rat reach the Titan Chassis.	The rat begins dismantling. Titan Integrity drops by 1% per second. (Multiple rats drain it faster).
6.03	<b>Game Over Trigger:</b> Let Titan Integrity reach 0%.	A massive "THE TITAN HAS COLLAPSED" UI takes over the screen. All buildings are destroyed. The server resets the session.
6.04	<b>Stage Upgrade:</b> Deposit required Scrap/Steel to upgrade from Stage 1 to Stage 2.	The Titan visual updates. Titan Integrity instantly heals by 25%.

## TEST SUITE 7: THE SCRAP STORM & THE 99% FINALE

**Goal:** Verify the Global Event forces teamwork and the climax triggers correctly.

Test ID	Action / Steps	Expected Result
7.01	<b>Storm Atmosphere:</b> Trigger the Scrap Storm event.	Sky turns dark brown, thick fog limits visibility, howling wind audio overrides ambient music.
7.02	<b>Storm Damage:</b> Observe buildings during an unanchored storm.	Buildings slowly take "Wind Damage."
7.03	<b>Tether Station:</b> In a 3-player server, have 2 players stand on the Tether Station pads.	Nothing happens. The base continues taking damage.
7.04	<b>Tether Activation:</b> Have the 3rd player step on the final pad.	A "Base Anchored" message appears. Wind damage stops completely.
7.05	<b>Rare Loot Spawn:</b> Search the wasteland during an active storm.	"Storm-Hardened Steel" nodes spawn. They can be collected and added to the Team Bank. (They despawn when the storm ends).
7.06	<b>The 99% Stand:</b> Use debug tools to push the Titan's Stage 4 Command Pit to 99% completion.	A permanent, unbreakable Scrap Storm starts. The Wave Timer vanishes. An infinite swarm of Elite Rats spawns from all holes.
7.07	<b>Victory State:</b> Survive the 99% Stand for the hidden 3-minute timer.	Titan hits 100%. A massive shockwave vaporizes all enemies. The "VICTORY" screen rolls with session statistics.

## TEST SUITE 8: UI TENSION & SENSORY "JUICE"

**Goal:** Verify that the UI correctly manipulates player stress levels.

Test ID	Action / Steps	Expected Result
8.01	<b>Wave Timer (Safe):</b> Observe the Wave Timer at 45 seconds.	Text is colored Yellow/Amber. NEXT SWARM: 00:45.
8.02	<b>Wave Timer (Warning):</b> Observe the Wave Timer hit 10 seconds.	Text instantly snaps to Bright Red.
8.03	<b>Wave Timer (Panic):</b> Observe the Wave Timer hit 5 seconds.	The red text begins "Pulsing" (scaling up and down) exactly once per second, mimicking a heartbeat.
8.04	<b>Wave Timer (Siren):</b> Observe the Wave Timer hit 00:00.	A low-frequency mechanical Siren/Horn audio cue plays globally. The rat wave begins spawning.
8.05	<b>Fixer Paranoia:</b> Have a rat dismantle a building on the far side of the base. Play as the Fixer.	The red "Near-Miss" progress bar above the building features a thick, high-contrast, strobing yellow border visible through the environment to catch the Fixer's eye.