

Hashlock Certified

StonkBrokers Hookr Hook Suite - Security Audit (end to end pass)

StonkFeeHook + BattleVault + StrategyLauncher + FractionalLauncher + SmartLpHook / SmartLpLadder + PairTokenFactory / PairToken / PairTokenFeeManager / PairTokenLauncher, plus the StonkBroker RulesLaunch preset script

Robinhood Chain (EVM 4663) - reviewed at stonkbrosers commit 810c9aaf

Report date: 2026-10-13 - Battle / Strategy / Fractional / Smart LP stacks LIVE on audit fixed bytecode with the Hookr partner fee leg (redeployed after the end to end pass). Pair Token stack LIVE 2026-10-12. Every StonkFeeHook controller plus Smart LP redeployed 2026-10-13 for HK-22. StonkBroker preset launches stay on HARD HOLD.



In partnership with Hookr (hookr.fun) for Uniswap v4 hook launches

Verdict: GO for Battle / Strategy / Fractional / Smart LP on the redeployed bytecode, and GO for the Pair Token stack deployed 2026-10-12 (genesis guard HK-21 fixed before the broadcast). Every HIGH and MEDIUM found by the end to end pass is FIXED in source, pinned by a regression test, and live on chain (Sourcify exact match on all thirty three contracts). HK-14 is now LIVE on the redeployed Smart LP hook. HK-22 (HIGH, partial fill fee / inflow) is FIXED and LIVE on every StonkFeeHook controller (Battle, Strategy, Fractional 404, Pair Token launcher), all redeployed 2026-10-13 together with Smart LP. The owner settable Hookr partner fee leg (HK-20) is live on every custom controller with the recipient set to the Hookr Safe 0x8Fdfaa25e2E4dDa297F301ea06458f22186D6bE9 at 5000 bps since 2026-10-11. StonkBroker RulesLaunch preset script stays dry ops only (HARD HOLD on launches)

Zero critical. End to end pass: HK-10 exact output wrap, HK-11 executor chosen minOut, HK-17 fee notify with zero earning supply, HK-18 hard creator push (all HIGH, FIXED); HK-12 knockout residue and HK-19 Battle reserve loop / zero minOut (MEDIUM, FIXED); HK-13 dead fee pairs (LOW, FIXED); HK-14 Smart LP transfer return values (LOW, FIXED and LIVE on the redeployed Smart LP hook); HK-15 docs and HK-16 process RESOLVED by the redeploys; HK-20 Hookr partner fee leg (INFO, LIVE, Hookr Safe recipient set); HK-21 pre existing zero liquidity pool at the minimum sqrt price (INFO, FIXED by the PairToken genesis guard); HK-22 buy fee and Battle inflow counted on the specified amount of a partial fill (HIGH, FIXED and LIVE on every StonkFeeHook controller redeployed 2026-10-13). HK-01..HK-09 stay FIXED or ACCEPTED. Proof ledger: Battle 22/22, Strategy 25/25, Fractional 18/18, Partner 9/9, SmartLpHook unit 64/64 + fork 6/6, PairToken 17/17 + fork 7/7 (total 168 test functions counted in tree; whole hooks/ suite 155/155 non fork green on the deployed source, fork 7/7, 162 total). Hookr's own root / Rules / Launcher / Registry contracts are OUT OF SCOPE (third party, unaudited by this engagement). Threat model: Robinhood Chain has no public mempool (Orbit FCFS); mitigations are framed as anti snipe economics, thin pool guards and lock discipline, never sandwich protection.

Auditor

Name	Admir Zlatic (0xSimpleFarmer)
Role	Head of DeFi at ApeCoin; founder, Clutch Markets / StonkBrokers
Grants	Polymarket grant winner; Arbitrum grant recipient
Primary credential	Hashlock Solidity Smart Contract Auditor Certification (SSCAC)
SSCAC date / ID	February 3, 2026 - admir.zlatic (certificate on file)
Additional credential	CPACC certified auditor
Certification	Hashlock Certified
Proof of credential	SSCAC certificate attached in the appendix
Report date	2026-10-13

1. Executive summary

StonkBrokers ships six official Hookr surfaces. Five are custom Uniswap v4 hook stacks built around a shared StonkFeeHook that points at a controller (BattleVault, StrategyLauncher, FractionalLauncher, SmartLpHook, or PairTokenLauncher, which wraps one full range v4 position into a transferable ERC-20 share). The sixth is a RulesLaunch preset on Hookr's owned root with royalty pinned to the StonkBrokers treasury EOA 0xb668382cF44038a3E8140E789060F6A809787CDa. Custom hooks cannot be Hookr owned roots: HookrRouter / HookrQuoter / the Hookr SDK refuse non root hooks, so those pools route through the Uniswap Universal Router with empty hookData and are quoted with the Uniswap V4 Quoter.

Metric	Value
Findings	0 critical. Prior pass: 3 high FIXED (HK-01..HK-03), 2 medium FIXED (HK-04, HK-05), 4 informational / accepted (HK-06..HK-09). End to end pass: 4 high FIXED (HK-10, HK-11, HK-17, HK-18), 2 medium FIXED (HK-12, HK-19), 2 low FIXED (HK-13, HK-14 live on the redeployed Smart LP hook), docs HK-15 and process HK-16 RESOLVED by the redeploy, 1 informational LIVE (HK-20 Hookr partner fee leg, Hookr Safe recipient set), 1 informational FIXED (HK-21 pair token genesis guard); 2026-10-13 pass: 1 high FIXED by redeploying every StonkFeeHook controller (HK-22 partial fill fee / inflow)
Live state (4663)	Battle hook 0x6ced3a0048F9f42836a90ee47FFe64645B0bAacc / vault 0x1BaDdAB75dd5223C2A619AA9c88BD211aaC5D304 (redesployed 2026-10-13 for HK-22, ownership transfer to the company Safe pending acceptOwnership); Strategy hook 0x242FA7F53383a0e77Dd2A7778dC9Da794f042AcC / launcher 0x9f6821af226D85234DED5F0f024A8A2B4Fa6d023; Fractional hook 0x8A6c104d8bc04E058Ca08282E605D42a84D6aaCc / launcher 0xCD44629152c9a7CAc2cD68bb25A2293022F3183D (deployer 0x3361426DEea55e88cb04cA5cFeB46D99eB36dff, ERC6551Registry 0x3Df336317B73e0ce417E03488abb2B79cEe2B9E4, account impl 0xb9D00C31F479B892Ae7F8F500dbf3FF3E41acC26); Smart LP hook 0x47137a7733E2B4DBD0e25416d5D5B29C8A1Da0c4 / lens 0x29Eaf335fed9270ba98BD5dd99519bb3af4C3F00 / sINVDA ladder 0x3Ddf0412398D806AF1069B0EA29242b6BD22fd2B on NVDA/USDG pool 0x3b0a3db8c4d25fd428792aa6718796a3b87945e2b1d8b282500a753155a16e8b. Strategy, Fractional and Smart LP redeployed 2026-10-13 on the HK-22 fixed bytecode with the Hookr partner leg (partnerBps 5000 of the protocol leg; partnerTo = Hookr Safe 0x8Fdfaa25e2E4dDa297F301ea06458f22186D6bE9 since 2026-10-11, pendingOwner = company Safe 0x6D6981459be6EB09C778d98527bCCc1a235bbb26 awaiting acceptOwnership); the two earlier broadcasts (zero launches) are archived in hooks/deployments/*.superseded-2026-10-10.json and *.superseded-2026-10-10b.json. Battle redeployed 2026-10-13 for HK-22 (same partner leg, pendingOwner = company Safe); every 2026-10-10b / 2026-10-12 generation retired that day (zero launches) is archived as *.superseded-2026-10-13.json. Pair Token stack (2026-10-12): factory 0x282c4815F30abc1D0A8eB810c7309140d35a5B38, fee manager 0x18AdF7be1d23022FcCf286D3d342d92Ecb3F9195, implementation 0x56C8c249d4c021e93635b120aC68A9a36eb01753, launcher 0x1cEE10c87D261912A833E000f7e7295DC9E813E7, hook 0x261a19357c66349BccEC55711F81612C0030aaCC (launcher + hook redeployed 2026-10-13 for HK-22; factory, fee manager, implementation and anchors unchanged); owner = ops deployer 0xD4aF10Bc56b08f8fc2990a3ADeeD4b757ae6A26C until the operator signals, booster = Clock In 3.0 broker engine 0xB673276C46dE1428EacC15Ed6eceF480259D8566, partnerTo Hookr Safe at 5000 bps, 13 seed anchors (ETH, WETH, USDG, STONKBROKER and the ten Clock In menu stocks) owner extendable via setMinSeed.
Unit / fork suites	Battle 22/22, Strategy 25/25, Fractional 18/18, Partner 9/9, SmartLpHook 64/64 + fork 6/6, PairToken 17/17 + fork 7/7
Deployed sizes	All under EIP-170 (see section 2)
Chain	Robinhood Chain 4663 only for this engagement
Owner value path	No path from owner to locked LP / war chest / escrowed NFT / strategy principal

2. Scope

Contract / file	Role	Runtime size
hooks/src/base/StonkFeeHook.sol	Shared fee / lock / controller hook	5,860 B (24% of EIP-170)
hooks/src/battle/BattleVault.sol	Epoch battle vault + settle	20,496 B (83% of EIP-170)
hooks/src/battle/BattleToken.sol	Rival ERC-20	1,845 B (8% of EIP-170)
hooks/src/strategy/StrategyLauncher.sol	Strategy launch + redeem	23,288 B (95% of EIP-170)
hooks/src/strategy/StrategyToken.sol	Strategy share ERC-20	4,845 B (20% of EIP-170)
hooks/src/fractional/FractionalLauncher.sol	NFT escrow + fractions	17,630 B (72% of EIP-170)
hooks/src/fractional/FractionToken.sol	Fractional ERC-20	5,198 B (21% of EIP-170)
hooks/src/SmartLpHook.sol	Smart LP dynamic fee hook	16,116 B (66% of EIP-170)
hooks/src/SmartLpLadder.sol	Single sided ladder vault	18,780 B (76% of EIP-170)
hooks/src/pair/PairTokenFactory.sol	Pair token clone factory + seed anchors	7,670 B (31% of EIP-170)
hooks/src/pair/PairToken.sol	Full range v4 LP share ERC-20	16,254 B (66% of EIP-170)
hooks/src/pair/PairTokenFeeManager.sol	Pair token fee accrual + partner leg	3,647 B (15% of EIP-170)
hooks/src/pair/PairTokenLauncher.sol	Pair token Hookr preset controller	10,377 B (42% of EIP-170)
hooks/hookr/stonkbroker-hook.mjs	RulesLaunch preset CLI	n/a (script)

Out of scope: Hookr root / Rules / Launcher / Registry / Treasury / Recapture bytecode (third party), Uniswap v4 PoolManager, Universal Router, V4 Quoter, WETH, Chainlink feeds, and the Hookr website.

3. Trust model

Role	Can	Cannot
Owner (Ownable2Step)	Bound fee / protocol recipient / min seed / listed bases; pause new launches where coded	Withdraw locked LP, war chest, escrowed NFT, or strategy principal
Creator / launcher	Create battles / strategies / fractions within bounds; set creator fee recipient where coded	Pull locked liquidity; bypass outside LP lock; mint rival tokens outside create
Anyone	Settle ended epochs; swap via Universal Router; claim fee streams per product rules	Add or remove outside liquidity while locked; exact output on any controller pool (HK-10 closed the zero fee branch)
Treasury EOA (preset)	Claim Hookr royalties for StonkBroker RulesLaunch launches	Affect custom hook vault accounting

4. Findings

HK-01 HIGH

FIXED

Outside liquidity while a battle / strategy / fraction is live

Without beforeAddLiquidity / beforeRemoveLiquidity gates, a third party could mint into the locked pool and dilute fee or settlement accounting. StonkFeeHook refuses outside add/remove with LiquidityLocked while the controller reports the pool locked. Pinned in Battle / Strategy / Fractional suites.

HK-02 HIGH**FIXED****Owner or creator path to pooled quote / war chest / NFT escrow**

Controllers were reviewed for any withdraw / rescue that could touch principal. rescueToken (where present) refuses protected assets. War chest and locked LP only move through settle / redeem / reconstitute paths. Pinned by owner no value path tests.

HK-03 HIGH**FIXED****Exact output swaps during live snipe tax (battle)**

Exact output while a decaying tax is live would underpay the tax leg. StonkFeeHook reverts ExactOutputWhileTaxed on controller pools. The end to end pass found the zero fee branch returned BEFORE that check (HK-10); the check now sits above the early return, so exact output is refused on every controller pool regardless of the live fee. Exact input remains the supported UX path.

HK-04 MEDIUM**FIXED****NFT deposit via safeTransferFrom into FractionalLauncher**

Collections without onERC721Received (including StonkBroker TBA style accounts) revert on safeTransferFrom. Deposit path uses plain transferFrom, matching Anvil TBA discipline. Documented in the Fractional integration guide.

HK-05 MEDIUM**FIXED****Hookr SDK checkRulesConfig missing liquidityOwner / blockNumber**

The StonkBroker preset script initially failed preflight with Launch guard needs a liquidity owner when guardEndBlock was nonzero. Script now passes liquidityOwner (HookrLauncher) and blockNumber into checkRulesConfig and into defaultRulesLaunch.

HK-06 INFO**ACCEPTED****Custom hooks are not Hookr owned roots**

By design. Directory cards must state vanillaSwap via Universal Router + V4 Quoter. Hookr SDK root only paths will not route these pools.

HK-07 INFO**ACCEPTED****Thin pool impact at battle settlement size**

Settlement is permissionless and retryable. A thin quote pool can move the winner mark; pullBps is capped and knockout floors bound the bleed. Documented residual in the Battle guide.

HK-08 INFO**ACCEPTED****Hookr third party stack unaudited by this engagement**

The RulesLaunch preset trusts Hookr's owned root. Royalty pin and seed / hold caps are the StonkBrowsers controls; Hookr bytecode changes are outside this report.

HK-09 INFO**ACCEPTED****Robinhood Chain has no public mempool**

Orbit private FCFS sequencer. Do not justify mitigations as anti sandwich. Latency sniping and thin pool fills remain the relevant threats.

4.1 End to end pass (2026-10-13)

Second pass over the full tree: shared base (StonkFeeHook, PoolController, Owned, PriceMath, OracleTick), the four controllers and their tokens, the Fractional 6551 account and registry, SmartLpHook / SmartLpLadder / SmartLpHookLens, the Hookr CLI, deploy scripts, the five integration guides and ABIs, and the live 4663 state. Proof of concept tests were run against the source as found and removed from the tree afterwards; each finding below was then fixed and pinned by a named regression test that stays in the tree, and the three stacks were redeployed on the fixed bytecode the same day.

HK-10 HIGH**FIXED****Exact output on a zero fee pool wraps the battle volume tally**

StonkFeeHook.beforeSwap returns early when the live fee is zero, BEFORE the ExactOutputWhileTaxed check, and afterSwap derives quoteIn as `uint256(-params.amountSpecified)`. For an exact output swap `amountSpecified` is positive, so the subtraction wraps to a value near 2^{256} and the controller is told a huge quote inflow. PoC on BattleVault: one exact output buy of 10M tokens on side 0 moved the side from a net inflow of 0 to a recorded margin of 9,999,995e18 and flipped the epoch leader from side 1 to side 0, which is the input to settle and the LP pull. FIX: the ExactOutputWhileTaxed check now runs above the zero fee early return, so exact output is refused unconditionally on controller pools. Pinned by `test_exactOutputRefused_zeroFeeBattle`, `test_exactOutputRefusedWhileTaxed` (Battle) and `test_exactOutputRefused_zeroFeeStrategy` (Strategy). Live on the redeployed hooks.

HK-11 HIGH**FIXED****Permissionless strategy execute with caller chosen minOut**

StrategyLauncher.execute(strategyId, minOut) is callable by anyone and the only floor on the quote swap is the caller's minOut. The live launcher has `minExecuteQuote = 0`, so a caller can run a strategy's quote through the pool at any fill, including one they moved first, and settle shares at a damaged mark. Robinhood has no public mempool, so this is a direct extraction by the executor rather than a sandwich. FIX: execute now tranches the pending quote by an owner bounded impact cap (`maxExecImpactBps`, default 100, hard cap `MAX_EXEC_IMPACT_BPS` 1000), floors every tranche at the pool mark minus `maxExecSlipBps` (default 300, hard cap `MAX_EXEC_SLIP_BPS` 2000) and takes minOut as the larger of the caller value and that floor; pending below `minExecuteQuote` reverts `NothingPending`. `setExecGuards(slipBps, impactBps)` is owner only and bounded. The redeployed launcher carries `minExecuteQuote = 0.001 ETH`. Pinned by `test_execute_tranchesWhenPendingExceedsImpactCap` and `test_setExecGuards_boundsAndOwner`.

HK-12 MEDIUM**FIXED****Knockout settlement strands quote in the war chest**

When a battle ends by knockout, settle pulls the loser's LP and pays the winner leg, but the `restQuote` remainder stays in `warChest` with no second path out: a second settle reverts `BattleEnded` and no claim reads that slot. PoC left 74,107,500,001,615,428 wei of quote (about 0.074 ETH at the test seed) plus roughly $20.7e27$ idle winner tokens in the vault after a knockout. FIX: the knockout branch now buys the winner with the whole remaining quote, then burns every idle winner token AND the loser's idle seed dust, so the vault ends a knockout with zero idle value. Pinned by `test_settle_knockoutLeavesNoIdleValue`, `test_settle_knockoutEndsBattle` and `test_settle_maxRoundsForcesKnockout`.

HK-13 LOW**FIXED****createBattle accepts fee pairs that revert every swap**

`createBattle` bounds `snipeBps` and `buy / sell fee` independently, so `snipe 9900 plus buyFee 1000` passes creation while the first swap reverts `FeeTooHigh` (combined fee ≥ 10000). The pool is dead until the snipe decays below the gap. FIX: all three controllers revert `BadParams` at creation when `snipeStartBps + max(buyFeeBps, sellFeeBps)  $\geq 10000$` . Pinned by `test_create_rejectsBadParams` (Battle, Strategy) and `test_create_badParamsMatrix` (Fractional).

HK-14 LOW**FIXED (live)****Smart LP hook fee legs ignore ERC-20 transfer return values**

`SmartLpHook._payProtocol` and `_settle` called `IERC20Minimal.transfer` without checking the return value, so a recipient that reverts on receive blocked the whole flush (LP donation included) and a false returning token would have debited the accrual without moving funds. FIX in source: both legs now go through `_tryTransfer` (low level call, empty return accepted only from a contract, short return treated as failure); `_settle` reverts `TransferFailed` when the pool manager leg fails; `_payProtocol` pays the booster half then the buyback half and returns only what actually moved, so flush subtracts exactly the paid amount from `accruedProtocol0 / 1` and the unpaid remainder is re split 50 / 50 on the next flush. Pinned by `test_flush_blockedProtocolLeg_keepsAccrual` (blocked booster leg keeps the whole accrual, false returning buyback leg leaves only the paid half, a later flush with healthy recipients drains the hook). The fix is LIVE: the Smart LP hook was redeployed on 2026-10-10 and again on 2026-10-13; the live hook is `0x47137a7733E2B4DBD0e25416d5D5B29C8A1Da0c4` (earlier generations carried zero positions and are archived as

superseded).

HK-15 INFO

RESOLVED

Guides, ABIs and repository state lag the live deployments

At review time the Battle / Strategy / Fractional guides read NOT DEPLOYED with PENDING addresses, the shipped ABIs lacked warChestByQuote (BattleVault) and pendingReward (StrategyToken, FractionToken), and the hook tree lived on an unpushed local commit. The guides, the Hookr overview, this report and the ABIs were regenerated from the redeployed artifacts (byte exported from hooks/out) and the tree was committed with the new and superseded deployment state files.

HK-16 MEDIUM

RESOLVED (redploy)

Three stacks broadcast under the HARD HOLD on unfixed bytecode

Battle, Strategy and Fractional were first deployed to 4663 on 2026-10-10 while the hold was in force, on bytecode that lacked the HK-10..HK-13 and HK-17..HK-19 fixes. Those addresses carried zero launches, so superseding them stranded nothing. On the user's explicit go the fixes landed and all three controller + hook pairs were redeployed (new CREATE2 salts mined against the fixed controllers), verified on Sourcify (exact match), and the deploy script headers now state that any further --broadcast is a new deployment needing its own go. The partner leg redeploy later the same day followed the same rail.

HK-17 HIGH

FIXED

Fee notify with zero earning supply strands quote

Strategy and Fractional fee legs notified the holder reward index while totalEarningSupply was zero (before the first earner, or after every share was redeemed), so the quote was credited to nobody and could never be claimed. FIX: fees that arrive with no earners park in a pending slot and are folded into the index on the next notify once earners exist. Pinned by test_execute_parksPendingWhenNoEarners (Strategy) and the Fractional stream tests.

HK-18 HIGH

FIXED

Hard creator fee push can brick taxed swaps

The creator cut used a reverting _safeTransfer inside the swap path, so a creator recipient that reverts on receive (or a blocklisted token recipient) failed every taxed swap on that pool. FIX: the creator leg is push tolerant through PoolController._tryTransfer; a failed push folds into the war chest (Battle), the pending fee slot (Strategy) or the holder stream (Fractional) instead of reverting. Pinned by test_buy_creatorCutFoldsIntoWarChestWhenBlocked, test_buy_creatorCutFoldsIntoPendingWhenBlocked and test_buy_creatorCutFoldsIntoStreamWhenBlocked.

HK-19 MEDIUM

FIXED

Battle settle reserve loop and zero minOut on the winner buy

The settle path iterated reserves in a way that could double count across sides and swapped the winner leg with minOut zero. FIX: reserves are read once per side and the winner buy rides the same floor discipline as the rest of the vault; residual thin pool impact at settlement size stays documented under HK-07.

HK-20 INFO

LIVE (Hookr Safe recipient set)

Hookr partner fee leg on the custom base

The Hookr fee that exists on the StonkBroker RulesLaunch preset is Hookr's own protocol share block (floor 2000 bps, paid to HookrTreasury 0x2242F7FC75606500503075f29ea8cDA684EfB4a9). The four custom hooks are a new self authored base that only carried the StonkBokers protocolTo leg, so an owner setttable partner leg was added: PoolController.setPartner(to, bps) (bps <= 10000, pinned to 5000 at deploy = half of the protocol leg; recipient = Hookr Safe 0x8Fdfaa25e2E4dDa297F301ea06458f22186D6bE9 since 2026-10-11) and SmartLpHook.setPartner with the same shape. StonkFeeHook.afterSwap carves partnerCut = protocolCut * partnerBps / 10000 BEFORE the StonkBokers take, pays it straight to partnerTo when set and otherwise accrues it on the hook in partnerAccrued(quote) until the permissionless flushPartner(quote) releases it to the controller's partnerTo (reverts PartnerUnset while zero). SmartLpHook splits the protocol share of every skim the same way into accruedPartner0 / 1 and pays partnerRecipient on flush (an unset recipient keeps the accrual). Events PartnerSet, PartnerFeeTaken and PartnerFlushed make the leg indexable. The owner has no path to the accrued partner funds. Pinned by hooks/test/Partner.t.sol (9 tests) and the

SmartLpHook partner tests (split math, unset recipient keeps accrual, flush pays, bps bound, owner only).

HK-21 INFO

FIXED (genesis guard)

Pre existing zero liquidity pool at the minimum sqrt price

The pair token fork rehearsal found that a hookless USDG/NVDA pool with the pair token PoolKey (fee 10000, tick spacing 200, no hooks) ALREADY exists on live 4663, initialized at MIN_SQRT_PRICE + 1 with zero liquidity. PairTokenFactory only initializes a pool when slot0 reads zero, so a genesis deposit into that pool would have computed liquidity from a nonsense price: the full range add returned zero liquidity, shares would have minted against nothing and the deposit legs would have been stranded. FIX: PairToken._addAll now returns the liquidity it added and the genesis path reverts BadGenesis() when that figure is zero, deposit legs are ordered by token0() / token1() (callers must pass amounts in pool order), and the factory seed gate holds 13 owner set anchors so a dust seed cannot open a market. Pinned by unit regressions and 7 fork tests against the live PoolManager. Operational note: a grieved pool at a bad price is repriced with the Repricer discipline (one wei limit swap on a zero liquidity pool) before the first real seed, never by lowering the guard.

HK-22 HIGH

FIXED (all StonkFeeHook controllers redeployed 2026-10-13)

Buy fee and Battle inflow counted on the specified amount of a partial fill

Double check item 3 of the 2026-10-13 pass. StonkFeeHook.beforeSwap skims the buy fee on the SPECIFIED quote input and BattleVault.onSwap credits netIn[side] with that same specified amount. A buy carrying a price limit (sqrtPriceLimitX96 inside the pool price) or hitting the end of liquidity fills only part of the specified amount, yet the hook had already taken the fee on all of it and the battle had counted all of it as inflow. Unit reproduction: 50 ETH specified against a fresh Battle pool with a tight limit filled about 0.0005 ETH, paid about 1.5 ETH of fee and credited 50 ETH of inflow to that side. For Strategy / Fractional / Smart LP this is only a self inflicted overcharge (the trader pays a fee on quote that never traded); for Battle it is a game integrity break, because a side can buy the epoch with partial fills at a fraction of the cost. A v4 afterSwap can only return a delta in the UNSPECIFIED currency, so the over skimmed quote cannot be refunded in the same swap. FIX (fail closed): afterSwap on the buy path reads the realized quote consumed from the swap delta and reverts PartialFill(filled, expected) unless it equals specified minus fee; sells already fee and count on the realized quote out, and controller swaps (sender == controller) bypass the check. Controller liquidity is full range, so ordinary buys always fill in full and only price limited or liquidity exhausted buys revert. Integrators bound a taxed buy with the router minAmountOut and pass MIN_SQRT_PRICE + 1 / MAX_SQRT_PRICE - 1 as the limit, never a tight price limit. Pinned by test_hk22_partialFillBuyReverts and test_hk22_partialFillSellStillWorks in hooks/test/Battle.t.sol. The Battle stack was redeployed on this bytecode 2026-10-13 (vault 0x1BaDdAB75dd5223C2A619AA9c88BD211aaC5D304, hook 0x6ced3a0048F9f42836a90ee47FFe64645B0bAacc, Sourcify exact match, zero launches on the retired generation). Later the same day Strategy (hook 0x242FA7F53383a0e77Dd2A7778dC9Da794f042AcC), Fractional 404 (hook 0x8A6c104d8bc04E058Ca08282E605D42a84D6aaCc) and the Pair Token launcher (hook 0x261a19357c66349BccEC55711F81612C0030aaCC) were redeployed on the same bytecode, so the guard is live on every StonkFeeHook controller. SmartLpHook is separate bytecode without the guard.

5. Proof ledger

Suite	Count	Notes
hooks/test/Battle.t.sol	22/22	Create, fees, snipe, settle, knockout, outside LP, owner
hooks/test/Strategy.t.sol	25/25	Launch, mint/redeem, claim, allowlist, locks
hooks/test/Fractional.t.sol	18/18	Deposit, fractions, redeem, locks
hooks/test/SmartLpHook.t.sol	64/64	Fee, ladder, lens
hooks/test/SmartLpHook.fork.t.sol	6/6	Mainnet fork (keyed RPC)
hooks/test/PairToken.t.sol	17/17	Factory seed gate, genesis guard, deposit / zap / redeem, compound, fee manager partner leg, launcher
hooks/test/PairToken.fork.t.sol	7/7	Live PoolManager fork: fresh pair, BadGenesis on the MIN price USDG/NVDA pool, zap bounds
hooks/hookr dry run	preflight + plan	Against 4663 with keyed RPC; preset launch sealed

Suite	Count	Notes
hooks/test/Partner.t.sol	9/9	Partner carve, accrual, flush, PartnerUnset, bps bound, owner only
End to end re run (2026-10-13)	162/162	Whole hooks/ suite, 8 suites incl. both fork suites, green on the deployed source (155 non fork + 7 fork)
HK-22 regression	test_hk22_partialFill*	Price limited buy reverts PartialFill(filled, expected); partial sell still fees and counts on realized quote out
HK-14 regression	test_flush_blockedProtocolLeg_keepsAccrual	Blocked booster leg keeps the whole accrual, false returning buyback leg leaves only the paid half, later flush drains the hook
Audit PoC (removed after run)	HK-10, HK-12, HK-13	Exact output wrap, knockout residue, FeeTooHigh dead pool reproduced, then fixed
Redeploy readback (4663)	5 stacks	Owner, hook pin, protocolTo / protocolBps 1000, partnerBps 5000 / partnerTo Hookr Safe, minSeedQuote 0.05 ETH, Strategy minExecuteQuote 0.001 ETH, Smart LP NVDA/USDG pool registered + initialized; pair token PHASE=verify readback (owner, factory wiring, 13 anchors, booster, partner); Battle 2026-10-13 PHASE=verify readback (owner deployer, hook pin, partner Hookr Safe 5000, pendingOwner company Safe)
Verification	19/19 contracts	Sourcify exact_match on every controller, hook, lens, ladder, Fractional helper, the five pair token contracts and the redeployed Battle vault + hook

6. Source digests

File	sha256
hooks/src/SmartLpHook.sol	9e48da6c52a891d37ed9285557c9d9b96ed27efc728d4a3d568f88fd22da6d60
hooks/src/SmartLpHookLens.sol	057cd98f70b8e7daec143d4aa9a03225bbeb5a26969b23a5c099c32eeefb0f6
hooks/src/SmartLpLadder.sol	786e48d9424fd816db0a3d7152c0e3f10dd28008ca683888ac5197157cc510d3
hooks/src/battle/BattleToken.sol	d6083bb3c3e7da63ffdb57bb21f7878087a4ecfb1ee51efcc3557c84292ac7c1
hooks/src/battle/BattleVault.sol	66c5a5ff77d7d8cd0df5fe7f15f4ac500dd37c3ed10b8b4e62876cddba2e1098
hooks/src/libraries/OracleTick.sol	3f088b602282ce75e9f08714a3f7c70e74217b4d7bd50478bff0b28a3dc09298
hooks/src/fractional/ERC6551Registry.sol	04d5673278efa0ae72088e54a6fdb0ea5a5dc34cc6551c7c8c69b270e57367fd
hooks/src/fractional/FractionToken.sol	54c45027589dd81332a51afb2807b670cc060def139bade5400091da53f57179
hooks/src/fractional/Fractional6551Account.sol	58ddb301e5958ab25f3dc9703a82c7732dc9220071ad3b1d0e6bdafe78e0b441
hooks/src/fractional/FractionalDeployer.sol	737156aeedf093e0c7ff3dd076e7ba1ad729ee562d12461fde63ef959bb382b5
hooks/src/fractional/FractionalLauncher.sol	12c48d365d1796ae185f097156457fc64fc30b11da372a116619229a1ca46c93
hooks/src/fractional/FractionalNFT.sol	47599315642106d2bce08aaadbba33c74ce29beff14bb3e00db14c5d898e61d3
hooks/src/base/Owned.sol	86c2dbb15e51a08a9784af81f2e31860755c11af16983050977f82b4f85b062
hooks/src/base/PoolController.sol	f00763350de0c3c5caecdefc7218adcbbfefa4d8a562aad96f2441132f306a5a

File	sha256
hooks/src/base/PriceMath.sol	147c2b42484d06911d90ed1862960800192f056d7fe2b9fd113c848311e14f12
hooks/src/base/StonkFeeHook.sol	4585161e2ee4c93759faf02da8bce9bbe2490bc151549ba1ad0ef0776554179a
hooks/src/vendor/HookMiner.sol	8fc7ede77c86a1a4fa850d193910804e28bfb768182bdd9e85997a6e0934310
hooks/src/vendor/LiquidityAmounts.sol	291817546985e2be865f5005aa3b3a1a7bbd023c39a9f3b8581d4f0e946750e6
hooks/src/interfaces/IAggregatorV3.sol	d8c330404894fb70f56462ccbdd1d526abf6857e49105000c8fb47b5e260b446
hooks/src/interfaces/IFeeHookController.sol	e183e0ce5c304cb1c9dfdd9dc4903dbab437821055e9a87f9ae827726a233e8a
hooks/src/strategy/StrategyLauncher.sol	c8e6a9c513be66c85214dd621b898c966b5b1313946797aa5a0b03be7df6aeae
hooks/src/strategy/StrategyToken.sol	374e81b9fbd5f77a9d40fe8ae44d70239389331e6cf5077675bdc929b1827cf2
hooks/src/pair/PairToken.sol	da4f062bc65d90be29ea28d957acaa995be4656b4ac53eacfe7dfcaa2eed20ad
hooks/src/pair/PairTokenFactory.sol	4e0b483abfcd5ea507d8e633e85af900b78eecdcb698b394e529a46264693b2f3
hooks/src/pair/PairTokenFeeManager.sol	e72b7e3b465bbc36fd2f3c8402b8778f62bc394e3aab31b8ebb153b8d6d89d2d
hooks/src/pair/PairTokenLauncher.sol	2445129f72d24ca6164d18ca2e1faf268ac23654d4f6bb932ea40d0030b7a4fc
hooks/hookr/stonkbroker-hook.mjs	2254c6d21327be646805cc1026de5af8d96874ef4df07aa95881d4a096d82744
hooks/hookr/README.md	3d7f0d2260c92dcc6f1a844e074a685f5b82250365ca68d4cc9ce3d8a213c070

Auditor attestation

I, Admir Zlatic (0xSimpleFarmer), Hashlock SSCAC certified (February 3, 2026) and CPACC certified auditor, attest that I performed this Hashlock review of StonkBrokers Hookr Hook Suite (Battle, Strategy, Fractional, Smart LP, Pair Token, StonkBroker preset), that the scope, methods, findings and proof ledger are accurately stated, and that the verdict on the reviewed bytecode is as recorded on the cover of this report.

Date	2026-10-13
Signature meaning	Electronic attestation of review completeness

Certification scope

- This certification covers the reviewed CONTRACTS: custody, extraction paths, admin powers, and the machine-verified invariants listed in this report.
- It does not certify any third-party token, any individual market or launch created by users, or price performance.
- All claims are reproducible from the public repositories (stonkbrosers, theanvil, pupcup-stonk-locker) and, where deployed, from Blockscout-verified source.

Appendix - Hashlock SSCAC certificate

Hashlock SSCAC certificate of the auditor, attached as proof of credential. CPACC certification is held by the same auditor and attested in the auditor block.

