



Ladder LP Whitepaper

Single Sided Concentrated Liquidity Ladders on Robinhood Chain

VERSION 1.0 / PUBLIC MAINNET BETA

5 September 2026

Ladder LP is a noncustodial interface for arranging user-owned Uniswap liquidity positions along a chosen price path.

DOCUMENT MAP

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Document status Version 1.0 describes the Ladder LP public mainnet beta as implemented on 5 September 2026. Product behavior may change after publication. On-chain state and wallet confirmations remain authoritative.

Audience This paper is written for prospective users, liquidity providers, reviewers, and ecosystem participants who need to understand what the product does, how it charges fees, and where its risks remain.

PURPOSE AND SCOPE

1 Abstract and Product Scope

Ladder LP helps a user distribute one asset across several narrow concentrated-liquidity positions on Robinhood Chain. A buy ladder places quote-asset liquidity below the current pool price so price movement can progressively acquire the paired token. A sell ladder places the paired token above the current price so price movement can progressively acquire the quote asset.

Each band is minted as a separate Uniswap position NFT directly to the connected wallet. Ladder LP does not pool user funds, custody position NFTs, rebalance positions, or trade with a platform-controlled key. The user reviews a tick-aligned plan, simulates the complete mint, and confirms each required wallet transaction.

The product is an execution interface, not an investment manager. It does not select tokens for the user, predict price movement, guarantee that a position will enter range, or guarantee that fees will exceed price loss, gas, token taxes, or impermanent loss.

CURRENT SCOPE	IMPLEMENTATION
Network	Robinhood Chain mainnet / chain ID 4663 / ETH gas
Protocols	Uniswap V3 and compatible Uniswap V4 liquidity positions
Quote assets	WETH and USDG, subject to the protocol compatibility described in Section 3
Custody	User wallet retains the position NFTs and resulting assets
Automation	None. No rebalancing, vault strategy, grid bot, or platform signer
Lifecycle	Build, simulate, mint, monitor, claim, partially remove, or fully remove

Product principles

- Self custody remains the default. The wallet receives every position NFT and authorizes every state-changing transaction.
- On-chain facts take priority. Pool state, ticks, ownership, liquidity, fees, receipts, and contract calls are read or verified against Robinhood Chain.
- Warnings inform user decisions. The application blocks incompatible execution paths, but advisory risk signals do not evaluate the quality of a token or strategy.

STRATEGY MECHANICS

2 Ladder Mechanics

Concentrated liquidity assigns capital to finite price intervals. A position earns the pool's liquidity-provider fees only while the active price is inside its interval. As price crosses a position, its asset composition changes. Once price passes completely through the interval, the position becomes single-sided in the opposite asset until price returns.

DIRECTION	STARTING ASSET	PRICE PATH	EXPECTED CONVERSION
Buy below spot	ETH, WETH, or USDG	From just below spot toward a lower target	Quote asset progressively converts into the paired token
Sell above spot	Paired token	From just above spot toward a higher target	Paired token progressively converts into ETH, WETH, or USDG

Tick aligned bands

The selected price path is divided into adjacent ranges that match the pool's valid tick spacing. The requested position count is a maximum. If the selected move contains fewer distinct tick bands, Ladder LP reduces the executable count rather than creating duplicate or invalid ranges.

Single sided opening

The first band starts outside the current pool price. A buy ladder therefore deposits only the quote asset at opening, while a sell ladder deposits only the paired token. The pool, not Ladder LP, performs the progressive conversion as swaps move through each active range.

Allocation curve

Allocation increases geometrically toward the target boundary. If a ladder has n positions and edge multiplier m , the unnormalized weight for position i is m raised to i divided by n minus 1. The weights are then normalized to the selected deposit. This gives the far edge more capital without changing the chosen price target.

A ladder may remain inactive for an extended period, may reenter range after leaving it, or may finish entirely in the acquired asset. No path is guaranteed to complete.

USER CONTROLS AND COMPATIBILITY

3 Configuration and Market Support

CONTROL	AVAILABLE VALUES	EFFECT
Position count	5, 10, 15, 20, or 30	Sets the requested number of NFT ranges, subject to tick spacing
Smooth	2x edge weight	Smallest allocation difference between the first and farthest bands
Medium	5x edge weight	Moderate concentration toward the target
Aggressive	15x edge weight	Largest concentration toward the target
Volatility safe opening	Optional	Starts the nearest range at least 5 percent from live spot while keeping the selected target
Mint slippage	User selected	Sets the minimum deposit accepted for each position during mint

Current execution support

PROTOCOL	QUOTE	STATUS	COMPATIBILITY RULE
Uniswap V3	WETH	Live	Standard V3 pool with active liquidity at the current price
Uniswap V3	USDG	Live	Standard V3 pool with active liquidity at the current price
Uniswap V4	USDG	Live when compatible	Liquidity-changing hook permissions must not intercept standard add or remove liquidity
Uniswap V4	WETH	Live when compatible	Liquidity-changing hook permissions must not intercept standard add or remove liquidity

Pool selection

The interface shows fee tier, current pool price, active liquidity status, estimated total value locked, recent volume when available, and tick spacing. A pool with historical volume can still have no active liquidity at spot. Conversely, reported total value locked can sit outside the current price and remain inactive. Ladder LP separates those states and requires active spot liquidity for a new executable plan.

For V4, hooks can alter pool behavior at liquidity and swap lifecycle points. Version 1.0 enables execution only when the hook permission pattern is compatible with standard liquidity actions. This screen is a technical compatibility check, not a security audit of the hook or token.

4 Execution and Position Lifecycle

- 01 **Load a market** The user supplies a token contract and chooses WETH or USDG. Ladder LP reads token metadata, discovers matching V3 and V4 pools, and checks current state.
- 02 **Configure the ladder** The user chooses direction, target movement, position count, edge weight, capital, and optional volatility protection. The interface converts the price path to valid ticks and displays every allocation.
- 03 **Refresh and simulate** The review screen can refresh live price and wallet balance. The server reconstructs the plan from current on-chain data, validates balances and approvals, and simulates the complete mint batch before a wallet can submit it.
- 04 **Approve assets** ERC-20 deposits use an exact-amount approval path. V4 WETH and USDG execution uses the token approval and Permit2 authorization required by the configured Position Manager. For a V4 WETH buy ladder, Ladder LP can first prepare an exact wrap for any WETH shortfall; native ETH deposits into V3 do not require an ERC-20 allowance.
- 05 **Pay the opening fee** A non-exempt wallet confirms a separate ETH transfer to the disclosed treasury. The fee credit remains unconsumed until a matching mint transaction confirms on-chain.
- 06 **Mint and receive NFTs** The wallet submits a batched call to the official Uniswap Position Manager. Every position names the connected wallet as recipient. A successful ladder therefore appears as several wallet-owned position NFTs.
- 07 **Manage the position** The Position Desk reads V3 and V4 NFTs from the connected wallet. The user can claim fees, remove selected positions, or remove the complete ladder. Removal collects fees, returns the resulting token mix, and burns emptied NFTs.

Volatility controls

Simulation cannot freeze a pool price while the user confirms in a wallet. The volatility-safe opening creates a 5 percent initial gap to reduce the chance that the first range becomes invalid during confirmation. On exit, the user may widen aggregate slippage or choose a volatility-safe exit that accepts the pool's current token mix without token minimums. Accepting no token minimums materially increases execution risk and is clearly marked.

TRANSPARENT OPENING CHARGE

5 Platform Fees

Ladder LP charges one platform fee when a ladder is opened. The fee depends on the estimated USD value deployed, not the number of position NFTs. Ladder LP does not add a platform charge to fee claims, partial removals, or full removals. Users still pay Robinhood Chain gas. The selected pool's fee tier determines the share of swap fees attributable to liquidity while it is active and in range.

DEPLOYED VALUE	OPENING FEE	EFFECTIVE RATE
\$25	\$0.20	0.80%
\$50	\$0.40	0.80%
\$100	\$0.75	0.75%
\$250	\$1.75	0.70%
\$500	\$3.00	0.60%
\$1,000	\$5.00	0.50%
\$5,000	\$20.00	0.40%
\$10,000	\$40.00	0.40%
\$20,000	\$75.00	0.375%
\$30,000	\$105.00	0.35%

Continuous fee curve

For deposits up to \$50, the fee is 0.8 percent of deployed value. Between the published anchors, the fee is linearly interpolated, so there are no jumps at thresholds. Above \$20,000, the fee increases by \$3 for each additional \$1,000 of deployed value. The final amount is calculated in micro-dollars and rounded only when converted to ETH and displayed.

Payment verification and failed mints

The opening fee is paid in ETH using a live ETH/USD reference assembled from Coinbase, CoinGecko, and Kraken responses. Ladder LP verifies the payment sender, treasury recipient, value, empty calldata, and successful receipt. If the matching mint does not confirm, the paid credit is not consumed. It can be reused for an eligible ladder requiring no more than the paid fee for up to 15 days.

Treasury address 0xDd7E98A2Fa4ad47e4d964A9010D8A174058198D2

A limited operator and tester allowlist can waive the platform charge. Exemptions are applied by wallet address and do not change network gas or pool economics.

TRUST MODEL

6 Architecture and Security Model

Ladder LP prepares transactions; it does not sign them. The connected wallet remains the only authority that approves tokens, pays the platform fee, mints positions, claims fees, or removes liquidity. Position NFTs and returned assets go directly to that wallet.

LAYER	RESPONSIBILITY	DATA OR AUTHORITY HELD
Browser interface	Builds the plan, stores local ladder history, displays pool and position data	No private key or seed phrase
Application worker	Reads RPC and explorer data, builds calldata, simulates transactions, verifies fee credits	Temporary requests plus operational cache and fee records
Connected wallet	Displays and signs every state-changing transaction	Exclusive signing authority
Uniswap contracts	Own pool accounting and mint, collect, decrease, and burn position state	Protocol-controlled liquidity state
Robinhood Chain	Orders, executes, confirms, and publishes transactions	Canonical on-chain record

On-chain execution targets

V3 ladders use the configured Uniswap Nonfungible Position Manager. V4 ladders use the configured V4 Position Manager and PoolManager. The application batches positions so the user confirms one mint transaction after any required approvals and platform-fee payment.

Server-side records

The hosted database contains rate-limit counters, short-lived response cache entries, a verified V4 pool directory, and platform-fee quote records. It does not hold user assets or wallet signing keys. Closed-ladder PnL history is saved in the user's browser and is not an account-level ledger.

Security controls and limits

- Exact plan details are rebuilt and simulated before submission.
- Fee payments and mint receipts are verified on-chain before a fee credit is consumed.
- Stale or unavailable chain state pauses new ladder preparation.
- RPC retries, read-only failover, bounded batching, caching, and rate limits reduce infrastructure failures but cannot eliminate them.

This architecture reduces custody risk, but it does not remove application, wallet, token, protocol, hook, chain, or user-error risk. Until Ladder LP publishes an independent audit report, users should treat the public beta as unaudited.

MATERIAL USER RISKS

7 Risk Considerations

RISK	POSSIBLE EFFECT	CURRENT CONTROL OR DISCLOSURE
Price movement	The ladder can convert fully into an asset that continues to fall or rise	User selects direction and target; no return is promised
Impermanent loss	LP value can underperform simply holding the starting assets	PnL is shown against initial USD value, not as a hold benchmark
Out of range liquidity	A position stops earning fees while price is outside its interval	Live range status and distance to range are displayed
Token controls	Taxes, blacklists, pauses, supply changes, or transfer rules may impair mint or exit	Source and ownership signals plus exact simulation; future token behavior remains unknown
V4 hooks	A hook can change liquidity or swap behavior	Execution is disabled when liquidity-changing permissions are incompatible; this is not a hook audit
Slippage and volatility	Pool movement can invalidate minimum amounts or change the returned mix	Live refresh, simulation, user-set minimums, safe opening, and explicit high-risk exit mode
Gas and congestion	A transaction may cost more than expected or become uneconomic	Live range estimate and wallet confirmation; the user may reject the transaction
Infrastructure outage	Pool discovery, positions, pricing, or simulation can be delayed or unavailable	Health checks, retries, failover, cache, and explicit error states
Stablecoin deviation	USDG may trade away from \$1, making USD estimates inaccurate	Version 1.0 uses \$1 per USDG for estimates and discloses the assumption
Smart contract failure	Protocol, token, hook, or application errors can cause loss	Noncustodial design and simulation reduce some paths but do not guarantee safety

Concentrated liquidity is path dependent. Fee income can coexist with a loss in USD value, and a profitable historical ladder does not establish an expected return for another token, range, fee tier, or market regime.

Users should verify the token contract, pool, fee tier, quote asset, direction, ranges, approvals, fee transfer, and wallet simulation before confirming. A displayed warning, estimate, or successful simulation cannot predict later contract or market behavior.

MEASUREMENT AND UPTIME

8 PnL and Operational Reliability

Tracked PnL

For ladders opened through the current browser, tracked PnL compares initial deployed USD value with current position value, current claimable fees, and confirmed realized proceeds from claims or partial removals. A full close adds confirmed proceeds from the exit and preserves earlier realized actions. Duplicate transaction hashes are ignored.

MEASUREMENT	INCLUDED	IMPORTANT LIMITATION
Open ladder PnL	Current NFT value, claimable fees, realized claims, and partial removals	Depends on current pool pricing and complete local opening metadata
Closed ladder PnL	Confirmed full-close proceeds plus earlier realized actions	Unavailable when proceeds cannot be valued or initial deposit was not tracked
PnL card	Percent return, percent of starting capital, fee percent, and duration	Hides wallet address and dollar amounts; it is a marketing snapshot, not an audit record
Closed history	Confirmed exits retained for 15 days	Saved only in the browser that recorded the close

PnL is an estimate. It excludes tax, the value of time, alternative holding performance, unrealized token-transfer restrictions, and any transaction costs not captured by the browser record. It should not be used as an accounting, tax, or portfolio-reporting system.

Operational reliability

The application uses a production RPC provider for primary reads and a public read-only endpoint as fallback. Expensive read responses are briefly cached, position calls are batched, and V4 discovery retains a verified pool directory so explorer interruptions do not erase known markets. Transaction-building routes do not use the read-only fallback to sign or broadcast anything.

A chain-health gate compares recent block data with the current time. If the latest block is stale or unavailable, Ladder LP pauses new ladder preparation and warns the user. Existing on-chain positions remain under the user's wallet control even if the website or RPC provider is unavailable.

9 Product Boundaries and Roadmap

What Ladder LP does not include

- No custody, pooled vault, managed strategy, or platform-controlled wallet.
- No automated monitoring, rebalancing, stop loss, grid bot, or execution service. Autopilot is a separate product and is not part of Ladder LP.
- No Base, BNB Smart Chain, or other network support in version 1.0.
- No token endorsement, pool safety rating, return forecast, insurance, or guarantee of available liquidity.
- No permanent cloud account history for ladder metadata or PnL cards.

Near term public launch work

- 01 Public documentation** Publish this whitepaper together with plain-language risk, terms, privacy, and support information.
- 02 Domain and identity** Connect ladderlp.com, verify HTTPS and redirects, and keep project branding consistent across the website and social channels.
- 03 Security review** Complete a focused review of transaction construction, approval scope, fee-credit handling, V4 hook compatibility, and position removal. Publish any independent audit when available.
- 04 Measured rollout** Begin with a limited public beta, observe RPC usage, failed simulations, on-chain fee reconciliation, and user reports, then adjust operational limits from evidence.

Potential later work

Possible later work includes portable position history, additional quote assets, and support for other EVM networks. These items have no committed release date. Any new chain or protocol path requires separate contract verification, pricing, gas calibration, testing, and risk disclosure.

Changes to fees, supported contracts, or material risk controls should be reflected in a new document version. The interface and verified on-chain transaction remain authoritative when this paper and the live product differ.

LEGAL AND TECHNICAL REFERENCE

Disclosures and References

Use disclosure

Ladder LP is experimental software made available in public mainnet beta. Nothing in the interface, this whitepaper, or a PnL card is investment, financial, legal, tax, or accounting advice. Nothing is an offer, solicitation, recommendation, or promise of profit. Users are responsible for evaluating assets, pools, contracts, wallet prompts, applicable law, and tax consequences.

Ladder LP is an independent application. It is not affiliated with, sponsored by, or endorsed by Robinhood Markets, Inc., Robinhood Digital Assets, Uniswap Labs, the Uniswap Foundation, or their affiliates. Third-party names and marks identify the networks, assets, or protocols with which the software interacts.

Configured Robinhood Chain contracts

COMPONENT	ADDRESS
WETH	0x0bd7d308f8e1639fab988df18a8011f41eacad73
USDG	0x5fc5360d0400a0fd4f2af552add042d716f1d168
Uniswap V3 Position Manager	0x73991a25c818bf1f1128deaab1492d45638de0d3
Uniswap V4 PoolManager	0x8366a39cc670b4001a1121b8f6a443a643e40951
Uniswap V4 Position Manager	0x58daec3116aae6d93017baaea7749052e8a04fa7
Ladder LP fee treasury	0xDd7E98A2Fa4ad47e4d964A9010D8A174058198D2

References

- [1] [Robinhood Chain Documentation Connecting to Robinhood Chain](#) Accessed 5 September 2026
- [2] [Uniswap Developers Concentrated Liquidity](#) Accessed 5 September 2026
- [3] [Uniswap Developers Uniswap V3 Managing Liquidity](#) Accessed 5 September 2026
- [4] [Uniswap Developers Uniswap V4 Hooks](#) Accessed 5 September 2026
- [5] [Uniswap Developers Uniswap V4 Position Manager](#) Accessed 5 September 2026

Version note Product-specific statements in this paper are based on the Ladder LP version 1.0 implementation and its configured Robinhood Chain contracts as of the publication date.