

Tick, tick width and automation

Ticks in CLMM (Concentrated Liquidity Market Maker) is used to define the price relation of the two tokens in the pool.

Here is an illustration on what ticks looks like (borrowed from [UniswapV3Book.com](https://uniswap.org/learn/developing-clmm/))

Tick and price relation $p_{r i c e}(i) = 1.0001^i$ $p_{r i c e}(i) = 1.0001^i$
 $= 1.0001^i$

Then here is the tick number. A few examples:

- If $i = 0$
- , then price
- will be 0
- If $i = 1$
- , then price will be 1.0001
- 1
- 1
- =
- 1.0001
- $1.0001^1 = 1.0001$
- 1.0001
- 1
- 1
- =
- 1.0001

You normally would see ticks from the Uniswap position NFT (like the one below). Specifically, each position contains Min Tick and Max Tick , which defines the lower tick and upper tick (i.e. the range) of the position.

In the example above, the tick width or range is $194110 - (-198160) = 4050$. To calculate the associated price range, we would need to find the price corresponding to min tick (-198160) and max tick (194110). And that's not too hard to do:

- p
- r
- i
- c
- e
- (
- -
- 198160
-)
- =
- 1.0001
- 1
- -
- 198160
- =
- 2.47999507
- e
- -
- 9
- $\text{price}(-198160) = 1.0001^{-198160} = 2.47999507e-9$
- p
- r
- i
- c
- e
- (
- -
- 198160
-)
- =
- 1.0001
- 1
- -
- 198160
- =
- 2.47999507

- e
- -
- 9
- p
- r
- i
- c
- e
- (
- -
- 194110
-)
- =
- 1.000
- 1
- -
- 198160
- =
- 3.71818751
- e
- -
- 9
- price(-194110) = 1.0001^{-198160} = 3.71818751e-9
- p
- r
- i
- ce
- (
- -
- 194110
-)
- =
- 1.000
- 1
- -
- 198160
- =
- 3.71818751
- e
- -
- 9

Now you may wonder, why are the numbers so small? This is because 1 human readable ether is represented as 1e18 units on blockchain and the price above means 1 unit of ether is worth a really small number of USDC units. If we multiple the above prices by 1e18, we now get:

- Min tick price -> 2479995070 units of USDC, which is 2479.99507 USDC because USDC has 6 decimals (i.e. 1 human readable USDC is represented as 1,000,000 units)
- Max tick price -> 3718187510 units of USDC, which is 3718.18751 USDC.

Up to this point, we have went over ticks and the price range behind ticks [Previous INTENTional \(Points\) Campaign](#) Last updated 3 months ago