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# Anchored Vwap Probability Bounce

Expert Advisor Documentation

| PLATFORM | TYPE | TIMEFRAME | WEBSITE |
| --- | --- | --- | --- |
| MetaTrader 5 (MT5) | Mean Reversion | M5 – H1 | www.algobot.live |

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## Overview

**Anchored Vwap Probability Bounce** is a mean-reversion Expert Advisor that trades snap-backs toward the *anchored VWAP* — the volume-weighted average price measured from the open of the current trading day. Institutional desks benchmark their fills against the daily VWAP, and that continuous execution creates a gravitational pull that draws price back toward the day's anchor whenever it stretches too far away.

The EA re-anchors VWAP at the first bar of every calendar day (detected by a change in the bar's UTC date) and rebuilds the true session-anchored average bar-by-bar. Around that VWAP it computes a *volume-weighted sigma* and converts the current close into a **z-score** — a statistical measure of how many sigmas price is stretched away from the mean. When price is stretched beyond a configurable band and the most recent bar shows a snap-back in the opposite direction, the EA enters, targeting the anchored VWAP itself as the mean magnet.

> **Core idea:** The anchored VWAP is a structural magnet. When the z-score is deeply negative and a bullish reversal candle prints, the EA buys with the VWAP as its take-profit — a target that is, by construction, on the profitable side of the entry.

### Key Characteristics

- **Style:** Statistical mean reversion around a session-anchored VWAP.
- **Anchor:** Re-anchored daily at the first bar of each calendar day.
- **Signal:** Volume-weighted z-score band breach plus a confirming reversal candle.
- **Target:** The anchored VWAP (the daily mean).
- **Stop:** ATR-based, sized as a multiple of ATR beyond entry.
- **Best regime:** Ranging / low-trend sessions; weaker in strongly trending markets.

## How It Works

### 1. Anchored VWAP & Volume-Weighted Sigma

On the first bar of every new calendar day the EA resets its anchor. From that anchor forward it accumulates each closed bar's typical price and volume to compute the true anchored VWAP and its volume-weighted dispersion:

```
tp          = (High + Low + Close) / 3          (typical price)
Anchored VWAP = Σ(tp · vol) / Σ vol
VW-Variance   = Σ(vol · (tp − VWAP)²) / Σ vol
sigma         = √(VW-Variance)
z-score       = (Close − VWAP) / sigma
```

At least two bars must exist since the anchor so that sigma is greater than zero, and enough bars must be present to compute the ATR before any signal is evaluated.

### 2. Entry Logic

The EA acts only once per newly-closed primary bar and evaluates the closed bar (shift 1):

- **Long entry:** the closed bar's z-score is below `-SigmaMult` (price stretched below the lower band) *and* the bar is bullish (`Close > Open`, the first snap-back candle). Entry is placed at the Ask.
- **Short entry:** the closed bar's z-score is above `+SigmaMult` (price stretched above the upper band) *and* the bar is bearish (`Close < Open`). Entry is placed at the Bid.

### 3. Stop Loss & Take Profit

- **Take Profit:** the anchored VWAP. Because the z-score condition guarantees VWAP is on the correct side of entry, the target sits structurally in profit.
- **Stop Loss:** `AtrStopMult × ATR(AtrPeriod)` beyond the entry — below entry for longs, above entry for shorts.

- **Reward:Risk filter:** a setup is rejected unless `reward / risk ≥ MinRewardRisk`, where reward is the distance from entry to VWAP and risk is the distance from entry to the stop.

### 4. Trade Filters

- **Spread filter:** entries are skipped when the current spread (in points) exceeds `MaxSpreadPoints`.
- **Minimum reward:risk:** setups where VWAP is too close to cover the stop are discarded.
- **Anchor maturity:** at least two bars since the anchor are required so sigma is positive.
- **One position per magic:** a single open position is allowed at a time; the stop-loss and take-profit handle all exits.

> **Tip:** This is a counter-trend engine. It performs best in ranging or low-trend regimes. Consider filtering out high-ADX / strongly trending sessions externally, since a persistent trend can keep pushing price away from the anchored VWAP.

## Strategy in Action

The illustration below shows an example of how the strategy identifies a setup and triggers its entry and exit. This is a simplified, illustrative example for educational purposes — not real market data.


*Illustrative example only. Actual market behaviour varies.*

**Reading the chart**

Price drops well below the lower volume-weighted sigma band (the shaded oversold zone), producing a z-score below `-SigmaMult`. The first bullish candle (the green snap-back bar) confirms a reversal and triggers a **BUY**. The stop is placed `AtrStopMult × ATR` below entry, and the take-profit is set to the anchored VWAP, which price then reverts toward.

## Parameters

| Parameter | Default | Description |
|---|---|---|
| **SigmaMult** | `2.0` | Band width as a multiple of the volume-weighted sigma (the z-score threshold). Range 1.0–4.0, step 0.1. Lower values give more frequent but noisier signals; higher values give rarer, cleaner ones. |
| **AtrPeriod** | `14` | ATR lookback used to size the stop-loss distance. Range 5–30, step 1. |
| **AtrStopMult** | `1.5` | ATR stop multiplier — stop = entry ± AtrStopMult × ATR. Range 0.5–4.0, step 0.1. |
| **MinRewardRisk** | `0.8` | Minimum reward:risk ratio, where reward is the distance to the anchored VWAP and risk is the distance to the stop. Range 0.3–3.0, step 0.1. |
| **MaxSpreadPoints** | `80` | Skip entries when the current spread (in points) exceeds this value. Range 5–300, step 5. |
| **Lots** | `0.10` | Order volume in lots. Range 0.01–1.0, step 0.05. |
| **Magic** | `8841` | Magic number identifying this EA's positions. Range 0–9,999,999, step 1. |

## Recommended Settings

The strategy is designed to work on any liquid instrument (FX majors, indices, commodities) across the M5–H1 timeframes. Use the defaults as a starting point and optimize against your broker's data.

### Suggested Starting Point

- **Symbols:** Liquid FX majors, major indices, or commodities with tight spreads.
- **Timeframe:** M5 to H1 — lower frameworks trade more often, higher frameworks yield cleaner anchors.
- **SigmaMult:** Start at 2.0; increase for cleaner, rarer signals, decrease for more frequent ones.

- **AtrStopMult:** Keep tied to `SigmaMult` — a wider band should be paired with a proportionally sized stop.

> **Optimization note:** `SigmaMult` (the band width, k) and `AtrStopMult` should be tuned together. A wider band (high k) only needs a looser stop if the VWAP target is proportionally farther away. Best results appear in ranging / low-trend regimes; consider filtering out high-ADX sessions externally.

> **Regime sensitivity:** As a counter-trend mean-reversion system, this EA can suffer in strong, sustained trends where price keeps stretching away from the anchored VWAP without reverting. Validate thoroughly on out-of-sample data and consider a trend/ADX filter before live deployment.

## How to Install on MetaTrader 5

1. Copy `AnchoredVwapProbabilityBounce.ex5` to your MT5 `MQL5\Experts\` folder
2. Restart MetaTrader 5 and refresh the Navigator panel
3. Drag the EA onto a chart matching the recommended symbol and timeframe
4. Configure the input parameters and click **OK**
5. Enable **Algo Trading** in the MT5 toolbar

## Risk Warning

> Trading foreign exchange, CFDs, and other leveraged financial instruments involves substantial risk of loss and is not suitable for all investors. The strategies and tools described in this document are provided for **educational purposes only** and do not constitute financial advice, investment recommendations, or solicitation to trade. Always consult a qualified financial adviser before making trading decisions. Past backtest performance is not indicative of future results.