Algobot
Maximize Your Profits

Return Skewness Rotation

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Statistical Momentum	H1 (adaptable)	www.algobot.live

> ⚠ **Important Disclaimer** This document is for educational and informational purposes only. It does not constitute financial or investment advice. Trading forex, CFDs, and other leveraged instruments involves substantial risk of loss and is not suitable for all investors. Past backtest performance does not guarantee future results. Never trade with capital you cannot afford to lose.

Overview

Return Skewness Rotation is a statistical momentum Expert Advisor built on a first-principles idea: directional pressure often shows up in the **third moment** of the short-run return distribution — its *skewness* — before it becomes visible as drift in the mean. Near a genuine shift, one side quietly absorbs a cluster of small opposing moves (the body of the return distribution) and releases in occasional large bursts (the tail). The sign of that asymmetry reveals latent pressure that has not yet turned into obvious momentum.

Because raw skewness scales differently across symbols, timeframes, and market regimes, the EA never trades a fixed skew level. Instead it **standardizes** the current skew reading against its own recent history, producing a regime-relative z-score (`SkewZ`). Entry thresholds are therefore expressed in standard-deviation units rather than absolute numbers, letting the same settings adapt to quiet and volatile conditions alike.

The strategy uses no built-in indicators. Skewness is computed directly from log-returns, and the Average True Range (ATR) used for stops and targets is calculated manually from true range as a simple average — so the MQL5 behaviour mirrors the reference C# implementation exactly, rather than depending on a platform indicator library.

> **Core idea in one line:** When the sign and magnitude of return skewness rotate decisively away from the recent norm, the EA positions in that direction and exits once the asymmetry neutralizes.

How It Works

1. Building the skew signal

On every completed bar the EA appends a new log-return, `log(Close / PrevClose)`, to a rolling series. Once at least `SkewWindow` returns are available, it computes the **population skewness** of the most recent window:

```
g = m3 / s^3        (m3 = mean cubed deviation, s = standard deviation)
```

Each bar contributes one skew reading `g` to a second rolling series (the skew history), `NormWindow` readings deep.

2. Standardizing against the current regime

The latest skew reading is converted into a regime-relative z-score using the mean and standard deviation of the last `NormWindow` readings:

```
SkewZ = (g_now - mean_g) / std_g
```

A large positive `SkewZ` means upward asymmetry has rotated in relative to its own recent norm; a large negative value means downward asymmetry is dominant. If the skew history is too flat to standardize (near-zero dispersion), the EA simply waits.

3. Entry logic

- **Go long** when `SkewZ ≥ EntryZ` — upward asymmetry rotates in.
- **Go short** when `SkewZ ≤ -EntryZ` — downward asymmetry rotates in.

The EA trades **flat-only**: it holds at most one position per magic number on the symbol. New entries are considered only when no position for that magic is open.

4. Exit logic

Positions are managed by two independent mechanisms:

- **Rotation exit (dynamic):** a long is closed as soon as `SkewZ` rotates back below zero, and a short is closed as soon as `SkewZ` rotates back above zero. When the asymmetry that justified the trade has neutralized, the position is released.
- **ATR stop-loss / take-profit (protective):** every entry is submitted with a hard stop and target derived from ATR.

5. Stop-loss & take-profit sizing

ATR is the simple average of true range over the last `AtrPeriod` completed bars. For a long entered at the ask:

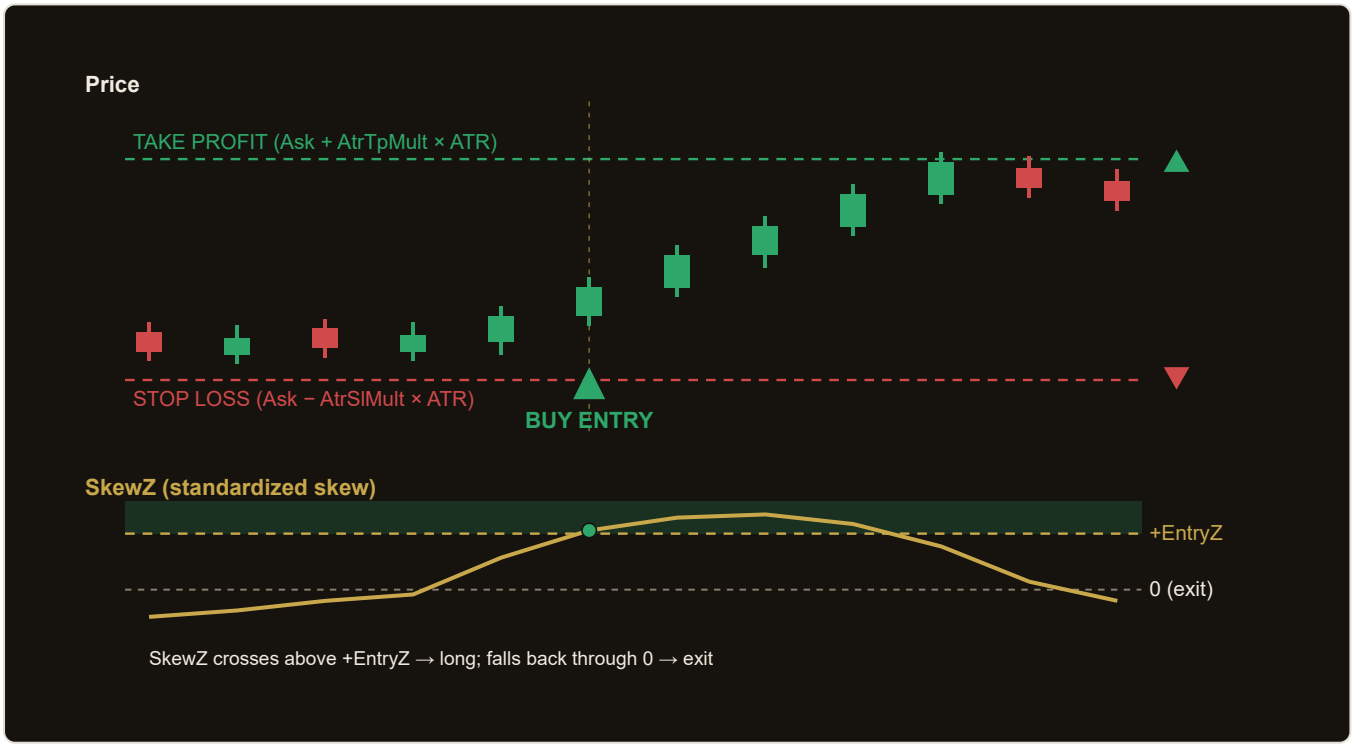
```
Stop Loss   = Ask - AtrSlMult × ATR
Take Profit = Ask + AtrTpMult × ATR
```

For a short entered at the bid the offsets are mirrored. With the default multipliers (`AtrSlMult = 2.0`, `AtrTpMult = 3.0`) the target is 1.5× the stop distance, giving a positive reward-to-risk profile on trades that reach their target.

> **One action per bar.** All logic runs once per completed bar (a new-bar gate), not on every tick. The EA reads the bar that has just closed, so signals are computed on finalized data and do not repaint intra-bar.

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 illustration

During consolidation, `SkewZ` hovers below its threshold. As downward moves become small and upward bursts grow, skewness rotates upward and `SkewZ` crosses above `+EntryZ` — the EA opens a long with an ATR-based stop and target. Price advances toward take-profit; had skewness instead rotated back through zero first, the dynamic rotation exit would have closed the trade before the target was reached.

Parameters

Parameter	Default	Description
SkewWindow	`30`	Number of recent log-returns used to estimate skewness. Range 15–80, step 5. Smaller values react faster but are noisier.
NormWindow	`50`	Number of skew readings used to standardize the current skew into `SkewZ`. Range 20–150, step 10. Larger values give a more stable regime baseline.
EntryZ	`1.0`	Entry threshold in regime-relative (standard-deviation) units. Long when `SkewZ ≥ EntryZ`, short when `SkewZ ≤ -EntryZ`. Range 0.3–2.5, step 0.1.
AtrPeriod	`14`	Lookback for the manual ATR (simple average of true range) used to size stops and targets. Range 7–30, step 1.
AtrSlMult	`2.0`	Stop-loss distance as a multiple of ATR. Range 0.5–5.0, step 0.25.
AtrTpMult	`3.0`	Take-profit distance as a multiple of ATR. Range 0.5–6.0, step 0.25.
Lots	`0.10`	Order volume in lots. Range 0.01–1.0, step 0.01.
Magic	`1001`	Magic number identifying this EA's positions. Ensures the EA only manages its own trades on the symbol.

Reward-to-risk: the ratio `AtrTpMult / AtrSlMult` sets the target-to-stop distance. The defaults (3.0 / 2.0) give a 1.5 : 1 profile. Because both scale with ATR, the geometry stays consistent as volatility changes.

Recommended Settings

The EA is symbol- and timeframe-agnostic by design, but the following starting points work well for evaluation:

- **Timeframe:** H1 as a balanced default. Lower timeframes generate more signals but demand tighter spreads; higher timeframes produce fewer, slower-developing rotations.
- **Symbols:** liquid majors (e.g. EUR/USD, GBP/USD, USD/JPY) where log-returns are clean and spreads are low.
- **SkewWindow / NormWindow:** start at the defaults (30 / 50). Widen both on higher timeframes for stability; narrow them on lower timeframes for responsiveness.
- **EntryZ:** 1.0 is a moderate threshold. Raise toward 1.5–2.0 to demand stronger, rarer rotations and cut false signals; lower toward 0.5 to trade more frequently.
- **ATR stops:** keep `AtrTpMult` above `AtrSlMult` to preserve a favourable reward-to-risk ratio.

> **Always validate first.** Backtest across multiple symbols and market regimes, then run on a demo account before committing real capital. Optimize `SkewWindow`, `NormWindow`, and `EntryZ` together — they interact, since the normalization window depends on how the skew window is sized.

How to Install on MetaTrader 5

1. Copy `ReturnSkewnessRotation.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

> **Warm-up period:** the EA needs enough closed bars to fill both the skew window and the normalization window before it can trade — roughly `SkewWindow + NormWindow + 2` bars (plus the ATR window). Expect no signals until that history has accumulated after attaching the EA.

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.