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Apex Compression Break

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Volatility Compression Breakout	H1 (recommended)	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

Apex Compression Break is a pure price-action breakout Expert Advisor that uses **no indicators whatsoever**. It is built on a single market observation: price tends to coil and compress before it expands. When the trading range tightens into a narrow box (the "apex"), energy accumulates inside that contraction. The EA waits for one decisive candle to close beyond the box and then enters in the breakout direction.

The strategy is fully self-contained. Each trade is opened with a **structural stop-loss** (placed just outside the opposite edge of the coil) and a **measured-move take-profit** (the box height projected as a multiple from the entry price). Only one position per magic number is held at a time, and once a trade is live it is managed entirely by its attached SL and TP — there is no trailing, scaling, or intervention.

> **In one sentence:** measure a recent range, confirm it has contracted versus the prior range, and trade the first strong candle that breaks out of the tightening box — with a structural stop and a measured-move target.

How It Works

The EA evaluates its logic **once per completed bar**. On each new bar it inspects a fixed window of price history laid out, by bar shift, as follows:

```
shift 1            = breakout bar (most recently closed candle)
shift 2 .. N+1     = coil box (the apex — recent range)
shift N+2 .. 2N+1  = prior reference window (range just before the coil)
```

where `N = RangeBars`. The EA needs at least `2 × RangeBars + 2` bars of history before it will act.

1. Build the coil box (the apex)

Across shifts `2 .. N+1` the EA finds the highest high and lowest low. These become the **box high** and **box low**, and their difference is the **box height** — the size of the recent compression.

2. Compare against the prior window

Across shifts `N+2 .. 2N+1` it measures the range of the window immediately preceding the coil (the **prior height**). The setup only qualifies as a genuine compression when:

```
boxHeight ≤ priorHeight × ContractionRatio
```

In other words, the recent range must have contracted to (by default) **80% or less** of the prior range. If the coil is not tighter than what came before it, no trade is considered.

3. Validate the breakout candle

The most recently closed candle (shift 1) is the decisive bar. The EA measures where its close sits within its own range:

```
closePos = (close − low) / (high − low)   // 0 = at the low, 1 = at the high
```

A **bullish breakout** requires all three of:

- The candle **closes above the box high** (`close > boxHigh`)
- It is an up candle (`close > open`)
- Its close is pinned near its high: `closePos ≥ BodyStrength` (a strong body, not a wick rejection)

A **bearish breakout** is the mirror image: the candle closes below the box low, is a down candle, and `(1 − closePos) ≥ BodyStrength` (close pinned near the low).

> **Worked example (defaults)**
>
> Suppose `RangeBars = 10` and the prior 10-bar window spanned 50 pips, while the recent 10-bar coil spans only 32 pips. Since 32 ≤ 50 × 0.80 (= 40), the compression filter passes. A candle then closes 4 pips above the box high, finishing in the top 75% of its own range (`closePos = 0.75 ≥ 0.60`) and is a green candle — a valid bullish breakout, so a Buy is sent.

4. Entry, stop-loss and take-profit

A small structural **buffer** equal to `boxHeight × 0.05` is added so the stop sits just outside the coil, beyond the noise of the boundary.

- **Buy** — entry at the current `Ask`; stop-loss at `boxLow − buffer`; take-profit at `entry + boxHeight × RewardMult`.
- **Sell** — entry at the current `Bid`; stop-loss at `boxHigh + buffer`; take-profit at `entry − boxHeight × RewardMult`.

The stop is therefore **structural** (it is invalidated only if price falls back through the opposite edge of the coil) and the target is a **measured move** (the height of the box projected by the reward multiple).

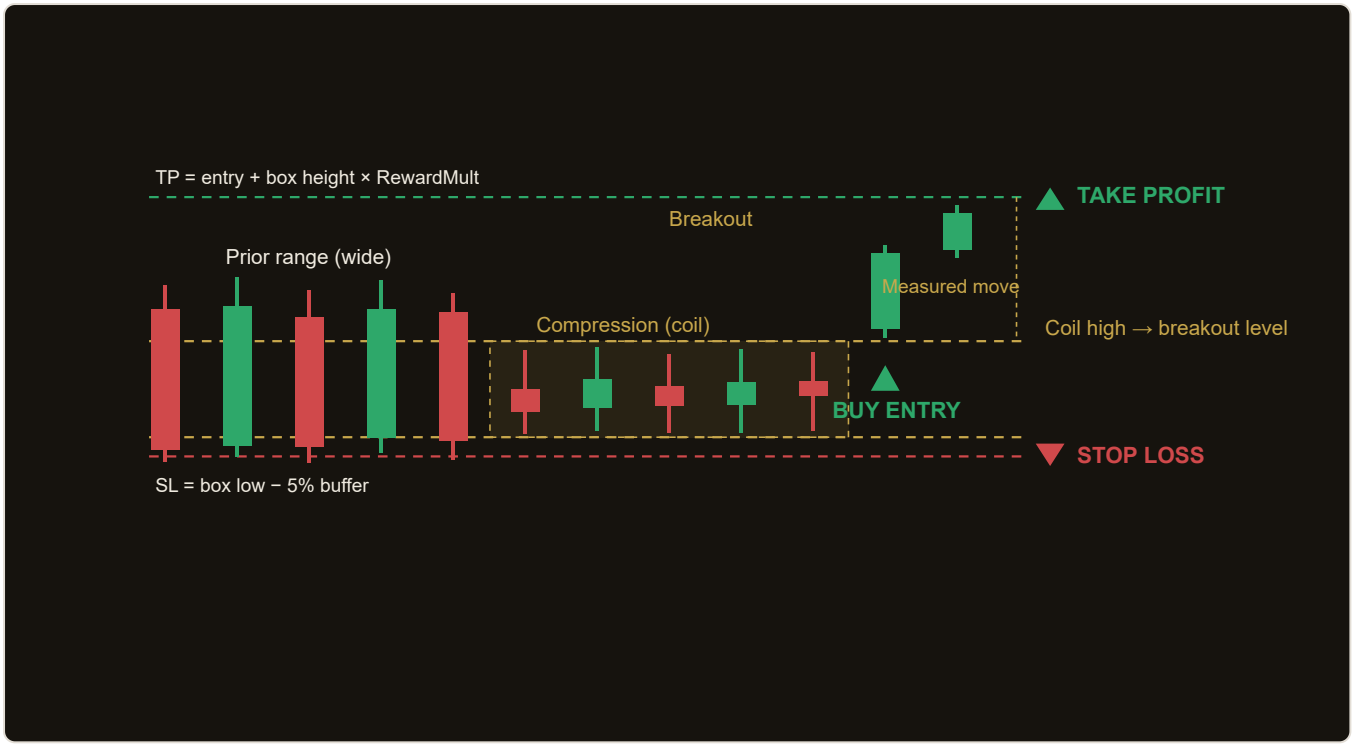
5. Position management

The EA holds **one position per magic number** at a time. While a trade is open it sends no new orders for that magic; the position is left to resolve at its SL or TP. Order volumes are normalised to the symbol's digit precision before submission, and every order is logged with its direction, volume, stop, target and broker return code.

> **Why "once per bar"?** All measurements use completed candles only. Acting on the close of each finished bar keeps the breakout test stable and avoids reacting to the flicker of an unfinished candle.

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.

Parameters

The EA exposes the following inputs. Defaults, with their tester optimisation ranges and steps, are taken directly from the strategy source.

Parameter	Default	Description
RangeBars	`10`	Number of bars in the coil window (the apex) *and* in the prior reference window. Integer, range 5–30, step 1. Larger values demand a longer, more established compression.
ContractionRatio	`0.80`	The recent range must be ≤ prior range × this ratio to qualify as a coil. Numeric, range 0.50–1.00, step 0.05. Lower values require a tighter, more pronounced compression.
BodyStrength	`0.60`	How close the breakout candle's close must sit to its extreme, from 0 to 1. Numeric, range 0.40–0.90, step 0.05. Higher values demand a more decisive, full-bodied breakout candle.
RewardMult	`1.5`	Measured-move target = box height × this multiple. Numeric, range 0.5–4.0, step 0.5. Sets the take-profit distance relative to the size of the compression.
Lots	`0.10`	Fixed trade volume in lots. Numeric, range 0.01–1.0, step 0.05. Position size is constant; size it to your account and risk tolerance.
Magic	`7720`	Magic number identifying this EA's positions. One position per magic is held at a time; use a unique value per chart/instance.

Recommended Settings

Because the strategy is built on pure structural price action, it adapts to any symbol that produces clean ranges and expansions. The defaults are a balanced starting point; treat the notes below as a tuning guide rather than guaranteed settings.

TIMEFRAME

Designed for intraday-to-swing structure. **H1** is the recommended default — long enough to form meaningful coils, short enough to deliver several setups per week. M30 and H4 are reasonable alternatives. Avoid very low timeframes (M1–M5) where the box height is dominated by spread and microstructure noise.

SYMBOLS

Works best on instruments with distinct contraction–expansion cycles: major FX pairs (EUR/USD, GBP/USD, USD/JPY), gold (XAU/USD), and major indices. Prefer lower-spread instruments, since the structural stop and measured-move target are both expressed in raw price.

Tuning tips

- **Fewer, cleaner signals:** lower `ContractionRatio` (e.g. 0.65) and raise `BodyStrength` (e.g. 0.70) to demand tighter coils and stronger breakout candles.
- **More frequent signals:** raise `ContractionRatio` toward 0.90 and lower `BodyStrength` toward 0.45.
- **Target distance:** `RewardMult = 1.5` targets one-and-a-half box heights. Increase it on strongly trending instruments; reduce it for quicker, more frequent exits.
- **Coil length:** increase `RangeBars` on higher timeframes so the window still represents a meaningful stretch of price.

Always validate any parameter set in the MT5 Strategy Tester on quality historical data, and forward-test on a demo account, before risking live capital. Optimised settings can overfit; favour robust ranges over single "best" values.

How to Install on MetaTrader 5

1. Copy `ApexCompressionBreak.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

Tip: If you wish to inspect or modify the logic, open `ApexCompressionBreak.mq5` in MetaEditor and recompile it to regenerate the `.ex5`. The EA requires no external indicators or libraries beyond the standard `Trade\Trade.mqh`.

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.