**Stop Out**

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**Strategy Outline:**

EA will trade using Martingale or grid techniques. Trades will occur as series. User indicates on panel whether EA will buy or sell for all trades which will be in the same direction. An opening trade is made in a series. For this example we will use buy as the trading mode. After EA buys if initial trade becomes unprofitable, EA will open more trades of the same currency pair at different points determined on the control panel. These points will be referred to as BM (buy more) lines. If trade becomes profitable, once profit is secured as value reaches the point where with trailing enabled trade can’t make a loss anymore, a second series is open and then a third and a fourth as each series secures its profit. Series that secured profit (we will call these profitable series) before crossing a BM line will only ever have one trade as each new trade open is a new series. Series can be open simultaneously and only the last series opened won’t have its profit secured (we will call these unprofitable series). This last series is initially unprofitable but can eventually become profitable. There will always only be one unprofitable series open as well as any amount of profitable ones. Profitable series are ones which TP line + trailing distance is passed. Unprofitable series are ones where TP line + trailing distance hasn’t been passed.

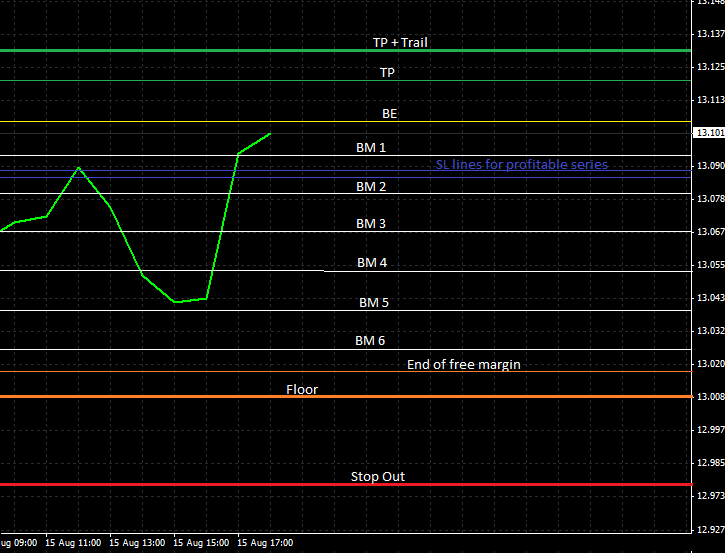
**Graphical interface on chart and line behavior:**

For unprofitable series we will have the following lines marked on trading chart:

* Many BM (buy more) lines “white”. Lines are located at different intervals from the value at which we made our first trade.
* One BE (break even) line “yellow”. This line is located at the value where all open trades average out to break even for the series.
* One TP (target profit) line “green”. This line is located beyond the BE line in the profitable direction and location is determined by the target profit set on panel. E.G. 10 PIPs form BE line.
* One TP + T (target profit plus trailing) line “thick green”. This line is located at the distance determined on the control panel as trailing distance. E.G. if trailing is 20 PIPs then this line would be 20 pips away from TP line in the profitable direction. Once this line is crossed series becomes profitable and will sell all trades open for the series only if there is a 20 PIP decrease in value from the highest value reached.
* One FM (end of Free Margin) line “orange”.
* One Floor (floor we establish on control panel) “thick orange”.
* One SO (Stop Out) line “thick dark red”.

Once TP + T line is passed, TP line should change to a SL (Stop Loss) line “blue” and all other lines should disappear for the series. A new series will be opened at this point showing all the pertinent lines. Because of this, for profitable series (series which have secured their profit when the TP + T line is crossed) there is only one line, the SL (stop loss) “blue” line. If this line is crossed then all trades from the series are closed, the series makes a profit and blue line should disappear for that particular series.

Here is an example of what 3 open series could look like. Blue lines should rise in a parallel fashion together with current value and stay fixed if value trends towards the lines because they are trailing behind value. It’s important to notice they represent the target value at which all trades for a series are closed, even though SL orders may be constantly adjusted and a virtual SL computed so that if that value is reached all orders are closed at that point. This means EA should do both, constantly adjust orders and also monitor the virtual point to close orders if parameter is met. This way if we get disconnected we still make a profit but we also achieve maximum precision as we close trades even if all orders haven’t been adjusted to pending value.



The space between BM lines called a “Step”. The first step is the distance between the BE line and the BM line marked “1”. Step two is the distance between BM line 1 and BM line 2. On Step 5, a total of five purchases of the same currency pair have been made at different values.

**EA floor (please look at control panel on excel file and read all comments in cells before reading this section)**

The most important value we can set on the control panel is the “Floor” value. The target of the “Floor” line is for it to stay fixed for every series once we set it E.G. For the USDEUR pair this could be at 1.200 which means that EA will calculate trade amounts and locations in respect to this point. The more the EA buys the closer it gets to using up the free margin and the stop out location. The “Floor” should be 1 step below the last possible trade that can be opened by EA at calculated values E.G. If step size maximum for the last step group is 400 PIPs or the last calculated step size at that point is 400, then the “Floor” line should be 400 PIPs below the last BM line.

EA needs to adjust the following parameters: Trade size, trade growth factor, step size and step growth factor as each new series and each new trade is opened in order to ensure that “Floor” is located at the value set on the control panel. Previous EA version we had programmed did this by establishing a target loss per step and then adjusting purchase size at each new step to achieve target loss. This helps to deal with variations in slippage and spread. Previous EA version only adjusted during each new series opened but opened each new series with the same parameters. This meant that the floor moved with each new series opened. New version needs to recalibrate whenever possible to maintain the position of the floor fixed.

It is important to note that even though EA calculates “Floor” level for each new trade and series, it can only do it for current spread and under the assumption that there will be no slippage, so as EA reaches successive BM points it has to recalculate parameters to account for variations in spread and slippage which will ultimately affect the original plan for the trade amounts and locations to keep floor at the desired level.

Here is an example of how EA should behave. A series is opened on the EURUSD pair by opening a first trade for 0.01 at 1.300 and calculations are made for EA to double the initial buy amount every 100 PIPs (with a trade growth factor of 2) so that floor will be located at 1.200 (the location user established on control panel) E.G. EA calculates it would need to buy: 0.02, 0.04, 0.08, 0.16, 0.32 etc. at every successive BM line. EA now has a buy pattern which will result in the floor being located at 1.2000 but as it is about to buy 0.02 at first BM spread happens to be double the value at which calculations were made for the series. If EA now buys according to original plan floor will end up being much closer than we desire. EA can’t for any motive be stopped out before the target location so it must now recalculate and adjust original BM locations and target trade amounts to achieve its goal. To do this there must be a hierarchy of the adjustable parameters (trade growth factor, step size and step growth factor) and there must be a “buy or calculate” hierarchy also which enables the EA to quickly make purchases when it doesn’t have the time to make all the computations before it reaches another BM point.

Hierarchy of adjustable parameters: I assume EA needs a hierarchy or order in which parameters are adjusted for calculating trade amounts and locations. I assume there are two basic ways of making calculation. One way is through trial and error and the other is through exact calculation or reverse engineering of the parameters. I don’t know the math involved in doing it through exact calculation with a formula which will give you desired input values once output values are defined, so if you can do the math, this would be the most exact method and greatly reduce the time used to calculate which would be a lot better for decisions made over very small variations in value of desired currency pair. For the trial and error method you will need to define the order in which to vary parameters and the logical order is to modify parameters which have the greatest effect on the output values first E.G. Change trade growth factor. Since trades can only be increased or decreased by discrete amounts such as 0.01 any modification in this parameter will result in varying amount of target purchases which when rounded up or down might result in great variations for the results so I would use this parameter first and then step growth factor and finally step size.

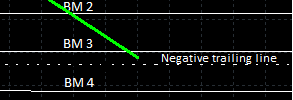
**Negative trailing**

The idea of negative trailing is to make sure purchases are made at the furthest point possible from initial trade. I have called this concept negative trailing, but basically it’s just applying the trailing principle to trades to be opened rather than SL of existing trades.

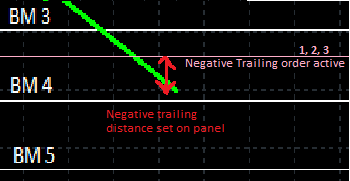
As value changes and EA opens successive trades on a losing streak orders are not executed at intended BM unless trade losses x more PIPs and then touches BM line. If this doesn’t occur and EA touches another BM without having placed an order for previous BM, then orders are nested together and accumulated until they gain x PIPs in the profitable direction and then executed. This means that on step 5, EA might have 4 accumulated orders and execute them jointly after open trades cross the additional PIPs to trigger trailing and then recover that same amount of PIPs at any location of step 5.

The line marking the point from which negative trailing is activated for a particular BM line should be a white dotted line (only on the step which pair is on) and once it is crossed a parallel pink line should follow current value at the negative trailing pips distance. BM lines which are crossed and where an order is nested and pending should also change from white to a different color.

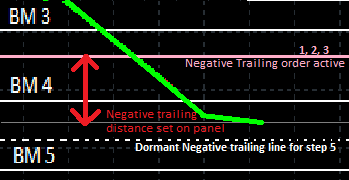
This diagram shows white dotted line marking the point after which negative trailing is activated



This diagram shows the pink line marking the point where 3 pending orders which are nested together (corresponding to BM orders 1,2 and 3) will be opened



This diagram is a continuation of last diagram as pair value crosses BM 4 line



Notice how pink line is still trailing behind gray (current value) line but a new dotted line is drawn on step 5 as value crosses BM 4 line, if this new line is crossed pink line will now show 4 nested orders and white dotted line will dessapear.

**Panels:**

* + There will be two panels named "Real" and "Calc". Each one will have a button to interchange between the two and another to import data from one panel to the other. Both will also have a results table that is shown upon request.
  + “Real” panel will affect real trading and give you stats on EAs performance where as “Calc” will allow you to play around with numbers without affecting trading.
  + “Calc” only takes values from its own panel, none are taken from trading.
  + “Calc” has to work on weekends without feed from broker so I can run my calculations.
  + I’ve attached both panels in an excel sheet because they don’t fit here, each panel is in a tab labeled accordingly. Please read every comment on every cell that has one.
  + Each panel and its corresponding results table should be a particular color to distinguish them easily visually.

**Stats to be displayed on top and aligned to the left of lines:**

Bal = Balance Eq = Equity Prof = Profit Buy = Target buy at BM T = Time elapsed since first order in series

All lines 🡪 Bal: 100,000 Eq: 99,964.50 Prof: -35.50

BM Lines 🡪 Buy: 0.12 L

Current Value line 🡪 T: 4h 10m 3s

Negative trailing pink line 🡪 Orders: 4 Buy: 0.12 L

**Performance:**

* EA must check and correctly process errors in trading operations and adapt to purchases rejected.
* All of the algorithm "bottlenecks" should be exhaustively thought out and accurately processed.
* The EA should be able to restore its normal work after a temporary disconnection, reconnection to the account, or a reset of the client terminal.
* If after a disconnection currency pair value is now profitable EA shouldn’t open orders which would have been opened at different intervals after each order becomes profitable, it should instead just open one new order if all previous ones have their profit guaranteed. In the other direction if EA has missed out on a few BMs then EA should calculate what BM it is on from when series was initiated and purchase necessary additional assets that would put it back on track to being stopped out at target location.
* If you can’t set the pending or stop orders, they need to be tracked virtually, and when the price of their levels is reached, executed on the market price.
* If you can’t open position on the market prices within N attempts, the maximum allowable slippage should be increased.
* At the triggering of a pending or stop order, by a level, not provided by the algorithm, and with slippage (eg, with a price gap), the levels of all of the dependent orders should be adjusted (and, perhaps, even their volumes).
* All functions that operate on the size of the deposit (for example, the calculation of the lot), should normally accept non-trade operations with a balance (balance or withdrawal).
* User must be able to back test with all the variable parameters for the EA and stop out location should always be exactly where it was set in control panel.