

## ML4 EA DEVELOPMENT PROJECT

Project Details	
Client:	Zippu // MQL5 Handle
Project Title:	Shio EA v1.1
Developer:	TBD
Project Start Date:	xx.02.2021
Project End Date:	xx.02.2021
Agreed Upon Budget:	TBD
Language	MT4 / MQL4
Compatible Pairs / Indices	All – the EA should be useable on any MT4 chart
Deliverables	<ol style="list-style-type: none"><li>1. Source code in .mq4</li><li>2. Compiled .ex4 executable</li></ol>

### 1.0 Trading idea

Whether manual or via Expert Advisors sometimes we get bad positions that result in stops or, worst case, keep going in the wrong direction without any stop at all. These bad positions result in high draw down (DD) and margin use, ultimately putting the user's account in jeopardy if not properly managed or closed at a loss.

I would like to create an EA which manages these bad positions by hitting "pause"; it will prevent the growth of additional draw down, free up margin use for other trades (and EAs), slowly work to reduce the draw down on its own and, perhaps most importantly, allow the user to sleep by eliminating stress.

The principle is to anchor the DD from going against us any further as the market goes in the wrong direction, and then to enable the DD to fall on its own when the market is moving again in the right direction. This is done through the use of a "Hedge Field", composed of a number of protective hedge positions built around a dynamically moving Anchor Point.

Before activation of the EA the user will need to define several variables:

- a. Which positions the EA will cover against, using their order numbers as inputs.
- b. The total % of desired cover of the position. This % can be greater than 100% (200%, 300% etc).
- c. The desired size (in %) of each hedge position.
- d. The distance between hedge levels in the "Hedge Field", in points.
- e. The "Buffer Range", in points. Determines the placement of SL's and the re-creation of pending orders.
- f. The size of the "Anti Tail", which by default is the same as the distance between hedge levels, in points.

#### Example Scenario

Once the EA is engaged by the user, it will immediately open an initial pending hedge order (Anchor Hedge) against the selected position(s), at a distance equal to the Anti Tail (in points) away from the current price.

- If the EA is protecting against a sell, then the pending order for the Anchor Hedge (a buy) is opened at the current price + Anti Tail.
- If the EA is protecting against a buy, then the pending order for the Anchor Hedge (a sell) is opened at the current price – Anti Tail.
- If / when this pending hedge is opened, it shall be considered to be the Anchor Hedge. Naturally each hedge in a Hedge Field is of the same type as the related Anchor Hedge.

- Based on this Anchor Hedge, levels for additional hedge positions will be defined and pending orders immediately created. The number of pending orders to create is a function of the total % cover, and the size in % of the hedge positions. For example, a 200% cover with 25% positions would mean 8 positions of 25% including the initial Anchor Hedge.
- If the market continues to move in the “wrong” direction (see definitions) beyond the Anchor Point, pending orders eventually become open positions and depending on the total % cover it is possible that the value of these hedges exceed the value of the covered position(s).
- In the case where a pending order becomes a real order, a SL will be placed once the price moves a sufficient distance away, relative to the “Buffer Range”.
  - If the hedge is a buy & Buffer Range is 10 points, the SL is placed once the price rises past open price + 10 points.
  - If the hedge is a sell & Buffer Range is 10 points, the SL is placed once price falls past open price – 10 points.
- If the market comes back in the “right” direction (see definitions) towards the Anchor Point, positions will be closed profitably in succession based on Buffer Range defined SL’s. The Anchor Hedge is closed in this fashion.
  - When an Anchor Hedge is closed, all remaining pending orders are also closed (those that have not been opened) AND a new pending Anchor Hedge is immediately placed at a distance equal to the Anti Tail away from the current price level.
    - Protecting vs a sell: current price + Anti Tail
    - Protecting vs a buy: current price - Anti Tail
- In the case where a pending order becomes a real order, and is eventually closed when price passes back over it’s SL, a new pending order will be created to take its place only if the price has moved in the right direction and passed the Buffer Range. Some examples on how this could work:
  - A pending buy order is created at 1.15100. The Buffer Range has been defined as 10 Points.
    - The stop level will be placed at  $1.15100 + \text{Buffer} = 1.15110$  and placed after the price has risen past this level (say 1.15111).
  - Price rises to 1.15100 and the buy is opened.
  - Price rises and as it passes 1.15111 the SL is placed at 1.15110.
  - Price drops down to 1.15105, closing the position at 1.15110.
    - The price point to reopen this hedge level’s pending order at 1.15100 is  $1.15100 - \text{Buffer} = 1.15090$
    - If price drops below 1.15090 (say 1.15089) the pending order at 1.15100 is reset.
  - The following 3 scenarios are now possible:
    1. Price immediately climbs again from 1.15105 to some higher point. Since the pending order at 1.15110 was not reset, nothing happens. Price could continue to rise and hit another pending order (other than 1.15110), or fall.
    2. Price falls down to 1.15095, before turning around and climbing again. Since price has not passed beyond the value needed to reset the pending order ( $1.15100 - \text{Buffer} = 1.15090$ ), nothing happens.
    3. Price falls down to 1.15089 ( $1.15100 - \text{Buffer}$ ), and the pending buy order at 1.15100 is reset. If price continues to fall nothing happens. If price rises again the order may once more be opened as at the beginning of this example.
- If there is no open Anchor Hedge (only a pending order), and so long as price moves towards the covered position (the right direction) the pending order for the Anchor Hedge is constantly updated according to the Anti Tail distance and follows the price movement. If price turns back around into the wrong direction and the Anchor Hedge becomes a real order, the other pending orders are created.
  - For example let us assume that we are covering against a sell at 1.14800, the Anti Tail is 25 points and the Anti Tail Step is 5. The price when the EA is opened is 1.15050.

- Immediately a pending order for the buy Anchor Hedge is placed at  $1.15050 + 25 = 1.15075$ .
- At 1.15050 we are at the limit of the Anti Tail. Nothing happens immediately but if price continues to fall, we will be able to lower the level of the Anchor Hedge's pending order.
- Price falls to 1.15046 ( $1.15075 - 25 - 4$ ): nothing happens since the Anti Tail Step is 5.
- Price falls to 1.15045 ( $1.15050 - 25 - 5$ ): the pending order for the Anchor Hedge is updated to 1.15070 ( $1.15045 + 25$ ). The next update would be at 1.15040 ( $1.15040 + 25 = 1.15065$ ).
- The check to see whether the Anchor Hedge shall be updated is:
  - Buy hedges: IF Price < (Pending Hedge Open Price – Anti Tail – Step), THEN update
  - Sell hedges: IF Price > (Pending Hedge Open Price + Anti Tail + Step), THEN update

It is expected that this strategy allows us to gradually build a wall of positions to prevent DD and over margin use when the market goes in the wrong direction, but to also remain fluid in the face of market consolidation and deconstruct the wall of protective positions as the market comes back in our favour. Eventually by using the Anti Tail concept, the Anchor Point approaches the covered position(s) and they cancel out (we return to a point where the covered position has a value of 0, swap costs notwithstanding).

If at any point the summed value of all open hedge positions AND the summed value all covered positions  $\geq 0$  (that is to say, they balance out to 0), and the CLEANER switch is TRUE, then all of the positions will be closed by the EA. This means that if the positive value of our hedges equals or exceeds the value of the covered positions, they close out.

To help visualize the strategy: *imagine being at the beach, in the water, and wanting to get back to shore. When the current goes out to sea you are moving against it and need to dig in and hold your ground, however when the waves move towards the beach you can relax and even run forward with the water. Once you reach the beach you are safe and free of the current (and your positions are closed!).*

Note that if the positions to be hedged turn positive or close, they shall no longer be considered for hedging and the EA will suspend operation (if for example the CLEANER option is not used).

There is a possibility that a hedge is opened and never turns sufficiently positive to activate the SL condition (does not pass the Buffer Range). In this case it can turn negative (in terms of float & DD). For this project this is referred to as an Orphaned Hedge, and is counted against the number of open hedge positions.

The user defines the maximum number of permissible Orphans. If the maximum number of Orphaned Hedge positions have been reached, then no more positions will be opened (pending orders are removed, and are not recreated unless the Orphaned Hedges have been closed).

It could be possible for the user to manually close an Orphaned Hedge (eating the loss). This would allow pending orders to be recreated if need be.

The rules for opening and closing Hedge Anchors are defined in here in Section 1.0, explained in Section 2.0 and demonstrated in Section 5.0.

The rules regarding Trading Signals are Section 4.0.

There are special rules related to correctly testing the EA during development, outlined in the Section 2.0 Terms & Definitions, but also in Section 8.0.

If the developer has ideas regarding this strategy / EA that they want to share, the author is happy to discuss.

The final deliverable will be the source code for the EA that the author can open and manipulate in the MetaEditor to further their personal learning objectives. There will be no limitations imposed on what can be done with this source code after delivery (do not include proprietary elements that cannot be shared).

Final deliverables for this project:

1. Source code in .mq4
2. Compiled .ex4 executable

Additionally:

1. The EA shall operate on any MT4 chart without error.
2. The EA shall be written in as efficient a manner as possible to permit high responsiveness during live market conditions.

## 2.0 Terms & Definitions

The following terms are used in the description of this EA and are here defined for precision.

### Anchor Point / Anchor Hedge

Once activated the EA places its first pending order at a distance equal to Anti Tail from the current price. If opened, this position becomes the Anchor Hedge. Further Hedge Levels are calculated and pending orders created.

If the Hedge Target (the covered position) is a sell, then the first pending order is a buy placed at the current price + Anti Tail.

If the Hedge Target (the covered position) is a buy, then the first pending order is a sell placed at the current price – Anti Tail.

If the Anchor Point is not open, is a pending order, and the price moves in the right direction, the pending order also moves to follow this price so as to close the distance between the Anchor and the covered position.

### Anti Tail

The Anti Tail is a variable defined by the user, in points. It defines the distance to be maintained between price moving in the right direction and a trailing Anchor Point.

For example let us assume that the EA is activated when the price is 1.15050, the Anti Tail is 25, and we are protecting against some sell at 1.14800. Immediately a pending buy order (Anchor Point) is placed at 1.15075. As price moves in the right direction (down towards 1.14800), the pending order follows at a distance of 25 points (and with respect to the Anti Tail Step). If at any point price moves in the wrong direction (up in this scenario) the Anti Tail stays where it is, possibly opening a Hedge Field if the Hedge Anchor is triggered.

### Anti Tail Step

The distance that price needs to change in the right direction before the Anchor Point pending order is updated. This prevents the EA needing to calculate and update the pending Hedge Anchor order every tick. For example if the Anchor Point level is 1.15075 (a buy, countering a sell) the Anti Tail value is 25 and the Tail Step is 5, then the price will need to fall by 25 + 5 points to 1.15045 before being updated to 1.15070. Otherwise it will stay at 1.15075.

### Bar, Active

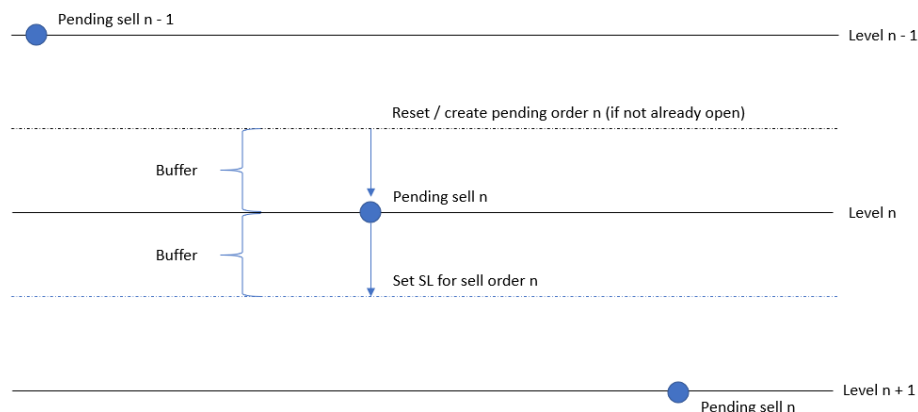
Unless otherwise stated, all actions will be performed either on the active bar, or on the previous bar. The active bar is defined as the live market bar (bar “0”).

### Bar, Previous

Unless otherwise stated, all actions will be performed either on the active bar, or on the previous bar. The previous bar is defined as the first historical bar in a time frame (bar “-1”). The second oldest bar is defined by bar “-2”, etc.

### Buffer Range

The buffer is a special area, extending above and below a hedge level. On one side of the hedge level it defines where a SL should be placed. On the other side of the hedge level it defines the point at which a hedge should be reset. Here below a framework for the buffer zone around a sell hedge.



For example: Imagine a scenario where a sell hedge level is set at 1.12550. Currently there is a pending order to open that hedge. The buffer is set to 10 points.

If the price hits 1.12550, the sell hedge is opened. If the falls below 1.12540 ( $1.12550 - 10$ ), a SL is placed at 1.12540. If at some point the sell is closed, and the price moves above 1.12560 ( $1.12550 + 10$ ), then the pending sell hedge is once more opened at 1.12550.

### Cleaner, %

The value to be used when determining whether positions shall be closed. If Cleaner % is set to 100%, then when the summed positive value of the hedges plus the summed negative value of the covered positions  $\geq 0$ , they will be closed. If Cleaner % is set to 200%, the summed positive value of the hedges plus 2x the summed value of the covered positions  $\geq 0$ , they will be closed.

### Cleaner

If at any point the summed value of all open hedge positions AND the summed value all covered positions times the Cleaner % are  $\geq 0$  AND the CLEANER switch is TRUE, then all of the positions will be closed. This means that if the positive value of our hedges equals or exceeds the value of the covered positions, they close out.

#### Example 1:

- Cleaner Switch = TRUE
- Cleaner % = 100%
- Covered Position = 1.00 Buy = -\$200
- Anchor Hedge = 0.25 Sell = \$120
- Hedge #2 = 0.25 Sell = \$60
- Hedge #3 = 0.25 Sell = \$25
- Sum =  $(-200 \times 100\%) + 120 + 60 + 25 = 5$

The EA will close all positions, beginning with the newest and working backwards (#3, #2... covered position).

#### Example 2:

- Cleaner Switch = TRUE
- Cleaner % = 200%
- Covered Position = 1.00 Buy = -\$200

- Anchor Hedge = 0.25 Sell = \$240
- Hedge #2 = 0.25 Sell = \$120
- Hedge #3 = 0.25 Sell = \$50
- Sum =  $(-200 \times 200\%) + 240 + 120 + 50 = 10$

The EA will close all positions, beginning with the newest and working backwards (#3, #2... covered position).

#### #Hedges

The maximum number of hedge positions that will be opened at any one time. This is a function of user defined variables.

$$\#Hedges = Hedge\ Target\ \% / Hedge\ Size\ \%$$

For example if the Hedge Target % is 250%, and the Hedge Size % is 50%, then:

$$\#Hedges = 250\% / 50\% = 5$$

#### Default Timeframe

The default timeframe will be the timeframe of the window.

#### Hedge, Buy

A hedge used to anchor against a sell, this is a buy position.

#### Hedge, Sell

A hedge used to anchor against a buy, this is a sell position.

#### Hedge Size %

The hedge size % is defined by the user, as a % of the Hedge Target and is intended to break the Hedge Target into smaller pieces. For example, if the Hedge Target is 1.0 lots and the user defines Hedge Size as 25%, then each Hedge Size Lot is 0.25.

#### Hedge Levels

A Hedge Level is a price point at which a pending order will be placed, and replaced, as need be so long as the Anchor Point remains in place. There are as many Hedge Levels as there are #Hedges. The distance between the Hedge Levels is the variable Hedge Distance.

#### Hedge Distance

The distance between the Hedge Levels, as defined by the user in points.

### Hedge Field

All of the Hedge Levels together make up a Hedge Field. The field is defined relative to the Anchor Point / Anchor Hedge. In the below example we assume that the position to hedge against is a sell, and therefore the Hedge Field extends in the opposite direction, upwards.



If instead we are protecting against buy positions, then the Hedge Field would instead extend downwards.

### Hedge Size Lot

The actual order size to be used for sending orders, and is calculated in the following manner:

$$\text{Hedge Size Lot} = \text{Hedge Target Lot} \times \text{Hedge Size \%}$$

For example if our Hedge Target Lot is 1.0 lots, and the user has defined Hedge Size % is 25%, then each position will have the following size:

$$1.0 \times 25\% = 0.25$$

### Hedge Target Lot

The sum of lots of the positions that need to be hedged against. For example if 3 positions of 0.25, 0.40 and 0.35 lots are causing trouble and need to be hedged against, the Hedge Target value would be:

$$0.25 + 0.40 + 0.35 = 1.0 \text{ lots}$$

The Hedge Target is calculated using the lot sizes of positions identified by the user (see section 3.0).

### Hedge Reset

A hedge position first begins as a pending order based on a Hedge Level, becomes an open position, receives a SL if the conditions are met, and will close based on this SL. Unless the Anchor Point changes however, the Hedge Levels remain the same and it is required that a new pending order to be created at the same point.

The pending order is reset once the market moves a certain distance away from the Hedge Level. This distance is the Buffer Range. For example (Assuming that the Buffer Range is 10 points):



If a Buy Hedge is opened at 1.15100 and afterwards closed, the pending order is reset once the price drops below 1.15090 (1.15100 – Buffer Range).

If a Sell Hedge is opened at 1.15100 and afterwards closed, the pending order is reset once the price climbs above 1.15110 (1.15100 + Buffer Range).

#### Magic Number

The specific number to separate EA orders from any other active orders is 77177.

#### Market Direction

The “right” and “wrong” market directions are defined based on the positions that we need to protect against.

If we need to hedge against sell positions, then the “right” direction will be when price falls towards the open sell positions, reducing the drawdown. If we need to hedge against buy positions, then the “right” direction will be when price climbs towards the open buy positions, reducing the drawdown.

#### Orphaned Hedge

When the EA has opened a hedge position and the market turns away before the SL can be activated, the hedge may accumulate a negative float. The orphaned hedge is either closed manually by the user, or when the market turns around once more and allows activation of the SL.

#### Stop Loss (SL)

The Stop Loss is set once the market moves a certain distance away from the open price of a position. This distance is the Buffer Range. For example:

If a buy position is opened at 1.15100 and the Buffer Range is 10 points, then when price reaches 1.15111, a SL is placed at 1.15110 (1.15100 + Buffer Range).

If a sell position is opened at 1.15100 and the Buffer Range is 10 points, then when the price reaches 1.15089, a SL is placed at 1.15090 (1.15100 – Buffer Range).

#### Start Condition

When running the strategy tester in MT4, it is not possible for the tester to begin with positions that are already open. Testing of this EA requires open positions to manage and hedge against. Therefore, it is necessary to define “start conditions”, which allow the EA to manage positions in the strategy tester.

These start conditions are 1 – 3 positions which will be opened by the EA once it is activated. The start conditions are defined by Buy / Sell, by lot size, and by the time at which they will be opened. The opening of the conditions is relative to the activation of the EA, such that:

- $t_0$  = immediately when the EA is activated
- $t_1$  =  $t_0$  + some amount of time (minutes) after  $t_0$
- $t_2$  =  $t_0$  + some amount of time (minutes) after  $t_0$

It is up to the user / tester to ensure that the positions which are opened correspond to the desired test conditions.

## 3.0 Variables

Proposed default values in parenthesis.

- XXX Development Variables XXX
  - Start Condition 1
    - Type Buy / (Sell)
    - Size 0.25
    - Open? t0
  - Start Condition 2
    - Type Buy / (Sell)
    - Size 0.40
    - Open? t = t0 + 0 minutes
  - Start Condition 3
    - Type Buy / (Sell)
    - Size 0.35
    - Open? t = t0 + 0 minutes
- Hedge Targets (numbers found in the terminal, entered manually by user)
  - Hedge Target Order # 1: [ignore if empty]
    - For development: (Start Condition 1)
  - Hedge Target Order # 2: [ignore if empty]
    - For development: (Start Condition 2)
  - Hedge Target Order # 3: [ignore if empty]
    - For development: (Start Condition 3)
  - Hedge Target Order # 4: [ignore if empty]
  - Hedge Target Order # 5: [ignore if empty]
  - Hedge Target Order # 6: [ignore if empty]
  - Hedge Target Order # 7: [ignore if empty]
  - Hedge Target Order # 8: [ignore if empty]
  - Hedge Target Order # 9: [ignore if empty]
  - Hedge Target Order # 10: [ignore if empty]
- Hedge Definitions
  - Total Cover % (200%)
  - Hedge Size % (25%)
  - Hedge Distance (50)
  - Buffer Range (points) (10)
  - Anti Tail (points) (50)
  - Anti Tail Step (points) (10)
  - Maximum Orphans (2)
- Miscellaneous
  - CLEANER (TRUE)/FALSE
  - Cleaner % (100%)
  - Magic Number 77177

While these are the variables that I propose, there are certainly others that could be included. If the developer has ideas that they think would facilitate the objective, then I am happy to discuss those suggestions.

## 4.0 Trading Signals

In this strategy we are uniquely concerned with the management of a linear grid system, based on fixed levels and price action. There are no “signals” in the normal sense, as there are no indicators or related calculations needed for the management of hedge positions. This is an entirely mechanical system.

When the EA is activated, a pending order representing the Anchor Point is created. If prices move in a favourable direction, the Anchor Point follows at a distance equal to the “Anti Tail” value. If price moves in the “wrong” direction, eventually the pending order becomes a real order.

If the Anchor Point becomes a real order, the EA immediately creates a number of additional pending orders based on the size and distance defined by the user.

The following diagram illustrates a hypothetical price action scenario.



## Hedge Field Management

For the scenario above to be possible with the selected variables, the CLEANER option is set to FALSE.

1. The user has opened a sell position; however, the market moves upwards.
2. The user engages the EA with the default values at 1.15050.
  - a. 200% coverage is expected with each hedge weighing 25%, there will therefore be 8 levels.
  - b. A pending order (Anchor Point) is created at Level 1:  $1.15050 + 50 = 1.15100$ .
3. Price rises and the Anchor Point (buy) is opened.
  - a. The EA places pending orders at all levels from 2 to 8, space out by 50 points.
4. The price passes (level 1 + buffer) and so the SL is placed for order 1 at 1.15110.
5. Price rises and opens the pending order at level 2 1.15150, 0.25 lots.
6. The price passes (level 2 + buffer) and so the SL is placed for order 2 at 1.15160.
7. Price rises and opens the pending order at level 3 at 1.15200, 0.25 lots.
8. Price drops enough to trigger the SL for level 2 (1.15155), but not enough to reset it.
9. The price passes (level 3 + buffer) and so the SL is placed for order 3 at 1.15210.
10. Price rises and opens the pending order at level 4a at 1.15250, 0.25 lots.
11. The price passes (level 4 + buffer) and so the SL is placed for order 4a at 1.15260.
12. Price rises and opens the pending order at level 5 at 1.15300, 0.25 lots.
13. The price drops enough to trigger the SL for order 4a at 1.15255.

14. The price drops enough to trigger the reset of the pending order for level 4b (level 4 – buffer) at 1.15245.
15. Price rises and opens the pending order at level 4b at 1.15250, 0.25 lots.
16. The price passes (level 4 + buffer) and so the SL is placed for order 4b at 1.15260.
17. The price passes (level 5 + buffer) and so the SL is placed for order 5 at 1.15310.
18. Price rises and opens the pending order at level 6 at 1.15350, 0.25 lots.
19. The price passes (level 6 + buffer) and so the SL is placed for order 6 at 1.15360.
20. Price rises and opens the pending order at level 7 at 1.15400, 0.25 lots.
21. The price passes (level 7 + buffer) and so the SL is placed for order 7 at 1.15410.
22. Price rises and opens the pending order at level 8 at 1.15450, 0.25 lots.
23. The price drops enough (1.15410) to trigger the SL for order 7.
24. The price drops enough (1.15390) to trigger the reset of the pending order for level 7 (level 7 – buffer).
25. The price drops enough (1.15360) to trigger the SL for order 6.
26. The price drops enough (1.15340) to trigger the reset of the pending order for level 6 (level 6 – buffer).
27. The price drops enough (1.15310) to trigger the SL for order 5.
28. The price drops enough (1.15290) to trigger the reset of the pending order for level 5 (level 5 – buffer).
29. The price drops enough (1.15260) to trigger the SL for order 4b.
30. The price drops enough (1.15240) to trigger the reset of the pending order for level 4b (level 4 – buffer).
31. The price drops enough (1.15210) to trigger the SL for order 3.
32. The price drops enough (1.15190) to trigger the reset of the pending order for level 3 (level 3 – buffer).
33. The price drops enough (1.15110) to trigger the SL for order 1 (Anchor Point)
34. Once the Anchor Point is closed, all remaining pending orders are deleted
35. A new pending order for a new Anchor Point is created according to the Anti Tail rules
  - a. When the Anchor is closed, the price is 1.15110.
  - b. A new pending Anchor is placed at (price + Anti Tail) =  $1.15110 + 50 = 1.15160$ .

In this example, the order at level 8 is unfortunately left open as an orphan. Since the maximum number of orphans has not been reached, the EA may continue to operate normally.

In this example if the CLEANER option had been set to TRUE and 100%, it is likely that the positive value of the opened hedges would have exceeded the value of the negative sell, resulting in a close of all positions.

#### Anti Tail Management

Following on the example above, when the price is at 1.15110, a pending anchor is created at 1.15160. If the price continues to fall towards the Sell 1.0 @ 1.14800, we expect that the pending Anchor Hedge falls with it. Eventually at some point in the future, if not already closed via the CLEANER option, the distance between the Anchor Hedge and covered position will be reduced to zero. However each time the price goes back in the wrong direction, the Hedge Field keeps DD and float to a minimum.

- For example let us assume that we are covering against a sell at 1.14800, the Anti Tail is 25 points and the Anti Tail Step is 5. The price when the EA is opened is 1.15110.
- Immediately a pending order for the buy Anchor Hedge is placed at  $1.15110 + 50 = 1.15160$ .
- At 1.15110 we are at the limit of the Anti Tail. Nothing happens immediately but if price continues to fall, we will be able to lower the level of the Anchor Hedge's pending order.
- Price falls to 1.15106 ( $1.15160 - 50 - 4$ ): nothing happens since the Anti Tail Step is 5.
- Price falls to 1.15105 ( $1.15160 - 50 - 5$ ): the pending order for the Anchor Hedge is updated to 1.15155. ( $1.15105 + 50$ ). The next update would be at 1.15100 ( $1.15100 + 50 = 1.15050$ ).
- The check to see whether the Anchor Hedge shall be updated is:
  - Buy hedges: IF Price < (Pending Hedge Open Price – Anti Tail – Step), THEN update
  - Sell hedges: IF Price > (Pending Hedge Open Price + Anti Tail + Step), THEN update

## 6.0 Lifetime of Signals/Orders/Positions

- Pending orders will persist until the Anchor Point is closed, closing all associated pending orders.
- The Anchor point pending order is updated according to the Anti Tail step size. If the market goes in the right direction it is deleted and replaced according to the step size. If the market goes in the wrong direction the pending order becomes a real order, and pending orders for the rest of the hedge field are created.
- Pending order lifetimes will be until opened, or until the Anchor Hedge is closed and then all open pending orders will be closed.
- Real order lifetimes will be until closed by the user, or by a SL.
- If at any point the value of the hedges is equal to or greater than the positions being covered (considering the Cleaner %), and the CLEANER option is TRUE, the EA will close all of the positions together.

## 7.0 Management of Open Positions and Pending Orders

Orders are opened and closed according to the rules outlined here. Orders are opened in support of the hedge field, and closed either via SLs or manually.

## 8.0 Notes About EA Development Testing

As stated previously when running the strategy tester in MT4, it is not possible for the tester to begin with positions that are already open, for the EA to test its management of positions. Therefore, it is necessary to define “start conditions”, which allow the EA to manage positions in the strategy tester.

These start conditions are 1 – 3 positions which will be opened by the EA once it is run. These positions take the place of what would otherwise be user defined Hedge Target Orders.

The start conditions are defined by Buy / Sell, by lot size, and by the time at which they will be opened. The opening of the conditions is relative to the activation of the EA, such that:

- $t_0$  = immediately when the EA is activated
- $t_1 = t_0 + \text{some amount of time (minutes) after } t_0$
- $t_2 = t_0 + \text{some amount of time (minutes) after } t_0$

It is up to the user / tester to ensure that the positions which are opened correspond to the desired test conditions. The ideal situation depends on whether the user wants to test against buys or sells. The market conditions should allow for the selected start conditions to open, and then to turn negative before the conditions for the first Hedge Anchor is met.

If the EA is to test against sells, then the beginning of the tester time period should be shortly before a steep increase in price.

If the EA is to test against buys, then the beginning of the tester time period should be shortly before a steep drop in price.