



CROSS-COUNTRY GUIDE

For the use of all FEI Eventing Officials at Eventing Competitions and training venues.

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Contents

Preamble	4
Aim and Philosophy	5
1. General Guidelines and Levels	9
Some simple guidelines for all levels.....	9
One Star (including Pony).....	11
Two Star (including Pony).....	12
Three Star	13
Four Star.....	14
Five Star	14
2. Flow, measurement of the course, and measurement of fences	15
Flow	15
Measurement of the course.....	15
Measurement of fences dimensions.....	15
Illustration of measurements	16
Front Shoulder of Spread Fences (refer to Eventing rules, art 547.2.6)	17
3. Intensity of Effort – Short & Long Format	17
4. Guidelines about the metres per effort (mpe)	18
5. Anchoring or Securing of Portable Fences	18
6. Securing Portable Frangible fences	18
7. Securing narrow fences/skinnyies	18
50mm type Ground Anchors	19
Posts	19
Securing fences on arenas/all weather surfaces and water jumps with a liner	19
8. Frangible Deformable Devices (art. 547.2.4)	21
Current thoughts on what device to use	22
9. MIM Correct Fitting Checks	23
10. Criteria for evaluating difficulty and risk level	29
Approach.....	29
Terrain.....	29
Climate	29
Definitions	30
Footing	30
Materials	30
Profiles of Fences/Lower Rails	30
A Clear Question	31
Horses length of stride	31
Removing a fence once the competition has started.....	31

Hazards.....	31
Overhead hazards	31
Leading Edges (art. 547.2.6)	32
Ground Lines	33
Target speed and take off point.....	34
12. Dimensions	35
Combinations and Related distances	35
Curving Lines.....	35
Table type Fences.....	35
Spread Fences	36
Ditches	36
Fences with a curved/round (convex) front.....	36
Brush Fences	36
Double and Triple Brushes	37
Unjumpable Parts of Fences.....	37
Alternative Obstacles	37
Bounce Fences	38
Keyhole Fences	38
Fences with 'slats/boards'.....	39
Fences with Roof	39
Water Fences (refer to Eventing rules, art 547.2.5 & 547.3.3)	39
Corners.....	40
Warm Up Fences	41
Drops.....	41
Narrow Fences	41
Steps & Banks.....	41
Flagging of fences	42
13. Footing.....	42
Changing Footing	42
14. Drones & Cameras	42
15. A Horse's Perspective	43

Preamble

This Cross Country Guide for Officials is a reference point for ALL FEI Officials, not just course designers and is intended to support FEI Officials Education. It is not a rule book nor is it a stand-alone document, rather it is to be used as a supplementary document alongside the official FEI Officials Education programme.

- The purpose of the guide is to share information based on experience and is intended to help with designing and evaluating cross country courses.
Not all eventualities are covered and it is up to the Event Officials to make decisions based on the fundamental principles of fairness to Horse and Athlete alongside the overall aim of minimising risk. This Guide is intended to provide a document for referring to on a regular basis. **They are notes for guidance and are not rules nor do they represent a complete guide to course design.**
- The guide seeks to help officials achieve the same standard of cross country course at each level of competition and seeks to improve standards of safety for Horse and Athlete.
- Fences that may be designed that fall outside this guide should be fair, as safe as possible, and of the right standard for the level of the competition. The CD and TD need to have agreed any such fence should this be the case, prior to the start of the competition
- As a general comment it is believed that the technicality of the modern courses has reached the point where we should not be more demanding in our expectations of what Horses are being asked to do in terms of intensity and technicality
- This Guide is also intended to be an **“open project”** to reflect all new ideas, findings and lessons learned.
- The FEI is committed to making all information at its disposal promptly available to its officials through all possible channels and **these Guidelines will be updated on a regular basis** to reflect all new findings and lessons learned based on experience at international and national level.
- NFs are encouraged to undertake approved studies and initiatives with the aim and intention of lowering the level of risk inherent in the Cross Country test both in the form and setting of obstacles, and in devising special devices and mechanisms which can limit the consequences of error or accidents in certain situations.
- All CDs should be able to justify their work and if for any reason a fence or fences is/are produced that do not conform to this Guide the officials responsible at the event should be satisfied that the fence is appropriate
- These notes are based on experience in the use of certain types of obstacles at International and National level and are intended to constitute a guide as to how to design and construct fences to lower the risk for Horses and Athletes in the Cross Country test.
- **This document should be read in conjunction with the FEI Rules for Eventing**

- **Please take note of the following HORSE FALL recommendation introduced for 2024:**

The Eventing Committee and Risk Management Steering Group have agreed to include the following recommendation for 2024 for implementation by Ground Jury:

Following any Horse Fall on Cross Country, a systematic interview/discussion will need to take place between the Athlete and the Ground Jury (President or Member) and/or the Technical Delegate. The aim is educational to understand the circumstances to learn for the future – Horse falls are a serious risk factor for athlete, horse and our sport and need to be minimised. The discussion is to be recorded in the Judge and/or TD report (a section has been added in the reports).

Aim and Philosophy

The International Hartington Report - April 2000

A fundamental conclusion which pervades every detailed recommendation is that everything should be done to prevent Horses from falling: this single objective should greatly reduce the chances of Athletes being seriously injured as well as significantly improving the safety of competing Horses.

FEI Eventing Rules

The Cross Country Test constitutes the most exciting and challenging all-round test of riding ability and Horsemanship where correct principles of training and riding are rewarded. This test focuses on the ability of Athletes and Horses to adapt to different and variable conditions of the Competition (weather, terrain, obstacles, footing, etc...) showing jumping skills, harmony, mutual confidence, and in general "good pictures".

The aim of the CD is to set the appropriate test for each level but also produce a "good picture". Therefore the best Horses and Athletes should be able to make the course look easy.

It is the Course Designer's responsibility to design courses that help to produce better Horses and Athletes.

The CD should not design to "test the best" but rather be thinking about a fair course that is appropriate for the level that should give the average Horse and Athlete the opportunity to complete without having to take a multitude of Black Flag alternatives.

At the lower levels the emphasis is very much on the education of Horse and Athlete, introducing both parties to a wide variety of fences and simple questions. As the levels progress so the degree of difficulty of the courses should suitably reflect the particular level. At the highest level the balance is more on the examination of the skills of the Horse and Athlete in a sophisticated manner. The "intensity" of the courses may increase as the levels become higher.

As a general philosophy the numbers of finishers is more important than the number of clear rounds. It has to be accepted that the quality of the field and the weather conditions can impact the statistics and that, particularly at the higher levels, many Athletes now choose to retire once they are clearly out of contention or are not going to achieve a qualifying result. These issues will be reflected on the scoreboard showing more

retirements and less "cricket scores".

The goal of seeing as many finishers as possible is desirable for all levels, but the degree of difficulty should not be compromised in order to achieve this, for example by the over-use of alternatives.

Athletes should be able to slow down and jump, out of a rhythm, the occasional straightforward, more "upright" type of fence.

This applies to all levels of Competition. Any fence like this, if created, should be suitably positioned on the course, preferably off a turn and/or on slightly rising ground where Athletes will not be tempted to approach too quickly

Special care should be taken, in how and where these fences are sited and constructed.

It is also important that all officials recognise the different standards of, and understand, what is appropriate at the various star levels. The belief is that the levels should be the same around the world, i.e. a 3* in the UK or Brazil should be the same degree of difficulty as a 3* in Australia or Russia.

Additionally, it is expected that national classes of a particular level should in principle be of the same standard as international classes of a comparable level.

Where different levels are running on the same venue at all levels the goal should be to minimize the number of shared fences (i.e. less than 10% of the fences on course).

Vision statement for Eventing Risk Management Policy

Eventing constitutes an exciting and challenging all-round test of riding ability and Horsemanship within an accepted and acceptable level of risk. Every effort must be taken by all involved in order to ensure that, at each level, responsible Athletes are participating with progressively trained Horses in order not to be exposed to a higher risk than what is strictly inherent to the nature of the Competition and generally acceptable to stakeholders.

The safety of Horse and Athlete has an ever-increasingly high profile in the image, evolution and financial well-being of our sport and cannot be overemphasized.

The task of a Course Designer is to produce a Cross Country Test of the level required without exposing Horses and Athletes to a higher risk than what is strictly necessary to produce the right test for that level.

Questions can be difficult yet appropriate and fair for the level and the Course Designer should always visualize what the consequences can be of an error from the less experienced Horses and/or Athletes.

Course Designers should consider the possible consequences of a fall at any fence, e.g. hazards after a fence.

Some of the following points are sharing the thinking behind some of the FEI Eventing Rules to assist with course designing:

Counting the efforts

There is a new rule introduced in 2022 (Art 547.6)) regarding counting efforts. This rule permits, in exceptional and particular circumstances and with the agreement of both the TD and CD, that not counting steps and ditches in certain specific situations can bring added value to courses and will encourage CDs to use more traditional fences such as coffins and sunken roads to improve the education of horses and athletes at all levels, especially at the lower levels.

Additionally, because of the different characteristics and terrain of venues, there are some courses which will undoubtedly benefit from being able to have an extra effort or two to improve the flow and balance. Example – events with little by way of terrain will benefit whereas events with lots of terrain are unlikely to need any extra efforts.

The thinking behind the new rule is that rather than simply adding 2 more efforts to the maximum permitted, the plan is that, in the following situations, steps and ditches need not necessarily count as efforts:

~~— A single step up or down need not count towards the effort tally —~~

- **2 steps as part of a combination/related fences need only count as one effort**, eg a sunken road with what would traditionally have 4 efforts (fence before, 2 steps, fence after) would be 3 efforts
- **3 steps up or down could count as 2 efforts**
- **A ditch as part of a combination need not count as an effort**, eg in a hollow/coffin

Associated points:

1. The steps and ditches would be flagged/lettered as normal and judged as normal.
2. The CD and TD need to agree in advance on how many of such efforts are appropriate for the particular competition
3. This applies for S and L courses

The Rules regarding efforts include wording such as:

- "significant jumping efforts"
 - ➔ **For Guidance:** "Significant jumping efforts" will include all obstacles and steps which require a significant effort on the part of the horse (see below).
- "average Horse"
- "expected to attempt to negotiate"

Inevitably such words require subjective judgments to be made, and no absolute, objective criteria can be laid down.

The TD is required to make these judgments, after discussion with the CD, and should rely on experience and training, bringing a spirit of common sense and above all fair play to his decisions.

Definition of 'Effort'

An effort is any fence/obstacle that requires a horse to make a jumping effort. However, this needs to be read in conjunction with the rule introduced in 2022 and referred to above in 'Counting the efforts' regarding efforts Where a horse passes through some flags on a course, for example, a run in to water, and it is not required to make a jumping effort, it does not count as an effort even though it may be a lettered part of a combination or separately numbered series of fences.

"The average Horse" means the Horse(s) in the middle of the ability/experience range for the level of the Competition.

"Expected to attempt to negotiate" is the usual, expected route that could be taken by the large majority of competitors.

Obstacles with alternative elements or options

Where an obstacle may be jumped in one effort, but has options involving two or more efforts, each of these options should be lettered as an element (art.547.5.1).

All alternatives should be within the permitted dimensions for the relevant level. The "black flags" (art. 547.5.3) is of great help in this and should be used intelligently by CD and TD to create smooth lines and options. The track/route for any alternative should not break up the flow and rhythm for the Horse & Athlete.

Dimensions of obstacles (art. 547.3, 547.4 and Annex B)

It is essential that an obstacle be carefully measured.

For avoidance of doubt, this Rule does not mean that everything between the flags should always be within the height limits - simply that all the parts, which the CD and TD expect the average Horse and rider to attempt should be. Fences must be measured on the intended jumping line, this particularly applies to top and base spreads which will inevitably be wider than if the fence is being jumped in a straight line.

Dimensions of obstacles involving water (art.547.3.3)

At obstacles involving water crossings, the depth of the water may not exceed 35cm. (10 – 15cm. depth is considered sufficient under normal circumstances for lower levels.)

This rule (art. 547.3.3) is intended to avoid the Horses from having an extra problem at the take-off and landing in the water. The depth of water should be proportional to the jumping effort into and out of the water. (i.e. the bigger the effort required from the Horse, the shallower the water). The minimum length of 9m before a fence or step out of the water is to assure that always the Horse has at least two strides in the water.

1. General Guidelines and Levels

Some simple guidelines for all levels

- The aim of the designer is to provide a suitable test for the level of Competition without exposing Horses and Athletes to a higher risk than is strictly necessary to produce the right test for that level.
- Fences and questions should never be justified by the use of alternatives, options or frangible devices.
- Jumping a fence in both directions is accepted only for black flag options. **Frangible fences can only be jumped in the direction of the flagging**
- At all levels Horses and Athletes should be encouraged and have their confidence built, not shaken or destroyed.
- It should be recognized that our sport is about achieving a standard, not about pushing the standard above what it should be. This includes measuring the length of the courses fairly and reasonably.
- Any/all questions should be fair. It is not acceptable (and a CD should never try) to catch Horses out using unfair distances or by trying to be too clever or over complicated.
- 'Hidden' fences which surprise Horses should not be used.
- Horses should be given time (ideally a minimum of 2 or 3 strides before the fence) to understand clearly what they are being asked to jump.
- Course designers have to appreciate and take into consideration the part that inclement weather can play on the severity of a course. If or when conditions deteriorate officials should readily be prepared to reduce the jumping "effort" required by the Horse at all levels because of the energy sapping nature of the conditions.
- Course designers and officials must be mindful of the position of the sun at the time of year that the competition will be running and the effect that a low sun in particular can have on the line of a fence and also the shadows that can be cast.
- Course designers have to be their own biggest critics!
- Course designers should understand that courses should prepare Horses and Athletes for the next level of Competition and therefore need to be of the correct degree of difficulty.
- Any Horse should be able to jump a straightforward fence of maximum dimensions at any particular level – big does not necessarily equate to difficult nor small too easy
- Unless there is a good reason in general all straightforward fences should be of maximum dimensions
- We should be looking to give Horses and Athletes the opportunity to show what they can do and are capable of rather than seeking to find out what they cannot do.
- All courses should "flow" and permit a good "rhythm". Tight turns should be avoided especially early and late in the course. 'S' bends are not recommended unless there are four or more strides between elements. CD's should not attempt to slow Horses down at the expense of 'flow'.
- Wherever possible it is better to have turns before fences and especially at combinations to help the horses balance, rather than after fences.
- All courses should aim to offer a positive experience.
- Course Designers should recognise that too many 'gear changes' or interruptions to the flow of the course will make it more physically and mentally tiring for Horses.
- Course Designers need to recognise the effect that their fences, distances in

combinations, and related fences will have on the shape of the Horses jump and be mindful of what is good to see and what is not good to see and also the mental and physical effect that courses and fences overall have on the Horses

- Course Designers should be mindful not to overdo the use of brush fences on their courses or the test can change significantly. The reasons for this are that by using too many brush fences the amount of effort expended by Horses can increase significantly and that, particularly at the lower levels, the emphasis is more on educating Horses to jump 'fixed fences'
- Too much distance between fences can also have a negative effect on a Horse's performance, causing the Horse to "switch off". Strong consideration should be given to at least a moderate bend approaching a fence after a long gallop.
- Each cross country course must have a water fence. Where fences for different classes are situated next to or close to one another in such a way that an athlete may inadvertently jump the wrong fence it is highly recommended that the fence(s) not being jumped in a particular class have their flags crossed so that there is no chance of an athlete jumping a wrong fence by mistake

One Star (including Pony)

- The aim is to introduce Horses and Athletes to a wide variety of fences and simple questions recognising that this is the entry level of international competitions
- There will probably be a wide variety in the age group of the Horses competing and a wide range of Athlete ability.
- The emphasis is very much on education of Horse and Athlete.
- Simple combinations, turning and accuracy/line questions, corners, ditches, etc. need to be used
- The "intensity of effort" is low and regular "let up" fences are needed.
- Course Designers must make sure the direct route is always appropriate.
- If an alternative is needed the direct route is perhaps too difficult. Alternatives should be the absolute exception at the 1* Level, except for 'skinny' fences or where it is difficult to re-present the Horse at the fence.
- We should not be embarrassed if the majority of the Horses jump around at this level, "clear and inside the time".
- It is important to remember that this level also needs to prepare Horses for 2* competitions.
- The course should be inviting, flowing, well balanced and make use of the natural terrain as much as possible. The use of the terrain and positioning of obstacles should require competitors to think a little bit about the judgement of speed and approach.

Design and Construction

The variety of fence design and materials used in construction plays a significant part in educating horses and athletes. Courses should have a good balance of fences and the first few fences should encourage horses to jump confidently and in a rhythm and reflect the task ahead. Straight forward fences should be up to maximum dimensions, and where design is not an issue should be as wide and inviting as possible. A number of fences with top spread should be encouraged. Fences that restore confidence should be used after combinations or more difficult questions.

Narrow Fences

At 1* level it is fair to ask the horse and rider some simple test of accuracy and honesty, but still allow for the less experienced members of the partnership. The minimum jumpable width should be 190-200cm wide. **There should be a maximum of 4 "minimum jumpable width" fences.** These can be made more inviting with the use of trees and dressing to create an impression of width.

Core Cross Country Elements for 1*

It is envisaged that each course should have a minimum of 5 core fence from the list as follows Each course must have a water fence and so this is not included in the list of core fences. It is important that courses at this level should have at least two maximum, or near maximum, top spread fences.

There should be a minimum of 4 combinations/series of related fences.

Core Fence types:

- | | |
|---|--|
| • Max spread fences | • Rail/ Ditch/rail combination |
| • Brush fences | • Corner/narrow – no more than 4 at this level |
| • Drop fences | • Bank (step up and/or down combination) |
| • Sunken road | • Open Oxer |
| • Trakehner and/or open ditch (ditch with brush or palisade behind) | |

Two Star (including Pony)

- The 2* Level is also an educational level and it is not appropriate to put exercises seen at the higher levels onto 2* courses at 1.10 metre height!
- The aim is to continue to introduce Horses and Athletes to a wide variety of fences and simple questions.
- There will probably be a wide variety in the age group of the Horses competing and a wide range of Athlete ability.
- The emphasis is very much on education of Horse and Athlete.
- Simple combinations, turning and accuracy/line questions, corners, ditches, etc. need to be used
- The "intensity of effort" is low and regular "let up" fences are needed.
- Course Designers must make sure the direct route is always appropriate.
- If an alternative is needed the direct route is probably too difficult. Alternatives should be the absolute exception at the 2* Level, except for 'skinny' fences or where it is difficult to re-present the Horse at the fence.
- We should not be embarrassed if the majority of the Horses jump around at this level, "clear and inside the time".
- It is important to remember that this level also needs to prepare Horses for 3* Competitions.
- The minimum jumpable width should be 165-180cm. wide. There should be a maximum of 4 "minimum jumpable width" fences

Core Cross Country Elements for 2*

It is envisaged that each course should have a minimum of 5 core fence from the list below *. Each course should have a water fence and so this is not included in the list of core fences, and each course should have narrow fences. Each course should have at least 3 fences with maximum, or near maximum, top spread

There should be a minimum of 4 combinations/series of related distances on the course. Obstacles in water are acceptable. A bounce may be used at this level but it is not core fence type.

Core Fence types:

- | | |
|--|--|
| <ul style="list-style-type: none">• Max spread fences• Brush fences• Trakehner and/or open ditch (ditch with brush or palisade behind)• Rail/ Ditch/rail combination• Corner/narrow – no more than 4 at this level | <ul style="list-style-type: none">• Bank (step up and/or down combination)• Drop fences• Sunken Road* with jumps before and/or after• Open Oxer• Open corner |
|--|--|

Three Star

- Many consider this the most difficult level to design well for. It is still an "educational" level yet it should also prepare for the next step to the three star level.
- Often the best way to determine this level is to ask if the question is a 2* question or a 4* question. If the answer to both is "no" then it is probably a 3*question!
- If the answer is yes then the level of difficulty needs increasing or decreasing as appropriate.
- As this is still an educational level CD's should again ask themselves the appropriateness of the direct route if it is felt an alternative is needed. Alternatives at the 3*Level should again be the exception, except for 'skinny' fences or where it is difficult to re-present the Horse at the fence.
- More sophisticated types of questions should be asked building on what has been learned at 2*level.
- Fewer "let up fences" than 2* but still recognizing that this level is where many Athletes will introduce their Horses to Long Format Competition having by-passed the 2* level.
- The trend is currently to begin to "cluster" fences at this level which puts more emphasis on the intensity in those sections of the course. This should never be overdone at any level and keeping a certain regularity of fences is key for the balance and flow of the course.
- The minimum jumpable width should be 150-165cm. wide. There should be a maximum of 20% "minimum jumpable width" fences.

Core Cross Country Elements for 3*

It is envisaged that each course should have a minimum of 5 core fence types from the list of fences below. Each course should have a water fence and so this is not included in the list of core fences, and each course should have narrow fences and at least 4 fences with maximum or near maximum top spread

There should be a minimum of 5 combinations/series of related distances on the course. Obstacles in water are acceptable. A bounce may be used at this level but it is not core fence type.

Core Fence types:

- | | |
|---|--|
| <ul style="list-style-type: none">• Max spread fences• Brush fences• Trakehner and/or open ditch (ditch with brush or palisade behind)• Rail/ Ditch/rail combination• Corner/narrow | <ul style="list-style-type: none">• Bank (step up and/or down combination)• Drop fences• Sunken Roadwith jumps before and/or after• Open oxer• Open corner |
|---|--|

Four Star

- 4* is the level that starts to examine the skill of the Athlete and the athleticism and ride-ability of the Horse. The balance begins to swing from education to examination.
- Therefore the questions will start to become more sophisticated and there will be more clustering of fences for spectators and perhaps TV. This should never be overdone at any level and keeping a certain regularity of fences is key for the balance and flow of the course.
- This is a level that qualifies Horses for Championship Events so should be a stepping stone to those competitors.
- The "intensity of effort" increases from the 3* level, there will therefore be fewer "let up" fences and more related obstacles. However this level should still give Horses and Athletes the chance to learn and benefit from their experience.
- In setting this test Course Designers need to be careful not to overdo the intensity of the questions asked (refer to section on intensity of effort).
 - The minimum jumpable width should be 140-150 cm. wide. There should be a maximum of 20% "minimum jumpable width" fences.

Core Cross Country Elements for 4*

There should be a minimum of 7 combinations/series of related fences on the course.

Five Star

- This is the highest level with the most sophisticated courses where the accumulation of jumping efforts has an effect on the mental and physical tiredness and confidence of both the Horse and Athlete.
- These are the most difficult courses to set as the margin for error is the smallest so only experienced designers and officials should be used.
- The minimum jumpable width should be 130-140 cm. wide. There should be a maximum of 20% "minimum jumpable width" fences.

2. Flow, measurement of the course, and measurement of fences

Flow

In every course, there should be a beginning, middle and end.

- **Beginning:** 3- 5 fences to get Horses and Athletes thinking forward with a good rhythm and jumping in a good shape. The lower the level the more fences at this stage of the course are recommended
- **Middle:** The meat of the course, where the main questions are asked. Don't start with the most difficult question (or combination) but rather let the difficulty progress and then ease off towards the end when Horses maybe getting tired. In principle after every 'question' there should be an easier confidence boosting fence, particularly at the lower levels.
- **End:** 3 or 4 easier interesting fences/easier questions to aim to finish on a good note. Quite often these fences take a lot of thought in order to keep Athletes and Horses paying attention and interested whilst at the same time managing the speed/pace.. At the end of the course these fences/questions should if possible be off a turn to control and manage pace
- Wherever possible, try and avoid the possibility of Horses landing static after a fence particularly at combinations and where a turn is involved after the fence
- Don't try to slow Horses down at the expense of flow.

Measurement of the course

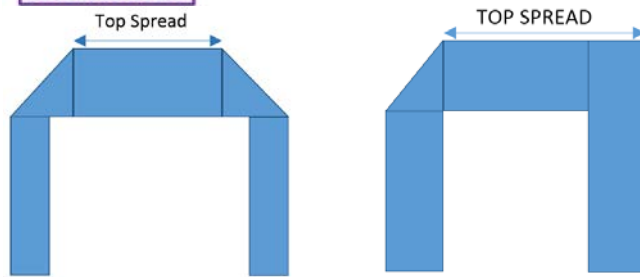
- The course should be measured fairly and on a realistic riding line **after** the fences and course roping are in position. It is inappropriate if Athletes are measuring the course approximately 100m longer than the officials. The measurement of the course needs to include the base spread of all fences.
- The use of GPS or an app is not considered best practice in measuring a course. Measuring wheels (regularly checked to ensure continuing accuracy) with a wheel diameter > 70 cm, are considered the best way to measure a course.

Measurement of fences dimensions

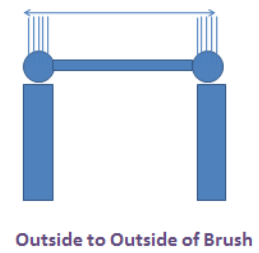
- All fences must comply with the permitted dimensions on the line that the CD is inviting the Athletes to jump a fence.as per the rules art. 547.3
- Hammock type fences – at least 1.60m width in the centre of the fence must not exceed the maximum permitted dimensions (see below)
- The base spread of a fence has to include the solid ground line no matter what material it is. Soft ground lines such as mulch or flowers are not included

Illustration of measurements

TOP SPREAD



TOP SPREAD with BRUSH



Outside to Outside of Brush

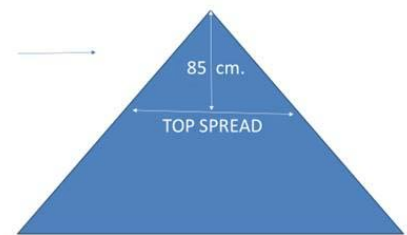
TOP SPREAD



OUTSIDE TO OUTSIDE

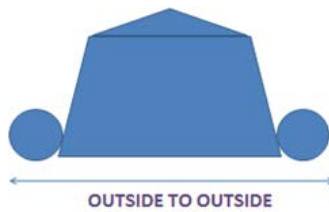
HIGHEST POINT TO HIGHEST POINT

TOP SPREAD

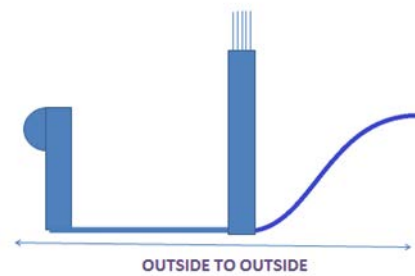


BASE SPREAD

BASE SPREAD

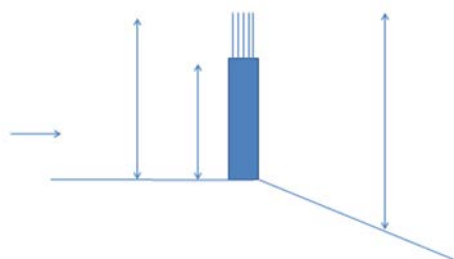


OUTSIDE TO OUTSIDE

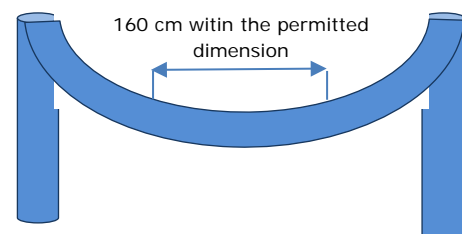


OUTSIDE TO OUTSIDE

THE BRUSH



HAMMOCK FENCE



Front Shoulder of Spread Fences (refer to Eventing rules, art 547.2.6)

The Eventing rules state that all spread fences with upright fronts must have the top of the front of the fence rounded or sloped. It is recommended that the slope should be 45° (with a margin of +/- 5°) to a point 20cm. below the top of the leading edges

If a fence has a sloping back, the back edge should follow the same principles as the front edge

Gates are exempted. However, if gates are used on a course it is strongly recommended at all levels that they have an approved frangible mechanism incorporated in to their design and a ground line. It is not recommended at any level to encourage athletes to jump gates on an angle.

3. Intensity of Effort – Short & Long Format

- When considering the "intensity of effort" officials should take into account both terrain and ground conditions and discuss with the Course Designer their thought process. They should also discuss all fences that are outside these guidelines.
- Course Designers should understand the number of efforts they have on every minute of their course. A large number of efforts (6-9) combined with significant terrain is not appropriate in any given minute. 3-4 efforts per minute normally allows competitors to 'stay with the clock'.
- The Course Designer should also understand the physical effort involved with every fence. For example the straight forward galloping fence jumped out of rhythm actually gives a Horse a 'breather'. The fence where the Horse lands 'static' and has to accelerate away is very tiring.
- It is essential to consider also the mental effect that a course can have on Horses; courses can be mentally demanding. Every time a Horse or Athlete steps up a level it is like them going to their first 5*.
- Intensity is a much debated subject and it is up to all officials to be mindful of this aspect to not overdo it. It is impossible to cover this subject in detail since each site is different.
- The window of distances and efforts is there to give designers flexibility but it is essential that courses should flow and have a good feel and balance.
- If the Course Designer wishes to use the maximum number of permitted efforts in a Short Format Competition, the course will inevitably be much more intense than if the maximum number of permitted efforts are used at a Long Format Competition, so Course Designers should always relate to these Guidelines.
- It is suggested that in Short Format Competition, recognizing the intensity is a possible issue, there may be one or two fewer "related" types of questions or combinations compared to what one would expect in Long Format Competition.

4. Guidelines about the metres per effort (mpe)

Short Format Competition: In general there should not be more than an average of one jumping effort per commenced 100m over the entire length of the course. The guide is not more than one effort per 110m at 4*, 105m at 3*, and 100 at 1* & 2* but it is recognised that there are occasions when a course will have a better flow and balance if working on a slightly lower distance per effort. In such situations the TD and CD should be in agreement.

Long Format Competition: it is recommended that there is not more than an average of one jumping effort per commenced 125 metres over the entire length of the course at the 2* level, 130mpe at 3*, 135mpe at 4* and 140mpe at 5*. It is again recognised that there are occasions when a course will have a better flow and balance if working on a slightly lower distance per effort. In such situations the TD and CD should be in agreement.

5. Anchoring or Securing of Portable Fences

The importance of this cannot be overemphasised and it is not acceptable to assume that, because a fence is heavy, it will not move if hit at speed by a Horse. Course designers, builders and TDs must make every effort to ensure that each and every portable fence is 'anchored' in a way that will prevent movement as fences that do move significantly increase the chance of a fall. All portable fences must be anchored at the front or on the sides at the front.

There are various recognised ways of securing portables, with the most traditional being the use of posts and, more recently, the Ground Anchor system which is both popular and efficient (see below for more information). There are other methods and, as long as the principle is adhered to, they can also be accepted.

In certain situations, like lined water jumps or all weather arenas, it is not possible to use anything that can pierce the lining/membrane in which case great care should be taken to ensure the fences are secured in another way.

6. Securing Portable Frangible fences

When using frangible fences, it is important that these are secured in such a way that there is no movement. If there is movement in the fence, or in the fixing, the frangible device may not activate in the way it is intended. For the frangible to activate with the right force the fence should not move. The use of chains and other such systems allow too much movement to ensure correct activation. The 'ground anchor' system is well tested, sufficient anchors must be used to minimise any movement. You must ensure that portable fences are well braced and have a 'big enough' foot print to ensure stability and rigidity.

7. Securing narrow fences/skinnies

Experience has shown that skinny fences, eg fences with less than 2.4m jumpable width, can move if fewer than 4 ground anchors are used. For these fences it is very important to have ground anchors at the front and at the back. All brackets for ground anchors must be secured to the main structural frame of the fence rather than the cladding of the fence and ground anchors

at the front of narrow fences must be set back 15-20cms from the front to reduce the chance of a horse being injured should it run out at the fence.

It is important to only use tried and tested ground anchors and brackets. Beware of cheap imitations!

50mm type Ground Anchors

These are a very efficient & reliable system but some things should be considered:

- The anchors should be at the front of the fence rather than at the back, or at the front AND back. At least two should be used.
- Where fences with small base spreads are being fixed extra anchors may be required at the front of the fence.
- There are two lengths of anchors available – 460mm. and 620mm. – and the correct ones should be used depending on the ground conditions, i.e. the longer ones in sandy soil.
- It is worth noting that there is a significant change in the security of the fence when the longer ground anchors are used, they give much more security to the fence
- The anchor brackets should be securely fixed to the frame of the fence so that the fence cannot break away from the brackets.
- When locating the brackets on the fences it is essential that they are not in a position to injure a horse if it horse runs out at the fence; all officials must examine the fences to ensure that the tops of the ground anchors are protected or positioned such that they cannot injure a horse if it runs out; the same applies for the practise fences.

Posts

These should be substantial (min diameter 125 mm.) and dug (or knocked) deep enough into the ground. A minimum depth of 0.75m. is required but in soft conditions this might need to be increased.

- Posts should be at the back of the fence but, if set below half way up the highest part of the fence, should also be put at the front or side as well to stop the front lifting on impact.
- Try not to use posts with lots of knots as they weaken the post.
- Using a combination of posts and anchors can work very well.
 - Posts not at the back of the fence should be secured to the fence using bolt, coach screw, rope or wire.

Securing fences on arenas/all weather surfaces and water jumps with a liner

It is not always possible to use the traditional ground anchors when securing fences on arena surfaces or in water for fear of puncturing/piercing a membrane or sub structure.

It is possible to use weight, to have legs on the bottom of the fences that extend out the front and behind the fence. There are several different methods to secure jumps in water jumps and arenas with liners as follows

1. Use 20cm x 8cm timbers attached securely to the main frame of the bottom of the fence so that they come out approximately 60cm in front and 1m behind the frame of the fence. Dig these into the bottom of the water jump and then cover with at least 10cm of

stone. If the fence has a narrow face then it is suggested that the timbers be angled from front to back so that they are wider at the back.

2. Secure 3cm thick plyboard covering the whole bottom of the jump attached securely to the main frame of the jump, making sure that it comes out approximately 60cms in front of the fence, 1m behind the fence, and 40cm around the rest of the fence. This should then be dug into the bottom of the water jump and covered with at least 10cm of stone.

It is important to note that whichever of these methods are used the timber must be securely fastened to the main frame of the fence at the base of the jump. All wood sizes are suggested as sizes may vary slightly from country to country.

It is also possible to use weight or it is possible, subject to the construction of the arena, to use 5" ground anchors through brackets as used for spirafixes. provided the ground anchors can get sufficient purchase and security in the ground and there are enough of them

Skinny fences must be secured front and back.

For large fences it is possible to use 2 x 5" (13 cm) anchors on the back on each side and 3 x 5" anchors on the back on each side for the skinny/small base spread fences instead of the normal 12" (30 cm) or 14"(35cm) ground anchors that we would use on grass..

Brackets that have proved successful are:

- 1/4" (63mm) steel, 3 1/2"(9cms) wide
- Height of the back of the bracket - 10"/25cms
- Length of the bottom of the bracket:
 - 14"/35cms for 2 ground anchors.
 - 22"/55cms for 3 ground anchors.

8. Frangible Deformable Devices (art. 547.2.4)

Obstacles can be provided with frangible/deformable technology only if such technology has been approved by the FEI according to the FEI Standard for frangible/deformable cross country fences. A list of approved frangible devices is published on the FEI website.

For all levels, all open oxers, open corners, verticals or near verticals with open rails, top rail on triple bars and gates where the rail dimensions and weight fit the acceptable parameters of an FEI approved frangible device, must be fitted with frangible devices. **It is highly recommended that all new table type fences are made frangible** (where they fit the dimensions and weights of the frangible manufacturer). For those tables made with the old MIM table kit there is a conversion instruction available on the FEI website.

A fence should never be designed, **sited**, or built with a frangible device if the CD would not normally build it as a fixed obstacle. Frangible devices are designed to reduce the possibility of a serious fall NOT compensate for a wrongly or poorly designed or sited fence.

To give frangible devices the best opportunity to release with the right force its important they are fitted to the manufacturer's instructions.

- A showjump rails come down with approx. 5 Joule force.
- With MIM the back rail needs a minimum of 700 Joule (1400 times a showjump rail) to break the clip.
- The rail weight is very important for devices to work correctly and must be checked by the builder when constructed. With MIM devices the rail weight may exceed the relevant maximum weights (as specified in the MIM Instructions) by up to 25% of the relevant maximum weight. There are no minimum rail weight requirements. Please refer to the document "Instructions for weighing MIM fences" published on the FEI website (*Eventing / Risk Management / Deformable & Frangible Devices*).
- All New Built fences with MIM frangible devices must meet the manufacturer's instructions from ~~January 1st 2024~~**November 1st 2023**. A weight label is to be attached to all new built fences from that date. Weights can exceed the relevant maximum weight (as specified in the MIM Instructions) by up to 25% of the relevant maximum weight. Weight labels now come with MIM kits or are available free from MIM. ~~(Note weights can exceed the relevant maximum weight (as specified in the MIM Instructions) by up to 25% of the relevant maximum weight.)~~
- All existing fences with MIM frangible devices built up to January 1st 2024 may stay in use without changes until end of their useful life. ~~must meet the manufacturer's instructions from January 1st 2025. A weight label is to be attached to all fences from that date. (Note weights can exceed the relevant maximum weight (as specified in the MIM Instructions) by up to 25% of the relevant maximum weight.)~~
- Table Fences: When weighing these fences any dressing such as heavy pots or similar need to be taken into account when calculating compliance with the maximum weight requirements.

In order to have devices approved to be used in FEI competitions the manufacturers are required to comply with this standard and apply for the registration of their product on the FEI list of approved frangible/deformable devices to be used in FEI competitions. The device can and will be approved by the FEI after passing all the tests and requirements (fitting instructions, etc...) as detailed in the standard.

- **Standard for frangible/deformable Cross Country fences:** <https://inside.fei.org/fei/disc/eventing/risk-management/devices>

For the purposes of this standard, TRL (Transport Research Laboratory (GBR) and Chalmers University (SWE) have been appointed as the FEI approved inspection authorities. If needed, the FEI will examine requests to approve additional institutes to act as FEI approved inspection authorities for the purposes of this standard.

- **Register of Products** having met the Standard for the minimum strength of frangible / deformable Cross Country fences
<https://inside.fei.org/fei/disc/eventing/risk-management/devices>

Please note, the standard for frangible / deformable Cross Country fences has been updated in April 2023.

There is an Information Sheet (FAQs), which is updated as new information becomes available, on the FEI website regarding the MIM system which is for all officials and course builders to refer to. Please note that the MIM instructions have been updated on 23 October 2023 ~~21 January 2022~~ (including Corner kit) and include a yellow clip for use on all fences designed to be jumped on an angle. There is also an update allowing wider use of the BE Reverse Pin (~~18 February~~ April 2022).

A frangible device should only be used after the specifications, appropriate siting and materials of a normal fixed obstacle have been established, whereby the use of such a device will only enhance the safety of the fence. The design and construction of a traditional fixed fence should never be compromised by the use of a frangible device.

The use of frangible mechanisms must never be used to change the design, siting or build of a fence or alter what a course designer would normally design were these mechanisms not available. For example, if a CD would normally build a post & rails with 3 rails it should still have 3 rails when there is a frangible device fitted. Similarly, the use of a frangible mechanism must not justify siting a fence where a CD would not normally put one nor justify a change of height of a fence. The profile and height of a fence remains just as important with or without the use of a frangible mechanism.

Current thoughts on what device to use

- Oxers: where MIM Clips and Reverse Pins are available it is recommended that a MIM Clip should be used on the front rail and a MIM clip or a Reverse Pin on the back rail.
- Corners: Front pinned fences are not approved as from 2022. The updated MIM system must be used for open corners using the yellow clips.
- Tables: It is highly recommended that all new table type fences are made frangible.
- Reverse pins: As from 1st January 2022, all fences with reverse pins must comply with the latest approved BE reverse pin instructions (They can be used as the backrails on oxers and corners but please refer to the FEI website for further details)

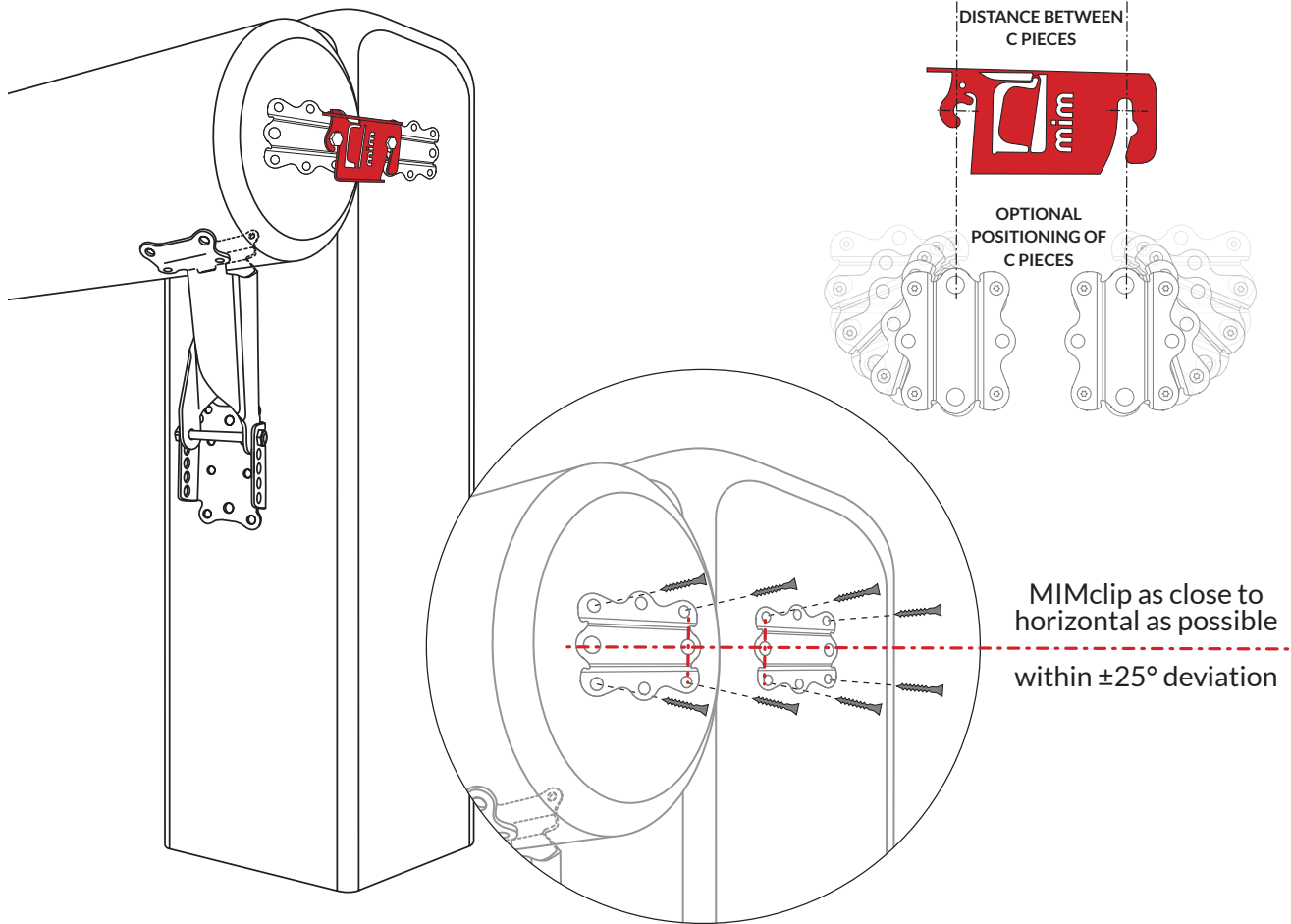
9. MIM Correct Fitting Checks

CORRECT FITTING CHECKS

Post and Rail Kit - 80321 - Oxer Kit - 80329

If used on narrow or angled fences please ensure

- Straight fences must use Red clips
- Angled fences must use Yellow clips



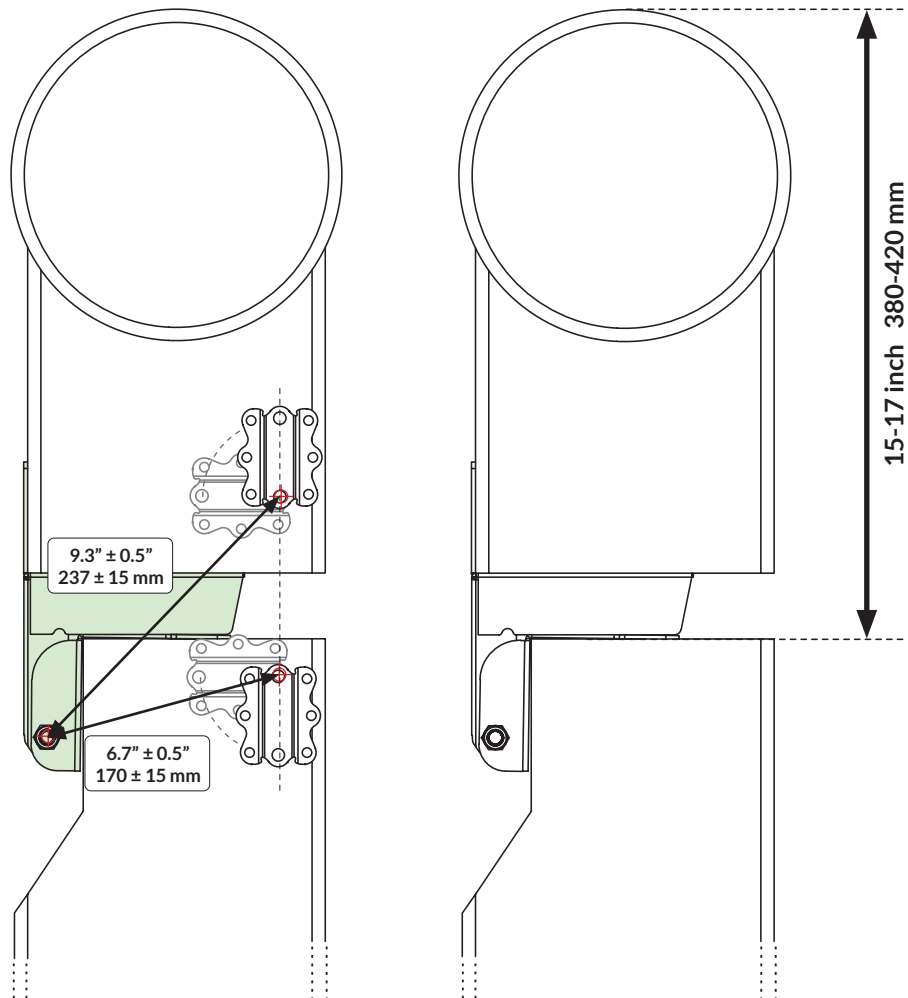
- Checking the device is fitted within the upper limits of the dimensions in the instructions will ensure that it activates as the manufacturer designed to meet the FEI frangible standard.
- The clips must be checked if any horse hits the fence to see if the warning flag has been activated and clips replaced with new ones if there is any warning to ensure fairness for all competitors. Never push the warning flag back in as the clip is already weakened.
- Dimensions on new built fences using MIM to be correct from 1st January 2024. Existing fences with MIM frangible devices built upto January 1st 2024 may stay in use without changes until end of their useful life.
- Weight of rails/tables can exceed the maximum weight(as specified in the MIM Instruction) by up to 25%. Weight labels come with all new MIM kits and are available free from MIM if you need more.

CORRECT FITTING CHECKS

Corner Kit - 80326

If used on narrow or angled fences please ensure

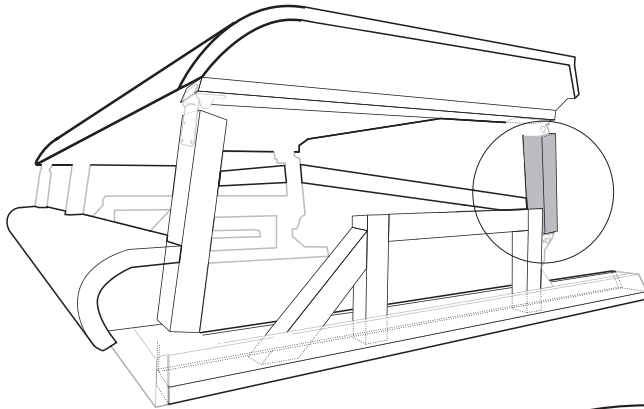
- Narrow fences must use Red clips
- Angled fences must use Yellow clips



- Checking the device is fitted within the upper limits of the dimensions in the instructions will ensure that it activates as the manufacturer designed to meet the FEI frangible standard.
- The clips must be checked if any horse hits the fence to see if the warning flag has been activated and clips replaced with new ones if there is any warning to ensure fairness for all competitors. Never push the warning flag back in as the clip is already weakened.
- Dimensions on new built fences using MIM to be correct from 1st January 2024. Existing fences with MIM frangible devices built upto January 1st 2024 may stay in use without changes until end of their useful life.
- Weight of rails/tables can exceed the maximum weight(as specified in the MIM Instruction) by up to 25%. Weight labels come with all new MIM kits and are available free from MIM if you need more.

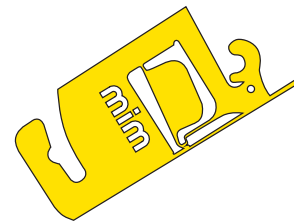
CORRECT FITTING CHECKS

Table Kit straight and angled - 80320

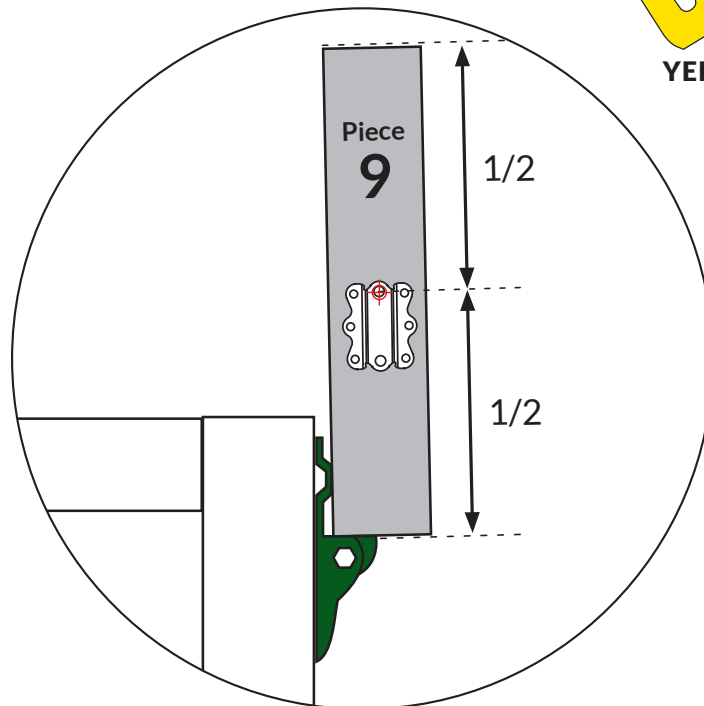


IMPORTANT

Yellow Clips on all frangible straight and angled tables



YELLOW CLIP



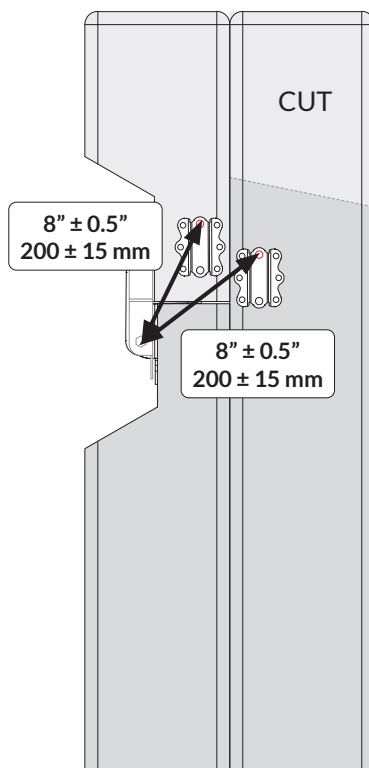
- Checking the device is fitted within the upper limits of the dimensions in the instructions will ensure that it activates as the manufacturer designed to meet the FEI frangible standard.
- The clips must be checked if any horse hits the fence to see if the warning flag has been activated and clips replaced with new ones if there is any warning to ensure fairness for all competitors. Never push the warning flag back in as the clip is already weakened.
- Dimensions on new built fences using MIM to be correct from 1st January 2024. Existing fences with MIM frangible devices built upto January 1st 2024 may stay in use without changes until end of their useful life.
- Weight of rails/tables can exceed the maximum weight(as specified in the MIM Instruction) by up to 25%. Weight labels come with all new MIM kits and are available free from MIM if you need more.

CORRECT FITTING CHECKS

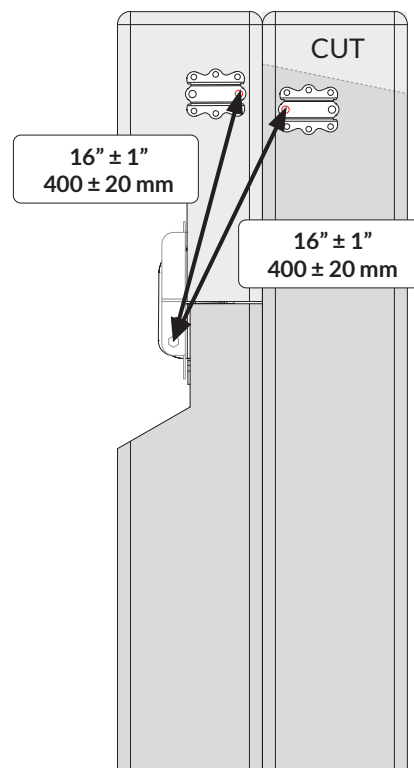
Wall and Gate Kit - 80324

- Angled jump must use Yellow Clips
- Straight jump must use Red Clips

POSITIONING OF CLIP FOR ANGLED JUMP



POSITIONING OF CLIP FOR STRAIGHT JUMP

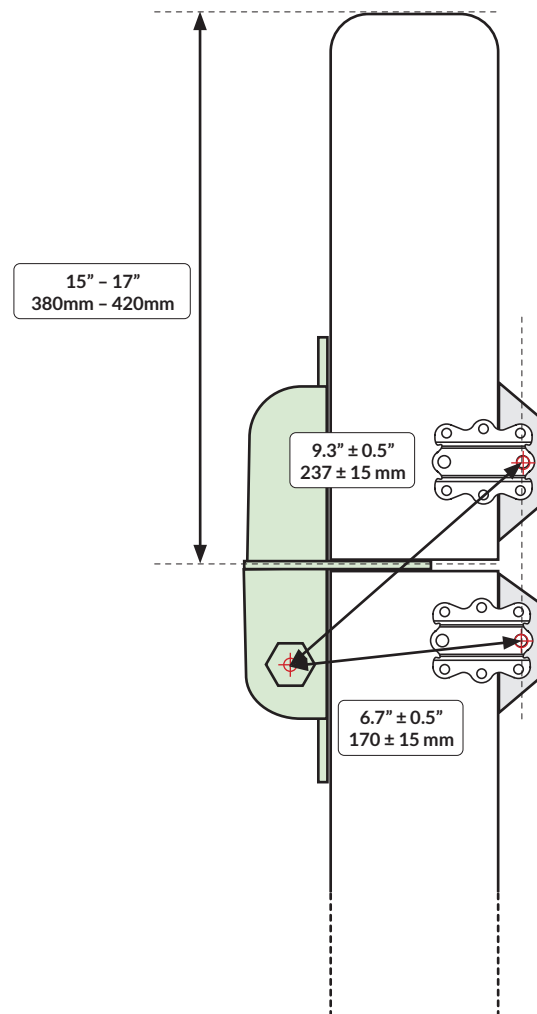


- Checking the device is fitted within the upper limits of the dimensions in the instructions will ensure that it activates as the manufacturer designed to meet the FEI frangible standard.
- The clips must be checked if any horse hits the fence to see if the warning flag has been activated and clips replaced with new ones if there is any warning to ensure fairness for all competitors. Never push the warning flag back in as the clip is already weakened.
- Dimensions on new built fences using MIM to be correct from 1st January 2024. Existing fences with MIM frangible devices built upto January 1st 2024 may stay in use without changes until end of their useful life.
- Weight of rails/tables can exceed the maximum weight(as specified in the MIM Instruction) by up to 25%. Weight labels come with all new MIM kits and are available free from MIM if you need more.

CORRECT FITTING CHECKS

Old Gate and Wall Kit - 00324

- Straight fences must use Red Clips
- Angled fences must use Yellow Clips



- Checking the device is fitted within the upper limits of the dimensions in the instructions will ensure that it activates as the manufacturer designed to meet the FEI frangible standard.
- The clips must be checked if any horse hits the fence to see if the warning flag has been activated and clips replaced with new ones if there is any warning to ensure fairness for all competitors. Never push the warning flag back in as the clip is already weakened.
- Dimensions on new built fences using MIM to be correct from 1st January 2024. Existing fences with MIM frangible devices built upto January 1st 2024 may stay in use without changes until end of their useful life.
- Weight of rails/tables can exceed the maximum weight(as specified in the MIM Instruction) by up to 25%. Weight labels come with all new MIM kits and are available free from MIM if you need more.

10. Criteria for evaluating difficulty and risk level

Approach

- Uphill or up a slope – easier for horses to jump
- Gentle downslope – horses generally jump ok although the fence profile needs to be softer than when going up a slope
- Downhill – more difficult for horses to jump
- Straight line – more difficult to set horses up
- Off a turn - easier to set horses up

Terrain

The cumulative effect of undulating terrain has to be borne in mind

Climate

Climatic conditions play an important part in the design of a course and its overall degree of difficulty which can change if the weather turns bad

Wet Bulb Globe Temperature (WBGT) from Temperature and Relative Humidity																																																		
		Temperature (°C)																																																
		20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50																		
Relative Humidity (%)	0	15	16	16	17	18	18	19	19	20	20	21	22	22	23	23	24	24	25	25	26	27	27	28	28	29	29	30	31	31	32	32																		
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100	24	26	27	28	29	31	32	33	35	36	38	39																																						

WBGT > 40

Note: This table is compiled from an approximate formula which only depends on temperature and humidity. The formula is valid for full sunshine and a light wind

Figure 1: The WBGT index has the advantage that it combines the effects of air temperature, humidity, and wind and sun radiation into one number. If WBGT=32 or more, it means that climatic conditions are hazardous for Horse to compete in and will require further modifications to the competition. For further information about how it is calculated, please refer to the Eventing Memorandum.

Definitions

- Oxer: a spread fence
- Square oxer: a 'parallel' spread fence where the front rail is 250 cms or less lower than the back rail
- Ascending spread: a spread fence where the front is more than 250cms lower than the back rail
- Upright: an upright fence where the lower rail(s) is/are in front of plane of the top rail
- Vertical: a gate or similar fence eg rails on top of each other

Footing

- Good footing – easier
- Deep, loose or soft footing – more difficult
- Attention should be given to take off and landing zone in order to provide good and regular footing

Materials

- Brush – easiest and most forgiving
- Roof/sloping leading edge – forgiving
- Log/round tops – still forgiving
- Rails/rounded leading edge – less forgiving
- Sawn Timber/90° leading edge – unforgiving and 90° leading edges are not permitted. They must be rounded off if used and not be square,
- Stone – unforgiving and must never be used without a timber frame

Profiles of Fences/Lower Rails

The profiles of every fence must be such that it helps the horses 'read the shape of the fence' and understand the question. Officials need to understand how the profile of a fence affects how a horse will jump it.

Where there is a fence with a top rail and a lower rail on the front face (e.g. an oxer or an upright post & rails) the lower rail needs to be not less than half way up the fence, and that in these situations there should be some sort of ground line also.

Alternatively, if a top rail and a ground line are used there needs to be some dressing (e.g. a shrub/tree/bush) to ensure that there is a good profile to the front of the fence and not just a gap between the top rail and the ground line.

11. Lessons Learned

A Clear Question

First and foremost, the question that the Horse has to answer should be a clear one, which should not be misunderstood by the Horse. All Horses have to be able to evaluate what is in front of them in a very short time and they should be able to clearly understand what they are being asked to jump in order to make decisions.

Horses length of stride

When going up or down a slope a horse's length of stride can change a bit. The greater the slope the greater the change. It is also accepted that a horse's stride length will lengthen when going down a gentle slope but when the slopes gets steep there, there comes a point when the stride can shorten. It is also the case that when going up hill a horse's stride may lengthen a bit depending on the degree of slope and the speed of the horse. This is explained in greater detail at FEI seminars.

It is also recognised that the length of a horses stride changes with speed. The faster the approach the longer the stride and therefore the distance between related obstacles needs adjusting accordingly.

Removing a fence once the competition has started

In the interests of safety the Ground Jury with the TD and the CD should quickly discuss any fence on a course which for whatever unforeseen reason is jumping consistently badly with a view as to whether it should be amended or removed from the course altogether.

Discussion and actions should take place, as an example if:

- a fence is consistently jumping badly and is causing 'near misses'
- a fence causes two horse falls as a result of the horse hitting or misreading the fence
- if a fence has caused 3 rider falls
- the ground deteriorates to a degree such that it becomes difficult for horses to jump and safely negotiate the fence in question

Some options are:

- remove the fence or element if necessary
- hold the competition and repair the footing if this is the reason for the concern
- Alter the ground line

In the interests of making a quick decision the President of the Ground Jury, the TD and the CD could make the decision without necessarily consulting other members of the Ground Jury.

Hazards

Unnatural hazards should not be placed behind a fence in a way that may distract a Horse on approach or at take-off, particularly if they resemble a human being.

Overhead hazards

As we design, build, prepare, and inspect courses it is very important to look out for overhead hazards that may not be immediately obvious on both the direct line and, if there is one, on

the line to be taken on a long route/option. Such hazards (eg tree branches, roof eaves before or even after a fence) can cause a serious distraction to the horse and rider. The CD and TD need to agree the best course of action to deal with any such instances whether it is removing the hazard or preventing horses passing underneath it. Equine Vision, Light to Dark/Shadows/the Sun, etc

- CD's and all Officials need to recognise that Horses see in contrast and, it is believed, dichromatically rather than in colour as we see colour. Therefore the contrast and the definition between the top of the fence and the background is of the utmost importance.
- At all levels Course Designers should recognise the effect of shadow and light to dark.
- When going from light to dark Horses should be given time to adjust to new circumstances, the suggestion being that they should have at least 2 full strides as the minimum.
- Course Designers should recognise and take into account when designing and siting fences the effect of shadows and the sun particularly early and late in the day and the time of year of the competition.
- It is essential to not present a silhouette to Horses when jumping from the dark towards light or towards the sun.
- It is believed that Horses take longer times to adjust to light changes than humans
- It is believed that there are ways to help horses 'read' a fence. For example, on spread fences have some definition on the top at the front and back to help define the spread; a spread fence with barrels on the front and back will be read more easily than one without; a fence in a fenceline should have the front of the fence in line with the fenceline rather than the back or some trees put on both sides and in front of the leading edge
- With oxers and ascending spread fences it is essential to ensure that the back rail is clearly visible. A minimum of 5cms difference is recommended
- Dressing fences: CDs and officials need to be mindful of what may be positioned on either side of the front of a fence to help the horses 'read' it. It is believed that setting dressing eg trees, pillars, etc back from the front of a fence can be misleading to horses. It is recognised that as the horses gets closer to the fence it draws more and more information from the side.

Leading Edges (art. 547.2.6)

It is essential that every effort is made to avoid unforgiving leading edges on any fence. Research has shown that the more a Horse's mass can be deflected and the less it is stopped at impact the more forgiving the fence and the less the chance of a rotation. In the same vein a smooth surface is more forgiving than rough bark.

Any front leading edge must not be in front of the base of a fence. Where an angled section has been added to the front of an existing fence use the ground line and any necessary filling/dressing to prevent a horse hitting the front of the angled part from underneath.

As a recommendation, front leading edge of spread fences, corners, etc should be sloped at 45° (with a margin of +- 5°) to a point 20cm below the highest point of the leading edge.

Solid top spread fences - there should be nothing protruding from the front of a fence such as a half round which a horse may catch a leg on as it comes upwards in its jumping trajectory

Ascending fences - the front of any spread fence, such as a house or flower box, must be no less than 25cms from the height of the fence unless it is rounded



Good example of a sloped leading edges with the bottom filled.



Bad example of fence: the front of the leading edge may well be sloped at 45 degrees but it is "false" leading edge, with no filling under with the risk that a horse can catch its leg or boot on its way up

Ground Lines

CDs and all officials need to assist and encourage horses to take off at a good point. There are several ways to do this: one of which is to help horses with their depth perception. There are 3 key reference points which it is believed will assist horses with this: one on either side of the fence and one in the centre.

Research has shown that in order to get over a fence without catching a leg on the leading edge, a horse must be no closer at the point of take off than:-

- 1.8m when travelling at 600m/min
- 1.35m when travelling at 450m/min
- 0.9m when travelling at 300m/min

The point of take-off is not the same as the ground line when measuring Base Spread.

With this information it is possible to consider ground lines in a fresh light.

- Ground lines are intended to help horses read the fence and identify the leading edge.
- Ground lines should be used to improve the profile of fences and to help prevent horses getting too 'deep' to a fence

- The height of the dressing in front of a fence is equally as important as how far in front of the fence a ground line may be
- Unless there are exceptional circumstances, ground lines should always be used on fences at all levels
- An additional ground line is not compulsory for fences with a front leading edge of 50 cm or less
- It is expected for there to be a discussion between the TD and CD as to the type of ground line to use
- Ground lines can be rails, flowers,/plants mulch/woodchip, it can be offcuts or anything suitable that will help or further improve the profile of a fence. It need not necessarily extend all the way along the front of the fence, but must remain consistent throughout the day
- Ground lines should be used on steps out of water
- A single rail must never be used without a ground line
- False groundlines are not acceptable under any circumstances
- Groundlines should stay consistent through the entire competition
- Solid groundlines need to be set but not fixed if there is any chance that they may cause a leg trap
- Solid ground line is part of the base spread measurement
- Soft ground lines (such as mulch or flower) is not included in the in the base spread. They are put in front of a fence to help it to jump better

What are the benefits of ground lines?

The sport has an objective and a responsibility to do what it can to reduce rotational falls. Part of this relates to fence profiles which should help the horse read the question and help the shape of its jump.

Experience has shown that fences generally jump better if there is a ground line. It is believed that the height of ground line (to give an improved profile to the fence) is perhaps more important than how far out in front of the fence it is.

There is a balance to be found between helping the horse and encouraging riders to go too fast.

In assessing a fence the horse has to process a lot of information in a short timeframe. We know that the closer the horses gets to the fence the more it draws information from the sides, therefore decoration on the sides of the fence helps keep the horse away from the leading edge, while it is believed the ground line in the middle of the fence helps the horse identify the question from distance.

Rather than ask the question “why would you put a ground line in?”, it is better to ask “why wouldn’t you use one?”

Target speed and take off point

References to target speed means the approximate speed at which the CD expects the fence to be ridden at under normal circumstances.

References to take off point mean where a horse would be expected to take off under normal circumstances

12. Dimensions

- Apart from the first fence all straightforward fences should be built to the height of the level being jumped. If a fence on flat ground cannot be built to maximum dimensions it is probably the wrong fence in the wrong place. It does nobody any favours to get a 1.15 qualification over a 1.10 track.
- As a guideline fences on a down slope, before a step, ditch or other unexpected situation should be circa 5cm below maximum height.
- All spread fences should have the back clearly visible

Combinations and Related distances

- Course Designers should not try to trick Horses or Athletes and where possible Horses should have 2 or 3 strides to be able to understand the question.
- Any combination on 4 strides or less should be on a true distance.
- A true distance refers to the number of strides the average horse would take to go on a related line. The CD and TD both should be in agreement that the average horse should arrive at a related fence on a normal stride from the previous fence, not a half stride. There are numerous factors that will determine a true distance including the slope of the land (uphill, downhill, flat), the profile of the fences (upright vs steeplechase style fence), the likely speed of approach to the fence (coming from a gallop across a flat paddock as opposed to coming off a turn after an incline. See points also under Ground Lines
- All Officials should be clear that, in general terms, the more steps/strides there are between fences the easier the question because the Athlete has more time to make adjustments. The exceptions are the distances where the Course Designer has used a fence as a set up for an exercise.

Curving Lines

- In 1 - 2 strides it is very difficult to curve more than approximately 10°. This would only be appropriate for the 4* and 5* levels.
- In 3 strides it is difficult to curve more than 60°. This is only appropriate for the 4* and 5* levels.
- In 4 strides you could curve 90° for the 4* and 5* level, 60° for 3* and 45° for 2*
- In 5 strides you could curve 90 degrees for the 3* and 60° for 2*
- In 6 strides or more you can ask the 2* to curve through 90°.
- In 7 strides or more you can ask the 1* to curve through 90 degrees.
- Any curving line should not have a radius of less than 20m.

Table type Fences

- At all levels the top of tables or table type fences should always be built either with a sloping front face, sloping upwards away from the Horse on the take-off side of the fence at approximately 45° or a round or half rounds so that the depth of the front face is not less than 25-30cm. **It is highly recommended that all new table type fences are made frangible** (where they fit the dimensions and weights of the frangible manufacturer). For those tables made with the old MIM table kit there is a conversion instruction available on the FEI website.

- At all levels, the possibility of a false ground line should be avoided. Thus for instance in the case of a picnic table there should not be a bench on the landing side of the obstacle if it causes a false optic.
- It is very important that CDs and TDs help the Horse to judge the spread of an obstacle. The top of a table should be slightly ascending anyway and painting the front and back edges and top of the fence can give it added definition. Another recommendation to help identify the spread is to put decoration on top of the fence at the front and the back, not just the back as this can make it more difficult for the Horse to read the leading edge.
- The back of tables/all spread fences should be clearly visible and looking higher than the front part.

Spread Fences

Fences with a top spread close to the maximum permitted for the level of Competition should not be sited in close proximity to hazards which may cause a distraction to the horse. Consideration should always be given in these circumstances to filling-in such spreads. It is essential to ensure that the Horse can see the back of the fence, using different materials, colours, flowers, etc.

Ditches

- At the one and two star levels a ditch of more than 75% of the maximum permitted base spread should not normally be used in front of an obstacle forming the second or subsequent part of a combination, if the distance between the 1st and 2nd part (or 2nd / 3rd as relevant) is less than four strides.
- It is very important that the sides (back face) and bottom of the ditch can be clearly distinguished from the surrounding ground - the colour of the ground / surface should be different – even spraying ground with a coloured paint has been tried with some success.
- Consideration should be given to the depth of ditches: a ditch less than 60cm. deep is not impressive enough for the Horse, whilst if a ditch is more than 60 cm. deep arrangements should be made such that a Horse can be extracted if required.

All ditches should be arranged with a ramp (slope) so that a Horse can be walked out of the ditch readily if necessary, preferably at each end.

Fences with a curved/round (convex) front

Narrow fences with a curved or rounded (convex) front face such as a pimple or mushroom can be hard for horses to understand and 'read' well. The dressing, in order to be fair to the horses, of these fences therefore becomes very important to overcome the optical challenge faced by horses and so CDs need to consider how to address this issue. Trees on each side at the front coming up to the height of the fence can help, a straight ground line can help remove the roundness of the top of the fence, a combination of both of these, ie dressing that is discernible and helps the horses.

Brush Fences

- Where there is both a solid or fixed part and a soft "brush" part (for Horses to brush through it without causing injury to the Horse) to an obstacle, the fence will jump better if there is 25cm to 30cm. of brush above the solid part which should be 5-10cms below the maximum permitted at every level.
- The back of the brush box should be 5cm. lower than the front
- For instance, at 4* and 5* where 1.40 - 1.45 m is permitted for the maximum height of

the brush, the fixed part should actually be set at approximately 1.10 – 1.15 m at the front and 1.05 – 1.10m at the back

- **Brush fences should be 'brushable' and not present a 'solid' element to the fence. Horses should be able to brush through them without undue stiffness in the brush.**
- The material used should be such that the risk of injury to Horses is as small as possible. Thick stems and sharp ends after trimming/cutting must be avoided. Ideally the top of the brush should be used in the fence rather than the thick, bottom part of the brush, ie cut the bottom off before the brush is put in to the fence and then trim the top.
- It is recommended that the overall thickness/depth of the brush is no more than 10cms, preferably less. **Brush means that a horse must readily be able to brush through the top of the brush.** Its thickness will depend on the materials used in different parts of the world. Great care must be taken when constructing brush fences so that there is no way that a horse is able to get one of its feet in to the frame holding the brush. If necessary the gap in the frame can easily be reduced.
- Brush 'shoulders' – care should be taken that Athletes do not try to jump the shoulder itself or the high brush and so it may be necessary to flag the parts of the brush that the Course Designer wants to be jumped.
- CDs must be mindful of the number of brush fences on their courses. It is important that horses learn to jump 'solid' fences correctly at the lower levels and so not to overuse brush at these levels. It is also important not to change the XC test by overusing brush fences which require horses to expend more effort overall.
- As a guide, the maximum number of brush fences should be no more than between 15% and 20% of the course.

Double and Triple Brushes

- It is essential that double and triple brushes are "filled in" between the rows of brush, so that a Horse can put a foot down with safety.
- In the case of double brushes, it is essential to "fill in" between the two rows of brush and to have a ¼ or ½ round in front of the second brush on top of the 'fill'.
- Triple Brushes – the maximum base spread should never be more than 3/4 (75%) of the maximum permitted base spread. The key to the success of these fences is to ensure that they are in proportion with not too much base spread: 1* and 2* 1.40m, 3* 1.60, 4* and 5 * 1.80m
- Part of the challenge of these fences is the width of the jump at the front; the wider it is the easier it tends to be and so for all levels the front width needs to be considered alongside the width at the back and the base spread

Unjumpable Parts of Fences

- Unjumpable parts of a fence or combination of fences should be truly "unjumpable". This means that the Course Designer and Technical Delegate should be sure they close the places where they do not want the Athletes to jump in a way that for the Horse it is clearly a barrier and is impossible to try to jump.

Alternative Obstacles

- Alternative obstacles, if possible, should be designed as the same type as the direct route, and not interfering with it.
- An alternative obstacle must not be sited in such a way as to encourage a quick jump

following a refusal for example, an "elbow" attached to an obstacle on the front side as an alternative (Eventing Rules, art. 547.5.2).

- Where possible, alternatives should be sited only behind the direct route, and on the landing side of obstacles. If this is not practicable (where ground slopes away or water involved) the alternative obstacle should be some distance away ensuring sufficient space to recover the impulsion needed to jump it (at least three strides).
- For this purpose the black flag methodology is often very helpful for the Course Designer.
- In principle, if a course is of the correct degree of difficulty and suitable for the level there should be little need for alternatives. However, the need for alternatives needs to be discussed and agreed by the TD and CD. It is important to recognise the importance of MERs being achieved over courses of the right degree of difficulty

Bounce Fences

- The elements of a bounce fence should not consist of uprights – the face of the elements should be sloping or rounded. The use of contrasting colours for each element is highly recommended.
- At 1*, except from small steps down, bounce fences are not acceptable at 1*
- At 2* or 3* Events, bounce fences should not be built on downhill slopes and even at 4* & 5* fences their use needs to be thoroughly considered before using them. A bounce of maximum height is not appropriate at a lower level Event.
- The first element should usually be lower than the second element to help the Horse read the question. Exceptions to this could be where there is water and/or a drop behind the second element
- Double bounce fences should not be used except in the case of 'steps'.
- A bounce having jumped down a step or after a drop is unacceptable

Keyhole Fences

CDs must be careful when using these fences in much the same way when designing any fence. It is acceptable to use them at all levels but care must be taken to ensure that whenever they are used the horses can clearly see their way after the fence and everyone must be mindful that some horses, especially when they come across one for the first time, may feel the need to 'duck' for fear of coming into contact with the top of the fence. It is therefore essential to ensure that there is plenty of height and the keyholes are not 'claustrophobic'.

- At 4* & 5* level the height of the hole should not be less than 1.80 m. and the width not less than 1.60 m.
- At 3* level the height of the hole should not be less than 2.00m. and the width not less than 1.90m.
- At 2* level the height of the hole should not be less than 2.10m. and the width not less than 2m
- At 1* level, the height of the hole should not be less than 2.20m and the width not less than 2.10
- Please note that these dimensions are the minimum, not necessarily the optimum
- Any surface that can be touched by the Horse should always be soft (not susceptible to hurt the Horse or the Athlete).

Keyholes should not have a spread of more than 45cm. and the bottom of the keyhole should be brush/soft. When using these fences it is essential that there is absolutely minimal chance

of an Athlete hitting the brush at top of the fence even if this means that the size of the 'hole' exceeds the minimum recommended.

This type of fence should only be built in such a way that the question for the Horse is very clear and this applies to any fence that may follow it; if a Course Designer wishes to use this sort of fence it will be necessary to ensure that the 'hole' is big enough for Horses to understand the question in full. If a fence is used after a keyhole the Horse should be able to understand the question easily i.e. not be surprised by another fence that is 'hidden'.

As with fences with a roof or arch over the top CDs should ensure that any shadow from a keyhole or the position of the sun throughout the course of the competition does not affect the horses' ability to read the fence/question clearly.

- There should be no chance of an Athlete or a Horse hitting the frame of the keyhole or the brush if brush is used. A minimum of 60cms of brush must be below the frame at the top of a keyhole

Fences with 'slats/boards'

Horses can find it hard to read fences such as the one below because the visual effect changes as they approach the fence due to the small gaps between the slats/boards where light comes through from behind. As such, these types of fences are not recommended for use, unless these gaps are obstructed with some material (battens, expansive foam, etc.) to avoid that light effect



Fences with Roof

- The lowest part of any roof structure should not be lower than 2.20m from the highest part of the fence.
- It is not recommended to use roofs at water complexes where the Horse has to jump under the roofed area or where there is a roofed bank in the water. Course Designers should ensure that the shadow from a roof or the position of the sun during the course of the competition does not affect the horses' ability to read the fence/question clearly
- The solid part of any timber frame over a fence should not be less than 3.60m. from the ground

Water Fences (refer to Eventing rules, art 547.2.5 & 547.3.3)

- Each course must have at least one water fences
- Using different shades of colours or clearly differentiated colours is recommended. This makes the Horse quickly understand what he has to jump. Avoid optical illusions and also

avoid reflective materials / gloss paint/ shiny varnishes. The top line of bank or step out of water should be very visible in all conditions especially when wet after a few Horses have passed.

- Step out of water, a ground line is recommended, and the previous fence should be not less than 2 strides before the step or 3 strides after drop into water
- While a slight slope on the ground where Horses land in water is recommended there should not be more than a 20cm change in the depth of water in the first two strides after landing.
- Water to water with a drop is not considered to be an appropriate question at any level
- The use of 'white' coloured fences is strongly **not recommended** when jumping into water.
- Rippling the surface of the water has proved to be useful to help Horses 'read' the water especially where there are shadows from trees. This effect can be created as simply as the fence judge moving the water with a stick. The "mirror effect" should be reduced by rippling the water surface.

Corners

- Open Corners are recommended at all levels where Horses have time to understand the question.
- Closed in 'solid top' corners are recommended where there is limited re-action time, i.e. after a step or ditch or shortly after crest of hill.
- Corners should not have a back rail shorter than 2.5m. and should be longer at the lower levels (1*, 2* & 3*). See table below. Use flagging and decoration to create a clear single visual passage across the fence. If a frangible rail is used great care should be taken to avoid the risk of a Horse jumping onto the retaining post.
- Suggested degrees for corners:
 - 1*: 40°-45 °
 - 2*: 45°-55 °
 - 3*: 55°-65 °
 - 4*: 70°-80°
 - 5*: up to 90°
- On open corners, if the course designer uses a short rail at the back, the suggested minimum length is:
 - 1*: not an acceptable fence for the level
 - 2*: 3.00m.
 - 3*: 2.80m.
 - 4* & 5*: 2.50m.

Acute Angle Fences

Course Designers should always avoid asking a Horse to jump a fence at an acute angle (more than 45 degrees) when changes of terrain are involved (drops, water, top of hills) as the risk of the Horse misreading it and leaving a leg is significantly increased. To assist with ensuring that athletes do not attempt to jump at an angle that the CD does not want them to it is strongly recommended to avoid this risk by blocking such a line using for example brush bundles.

Warm Up Fences

The purpose of the warm up is to allow Athletes to prepare their Horses and themselves for the cross country phase. Officials should ensure that there is a minimum of two, preferably 3 fixed fences with at least one designed to get the Horses jumping freely forward and the other a skinny with perhaps two show jumps, an upright and a spread to support the cross country fences. Care should be taken to make the area large enough that 3-4 Horses can easily canter around at XC speed.

Warm up fences should be dressed as if they are competition fences and they must be secured properly. Officials must check the warm up fences as though they are competition fences.

It is essential to monitor the ground during the day(s) of competition since warm up fences are jumped more than the fences on the actual course(s)

Drops

- The number of drops should not be excessive (10-15% as a guide) on any course.
- Fences jumping downhill with a significantly lower landing than take off should count
- Run away landings are much more forgiving and their use should be encouraged; landing on flat ground from a drop fence should be avoided

Narrow Fences

- The number of narrow fences should not be excessive on any course.
- Jumpable width should be evaluated considering the actual jumpable width presented to the Horse on the intended jumping line.
- Further consideration of the minimum jumpable widths of narrow fences and the thinking that the sport has gone too 'skinny' on occasions has led to the following recommended window of minimum jumpable width:
 - 1*: 190-200 cm.
 - 2*: 165-180 cm.
 - 3*: 150-165 cm.
 - 4*: 140-150 cm.
 - 5*: 130-140 cm.
- This is not to say that, provided the TD and CD are in agreement, fences cannot be narrower than this if they are jumped on a straight line or with a brush shoulder but this is not an excuse to have fences that are unsuitable for the level.

Steps & Banks

To assist horses when jumping up or down steps it is recommended to have a half round or a rail on top of each step to help with the definition of the steps.

The profile of steps is also important and where possible CDs, when having steps that are to be jumped up, are encouraged to have the ground slightly rising upwards so that it can be clearly seen by the horses on the approach

Banks that horses are required to jump must allow for good purchase, have clear definition, and not be slippery. It is important that horses can jump these fences with secure footing

Flagging of fences

All corners should have 3 flags on them, one on the apex and two on the inside. The inside flags should be positioned so that they encourage Athletes to jump the fence on an appropriate line. It is recognised that the inside flags, particularly on bigger/wider corners, will need to be more to the inside than on smaller angled corners

Flags on brush fences where there is a brush shoulder should be positioned such that horses are not able to jump outside the brush shoulder. It is acceptable for the shoulder to be included inside the flags

13. Footing

The importance of the best possible footing cannot be underestimated and Course Designers should factor this in to their designing. The quality of the footing is, ultimately, the CDs responsibility.

Good footing gives Horses confidence and security. Poor footing makes Horses suspicious and can lead to a lack or loss of confidence.

Course designers have to recognise that their courses should remain fair and, as far as is possible, the same, for all Horses regardless of the weather conditions. Inevitably when the footing is perfect it is reasonable to expect more combinations to achieve the Time Allowed.

Managing hard ground is much easier than managing wet ground and there is a lot of machinery available nowadays to make hard ground acceptable. Local knowledge of ground conditions and how best to deal with the challenges that Course Designers face is worth finding out about.

Changing Footing

In an ideal world, courses would have the same footing all the way around the course. However, it is sometimes necessary to use the Main Arena (good for sponsors and spectators) which may have an all-weather surface. CDs need to be mindful of the effect that a change of footing can have on the horses physically and be mindful of the tightness of the turns and the intensity of the fences in these circumstances.

14. Drones & Cameras

Modern photography can greatly enhance our sport. The TD should always approve camera placement and movement and drone operation before the competition according to the country regulations.

Drones are only to be flown by licensed operators, who provide risk assessment and a copy of their insurance to the TD. The operator must discuss with the TD the flight path and operational plan including the Landing/Home Zone. The take off is the most intrusive time in the flight of a drone.

The TD should post a notice on the notice board informing athletes and inform the paramedics, officials and fence judges that there is an approved drone being flown.

Current advice to drone operators is to fly no closer than 40m to the FoP and at an altitude of no less than 10m when filming along side a moving Athlete, remain 40m in front of the

Athlete on the FoP and at an altitude of no less than 20m when the horse galloping towards the drone.

If flight path is directly overhead of an Athlete then at an altitude of no less than 40m. A drone will not have a consistent flight path over members of the public - Commercial Drone Operators Licence – National Law

15. A Horse's Perspective

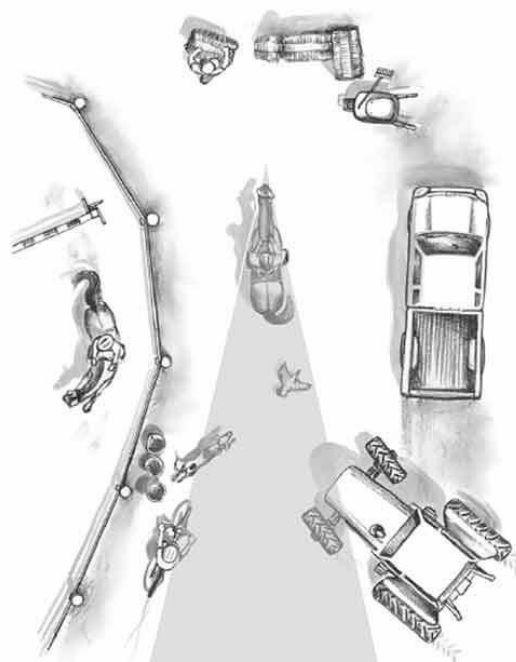
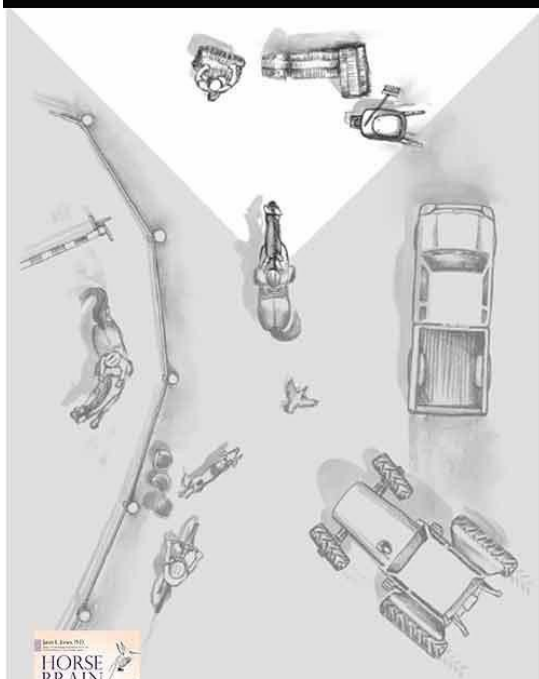
- **Tiredness** – Remember a Horse can get mentally tired as well as physically.
- **Uphill approach** – easier as long as there is the opportunity to keep the revs up.
- **Downhill approach** – more difficult because the Horse needs more help from the Athlete to maintain balance.
- **Approach off a turn** – easier because the turn helps with the balance.
- **Light into Dark** – difficult because it takes time for the Horse to establish where he is going/landing. Should use appropriate timber to facilitate contrast and ensure as good visibility as possible for the Horse
- **Towards daylight** – much easier for it is easier for the Horse to understand where it is going but be very mindful and guard against jumping a silhouette as this is potentially unsafe. . The fence must be obvious and clearly visible
- **Straight-line combinations** – easier for the Horse as it has the most time to understand and assess the "question", but more difficult for the Athlete.
- **Bending line combination** – can be more difficult as the Athlete has to take a decision and the Horse has less time to understand what is being asked
- **Blind turns** – difficult and not appropriate at any level because the Horse has little time to assess to question.
- **Vision** – a Horse is a 'prey animal' and can see forwards and backwards so cannot focus like a 'predator.' Therefore at narrow questions and corners it is believed that it sees the fence out of one eye and a wide open space with the other.
- **Colour** – all two legged creatures see in colour whereas research has shown that Horses see in contrast and dichromatically, ie they do not see colours as we see them. Therefore officials should be cognisant of contrast (eg a dark coloured rail in shadow is not a good idea) and the possible/probable effect of certain colours. Research by Exeter University in the UK has shown that horses see white, light blue, and yellow more clearly than red and dark blue Contrast is equally important, so white against green background is really good whereas black on a dark green background is not very good.



ONE SCENE, TWO VIEWS

The white area below indicates what the rider sees.

The white area below indicates what the horse sees.



FROM *HORSE BRAIN, HUMAN BRAIN* BY JANET JONES, PHD
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