

= Field hockey pitch =

A hockey pitch is the playing surface for the game of field hockey . Historically , the game was played on natural turf (grass) but nowadays is predominantly played on an artificial turf . The transition onto artificial pitches came during the 1970s and was made mandatory for major competitions in 1976 . All the lines , markings and goal specifications are outlined by the International Hockey Federation in " The Rules of Hockey " .

All line markings on the pitch form part of the area which they define . For example , a ball on the side line is still in the field of play ; a ball on the line of the penalty circle is in the penalty circle ; a foul committed over the 23 @-@ metre (25 @-@ yard) line has occurred in the 23 @-@ metre area . A ball must completely cross a boundary line to be out of play , and a ball must wholly cross the goal line before a goal is scored .

Due to the original formulation of the rules in England , the standard dimensions of a hockey pitch were originally expressed in imperial units . The rules are now expressed explicitly in metric dimensions (since 1998) although the use of the imperial terms remains common in some countries .

= = Field of play = =

The hockey pitch is rectangular in shape . The longer perimeter edges are called the side line , the opposing shorter edges are referred to as back line and the portion of this between the goal posts is known as the goal line . The side line must measure 91 @. @ 40 m (100 yd) and the back line should measure 55 @. @ 00 m (60 yd) . There must be a minimum run @-@ off of 2 m at the sidelines and 3 m at the backlines which may be a different surface for the final metre . All line markings must be white and 75 millimetres wide . In each corner of the pitch , a corner flag of no more than 300 mm square is attached to a post of height 1 @. @ 20 ? 1 @. @ 50 m .

Historically , the pitch dimensions were imperial and were replaced by metric equivalents in 1998 . The first recorded rules represented what London clubs were using at the time . Surbiton Hockey Club 's minutes from 1876 stated that pitches were to be " 100 ? 150 yards (91 ? 137 m) long and 50 ? 80 yards (46 ? 73 m) wide " . Rules by the Hockey Association of England in 1886 specified " 100 yards long by 55 to 60 yards (50 to 55 m) wide " . In 1905 , the International Rules Board allowed the width of the pitch to be " up to 66 yards (60 m) " but this decision was reversed in 1909 . In 1975 , the current width of 60 yards was written into the rules .

On artificial surfaces , the field of play should be coloured green , ultramarine blue or signal blue . It is permitted for the run @-@ off portion of the pitch to be an alternative colour .

= = Goal = =

Goals consist of two upright posts placed equidistant from the centre of the backline , joined at the top by a horizontal crossbar . The inner edges of the posts must be 3 @. @ 66 metres (4 yd) apart , and the lower edge of the crossbar must be 2 @. @ 14 metres (7 ft) above the ground . The goalposts and crossbar must be white and rectangular in shape with width 50 millimetres (2 in) and a depth of 50 to 75 millimetres (2 to 3 in) . A backboard of height 460 millimetres (18 in) extends for the width of the goal and a sideboard of the same height must extend for at least 1 @. @ 20 m ; the goal must be at least this deep at ground level and at least 0 @. @ 90 m deep at crossbar level . Affixed to these boards , the posts and crossbar is a net to stop the ball .

The first hockey goals were " 7 feet (2 @. @ 1 m) tall posts placed 6 yards (5 @. @ 5 m) apart " but were reduced to 4 yards (3 @. @ 7 m) apart in the 1886 rules . In 1987 , a rule was introduced so that at penalty corners " the first hit at goal should not cross the goal @-@ line higher than 18 inches (460 mm) " . This saw the introduction of a sideboard and backboard to the goals which are now mandatory .

= = Circle = =

A goal is scored when the ball passes completely over the goal line but only if the ball was played (by a defensive or offensive player) in the penalty circle . Additionally , the circle marks the area a goalkeeper may play the ball with any part of his body and the area where an infringement by a defender results in a penalty corner . The terminology circle (or D) is widely used although the area is actually formed by a 3 @. @ 66 @- @ metre (4 yd) straight line , parallel to the goal line , connected to two 14 @. @ 63 @- @ metre (16 yd) quadrant arcs .

The 1876 rules stated that " no goals shall be allowed if the ball be hit from a distance of more than 15 yards (14 m) from the nearest goalpost " . A visible " striking circle " with " radius of 15 yards " was codified in 1886 . The radius of the circle was increased to 16 yards (15 m) in 1951 for men 's hockey and 1968 for women 's hockey . Any free @- @ hit within 5 m of the circle must be taken back to 5 m from the circle ; a broken circle 5 m from the penalty circle denotes this location and became mandatory in 2000 .

A penalty spot is centrally positioned directly in front of the goal and used for a penalty stroke . The spot is 150 mm in diameter and its centre is 6 @. @ 475 m from the outside of the goal line . Penalty strokes were introduced in 1963 for deliberately stopping a certain goal ; they were originally taken 8 yards (7 @. @ 3 m) from goal . In 1973 , a stroke could also be awarded for a deliberate foul in the circle and the spot was moved to 7 yards (6 @. @ 4 m) from goal the following year .

= = Other markings = =

A half @- @ way line , parallel to the back line , divides the pitch in two . The start of each period of play and resumption of play following a goal starts with all players in the half they are defending . The line was also used for the obsolete offside rule .

Each half of the pitch is then divided again by a line , referred to as the 23 metre line or 25 yard line , positioned 22 @. @ 90 m from each back line . Historically , this was first used to resume play after the ball passed over the back line and marked by flags at the side of the pitch . In 1949 , deliberate defensive offenses in this area resulted in a penalty corner . From 1961 , players on the defensive team who were not involved at the penalty corner stood behind this line (this was then moved to the half @- @ way line two years later) . The line was also used for the offside rule between 1987 until the rule was abolished in 1996 . Nowadays , there are detailed rules regarding fouls and free @- @ hits in the 23 metre region of the pitch . Since 2015 , the 23 metre line has also been used for the attacking team to resume play when it has gone over the back line (this replaced long corners) .

There are additional markings 300 mm long and perpendicular to the back line that denote distances of 10 m and 5 m from each goal post . These are relevant at a penalty corner ; the former is the mark from which the attacking team takes the penalty corner and the latter is the closest position which a defender may stand . These marks had been 5 and 10 yards (4 @. @ 6 and 9 @. @ 1 m) in earlier versions of the rules . There is a similar mark 5 m from along the side line (from where long corners were formally taken) and a mark 14 @. @ 6 m along the side line indicating the level of the top of the penalty circle . There are also 150 mm long markings where the goal posts are situated .

= = Artificial playing surface = =

Historically , the game was developed on natural grass turf . However , in 1976 , the International Hockey Federation (FIH) made artificial pitches mandatory at all major competitions . The 1976 Summer Olympics in Montreal was the first of these ; however at this time few players had seen nor played on synthetic pitches . Although it is still permissible to play on natural turf all national competitions and international matches must be played on an artificial surface . Elite @- @ level competitions , such as the Olympic Games and World Cup , require a water @- @ based playing surface . However , due to water conservation efforts , this is not seen as a long @- @ term sustainable option and alternative elite surfaces that do not require water are being researched .

There are three main types of artificial hockey surface :

Unfilled or water @-@ based - artificial fibres that are densely packed for stabilisation , requires irrigation or watering to avoid pitch wear

Dressed or sand @-@ dressed - artificial fibres can be less densely packed and sand supports the fibres for part of the pile depth

Filled or sand @-@ filled - artificial fibres can be longer and less densely packed and sand supports the fibres for 100 % of the pile depth

On water @-@ based pitches , shorter fibres and wetted turf reduce friction and increase the speed at which the game can be played . However , these pitches require watering before , during and after the game and maintenance costs are significant . Sand @-@ dressed pitches cost more than sand @-@ filled pitches but are preferable for hockey as there is an absence of sand close to the playing surface . However , a multi @-@ purpose surface suitable for sports including association football and tennis is often required and hockey may not be the predominant sport . There are many different specifications and categorisations for artificial turf including shock absorption , surface rebound , friction , and strength outlined by the International Hockey Federation . Recently , longer @-@ pile third @-@ generation or 3G pitches have become popular , especially for football , but these do not usually meet the FIH 's test criteria ; they are often too inconsistent and slow .

= = = Criticism = = =

The World Hockey magazine reported on the first hockey tournament played on an artificial pitch in 1975 ? a trial event in Montreal prior to the Olympics ? and said the surface had " enormous benefits " . Steve Ruskin , of Sports Illustrated , said that " A slow , analytical game gave way to one of nonstop , true @-@ hop action . " However , it has been stated that the decision to make artificial surfaces mandatory greatly favoured more affluent Western countries who could afford these new pitches . Before the switch to an artificial surface the Indian men 's hockey team were dominant , winning seven of the eight Olympic gold medals between 1928 and 1964 . In 1996 , Indian hockey player Ajit Pal Singh stated that despite its size " [India] can afford only 12 or so AstroTurf fields " . Sardara Singh , captain of the Indian men 's hockey team , said that " hockey players in India play on astroturf [sic] for the first time at the age of 19 or 20 and find it hard to adapt . " However , the Pakistan hockey team have performed well following the change of surface despite the country being worse off economically and having fewer artificial pitches . When describing the change of surface , Ruskin said that " for India it was like starting over , with all nations even in field hockey . "