History of Equipment Rules

Contents

1. Executive Summary

The following is a brief overview of the evolution of equipment rules from 1909 to current. Particular focus on rules, specifications, and committee deliberations with respect to distance is presented.

2. History of Equipment Rules

1909: The first mention of rulings on equipment in the Rules of Golf. The "Form and Make of Golf Clubs" appears in a separate section between recommendations for local rules and etiquette.

> Form and Make of Golf Clubs. The Rules of Golf Committee intimates that it will not sanction any substantial departure from the traditional and accepted form and make of golf clubs, which in its opinion, consist of a plain shaft and a head which does not contain any mechanical contrivance, such as springs.

1911: The term "conformity" appears for the first time in the Rules of Golf. Mention of conformity is included in Rule 1-1.

> General and Through the Green. Rule 1. Mode of Play. (1) The game of golf is played by two sides, each playing its own ball, with clubs made in conformity with the directions laid down in the clause on the 'Form and Make of Golf Clubs'.

In addition, "Form and Make of Golf Clubs" was amended to ban ""clubs as those of mallet-headed type." Special interpretations by the USGA were added:

> The shaft of a putter may be fixed at the heel or at any other point in the head. The term mallet-headed, as above used, when applied to putters does not embrace putters of the so-called Schenectady type. U.S.G.A.

Three additional considerations were added to "Form and Make of Golf Clubs" which would be used to guide The R&A Rules of Golf Committee in interpreting the rule:

(1) The head of the Golf Club shall be so constructed that the length of the head from the back of the heel to the toe shall be greater than the breadth from the face to the back of the head.
(2) The shaft shall be fixed to the heel, or to a neck, socket, or hosel which terminates at the heel.
(3) The lower part of the shaft shall, if produced, meet the heel of the club, or (as for example in the case of the Park and Fairlie Clubs) a point opposite the heel, either to right or left, when the club is soled in the ordinary position for play.

1921; The Rules of Golf Committees of the United States Golf Association and The R&A stated that they "will take whatever steps they think necessary to limit the power of the golf ball with regard to distance, should any ball of greater power be introduced." (Rules of Golf, 1921)

> The weight of the ball shall be not greater than l.62 ounces avoirdupois and the size not less than 1.62 inches in diameter.

Steel shafts are also banned by the USGA

> A steel shaft is a departure from the traditional and accepted form of golf clubs. U.S.G.A.

1922: Rule 1-1, is expanded to include both clubs and balls made in conformity with "the directions laid down in the clause on 'Form and Make of Golf Clubs and Balls.'" In addition, the USGA interpretations to the clause on "Form and Make of Golf Clubs" includes a ban of steel shafts.

1924: the USGA Implements and Ball Committee began experiments with lighter balls. In making this decision they noted: "The Committee is guided in making these experiments by the fact that the yardage of championship courses has materially increased during the past few years. This is tending more and more to make the championships an endurance test rather than a test of skill. The extra expense in relaying of courses, the purchase of property and the up-keep area also items which convince the Committee that such action is necessary. (Year Book of the United States Golf Association, 1924)."

Lines, dots, or other markings on club faces for the obvious purpose of putting a cut the ball are not permitted (USGA – R&A, 1933). Steel shafts are now permitted.

1931: After conducting research and testing over the course of 5 years, the USGA places new limitations on the golf ball noting that the "United States Golf Association will take whatever steps necessary to limit the power of the ball with regard to distance, should any ball of greater power be introduced. They also note that "The report of this Committee [Implements and Ball] for the year 1930 would not be complete without mention of the splendid support given by the Golf Ball Manufacturers who, during a period of substantial re-adjustment in their manufacturing equipment, have shown every co-operation and desire to serve the best interests of the game." (Year Book of the United States Golf Association, 1931)

> The weight of the ball shall be not greater the 1.55 ounces avoirdupois, and the size not less than 1.68 inches in diameter. (Rules of Golf, 1931)

Concavity in the clubface is no longer permitted.

> Club faces shall not embody any degree of concavity or more than one angle of loft. U.S.G.A.

The R&A permits the use of steel shafts.

1932: The lighter ball lasts only one year. While players found the size of the ball uniformly popular and preferable to play, the weight of the ball was found to be of insufficient to hold its course in the wind and was easily diverted by irregularities on the putting green. The USGA returns to a maximum

weight of 1.62 oz and retains the minimum diameter at 1.68-in as the American 'standard' ball. The R&A keeps the 1.62-in and 1.62 oz. ball as the British 'standard' ball.

Wooden clubs constructed so that weights in the head can be added or removed are permitted provided they are covered with a plate in such a way that they cannot be adjusted outside the shop. Iron club with insets in the faces are not barred in the USGA Rules.

1934:

Wooden clubs constructed so that weights in the head can be added or removed are permitted provided they are covered with a plate in such a way that they cannot be adjusted outside the shop. Iron club with insets in the faces are not barred in The R&A Rules.

A specific penalty is now added for playing with non-conforming clubs or balls to Rule 1-1. It is disqualification.

> In Competitions players using Clubs or Balls which are not in conformity with the Clause on "Form and make of Golf Clubs and Balls" shall be disqualified. (Rules of Golf, 1934)

Interpretations are now integrated into the USGA Rules including limitations on where the shaft is attached and the proportions of the clubhead.

> The following general considerations will guide the Rules of Golf Committee in interpreting the above:
>
> 1. The head of a golf club shall be so constructed that the length of the head from the back of the heel to the toe shall be greater than the breadth from the face to the back of the head.
>
> 2. The shaft shall be fixed to the heel or to a neck, socket or hosel in line with the heel or to a point opposite the heel, either to right or left, when the club is soled in the ordinary position for play.
>
> 3. The shaft of a putter may be fixed at any point in the head between the heel and a line terminating at the centre of the sole. (Rules of Golf, 1934)

1937: "On June 5, 1936 the principal golf ball manufacturers and members of the Golf Ball Manufacturer's Association, with the exception of the Penfold Company, which is not a member, were called together at Baltusrol and were told that the U.S.G.A. viewed with alarm the increasing flight of balls during the past few years. Each manufacturer present promised that he would not bring out for merchandising a ball of greater distance than those already on the market without first notifying us in writing." (Year Book of the United States Golf Association, 1937)

1938: The fourteen-club limit is introduced

> Effective January 1, 1938, amending of preambles to the Rules of Golf:
>
> The game of golf consists in a ball being played from the teeing ground into the hole by successive strokes, with clubs (not exceeding fourteen in number) and balls made in conformity with the directions laid down in the clause on "Form and Make of Golf Clubs and Balls." (Rules of Golf, 1938)

1942: The USGA implement a velocity standard [Initial Velocity Standard (IV)] for golf balls stating: "This has the effect of "freezing" the distance qualities of the ball at the length of the 1941 ball." (Year Book of the United States Golf Association, 1942)

> BALLS
>
> The weight of the ball shall not be greater than 1.620 ounces avoirdupois, and the size not less than 1.680 inches in diameter. The velocity of the ball shall not be greater than 250 feet per second when measured on the U.S.G.A's apparatus; the temperature of the ball when so tested shall be 75 degrees Fahrenheit; a maximum tolerance of 2% will be allowed on any ball in such velocity test. (Rules of Golf, 1942)

1947: It is noted that the Implements and Ball Committee is the interpreting body, rather than the Rules of Golf Committee at the USGA with regard to the "Rules Governing Form And Make Of Golf Clubs And Balls".

> The following general considerations will guide the Implements and Ball Committee in interpreting the above: (Rules of Golf, 1947)

With the reorganization of the Rules, the clause on the penalty for using clubs or balls not in conformity with the Form and Make of Golf Clubs and Golf Balls is separated from its initial mention in the Preamble and moved to Rule 2-3: General Penalties.

Two additional specifications (grip and all parts fixed) are added to general considerations in the USGA Rules interpreting the Form and Make of Golf Clubs. (These are added by The R&A in 1952.)

> 4. The grip shall consist of a plain extension of the shaft to which material may be added for the purpose of obtaining a firmer hold.
>
> 5. A club shall be one unit. All its various parts shall be permanently fixed. No part may be movable or separable or capable of adjustment by the player. (Rules of Golf, 1947)

1948: The Implements and Ball Committee notes that it received the usual number of inquiries regarding the legality of the implements of the game. "Among these were a number of special gloves offering various kinds of mechanical assistance to the player, none of which could be accepted." (Year Book of the United States Golf Association, 1948)

1952: With the institution of a worldwide uniform code of rules, the only exception maintained is golf ball specifications. The preface of the 1952 Rules includes a paragraph on the different specifications of the British and American ball.

> The Ball
>
> There has been and still remains a difference in the size of the ball. This matter has been regarded in a somewhat different light from that of the Rules of actual play. Playing conditions differ in many parts of the world, and the ruling bodies held to the opinion that the smaller British ball is no more suitable for play in the United States than the larger American ball is suitable for play in Great Britain. It is hoped that in the future it may be possible to find some basis for standardizing the ball. In the meanwhile, and in this code, the

> size of the British ball is specified as not less than 1.620 inches in diameter and that of the American ball as not less than 1.680 inches, with weight coinciding at 1.620 ounces. To give playing equality in international team competition, the USGA has legalized the smaller ball for use in such contests in its country. (Rules of Golf, 1952)

The Rules of Golf greatly expanded the "general considerations" to "guide the USGA in interpreting" clubs conforming to the Form and Make of Clubs. Sections include: Shape of Head, Attachment of Shaft, Nature of Grip, and Moveable Parts Prohibited. This is no longer a section in the Appendix, but fully enumerated in Rule 2. The Club and Ball. Rule 2-2 is the Form and Make of Clubs. A separate section "Markings on Iron Clubs" is included in the Appendix.

An exception covering international team competition is added to Rule 2-3. Weight, Size and Velocity of Ball section.

> 3. Weight, Size and Velocity of Ball. a. Exception. In international team competition the size of the ball shall be *not less* than 1.620 inches in diameter, and the velocity specification above shall not apply. Penalty for breach of Rule: Disqualification
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> Note: *The Rules of the Royal and Ancient Golf Club of St. Andrews, Scotland, provide that the weight of the ball shall not be greater than 1.620 ounces avoirdupois, and the size not less than 1.620 inches in diameter.* (Rules of Golf, 1952)

1953: The USGA and The R&A Implements and Ball Committees disapprove a "novel wooden clubhead which contained three passages originating in the face and terminating in a streamlined egress chamber at the back. The purpose of the passages was to permit air to flow through the clubhead and dissipate the partial vacuum behind it, this increasing the speed with which the clubhead could be swung." (Year Book of the United States Golf Association, 1954)

1955: The Implements and Ball Committee noted: "On two occasions we rendered the opinion that multiple-faced clubs did not conform, because clubs with two faces of differing lofts can be used to circumvent the maximum of fourteen clubs."

Also noted was the increasing number of "clubs which the detailed Rules never contemplated. In questionable cases we apply the test of the principle of 'the traditional and customary form and make.' That, after all, is the best measure of a club's acceptability." (Year Book of the United States Golf Association, 1956)

1956: Note added to Rule 2. The Club and the Ball reserving the right of the USGA and R&A to change the rules regarding the club and ball at any time.

> Rule 2. The Club and the Ball. The United States Golf Association and the Royal and Ancient Golf Club of St. Andrews, Scotland, reserve the right to change the Rules and the interpretations regulating clubs and balls at any time. (Rules of Golf, 1956)

New Exception for putter shafts added to Rule 2-2e allowing the shaft of a putter to be fixed at any point of the head

1958: The Implements and Ball Committee noted that the use of tungsten powder as a weighting substance in a wooden clubhead was approved "provided it is firmly fixed and not movable."

Also, the committee disapproved a putter with a shaft that attached at both the heel and the toe, noting; “the Rules contemplate a single attachment.” (Year Book of the United States Golf Association, 1959)

1962: The Implements and Ball Committee noted that it had been suggested the USGA set a standard loft for each club. “This was rejected as undesirable as well as impossible to police.” (Year Book of the United States Golf Association, 1963)

1964: Rule 2-2a includes new definitions of three types of clubs, “iron,” “wood,” and “putter,” in a section titled “General Characteristics.”

> An “iron” club is one with a head which usually is relatively narrow from face to back, and usually is made of steel.
>
> A “wood” club is one with a head relatively broad from face to back (see Figure B on page 11), and usually is made of wood, plastic or a light metal.
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> A “putter” is a club designed primarily for use on the putting green – see Definition 25.

Rule 2 includes more detailed specifications for measuring length of a clubhead and for attachment of the shaft to the clubhead. A section in the USGA Appendix is added, “British Differences in the Rules of Golf,” which includes the provision regarding the golf ball (Rule 2-3) that the size of ball be not less than 1.620 inches in diameter, and that a ball velocity test is not required.

1968: The American ‘standard’ ball is adopted for all British PGA events.

After receiving a number of clubs with bends in the shaft the Rules explicitly state that the shafts in all clubs must be straight

> The shaft shall be designed to be straight from the top to a point not more than five inches above the sole. The shaft shall be generally circular in cross-section. The shaft shall be fixed to the clubhead at the heel (as illustrated in Figure A on page 10). The shaft may be attached directly to the clubhead or to a neck or socket of the clubhead; any neck or socket shall not be more than five inches in length measured from the top of the neck or socket to the sole. The shaft and the neck or socket shall remain in line with the heel, or with a point to right or left of the heel, when the club is soled at address. The distance between the axis of the shaft (or the neck or socket) and the back of the heel shall not exceed five-eighths of an inch in wood clubs and five-sixteenths of an inch in iron clubs. (Rules of Golf , 1968)

Putter shafts at right angles, as used in a certain croquet style stroke, are prohibited.

> The axis of the shaft from the top to a point not more than five inches above the sole shall diverge from the vertical by at least ten degrees in relation to the horizontal line determining length of head under Rule 2-2c. (Rules of Golf , 1968)

Golf gloves are given approval as artificial aids provided it is a plain glove.

1970: The Joint Committee on a Uniform Ball consisting of representatives from The R&A and the USGA agrees that a uniform ball is feasible for golf throughout the world. The specification

tentatively agreed upon was a minimum diameter of 1.66 inches and a maximum weight of 1.62 ounces avoirdupois.

1973: "Concerned that specific recent aerodynamic developments in ball dimpling and the introduction of the graphite shafts might render the existing distance regulations inadequate", meetings with manufacturers leads to indoor and outdoor tests of golf balls is undertaken. (Year Book of the United States Golf Assocation, 1973)

1974: After significant evaluation and testing the Uniform Ball program is abandoned. The American 'standard' ball is adopted for the Open Championship.

The development and establishment of an Overall Distance Standard becomes a top priority.

1976: The USGA and R&A implement the Overall Distance Standard (ODS) for golf balls effective March 1, 1976. The goal to "limit future technological development aimed at increasing the distance a golf ball can travel." (Year Book of the United States Golf Association, 1976).

> A brand of golf ball, when tested on apparatus approved by the USGA on the outdoor range at the USGA Headquarters under the conditions set forth in the Overall Distance Standard for golf balls on file with the USGA, shall not cover an average distance in carry and roll exceeding 280 yards, plus a tolerance of 8%. (Note: The 8% tolerance will be reduced to a minimum of 4% as test techniques are improved.) (Rules of Golf, 1977)

1980: With the development of golf balls designed to correct, in flight, a hook or a slice, a new standard for golf balls requiring that "the ball shall be designed and manufactured to perform in general as if it were spherically symmetrical" is adopted.

1984: To accommodate the process of investment casting to manufacture irons, the requirement that the grooves must be in the form of V's is removed.

> A series of straight grooves with diverging sides and a symmetrical cross-section may be used. (Rules of Golf , 1984)

1986: The 8% tolerance (4% test tolerance and 4% innovative tolerance) associated with the ODS is reduced to 6% (296.8 yds), reflecting a 4% innovative tolerance with a 2% test tolerance.

> A brand of golf ball, when tested on apparatus approved by the USGA on the outdoor range at the USGA Headquarters under the conditions set forth in the Overall Distance Standard for golf balls on file with the USGA, shall not cover an average distance in carry and roll exceeding 280 yards plus a tolerance of 6%. Note: The 6% tolerance will be reduced to a minimum of 4% as test techniques are improved. (Rules of Golf , 1986)

1987: The requirement that groove edges must be round and 30° method for determining the edge of the groove are introduced.

> Any rounding of groove edges shall be in the form of a radius which does not exceed 0.020 inches (0.5mm). The width of the grooves shall not exceed 0.035 inches (0.9mm), using the 30-degree method of measurement on file with the United States Golf Association. (Rules of Golf, 1988)

1990: The R&A adopt the American 'standard' ball. A maximum weight of 1.62 oz and a minimum diameter at 1.68-in become the golf ball standard worldwide

1992: Insets in clubs, including irons are permitted.

1996: The actual symmetry test is removed from the text of the Rules. That test may still be used to advise manufacturers if the ball is not symmetrical.

1998: The USGA announces that is "developing and intends to implement tests for golf balls and clubs to strengthen standards designed to limit the distance that the most highly skilled players can drive a golf ball". The press release announces the adoption of the test for the spring-like effect and the initiation of golf ball testing using the USGA Indoor Test Range (USGA Press Release, November 3, 1998)

> 4-1e. **Club Face**
>
> **GENERAL**
>
> The material and construction of the face shall not have the effect at impact of a spring, or impart significantly more spin to the ball than a standard steel face, or have any other effect which would unduly influence the movement of the ball. (Rules of Golf , 1999)

The spring-like effect test limits the Coefficient of Restitution (COR) standard to 0.822 plus a test tolerance of 0.008 (0.830).

2002: The USGA and R&A publish the Joint Statement of Principles.

The R&A joins the USGA and adopts the COR standard for spring-like effect.

The USGA and R&A implement Phase l of indoor ball testing using the USGA Indoor Test Range (ITR) and Actual Launch Conditions (ALC) from Iron Byron for testing golf balls for conformance to the ODS effective March 1, 2002. The test uses the same set up on the mechanical golfer (10°, 42 revs/s backspin and 235 ft/s ball speed) and sets a limit of 291.2 yards with a 5.6 yard test tolerance. (Notice to Manufacturers, December 19, 2001)

2004: The USGA and R&A adopt standards for clubhead size and a maximum clublength for clubs other than putters effective January 1, 2004.

> Clubhead volume will be limited to 460 cc plus 10 cc for measurement tolerance of (470cc).
> Clubhead heel-to-toe dimension will be is limited to 5.0 inches.
> Clubhead sole-to-crown dimensions will be limited to 2.8-inches.
> Club length for clubs other than putters will be limited to 48 inches. (Notice to Manufacturers, October 29, 2003)

The USGA and R&A adopt an improved test method for spring-like effect (pendulum test). The limit, which is based upon the original COR limit of 0.822, is a Characteristic Time (CT) limit of 239μs plus a tolerance of 18 μs (257 μs) corresponding to the original COR limit plus tolerance of 0.830.

The USGA and R&A implement Phase II of indoor ball testing effective for all balls received after May 26, 2004. Noting that both players and equipment have changed considerably over the 27 years since the ODS was first implemented: "The proposed new test reflects changes in the game. The goal is to make today's testing methods correspond to today's best golfers." (Notice to Manufacturers, July 3, 2003)

Reflecting this goal, Phase II changes both the test conditions and the conformance limit for evaluating golf balls for conformance to the ODS. The test uses a titanium club with a COR of 0.820 and a swing speed of 120 mph. The limit is set at 317.0 yds with a test tolerance of 3.0 yds for a limit plus tolerance limit of 320.0 yds.

2005: The first List of Conforming Driver Heads is published.

2006: The USGA and R&A adopt a standard for clubhead moment of inertia (MOI). Noting that the moment of inertia of driver heads has approximately tripled over the past 15 years. The USGA and R&A express concern that "any further increases in moment of inertia may reduce the challenge of the game." While acknowledging that previously implemented clubhead size restrictions could serve as an effective cap, there is concern that "future materials with greater strength and lower weight" could lead to further increases. (Notice to Manufacturers, August 31, 2005)

> When the clubhead is in a 60 degree lie angle, the moment of inertia component around the vertical axis through the clubhead's centre of gravity must not exceed 5900 g-cm^2 plus a test tolerance of 100 g-cm^2. (Rules of Golf, 2008)

2008: The USGA and R&A announce an interim spring-like effect test to measure CT at additional locations on driver heads for the purpose of determining whether or not a club incorporates features or technology having the intent of, or the effect of, unduly influencing the clubhead's spring effect.

The Driver Check Testing Program is established.

2010: Noting that "the skill of driving accuracy has become a much less important factor in achieving success while playing golf than it used to be", the USGA and R&A proposed new groove regulations in 2007. (Notice to Manufacturers, February 27, 2007)

New regulations, which limit added cross-sectional area/pitch as well as groove edge sharpness are adopted effective January 1, 2010. (Notice to Manufacturers, August 5 2008)

The USGA and R&A hold a Forum on Equipment Rulemaking in Vancouver, British Columbia, Canada

2011: Equipment Rulemaking Procedures, Version 1.0 are adopted in November.

2014: The USGA and R&A issue an interpretation regarding aerodynamic features on shafts. Traditionally, aerodynamic features on shafts were ruled non-conforming for not being of traditional and customary form and make. The interpretation now specifically states that the surface of the shaft must be smooth, which is characterized by a maximum roughness of 150 µin (R_a) for particle-type roughness.

2016: The USGA and R&A adopt an interpretation limiting the spring-like effect in all clubs other than putters.

- Clubs with lofts greater than 35 degrees are deemed to conform.
- "Iron" clubs, defined as those with claimed, marked or measured lofts of 35 degrees or less, a clubhead depth that is less than or equal to 1.5-in. and a radius of curvature of the club face that is greater than 30 inches, are tested using the COR method with a limit of 0.822 plus a test tolerance of 0.008 (0.830).
- All other clubs (except putters) are evaluated for spring-like effect solely using the pendulum test. The limits are a maximum characteristic time (CT) limit of 239 µs plus a tolerance of 18 µs (239 µs) within the impact area, and a maximum characteristic time outside the impact area of 257 µs plus an 18 µs tolerance (275 µs).

The USGA and R&A issue an interpretation further clarifying the conformance of aerodynamic features on shafts specifically stating that the shaft must not include features having the intent, or the effect, of improving aerodynamic performance.