

Specification for

Spring retaining rings —

Part 1: Carbon steel circlips

Co-operating organizations

The Mechanical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

- Associated Offices' Technical Committee
- Association of Consulting Engineers
- Association of Mining Electrical and Mechanical Engineers
- Board of Trade
- British Chemical Plant Manufacturers' Association
- British Compressed Air Society
- British Electrical and Allied Manufacturers' Association
- British Gear Manufacturers' Association
- British Internal Combustion Engine Manufacturers' Association
- British Mechanical Engineering Federation
- British Pump Manufacturers' Association
- Crown Agents for Oversea Governments and Administrations
- Electricity Council, the Central Electricity Generating Board and the Area Boards in England and Wales
- Engineering Equipment Users' Association
- Gas Council
- Institute of Marine Engineers
- Institution of Civil Engineers
- Institution of Gas Engineers
- Institution of Heating and Ventilating Engineers
- Institution of Mechanical Engineers
- Institution of Mechanical Engineers (Automobile Division)
- Institution of Production Engineers*
- Locomotive and Allied Manufacturers' Association of Great Britain
- London Transport Board
- Machine Tool Trades Association*
- Ministry of Defence
- Ministry of Defence, Army Department*
- Ministry of Labour (H.M. Factory Inspectorate)
- Ministry of Power
- Ministry of Public Building and Works
- Ministry of Technology*
- Ministry of Technology — National Engineering Laboratory
- Ministry of Transport
- National Coal Board
- National Physical Laboratory (Ministry of Technology)
- Radio Industry Council
- Royal Institute of British Architects
- The Steel Industry

This British Standard, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 19 April 1968

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The industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

- Radio and Electronic Component Manufacturers' Federation
- Individual manufacturers

Amendments issued since publication

Amd. No.	Date	Comments
2264	April 1977	Indicated by a sideline in the margin

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Foreword

This standard makes reference to the following British Standards:

BS 427, *Method for Vickers hardness test.*

BS 427-1, *Testing of metals.*

BS 427-2, *Verification of the testing machine.*

BS 860, *Table of approximate comparison of hardness scales.*

BS 1133, *Packaging code — Section 6: Temporary prevention of corrosion of metal surfaces (during transport and storage).*

BS 1134, *Centre-line-average height method for the assessment of surface texture.*

BS 1449, *Steel plate, sheet and strip.*

BS 1916, *Limits and fits for engineering.*

BS 3189, *Phosphate treatment of iron and steel for protection against corrosion.*

BS 3673, *Spring retaining rings — Part 2: Carbon steel E clips.*

BS 3673, *Spring retaining rings — Part 3: C clips.*

BS 3673, *Spring retaining rings — Part 4: Carbon steel circlips — metric series.* |

First published in 1963 this British Standard has now been revised under the authority of the Mechanical Engineering Industry Standards Committee and with the fullest co-operation of manufacturers and users of circlips.

In the case of the major radial depth dimensions, some manufacturers, for economic reasons, will need a period of time in which to change to the values of the British Standard. The British manufacturers have given every assurance that the British Standard dimensions will be adopted in full as normal tool replacement occurs and, in the interim period, the user is assured that the circlips offered will not vary by more than 20 % from the mean values for major radial depth.

The standard is a companion-work to BS 3673-2, *Carbon steel “E clips”* and BS 3673-3, *“C clips”*. |

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 15 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard relates to internal and external circlips in both inch and metric dimensional ranges, manufactured from carbon steel.

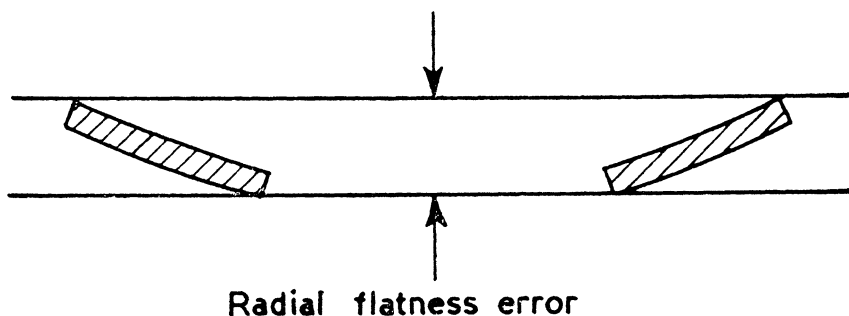
Requirements for material, heat treatment, hardness and manufacture are laid down, together with dimensions and tolerances. The requirements for the finish and testing of the circlips are also given.

NOTE For reference to metric sizes see BS 3673-4.

2 Nomenclature

For the purposes of this British Standard the nomenclature of Figure 1 has been adopted together with the following definitions:

- 1) *Nominal size*. The nominal size of a circlip is equal to the nominal diameter of shaft or bore for which the circlip is designed.
- 2) *Radial flatness error (dish)*. The minimum distance separating two parallel planes which just contain the sectional profile of a circlip, the free ends of which are positioned in a common plane in order to discount any spiral effect which may be present.



3 Material

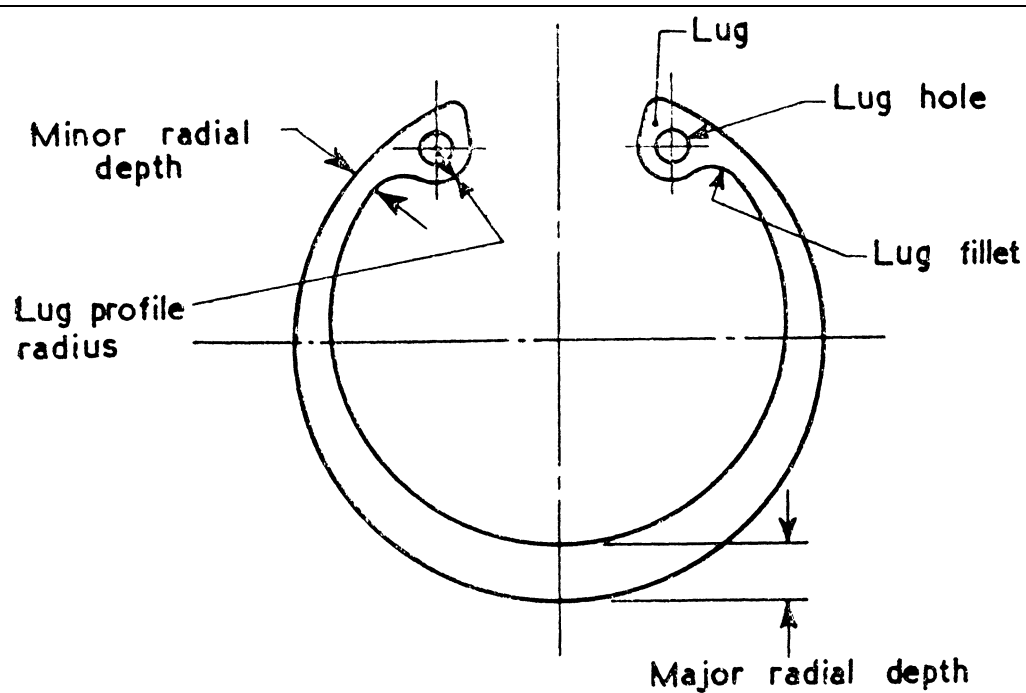
Circlips shall be manufactured from material conforming to a suitable composition selected from the BS 1449 En 42¹⁾ range. Alternatively, carbon steels having equivalent mechanical properties may be used provided that the circlips are capable of satisfying the test requirements of Clause 8.

4 Heat treatment and hardness

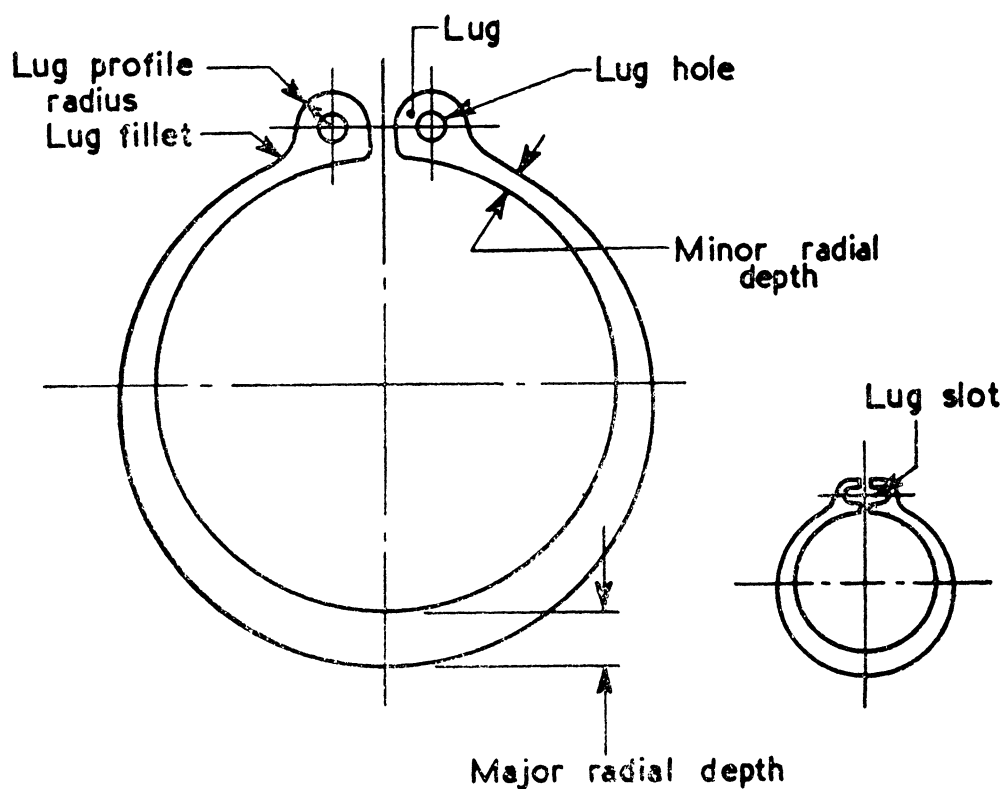
Circlips shall be hardened and tempered so that the minimum hardness after tempering shall be as follows:

Up to and including 3 in designating size	480 HV
Above 3 in, up to and including 5 in designating size	460 HV
Above 5 in, up to and including 8 in designating size	440 HV
Above 8 in designating size	400 HV

¹⁾ BS 1449, "Steel plate, sheet and strip"



a. Internal circlip



b. External circlip

Figure 1 — Nomenclature of circlips