BRITISH STANDARD

BS 3974-1: 1974
Incorporating Amendment No. 1

Specification for

Pipe supports —

Part 1: Pipe hangers, slider and roller type supports

UDC 621.881:621.643.2

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 Hydraulic Equipment Manufacturers Ltd
Association of Mining Electrical and Mechanical Engineers
British Compressed Air Society
British Electrical and Allied Manufacturers' Association
British Gas Corporation*
British Gear Manufacturers' Association
British Internal Combustion Engine Manufacturers' Association
British Mechanical Engineering Confederation
British Pump Manufacturers' Association
British Steel Industry*
Crown Agents for Oversea Governments and Administrations
Department of Employment (H. M. Factory Inspectorate)
Department of the Environment
Department of Trade and Industry
Department of Trade and Industry — National Engineering Laboratory
Electricity Council, the Central Electricity Generating Board and the Area Boards in England and Wales*
Engineering Equipment Users' Association*
Federation of Manufacturers of Construction Equipment and Cranes
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 Plant Engineers
Institution of Production Engineers
London Transport Executive
Machine Tool Trades Association
Ministry of Defence
Ministry of Defence, Army Department
National Coal Board
National Physical Laboratory (Department of Trade and Industry)
Process Plant Association*
Railway Industry Association of Great Britain
Royal Institute of British Architects
Telecommunications Engineering Manufacturing Association

The scientific and 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.

British Marine Equipment Council
Council of British Manufacturers of Petrolcum Equipment
Heating and Ventilating Contractors' Association
High Pressure Pipework Consultative Committee
Institute of Plumbing

This British Standard, having been approved by the Mechanical Engineering Industry Standards Committee, was published under the authority of the Executive Board on 23 July 1974

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The following BSI references relate to the work on this standard:
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Amendments issued since publication

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Contents

Foreword

This British Standard is the metric revision of BS 3974-1, which was originally published in 1966 under the authorization of the Mechanical Engineering Industry Standards Committee and at the request of the Engineering Equipment Users' Association. Previously restricted to requirements for the design (including dimensions) and the manufacture of components for rod-type pipe hangers, this revised edition has been extended to meet the needs of industry and now includes requirements on the design and manufacture of components for slider and roller type supports, for pipes transporting fluids within a temperature range minus 20 °C to 470 °C.

The revised appendices provide recommendations on design considerations, data and formulae for pipework calculations and methods of fixing. To assist the user in the application of pipe supports, many illustrations of typical support assemblies from the Engineering Equipment Users' Association Handbook No. 18 have been included in a separate appendix.

A further Part of this series (BS 3974-2) will deal with pipe attachments to steelwork and masonry structures.

NOTE 1 Information concerning SI units is given in BS 350. "Conversion factors and tables", and in PD 5686 'The use of SI Units'.

NOTE 2 Attention is drawn to certification facilities offered by BSI; see the inside back cover of this standard.

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 to iv, pages 1 to 52, an inside back cover 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 specifies requirements for the design (including dimensions) and manufacture of components for pipe hangers, slider and roller type supports for uninsulated and insulated steel and cast iron pipes of nominal size 15 mm to 600 mm, used for transporting fluids within the temperature range – 20 °C to 470 °C.

Recommendations on design considerations, data and formulae for pipework calculations, methods of fixing and illustrations of typical pipe support assemblies are given in the appendices.

NOTE The titles of the British Standards referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply:

1) anchor
a securing device to maintain in a pipeline a point fixed both in position and direction, under the design condition of temperature and loading

2) cold pull-up (cold draw)
a strain induced in a pipeline during erection to compensate for expansion or contraction under working conditions. This strain may be compressive or tensile depending upon the working temperature being below or above ambient

3) duckfoot
a device for transferring the axial load in a vertical pipeline at its lower extremity to a foundation or other fixtures

4) expansion loop
a device for absorbing the movement due to either temperature change or external force

5) expansion bellows
a device performing a similar function to an expansion loop, but employing a corrugated flexible element inserted in the pipeline

6) fittings
the component parts of a pipeline, other than the pipe. This collective term usually embraces bends, elbows, tees, unions, flanges and similar equipment

7) guide
a device used to restrict pipeline movement to a predetermined direction

8) hanger
a device for suspending a pipeline from a fixed point, and for maintaining the pipeline at a predetermined level, while allowing limited axial and lateral movement

9) loading
the total force on a securing device; it comprises the dead weight of the pipe, working or test fluid, fittings, valves and insulation. It also includes the forces due to thermal expansion or contraction, static and dynamic pressure, impact, wind, snow and ice

10) slider support
a device incorporating two flat or curved surfaces, one of which is attached to the pipe to allow for sliding movement, axially and laterally

11) roller support
a device on which the pipe rests incorporating a rotating member to allow longitudinal movement of the pipeline

12) spherical washer
a component used at the top of a sling rod to allow a limited amount of angular movement

13) Pivot anchor
a type of anchor that permits a pipe to swivel about a fixed point

14) sleeper
a type of support, usually placed on the ground in a pipe track or corridor

15) spring hanger
a type of pipe hanger, designed to adjust itself to changes in position as a result of changes in condition of the pipeline