

Rope rollers, pulleys, mountings and assemblies for colliery track haulage —

Part 5: Specification for suspended pulley assemblies and clamps

UDC 622.33.005:622.625.5:622.673.3:006.3/.8

Confirmed
January 2011

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW

BSI
Documents

AVA

Document Sharing Hub

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Mining and Quarrying Requisites Standards Policy Committee (MQE/-) to Technical Committee MQE/18, upon which the following bodies were represented:

- Association of British Mining Equipment Companies
- British Foundry Association
- British Steel Industry
- Federation of Wire Rope Manufacturers of Great Britain
- Health and Safety Executive
- Institution of Mining Electrical and Mining Mechanical Engineers

This British Standard, having been prepared under the direction of the Mining and Quarrying Requisites Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 30 June 1990

© BSI 11-1999

The following BSI references relate to the work on this standard:
Committee reference MQE/18
Draft for comment 88/74304 DC

ISBN 0 580 17992 3

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Definitions	1
3 General	1
4 Design considerations	1
5 Dimensions and shape of pulley components and mountings	1
6 Materials	3
7 Manufacture	5
8 Type testing	5
9 Marking	5
Appendix A Information to be supplied by the purchaser	6
Appendix B Information to be provided by the supplier	6
Appendix C Methods of testing suspended pulley assemblies and clamps	7
Appendix D General recommendations for the design and operating criteria of pulley assemblies	7
Appendix E Typical clause relating to inspection that the purchaser may choose to write into his order or contract for the supply of pulley assemblies and clamps to this Part of BS 3876	10
Figure 1 — Permitted minimum angular movement of suspended pulley assemblies	2
Figure 2 — Typical horizontal spindle pulley	4
Figure 3 — Testing of a pulley for run-out	4
Figure 4 — Test forces for suspended pulley assemblies and clamps	6
Figure 5 — Relationship between rope tension and resultant force on the pulley wheel	8
Figure 6 — Relationship between rope speed and roller speed (r/min)	9
Table 1 — Dimensions of horizontal spindle pulleys	3
Table 2 — Bearing characteristics and designations	3
Publications referred to	Inside back cover

Foreword

This Part of BS 3876 has been prepared under the direction of the Mining and Quarrying Requisites Standards Policy Committee.

The other Parts in the revised edition of BS 3876, are as follows:

- *Part 1: Specification for parallel barrel rollers, mountings and assemblies;*
- *Part 2: Specification for vertical spindle pulleys, mountings and assemblies;*
- *Part 3: (Withdrawn);*
- *Part 4: (Withdrawn).*

In the revised Parts, the following points should be noted:

- a) tapered rollers, which were covered in BS 3876-2:1965, are now omitted from the revised Part 2;
- b) vertical rollers, which were included in the 1965 edition of Part 2, are now omitted as it is considered that the parallel barrel rollers specified in Part 1 can be used in the vertical mode;
- c) horizontal spindle pulleys, covered in the 1965 edition of Part 2, are relocated in Part 5 of the revised edition;
- d) Part 3:1965 has been withdrawn because there is no longer any requirement for rollers with non-metallic rope bearing surfaces;
- e) the requirements for mountings for parallel barrel rollers, previously specified in BS 3876-4:1966, have been revised and incorporated into the expanded edition of Part 1; there is therefore no need for retention or revision of a separate Part 4.

During the preparation all dimensions have been metricated and these are not necessarily straight conversions from the imperial dimensions previously adopted.

Product certification. Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS 5750.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies. If a third party certification scheme does not exist, users should consider approaching an appropriate body from the list of Association members.

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 10, 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 Part of BS 3876 specifies requirements for suspended pulley assemblies and clamps intended for use in colliery track haulage.

This Part applies to:

- a) suspended pulleys, supplied and used with or without mountings, that are intended for the support of haulage ropes and which may be used in rope haulage ancilliary equipment, e.g. weight ropes on safety equipment, haulage rope tensioning equipment, etc.;
- b) mountings;
- c) suspended pulley assemblies that comprise the pulleys and mountings;
- d) clamps for suspending assemblies from supporting members.

The suspended pulleys to which this Part applies are not intended to be used where rope deflections in excess of 10° across a single pulley are required. Where rope deflections in excess of 10° per pulley are required, pulleys in accordance with BS 4878 should be used.

NOTE 1 Appendix A gives the information which should be supplied by the purchaser, in his enquiry and/or order for pulleys, mountings and assemblies in accordance with this Part of BS 3876.

NOTE 2 Appendix B gives the information that will be required by the purchaser, to be provided by the supplier, prior to the supply of pulleys, mountings and assemblies in accordance with this Part of BS 3876.

NOTE 3 Appendix D gives general recommendations for the design and operating criteria for suspended pulleys.

NOTE 4 No inspection requirements are specified in this Part of BS 3876. However, a typical requirement that a purchaser may choose to write into his order or contract for pulleys, mountings and assemblies to this Part is given in Appendix E.

NOTE 5 The titles of the publications referred to in this Part of BS 3876 are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 3876 the following definitions apply.

2.1

barrel

that part of the pulley on which the rope runs

2.2

pulley

a drum having a curved or U-shaped barrel, complete with spindle and bearings

2.3

mounting

the frame to which the pulley is, or is to be, attached

2.4

pulley assembly

the pulley and its mounting

2.5

clamp

means for securing the pulley assembly to a supporting member

NOTE The supporting member will typically be manufactured from a rolled steel joist to BS 4-1, having a flange width varying between 75 mm and 127 mm, as indicated in Figure 1.

3 General

The pulley components, mountings and clamps shall comply with the requirements specified in clauses 4 to 9 as appropriate.

The design of pulley shall be such that it is a fixture in the mounting, with the bearings being contained within the pulley.

4 Design considerations

The mounting shall not be supported by the clamping fastener [see Figure 1 b)].

The use of hooks, or “J” bolts for the clamping fasteners shall not be permitted.

The pulley assembly shall move freely within the minimum angular limits shown in Figure 1 when subjected to the safe working load of the pulley assembly [see clause 9 c)].

All screw threads shall be in accordance with BS 3643-1.

5 Dimensions and shape of pulley components and mountings

5.1 Dimensions

The dimensions of the pulleys shall be as given in Table 1.

NOTE 1 For convenience, a typical pulley is illustrated in Figure 2 which identifies the dimensions referred to in Table 1.

The profile of the pulley barrel shall be curved or U-shaped having a minimum depth d (see Figure 2) of 1.25 times the nominal diameter of the largest rope for which the pulley is designed to operate and have a radius at the barrel at least 1 mm greater than the nominal radius of that rope.

NOTE 2 Spindle ends may be plain, shouldered and threaded or otherwise machined to provide a suitable method of fixing the spindle in the pulley mounting.

Mountings shall be designed to accept pulleys which have been designed to the dimensions given in Table 1.