

INTERNATIONAL  
STANDARD

**ISO**  
**3684**

Second edition  
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**Conveyors belts — Determination of minimum  
pulley diameters**

*Courroies transporteuses — Détermination des diamètres minimaux des tambours*

Sample Document

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Reference number  
ISO 3684 : 1990 (E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3684 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*.

This second edition cancels and replaces the first edition (ISO 3684 : 1976), of which it constitutes a technical revision.

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# Conveyor belts — Determination of minimum pulley diameters

## 1 Scope

This International Standard establishes a method of calculating minimum pulley diameters for conveyor belts.

It applies to belts made of rubber or plastics with textile or metal carcasses, of different carcass thickness and different carcass materials, operating at any anticipated belt tension up to, but not exceeding, the maximum belt tension (RMBT).

It does not apply either to belts which have a carcass thickness of more than 20 mm or to those which have intermediate layers of rubber or plastics of more than 0,8 mm thickness between the plies.

Nor does it apply either to heat-resistant belts on conveyors for hot products at temperatures over 100 °C or to belts in service at ambient temperatures under – 40 °C.

The use on conveyor belts of pulleys with diameters too small for the carcass construction may lead to premature belt failure.

### NOTES

1 The values indicated in this International Standard are minimum values to be used in the absence of information provided by the conveyor belt manufacturer.

2 The calculation of the minimum pulley diameter according to this International Standard is valid for all general applications. For special purposes, the conveyor belt manufacturer may allow smaller pulley diameters. For belts which are not listed in the following tables, consult the manufacturer.

3 In the case of use of pulleys with diameters larger than those corresponding to the minimum diameter calculated for the recommended maximum belt tension, an increase of this maximum tension is not permissible.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to

agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3: 1973, *Preferred numbers — Series of preferred numbers.*

ISO 583: 1975, *Conveyor belts — Tolerances on total thickness and thickness of covers.*

ISO 1536: 1975, *Continuous mechanical handling equipment for loose bulk materials — Troughed belt conveyors (other than portable conveyors) — Belts.*

ISO 7590: 1988, *Steel cord conveyor belts — Cover thickness measurement.*

## 3 Definitions

### 3.1 Belt structure

**3.1.1 thickness of fabric carcass,  $h_2$ :** as defined by ISO 583.

**3.1.2 thickness of steel cord carcass,  $d_2$ :** as defined by ISO 7590.

### 3.2 Types of pulley

Figures 1 to 4 show the different types of pulley for conveyor belts.

**A:** Driving pulleys and pulleys exposed to high belt tension, for example:

- main driving pulley at the head or tail;
- delivery pulleys under full tension;
- loop pulleys in the tripper;
- terminal head pulleys in the case of tail driving, etc.