

Specification for

Troughed belt conveyors

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- Health and Safety Executive
- Institution of Mechanical Engineers
- Institution of Production Engineers
- Mechanical Handling Engineers Association
- Metal Packaging Manufacturers Association
- Solids Handling and Processing Association

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Contents

	Page
Committees responsible	Inside front cover
Foreword	iii
1 Scope	1
2 Definitions	1
3 Materials and components of construction	7
4 Belting	8
5 Belt edge clearance	8
6 Pulleys	9
7 Idlers and idler sets	11
8 Transition distances	18
9 Take-up devices	18
10 Power calculations	18
Appendix A Information to be supplied by the purchaser	19
Appendix B Information to be supplied by the manufacturer, if required	19
Appendix C Capacity and cross section of a conveyor with a smooth patternless belt	20
Appendix D Equation for calculating idler pitch for maximum sag of 2 %	23
Appendix E Pitch of idler sets	23
Figure 1 — Typical troughed belt conveyor	2
Figure 2 — Typical forms of drive	3
Figure 3 — Typical forms of take-up device	4
Figure 4 — Typical travelling tripper	5
Figure 5 — Typical arrangement of troughed belt shuttle conveyor	6
Figure 6 — Typical plough	6
Figure 7 — Belt edge clearance	8
Figure 8 — Idler dimensions	11
Figure 9 — Plan views of in-line and staggered carrying idler sets	12
Figure 10 — Part view of in-line idler set in vertical plane	12
Figure 11 — Part view of staggered idler set in vertical plane	12
Figure 12 — View in vertical plane showing angle of inclination of wing idlers for troughed carrying idler sets	13
Figure 13 — Side elevation of wing idler with forward tilt	13
Figure 14 — Side elevation of carrying idlers	13
Figure 15 — Single flat return idler	14
Figure 16 — Two return idlers in vee form	14
Figure 17 — Plan view of vee return idler	14
Figure 18 — Clearance between return idler and supporting structure	14
Figure 19 — Nominal idler lengths for three-idler carrying sets, flat and vee return idlers	15
Figure 20 — Mounting dimensions of carrying and return idler sets	17
Figure 21 — Impact ring dimensions	17
Figure 22 — Disc dimensions	18
Figure 23 — Trough section with three carrying idlers	21
Figure 24 — Factor k as a function of slope angle δ	21

	Page
Table 1 — British Standards for materials and components to be used in the manufacture of troughed belt conveyors	7
Table 2 — Belt width	8
Table 3 — Belt edge clearance	9
Table 4 — Minimum pulley face length	9
Table 5 — Pulley nominal diameters	9
Table 6 — Minimum pulley diameter appropriate to belt construction	10
Table 7 — Nominal outside diameters of carrying and return idlers	11
Table 8 — Nominal lengths of carrying and return idlers	11
Table 9 — Minimum radial clearance for carrying idlers	13
Table 10 — Nominal lengths of carrying and return idlers appropriate to belt widths	15
Table 11 — Mounting dimensions of carrying and return idler sets appropriate to belt width	16
Table 12 — Nominal outside idler diameters and related belt speeds	16
Table 13 — Impact ring for carrying idlers outside diameter	17
Table 14 — Discs for return idlers outside diameter	18
Table 15 — Maximum cross section of the handled material, <i>S</i> , for triple-roller troughed belts in accordance with Figure 23 with equal-length carrying idlers	22
Table 16 — Typical pitch of idler sets with troughing angle up to 35°	23
Publications referred to	25

Foreword

This British Standard has been prepared under the direction of the Mechanical Handling Standards Policy Committee. It is a revision of BS 2890:1973, which is withdrawn. More detailed requirements for pulley and idler lengths have been specified in this edition of the standard. The relationship between the dimensions specified in this British Standard and those specified in the relevant standards published by the International Organization for Standardization (ISO) is also given.

The requirements and guidance given in the previous edition on statutory requirements and guarding have not been included in this standard. They will be incorporated into a future code of practice for the safeguarding of hazard points on troughed belt conveyors.

This standard applies to the mechanical parts of troughed belt conveyors on which belts complying with BS 490-1 are used. If other types of conveyor belting are used, those requirements in the standard which relate to belt tensions, pulley diameters and take-up allowance may not be applicable. Requirements for the design of the supporting structure are not specified.

Requirements in this standard are based on dry conditions of operation and the manufacturer should be consulted regarding applications intended for wet conditions.

This standard is a companion standard to BS 4531 “*Portable and mobile troughed belt conveyors*”.

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 26, 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 the design and dimensional requirements for non-mobile troughed belt conveyors and their components.

It applies to conveyors fitted with rubber or plastics belting with textile reinforcement complying with BS 490-1 carrying loose bulk materials and with a maximum belt speed of 5 m/s.

This standard does not apply to the following categories but can be used as a guidance document for them:

- a) underground mine conveyors;
- b) conveyors handling materials that do not behave as solids;
- c) conveyors fitted with steel cord belting.

NOTE 1 Appendix A provides guidance on the information to be supplied by the purchaser when ordering. Appendix B provides guidance on the information to be supplied by the manufacturer.

NOTE 2 Portable and mobile conveyors are covered in BS 4531.

NOTE 3 The titles of the publications referred to in this standard are listed on pages 25, 26 and 27.

2 Definitions

For the purposes of this British Standard, the following definitions apply.

NOTE Typical forms of conveyors and their components are shown in Figure 1 to Figure 6.

2.1

head of the conveyor

the discharge end of the conveyor

2.2

tail of the conveyor

the loading end of the conveyor

2.3

carrying idler

an idler which supports the loaded belt. An assembly of one or more free-running carrying idlers comprises a carrying idler set

2.4

return idler

an idler which supports the empty side of the belt. An assembly of one or more idlers comprises a return idler set

2.5

take-up device

the device for taking up slack and applying tension to the belt

NOTE Typical forms of take-up device are shown in Figure 3.

2.6

anti-run-back device

an automatic device for preventing a loaded elevating conveyor running backward when the power source is removed

2.7

driving pulley

the pulley that drives the belt

2.8

snub pulley

the pulley used to develop the necessary arc of contact (angle of wrap) of the belt on the driving pulley

2.9

bend pulley

the pulley used to change the direction of the belt

2.10

head pulley

the terminal pulley at the head of a conveyor

NOTE This may be a driving pulley.

2.11

tail pulley

the terminal pulley at the tail of a conveyor

NOTE This may be a take-up pulley.

2.12

take-up pulley

the travelling pulley used in the take-up device

2.13

drive

the equipment which drives the belt, consisting of a power unit, transmission and driving pulley

NOTE Typical forms of drive are shown in Figure 2.

2.14

power unit

the conveyor power source

NOTE Examples of power units are an electric motor, internal combustion engine, motorized pulley.

2.15

transmission

the assembly of devices coupling the power unit to the driving pulley for driving the belt at the desired speed

2.16

handing of conveyor

the designation of the sides of a unidirectional conveyor e.g. left or right when viewed from the tail to the head of the conveyor

2.17 brake

a device for bringing the belting of a conveyor to rest and maintaining it at rest

2.18 chute

a straight or curved, open-topped or enclosed, smooth trough by which materials are directed and lowered by gravity

2.19 safeguard

a guard or device designed to protect persons from danger

2.20 regenerative conveyor

a conveyor for which the head is substantially lower than the tail, giving a negative power requirement

2.21 retarder

a device for preventing the overspeeding of a regenerative conveyor

2.22 cleaner

a device for removing adherent material from the belt or a pulley

2.23 overend discharge

discharge over the head of the conveyor

2.24 tripper

a device mounted either in a fixed position or on a travelling carriage, for discharging material from a belt conveyor at selected points or at any point along the length

NOTE A typical travelling tripper is shown in Figure 4.

2.25 shuttle conveyor

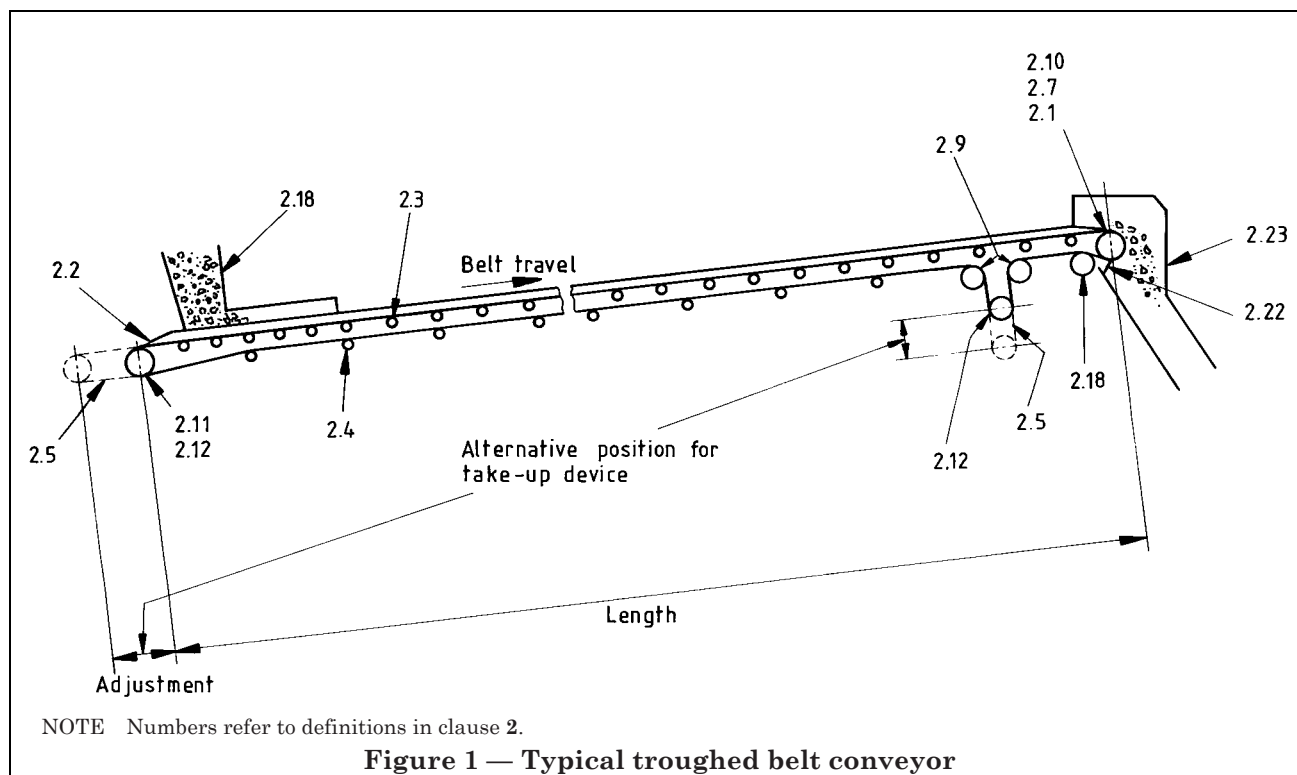
a unidirectional or reversible belt conveyor having overend discharge, the whole being mounted on a travelling carriage capable of being shuttled backwards and forwards along a track, giving a continuous distributed discharge

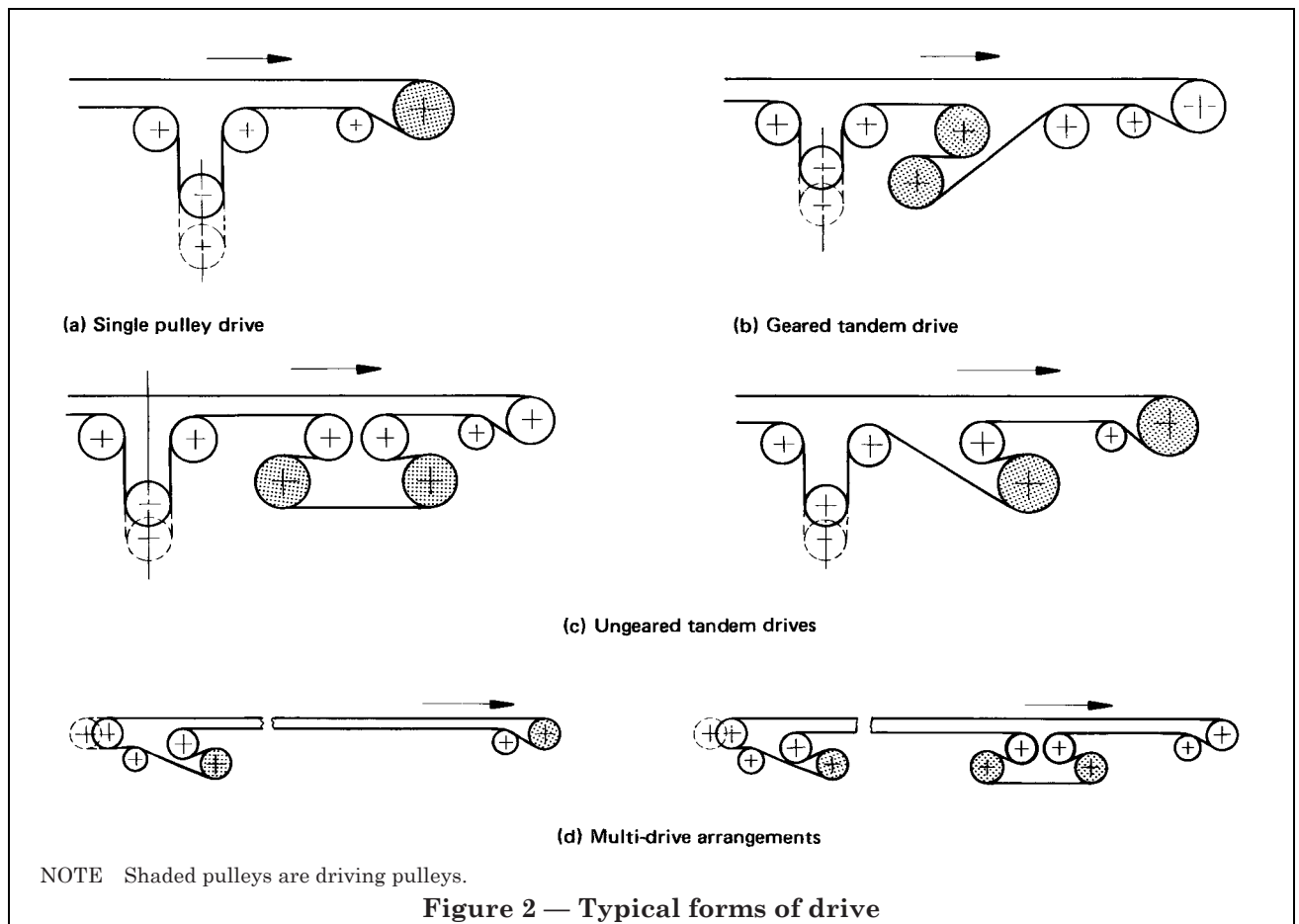
NOTE A typical arrangement of a troughed belt shuttle conveyor is shown in Figure 5.

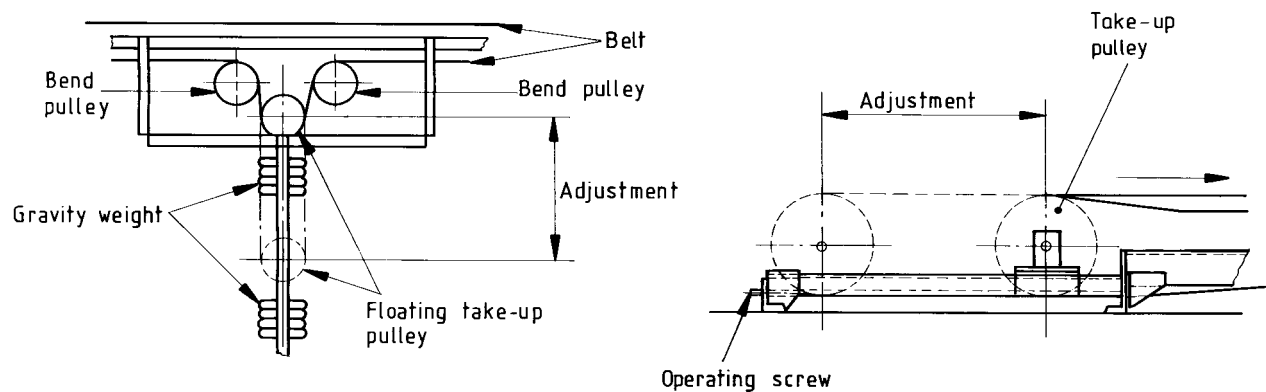
2.26 plough

a blade or blades mounted obliquely across the belt to discharge the material by deflecting it from the belt

NOTE 1 This can be useful where headroom and space are limited but it is not recommended for any duty other than slow speed conveyors handling non-abrasive free-flowing materials.
NOTE 2 A typical plough is shown in Figure 6.

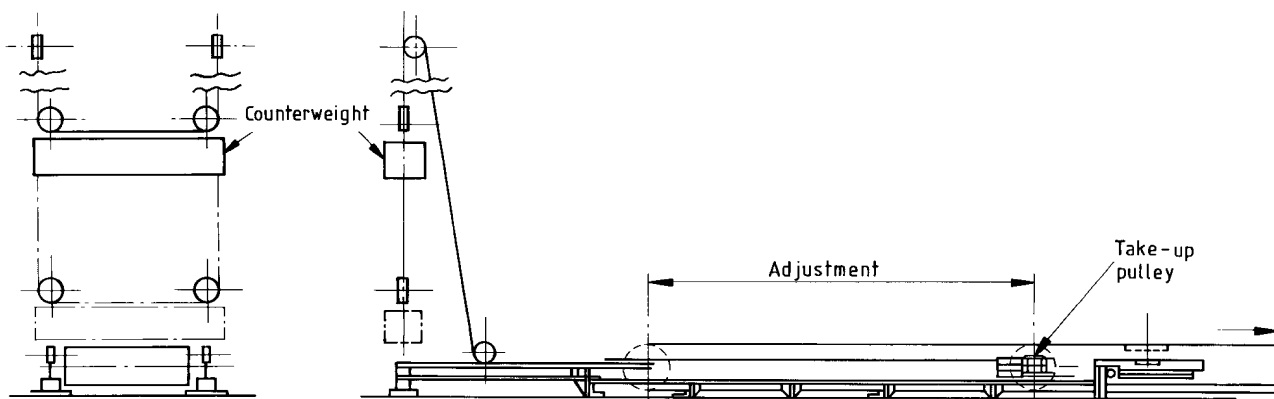




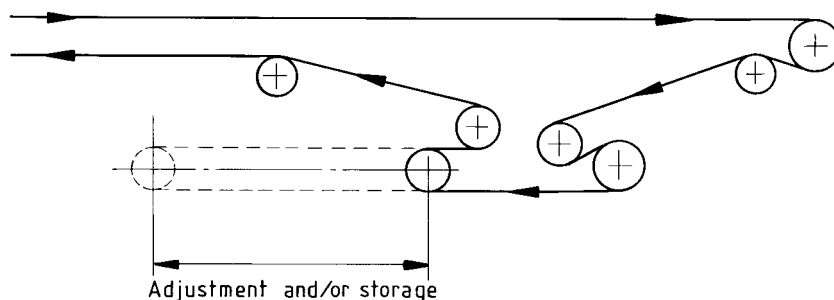


(a) Gravity-weight-operated, vertical take-up at intermediate point of conveyor

(b) Screw-operated take-up at tail end of conveyor



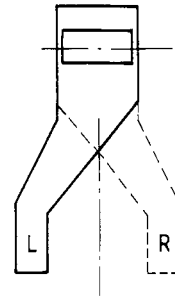
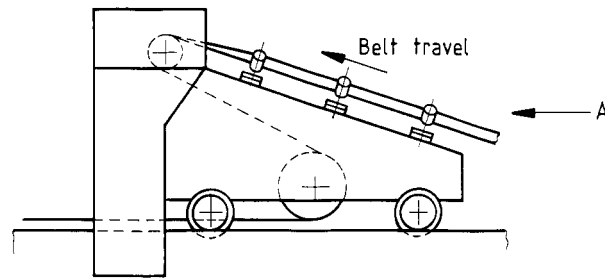
(c) Gravity-weight-operated take-up at tail end of conveyor



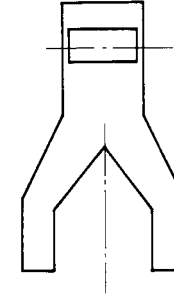
NOTE Take-up is by hydraulic, electric, gravity weight or mechanical method.

(d) Loop take-up

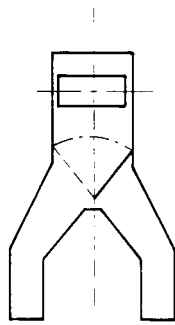
Figure 3 — Typical forms of take-up device



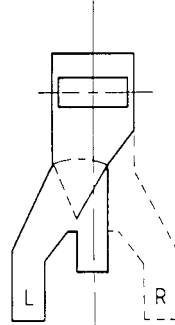
One-way chute for one side discharge, either right or left



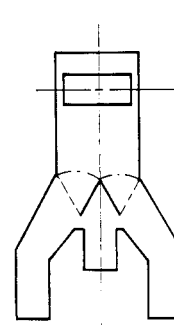
Two-way chute for discharge to both sides simultaneously



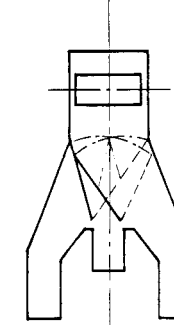
Two-way chute with flap valve for discharge to either side alternately or to both sides simultaneously



Two-way chute with flap valve for discharge to one side R or L hand or alternatively forward



Three-way chute with flap valve for discharge to both sides simultaneously or alternatively forward



Three-way chute with two flap valves for discharge to either side alternately, both sides simultaneously or alternatively forward

NOTE Chutes are viewed in the direction of arrow A.

Figure 4 — Typical travelling tripper