

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

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ISO RECOMMENDATION

R 1537

CONTINUOUS MECHANICAL HANDLING EQUIPMENT
FOR LOOSE BULK MATERIALS

TROUGHED BELT CONVEYORS (OTHER THAN PORTABLE CONVEYORS)
IDLERs

1st EDITION

July 1970

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BRIEF HISTORY

The ISO Recommendation R 1537, *Continuous mechanical handling equipment for loose bulk materials – Troughed belt conveyors (other than portable conveyors) – Idlers*, was drawn up by Technical Committee ISO/TC 101, *Continuous mechanical handling equipment*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question led to the adoption of Draft ISO Recommendation No. 1537, which was circulated to all the ISO Member Bodies for enquiry in October 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Belgium	India	Sweden
Canada	Israel	Switzerland
Colombia	Italy	Thailand
Czechoslovakia	Netherlands	Turkey
Finland	New Zealand	U.A.R.
France	Norway	United Kingdom
Germany	South Africa, Rep. of	U.S.A.
Greece	Spain	U.S.S.R.

The following Member Body opposed the approval of the Draft :

Japan

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

FOREWORD

Troughed belt conveyors (other than portable conveyors) for loose bulk materials form the subject of the three following ISO Recommendations :

ISO/R 1535, *Troughed belt conveyors (other than portable conveyors) – Belts*

ISO/R 1536, *Troughed belt conveyors (other than portable conveyors) – Belt pulleys*

ISO/R 1537, *Troughed belt conveyors (other than portable conveyors) – Idlers* (This ISO Recommendation).

Light duty belt conveyors for loose bulk materials will be covered by another ISO Recommendation*.

* At present at the stage of draft proposal.

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CONTINUOUS MECHANICAL HANDLING EQUIPMENT
FOR LOOSE BULK MATERIALS

TROUGHED BELT CONVEYORS (OTHER THAN PORTABLE CONVEYORS)

IDLERS

1. SCOPE

This ISO Recommendation specifies the dimensions of idlers, their arrangement and clearances for troughed belt conveyors (other than portable conveyors) with three carrying idlers.

2. CLASSIFICATION

Idlers for belts include

- (1) carrying idlers in line of equal length supporting the carrying belt;
- (2) return idlers of two types supporting the return belt, namely :
 - (a) with one single return idler;
 - (b) with one set of two return idlers of equal length, the axes of which are equally inclined to the horizontal to form a V. The angle of inclination is 10° .

The latter arrangement is applicable to conveyors with belts at least 800 mm wide.

3. SPECIFICATIONS

3.1 Materials

3.1.1 *Steel.* Where the idlers, carrying and return, are constructed from steel tubes, their diameters should be extracted from ISO Recommendation R 64, *Steel tubes — Outside diameters*. (See Table 1, clause 3.2.1.)

3.1.2 *Other materials.* The subject of idlers made of other materials will be considered at a later date.

3.2 Dimensions

3.2.1 *External diameters, d_1 , of carrying idlers and return idlers*

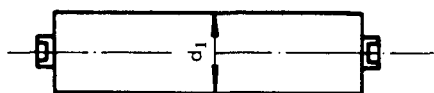


FIG. 1 — Idler

TABLE 1 — External diameters d_1 of carrying idlers and return idlers

millimetres	(inches)
63.5	(2 $\frac{1}{2}$)
76.1	(3)
88.9	(3 $\frac{1}{2}$)
101.6	(4)
108	(4 $\frac{1}{4}$)
127	(5)
133	(5 $\frac{1}{4}$)
152.4	(6)
159	(6 $\frac{1}{4}$)
168.3	(6 $\frac{5}{8}$)
193.7	(7 $\frac{5}{8}$)
219.1	(8 $\frac{5}{8}$)

3.2.2 *Lengths.* These lengths are applicable to fixed conveyors; other lengths may be necessary for field conveyors.

3.2.2.1 LENGTHS OF CARRYING IDLERS. Table 2 below gives the lengths of carrying idlers suitable for troughed belt conveyors using a centre idler and two side idlers in line.

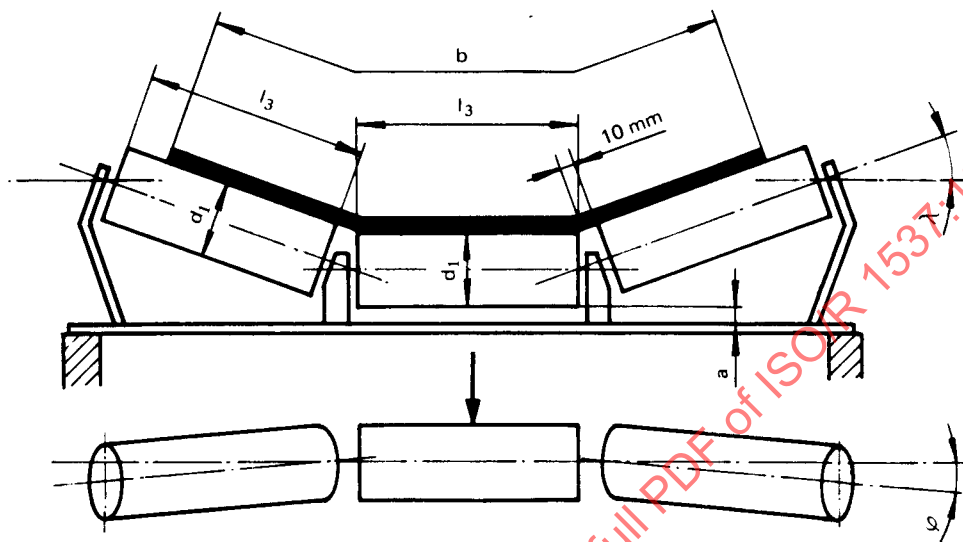


FIG. 2 — Carrying idlers

TABLE 2 — Lengths of carrying idlers

Belt widths*		Carrying idlers	
b		l_3	
millimetres	(inches)	millimetres	(inches)
400	(16)	160	(6 $\frac{1}{4}$)
500	(20)	200	(8)
650	(26)	250	(10)
800	(32)	315	(12 $\frac{5}{8}$)
1000	(40)	380	(15 $\frac{1}{4}$)
1200	(48)	465	(18 $\frac{5}{8}$)
1400	(56)	530	(21 $\frac{1}{4}$)
1600	(64)	600	(24)
1800	(72)	670	(26 $\frac{5}{8}$)
2000	(80)	750	(29 $\frac{1}{4}$)

* See ISO Recommendation R 251, *Widths and lengths of conveyor belts.*

3.2.2.2 LENGTHS OF RETURN IDLERS. Table 3 below gives the lengths of the return idlers for the two following arrangements :

- (1) one single return idler (see Fig. 3);
- (2) one set of two return idlers in V form (see Fig. 4).

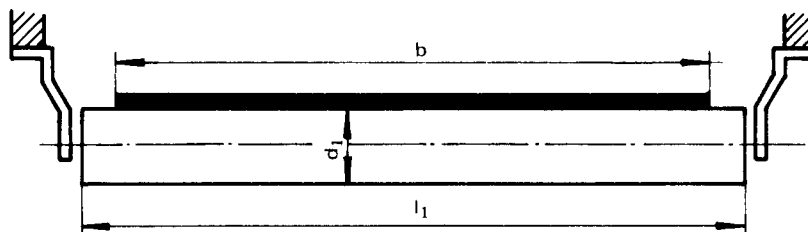


FIG. 3 — One return idler

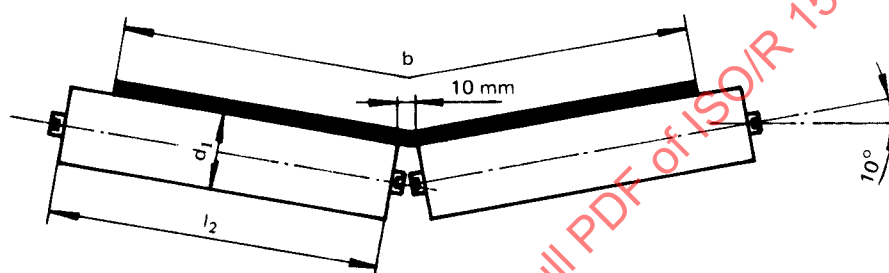


FIG. 4 — Two return idlers in V form

TABLE 3 — Lengths of return idlers

Belt widths b		Return idlers			
		one idler l_1		two idlers l_2	
millimetres	(inches)	millimetres	(inches)	millimetres	(inches)
400	(16)	500	(20)		
500	(20)	600	(24)		
650	(26)	750	(30)		
800	(32)	950	(38)	465	$(18 \frac{5}{8})$
1000	(40)	1150	(46)	600	(24)
1200	(48)	1400	(56)	700 (670)*	(28)
1400	(56)	1600	(64)	800 (750)*	(32)
1600	(64)	1800	(72)	900	(36)
1800	(72)	2000	(80)	1000	(40)
2000	(80)	2200	(88)	1100 (1150)*	(44)

* These values are employed for conveyors used in and supplied to COMECON countries.

3.2.3 Spindle ends

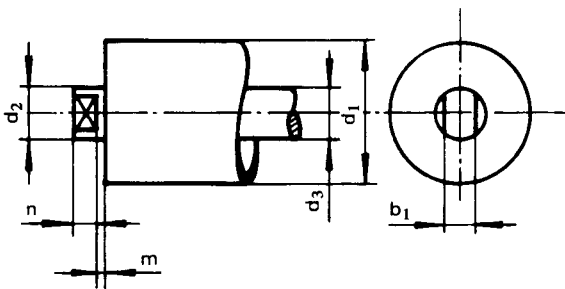


FIG. 5 – Spindle end without added end cap

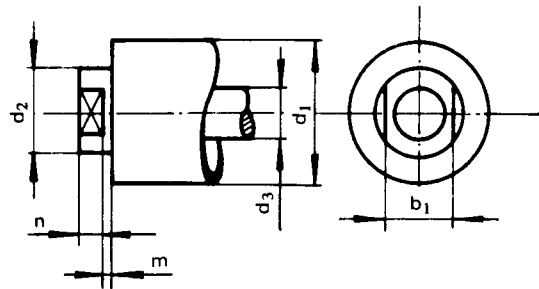


FIG. 6 – Spindle end with added end cap

The standard dimensions for spindle ends are :

- diameter d_2 ;
- diameter d_3 , corresponding to the inner diameter of the bearing;
- partial lengths m and n ;
- width on flats b_1 .

TABLE 4 – Spindle ends – Dimensions in millimetres

	d_2	d_3	b_1	m	n^*
without added end cap (see Fig. 5)	20	20	14	4	9
	25	25	18	4	12
	30	30	22	4	12
	40	40	32	4	12
with added end cap (see Fig. 6)	35	20	30	4	10
	45	25 (30)	38	4	12

* For return idlers the dimension $n + 10$ mm is allowed.

TABLE 5 – Spindle ends – Dimensions in inches

	d_2	d_3	b_1	m	n^*
without added end cap (see Fig. 5)	$(\frac{25}{32})$ or $(\frac{51}{64})$	$(\frac{25}{32})$ or $(\frac{51}{64})$	$(\frac{35}{64})$ or $(\frac{9}{16})$	$(\frac{5}{32})$	$(\frac{11}{32})$ or $(\frac{23}{64})$
	$(\frac{63}{64})$	$(\frac{63}{64})$	$(\frac{45}{64})$ or $(\frac{23}{32})$	$(\frac{5}{32})$	$(\frac{15}{32})$ or $(\frac{31}{64})$
	$(1 \frac{3}{16})$	$(1 \frac{3}{16})$	$(\frac{55}{64})$ or $(\frac{7}{8})$	$(\frac{5}{32})$	$(\frac{15}{32})$ or $(\frac{31}{64})$
	$(1 \frac{9}{16})$ or $(1 \frac{37}{64})$	$(1 \frac{9}{16})$ or $(1 \frac{37}{64})$	$(1 \frac{11}{64})$	$(\frac{5}{32})$	$(\frac{15}{32})$ or $(\frac{31}{64})$
with added end cap (see Fig. 6)	$(1 \frac{3}{8})$	$(\frac{25}{32})$ or $(\frac{51}{64})$	$(1 \frac{3}{16})$	$(\frac{5}{32})$	$(\frac{25}{64})$
	$(1 \frac{49}{64})$ or $(1 \frac{25}{32})$	$(\frac{63}{64})$ [$1 \frac{3}{16}$]	$(1 \frac{31}{64})$ or $(1 \frac{1}{2})$	$(\frac{5}{32})$	$(\frac{15}{32})$ or $(\frac{31}{64})$

* For return idlers, the dimension $n + \frac{25}{64}$ in is allowed.