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## Conveyor chains, attachments and chain wheels — Part I : Chains — Metric series

*Chaînes convoyeurs, plaques d'attache et roues pour chaînes —  
Partie I : Chaînes — Série métrique*

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**Descriptors** : chain drives, conveyor chains, bush chains, roller chains, sprockets, fixing plates, designation, dimensions, marking, chain pitch.

Price based on 5 pages

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

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.

Prior to 1972, the results of the work of the technical committees were published as ISO Recommendations; these documents are in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 100, *Chains and chain wheels for power transmission and conveyors*, has reviewed ISO Recommendation R 1977-1971 and found it technically suitable for transformation. International Standard ISO 1977/1 therefore replaces ISO Recommendation R 1977-1971, to which it is technically identical.

ISO Recommendation R 1977 had been approved by the member bodies of the following countries :

Australia	Greece	Romania
Belgium	India	South Africa, Rep. of
Czechoslovakia	Ireland	Spain
Egypt, Arab Rep. of	Israel	Thailand
France	Japan	United Kingdom
Germany	New Zealand	

The member bodies of the following countries had expressed disapproval of the Recommendation on technical grounds :

Sweden  
U.S.A.\*

\* Subsequently, this member body approved the Recommendation.

No member body disapproved the transformation of the Recommendation into an International Standard.

# Conveyor chains, attachments and chain wheels — Part I : Chains — Metric series

## 0 INTRODUCTION

This document forms part of ISO 1977, dealing with conveyor chains, attachments and chain wheels. Other parts are :

Part II : *Chain wheels.*

Part III : *Attachments — Metric series.*

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard gives specifications for metric-dimensioned bush, plain and flanged roller chains of both solid and hollow bearing pin types designed for general conveying and mechanical handling duties.

The dimensions indicated ensure interchangeability of complete chains and interchangeability of individual links of chains for repair purposes.

## 2 NOMENCLATURE

The nomenclature of chains is as given in figures 1 and 2.

## 3 DESIGNATION

Conveyor chain designating numbers are based on the ISO numbers given in tables 1 and 2 (column 1). The numbers are derived from the minimum breaking loads (in kilonewtons) and are given the prefix M to indicate solid bearing pin chain, or prefix MC to indicate hollow bearing pin chain.

*Examples :*

**M80** = Solid bearing pin chain of 80 kN (8 000 daN) nominal breaking load.

**MC224** = Hollow bearing pin chain of 224 kN (22 400 daN) nominal breaking load.

The symbol B (bush), F (flanged), P (plain) or S (small) is added, as appropriate, to indicate the type. This is followed by further digits indicating the pitch in millimetres.

*Example :*

**MC224-F-200** = Chain MC224 with flanged roller and pitch of 200 mm.

## 4 DIMENSIONS

Conveyor chains shall conform to the dimensions given in tables 1 and 2. Maximum and minimum dimensions are specified to ensure interchangeability of links as produced by different makers of chain. They represent limits for interchangeability, but are not necessarily to be regarded as limits of tolerance used in manufacture.

Pitch  $p$  is a theoretical reference dimension used in calculating strand lengths and chain wheel dimensions and it is not intended for inspection of individual links.

## 5 BREAKING LOADS

The test length shall have a minimum of three free pitches. The ends shall be attached to the testing machine shackles by a pin through the plate holes, or the bushes. The shackles should be so designed as to allow universal movement. The actual method is left to the discretion of the manufacturer.

Tests in which failures occur adjacent to the shackles shall be disregarded.

The minimum tensile breaking loads shall be not less than 95 % of those specified in tables 1 and 2.

## 6 LENGTH ACCURACY

The finished chain shall be accurate within  $+0,25\%$  of the nominal chain length when measured under the following conditions :

### 6.1 Standard test length for measurement

The standard length of chain for measurement purposes shall be that nearest 3 000 mm when an odd number of pitches, terminating at each end in an inner link, are assembled.

### 6.2 Support

The chain, in the unlubricated condition, shall be supported throughout its entire length.

### 6.3 Measuring load

A load equal to 1/50 of the appropriate breaking load shall be applied. (See tables 1 and 2.)

NOTE — The length accuracy of chains which have to work in parallel should be within the above limits but matched by agreement with the manufacturer.

## 7 CRANKED LINKS

To obtain an odd number of pitches in an endless chain it is necessary to use a cranked link (see figure 1). Dimensions of the crank shall be as given in tables 1 and 2.

Cranked links are not recommended for normal use.

## 8 MARKING

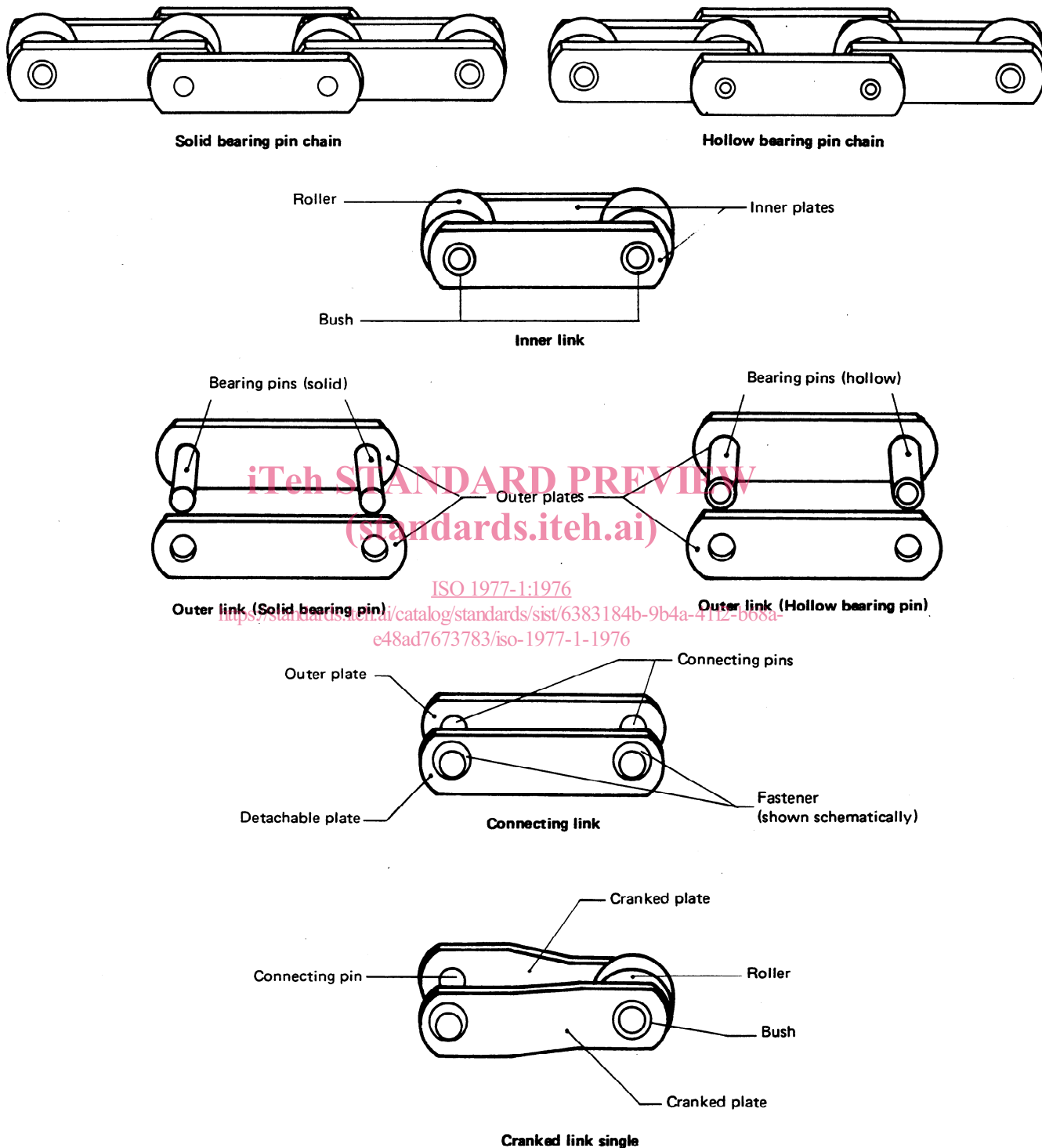
The chains should be marked with :

- a) the manufacturer's name or trademark;
- b) the ISO number (column 1 of tables 1 and 2).

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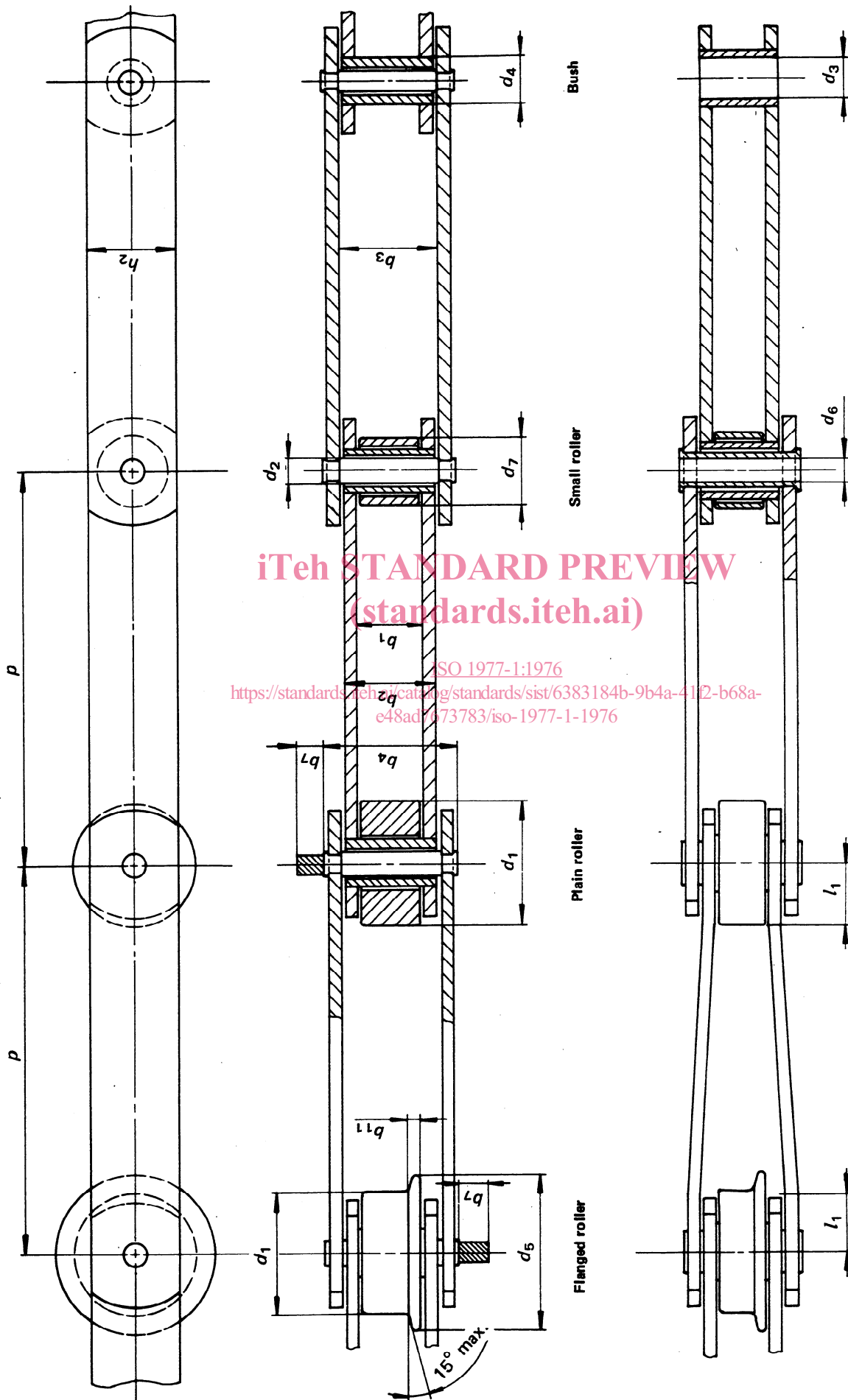
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NOTE – The illustrations do not define the actual form of the chain plates.

FIGURE 1 – Types of chains and links



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NOTES

- 1 Bearing pins may be of necked design as above or plain as shown in figure 1.
- 2 The illustrations do not define the actual form of the chain plates.

FIGURE 2 — Key to tables 1 and 2

TABLE 1 - Dimensions and data for solid pin conveyor chain

1	2	3	4												15	16		18
			Pitch <i>p</i>	Bearing pin body diameter <i>d</i> <sub>2</sub> max.	Bush bore <i>d</i> <sub>3</sub> min.	Bush diameter <i>d</i> <sub>4</sub> max.	Plate depth <i>h</i> <sub>2</sub> max.	Width between inner plates <i>b</i> <sub>1</sub> min.	Width over inner links <i>b</i> <sub>2</sub> max.	Width between outer plates <i>b</i> <sub>3</sub> min.	Width over bearing pins <i>b</i> <sub>4</sub> max.	Additional width for joint fastener <i>b</i> <sub>7</sub> max.	Measuring load daN	Cranked link dimension <i>l</i> <sub>1</sub> min.		Flanged roller dimensions		
Breaking load daN	Plain roller diameter <i>d</i> <sub>1</sub> max.	Flange diameter <i>d</i> <sub>5</sub> max.													Flange width <i>b</i> <sub>11</sub> max.			
M20	2 000	25	X	6,0	6,1	9,0	19	15	22	22,2	35	40	12,5	35	3,5	12,5		
M28	2 800	30	X	7,0	7,1	10,0	21	17	25	25,2	40	56	14,0	40	4,0	15,0		
M40	4 000	36		8,6	8,7	12,5	26	19	28	28,3	45	80	17,0	45	4,5	18,0		
M56	5 600	42	X	10,0	10,1	15,0	31	23	33	33,3	52	112	20,5	55	5,0	21,0		
M80	8 000	50		12,0	12,1	18,0	36	27	39	39,4	62	160	23,5	65	6,0	25,0		
M112	11 200	60	X	15,0	15,1	21,0	41	31	45	45,5	73	224	27,5	75	7,0	30,0		
M160	16 000	70	X	18,0	18,1	25,0	51	36	52	52,5	85	320	34,0	90	8,5	36,0		
M224	22 400	85	X	21,0	21,2	30,0	62	42	60	60,6	98	450	40,0	105	10,0	42,0		
M315	31 500	100	X	25,0	25,2	36,0	72	47	70	70,7	112	630	47,0	125	12,0	50,0		
M450	45 000	120		30,0	30,2	42,0	82	55	82	82,8	135	900	55,0	150	14,0	60,0		
M630	63 000	140		36,0	36,2	50,0	103	65	96	97,0	154	1 250	66,5	175	16,0	70,0		
M900	90 000	170	X	44,0	44,2	60,0	123	76	112	113,0	180	1 800	81,0	210	18,0	85,0		

TABLE 2 - Dimensions and data for hollow pin conveyor chain

1	2	3	4												15	16		18
			Pitch <i>p</i>	Bearing pin body diameter <i>d</i> <sub>2</sub> max.	Bush bore <i>d</i> <sub>3</sub> min.	Bush diameter <i>d</i> <sub>4</sub> max.	Plate depth <i>h</i> <sub>2</sub> max.	Width between inner plates <i>b</i> <sub>1</sub> min.	Width over inner links <i>b</i> <sub>2</sub> max.	Width between outer plates <i>b</i> <sub>3</sub> min.	Width over bearing pins <i>b</i> <sub>4</sub> max.	Additional width for joint fastener <i>b</i> <sub>7</sub> max.	Measuring load daN	Cranked link dimension <i>l</i> <sub>1</sub> min.		Flanged roller dimensions		
Breaking load daN	Plain roller diameter <i>d</i> <sub>1</sub> max.	Flange diameter <i>d</i> <sub>5</sub> max.													Flange width <i>b</i> <sub>11</sub> max.			
MC28	2 800	36,0		13,0	13,1	17,5	26,0	19,0	28,0	28,6	42,0	56	17,0	45,0	4,5	8,2		
MC56	5 600	50,0		15,5	15,6	21,0	36,0	22,0	33,0	33,7	48,0	112	23,5	65,0	5,0	10,2		
MC112	11 200	70,0		22,0	22,2	29,0	51,0	30,0	45,0	45,7	67,0	224	34,0	90,0	7,0	14,3		
MC224	22 400	100,0	X	31,0	31,2	41,0	72,0	40,0	60,0	60,8	90,0	450	47,0	125,0	10,0	20,3		

NOTES

- Those pitches indicated by X are for bush and small roller chains only.
- The dimension *l*<sub>1</sub> also determines the maximum plate length and the limit of the path of articulation taking minimum play into account.
- Chain MC112-P-100 requires a special design of chain wheel.

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