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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

# ISO RECOMMENDATION R 1977

# CONVEYOR CHAINS, ATTACHMENTS AND CHAIN WHEELS

PART I

CHAINS (METRIC SERIES)

1st EDITION

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# **BRIEF HISTORY**

The ISO Recommendation R 1977, Conveyor chains, attachments and chain wheels – Part I: Chains (Metric series), was drawn up by Technical Committee ISO/TC 100, Chains and chain wheels for power transmission and conveyors, the Secretariat of which is held by the British Standards Institution (BSI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1977, which was circulated to all the ISO Member Bodies for enquiry in January 1970. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

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

The following Member Bodies opposed the approval of the Draft :

Sweden U.S.A.

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

# CONVEYOR CHAINS, ATTACHMENTS AND CHAIN WHEELS

## PART I

## CHAINS (METRIC SERIES)

## INTRODUCTION

This ISO Recommendation has been prepared with a view to ensuring interchangeability of complete chains and interchangeability of individual links of chains for repair purposes.

Subsequent documents will relate to attachments and chain wheels.

## 1. SCOPE

This ISO Recommendation applies to metric-dimensioned bush, plain and flanged roller chains of both solid and hollow bearing pin types designed for general conveying and mechanical handling duties.

#### 2. NOMENCLATURE

The nomenclature of chains is as given in the Figure on page 5 and in the key, on page 6, to Tables 1 and 2.

#### 3. DESIGNATION

Conveyor chain designating numbers are based on the 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 nominal breaking load.

MC224 = Hollow bearing pin chain of 224 kN 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 should 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 should have a minimum of three free pitches. The ends should be attached to the testing machine shackles by a pin through the plate holes, or the bushes; the actual method is left to the discretion of the manufacturer. The shackles should be so designed as to allow universal movement.

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

The minimum tensile breaking loads should be not less than 95 % of those given in Tables 1 and 2.

## 6. LENGTH ACCURACY

The finished chain should be accurate within  ${}^{+0.25}_{0}$  % 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 should be that nearest 3000 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, should be supported throughout its entire length.

#### 6.3 Measuring load

A measuring load equal to 1/50 of the appropriate breaking load should 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). Dimensions of the crank should be as given in Tables 1 and 2.

Cranked links are not recommended for normal use.

## 8. MARKING

It is recommended that 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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	Dimensions in millimetr															imetre															
1	2	3	4														5		6	7	8	9	10	11	12	13	14	15	16	17	18
ISO chain No, (basic)	Breaking	Plain roller	Pitch									Bearing pin body Bush	Bush	Bush	Plate	Width between	Width over	Width between	Width over	Addition- al width	Measur-	Cranked link	Flanged roller dimensions		Smail						
	load	diameter		p							diameter	bore	diameter	depth	inner plates	inner links	outer pintes	bearing pins	for joint fastener	ing load	dimen- sion	Flange diameter	Flange width	diameter							
	kN	dı max.	40 40 200 200 200 200 100 100 100 100 100 10						d2 max.		d3 min.	d <sub>4</sub> max.	h <sub>2</sub> max.	b <sub>1</sub> min.	b2 max.	b3 min.	b4 max.	b <sub>γ</sub> max.	kN	l <sub>1</sub> min.	ds max.	<i>b</i> <sub>11</sub> max.	d7 max.								
M20	20	25	x	Ą	$\Lambda$	N	$\overline{V}$	$\overline{V}$	1				Ι				6.0	Τ	6.1	9.0	19	15	22	22.2	35	7	0.40	12.5	35	3.5	12.5
M28	28	30		x	$\Lambda$	V	V	V	V	1							7.0		7.1	10.0	21	17	25	25.2	40	8	0.56	14.0	40	4.0	15.0
M40	40	36		Ţ	Λ	$\Lambda$	$\mathbf{V}$	$\overline{V}$	$\overline{V}$	$\overline{V}$	1				Ι		8,5		8,6	12.5	26	19	28	28.3	45	9	0.80	17.0	45	4.5	18.0
M56	56	42			x1/	$\Lambda$	$\mathbb{Z}$	$\overline{V}$	V	$\mathbb{V}$	1				Ι		10.0		10.1	15.0	31	23	33	33.3	52	10	1.12	20.5	55	5.0	21.0
M80	80	50				$\Lambda$	$\mathbf{V}$	$\mathbb{V}$	V	V	V	1					12.0		12.1	18.0	36	27	39	39.4	62	12	1.60	23.5	65	6.0	25.0
M112	112	60			Ż	1	$\mathcal{V}$	V	V	V	V	V	1				15.0		15.1	21.0	41	31	45	45.5	73	14	2.24	27.5	75	7.0	30.0
M160	160	70				Ľ	1	V	$\mathbb{V}$	$\mathbb{Z}$	V	$\mathbb{Z}$	V	1		Ι	18.0		18.1	25.0	51	36	52	52.5	85	16	3.20	34.0	90	8.5	36.0
M224	224	85					ŀ	1	V	$\mathcal{V}$	V	V	V	V	1		21.0		21.2	30.0	62	42	60	60.6	98	18	4.50	40.0	105	10.0	42.0
M315	315	100					ſ	ľ	1	V	V	1	V	V	1		25.0		25.2	36.0	72	47	70	70.7	112	21	6.30	47.0	125	12.0	\$0.0
M450	450	120					Ĺ	ſ	1	V	$\mathbb{V}$	V	V	V	$\mathbb{V}$	1	30.0		30.2	42.0	82	55	82	82.8	135	25	9.00	55.0	150	14.0	60.0
M630	630	140								$\mathbf{k}$	V	V	V	V	$\mathbb{V}$	V	36.0		36.2	50.0	103	65	96	97.0	154	30	12.50	66.5	175	16.0	70.0
M900	900	170								X	1	V	Ī	V	V	V	44.0		44.2	60.0	123	76	112	113.0	180	37	18.00	81.0	210	18.0	85.0

## TABLE 1 - Dimensions and data for solid pin conveyor chain

## NOTES

1. Those pitches indicated by X are for bush and small roller chains only.

2. The dimension  $l_1$  also determines the maximum plate length and the limit of the path of articulation taking minimum play into account.

1	2	3			4			5	6	7	8	9	10	11	12	13	14	15	16	17	18
ISO chain No. (basic)	Breaking	<b>Plain</b> roller	Pitch					Bearing	Bush	Bush	Plate er depth	Width between inner plates	Width over inner links	Width between outer plates	Width over bearing pins	Addition- al width for joint fastener	Measur- ing load	Cranked link	Flanged roller dimensions		Hollow
	load	diameter	p				diameter	bore	diameter	dimen- sion								Flange diameter	Flange width	pin bore	
	kN	dı max.	63 100	160	200	315	400 500	dı max.	d3 min.	d4 max.	h2 max.	b <sub>1</sub> min.	b <sub>2</sub> max.	b3 min.	b4 max.	b, max.	kN	l <sub>i</sub> min.	d₅ max.	b <sub>11</sub> max.	d <sub>6</sub> min.
MC28	28	36.0	M	N	1			13.0	13,1	17.5	26.0	19.0	28.0	28.6	42.0	10.0	0.56	17.0	45.0	4.5	8.2
MC56	56	50.0	$\square M$	$\overline{N}$	П	Λ		15.5	15.6	21.0	36.0	22.0	33.0	33.7	48.0	13.0	1.12	23.5	65.0	5.0	10.2
MC112	112	70.0	ПИ	$\overline{N}$	И	$\mathcal{N}$		22.0	22.2	29.0	51.0	30.0	45.0	45.7	67.0	19.0	2.24	34.0	90.0	7.0	14.3
MC224	224	100.0		V	И	N	N	31.0	31.2	41.0	72.0	40.0	60.0	60.8	90.0	24.0	4.50	47.0	125.0	10.0	20.3

TABLE 2 - Dimensions and data for hollow pin conveyor chain

#### NOTES

1. The dimension  $l_1$  also determines the maximum plate length and the limit of the path of articulation taking minimum play into account.

2. Chain MC112-P-100 requires a special design of chain wheel.

Dimensions in millimetres