

International Standard



606

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Short pitch transmission precision roller chains and chain wheels

Chaînes de transmission de précision à rouleaux à pas courts et roues dentées correspondantes

First edition — 1982-12-01

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UDC 621.855

Ref. No. ISO 606-1982 (E)

Descriptors : chains, roller chains, short pitch chains, sprockets, chain pitch, dimensions, designation, marking.

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.

International Standard ISO 606 was developed by Technical Committee ISO/TC 100, *Chains and chain wheels for power transmission and conveyors*, and was circulated to the member bodies in June 1981.

It has been approved by the member bodies of the following countries :

Austria	Germany, F. R.	Romania
Belgium	India	South Africa, Rep. of
Brazil	Italy	Spain
China	Japan	Sweden
Czechoslovakia	Mexico	United Kingdom
Egypt, Arab Rep. of	Netherlands	USA
France	Poland	USSR

No member body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 606-1967, of which it constitutes a technical revision, as well as its Addendum 1-1974.

Short pitch transmission precision roller chains and chain wheels

0 Introduction

The provisions of this International Standard have been arrived at by including sizes of chains used by the majority of countries in the world, and by unifying dimensions, strength and other data in respect of which current national standards were differing and at the same time eliminating certain size ranges listed in some national standards for which it was considered a universal usage had not been established.

The whole applicational field open to this medium of transmission has been covered by the ranges of chains already established. To achieve this the sizes of 12,7 mm (0.5 in) to 76,2 mm (3.0 in) pitch inclusive have been duplicated by the inclusion of chains derived from standards originating in the western hemisphere and centred around ANSI (suffix A) and, on the other hand, by chains representing the unification of the principal standards originating in Europe and centred around BSI (suffix B), the two being complementary for the coverage of the widest possible field of application.

The part of this International Standard covering chain wheels represents the unification of all the relevant national standards in the world and includes, in particular, complete tolerances relating to tooth form which are absent from most current national standards.

The dimensions of chain specified ensure complete interchangeability of any given size and provide interchangeability of individual links of chains for repair purposes.

1 Scope and field of application

This International Standard applies to short pitch precision roller chains of simple and multiplex construction suitable for the mechanical transmission of power and allied applications, together with the tooth gap forms and rim profiles of their associated chain wheels. It covers dimensions, tolerances, measuring loads and minimum breaking loads.

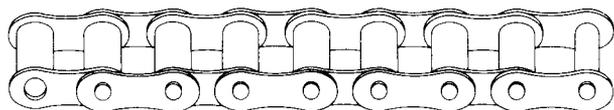
2 Reference

ISO 286/1, *ISO system of limits and fits — Part 1: General, tolerances and deviations.*¹⁾

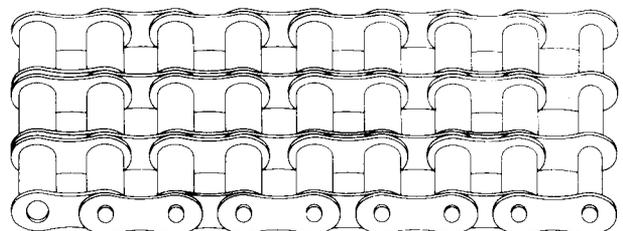
3 Chains

3.1 Nomenclature

Figures 1, 2 and 3 do not define the actual form of the chain plates.



Roller chain, simple



Roller chain, multiple (triplex)

Figure 1 — Roller chains

1) At present at the stage of draft. (Revision of ISO/R 286-1962.)

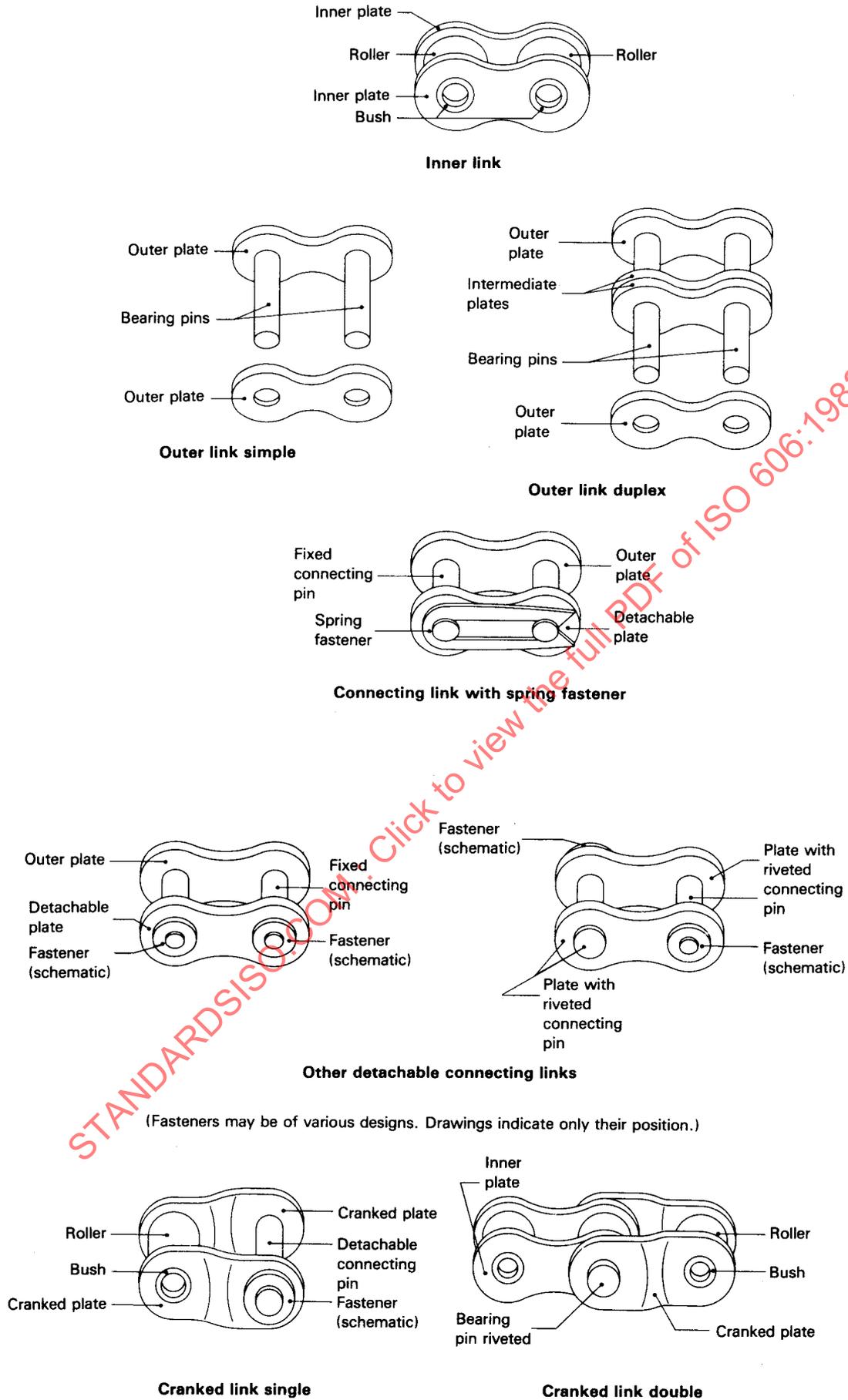


Figure 2 — Types of links

NOTE — Dimensional definitions are contained in the key to tables 1, 1M, 2 and 2M.

3.2 Designation

Transmission precision roller chains shall be designated by the standard ISO chain number given in tables 1, 1M, 2 and 2M; the first two digits expressing the pitch in sixteenths of an inch. The ISO chain numbers in tables 1 and 1M are supplemented by a hyphenated suffix 1 for simple chain, 2 for duplex chain, 3 for triplex chain, etc., for example 16B-1, 16B-2, 16B-3, etc.

3.3 Dimensions

Chains shall conform to the dimensions given in tables 1, 1M, 2 and 2M. 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 the actual tolerances that should be used in manufacture.

3.4 Minimum ultimate tensile strength

3.4.1 The minimum tensile strength is the minimum strength of samples tested to destruction in tensile loading, as defined in 3.4.2. This strength is not a working load. It is intended primarily as a comparative figure between chains of various constructions. For application information, the manufacturers or their published data should be consulted.

3.4.2 A tensile load, not less than that specified in table 1, 1M, 2 or 2M, is applied slowly to the ends of a chain length, containing at least five free pitches, by means of shackles permitting free movement on both sides of the chain centre line, in the normal plane of articulation.

Failure shall be considered to have occurred at the first point where increasing extension is no longer accompanied by increasing load, i.e. the summit of the load/extension diagram.

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

3.4.3 The tensile test shall be considered a destructive test. Even though a chain may not visibly fail when subjected to the minimum breaking load, it will have been stressed beyond the yield point and will be unfit for service.

3.5 Proof loading

It is recommended that all chains should be proof loaded to one-third of the minimum tensile breaking load given in tables 1, 1M, 2 and 2M.

3.6 Length accuracy

Finished chains shall be measured after proof loading (where applicable) but before lubricating.

The standard length for measurement shall be a minimum of :

- a) 610 mm (24 in) for ISO chain numbers 05B to 12B and 081 to 085 inclusive,
- b) 1 220 mm (48 in) for ISO chain numbers 16A to 72B inclusive,

and shall terminate with an inner link at each end.

The chain shall be supported throughout its entire length and the measuring load in tables 1, 1M, 2 and 2M shall be applied.

To comply with this International Standard, the length shall be the nominal length subject to the limits of tolerance :

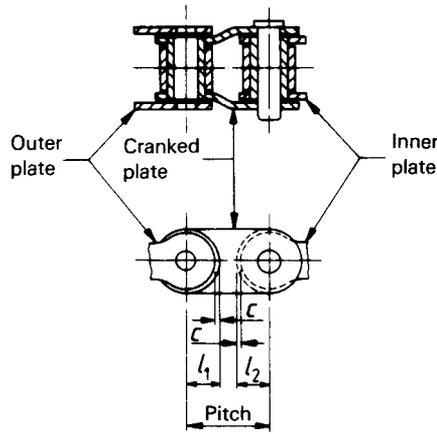
$$\begin{array}{l} +0,15 \\ 0 \end{array} \%.$$

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

3.7 Marking

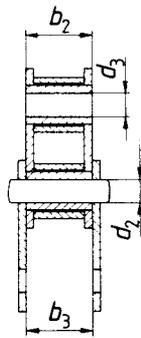
The chain shall be marked with :

- a) the manufacturer's name or trade mark;
- b) the ISO chain number (see column 1 of tables 1, 1M, 2 and 2M).

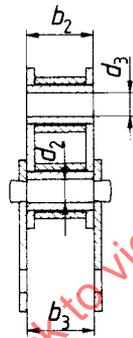


Cranked link

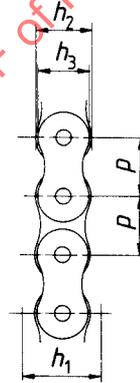
Dimension c represents the clearance between the cranked link plates and the straight plates available during articulation.



Plain pin

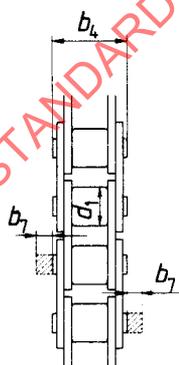


Shouldered pin

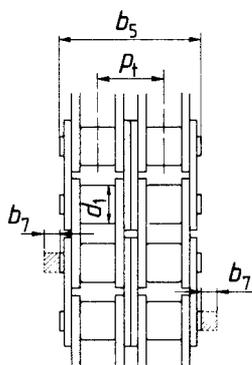


Sections through chain

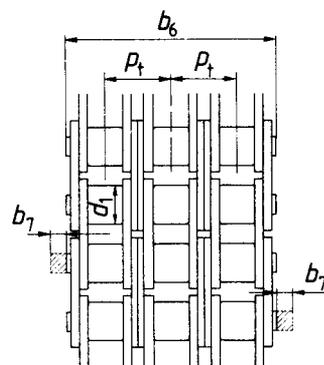
The chain path depth h_1 is the minimum depth of channel through which the assembled chain will pass.



Simple



Duplex



Triplex

The overall width of a chain with a joint fastener is equal to the width over the bearing pins b_4 , b_5 or b_6 plus b_7 for riveted pin end (or $+ 1,6 b_7$ for headed pin end) if fastener is on one side only, or $+ 2 b_7$ if fastener is on both sides.

The width over bearing pins for chains wider than triplex is equal to $b_4 + p_1$ (number of strands in chain $- 1$).

Figure 3 — Key to tables 1, 1M, 2 and 2M

Table 2 — (Inch-pound units) Chain dimensions, measuring loads and breaking loads of cycle and moped chains¹⁾

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	p	d_1 max.	b_1 min.	d_2 max.	d_3 min.	h_1 min.	h_2 max.	h_3 max.	l_1 min.	l_2 min.	c	b_2 max.	b_3 min.	b_4 max.	b_7 max.		min.
	in	in	in	in	in	in	in	in	in	in	in	in	in	in	in	lb	lb
081	0.500	0.305	0.130	0.144	0.146	0.400	0.390	0.390	0.211	0.211	0.003	0.228	0.233	0.40	0.06	28	1 800
082	0.500	0.305	0.094	0.144	0.146	0.400	0.390	0.390	0.211	0.211	0.003	0.181	0.186	0.32	0.06	28	2 200
083	0.500	0.305	0.192	0.161	0.163	0.416	0.406	0.406	0.211	0.211	0.003	0.311	0.316	0.51	0.06	28	2 600
084	0.500	0.305	0.192	0.161	0.163	0.449	0.439	0.439	0.227	0.227	0.003	0.346	0.351	0.58	0.06	28	3 500
085	0.500	0.306	0.251	0.141	0.143	0.400	0.390	0.390	0.208	0.240	0.003	0.357	0.362	0.55	0.08	28	1 500

Table 2M — (Metric units) Chain dimensions, measuring loads and breaking loads of cycle and moped chains¹⁾

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	p	d_1 max.	b_1 min.	d_2 max.	d_3 min.	h_1 min.	h_2 max.	h_3 max.	l_1 min.	l_2 min.	c	b_2 max.	b_3 min.	b_4 max.	b_7 max.		min.
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	da N	da N
081	12,70	7,75	3,30	3,66	3,71	10,17	9,91	9,91	5,36	5,36	0,08	5,90	5,93	10,2	1,5	12,5	800
082	12,70	7,75	2,38	3,66	3,71	10,17	9,91	9,91	5,36	5,36	0,08	4,60	4,73	8,2	1,5	12,5	960
083	12,70	7,75	4,88	4,09	4,14	10,56	10,30	10,30	5,36	5,36	0,08	7,90	8,03	12,9	1,5	12,5	1 160
084	12,70	7,75	4,88	4,09	4,14	11,41	11,15	11,15	5,77	5,77	0,08	8,80	8,93	14,8	1,5	12,5	1 560
085	12,70	7,77	6,38	3,58	3,63	10,17	9,91	9,91	5,28	6,10	0,08	9,07	9,20	14,0	2,0	12,5	670

1) These chains are recommended in the single version only.
 2) Cranked links are not recommended for use on chains which are intended for onerous applications.
 3) The actual dimensions will depend on the type of fastener used but they should not exceed the dimensions in this column, details of which should be obtained by the purchaser from the manufacturer.
 4) It is recommended that the joints for derailleur chain should always be riveted.

4 Attachments

4.1 General

Except when otherwise stated, the characteristics, dimensions and tests for the chain with attachments shall conform to the requirements of clause 3.

4.2 Designation

Two types of attachments are given, having the common dimensional basis as detailed in tables 1 and 1M (columns 2, 3 and 4); their designation and distinguishing features are as follows :

- K1 : with one attachment hole centrally disposed in each platform;
- K2 : with two attachment holes longitudinally disposed as shown in figure 4.

4.3 Dimensions

Attachments shall conform to the dimensions given in tables 3 and 3M.

4.4 Manufacture

The actual form of the attachment plates is left to the discretion of the manufacturer, but the attachments are normally of integral construction whereby the chain plates are extended and bent over to make the platform, as shown in figure 4.

The length of the attachment plate is also left to the discretion of the manufacturer, but it should be sufficient to accommodate the two attachment holes longitudinally in the case of type K2, and not interfere with the working of the adjoining links. A common length is normally adopted for both type K1 and K2.

4.5 Marking

The marking shall be the same as would be shown on the chain plates replaced by an integral construction attachment (see 3.7).

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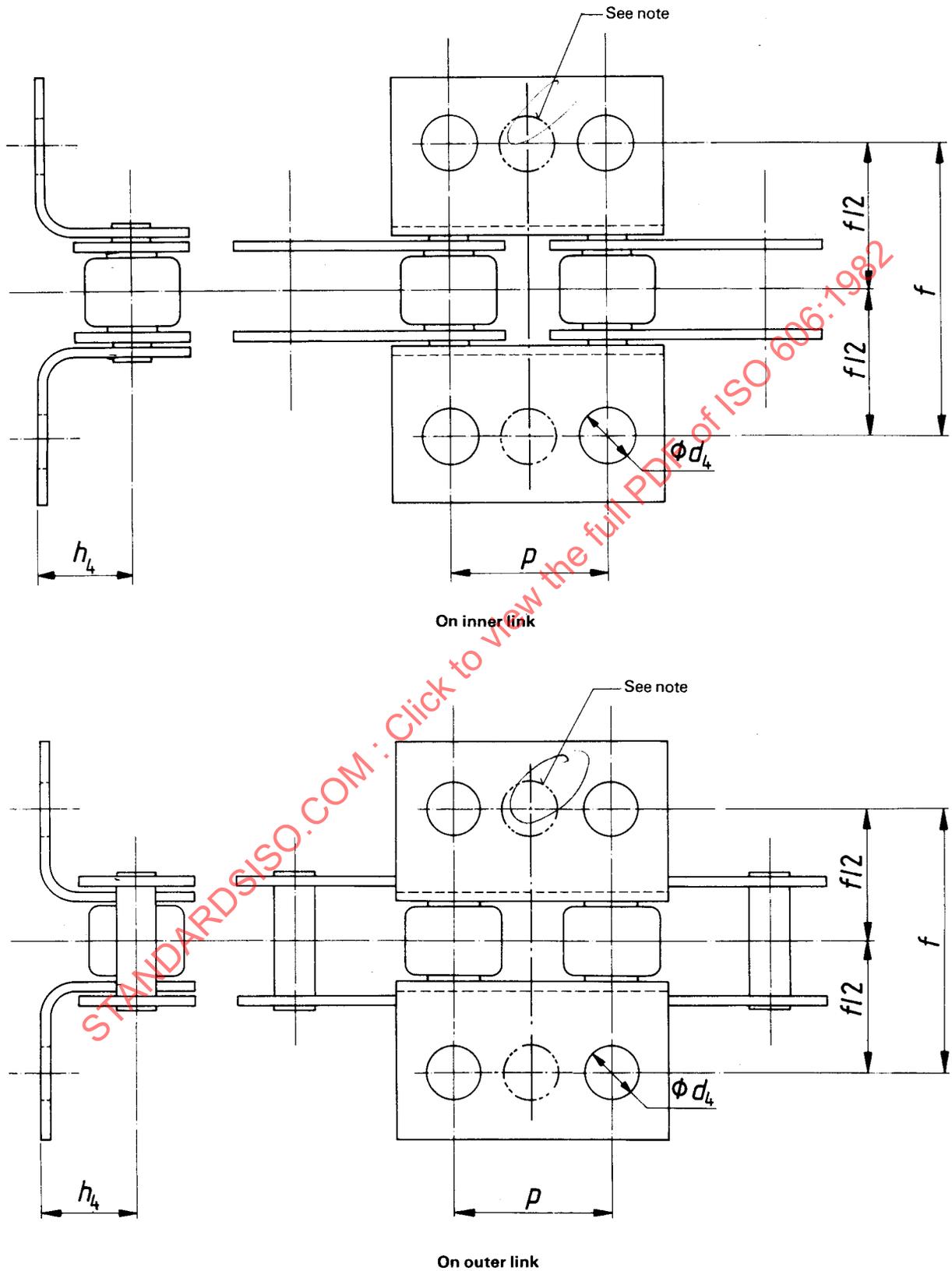


Figure 4 – K attachments (key to tables 3 and 3M)

NOTE — K2 attachment plates each have two attachment holes. K1 plates are similar except that they have one hole, centrally disposed (see 4.2).

Table 3 – (Inch units) Dimensions of attachments

(1)	(2)	(3)	(4)
ISO chain number	Platform height h_4	Hole diameter d_4 min.	Transverse distance between hole centres f
08 A	0.312	0.131	1.00
08 B	0.350	0.169	
10 A	0.406	0.200	1.25
10 B		0.209	
12 A	0.469	0.200	1.50
12 B	0.530	0.252	
16 A	0.625	0.261	2.00
16 B		0.252	
20 A	0.781	0.323	2.50
20 B		0.331	
24 A	0.906	0.386	3.00
24 B	1.050	0.413	
28 A	1.125	0.448	3.50
28 B		0.516	
32 A	1.250	0.516	4.00
32 B			

Table 3M – (Metric units) Dimensions of attachments

(1)	(2)	(3)	(4)
ISO chain number	Platform height h_4	Hole diameter d_4 min.	Transverse distance between hole centres f
08 A	7,92	3,3	25,40
08 B	8,89	4,3	
10 A	10,31	5,1	31,75
10 B		5,3	
12 A	11,91	5,1	38,10
12 B	13,46	6,4	
16 A	15,88	6,6	50,80
16 B		6,4	
20 A	19,84	8,2	63,50
20 B		8,4	
24 A	23,01	9,8	76,20
24 B	26,67	10,5	
28 A	28,58	11,4	88,90
28 B		13,1	
32 A	31,75	13,1	101,60
32 B			

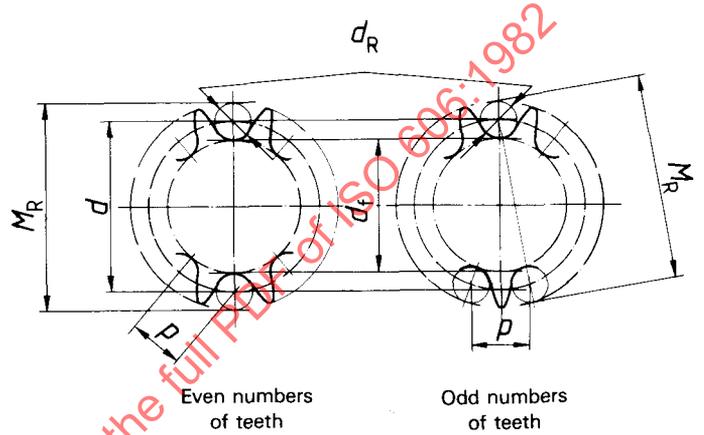
5 Chain wheels

5.1 Nomenclature

The nomenclature for basic chain dimensions on which all wheel data are based is given in figure 3. Chain wheel nomenclature is covered under the respective headings.

5.2 Diametral dimensions of wheel rim

5.2.1 Nomenclature



p = chordal pitch, equal to chain pitch

d_R = measuring pin diameter

z = number of teeth

d = pitch circle diameter

d_f = root diameter

M_R = measurement over pins

5.2.2 Dimensions

5.2.2.1 Pitch circle diameter

$$d = \frac{p}{\sin \frac{180^\circ}{z}}$$

(see the annex for pitch circle diameters in relation to the number of teeth)

5.2.2.2 Measuring pin diameter

$d_R = d_1$ (see 5.3.1) subject to tolerance limits

$$+ 0.0005 \text{ in (0,01 mm)}$$

$$0$$