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# International Standard



# 6973

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

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## Drop-forged rivetless chains for conveyors

*Chaînes à maillons non rivés, forgés par estampage pour convoyeurs*

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**Descriptors:** chains, conveyor chains, specifications, dimensions, designation, marking.

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6973 was prepared by Technical Committee ISO/TC 100, *Chains and chain wheels for power transmission and conveyors*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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# Drop-forged rivetless chains for conveyors

## 0 Introduction

American National Standard, ANSI B29-22M, deals with three types of rivetless chain, i.e. "regular", "X" and "modified X" types. This International Standard deals with chains similar to the "X" type with an assured dimension on the centre link similar to the "modified X" type. The chains specified in this International Standard are intended to be used in place of all three types of ANSI chains.

By adhering to the dimensions specified in this International Standard, it is possible to ensure that parts of chains of different origins can be joined together. It should be noted, however, that the pin should be of the same origin as the side bars.

It is recognized that methods other than "drop"-forging may be used to manufacture these chains, e.g. air, steam, press or other forging methods.

The dimensions specified in this International Standard are shown in inches and millimetres; the latter are conversions of the basic inch dimensions.

## 1 Scope and field of application

This International Standard lays down the dimensions, tolerances, measuring loads and minimum breaking loads, for drop-forged rivetless chains suitable for conveyor applications under a variety of conditions.

## 2 Chains

### 2.1 Nomenclature

The nomenclature of the chains is indicated in figure 1. Figure 1 illustrates the chain components.

### 2.2 Designation

Drop-forged rivetless chains are designated by the prefix "F" followed by a number, e.g. 348, which indicates the reference, not actual, pitch in inches, i.e. 3 in, and the nominal diameter of the pin, i.e. 4/8 in or 1/2 in.

### 2.3 Construction

A chain is assembled from three basic parts, each of forged manufacture (see clause 0), having a precise dimension on the

centre link for securing an attachment (see figure 1). The centre link is joined to the two outside bars, which are symmetrical, by a tee-headed pin. Assembly is made by moving the pin and side bars forward to the midpoint of the centre link and rotating the assembly 90°.

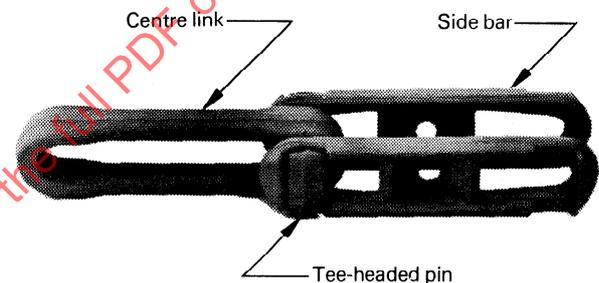


Figure 1 — Chain assembly

### 2.4 Dimensions

Chains shall conform to the dimensions given in tables 1 and 1M. Maximum and minimum dimensions are specified to ensure that chain elements manufactured by different makers can be joined together. They represent limits for interchangeability but are not the actual tolerances that should be used in manufacture.

NOTE — The dimensions given in tables 1 and 1M are illustrated in figure 2.

Pitch,  $p$ , is a theoretical dimension used in calculating strand lengths and chain wheel dimensions; it is not intended for inspection of individual links. Pitch,  $p$  (not the reference pitch), is used with the tolerances indicated to describe chain characteristics and length.

### 2.5 Finish

Sharp edges and protrusions shall be absent from the pin seating and driving face areas of the centre link.

### 2.6 Minimum ultimate tensile strength

The test length shall have a minimum of four free pitches. The ends shall be attached to the tensile testing machine fixtures by a pin through the space in the centre link on one end and through the holes of the outer sidebars, or through the centre

link if five free pitches are used. The fixtures shall be so designed as to allow universal movement; the actual method to be used is left to the discretion of the manufacturer.

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

The minimum tensile breaking loads shall be those given in tables 1 and 1M.

## 2.7 Length accuracy

Finished chains shall be measured either dry or after only light lubrication.

The standard measuring length is given in tables 1 and 1M for each size.

The chain shall be supported throughout its entire length and the measuring load given in tables 1 and 1M applied. The measured length shall be the standard measuring length within the limits of the tolerances given in tables 1 and 1M.

## 2.8 Marking

The chain should be marked with

- a) the manufacturer's name or trademark;
- b) the ISO chain number (see 2.2).

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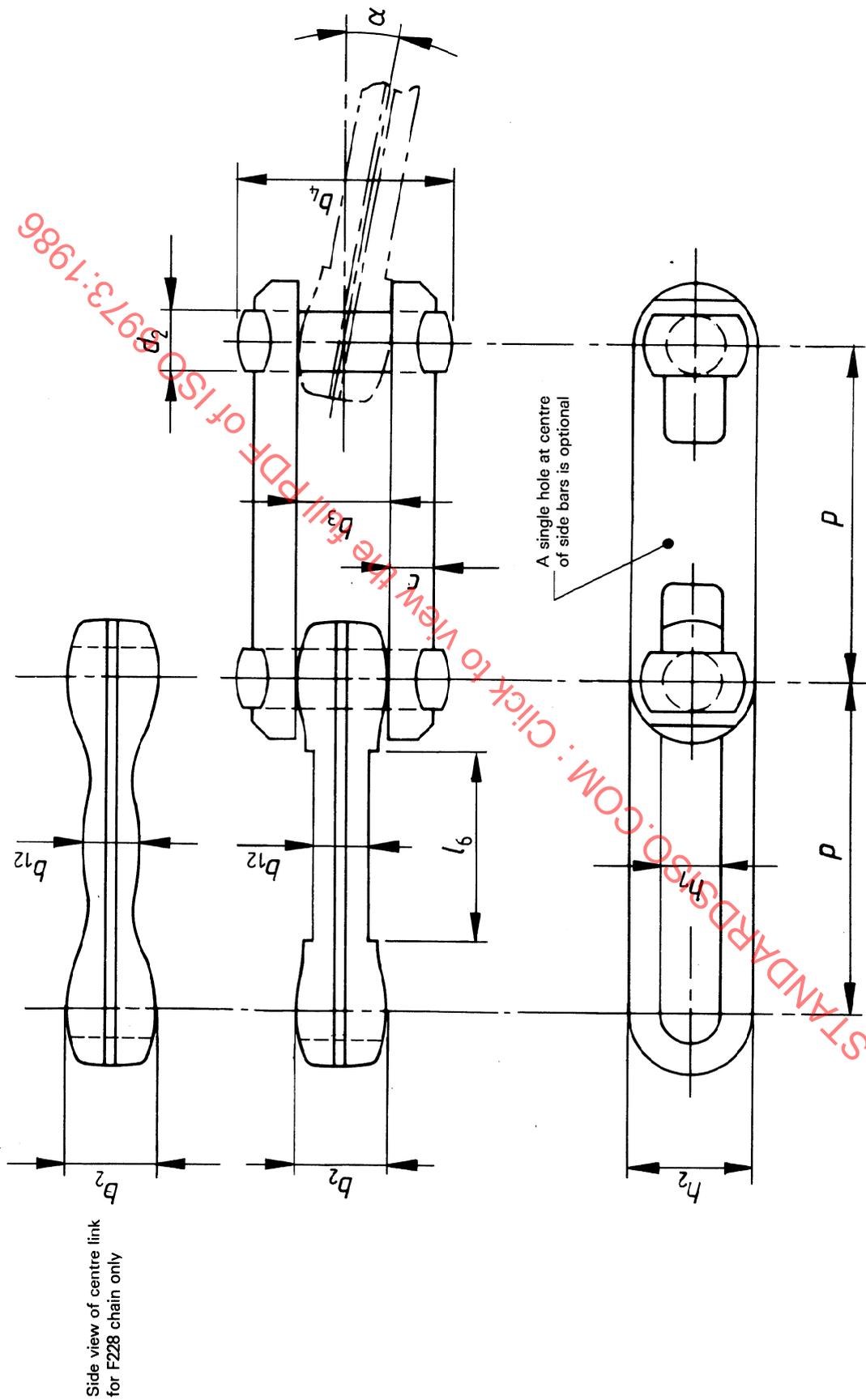


Figure 2 — Chain dimensions

Table 1 — Chain dimensions, measuring loads and ultimate tensile loads (Inch-pound units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18
														Ultimate tensile load	Standard measuring length			
ISO chain No.	Reference pitch	Theoretical pitch	Width of centre link opening	Pin diameter	Chain height	Chain width over pins	Side bar thickness	Centre link width (primary) <sup>1)</sup>	Centre link width (secondary)	Width between side bars	Centre link mounting face	$\alpha$	Ultimate tensile load min.	Ultimate tensile load max.	Standard measuring length min.	Standard measuring length max.	number of pitches	Measuring load
	in	in	in	in	in	in	in	in	in	in	in	degrees	lbf	in	in	in		lbf
F228	2	2.010	0.29	0.26	0.71	1.09	0.25	0.47	0.37	0.51	—	9	6 000	121.86	120.10	60	100	
F348	3	3.015	0.53	0.50	1.10	1.85	0.40	0.74	0.52	0.79	1.59	9	22 000	121.90	120.10	40	100	
F458	4	4.031	0.66	0.64	1.46	2.28	0.47	1.00	0.65	1.03	2.31	9	42 000	121.91	120.56	30	200	
F678	6	6.031	0.95	0.88	2.05	3.15	0.71	1.28	0.84	1.35	3.34	5	72 000	121.37	120.27	20	300	

1) Each centre link shall be symmetrical so that dimension  $b_2$  is relatively equal at each end.

Table 1M — Chain dimensions, measuring loads and ultimate tensile loads (Metric units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18
														Ultimate tensile load	Standard measuring length			
ISO chain No.	Reference pitch	Theoretical pitch	Width of centre link opening	Pin diameter	Chain height	Chain width over pins	Side bar thickness	Centre link width (primary) <sup>1)</sup>	Centre link width (secondary)	Width between side bars	Centre link mounting face	$\alpha$	Ultimate tensile load min.	Ultimate tensile load max.	Standard measuring length min.	Standard measuring length max.	number of pitches	Measuring load
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	degrees	daN	mm	mm	mm		daN
F228	50	51,1	7,4	6,6	18,0	27,7	6,4	11,9	9,4	13,0	—	9	2 700	3 095,2	3 050,5	60	45	
F348	75	76,6	13,5	12,7	28,0	47,0	10,2	18,8	13,2	20,1	40,4	9	9 800	3 095,2	3 050,5	40	45	
F458	100	102,4	16,8	16,2	37,0	58,0	12,0	25,4	16,5	26,2	58,7	9	18 700	3 096,5	3 062,2	30	90	
F678	150	153,2	24,1	22,3	52,0	80,0	18,0	32,5	21,3	34,3	84,8	5	32 000	3 082,8	3 054,9	20	135	

1) Each centre link shall be symmetrical so that dimension  $b_2$  is relatively equal at each end.