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# Short-pitch transmission precision roller and bush chains, attachments and associated chain sprockets

(Revision of ISO 606:1994 and of ISO 1395:1977)

*Chaînes de transmission de précision à rouleaux et à douilles, plaques-attaches et roues dentées correspondantes*

ICS 21.220.30

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## 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 606 was prepared by Technical Committee ISO/TC 100, *Chains and chain wheels for power transmission and conveyors*, Subcommittee SC , .

This edition cancels and replaces the previous ISO 606:1994 edition which has been technically revised, and ISO 1395:1997.

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## Introduction

The provisions of this revised International Standard have been established by including sizes of chains used by the majority of countries in the world, and by unifying dimensions, strengths and other data which differed in current national standards, for which it was considered a universal usage had not been established, have been eliminated.

The whole field of application open to this medium of transmission has been covered by the ranges of chains already established. To achieve this, the sizes of 6,35 mm pitch to 76,2 mm pitch inclusive have been duplicated by the inclusion of chains derived from standards originating and centred around ANSI (denoted by suffix A) and, on the other hand, by chains representing the unification of the principal standards originating in Europe (suffix B), the two being complementary for the coverage of the widest possible field of application.

The ANSI chain reference numbers (25, 35, 40, 50 etc.) are used world-wide and to assist in cross referencing the ISO and ANSI numbers details are now included in the standard as annex C.

The ANSI heavy series of chains (suffix H) are also included in this standard. The ANSI heavy series of chains differ from the ANSI standard series in that thicker plates are used. As there are no existing ISO numbers for these chains the ANSI numbering system has been adopted.

Clause 4 covers specification details for K attachments, M attachments and extended pin attachments for use with short pitch transmission roller and bush chains conforming with this standard.

Clause 5, covering chain sprockets, represents the unification of all the relevant national standards in the world and includes, in particular, complete tolerances relating to tooth form.

The dimensions of chain specified ensures complete interchangeability of any given size and provide interchangeability of individual links of chains.

This standard now also includes short pitch bush transmission chains previously covered ISO 1395.

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# Short-pitch transmission precision roller and bush chains, attachments and associated chain sprockets —

## 1 Scope

This International Standard specifies requirements for short pitch precision roller and bush chains with associated sprockets suitable for the mechanical transmission of power and allied applications. It covers dimensions, tolerances, length measurement, preloading, minimum tensile strengths, and minimum dynamic strength.

Although clause 5 applies to chain sprockets for cycles and motor cycles, this Standard does not apply to chain for cycles or for motor cycles, which are covered by ISO 9633 and ISO 10190 respectively.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of ISO 606. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on ISO 606 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts* <https://www.iso.org/standard/40889c66-7a08bef30e8b/iso-dis-606>

ISO 15654, '*Fatigue test method for transmission precision roller chains*'

## 3 Chains

### 3.1 Nomenclature of assemblies and components

The nomenclature of chain assemblies and their component parts is illustrated in Figures 1 and 2; the figures do not define the actual form of the chain plates.

### 3.2 Designation

Chains are designated by the standard ISO chain number given in Tables 1 and 2. The ISO chain numbers in Table 1 are supplemented by a hyphenated suffix 1 for simplex chain, 2 for duplex chain, 3 for triplex chain: for example 16B-1, 16B-2, 16B-3 etc. Chains 081, 083, 084 and 085 do not follow this procedure since they are normally available in simplex form only.

The chains designated in Table 2 are the ANSI heavy series which are also supplemented by a hyphenated suffix 1 for simplex chain, 2 for duplex chain, 3 for triplex chain: for example 80H-1, 80H-2, 80H-3 etc.

### 3.3 Dimensions

Chains shall conform to the dimensions shown in Figure 3 and given in Tables 1 and 2. Maximum and minimum dimensions are specified to ensure interchangeability of links produced by different makers of chain. They represent limits for interchangeability, but are not the manufacturing tolerances.

### 3.4 Performance requirements

The tests given in 3.4.1 to 3.4.4 shall only be performed on unused undamaged chain to determine whether the subject chain complies with the minimum requirements specified in Tables 1 and 2.

**WARNING — The test requirements are not to be taken as working loads. These loads could be selected, indirectly, using the ISO 10823 standard.**

**The test results shall be invalid if the chain has previously been in service or stressed in any way (other than by preloading in accordance with 3.4.2).**

#### 3.4.1 Tensile testing

**3.4.1.1** The minimum tensile strength is that value which shall be exceeded when a tensile force is applied to a sample which is tested to destruction as defined in 3.4.1.2. This minimum tensile strength is not a working load, but is intended primarily as a comparative figure between chains of various constructions.

**3.4.1.2** A tensile force shall be 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 centreline, 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 force; i.e. the summit of the force/extension diagram. The force at this point must exceed the minimum tensile strength stated in Tables 1 and 2.

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

**3.4.1.3** The tensile test shall be considered as a destructive test. Even though a chain may not visibly fail when subjected to a force equivalent to the minimum tensile strength, it will have been stressed beyond the yield point and will be unfit for service.

**3.4.1.4** These requirements do not apply to cranked links, connecting links or chains with attachments as their tensile strength could be reduced.

#### 3.4.2 Preloading

Chains manufactured to this standard shall be preloaded by applying a minimum tensile force equivalent to 30 % of the minimum tensile strength given in Tables 1 and 2.

#### 3.4.3 Length validation

Measurement of chains shall take place after preloading but before lubrication.

The standard length for measurement shall be a minimum of:

- a) 610 mm for ISO chain numbers 04C to 12B and 081 to 085 inclusive.
- b) 1220 mm for ISO chain numbers 16A to 72B inclusive.



The chain shall be supported throughout its entire length and the measuring force specified in Tables 1 and 2 shall be applied.

The measured length shall be the nominal length  $\begin{matrix} +0,15\% \\ 0 \end{matrix}$

except for chains with attachments when it shall be the nominal length  $\begin{matrix} +0,30\% \\ 0 \end{matrix}$

The length accuracy of chains which have to work in parallel may be matched within closer tolerances.

#### 3.4.4 Dynamic testing

Chains conforming to this standard shall survive a conformance test, as described in ISO 15654, using the dynamic strength values in Tables 1 or 2 for the particular chain. These requirements do not apply to cranked links, connecting links or chains with attachments as their dynamic strength could be reduced. The methods used for calculating the minimum dynamic strength are shown in annex D. The method for determining the maximum test force for the conformance test is shown in annex E.

#### 3.5 Marking

The chain shall be marked with the manufacturer's name or trademark.

The chain number quoted in Tables 1 or 2 should be marked on the chain.

#### 3.6 Cranked links

Cranked links should not be used with the heavy series chains or on chains which are intended for highly stressed applications. Where a cranked link is used a reduction in performance will occur.



a) Simplex chain

b) Duplex chain

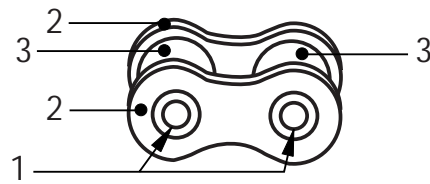


c) Triplex chain

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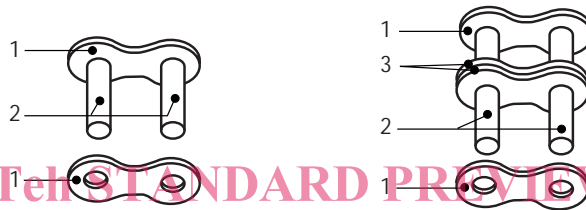
**Figure 1 — Types of roller chain assembly**



a) inner link

**KEY**

- 1) Bush
- 2) Inner plate
- 3) Roller



Simplex outer link (standards.iteh.ai) Duplex outer link

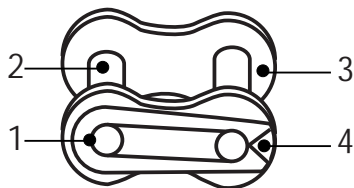
**b) Outer links for riveting**

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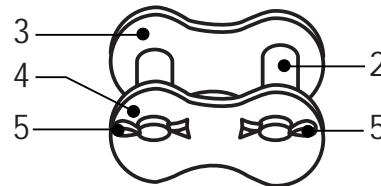
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**KEY**

- 1) Outer plate
- 2) Bearing pins
- 3) Intermediate plate(s)



Connecting link with spring clip fastener

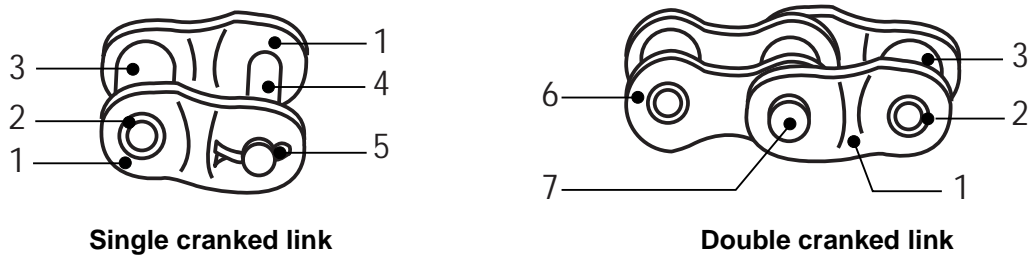


Connecting link with cotter pin fasteners

**c) Detachable connecting links**

**KEY**

- 1) Spring clip fastener
- 2) Fixed connecting pin
- 3) Outer plate
- 4) Detachable plate
- 5) Cotter pin fastener



d) Cranked links

**KEY**

- 1) Cranked plate
- 2) Bush
- 3) Roller
- 4) Detachable connecting pin
- 5) Cotter pin fastener
- 6) Inner plate
- 7) Bearing pin, riveted

**NOTES**

- 1. The dimension of the plates are specified in Tables 1 and 2.
- 2. Fasteners may be of various designs. Drawings indicate examples.

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**Figure 2 — Types of link**  
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