INTERNATIONAL STANDARD

ISO 606

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

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

Reference number
ISO 606:2015(E)

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 100, *Chains and chain sprockets for power transmission and conveyors*.

This fourth edition cancels and replaces the third edition (ISO 606:2004), which has been technically revised. It also incorporates Technical Corrigendum ISO 606:2004/Cor. 1:2006.

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, while eliminating those for which it was considered a universal usage had not been established.

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, on the one hand, by the inclusion of chains derived from standards originating and centred around ANSI, and on the other by chains representing the unification of the principal standards originating in Europe, 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 these numbers have now been introduced into this International Standard in place of the previous ISO reference numbers (04C, 06C, 08A, 10A, etc.) To assist in cross-referencing the ANSI and previous ISO numbers, details are included in Annex B of this International Standard.

The ANSI heavy series of chains (suffix H) are specified in this International Standard. The ANSI heavy series of chains differs from the ANSI standard series in that thicker plates are used.

The ANSI extra heavy series of chains (suffix HE) are now included. The ANSI extra heavy series are dimensionally as the ANSI heavy series (suffix H) but have a higher minimum ultimate tensile strength.

Clause 4 covers specification details for K and M attachments, and extended pin attachments for use with short-pitch transmission roller and bush chains conforming with this International 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 inclusion of the dimensions of the chains specified ensures complete interchangeability of any given size and provides interchangeability of individual links of chains.

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

1 Scope

This International Standard specifies the characteristics of 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 International Standard is not applicable to their chains, which are covered by ISO 9633 and ISO 10190, respectively.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

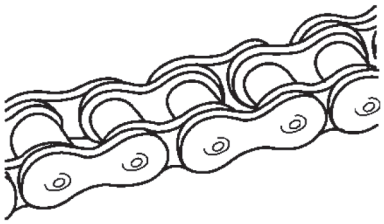
ISO 286-2:2010, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 2: Tables of standard tolerance classes and limit deviations for holes and shafts*

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

3 Chains

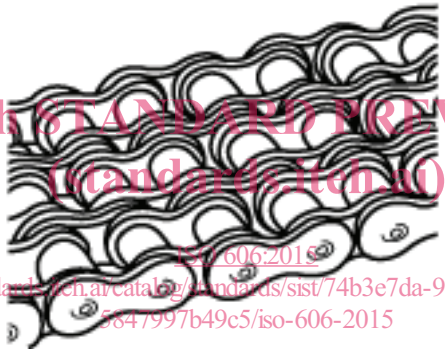
3.1 Nomenclature of assemblies and components

The nomenclature of chain assemblies and their component parts is shown in Figures 1 and 2 (which do not define the actual form of the chain plates).



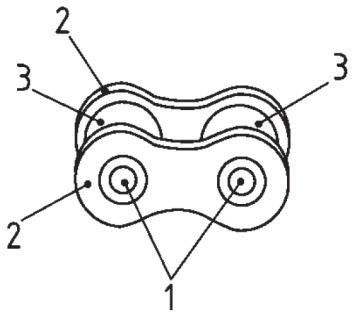
a) Simplex chain

b) Duplex chain



c) Triplex chain

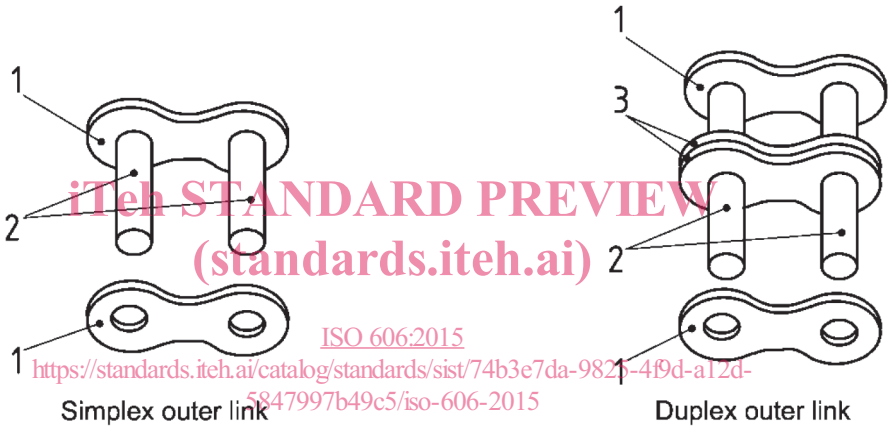
Figure 1 — Types of roller chain assembly



a) Inner link

Key for a)

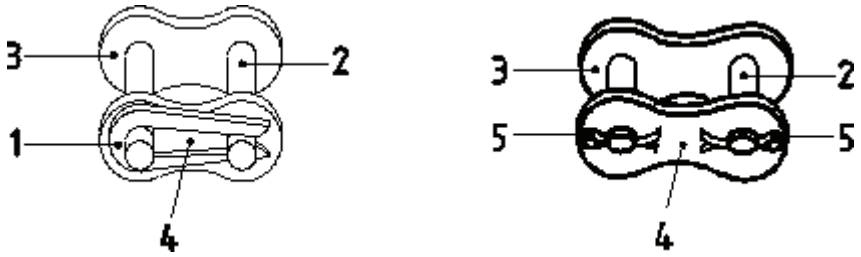
1 bush
2 inner plate
3 roller



b) Outer links for riveting

Key for b)

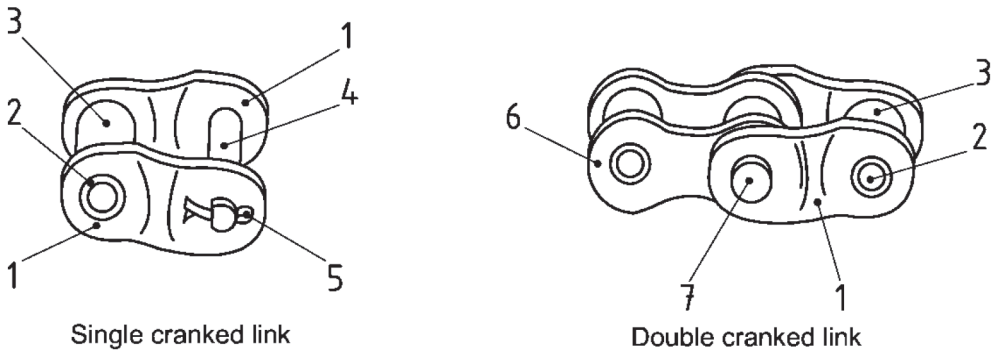
1 outer plate
2 bearing pins
3 intermediate plate(s)



c) Detachable connecting links

Key for c)

1 spring clip fastener
2 fixed connecting pin
3 outer plate
4 detachable plate
5 cotter pin fastener



d) Cranked links

Key for d)

1 cranked plate
2 bush
3 roller
4 detachable connecting pin
5 cotter pin fastener
6 inner plate
7 bearing pin, riveted

NOTE 1 The plate dimensions are specified in Tables 1 and 2.

NOTE 2 Fasteners can be of various designs. Drawings indicate examples.

Figure 2 — Types of link

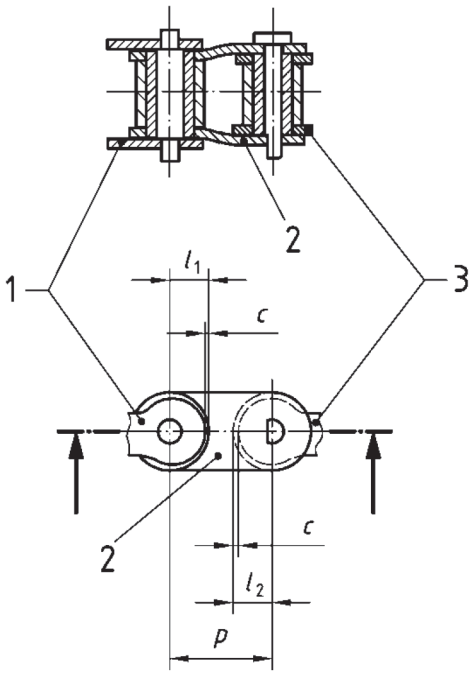
3.2 Designation

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 and 3 for triplex chain, for example, 16B-1, 16B-2, 16B-3, 80-1, 80-2, 80-3. Chains 081, 083, 084 and 41 do not follow this procedure since they are normally available in simplex form only.

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

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.



a) Cranked link

Key for a)

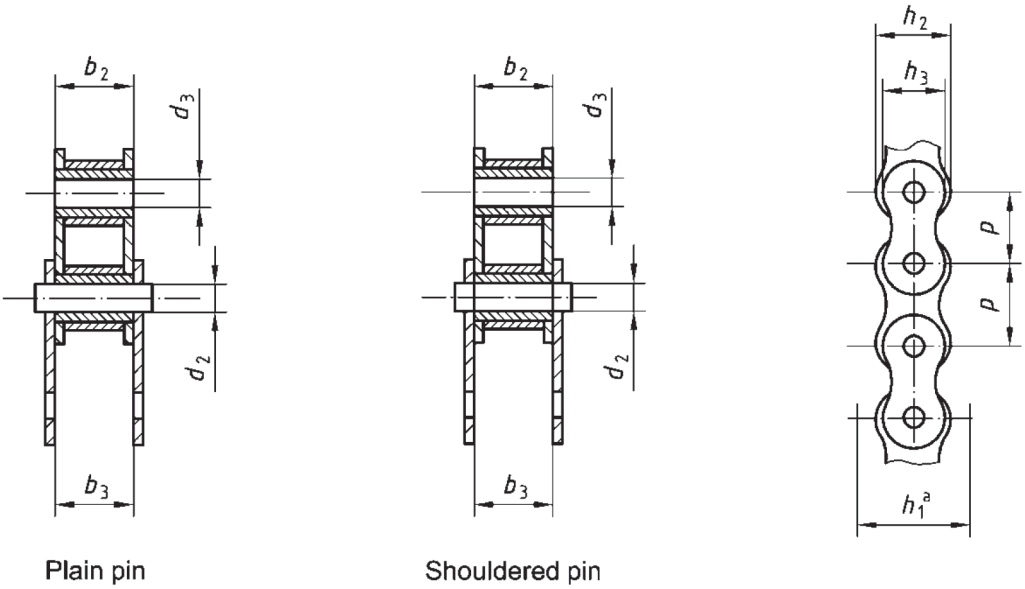
c clearance between cranked link plates and straight plates available during articulation

p pitch

1 outer plate

2 cranked plate

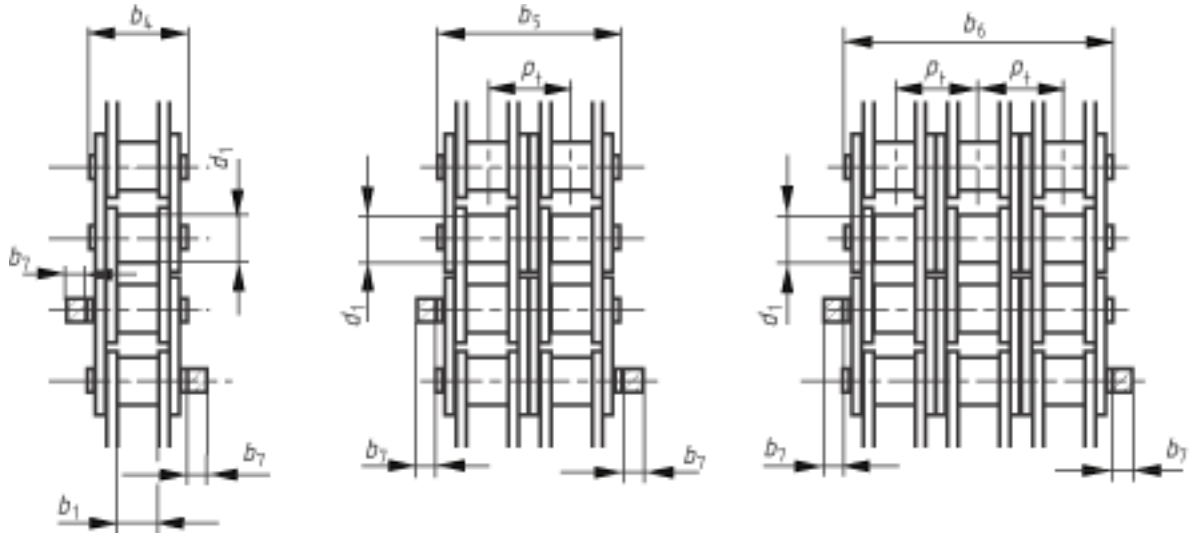
3 inner plate



b) Sections through chain

Key for b)

a Chain path depth is the minimum depth of channel through which the assembled chain will pass



Simplex chain **Duplex chain** **Triplex chain**

c) Types of chain

NOTE For the symbols, see Table 1.

Figure 3 — Chains

The overall width of a simplex, duplex or triplex chain with a joint fastener is given by

a) for riveted pin end chains if the fastener is on one side only:

$(b_4 + b_7)$ or $(b_5 + b_7)$ or $(b_6 + b_7)$;

b) for riveted pin end chains if the fastener is on two sides:

$[b_4 + (2b_7)]$ or $[b_5 + (2b_7)]$ or $[b_6 + (2b_7)]$;

c) for headed pin end chains if the fastener is on one side only:

$[b_4 + (1{,}6b_7)]$ or $[b_5 + (1{,}6b_7)]$ or $[b_6 + (1{,}6b_7)]$;

d) for headed pin end chains if the fastener is on two sides:

$[b_4 + (3{,}2b_7)]$ or $[b_5 + (3{,}2b_7)]$ or $[b_6 + (3{,}2b_7)]$.

The overall width of chains wider than triplex is given by

$b_4 + [p_t \times (\text{number of strands in chain} - 1)]$.

3.4 Performance requirements

3.4.1 General

WARNING — The test requirements are not to be taken as working loads. These loads could be selected, indirectly, using ISO 10823. 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 **3.4.3**).

The tests given in 3.4.2 to 3.4.5 shall only be performed on unused, undamaged chains to determine whether the subject chain complies with the minimum requirements specified in Tables 1 and 2.

3.4.2 Tensile testing

3.4.2.1 The minimum tensile strength is that value which shall be exceeded when a tensile force is applied to a sample tested to destruction in accordance with **3.4.2.2**

NOTE This minimum tensile strength is not a working load, but is intended primarily as a comparative figure between chains of various constructions.

3.4.2.2 Apply a tensile force slowly to the ends of a chain length containing at least five free pitches by means of fixtures permitting free movement on both sides of the chain centreline, in the normal plane of articulation. **Annex E** (informative) describes methods to consider using in order to avoid an excessive increase in the rate of stress being applied to the chain during the tensile test.

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 shall exceed the minimum tensile strength stated in Tables 1 and 2.

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

3.4.2.3 The tensile test shall be considered as a destructive test. Even though a chain might 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.

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

3.4.3 Preloading

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

3.4.4 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 25 to 12B and 081 to 41 inclusive, or

b) 1 220 mm for ISO chain numbers 80 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 $^{+0,15}_{0}$ %, except for chains with attachments when it shall be the nominal length $^{+0,30}_{0}$ %.

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

3.4.5 Dynamic testing

Chains in conformance with this International Standard shall survive a conformance test, as specified in ISO 15654, using the dynamic strength values given 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 given in Annex C. The method for determining the maximum test force for the conformance test is given in Annex D. The informative Annex F describes two methods used to approximate the minimum dynamic test values for multiplex chains.