
International Standard



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Extended pitch precision roller chains and chain wheels for transmission and conveyors

Chaînes de précision à rouleaux à pas long et roues dentées correspondantes, pour transmission et convoyeurs

Second edition — 1984-03-15

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[ISO 1275:1984](#)

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Foreword

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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 1275 was developed by Technical Committee ISO/TC 100, *Chain and chain wheels for power transmission and conveyors*.

This second edition was submitted directly to the ISO Council, in accordance with clause 6.11.2 of part 1 of the Directives for the technical work of ISO. It cancels and replaces the first edition (i.e. ISO 1275-1972), which had been approved by the member bodies of the following countries :

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No member body had expressed disapproval of the document.

Contents

	Page
0 Introduction	1
1 Scope and field of application	1
2 References	1
3 Transmission chains	1
3.1 Nomenclature	1
3.2 Designation	3
3.3 Dimensions	3
3.4 Minimum ultimate tensile strength	3
3.5 Proof loading	3
3.6 Length accuracy	3
3.7 Marking	3
4 Chain wheels	7
4.1 Nomenclature	7
4.2 Diametral dimensions and tooth shape	7
4.3 Radial run-out	9
4.4 Axial run-out (wobble)	9
4.5 Pitch accuracy of wheel teeth	9
4.6 Range of teeth	10
4.7 Bore tolerance	10
4.8 Marking	10
5 Conveyor chains	10
5.1 General	10
5.2 Nomenclature	10
5.3 Designation	10
5.4 Dimensions	10
5.5 Marking	10
5.6 Attachments	13
Annex : Pitch circle diameters	15

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Extended pitch precision roller chains and chain wheels for transmission and conveyors

0 Introduction

The provisions of this International Standard have been established 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 differ. At the same time certain side ranges listed in some 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 25,4 mm (1.0 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 (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.

Clause 4 covering chain wheels represents the unification of all the relevant national standards in the world and includes, in particular, complete tolerances relating to tooth shape which are absent from most current national standards.

The specified dimensions of chain 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 specifies the characteristics of extended pitch precision roller chains suitable for the mechanical transmission of power and for conveyors, together with those of their associated chain wheels. It specifies dimensions, tolerances, measuring loads and minimum ultimate tensile strengths.

These extended pitch chains have been derived from some of the short pitch transmission precision roller chains covered by ISO 606 having certain common dimensions but of twice the pitch.

These chains are intended for use under less onerous conditions in respect of speed and power transmitted than are the base chains from which they are derived.

2 References

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

ISO 606, *Short pitch transmission precision roller chains and chain wheels.*

3 Transmission chains

3.1 Nomenclature

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

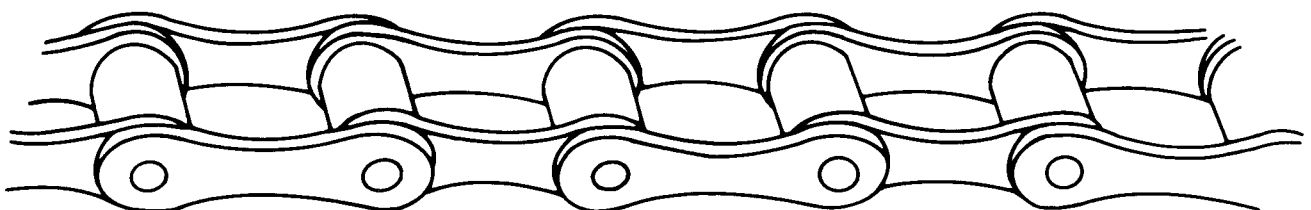


Figure 1 — Transmission chain

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

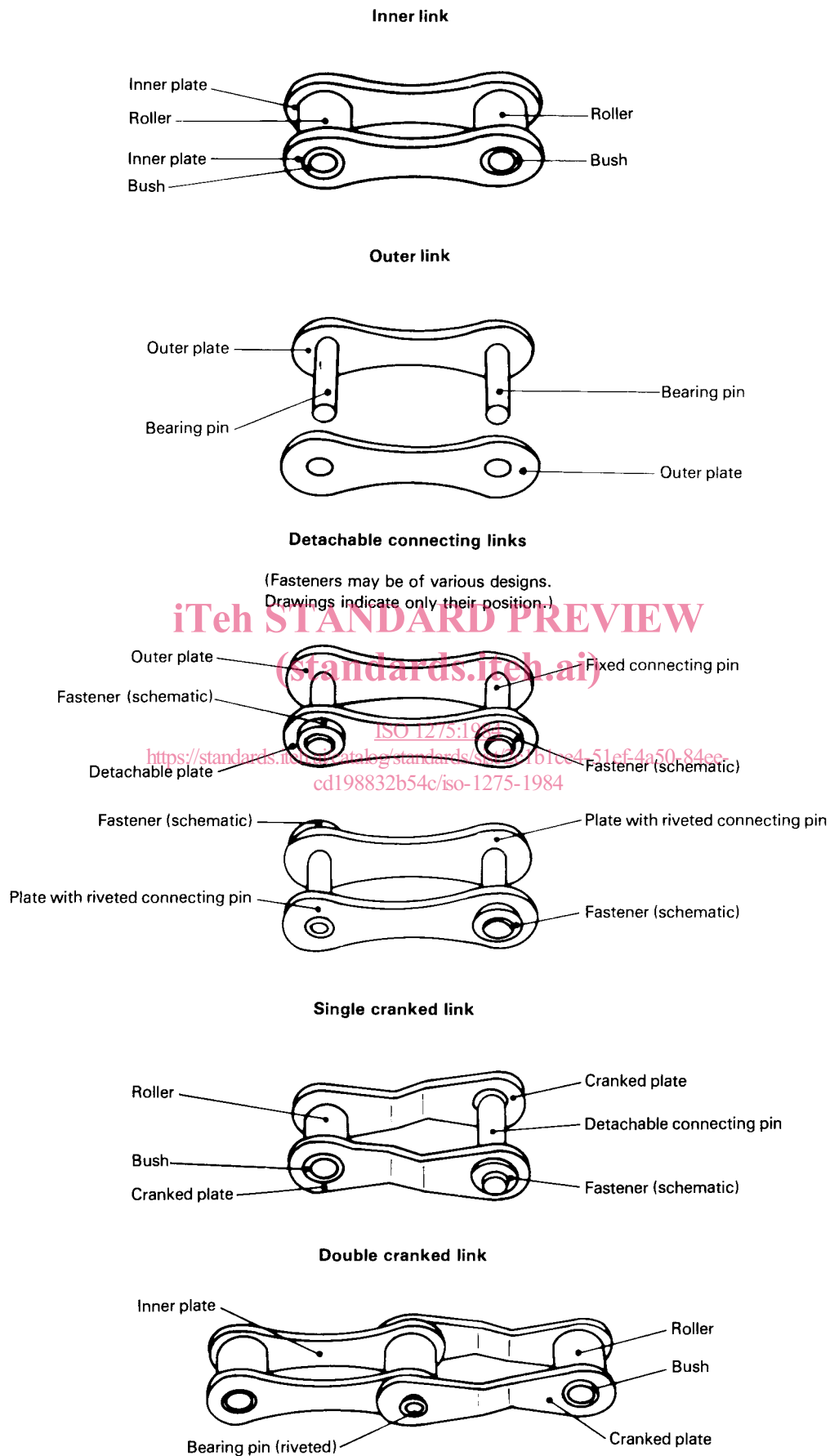


Figure 2 – Types of links

3.2 Designation

Extended pitch transmission precision roller chains shall be designated by the standard ISO chain numbers given in tables 1 to 4, first column. These chain numbers have been obtained by taking the ISO chain number for the base chain in ISO 606, and adding the prefix 2.

3.3 Dimensions

Chains shall conform to the dimensions given in tables 1 to 4. The 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 manufacturing tolerances.

For the purposes of this International Standard, dimensions for the simple (single strand) extended pitch chains only are shown.

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 tables 1 to 4 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.

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

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.

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 ultimate tensile load given in tables 1 to 4.

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 208A to 210B inclusive;
- b) 1 220 mm (48 in) for ISO chain numbers 212A to 232B inclusive;

and shall terminate with an inner link at each end.

The chain shall be supported throughout its entire length, and the measuring load given in tables 1 to 4 shall be applied.

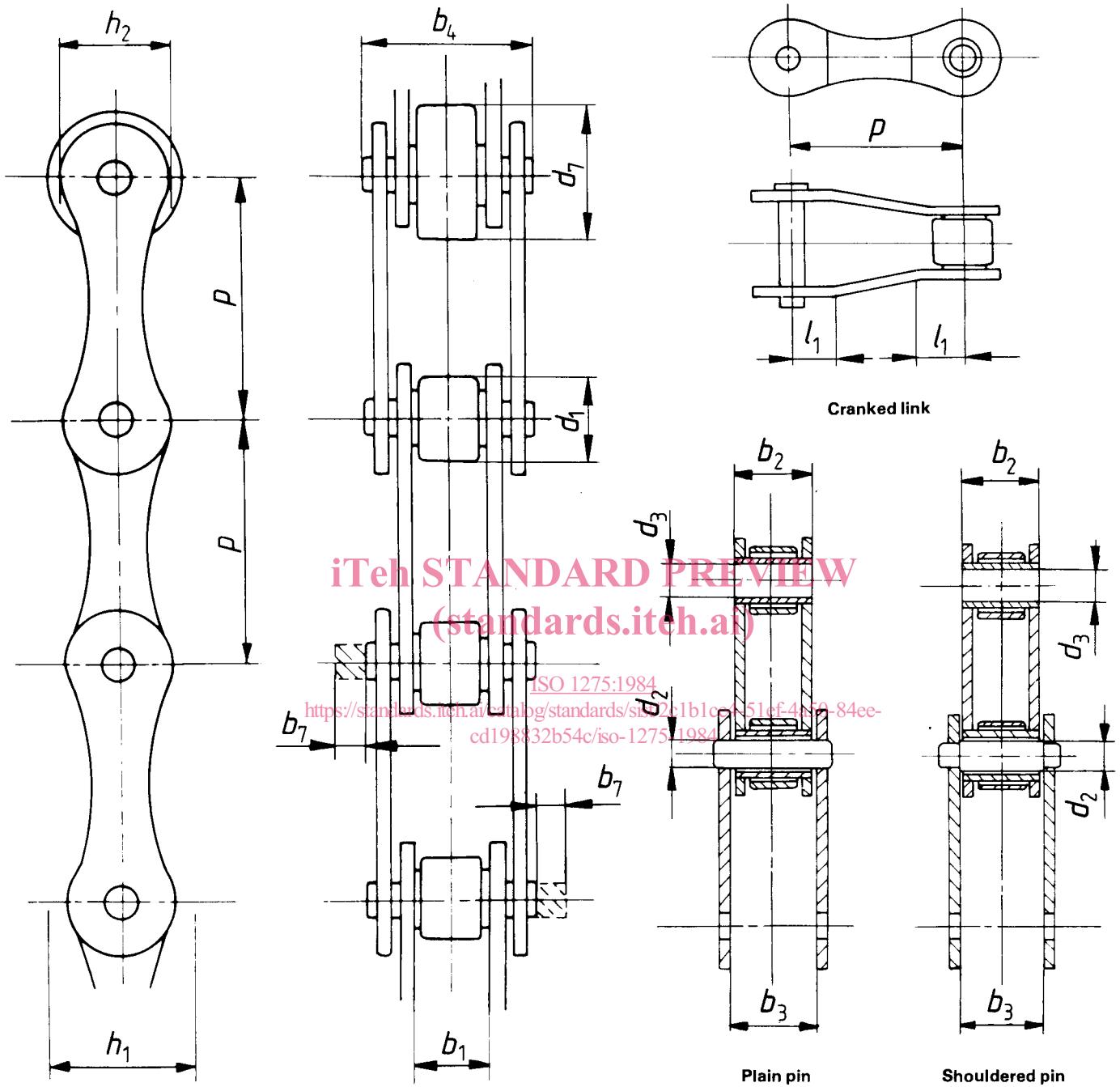
To comply with this International Standard, the length shall be the nominal length subject to the limits of tolerance : $\begin{matrix} + 0,15 \\ 0 \end{matrix} \%$.

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

3.7 Marking

The chains shall be marked with :

- a) the manufacturer's name or trade mark;
- b) the ISO chain number (see column 1 of tables 1 to 4).



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

The overall width of a chain with a joint fastener is :

$b_4 + b_7$ for riveted pin end and fastener on one side;

$b_4 + 1.6 b_7$ for headed pin end and fastener on one side;

$b_4 + 2 b_7$ for fasteners on both sides.

Figure 3 – Symbols for tables 1 to 4

Table 1 — Chain dimensions, measuring loads and tensile loads of extended pitch transmission chains (metric units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
208A	25,40	7,95	7,85	3,96	4,01	12,33	12,07	6,9	11,18	11,31	17,8	3,9	12	1 380
208B	25,40	8,51	7,75	4,45	4,50	12,07	11,81	6,9	11,30	11,43	17,0	3,9	12	1 780
210A	31,75	10,16	9,40	5,08	5,13	15,35	15,09	8,4	13,84	13,97	21,8	4,1	20	2 180
210B	31,75	10,16	9,65	5,08	5,13	14,99	14,73	8,4	13,28	13,41	19,6	4,1	20	2 220
212A	38,10	11,91	12,57	5,94	5,99	18,34	18,08	9,9	17,75	17,88	26,9	4,6	28	3 110
212B	38,10	12,07	11,68	5,72	5,77	16,39	16,13	9,9	15,62	15,75	22,7	4,6	28	2 890
216A	50,80	15,88	15,75	7,92	7,97	24,39	24,13	13,0	22,61	22,74	33,5	5,4	50	5 560
216B	50,80	15,88	17,02	8,28	8,33	21,34	21,08	13,0	25,45	25,58	36,1	5,4	50	4 230
220A	63,50	19,05	18,90	9,53	9,58	30,48	30,18	16,0	27,46	27,59	41,1	6,1	78	8 670
220B	63,50	19,05	19,56	10,19	10,24	26,68	26,42	16,0	29,01	29,14	43,2	6,1	78	6 460
224A	76,20	22,23	25,22	11,10	11,15	36,55	36,20	19,1	35,46	35,59	50,8	6,6	111	12 460
224B	76,20	25,40	25,40	14,63	14,68	33,73	33,40	19,1	37,92	38,05	53,4	6,6	111	9 790
228B	88,90	27,94	30,99	15,90	15,95	37,46	37,08	21,3	46,58	46,71	65,1	7,4	151	12 900
232B	101,60	29,21	30,99	17,81	17,86	42,72	42,29	24,4	48,57	48,70	67,4	7,9	200	16 900

1) The actual dimensions will depend on the type of fastener used but they should not exceed the dimensions in this column, and should be obtained by the purchaser from the manufacturer.

Table 2 — Chain dimensions, measuring loads and tensile loads of extended pitch transmission chains (inch-pound units)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
															ISO chain number
208A 208B	1.00	0.313	0.309	0.156	0.158	0.485	0.475	0.27	0.440	0.445	0.445	0.70	0.15	28	3 100
	1.00	0.335	0.305	0.175	0.177	0.475	0.465	0.27	0.445	0.450	0.450	0.67	0.15	28	4 000
210A 210B	1.25	0.400	0.370	0.200	0.202	0.604	0.594	0.33	0.545	0.550	0.550	0.86	0.16	44	4 900
	1.25	0.400	0.380	0.200	0.202	0.590	0.580	0.33	0.523	0.528	0.528	0.77	0.16	44	5 000
212A 212B	1.50	0.469	0.495	0.234	0.236	0.722	0.712	0.39	0.699	0.704	0.704	1.06	0.18	63	7 000
	1.50	0.475	0.460	0.225	0.227	0.645	0.635	0.39	0.615	0.620	0.620	0.89	0.18	63	6 500
216A 216B	2.00	0.625	0.620	0.312	0.314	0.960	0.950	0.51	0.890	0.895	0.895	1.32	0.21	112	12 500
	2.00	0.625	0.670	0.326	0.328	0.840	0.830	0.51	1.002	1.007	1.007	1.42	0.21	112	9 500
220A 220B	2.50	0.750	0.744	0.375	0.377	1.200	1.188	0.63	1.081	1.086	1.086	1.62	0.24	175	19 500
	2.50	0.750	0.770	0.401	0.403	1.050	1.040	0.63	1.142	1.147	1.147	1.70	0.24	175	14 500
224A 224B	3.00	0.875	0.993	0.437	0.439	1.439	1.425	0.75	1.396	1.401	1.401	2.00	0.26	250	28 000
	3.00	1.000	1.000	0.576	0.578	1.328	1.315	0.75	1.493	1.498	1.498	2.10	0.26	250	22 000
228B 232B	3.50	1.100	1.220	0.626	0.628	1.475	1.460	0.84	1.834	1.839	1.839	2.56	0.29	340	29 000
	4.00	1.150	1.220	0.701	0.703	1.682	1.665	0.96	1.794	1.799	1.799	2.65	0.31	450	38 000

1) The actual dimensions will depend on the type of fastener used but they should not exceed the dimensions in this column, and should be obtained by the purchaser from the manufacturer.

4 Chain wheels (sprockets)

4.1 Nomenclature

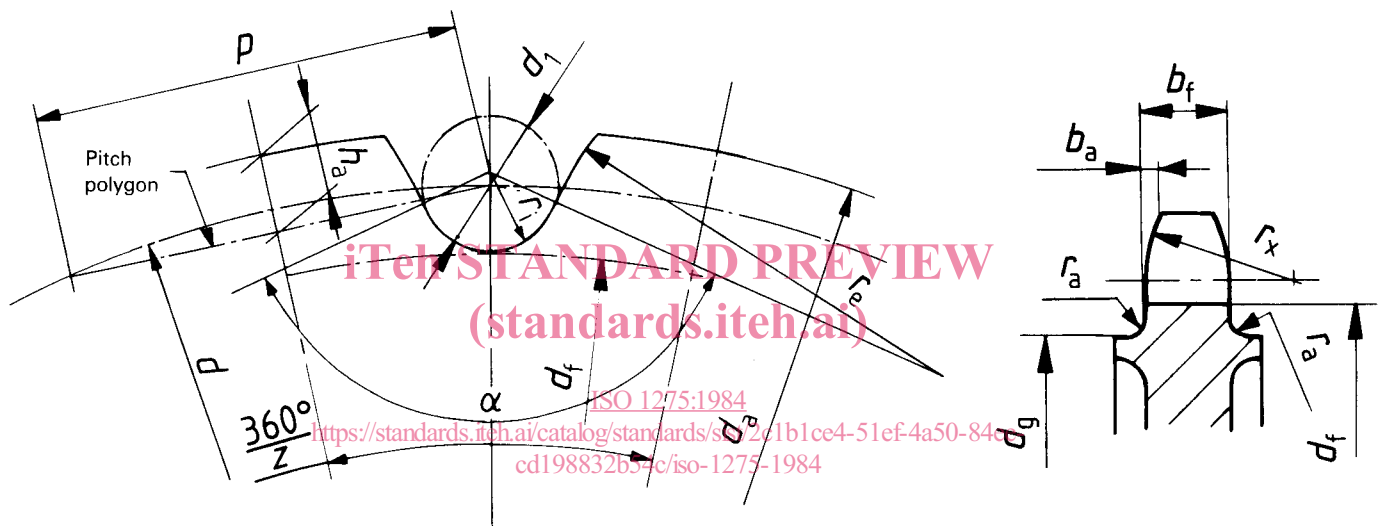
The nomenclature for basic chain dimensions on which all wheel data are based is given in figure 3 and tables 1 to 4.

Chain wheel dimensions are explained below.

4.2 Diametral dimensions and tooth shape

4.2.1 Nomenclature

Nomenclature for diametral dimensions and tooth shape is given in figure 4.



b_a = tooth side relief	p = chordal pitch, equal to chain pitch
b_f = tooth width	r_a = shroud fillet radius
b_1 = minimum width between inner plates	r_e = tooth flank radius
d = pitch circle diameter	r_i = roller seating radius
d_a = tip diameter	r_x = tooth side radius
d_f = root diameter	z = number of teeth corresponding to the number of links that can be wrapped around the wheel
d_g = absolute maximum shroud diameter	z_1 = number of teeth for double-cut wheels = $2z$
d_1 = maximum roller diameter	α = roller seating angle
h_a = height of tooth above pitch polygon	
h_2 = maximum plate depth	

Figure 4 — Diametral dimensions and tooth shape