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(JCA/JSA)

**Short-pitch transmission precision
roller chains and bush chains**

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In the event of any doubts arising as to the contents,
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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Chain Association (JCA)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS B 1801:2014**), which has been technically revised.

However, **JIS B 1801:2014** may be applied in the **JIS** mark certification based on the relevant provisions of Article 30, paragraph (1), etc. of the Industrial Standardization Act until 19 November 2020.

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Short-pitch transmission precision roller chains and bush chains

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 606:2015**, Edition 4, with some modifications of the technical contents.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JD.

1 Scope

This Standard specifies requirements for short-pitch roller chains and bush chains used for transmission for general purposes (hereafter referred to as chains).

The requirements for associated chain sprockets and attachments are given in Annex JA and Annex JB, respectively, for reference.

NOTE The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 606:2015 *Short-pitch transmission precision roller and bush chains, attachments and associated chain sprockets* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 1812 *Glossary of terms relating to chains, sprockets and accessories*

JIS B 7502 *Micrometers*

JIS B 7507 *Vernier, dial and digital callipers*

JIS B 7721 *Tension/compression testing machines—Calibration and verification of the force-measuring system*

JIS Z 2244 *Vickers hardness test—Test method*

JIS Z 2245 *Rockwell hardness test—Test method*

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions, and those given in **JIS B 1812** apply.

3.1

roller chain

chain with rollers

(source: **JIS B 1812, 4.1.1.2**)

3.2

short-pitch roller chain

roller chain used for the transmission for general purposes, the designation of which is to contrast to the double-pitch roller chain

(source: **JIS B 1812, 4.1.1.8**)

3.3

bush chain

chain without rollers

(source: **JIS B 1812, 4.1.1.3**)

3.4

link

generic term for elements that constitute a chain, expressed with symbol L in this Standard

(source: **JIS B 1812, 4.2.1.1**)

3.5

inner link

link in which two bushes are press-fitted into two inner plates

The link having a rotatable roller outside the bush is called “roller type inner link”, and the link not having the roller is called “bush type inner link”, expressed with symbol RL regardless of with or without roller in this Standard.

(source: **JIS B 1812, 4.2.1.2**)

3.6

rivet type outer link

link in which both ends of pins are caulked on an outer link, expressed with symbol RP in this Standard

(source: **JIS B 1812, 4.2.1.4**)

3.7

cotter type outer link

link in which one end of pins is fixed by a split pin or other pin on an outer link, expressed with symbol CP in this Standard

(source: **JIS B 1812, 4.2.1.5**)

3.8

spring clip connecting link

connecting link in which one end of two spring clip connecting pins is press-fitted into an outer plate and the other end has a connecting plate and a clip, both easily attachable and detachable

It is generally used when the pitch is 19.05 mm or under and is expressed with symbol CLCL in this Standard.

(source: **JIS B 1812, 4.2.1.9**)

3.9

connecting link with cotttered pin

connecting link in which one end of two cotttered connecting pins is press-fitted into an outer plate and the other end has an inserted connecting plate and a split pin, both easily attachable and detachable

It is generally used when the pitch is 25.40 mm or over and is expressed with symbol CPCL in this Standard.

(source: **JIS B 1812, 4.2.1.10**)

3.10

single offset link

link intended for the use when the number of links is the odd number, in which one bush is press-fitted into two offset plates and the offset pin is easily attachable and detachable, expressed with symbol 1POL or symbol OL in this Standard

(source: **JIS B 1812, 4.2.1.12**)

3.11

double offset link

link intended for the use when the number of links is the odd number, in which one offset link and one inner link are connected by a rivet type pin, expressed with symbol 2POL in this Standard

(source: **JIS B 1812, 4.2.1.13**)

4 Quantity symbols

For the purpose of this Standard, the following quantity symbols apply.

- b_0 : plate thickness (mm)
- b_1 : minimum width between inner plates (mm)
- b_2 : maximum width of over inner link (mm)
- b_3 : minimum width between outer plates (mm)
- b_4 : maximum width over bearing pin (mm)
- b_7 : maximum additional width for joint fastener (mm)
- d_1 : maximum roller diameter (mm)
- d_2 : maximum bearing pin body diameter (mm)

- d_3 : minimum bush bore (mm)
- h_2 : maximum inner plate depth (inner plate) (mm)
- h_3 : maximum outer plate depth (outer plate, intermediate plate and connecting plate) (mm)
- l_1 : minimum offset link dimensions (distance from the centre of the bush to the bending position) (mm)
- l_2 : minimum offset link dimensions (distance from the centre of the pin to the bending position) (mm)
- p : pitch (mm)
- p_t : transverse pitch (mm)
- F_u : minimum tensile strength (kN)

5 Classification

Chains are classified into four types: Series A, Series A Class H, Series A Class HE and Series B, according to the dimensions of each part of the chain and the characteristics of chains.

6 Nominal number

The nominal numbers of chains shall be as given in Tables 1 to 3.

7 Structure and nomenclature of chain assemblies and their component parts

Chain is the general term of chains of which the connecting part can be flexible by combining inner links and outer links alternately as shown in Figure 1. Chains are usually joined with connecting links. In the case where the number of links of the whole chain is odd number, the joints shall consist of connecting link and offset link, or of offset link only. The nomenclature of each part is shown in Figure 1.

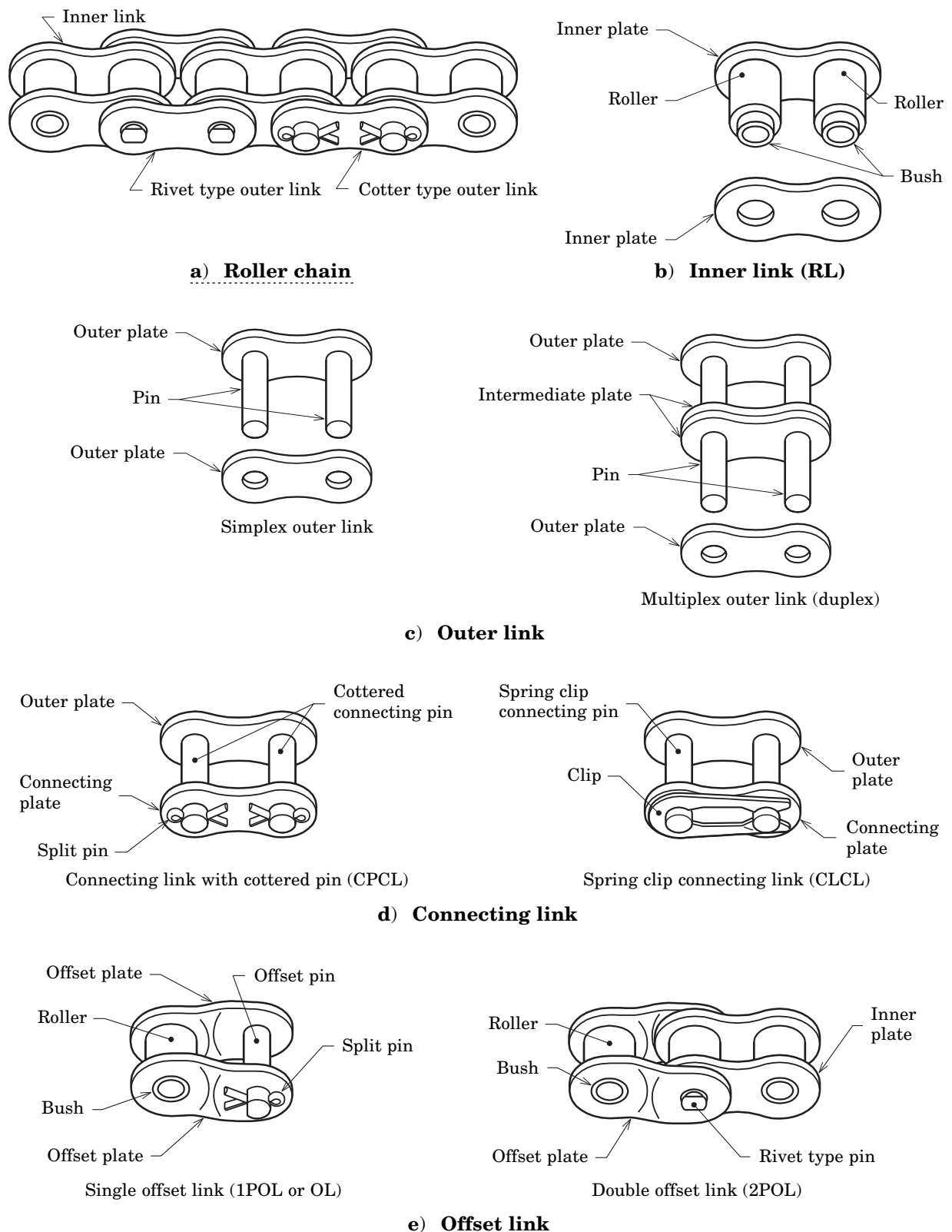


Figure 1 Example of structure of each part and nomenclature

8 Shape and dimensions

The shapes of chains are shown in Figure 2. The dimensions of chains, when measured in accordance with 10.1, shall meet the requirements given in Tables 1 to 3.

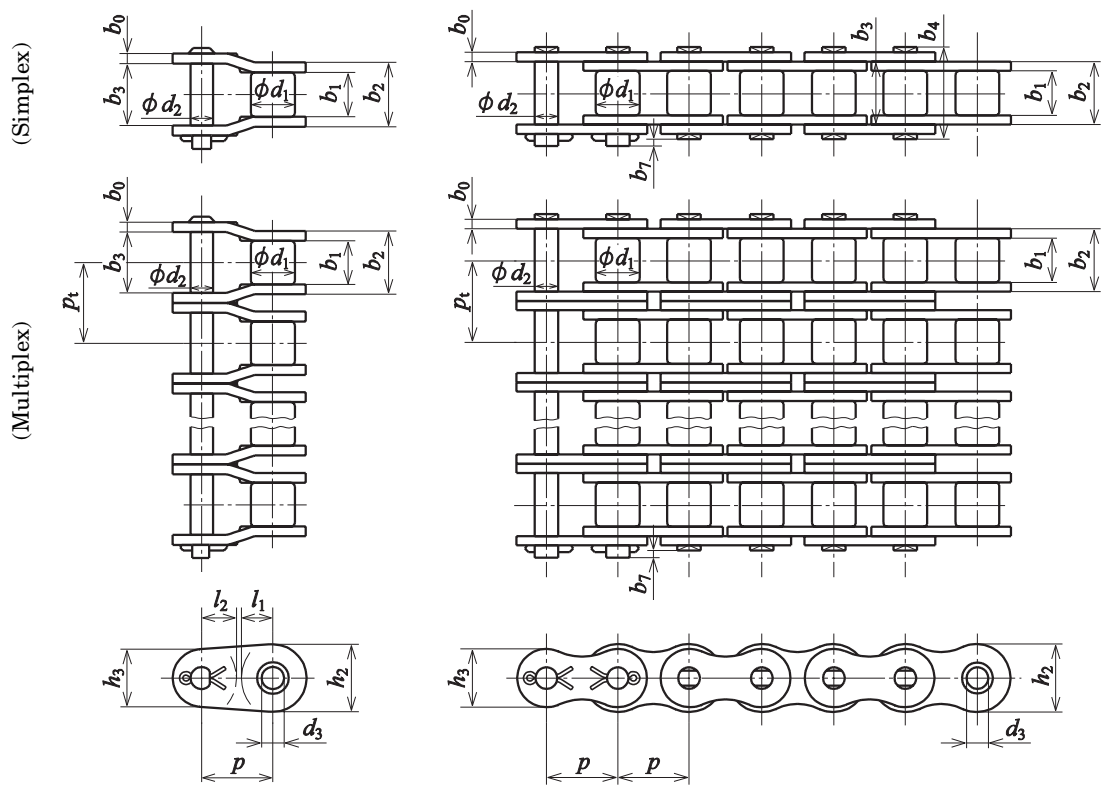


Figure 2 Shape of chains

Table 1 Dimensions, measuring force and minimum tensile strength of Series A chains

Nominal number	Pitch (reference dimension)	Maximum roller diameter	Minimum width between inner plates	Maximum bearing pin body diameter	Minimum bush bore	Maximum inner plate depth (inner plate)	Maximum outer plate depth (outer plate, intermediate plate and connecting plate)	Minimum offset link dimensions	Transverse pitch (multiplex reference dimensions)	Maximum width of over inner link	Minimum width between outer plates	Maximum width over bearing pin ^{a)}	Maximum additional width for joint fastener	Plate thickness (reference)	Measuring force	Minimum tensile strength			
																Simplex	Duplex	Triplex	
p	d_1	b_1	d_2	d_3	h_2	h_3	l_1	l_2	p_t	b_2	b_3	b_4	b_7	b_0		F_u			
mm															N	kN			
25	6.35	3.30 ^{b)}	3.10	2.31	2.33	6.02	5.21	2.65	3.08	6.4	4.80	4.85	9.1	2.5	0.75	50	3.5	7.0	10.5
35	9.525	5.08 ^{b)}	4.68	3.60	3.61	9.05	7.81	3.97	4.60	10.1	7.46	7.52	13.2	3.3	1.25	70	7.9	15.8	23.7
41 ^{c)}	12.70	7.77	6.25	3.60	3.62	9.91	8.51	4.35	5.03	—	9.06	9.12	14.0	2.0	1.25	80	6.7	—	—
40	12.70	7.92	7.85	3.98	4.00	12.07	10.42	5.20	6.1	14.4	11.17	11.23	17.8	3.9	1.5	120	13.9	27.8	41.7
50	15.875	10.16	9.40	5.09	5.12	15.09	13.02	6.61	7.62	18.1	13.84	13.89	21.8	4.1	2.0	200	21.8	43.6	65.4
60	19.05	11.91	12.57	5.96	5.98	18.10	15.62	7.90	9.15	22.8	17.75	17.81	26.9	4.6	2.4	280	31.3	62.6	93.9
80	25.40	15.88	15.75	7.94	7.96	24.13	20.83	10.55	12.20	29.3	22.60	22.66	33.5	5.4	3.2	500	55.6	111.2	166.8
100	31.75	19.05	18.90	9.54	9.56	30.17	26.04	13.16	15.24	35.8	27.45	27.51	41.1	6.1	4.0	780	87.0	174.0	261.0
120	38.10	22.23	25.22	11.11	11.14	36.20	31.24	15.80	18.27	45.4	35.45	35.51	50.8	6.6	4.8	1 110	125.0	250.0	375.0
140	44.45	25.40	25.22	12.71	12.74	42.23	36.45	18.42	21.32	48.9	37.18	37.24	54.9	7.4	5.6	1 510	170.0	340.0	510.0
160	50.80	28.58	31.55	14.29	14.31	48.26	41.66	21.04	24.33	58.5	45.21	45.26	65.5	7.9	6.4	2 000	223.0	446.0	669.0
180	57.15	35.71	35.48	17.46	17.49	54.30	46.86	23.65	27.36	65.8	50.85	50.90	73.9	9.1	7.1	2 670	281.0	562.0	843.0
200	63.50	39.68	37.85	19.85	19.87	60.33	52.07	26.24	30.36	71.6	54.88	54.94	80.3	10.2	8.0	3 110	347.0	694.0	1 041.0
240	76.20	47.63	47.35	23.81	23.84	72.40	62.49	31.45	36.40	87.8	67.81	67.87	95.5	10.5	9.5	4 450	500.0	1 000.0	1 500.0
Notes ^{a)} The pin length for multiplex chains shall be calculated by $b_4 + p_t \times (\text{number of chain lines} - 1)$.																			
^{b)} The value of d_1 in this case indicates the bush outer diameter.																			
^{c)} Nominal number 41 shall only apply to simplex chains.																			

Table 2 Dimensions, measuring force and minimum tensile strength of Series A Class H chains and Series A Class HE chains

Nominal number	Pitch (reference dimension)	Maximum roller diameter	Minimum width between inner plates	Maximum bearing pin body diameter	Minimum bush bore	Maximum inner plate depth (inner plate)	Maximum outer plate depth (outer plate, intermediate plate and connecting plate)	Minimum offset link dimensions	Transverse pitch (multiplex reference dimensions)	Maximum width of over inner link	Minimum width between outer plates	Maximum width over bearing pin ^{a)}	Maximum additional width for joint fastener	Plate thickness (reference)	Measuring force	Minimum tensile strength			
																Simplex	Duplex	Triplex	
<i>p</i>	<i>d</i> ₁	<i>b</i> ₁	<i>d</i> ₂	<i>d</i> ₃	<i>h</i> ₂	<i>h</i> ₃	<i>l</i> ₁	<i>l</i> ₂	<i>p</i> _t	<i>b</i> ₂	<i>b</i> ₃	<i>b</i> ₄	<i>b</i> ₇	<i>b</i> ₀		<i>F</i> _u			
mm															N	kN			
60H	19.05	11.91	12.57	5.96	5.98	18.10	15.62	7.90	9.15	26.1	19.43	19.48	30.2	4.6	3.2	280	31.3	62.6	93.9
80H	25.40	15.88	15.75	7.94	7.96	24.13	20.83	10.55	12.20	32.6	24.28	24.33	37.4	5.4	4.0	500	55.6	111.2	166.8
100H	31.75	19.05	18.90	9.54	9.56	30.17	26.04	13.16	15.24	39.1	29.10	29.16	44.5	6.1	4.8	780	87.0	174.0	261.0
120H	38.10	22.23	25.22	11.11	11.14	36.20	31.24	15.80	18.27	48.9	37.18	37.24	55.0	6.6	5.6	1 110	125.0	250.0	375.0
140H	44.45	25.40	25.22	12.71	12.74	42.23	36.45	18.42	21.32	52.2	38.86	38.91	59.0	7.4	6.4	1 510	170.0	340.0	510.0
160H	50.80	28.58	31.55	14.29	14.31	48.26	41.66	21.04	24.33	61.9	46.88	46.94	69.4	7.9	7.1	2 000	223.0	446.0	669.0
180H	57.15	35.71	35.48	17.46	17.49	54.30	46.86	23.65	27.36	69.2	52.50	52.55	77.3	9.1	8.0	2 670	281.0	562.0	843.0
200H	63.50	39.68	37.85	19.85	19.87	60.33	52.07	26.24	30.36	78.3	58.29	58.34	87.1	10.2	9.5	3 110	347.0	694.0	1 041.0
240H	76.20	47.63	47.35	23.81	23.84	72.40	62.49	31.45	36.40	101.2	74.54	74.60	111.4	10.5	12.7	4 450	500.0	1 000.0	1 500.0
60HE	19.05	11.91	12.57	5.96	5.98	18.10	15.62	7.90	9.15	26.1	19.43	19.48	30.2	4.6	3.2	280	41.5	83.0	124.5
80HE	25.40	15.88	15.75	7.94	7.96	24.13	20.83	10.55	12.20	32.6	24.28	24.33	37.4	5.4	4.0	500	69.2	138.4	207.6
100HE	31.75	19.05	18.90	9.54	9.56	30.17	26.04	13.16	15.24	39.1	29.10	29.16	44.5	6.1	4.8	780	104.0	208.0	312.0
120HE	38.10	22.23	25.22	11.11	11.14	36.20	31.24	15.80	18.27	48.9	37.18	37.24	55.0	6.6	5.6	1 110	146.0	292.0	438.0
140HE	44.45	25.40	25.22	12.71	12.74	42.23	36.45	18.42	21.32	52.2	38.86	38.91	59.0	7.4	6.4	1 510	194.0	388.0	582.0
160HE	50.80	28.58	31.55	14.29	14.31	48.26	41.66	21.04	24.33	61.9	46.88	46.94	69.4	7.9	7.1	2 000	250.0	500.0	750.0
180HE	57.15	35.71	35.48	17.46	17.49	54.30	46.86	23.65	27.36	69.2	52.50	52.55	77.3	9.1	8.0	2 670	311.0	622.0	933.0
200HE	63.50	39.68	37.85	19.85	19.87	60.33	52.07	26.24	30.36	78.3	58.29	58.34	87.1	10.2	9.5	3 110	416.0	832.0	1 248.0
240HE	76.20	47.63	47.35	23.81	23.84	72.40	62.49	31.45	36.40	101.2	74.54	74.60	111.4	10.5	12.7	4 450	664.0	1 328.0	1 992.0
Note ^{a)} The pin length for multiplex chains shall be calculated by <i>b</i> ₄ + <i>p</i> _t × (number of chain lines – 1).																			

Table 3 Dimensions, measuring force and minimum tensile strength of Series B chains

Nominal number	Pitch (reference dimension)	Maximum roller diameter	Minimum width between inner plates	Maximum bearing pin body diameter	Minimum bush bore	Maximum inner plate depth (inner plate)	Maximum outer plate depth (outer plate, intermediate plate and connecting plate)	Minimum offset link dimensions		Transverse pitch (multiplex reference dimensions)	Maximum width of over inner link	Minimum width between outer plates	Maximum width over bearing pin ^{a)}	Maximum additional width for joint fastener	Plate thickness		Measuring force	Minimum tensile strength		
															Outer plate (reference)	Inner plate (reference)		Simplex	Duplex	Triplex
	p	d_1	b_1	d_2	d_3	h_2	h_3	l_1	l_2	p_t	b_2	b_3	b_4	b_7	b_0		F_u			
mm																N	kN			
05B	8.00	5.00	3.00	2.31	2.36	7.11	7.11	3.71	3.71	5.64	4.77	4.90	8.6	3.1	0.75	0.75	50	4.4	7.8	11.1
06B	9.525	6.35	5.72	3.28	3.33	8.26	8.26	4.32	4.32	10.24	8.53	8.66	13.5	3.3	1.0	1.3	70	8.9	16.9	24.9
081 ^{b)}	12.70	7.75	3.30	3.66	3.71	9.91	9.91	5.36	5.36	—	5.80	5.93	10.2	1.5	1.0	1.0	125	8.0	—	—
083 ^{b)}	12.70	7.75	4.88	4.09	4.14	10.30	10.30	5.36	5.36	—	7.90	8.03	12.9	1.5	1.3	1.3	125	11.6	—	—
084 ^{b)}	12.70	7.75	4.88	4.09	4.14	11.15	11.15	5.77	5.77	—	8.80	8.93	14.8	1.5	1.5	1.9	125	15.6	—	—
08B	12.70	8.51	7.75	4.45	4.50	11.81	10.92	5.66	6.12	13.92	11.30	11.43	17.0	3.9	1.5	1.5	120	17.8	31.1	44.5
10B	15.875	10.16	9.65	5.08	5.13	14.73	13.72	7.11	7.62	16.59	13.28	13.41	19.6	4.1	1.5	1.5	200	22.2	44.5	66.7
12B	19.05	12.07	11.68	5.72	5.77	16.13	16.13	8.33	8.33	19.46	15.62	15.75	22.7	4.6	1.7	1.8	280	28.9	57.8	86.7
16B	25.40	15.88	17.02	8.28	8.33	21.08	21.08	11.15	11.15	31.88	25.45	25.58	36.1	5.4	3.2	4.0	500	60.0	106.0	160.0
20B	31.75	19.05	19.56	10.19	10.24	26.42	26.42	13.89	13.89	36.45	29.01	29.14	43.2	6.1	3.5	4.5	780	95.0	170.0	250.0
24B	38.10	25.40	25.40	14.63	14.68	33.40	33.40	17.55	17.55	48.36	37.92	38.05	53.4	6.6	5.2	6.0	1 110	160.0	280.0	425.0
28B	44.45	27.94	30.99	15.90	15.95	37.08	37.08	19.51	19.51	59.56	46.58	46.71	65.1	7.4	6.3	7.5	1 510	200.0	360.0	530.0
32B	50.80	29.21	30.99	17.81	17.86	42.29	42.29	22.20	22.20	58.55	45.57	45.70	67.4	7.9	6.3	7.0	2 000	250.0	450.0	670.0
40B	63.50	39.37	38.10	22.89	22.94	52.96	52.96	27.76	27.76	72.29	55.75	55.88	82.6	10.2	8.0	8.5	3 110	355.0	630.0	950.0
48B	76.20	48.26	45.72	29.24	29.29	63.88	63.88	33.45	33.45	91.21	70.56	70.69	99.1	10.5	10.0	12.1	4 450	560.0	1 000.0	1 500.0
56B	88.90	53.98	53.34	34.32	34.37	77.85	77.85	40.61	40.61	106.60	81.33	81.46	114.6	11.7	12.3	13.6	6 090	850.0	1 600.0	2 240.0
64B	101.60	63.50	60.96	39.40	39.45	90.17	90.17	47.07	47.07	119.89	92.02	92.15	130.9	13.0	13.6	15.2	7 960	1 120.0	2 000.0	3 000.0
72B	114.30	72.39	68.58	44.48	44.53	103.63	103.63	53.37	53.37	136.27	103.81	103.94	147.4	14.3	15.7	17.4	10 100	1 400.0	2 500.0	3 750.0
Notes ^{a)} The pin length for multiplex chains shall be calculated by $b_4 + p_t \times (\text{number of chain lines} - 1)$.																				
^{b)} Nominal numbers 081, 083 and 084 shall only apply to simplex chains.																				