

BUREAU OF INDIAN STANDARDS

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भारतीय मानक मसौदा

कन्वेयर चेन, चेन-पहिये और अटैचमेंट — विशिष्टि

भाग 1 चेन

[आईएस 6834 (भाग 1) का पहला पुनरीक्षण]

DRAFT *Indian Standard*

**CONVEYOR CHAINS, CHAIN-WHEELS AND
ATTACHMENTS — SPECIFICATION**

PART 1 CHAINS

[*First Revision* of 6834 (Part 1)]

ICS 53.020.30

Continuous Bulk Conveying, Elevating, Hoisting Aerial
Ropeways and Related Equipment Sectional Committee, MED 06

Last date for receipt of comments
is **10 April 2024**

FOREWORD

(Formal clause to be added later)

This standard was first published in 1973, with a view to ensuring interchangeability of complete chains and interchangeability of individual links of chains for repair purposes.

This revision has been taken up to keep pace with the latest technological developments and the practices followed in conveyor industry. This revision incorporates the following major changes.

- a) A reference clause has been added mentioning the latest version of all the referred standards;
- b) More variety of chains are included;
- c) Clause 6 has been modified.

The specification for conveyor chains, chain-wheels and attachments is in three parts. This standard (Part 1) covers the chains. Other parts in this series under the general title are as follows:

Part 2 Chain – Wheels

Part 3 Attachments

The composition of the Committee responsible for the formulation of this standard is given at *(to be added later)*.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2:2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

DRAFT Indian Standard**CONVEYOR CHAINS, CHAIN-WHEELS, AND
ATTACHMENTS — SPECIFICATION****PART 1 CHAINS***(First Revision)***1 SCOPE**

This standard (Part 1) specifies the requirements for forged link, round link, bush, plain and flanged roller chains of the following four types, designed for general conveying and mechanical handling duties:

- a) Solid bearing pin type;
- b) Hollow bearing pin type;
- c) Forged link chain; and
- d) Round link chain.

2 REFERENCES

The standard listed below contains provision, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standard listed below:

<i>IS No.</i>	<i>IS Title</i>
IS 4240 : 1984	Glossary of conveyors terms and definitions (<i>first revision</i>)

3 TERMINOLOGY

3.1 For the purpose of this standard, the definition given in IS 4240 shall apply.

3.2 For the purpose of this standard, the nomenclature given in Fig. 1 shall apply.

4 MATERIALS

The chains shall be manufactured from any suitable steel which in the finished condition satisfies the requirement laid down in **11**.

5 DIMENSIONS

5.1 The conveyor chains shall conform to the dimensions given in Table 1, Table 2, Table 3 and Table 4 read with Fig. 2, Fig. 3 and Fig. 4.

5.2 The maximum and the minimum dimensions are specified to ensure interchangeability of links as produced by different manufacturers of chains. They represent limits for interchangeability but are not the actual tolerances that should be used in manufacture.

5.3 The pitch p is a theoretical reference dimension used in calculating strand lengths and chain wheel dimensions and it is not intended for inspection of individual links.

6 LENGTH ACCURACY

The finished round link chain shall be accurate within 0.55 percent of the nominal chain length. The finished forged link chain shall be accurate within 0.1 percent of the nominal chain length when measured under the following conditions:

- a) *Standard Test Length for Measurement* — The standard length of chain for measurement purposes shall be that nearest 3 000 mm when an odd number of pitches, terminating at each end in an inner link, are assembled;
- b) *Support* — The chain, in the unlubricated condition, shall be supported throughout its entire length; and
- c) *Measuring Load* — A measuring load equal to 1/100 of the appropriate breaking load shall be applied (*see* Table 1, Table 2, Table 3, Table 4 and Table 5).

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

7 BEARING PINS

7.1 Bearing pins shall preferably be riveted on all outer links. However, it is permissible to use detachable links for joints and in exceptional applications.

7.2 The bearing pins shall be either of plain type or of shouldered type.

7.3 Bearing pin not applicable for round link and forged link chain.

8 CRANKED LINKS

8.1 To obtain an odd number links in an endless chain it is necessary to use a cranked link (*see* Fig. 1) and in such cases a double link shall be supplied. Dimensions of the cranked links shall be as given in Table 1, Table 2, Table 3, and Table 4.

NOTE —

- 1) Cranked links are not recommended for normal use.
- 2) Cranked link not applicable for forged and round link chain.

9 DESIGNATIONS

9.1 The chains shall be designated by the followings:

- a) Commonly used name;
- b) Chain number;
- c) Whether bush chain/roller chain/forged chain/round chain;
- d) The pitch of the chain; and
- e) IS number.

Example:

A forged link chain bearing of chain number FS01 with pitch 142 mm and breaking load 220 KN shall be designated as:

Chain FS01-S-220 IS

10 MARKING

10.1 The chain shall be marked with the manufacturer's name or trademark, chain number and heat/batch code.

10.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.

11 TESTS

11.1 Breaking Load Test

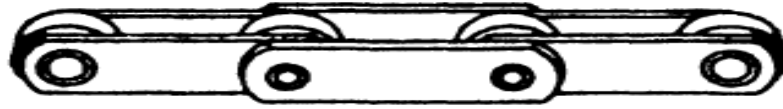
The test length shall have a minimum of three free pitches. The ends shall be attached to the testing machine shackles by a pin through the plate holes or the bunches. The shackles shall be so designed as to allow universal movement; the actual method is left to the discretion of the manufacturer.

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

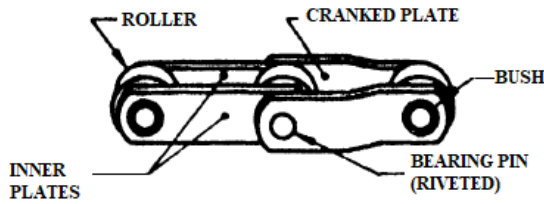
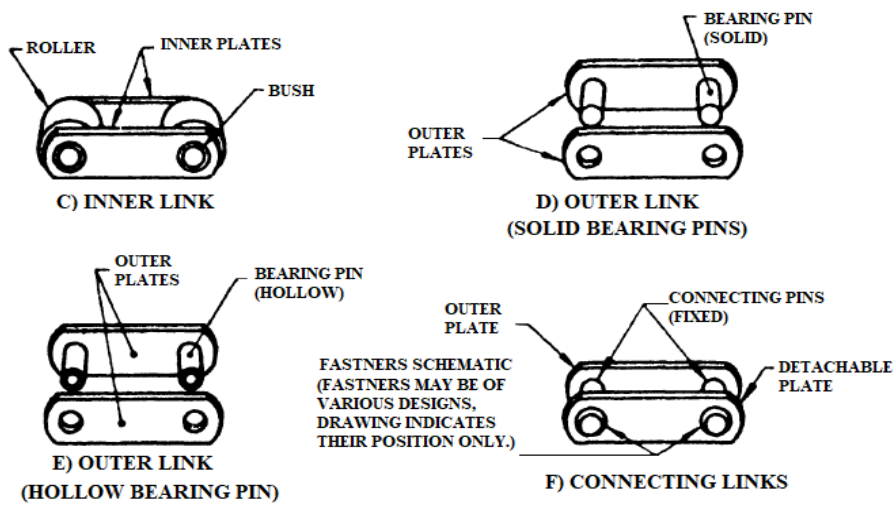
11.1.2 The minimum breaking loads shall be not less than 95 percent of those given in Table 1, Table 2, Table 3, Table 4 and Table 5.



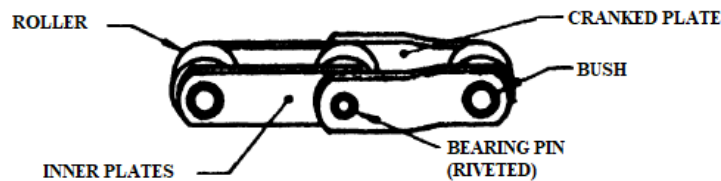
A) SOLID BEARING PIN CHAIN



B) HOLLOW BEARING PIN CHAIN



G) CRANKED LINK DOUBLE (SOLID BEARING PIN)



H) CRANKED LINK DOUBLE (HOLLOW BEARING PIN)

FIG. 1 NOMENCLATURE OF CONVEYOR CHAINS

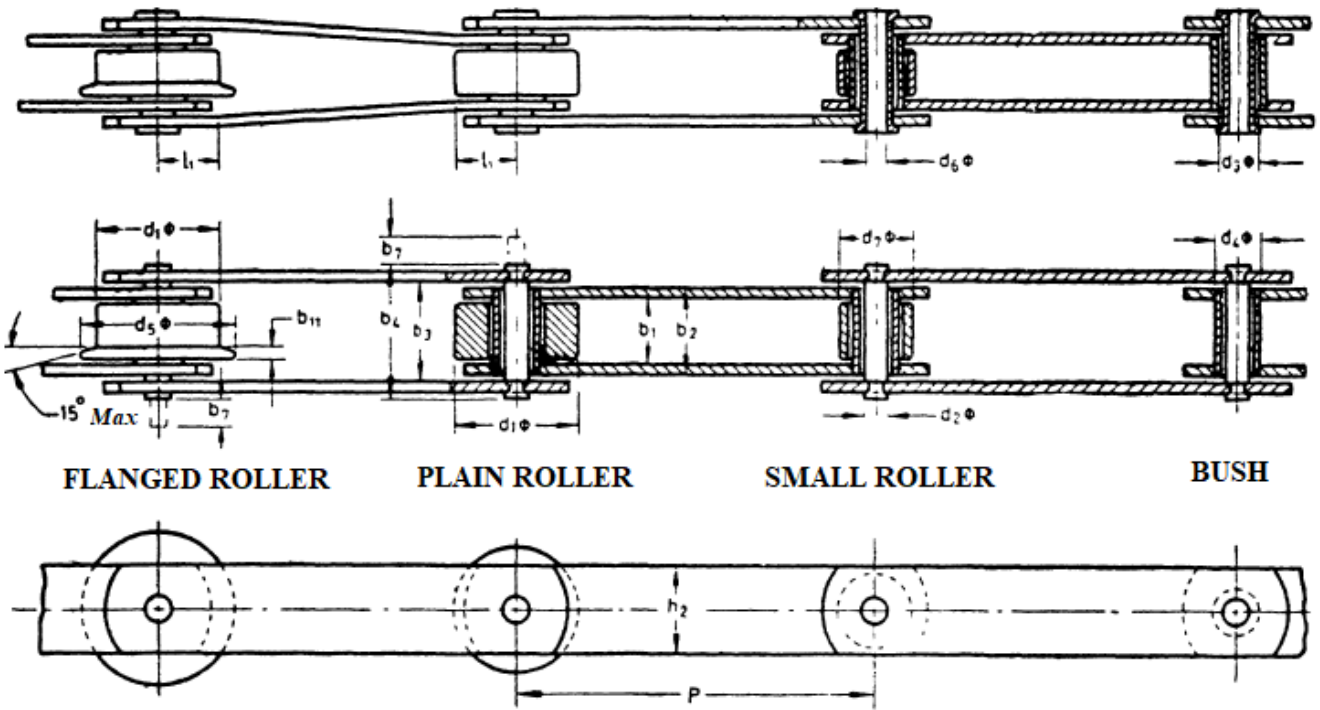


FIG. 2 DIMENSIONS FOR SOLID PIN AND HOLLOW PIN CONVEYOR CHAINS

Table1 Dimensions for Sound Pin Conveyor Chains

(Clauses 5.1, 6, 8.1, and 11.1.2)

All dimensions in millimetres.

Sl No.	Chain No.(Basic)	Braking Load		PlansRollerDia.	Pitch <i>P</i>																Bearing pin body	BushBore	BushDia.	Plate Depth	Width betweenInnerPlates	Width Over InnerLink	Width betweenOuterPlates	Width Over BearingPin	Additional Width for	MeasuringLoad		Cranked LinkDimension	FlangedRollerDimensions		Small RollerDia
		kN	kgf		d_1 <i>Max</i>	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)										d_2 <i>Max</i>	d_3 <i>Min</i>		d_4 <i>Max</i>	h_2 <i>Max</i>	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	
i)		kN	kgf	d_1 <i>Max</i>	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1 000	d_2 <i>Max</i>	d_3 <i>Min</i>	d_4 <i>Max</i>	h_2 <i>Max</i>	b_1 <i>Min</i>	b_2 <i>Max</i>	b_3 <i>Min</i>	b_4 <i>Max</i>	b_7 <i>Max</i>	kN	kgf	l_1 <i>Min</i>	d_5 <i>Max</i>	b_{11} <i>Max</i>	d_7 <i>Max</i>	
ii)	M20	20	2 000	25	X															6.0	6.1	90	19	15	22	22.2	35	7	0.40	40	125	35	3.5	12.5	
iii)	M28	28	2 800	30		X														7.0	7.1	100	21	17	25	25.2	40	8	0.56	56	140	40	4.0	15.0	
iv)	M40	40	4 000	36			X													8.5	8.6	125	26	19	28	28.3	45	9	0.80	80	170	45	4.5	18.0	
v)	M56	56	5 000	42				X												10.0	10.1	150	31	23	33	33.3	52	10	1.12	112	205	55	5.0	21.0	
vi)	M80	80	8 000	50					X											12.0	12.1	180	36	27	39	39.4	62	12	1.60	160	235	63	6.0	25.0	
vii)	M112	112	11 200	60						X										15.0	15.1	210	41	31	45	45.5	73	14	2.24	224	275	75	7.0	30.0	
viii)	M160	160	16 000	70							X									18.0	18.1	250	51	36	52	52.5	85	16	3.20	320	340	90	8.5	36.0	
ix)	M224	224	22 400	85								X								21.0	21.2	300	62	42	60	60.6	93	18	4.50	450	400	105	10.0	42.0	
x)	M315	315	31 500	100									X							25.0	25.2	360	72	47	70	70.7	112	21	6.30	630	470	125	12.0	50.0	
xi)	M450	450	45 000	120										X						30.0	30.2	420	82	55	82	82.8	135	25	9.00	900	550	150	14.0	60.0	
xii)	M630	630	63 000	140											X					36.0	36.2	500	103	65	96	97.0	154	30	12.50	1 250	665	175	16.0	70.0	
xiii)	M900	900	90 000	170												X				44.0	44.2	600	123	76	112	113.0	180	37	18.00	1 800	810	210	18.0	85.0	

NOTES

- ¹ Those pitches indicated by crosses are for bush and small roller chains only.
- ² The dimension l_1 also determines the maximum limit of the path of articulation of end of side plate.
- ³ The breaking load in kgf is approximate and is for guidance only.

Table 2 Dimensions for Hollow Pin Conveyor Chains
(Clauses 5.1, 6, 8.1, and 11.1.2)

All dimensions in millimetres.

SI No.	Chain No. (Basic)	Braking Load		Plate Roller Dia.	Pitch p										Bearing Pin Body	Bush Bore	Bush Dia.	Plate Depth	Width between Inner Plates	Width Over Inner Link	Width between Outer Plates	Width Over Bearing Pin	Additional Width for Joint Fasteners	Measuring Load		Cranked Link Dimension	Flanged Roller Dimensions		Hollow Pin Bore
		(3)	(4)		(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)										(16)	(17)		(18)	(19)	
i)		kN	kgf	d_1 Max	63	80	100	125	160	200	250	315	400	500	d_2 Max	d_3 Min	d_4 Max	h_2 Max	b_1 Min	b_2 Max	b_3 Min	b_4 Max	b_7 Max	kN	kgf	l_1 Min	d_5 Max	b_{11} Max	d_6 Min
ii)	MC28	28	2 800	36.0											13.0	13.1	17.5	26.0	19.0	28.0	28.6	42.0	10.0	0.56	56	17.0	45.0	4.5	8.2
iii)	MC56	56	5 000	50.0											15.5	15.6	21.0	36.0	22.0	33.0	33.7	48.0	13.0	1.12	112	23.5	65.0	5.0	10.2
iv)	MC112	112	11 200	70.0											22.0	22.2	29.0	51.0	30.0	45.0	45.7	67.0	19.0	2.24	224	34.0	90.0	7.0	14.3
v)	MC224	224	22 400	100.0											31.0	31.2	41.0	72.0	40.0	60.0	60.8	90.0	24.0	4.50	450	47.0	125.0	10.0	20.3

NOTES

¹ The dimension l_1 also determines the maximum limit of the path of articulation of end of side plate.

² Chain MC112-P-100 requires a special design of chain wheel.

³ The breaking load in kgf is approximate and is for guidance only.

Table 3 Dimensions for Forged Link Chain with Breaking Load
(Clauses 5.1, 6, 8.1, and 11.1.2)

<i>SlNo.</i>	<i>Chain No.</i>	<i>Chain Size(P ×H×W)</i>	<i>Breaking Load</i>	<i>MOC</i>
(1)	(2)	(3)	(4)	(5)
i)	FS01	102 × 36 × 13	170KN	Alloy Steel
ii)	FS02	142 × 50 ×13	220KN	Alloy Steel
iii)	FS03	142 × 50 ×19	200KN	Alloy Steel
iv)	FS04	142 × 50 ×29	480KN	Alloy Steel
v)	FS05	216 × 75 ×27	600KN	Alloy Steel
vi)	FS06	200×50×25	350KN	Alloy Steel
vii)	FS07	225 × 60 ×30	500KN	Alloy Steel
viii)	FS08	250 × 60 ×30	520KN	Alloy Steel
ix)	FS09	175×60×30	520KN	Alloy Steel
x)	FS10	260 × 75 ×31	700KN	Alloy Steel
xi)	FS11	315 × 80 ×39	1 200KN	Alloy Steel

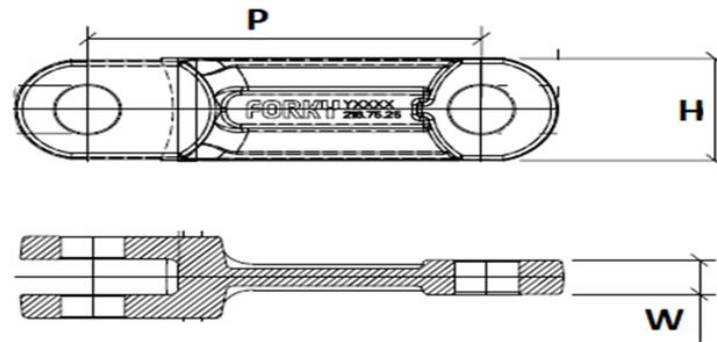


FIG. 3 FORGED LINK CHAIN

Table 4 Dimensions For Round Link Chain With Breaking Load
(Clauses 5.1, 6, 8.1, and 11.1.2)

Sl No.	Chain d × t mm	Chain Width		Weight kg/m (lb/yd)	Strand Length m(yd)/Link	Attachment Distance Links
		bl (Min) mm	ba (Max) mm			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	8 × 31	10.3	28	1.3 (0.95)	50.0 (164.04)/1613	Variable
					Fitting strand	
					24.893 (81.67)/803	
ii)	10 × 38	12.5	34	2.1 (1.54)	50.0 (164.04)/1315	Variable
					Fitting strand	
					20.026 (65.70)/527	
iii)	14 × 50	16.3	47	4.0 (2.94)	Fitting strand	Variable
					19.95 (65.45)/399	

					Fitting strand	
iv)	14 × 64	16.3	47	3.7 (2.95)	10.176 (33.38)/159	Variable
					Fitting strand	
v)	16 × 64	20	55	5.1 (3.77)	38.336 (125.77)/599	Variable
					19.9 (65.29)/311	
					Fitting strand	
vi)	18 × 64	21	60	6.9 (5.10)	28.224 (92.6)/441	Variable
					15.296 (50.18)/239	
					Fitting strand	
vii)	19 × 75	22	63	7.7 (5.67)	53.925 (176.92)/719	Variable
					10.725 (35.19)/143	
					Fitting strand	
viii)	19 × 120	23	65	6.3 (4.63)	3.0 (9.84)/25	2
					5.16 (16.93)/43	
					Fitting strand	
ix)	22 × 86	26	74 (73)	9.7 (9.5)/7.13 (6.98)	10.234 (33.58)/119	Variable
					Fitting strand	
x)	25 × 95	34	90	12.5 (9.2)	8.265 (27.12)/87	4
					Fitting strand	
xi)	26 × 92	30	85	13.7 (10.07)	14.444 (47.39)/157	Variable
					Fitting strand	
xii)	26 × 100	31	87	13.3 (9.78)	7.9 (25.92)/79	4/8/10/16
					8.1 (26.57)/81	n×4+1×6
					8.3 (27.23)/83	4/6/12/14
					Fitting strand	—
xiii)	30 × 108	34	97	18.0 (13.23)	10.692 (35.08)/99	Variable
					Fitting strand	
xiv)	30 × 120	36	102	17.5 (12.87)	5.640 (18.50)/47	4/6/8/12/16
					5.88 (19.29)/49	10
					Fitting strand	—
xv)	34 × 126	38	109	22.7 (16.7)	8.694 (28.52)/69	variable
					Fitting strand	
xvi)	34 × 136	39	113	23.8 (17.49)	4.760 (15.62)/35	4/6/12/18
					5.304 (11.69)/39	4/8/10
					Fitting strand	—

xvii)	38 × 144	44	127	30.0 (22.07)	3.312 (7.30)/23	8/12
					4.176 (9.21)/29	4/6/10
					Fitting strand	—

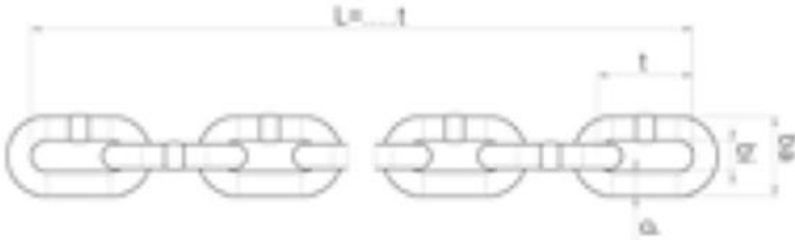


FIG. 4 ROUND STEEL LINK CHAINS IN SPECIAL GRADES — HIGH WEAR RESISTANT

xvii)					(28 101)			7 905 643					
xviii)						7 908 983		7 905 644					
xix)			340 (76 435)		140 (31 473)	7 902 205	260 (58 450)		230 (51 706)		230 (51 706)		19 × 75
xx)				7 904 795				7 905 646		7 905 862		7 909 280	
xxi)				7 904 540		7 909 075		7 905 648		7 905 863		7 909 283	
xxii)							260 (58 450)	7 905 650					19 × 120
xxiii)								7 905 651					
xxiv)								7 905 652					
xxv)	610 (137 133)	8 504 310	450 (101 164)	7 101 775	260 (58 450)	7 905 474	350 (78 683)	7 905 654			310 (69 691)	7 905 719	22 × 86
xxvi)				7 101 774		7 905 475		7 905 655				7 905 720	
xxvii)							400 (89 924)	7 905 657					25 × 95
xxviii)								7 905 658					
xxix)	850 (191 087)	7 906 999			370 (83 179)	7 905 480							26 × 92
xxx)						7 905 477							
xxxi)					370 (83 179)	7 905 491	430 (96 668)	7 905 660	370 (83 179)		430 (96 668)	7 905 722	26 × 100
xxxii)										7 909 277			
xxxiii)						7 905 492		7 905 661				7 905 723	
xxxiv)						7 905 493		7 905 662		7 909 278		7 905 724	

xxxv)					440	7 905 497							30 × 108
xxxvi)	1 130 (254 034)	7 907 002			(98 916)	7 905 496							
xxxvii)					440	7 905 498	640 (143 878)	7 905 664		580 (130 389)	7 905 727	30 × 120	
xxxviii)				(98 916)	7 905 499	7 905 666							
xxxix)					7 905 500	7 905 667		7 905 728					
xl)					460 (103 412)	7 905 502	720 (161 862)	7 905 670				34 × 126	
xli)	1 450 (325 973)	7 907 005			7 905 503	7 905 672							
xlii)					460 (103 412)	7 905 521	720 (161,862)	7905672	630 (141 630)	7 905 865	670 (150 622)	7 908 694	34 × 136
xliii)				7 905 522		7905676		7 905 866		7 908 692			
xliv)				7 905 506		7905678		7 905 868		7 998 695			
xlv)							920 (206 824)	7 905 680		850	7 908 697	38 × 144	
xlvi)						7 905 681		7 908 698					
xlvii)						7 905 683		7 908 699					

NOTE — Allowed tolerance of breaking tension ± 10 percent.

