
**Marine structures — Mobile offshore
units — Chain wheels**

Structures maritimes — Unités mobiles au large — Pignons à chaîne

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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.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 4, *Outfitting and deck machinery*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Marine structures — Mobile offshore units — Chain wheels

1 Scope

This document specifies the requirements for the profiles, dimensions, tolerances, materials and inspection of chain wheels for chains on mobile offshore units.

Chain wheels meeting the requirements of this document can be used with offshore mooring chains conforming to ISO 20438.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3828, *Shipbuilding and marine structures — Deck machinery — Vocabulary and symbols*

ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method*

ISO 8062-3, *Geometrical product specifications (GPS) — Dimensional and geometrical tolerances for moulded parts — Part 3: General dimensional and geometrical tolerances and machining allowances for castings*

ISO 11971:—¹⁾, *Steel and iron castings — Visual examination of surface quality*

ISO 16859-1, *Metallic materials — Leeb hardness test — Part 1: Test method*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3828 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

pitch diameter

D_p

circumscribed circle diameter of the regular polygon formed by the centerline of the stud-link anchor chain where the anchor chain is engaged with the chain wheel

Note 1 to entry: Pitch diameter is used to calculate the maximum torque of the anchor chain during operation.

3.2

speed calculation diameter

D_v

diameter of the moving line of the stud-link anchor chain when anchoring with power

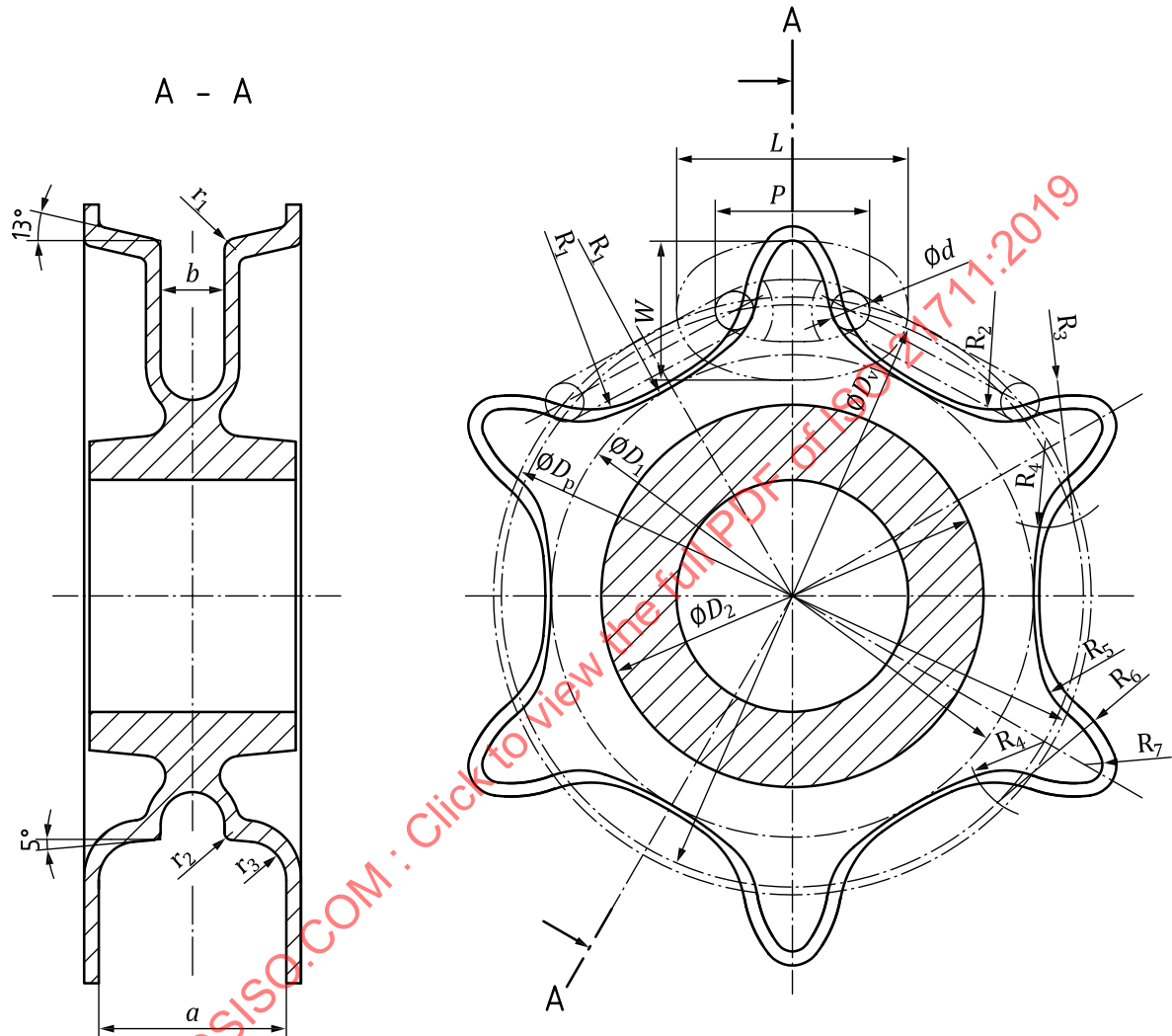
1) Under preparation. Stage at the time of publication: ISO/DIS 11971:2018.

a) Type A — 5-tooth chain wheel, see [Figure 1](#) for the tooth profile structure. The nominal dimensions are given in [Table 1](#).



Figure 1 — Tooth profile structure of type A chain wheel

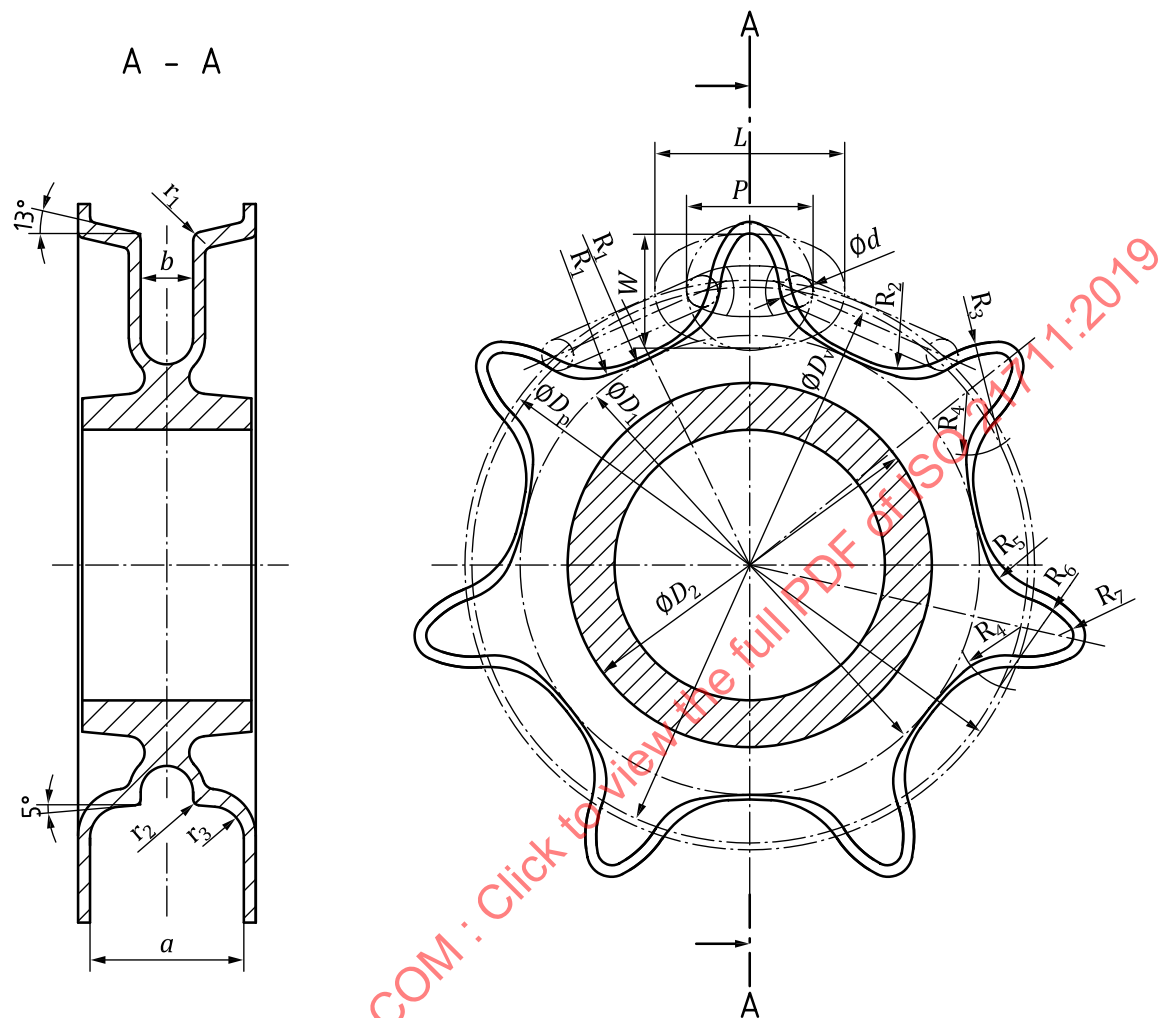
- b) Type B — 6-tooth chain wheel, see [Figure 2](#) for the tooth profile structure. The nominal dimensions are given in [Table 1](#).



It is not recommended to select values in the shaded area.

Figure 2 — Tooth profile structure of type B chain wheel

c) Type C — 7-tooth chain wheel, see [Figure 3](#) for the tooth profile structure. The nominal dimensions are given in [Table 1](#).



It is not recommended to select values in the shaded area.

Figure 3 — Tooth profile structure of type C chain wheel

Table 1 — Nominal dimensions of chain wheels

Dimensions in mm

Link				Chain wheel																
d	L	P	W	Teeth/ Type	D _v	D _p	D ₁	D ₂	a	b	R ₁	R ₂	R ₃	R ₄	R ₅	R ₆	R ₇	r ₁	r ₂	R ₃
50	300	200	180	5 A	633	649	490	367	243	83	500	136	164	100	100	146	23	15	9	50
				6 B	754	775	625	496												
				7 C	878	900	726	576												
52	312	208	187	5 A	659	675	510	381	253	86	520	142	171	104	104	152	24	15	10	52
				6 B	784	806	650	516												
				7 C	913	936	755	599												

Table 1 (continued)

Link				Chain wheel																	
<i>d</i>	<i>L</i>	<i>P</i>	<i>W</i>	Teeth/ Type		<i>D_v</i>	<i>D_p</i>	<i>D₁</i>	<i>D₂</i>	<i>a</i>	<i>b</i>	<i>R₁</i>	<i>R₂</i>	<i>R₃</i>	<i>R₄</i>	<i>R₅</i>	<i>R₆</i>	<i>R₇</i>	<i>r₁</i>	<i>r₂</i>	<i>R₃</i>
54	324	216	194	5	A	684	701	529	396	263	89	540	147	177	108	108	158	25	16	10	54
				6	B	815	836	675	535												
				7	C	948	972	784	622												
56	336	224	202	5	A	709	727	549	411	272	93	560	153	184	112	112	164	26	17	10	56
				6	B	845	867	700	555												
				7	C	984	1008	813	645												
58	348	232	209	5	A	735	753	568	425	282	96	580	158	190	116	116	170	27	17	11	58
				6	B	875	898	725	575												
				7	C	1 019	1 044	842	668												
60	360	240	216	5	A	760	779	588	440	292	99	600	164	197	120	120	176	28	18	11	60
				6	B	905	929	750	595												
				7	C	1 054	1 080	871	691												
62	372	248	223	5	A	785	805	608	455	302	103	620	169	204	124	124	181	29	18	12	62
				6	B	935	960	775	615												
				7	C	1 089	1 116	900	714												
64	384	256	230	5	A	811	831	627	469	311	106	640	175	210	128	128	187	29	19	12	64
				6	B	966	991	800	635												
				7	C	1 124	1 152	929	737												
66	396	264	238	5	A	836	857	647	484	321	109	660	180	217	132	132	193	30	20	12	66
				6	B	996	1 022	825	654												
				7	C	1 159	1 188	958	760												
68	408	272	245	5	A	861	883	666	499	331	112	680	186	223	136	136	199	31	20	13	68
				6	B	1 026	1 053	850	674												
				7	C	1 194	1 224	987	783												
70	420	280	252	5	A	887	909	686	513	340	116	700	191	230	140	140	205	32	21	13	70
				6	B	1 056	1 084	875	694												
				7	C	1 229	1 260	1 016	806												
73	438	292	263	5	A	925	948	715	535	355	121	730	199	240	146	146	214	34	22	14	73
				6	B	1 101	1 131	913	724												
				7	C	1 282	1 314	1 060	841												
76	456	304	274	5	A	963	987	745	557	370	126	760	207	250	152	152	222	35	22	14	76
				6	B	1 147	1 177	950	754												
				7	C	1 335	1 368	1 104	876												
78	468	312	281	5	A	988	1 013	764	572	379	129	780	213	256	156	156	228	36	23	15	78
				6	B	1 177	1 208	975	773												
				7	C	1 370	1 404	1 133	899												
81	486	324	292	5	A	1 026	1 052	794	594	394	134	810	221	266	162	162	237	37	24	15	81
				6	B	1 222	1 255	1 013	803												
				7	C	1 423	1 458	1 176	933												
83	498	332	299	5	A	1 051	1 078	813	609	404	137	830	226	273	166	166	243	38	25	15	83
				6	B	1 252	1 286	1 038	823												
				7	C	1 458	1 494	1 205	956												
84	504	336	302	5	A	1 064	1 091	823	616	409	139	840	229	276	168	168	246	39	25	16	84
				6	B	1 267	1 301	1 050	833												
				7	C	1 475	1 512	1 220	968												

Table 1 (continued)

Link				Chain wheel																
<i>d</i>	<i>L</i>	<i>P</i>	<i>W</i>	Teeth/ Type	<i>D_v</i>	<i>D_p</i>	<i>D₁</i>	<i>D₂</i>	<i>a</i>	<i>b</i>	<i>R₁</i>	<i>R₂</i>	<i>R₃</i>	<i>R₄</i>	<i>R₅</i>	<i>R₆</i>	<i>R₇</i>	<i>r₁</i>	<i>r₂</i>	<i>R₃</i>
85	510	340	306	5 A	1 077	1 104	833	623	413	141	850	232	279	170	170	249	39	25	16	85
				6 B	1 282	1 317	1 063	843												
				7 C	1 493	1 530	1 234	979												
87	522	348	313	5 A	1 102	1 130	853	638	423	144	870	237	286	174	174	255	40	26	16	87
				6 B	1 313	1 348	1 088	863												
				7 C	1 528	1 566	1 263	1 002												
90	540	360	324	5 A	1 140	1 169	882	660	438	149	900	246	296	180	180	263	41	27	17	90
				6 B	1 358	1 394	1 125	892												
				7 C	1 581	1 621	1 307	1 037												
92	552	368	331	5 A	1 165	1 195	902	675	447	152	920	251	302	184	184	269	42	27	17	92
				6 B	1 388	1 425	1 150	912												
				7 C	1 616	1 657	1 336	1 060												
95	570	380	342	5 A	1 203	1 234	931	697	462	157	950	259	312	190	190	278	44	28	18	95
				6 B	1 433	1 472	1 188	942												
				7 C	1 669	1 711	1 379	1 094												
97	582	388	349	5 A	1 229	1 260	951	711	472	160	970	265	319	194	194	284	45	29	18	97
				6 B	1 463	1 503	1 213	962												
				7 C	1 704	1 747	1 408	1 117												
100	600	400	360	5 A	1 267	1 299	980	733	486	165	1 000	273	328	200	200	293	46	30	19	100
				6 B	1 509	1 549	1 250	992												
				7 C	1 756	1 801	1 452	1 152												
102	612	408	367	5 A	1 292	1 325	1 000	748	496	169	1 020	278	335	204	204	298	47	30	19	102
				6 B	1 539	1 580	1 275	1 011												
				7 C	1 791	1 837	1 481	1 175												
105	630	420	378	5 A	1 330	1 364	1 029	770	511	174	1 050	286	345	210	210	307	48	31	20	105
				6 B	1 584	1 626	1 313	1 041												
107	642	428	385	5 A	1 355	1 390	1 049	785	520	177	1 070	292	351	214	214	313	49	32	20	107
				6 B	1 614	1 657	1 338	1 061												
111	666	444	400	5 A	1 406	1 442	1 088	814	540	184	1 110	303	365	222	222	325	51	33	21	111
				6 B	1 675	1 719	1 388	1 101												
112	672	448	403	5 A	1 419	1 455	1 098	821	545	185	1 120	306	368	224	224	328	52	33	21	112
				6 B	1 690	1 735	1 400	1 111												
114	684	456	410	5 A	1 444	1 481	1 117	836	554	189	1 140	311	374	228	228	334	53	34	21	114
				6 B	1 720	1 766	1 425	1 130												
117	702	468	421	5 A	1 482	1 520	1 147	858	569	194	1 170	319	384	234	234	342	54	35	22	117
				6 B	1 765	1 812	1 463	1 160												
120	720	480	432	5 A	1 520	1 558	1 176	880	584	198	1 200	327	394	240	240	351	55	36	22	120
				6 B	1 810	1 859	1 500	1 190												
122	732	488	439	5 A	1 545	1 584	1 196	895	593	202	1 220	333	401	244	244	357	56	36	23	122
				6 B	1 841	1 890	1 525	1 210												
124	744	496	446	5 A	1 571	1 610	1 215	909	603	205	1 240	338	407	248	248	363	57	37	23	124
				6 B	1 871	1 921	1 550	1 230												
127	762	508	457	5 A	1 609	1 649	1 245	931	618	210	1 270	346	417	254	254	372	58	38	24	127
				6 B	1 916	1 967	1 588	1 259												
130	780	520	468	5 A	1 647	1 688	1 274	953	632	215	1 300	355	427	260	260	380	60	38	24	130
				6 B	1 961	2 014	1 625	1 289												

Table 1 (continued)

Link				Chain wheel																		
<i>d</i>	<i>L</i>	<i>P</i>	<i>W</i>	Teeth/ Type		<i>D_v</i>	<i>D_p</i>	<i>D₁</i>	<i>D₂</i>	<i>a</i>	<i>b</i>	<i>R₁</i>	<i>R₂</i>	<i>R₃</i>	<i>R₄</i>	<i>R₅</i>	<i>R₆</i>	<i>R₇</i>	<i>r₁</i>	<i>r₂</i>	<i>R₃</i>	
132	792	528	475	5	A	1 672	1 714	1 294	968	642	218	1 320	360	433	264	264	386	61	39	25	132	
				6	B	1 991	2 045	1 650	1 309													
137	822	548	493	5	A	1 735	1 779	1 343	1 005	666	227	1 370	374	450	274	274	401	63	41	25	137	
				6	B	2 067	2 122	1 713	1 359													
142	852	568	511	5	A	1 799	1 844	1 392	1 041	691	235	1 420	387	466	284	284	415	65	42	26	142	
				6	B	2 142	2 200	1 775	1 408													
147	882	588	529	5	A	1 862	1 909	1 441	1 078	715	243	1 470	401	483	294	294	430	68	44	27	147	
				6	B	2 218	2 277	1 838	1 458													
152	912	608	547	5	A	1 925	1 974	1 490	1 115	739	251	1 520	415	499	304	304	445	70	45	28	152	
				6	B	2 293	2 354	1 900	1 507													
157	942	628	565	5	A	1 989	2 039	1 539	1 151	764	260	1 570	428	516	314	314	459	73	46	29	157	
162	972	648	583	5	A	2 052	2 104	1 588	1 188	788	268	1 620	442	532	324	324	474	75	48	30	162	
165	990	660	594	5	A	2 090	2 143	1 617	1 210	803	273	1 650	450	542	330	330	483	77	49	31	165	
168	1 008	672	605	5	A	2 128	2 182	1 646	1 232	817	278	1 680	458	552	336	336	492	78	50	31	168	
171	1 026	684	616	5	A	2 166	2 221	1 676	1 254	831	283	1 710	466	562	342	342	500	80	51	32	171	
175	1 050	700	630	5	A	2 217	2 273	1 715	1 283	851	289	1 750	477	575	350	350	512	81	52	33	175	
178	1 068	712	641	5	A	2 255	2 312	1 744	1 305	866	294	1 780	486	585	356	356	521	83	53	33	178	
180	1 080	720	648	5	A	2 280	2 338	1 764	1 320	876	298	1 800	491	591	360	360	527	84	53	33	180	
182	1 092	728	655	5	A	2 305	2 364	1 784	1 335	885	301	1 820	496	598	364	364	533	85	54	34	182	
185	1 110	740	666	5	A	2 343	2 403	1 813	1 357	890	306	1 850	505	608	370	370	541	86	55	34	185	
188	1 128	752	677	5	A	2 381	2 442	1 842	1 379	914	311	1 880	513	617	376	376	550	88	56	35	188	
191	1 146	764	688	5	A	2 419	2 481	1 872	1 401	929	316	1 910	521	627	382	382	559	89	57	36	191	
194	1 164	776	698	5	A	2 457	2 520	1 901	1 423	944	321	1 940	529	637	388	388	568	90	57	36	194	
197	1 182	788	709	5	A	2 495	2 558	1 931	1 445	958	326	1 970	537	647	394	394	576	92	58	37	197	
200	1 200	800	720	5	A	2 533	2 597	1 960	1 467	973	331	2 000	546	657	400	400	585	93	59	37	200	
205	1 230	820	738	5	A	2 597	2 662	2 009	1 503	997	339	2 050	559	673	410	410	600	95	61	38	205	
210	1 260	840	756	5	A	2 660	2 727	2 058	1 540	1 021	347	2 100	573	690	420	420	614	98	62	39	210	

4.2 Designation

The designation of a chain wheel shall consist of the words “Chain wheel” followed by a space, a reference to this document followed by a space, the type of chain wheel (A, B or C) and the diameter (in mm) of the anchor chain.

EXAMPLE The designation of a 5-tooth chain wheel with a diameter of the anchor chain of 56 mm is as follows:

Chain wheel ISO 21711:2019 A56

5 Requirements

5.1 Geometric tolerance and dimensional tolerance

5.1.1 The linear dimensional tolerance of castings shall conform to ISO 8062-3, DCTG 11.

5.1.2 The geometric tolerance of castings shall conform to ISO 8062-3, GCTG 7.