TC 111

International Standard ISO 3076

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Short link chain for lifting purposes — Grade T (8), non-calibrated, for chain slings etc.

Chaînes de levage à maillons courts, classe T (8), non calibrées, pour élingues à chaînes, etc.

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Price based on 9 pages

Short link chain for lifting purposes — Grade T (8), non-calibrated, for chain slings, etc.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the requirements for lifting chains, grade T (8), non-calibrated, for use on cranes, in chain slings and for general lifting purposes. These are electrically welded round steel short link chains, fully heat treated and tested and comply with the general conditions of acceptance of ISO 1834.

The range of sizes covered by this International Standard is from 5 mm to 45 mm. The annex gives a range of temporary additional sizes 6 mm to 35 mm.

2 REFERENCES

ISO/R 388, *ISO metric series for basic thicknesses of sheet and diameters of wire.*

ISO/R 643, *Micrographic determination of the austenitic grain size of steels.*

ISO 1035/1, *Dimensions of hot rolled steel bars — Part 1: Round bars — Metric series.*[1)]

ISO 1834, *Short link chain for lifting purposes — General conditions of acceptance.*[2)]

3 DEFINITIONS

For the purpose of this International Standard the definitions given in ISO 1834 apply.

4 GENERAL CONDITIONS OF ACCEPTANCE

The chain shall comply fully with the requirements of ISO 1834 as well as those of this International Standard.

5 DIMENSIONS

5.1 Size (see ISO 1834, clause 4, Definitions)

The size of chain shall be one of the sizes listed in table 1, column 1 corresponding to the nominal diameter (d_n) of the steel wire (ISO/R 388) or bar (ISO 1035/1) from which the chain is made.

NOTE — Control over the size of the material (bar or wire) from which the chain is made is important but this International Standard concerns finished chain and must assume that the inspector may not have the opportunity of retrospective measurement of the original material. The chain manufacturer will realize the need for the size of this material to be kept within accepted tolerances.

5.2 Material diameter (see ISO 1834 for definition of material diameter and method of measurement)

5.2.1 Tolerance on material diameter

For sizes less than 18 mm the diameter d of the material in the finished link shall nowhere differ from the nominal diameter by more than $^{+\ 2}_{-\ 6}$ %, except at the weld.

For sizes 18 mm and over, the diameter d of the material in the finished link shall nowhere differ from the nominal diameter by more than ± 5 %, except at the weld.

5.2.2 Tolerances at the weld

The dimension of the steel at the weld shall nowhere be less than the diameter d of the steel adjacent to the weld, or exceed it by more than the following tolerances. (See figure 1 and table 1.)

1) At present at the stage of draft (Revision of ISO/R 1035/1-1969.)

2) At present at the stage of draft.

8 INSPECTION

8.1 Provision for inspection

The provision for inspection shall be as specified in ISO 1834.

8.2 Acceptance

The acceptance procedure shall be as specified in ISO 1834.

9 MARKING

9.1 Quality marking

The quality mark for the chain is T or 8. It shall be applied as specified in ISO 1834.

9.2 Identification marking

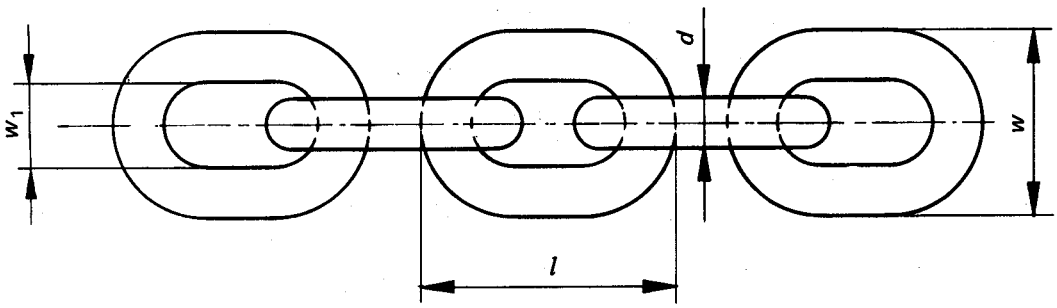
The identification marking shall be as specified in ISO 1834.

9.3 Inspection marking

The inspection marking shall be as specified in ISO 1834.

10 TEST CERTIFICATE

The manufacturer shall, if required, supply a certificate of test and examination with every supply of chain, containing the information detailed in ISO 1834. A typical form is given is ISO 1834, annex C.



l = outside link length (4,75 d_n min., 5 d_n max.)

w = outside link width (3,5 d_n max. except at weld)

w_1 = inside link width (1,25 d_n min. except at weld)

FIGURE 2 — Chain and link dimensions

TABLE 2 — **Mechanical properties**

Mechanical property	Requirement
Mean stress at specified minimum breaking force $\frac{2F_{m\,min}}{\pi d_n^2}$	800 MPa (N/mm^2)
Mean stress at proof force $\frac{2F_e}{\pi d_n^2}$	400 MPa (N/mm^2)
Ratio of proof force (acceptance) to specified minimum breaking force	50 %
Specified minimum total ultimate elongation	17 %
Mean stress at working load limit	200 MPa (N/mm^2)

NOTES

1 The stresses quoted in table 2 are obtained by dividing the force by the total cross-section of both sides of the link, i.e. they are mean stresses. The stress is in fact not uniform and particularly at the extrados the maximum fibre stress is considerably greater.

2 The working load may be selected to comply with national regulations but it must in no case exceed the load in table 3, column 4 or table 5, column 4.

TABLE 3 — **Grade T (8), non-calibrated, test requirements and working load limits**

(1)	(2)	(3)	(4)	(5)
Nominal size d_n mm	**Proof force (acceptance)** kN	**Minimum breaking force** kN	**Working load limit** t	**Manufacturing test force** kN
5	15,8	31,6	0,8	19
6,3	25	50	1,25	30
7,1	31,7	63,4	1,6	38
8	40,3	80,6	2,0	48
9	51	102	2,5	61
10	63	126	3,2	76
11,2	79	158	4,0	94
12,5	99	198	5,0	119
14	124	248	6,3	149
16	161	322	8,0	193
18	204	408	10	245
20	252	504	12,5	302
22,4	316	632	16	379
25	393	786	20	472
28	493	986	25	592
32	644	1 288	32	773
36	815	1 630	40	978
40	1 006	2 012	50	1207
45	1 273	2 546	63	1528

TABLE 5 – **Grade T (8), non-calibrated, test requirements and working load limits for chains in table 4**
(Temporary additional sizes)

(1)	(2)	(3)	(4)	(5)
Nominal size d_n mm	**Proof force (acceptance)** kN	**Minimum breaking force** kN	**Working load limit** t	**Manufacturing test force** kN
6	22,7	45,4	1,1	27
7	30,8	61,6	1,5	37
8,7	47,6	95,2	2,4	57
9,5	57	114	2,8	68
10,3	67	134	3,3	80
11	77	154	3,8	92
12	91	182	4,6	109
13	107	214	5,4	128
13,5	115	230	5,8	138
16,7	176	352	8,9	211
19	227	454	11,5	272
20,6	267	534	13,5	320
22[1)]	305	610	15,5	366
26[1)]	425	850	21,6	510
30	566	1 132	28,8	679
35[1)]	770	1 540	39,2	924

1) These sizes do not appear in the other International Standards for non-calibrated chain.

The size 25,4 mm is included in the other International Standard for non-calibrated chain but does not appear in this International Standard.