
**Aerospace — Turnbarrels, for aircraft
control wire rope — Dimensions and loads**

*Aéronautique et espace — Douilles de tendeurs de câbles de commande
d'aéronefs — Dimensions et charges*

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9738 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 12, *Mechanical system parts*.

Annex A forms a normative part of this International Standard.

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Aerospace — Turnbarrels, for aircraft control wire rope — Dimensions and loads

1 Scope

This International Standard specifies the characteristics of turnbarrels for aircraft control wire rope in either low alloy steel, corrosion-resistant steel, copper-zinc alloy or aluminium alloy.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 426-2:1983, *Wrought copper-zinc alloys — Chemical composition and forms of wrought products — Part 2: Leaded copper-zinc alloys.*

ISO 1637:1987, *Wrought copper and copper alloys rod and bar — Technical conditions of delivery.*

ISO 2020-1:1997, *Aerospace — Preformed flexible steel wire rope for aircraft controls — Part 1: Dimensions and loads.*

ISO 5855-2:1988, *Aerospace construction — MJ threads — Part 2: Limit dimensions for bolts and nuts.*

ISO 8074:1985, *Aerospace — Surface treatment of austenitic stainless steel parts.*

ISO 9761:2000, *Aerospace — Locking clips, in corrosion-resistant steel, for aircraft control wire rope turnbuckles — Dimensions.*

ISO 10955:1999, *Aerospace — End fittings and turnbarrels for aircraft control wire rope — Technical specification.*

ISO 13715:2000, *Technical drawings — Edges of undefined shape — Vocabulary and indication on drawings.*

EN 2101, *Aerospace series — Chromic acid anodizing of aluminium and wrought aluminium alloys.*

EN 2133:1998, *Aerospace series — Cadmium plating of steels with specified tensile strength $\leq 1\,450$ MPa, copper, copper alloys and nickel alloys.*

EN 2284, *Aerospace series — Sulphuric acid anodizing of aluminium and wrought aluminium alloys.*

EN 2704:—¹⁾, *Aerospace series — Aluminium alloy 2024-T3511 — Bars $a \leq 75$ mm.²⁾*

EN 3487:—¹⁾, *Aerospace series — Steel FE-PA 3601 — Softened — $500 \text{ MPa} \leq R_m \leq 700 \text{ MPa}$ — Bars for machining — $D_e \leq 100$ mm.²⁾*

¹⁾ To be published.

²⁾ AECMA.

SAE AMS 2431/6A, *Peening Media, Glass Shot*.

SAE AMS 4339, *Aluminium Alloy, Rolled or Cold Finished Bars and Rods 4.4Cu 1.5Mg 0.60Mn, Solution Heat Treated, Cold Worked, and Artificially Aged*.

SAE AMS 5635D, *Steel, Corrosion Resistant, Bars, Wire and Forgings 18Cr 9Ni 0.21Pb Free-Machining, Solution Heat Treated*.

SAE AMS 6370K, *Steel Bars, Forgings, and Rings 0.95Cr 0.20Mo (0.28-0.33C)*.

MIL-A-8625, *Anodic coatings, for aluminium and aluminium alloys*.³⁾

QQ-P-416F, *Plating, Cadmium (Electrodeposited)*.³⁾

3 Configuration, dimensions, loads and masses

Configuration, dimensions, loads and masses shall be in accordance with Figure 1 and Table 1.

4 Material

Code A: corrosion-resistant steel (in accordance with annex A).

Code B: copper-zinc alloy in accordance with ISO 462-2 and ISO 1637 (in accordance with annex A).

Code C: aluminium alloy (in accordance with annex A).

Code D: low alloy steel (in accordance with annex A).

5 Surface treatment

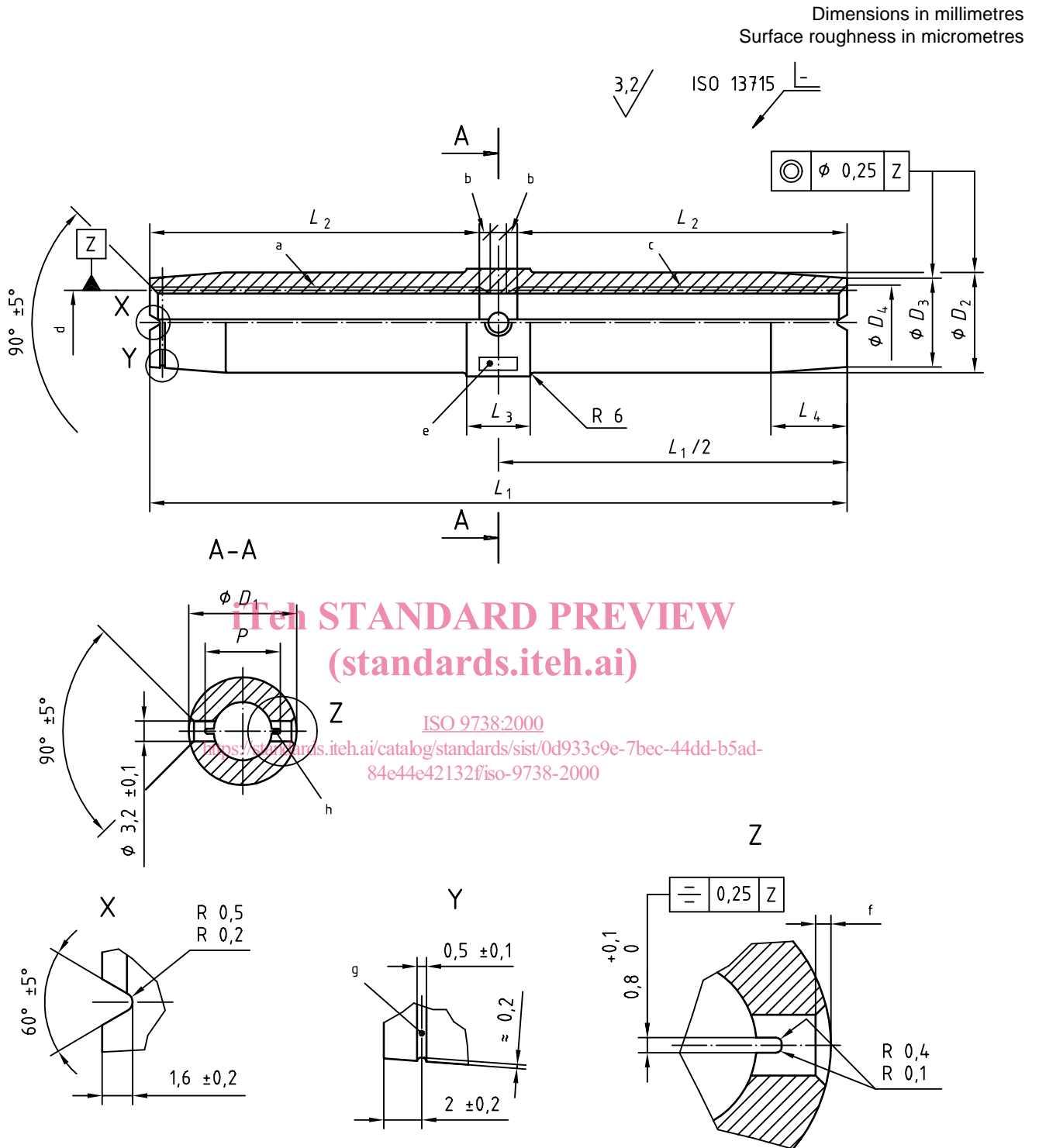
Corrosion-resistant steel: passivation (code P) in accordance with ISO 8074 or peening (code G) (in accordance with annex A).

Copper-zinc alloy: no surface (code N) treatment or peening (code G) (in accordance with annex A).

Aluminium alloy: anodic oxydation (code A) (in accordance with annex A).

Low alloy steel: cadmium plating (in accordance with annex A).

³⁾ May be obtained from: DODSSP Customer Service, Defense Printing Service Detachment Office, Building 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094, USA.



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- a Thread on left
- b Imperfect thread
- c Thread on right
- d Pitch diameter
- e Marking
- f Depth of countersunk 0,4 mm to 0,8 mm
- g Groove marking thread on left
- h Slot for locking clip in accordance with ISO 9761 (Code 04 turnbarrels have a single slot)

Figure 1

Table 1

Dimensions in millimetres

Thread ^a		D ₁	D ₂	D ₃	D ₄		L ₁		L ₂	L ₃	L ₄	P		Mass ^b	Minimum breaking load ^c	Nominal diameter of wire rope ^c
Code	Designation	h11	+1 0	0 -0,3	min.	max.	Code	± 0,5	min.	± 0,25	± 0,8	min.	max.	g/piece ≈	kN	
04	MJ4 × 0,7 – 4H6H	7	5,5	5,2	4,18	4,78	S	44	20	8	4	4,36	4,45	5,3	2,15	1,6
05	MJ5 × 0,8 – 4H6H	9	6,8	6,2	5,2	5,8	S	54	25		5	5,29	5,49	9,4	4,45	2,4
							L	84	40				14,2			
06	MJ6 × 1 – 4H6H	11	8,5	7,5	6,24	7,04	S	64	30		6	6,16	6,36	18,3	8,9	3,2
							L	100	48				28			
07	MJ7 × 1 – 4H6H	12	9,8	8,8	7,24	8,04	S	74	35		7	7,16	7,36	26,3	12,45	4
							L	114	55				40,1			
08	MJ8 × 1 – 4H6H	13	11,5	10,5	8,24	9,04	S	85	40		10	8	8,16	8,36	41,4	18,6
10	MJ10 × 1,25 – 4H6H	15	13,5	12	10,28	11,08	S	110	52	10		9,83	10,04	69	24,9	5,6
12	MJ12 × 1,25 – 4H6H	17	15,8	14	12,29	13,09	S			12		11,83	12,04	89,3	31,2	6,4

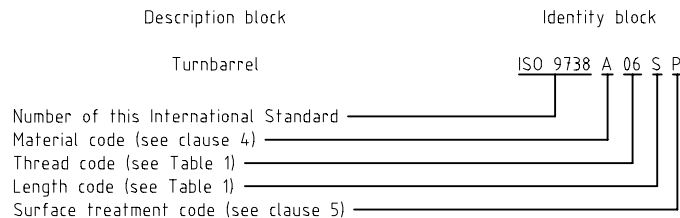
^a In accordance with ISO 5855-2.
^b For turnbarrels in corrosion-resistant steel.
^c In accordance with ISO 2020-1.

6 Designation

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Each turnbarrel in accordance with this International Standard shall be designated as shown in the following example.

EXAMPLE <https://standards.iteh.ai/catalog/standards/sist/0d933c9e-7bec-44dd-b5ad-84e44e42132f/iso-9738-2000>



7 Marking

The marking position shall be in accordance with Figure 1.

In addition to the manufacturer's own marking, each turnbarrel in accordance with this International Standard shall be marked using the identity block specified in clause 6.

The marking method is at the manufacturer's option.

8 Technical specification

In accordance with ISO 10955.

Annex A (normative)

Correspondence between national standards

This annex establishes a correspondence between different materials and surface treatment standards from certain user countries. Other member bodies are invited to declare their materials and surface treatment standards in this annex.

The materials and processes cited in Tables A.1 and A.2 are considered to be equivalent, assuming that the requirements for turnbarrels specified in this International Standard are respected.

Table A.1 — European standards

Code	Material		Surface treatment	
	Family	Standard	Nature	Standard
A	Corrosion-resistant steel	EN 3487	Passivation	ISO 8074
			Peening	SAE AMS 2431/6A
B	Copper-zinc alloy	ISO 462-2 ISO 1637	No surface treatment	—
			Peening	SAE AMS 2431/6A
C	Aluminium alloy	EN 2704	Anodic oxydation	EN 2101 or EN 2284
D	Low alloy steel	EN 2207	Cadmium plating	EN 2133

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Table A.2 — U.S. standards

Code	Material		Surface treatment	
	Family	Standard	Nature	Standard
A	Corrosion-resisting steel	SAE AMS 5635	Passivation	ISO 8074
			Peening	SAE AMS 2431/6A
B	Copper-zinc alloy	ISO 462-2 ISO 1637	No surface treatment	—
			Peening	SAE AMS 2431/6A
C	Aluminium alloy	SAE AMS 4339	Anodic oxydation	MIL-A-8625 Type II, Class 1
D	Low alloy steel	SAE AMS 6370	Cadmium plating	QQ-P-416 Type II, Class 2