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**Aerospace — Ball-ends, in corrosion-resistant steel, swaged on aircraft control wire rope — Dimensions and loads**

*Aéronautique et espace — Embouts à sphère terminale, en acier résistant à la corrosion, à sertir sur câbles de commande d'aéronefs — Dimensions et charges*

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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 9748 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 — Ball-ends, in corrosion-resistant steel, swaged on aircraft control wire rope — Dimensions and loads

## 1 Scope

This International Standard specifies the characteristics of ball-ends in corrosion-resistant steel swaged on aircraft control wire rope.

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

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

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

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

EN 2465:—<sup>1)</sup>, *Aerospace series — Steel FE-PA11 — Softened — Bars  $D_e \leq 100$  mm.*<sup>2)</sup>

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

SAE AMS 5639G, *Steel, Corrosion Resistant, Bars, Wire, Forgings, Tubing, and Rings, 19Cr 10Ni, Solution Heat Treated.*

SAE AMS 5641F, *Steel, Corrosion Resistant, Bars, Wire, and Forgings, 18.5Cr 10Ni 0.22Se Free-Machining; Swaging or Upsetting, Solution Heat Treated.*

## 3 Configuration, dimensions, loads and masses

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

## 4 Material

Corrosion-resistant steel (in accordance with annex A).

<sup>1)</sup> To be published.

<sup>2)</sup> AECMA.

Dimensions in millimetres  
Surface roughness in micrometres

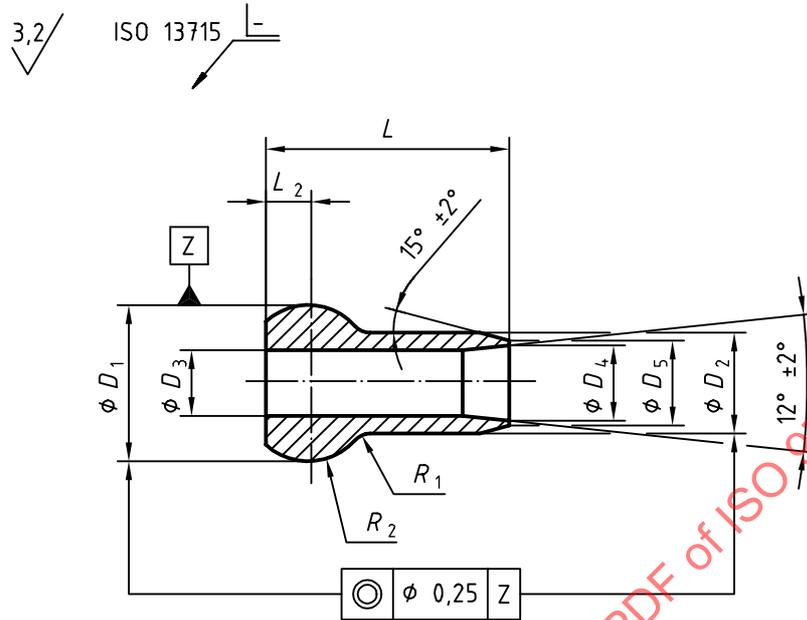


Figure 1

Table 1

Dimensions in millimetres

Wire rope <sup>a</sup>		$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$L_1$	$L_2$	$R_1$	$R_2$	Mass	Minimum breaking load <sup>a</sup>
Code	Nominal diameter	0 -0,1	0 -0,1	+0,1 0	+0,2 0	0 -0,2	+0,5 0	0 -0,1	± 0,25	± 0,25	g/piece ≈	kN
16	1,6	5,5	3,5	1,9	2,2	3	7	1,45	0,8	2	0,4	2,15
24	2,4	7	4,5	2,8	3	3,5	10	1,95	1	3	1	4,45
32	3,2	9	5,5	3,6	4	5	13	2,4	1,2	4	2,1	8,9
40	4	11	6,5	4,4	4,9	5,5	16	2,9	1,5		2,7	12,45
48	4,8	12,5	7,5	5,2	5,8	6,5	19	3,35	1,6	5	4,5	18,6
56	5,6	14	9	6	6,6	7,5	22	3,8	2		6,3	24,9
64	6,4	16	10	6,8	7,5	8,5	25	4,3		6	11,3	31,2

<sup>a</sup> In accordance with ISO 2020-1

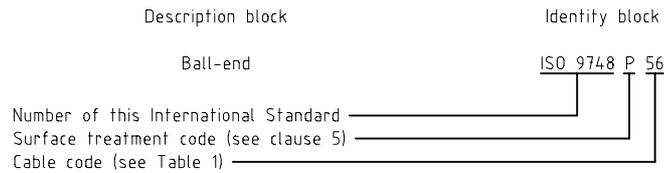
## 5 Surface treatment

Passivation (code P) in accordance with ISO 8074 or peening (code G) (in accordance with annex A).

## 6 Designation

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

EXAMPLE



## 7 Marking

In addition to the manufacturer's own marking, the packaging only shall be marked using the identity block as defined in clause 6.

The marking method is at the manufacturer's option.

## 8 Technical specification

In accordance with ISO 10955.

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## 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 ball-ends specified in this International Standard are respected.

**Table A.1 — European standards**

Code	Material		Surface treatment	
	Family	Standard	Nature	Standard
No code	Corrosion-resistant steel	EN 2465	Passivation	ISO 8074
			Peening	SAE AMS 2431/6A

**Table A.2 — U.S. standards**

Code	Material		Surface treatment	
	Family	Standard	Nature	Standard
No code	Corrosion-resistant steel	SAE AMS 5639 or SAE AMS 5641	Passivation	ISO 8074
			Peening	SAE AMS 2431/6A