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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Aircraft — Non-metallic pulleys with ball bearings for control cables — Dimensions and loads

*Aéronefs — Poulies non métalliques à roulements à billes pour câbles de commande —
Dimensions et charges*

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Reference number
ISO 7939 : 1988 (E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7939 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Aircraft — Non-metallic pulleys with ball bearings for control cables — Dimensions and loads

1 Scope and field of application

This International Standard specifies the requirements for non-metallic-bodied pulleys for aircraft control cables and incorporating ball bearings conforming to ISO 7938. The pulleys shall only be used within the temperature range from $-54\text{ }^{\circ}\text{C}$ to $+100\text{ }^{\circ}\text{C}$.

2 References

ISO 2020, *Aerospace — Mechanical system parts — Preformed flexible steel wire rope for aircraft controls — Technical specification.*

ISO 7938, *Aircraft — Ball bearings for control cable pulleys — Dimensions and loads.*

ISO 7940, *Aerospace — Mechanical system parts — Non-metallic pulleys with ball bearings for aircraft control cables — Technical specification.*¹⁾

3 Description

Each pulley shall consist of a non-metallic body manufactured from material complying with the requirements specified in clause 4, with a metallic bushing and fitted with a ball bearing.

The bushing is left to the manufacturer's discretion and the ball bearing shall conform to ISO 7938. The combination of pulley sizes and ball bearing sizes shall be in accordance with table 3.

4 Pulley body manufacture

The pulley body shall consist of fabric or equivalent reinforcing material, impregnated with a phenolic condensation product, the whole being subjected to a suitable combination of temperature and pressure in order to arrive at a finished product of uniform strength. Only material approved by the qualifying agency shall be used (see table 1).

5 Requirements

5.1 Dimensions

The dimensions and configuration of the pulleys shall conform to the figure and table 2.

5.2 Loads and mass

The starting torque, permissible static radial loads and mass shall comply with the requirements given in table 3.

1) At present at the stage of draft.

6 Designation

Each pulley complying with this International Standard shall be designated as shown in the following example:

Description block		Identity block					
Pulley		ISO 7939	M	S	32	12	E
Number of this International Standard							
Pulley body obtained without any machining (see table 1)							
Corrosion-resisting steel ball bearing (see table 1)							
Pulley size code (see table 2)	Nominal cable diameter						
	Nominal pulley diameter, H						
Ball bearing with seals (see table 1)							

Table 1 – Identification symbols

Description of type		Code letter	
Pulley body	Laminated phenolic with total or partial machining	L	
	Moulded phenolic without any machining	M	
	Moulded phenolic with total or partial machining	N	
Ball bearing	Material	Corrosion-resisting steel	S
		Low alloy steel	F
	Fitted with	Seals	E
		Shields	P

7 Marking

Each pulley shall be permanently marked, in the places shown in the figure, with the manufacturer's own marking and the identity block specified in clause 6.

8 Technical specification

Pulleys supplied as conforming to this International Standard shall comply with the relevant requirements laid down in ISO 7940.

Dimensions in millimetres

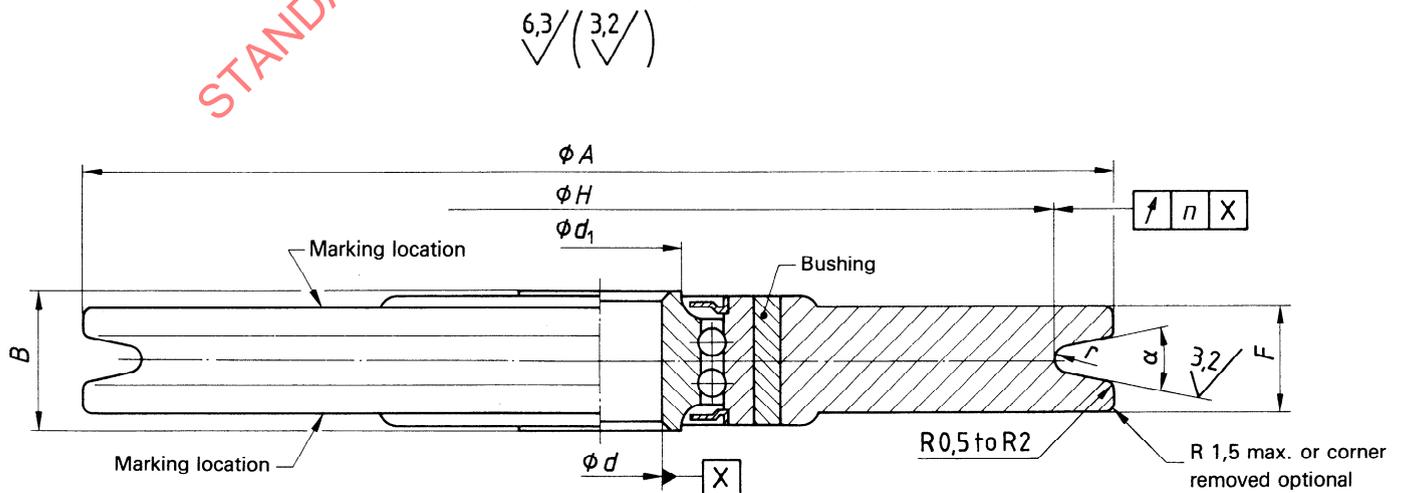


Table 2 — Dimensions

Dimensions in millimetres

Pulley size code	Nominal cable diameter	H		A		F 0 - 0,5	r ± 0,1	α ± 1,5°	d ¹⁾ 0 - 0,008	B ¹⁾ 0 - 0,12	d ₁ ¹⁾ min.	n
		nom.	tol.	nom.	tol.							
1605	1,6	50	+ 0,5 0	58	0 - 0,5	6	1	28°	6	8	8,8	0,25
1606		64		72								0,3
2406 ²⁾	2,4	80	+ 0,6 0	88	0 - 0,6	8	1,5	22°	8	12	10,6	0,35
2408				90								0,35
3208	3,2	120	+ 0,7 0	130	0 - 0,7	10	1,9	22°	10	14	13,2	0,4
3212				162								
3215	4	120	+ 0,7 0	133	0 - 0,7	11	2,3	22°	12	16	15,5	0,5
4012				163								
4015	4,8	150	+ 0,7 0	163	0 - 0,7	12	2,8	22°	15	17	16	0,4
4812				163								0,5
4815	5,6	120	+ 0,7 0	136	0 - 0,7	14	3,3	22°	15	18	17,7	0,4
5612 ³⁾				166								0,5
5615 ³⁾	6,4	150	+ 0,7 0	166	0 - 0,7	14	3,3	22°	15	18	17,7	0,5
6415 ³⁾				196								0,6
6418 ³⁾	6,4	180	+ 0,8 0	196	0 - 0,8	14	3,7	22°	15	18	17,7	0,6
6418 ³⁾				196								0,6

- 1) For reference purposes only (see ISO 7938).
- 2) Pulley used only for cable having 7 strands of 19 wires.
- 3) Bearing without cage.

NOTE — Dimensions not quoted are left to the manufacturer's discretion.

Table 3 — Mechanical requirements

Pulley size code	Maximum starting torque		Permissible static radial load ¹⁾ C _R	Mass ≈ g	Bearing size code
	Code				
	P	E			
1605	1,1	1,65	2,6	25	0608
1606				35	
2406	2	3	5,4 ²⁾	55	0812
2408				65	
3208	3,5	5	10,8	80	1014
3212				145	
3215	4	6	14,9	220	1216
4012				165	
4015	4,8	6	22,4	240	1217
4812				175	
4815	5,6	10,5	29,9	260	1518
5612				205	
5615	7	10,5	37,2	300	1518
6415				400	
6418	400				

- 1) For cable wrapped to 180° (see ISO 7940).
- 2) Based on the strength of 7 × 19 carbon steel wire rope (see ISO 2020).

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