

INTERNATIONAL
STANDARD

ISO
8845

First edition
1994-12-15

**Small craft with inboard engine —
Propeller shaft ends and bosses with
1:16 taper**

*Navires de plaisance à moteur intérieur — Extrémités d'arbres
porte-hélices et moyeux d'hélices avec une conicité de 1:16*



Reference number
ISO 8845:1994(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 voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8845 was prepared by Technical Committee ISO/TC 188, *Small craft*.

Annex A of this International Standard is for information only.

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Introduction

This International Standard, while accepting the ultimate adoption of metric shaft diameters (see [1]), nevertheless proposes to continue use of the long-existing and high production shaft taper of 1:16.

The 1:16 taper has been used in the production of the majority of propellers and shafts for many years, and it has been effectively demonstrated by available industry statistics that this is still the present situation.

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Small craft with inboard engine — Propeller shaft ends and bosses with 1:16 taper

1 Scope

This International Standard specifies the dimensions for interchangeability of propeller bosses (hubs) and propeller shaft ends in the shaft diameter range of 20 mm to 160 mm with a taper of 1:16, intended for installation in inboard-engined recreational and commercial small craft.

NOTE 1 This International Standard is intended for all new metric dimension propeller shafts and mating metric dimension propeller bosses with 1:16 taper. For replacement shafts and propellers with inch-based dimensions, SAE J 755 may be appropriate.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/R 773:1969, *Rectangular or square parallel keys and their corresponding keyways (Dimensions in millimetres)*.

ISO 1947:1973, *System of cone tolerances for conical workpieces from $C = 1:3$ to $1:500$ and lengths from 6 to 630 mm*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 nominal diameter: Diameter of the large end of the shaft end taper.

NOTE 2 This is the same as the diameter of the cylindrical shaft, ignoring tolerances.

3.2 taper: Conical portion of the shaft end designed to accommodate a key to transmit the full propeller shaft torque to the propeller, while allowing for disassembly.

4 Dimensions

The dimensions shall be those shown in figure 1 and table 1.

Configurations shown in figure 1 not specified by dimensions in table 1 are not essential to interchangeability and are therefore left to the discretion of the manufacturer.

5 Construction details

Details indicated in figure 1 are not intended to restrict design; nor are they to scale. Types and methods of construction or machining of the key, the keyway and their corner radii, the thread undercut and the thread end, or of other optional details (i.e. safety pin-hole, centring point, etc.) are left open for individual methods to comply with the configuration of the coupling and/or particular needs.

The length of the thread l_4 shall be equal to or greater than thread diameter d_2 . The part of the thread engaged by the propeller nut shall be not less than 80 % of the thread length l_4 .

6 Threads

Propeller locknuts and shaft ends shall use Metric Fine screw threads.

7 Tolerances

7.1 Shaft end taper small diameter, d_1

The tolerances shall be as given in table 1. The tolerance deviations are calculated from the nominal diameter.

7.2 Boss taper large diameter, D

The tolerances shall be as given in table 1.

7.3 Cone angle

The tolerances shall be cone diameter tolerances as in ISO 1947 with tolerance ranges equal to the diam-

eter tolerance ranges specified in 7.1 and 7.2 for diameters d_1 and D respectively.

7.4 Keyways and keys

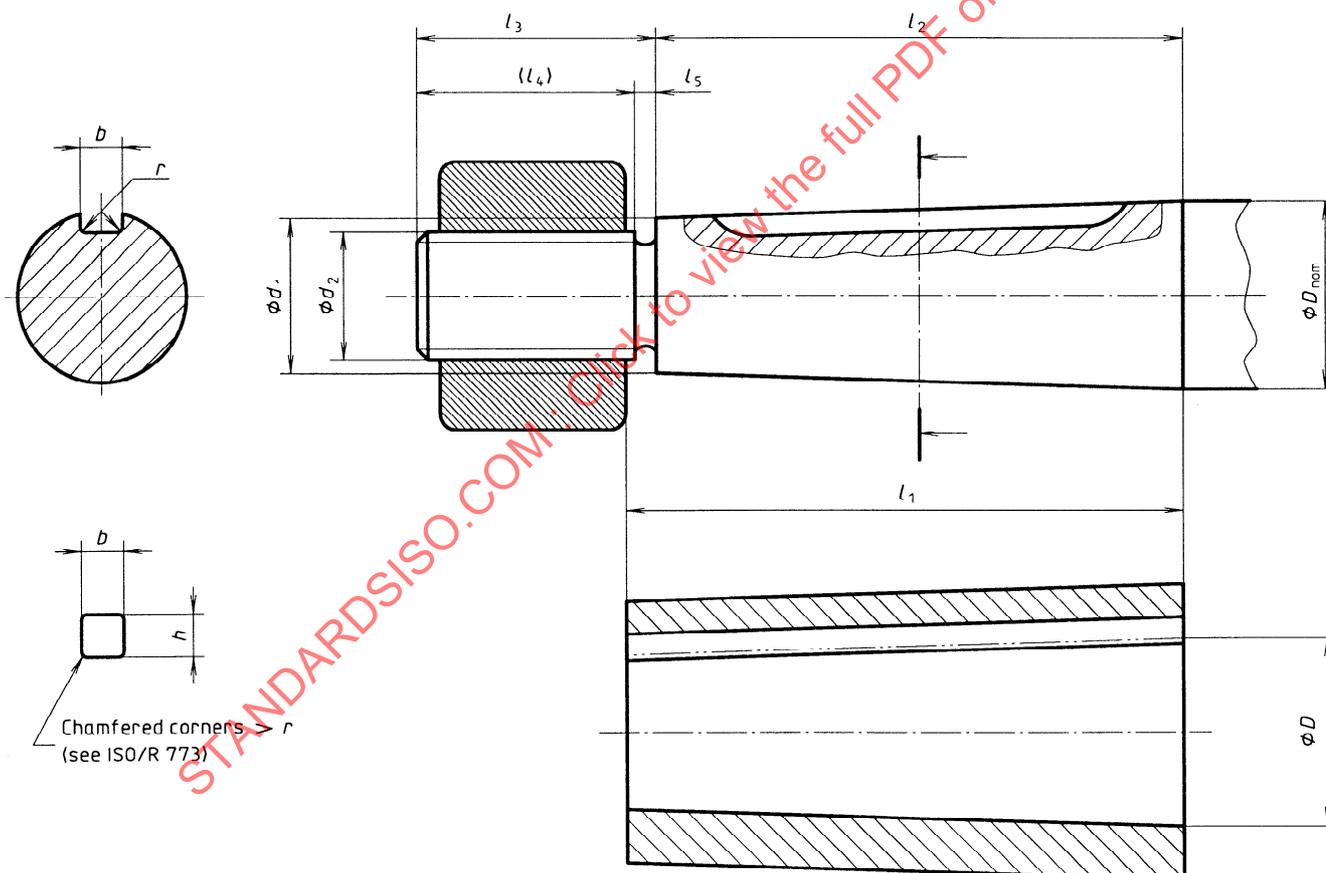
The tolerances shall be those given for normal keys in ISO/R 773.

8 Designation

Both propeller shafts and bosses constructed in accordance with these requirements shall be designated by a reference to this International Standard and the nominal diameter, in millimetres.

EXAMPLE

Propeller boss ISO 8845 - 80



NOTE — l_4 (thread length) $\geq d_2$

Part of thread engaged by nut $\geq 0,8d_2$. See clause 5.

Figure 1

Table 1

Dimensions in millimetres

Nominal shaft diameter ¹⁾ D_{nom}	Boss (hub)			Shaft end taper			Thread				Key	
	Length l_1	Bore bigger diameter D		Small diameter d_1		Taper length l_2	Diameter ¹⁾ d_2	Pitch P	Undercut l_5	Threaded end length l_3	Height h	Width b
		max.	min.	max.	max.							
20	59	20,000	20,052	16,702	16,650	54	14	1,5	4	25	6	6
25	73	25,000	25,052	20,712	20,672	68	16	1,5	4	25	7	8
30	89	30,000	30,052	24,827	24,775	84	20	1,5	4	30	7	8
35	104	35,000	35,062	28,889	28,837	99	24	2	4	35	8	10
40	119	40,000	40,062	32,952	32,900	114	24	2	4	35	8	12
45	134	45,000	45,062	37,024	36,962	129	30	2	5	40	9	14
50	149	50,000	50,062	41,087	41,025	144	36 (30)	3	5	45	9	14
(55)	164	55,000	55,074	45,161	45,087	159	36	3	5	45	10	16
60	182	60,000	60,074	49,224	49,150	177	42	3	5	55	11	18
(65)	190	65,000	65,074	53,486	53,412	185	42	3	5	55	11	18
70	205	70,000	70,074	57,549	57,475	200	48	3	7	60	12	20
(75)	220	74,500	74,574	61,611	61,537	215	48	3	7	60	12	20
80	235	79,500	79,574	65,674	65,600	230	56	4	10	70	14	22
(85)	250	84,500	84,587	69,749	69,662	245	56	4	10	70	14	22
90	265	89,500	89,587	73,812	73,725	260	64 (56)	4	10	75	14	25
(95)	280	94,500	94,587	77,874	77,787	275	64 (56)	4	10	75	14	25
100	295	99,000	99,087	81,937	81,850	290	72 (64)	4	10	85	16	28
110	305	109,000	109,087	93,694	93,612	300	80 (72)	4	10	90	16	28
120	315	119,000	119,087	102,137	102,050	310	90 (80)	4	10	95	18	32
130	325	129,0	129,1	110,575	110,488	320	100 (90)	4	10	105	18	32
140	350	139,0	139,1	119,102	118,925	345	100 (90)	4	10	105	20	36
150	380	149,0	149,1	119,837	119,750	375	110 (100)	4	13	115	20	36
160	410	159,0	159,1	127,757	127,670	405	120 (110)	4	13	125	22	40

1) Diameters in brackets are non-preferred.

Annex A

(informative)

Bibliography

NOTE 3 The following standards are not referred to in this International Standard, but have been taken into account in its preparation.

[1] ISO 4566:1992, *Small craft with inboard engine — Propeller shaft ends and bosses with 1:10 taper.*

[2] ISO 4759-1:1978, *Tolerances for fasteners — Part 1: Bolts, screws and nuts with thread diameters between 1,6 (inclusive) and 150 mm (inclusive) and product grades A, B and C.*

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