BRITISH STANDARD AEROSPACE SERIES

BS A 328-2: 1999
ISO 8399-2: 1998

Accessory drives and mounting flanges (Metric sizes) —

Part 2: Dimensions

ICS 49.035; 49.050

National foreword

This British Standard reproduces verbatim ISO 8399-2:1998 and implements it as the UK national standard.

The UK participation in its preparation was entrusted to Technical Committee ACE/14, Aerospace details and parts, which has the responsibility to:

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— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, page ii, pages 1 to 10 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 February 1999

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INTERNATIONAL STANDARD

ISO 8399-2

First edition
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Aerospace — Accessory drives and mounting flanges (Metric series) —

Part 2: Dimensions

Aéronautique et espace — Fixation et entraînement des équipements (série métrique) —

Partie 2: Dimensions

Reference number
ISO 8399-2:1998(E)

Foreword

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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 8399-2 was prepared by Technical Committee ISO/TC 20, *Aerospace,* Subcommittee SC 12, *Mechanical system parts.*

ISO 8399 consists of the following parts, under the general title *Aerospace — Accessory drives and mounting flanges (Metric series):*

— *Part 1: Design criteria;*

— *Part 2: Dimensions.*

Descriptors: Aircraft industry, mechanical drives, gear boxes, accessories, retaining flanges, couplings, form specifications, dimensions.

1 Scope

This part of ISO 8399 specifies the dimensions of couplings for accessory drives and mounting flanges with quick attach/detach provisions primarily intended for use in aircraft gearboxes and engine accessories.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8399. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8399 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 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*

ISO 1302:1992, *Technical drawings — Method of indicating surface texture.*

ISO 2768-1:1989, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications.*

ISO 3601-1:1988, *Fluid systems — Sealing devices — O-rings — Part 1: Inside diameters, cross-sections, tolerances and size identification code.*

ISO 4156:1981, *Straight cylindrical involute splines — Metric module, side fit — Generalities, dimensions and inspection.*

ISO 4287:1997, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters.*

ISO 8399-1:1998, *Aerospace — Accessory drives and mounting flanges (Metric series) — Part 1: Design criteria.*

ISO 13715:1994, *Technical drawings — Corners — Vocabulary and indication on drawings.*

3 Dimensions

3.1 Configuration and dimensions

The configuration of the accessory and engine or gearbox flanges is shown in Figure 1. The dimensions shall be as specified in Figure 1 and Table 1; other dimensions indicated in the details in Figure 1 shall be as specified in Figure 2 to Figure 5 and Table 2 to Table 4.

Corners are indicated in the figures in accordance with ISO 13715.

3.2 Misalignment

See ISO 8399-1:1998, subclause **6.3**.

3.3 Surface roughness

The surface roughness values according to ISO 4287, specified in the figures in accordance with ISO 1302, apply after surface treatment. However, it is permitted to double the value of the surface roughness specified in the figures for the sealing surfaces for aluminium alloy parts.

3.4 Limit deviations and fits

Limit deviations and fits are in accordance with ISO 286-2. For values without indication of limit deviations, class ISO 2768-m applies.

4 Spigot

4.1 Dimensions

The dimensions for the spigot (accessory flange and engine or gearbox flanges) shall be as shown in Figure 1 and as specified in Table 1.

4.2 Sealing of spigot seal groove

The radial compression on the cross-section and the stretch during assembly allowed for in this part of ISO 8399 are based on nitrile, fluorocarbon and silicon elastomers having a stretch capability of 80 % and a hardness value between 70 IRHD and 80 IRHD. It may be necessary to modify the groove and land dimensions if another material is used.

5 Locating of flanges

5.1 Locating pin

The dimensions for locating pins for flanges shall be as specified in Table 2 and as shown in figures

— 1 and 2 a) for accessory flanges, and

— 3 and 2 b) for engine or gearbox flanges.

5.2 Transfer tube and transfer tube seal

The dimensions for transfer tubes and transfer tibe seals for spigot size code greater than or equal to 075, shall be as shown in figures

— 1 and 3 a) for accessory flanges

— 1 and 3 b) for engine or gearbox flanges.

The O-rings for transfer tube seals shall have an inside diameter of (6,9 ± 0,14) mm and a cross-section diameter of (1,8 ± 0,08) mm.

NOTE The O-ring and groove dimensions are in accordance with ISO 3601-1 and ISO 3601-2:—, *Fluid power systems — O-rings — Part 2: Design criteria for standard applications.*[1)]

[1)] To be published.

6 Involute spline

6.1 Characteristics

The internal and external involute splines shall be in accordance with ISO 4156 and have the following characteristics:

— number of teeth, Z: according to Table 4 and Table 5;

— module, m: according to Table 4 and Table 5;

— pressure angle, α: 30°;

— fillet root;

— tolerance class: 5;

— fit class: H/d[2)];

— side fit.

6.2 Lengths and associated dimensions of involute splines

6.2.1 *Splines not lubricated by gearbox oil*

The lengths and associated dimensions of unlubricated splines shall be as specified in Table 3 and as shown in figures

— 4 a) for external involute splines on accessory flanges, and

— 4 b) for internal involute splines on engine or gearbox flanges.

6.2.2 *Spline lubricated by the oil of gearbox*

The lengths and associated dimensions of lubricated involute splines shall be as specified in Table 4 and as shown in figures

— 5 a) for external involute splines on accessory flanges, and

— 5 b) for lubricated internal involute splines on engine or gearbox flanges.

[2)] Other values may be defined according to the design of the driving end to obtain a loose fit.

Dimensions in millimetres
Surface roughness values in micrometres

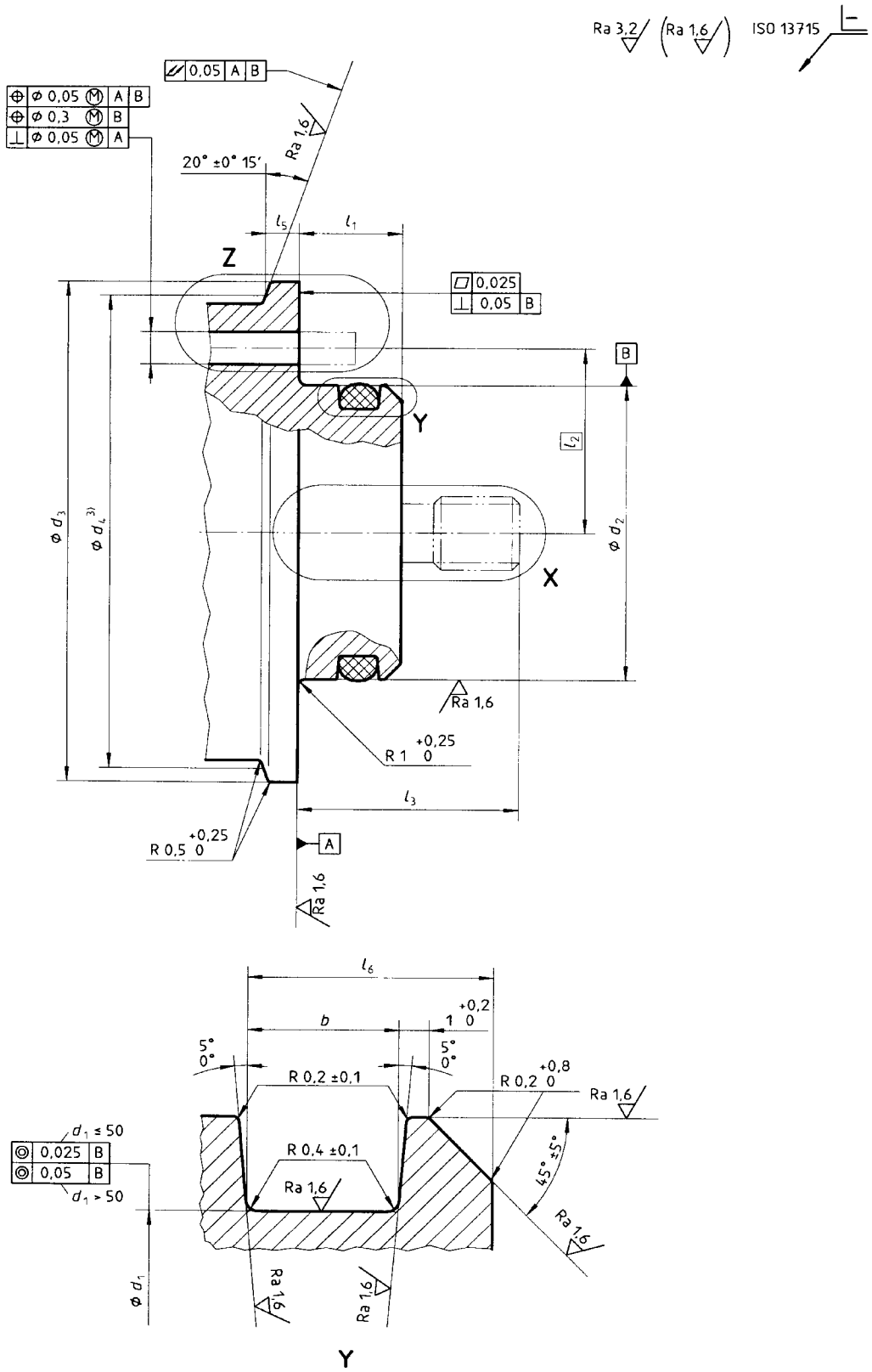
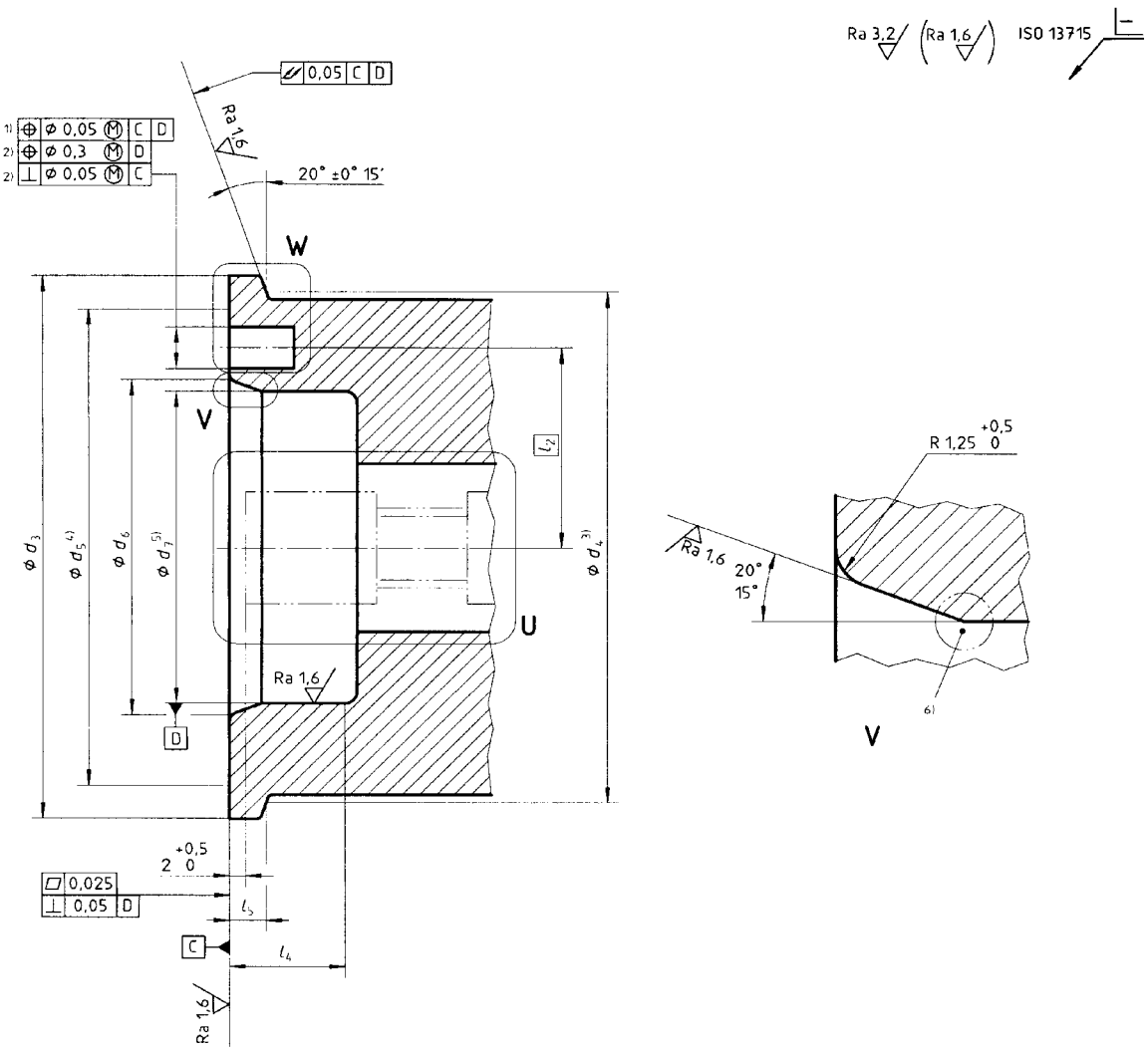


Figure 1 — Configuration and dimensions of accessory and engine or gearbox flanges



Details

U – See figures 4 b) and 5 b)

W – See figures 2 b) and 3 b)

X – See figures 4 a) and 5 a)

Z – See figures 2 a) and 3 a)

1) For spigot size less than or equal to 062.

2) For spigot size greater than or equal to 075.

3) Control diameter for length l_5.

4) Bearing surface to collar checked over this diameter.

5) Applies to depth l_4.

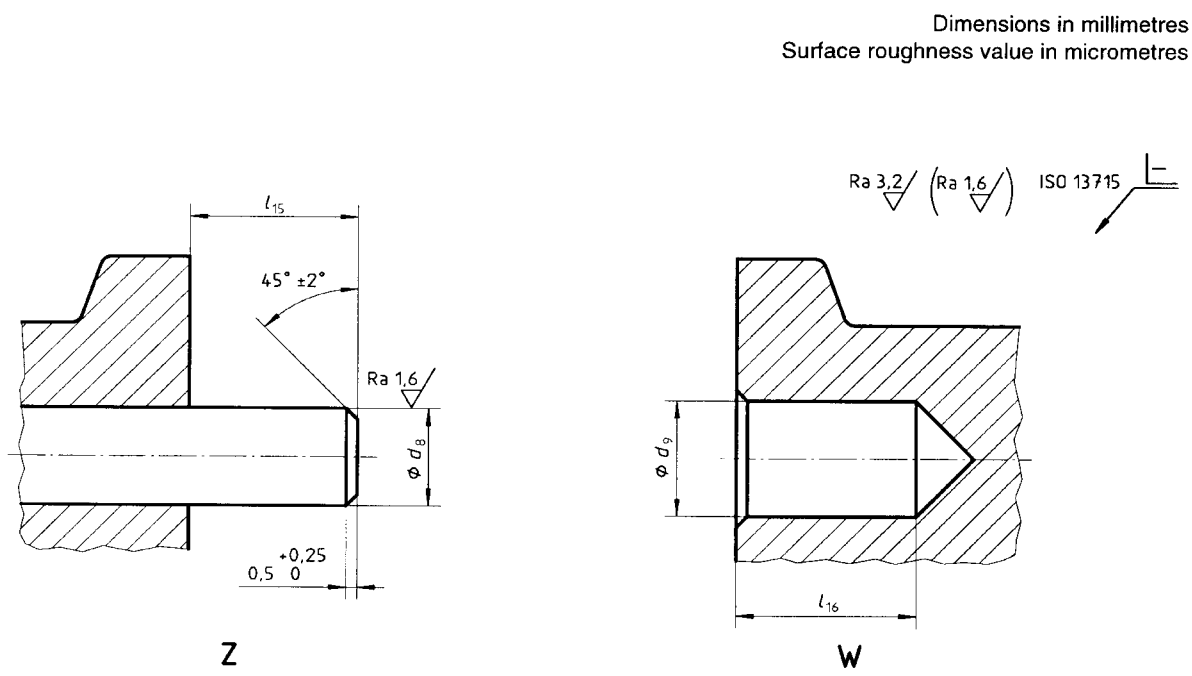
6) No burrs permitted in this area.

Figure 1 — Configuration and dimensions of accessory and engine or gearbox flanges *(concluded)*

Table 1 — Dimensions for accessory and engine or gearbox flanges

Dimensions in millimetres

Spigot size code	d_1		d_2 17	d_3 ± 0,25	d_4	d_5	d_6 +0,36 0	d_7 +0,08 0	l_1 +0,7 0	l_2	l_3 +3 0	l_4 min.	l_5 0 −0,05	l_6 0 −0,7	O-ring		Groove b 0 −0,25
															Inside diameter	Cross section (section diameter)	
040	33,62	0 −0,06	39,1	68	64	60	42	39,1	13	25	29,5	14,25	4,55	8,2	32,5 ± 0,29	3,55 ± 0,1	5,05
050	43,82		49,3	78	74	70	52	49,3		30	31				42,5 ± 0,36		
062	56,12		61,6	91	87	83	64	61,6		36,5	33,5				54,5 ± 0,42		
075	69,02		74,5	119	115	109	77	74,5	14	45,55	36,5	16,75	5,55	10	67 ± 0,49		
088	82,32		87,8	134	130	124	90	87,8		53	38				80 ± 0,56		
106	100,22		105,7	150	146	140	108	105,7		61	41,5				97,5 ± 0,66		
118	112,12		117,6	162	158	152	120	117,6		67	44,5				109 ± 0,72		
137	131,52		137	184	180	174	139	137		78	49				128 ± 0,83		
160	154,12		159,6	204	200	194	162	159,6		88	52,5				150 ± 0,95		
186	180,02		185,5	234	230	224	188	185,5		103	59,5				175 ± 1,09		
218	209,24	0 −0,07	217,62	268	264	258	220	217,62		120	63,5				212 ± 1,29	5,30 ± 0,13	7,35
257	248,24		256,62	309	305	299	259	256,62		140,5	71,5				250 ± 1,49		



a) Locating pin for accessory flanges

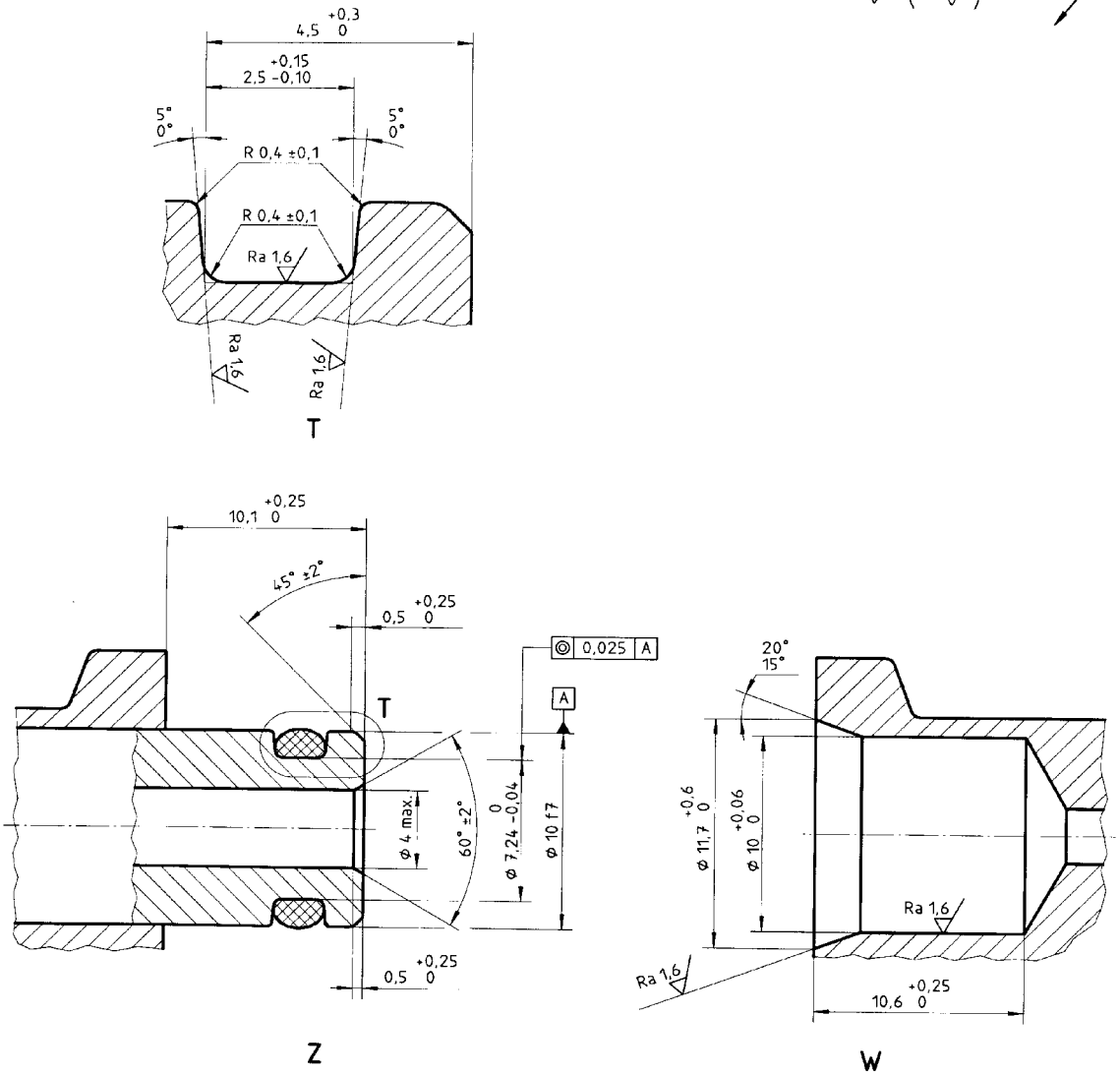
b) Socket on engine or gearbox flange for use with accessory flanges having a locating pin

Figure 2 — Configuration and dimensions for accessory and engine or gearbox flanges with locating pins

Table 2 — Dimensions for accessory and engine or gearbox flanges with locating pins

Dimensions in millimetres

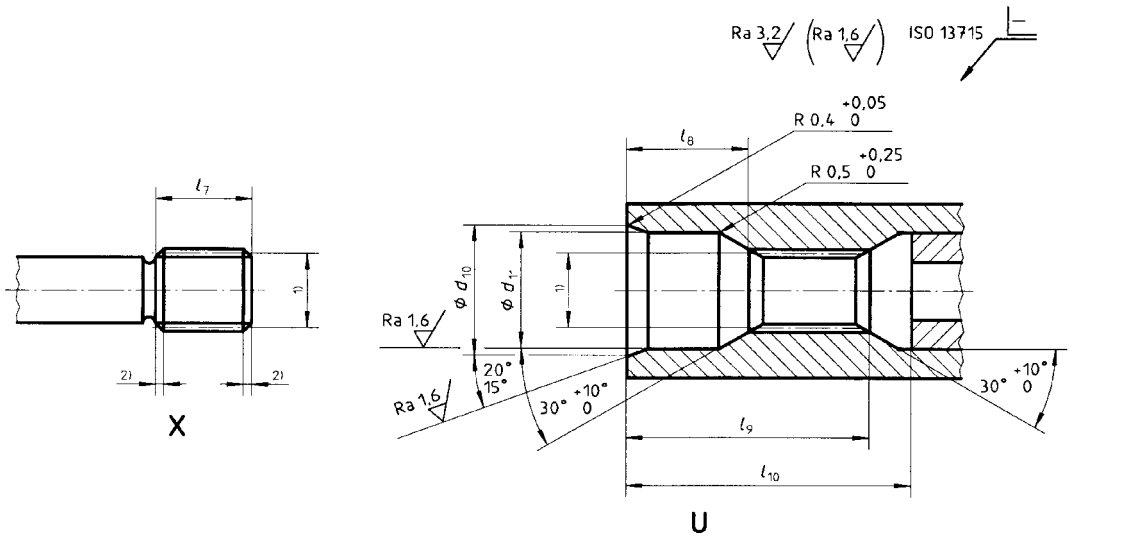
Spigot size code	d_8 **h12**	d_9 **H14**	l_{15} $^{0}_{-0,05}$	l_{16} min.
040	4,38	5,2	7,5	8
050				
062				
075	6,88	7,7	10,5	11
088				
106				
118				
137				
160				
186				
218				
257				



a) Transfer tube and transfer tube seal for accessory flanges

b) Socket on engine or gearbox flanges for use with accessory flanges having a transfer tube

Figure 3 — Configuration and dimensions for transfer tubes



a) External involute spline on accessory flanges **b) Internal involute spline on engine or gearbox flanges**

1) Reference pitch diameter. In accordance with ISO 8399-1, the accessory shall be capable of being operated satisfactorily with the pitch diameter of the spline on its input shaft displaced by a maximum of 0,15 mm from the spigot diameter.

2) Chamfer $0{,}8m \times 45° \pm 5°$ to $1{,}2m \times 45° \pm 5°$.

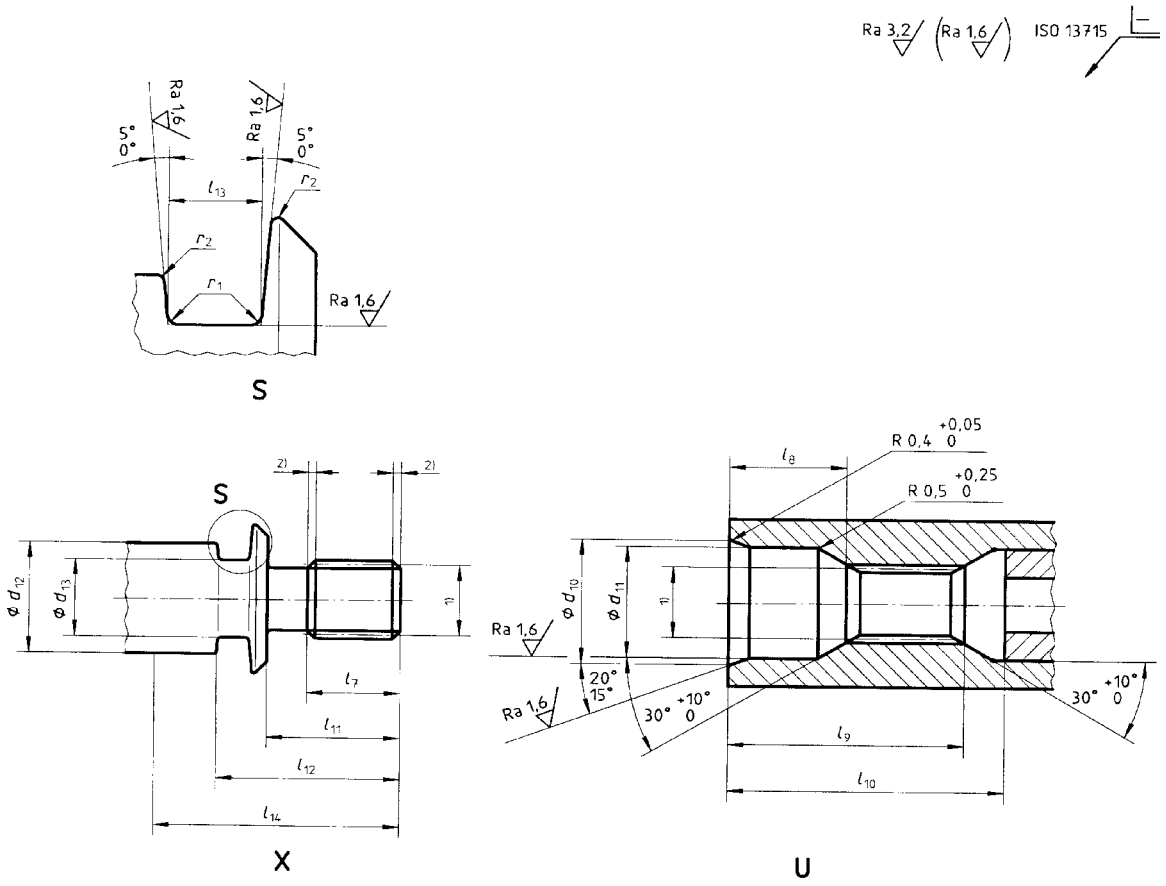
Figure 4 — Configuration and dimensions for unlubricated involute splines

Table 3 — Lengths and associated dimensions for unlubricated involute splines

Dimensions in millimetres

Code	Number of teeth Z	Module m	d_{10} $^{+0,8}_{0}$	d_{11} $^{+0,1}_{0}$	l_7 min.	l_8 $^{+0,2}_{0}$	l_9 min.	l_{10} min.
A	10	1	15,93	14,08	11,5		29	32
B	12		18,3	16,45	13	14,4	30,5	33,5
C	12		20,55	18,7	15		33	36
D	14		25,25	23,12	16,5		36	39
E	16	1,25	27,3	25,17	18		37,5	40,5
F	20		32,03	29,9	21,5		41	44
G	24		36,53	34,4	24,5		44	47
H	24		43,21	41,08	28,5	15,9	48,5	51,5
J	28		48,85	46,72	32		52	55
K	34	1,5	57,77	55,54	38		58	61
L	38		63,85	61,60	42		62	65
M	46		76,75	74,50	50		70	73

Dimensions in millimetres
Surface roughness values in micrometres



a) External involute splines on accessory flanges[3)] **b) Internal involute splines on engine or gearbox flanges**

1) Reference pitch diameter. In accordance with ISO 8399-1, the accessory shall be capable of being operated satisfactorily with the pitch diameter of the spline on its input shaft displaced by a maximum of 0,15 mm from the spigot diameter.
2) Chamfer $0{,}8m \times 45° \pm 5°$ to $1{,}2m \times 45° \pm 5°$.
3) The seal used shall be selected from ISO 3601-1:1988, series B and C.

Figure 5 — Configuration and dimensions for lubricated involute splines

Table 4 — Lengths and associated dimensions for lubricated involute splines

Dimensions in millimetres

Code	Number of teeth	Module	d_{10}	d_{11}		d_{12}	d_{13}		l_7	l_8	l_9	l_{10}	l_{11}	l_{12}	l_{13}	l_{14}[b]	r_1		r_2		O-ring	
	Z	m	$^{0}_{-0,5}$			f7			min.	$^{+0,2}_{0}$	min.	min.	$^{0}_{-0,25}$	$^{+0,2}_{0}$	$^{0}_{-0,25}$	min.	min.	max.	min.	max.	Ref.[a]	Section diameter
A	10	1	15,93	14,04		14,04	9,9		11,5		29	32	16,5	22,6		31					B0095A	
B	12		18,3	16,4	$^{+0,07}_{0}$	16,4	12,26	$^{0}_{-0,05}$	13	14,4	30,5	33,5	18	24,1	3,85	32	0,4	0,8	0,1	0,3	B0118A	2,65 ± 0,09
C		1,25	20,55	18,7		18,7	14,56		15		33	36	20,5	26,6		35					B0140A	
D	14		25,25	23,1		23,1	17,62		16,5		36	39	22	29,3		37					C0170A	
E	16		27,22	25,2		25,2	19,72		18		37,5	40,5	23,5	30,8		39					C0190A	
F	20		32	29,9		29,9	24,42		21,5		41	44	27	34,3		42					C0230A	
G	24		36,5	34,4		34,4	28,92		24,5		44	47	30	37,3		45					C0280A	
H	24		43,25	41,1	$^{+0,08}_{0}$	41,1	35,62	$^{0}_{-0,06}$	28,5	15,9	48,5	51,5	34,5	41,8	5,05	50	0,4	0,8	0,1	0,3	C0345A	3,55 ± 0,10
J	28		48,85	46,7		46,7	41,22		32		52	55	38	45,3		53					C0400A	
K	34	1,5	57,8	55,6		55,6	50,12		38		58	61	44	51,3		59					C0487A	
L	38		63,85	61,6		61,6	56,12		42		62	65	48	55,3		63					C0545A	
M	46		76,75	74,5		74,5	69,02		50		74	77	60	67,3		75					C0670A	

[a] In accordance with ISO 3601-1.
[b] The shaft shear section shall not be located in this area or in other areas where its failure could jeopardize the fluid sealing feature.

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