

Specification for

Jig and fixture components

UDC 621.753.4:621 – 229

NO COPYING WITHOUT BSI PERMISSION EXCEPT AS PERMITTED BY COPYRIGHT LAW



Document Sharing Hub

Co-operating organizations

The Mechanical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and professional and industrial organizations:

Associated Offices Technical Committee	Department of Trade and Industry National Engineering Laboratory*
Association of Consulting Engineers	Electricity Supply Industry in England and Wales
Association of Hydraulic Equipment Manufacturers Ltd.	Engineering Equipment Users' Association
Association of Mining Electrical and Mechanical Engineers	Federation of Manufacturers of Construction Equipment and Cranes
British Compressed Air Society	Institution of Gas Engineers
British Electrical and Allied Manufacturers' Association*	Institution of Heating and Ventilating Engineers
British Gas Corporation	Institution of Mechanical Engineers*
British Gear Manufacturers' Association	Institution of Plant Engineers
British Internal Combustion Engine Manufacturers' Association	Institution of Production Engineers
British Mechanical Engineering Confederation	London Transport Executive*
British Pump Manufacturers' Association	Machine Tool Trades Association*
British Steel Corporation	Ministry of Defence
British Steel Industry	Ministry of Defence, Army Department*
Crown Agents for Oversea Governments and Administrations	National Coal Board
Department of Employment (HM Factory Inspectorate)	Process Plant Association
Department of the Environment	Railway Industries Association of Great Britain
Department of Trade and Industry, ENT	Royal Institute of British Architects
Department of Trade and Industry, Marine Division	Telecommunication Engineering and Manufacturing Association

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

British Railways Board	Society of Motor Manufacturers and Trades Ltd.
Gauge and Tool Makers' Association	

This British Standard, having been approved by the Mechanical Engineering Industry Standards Committee, was published under the authority of the Executive Board on 28 June 1974

© BSI 12-1999

The following BSI references relate to the work on this standard:
Committee reference MEE/142
Draft for comment 72/32530 DC

ISBN 0 580 08363 2

Amendments issued since publication

Amd. No.	Date of issue	Comments

Contents

	Page
Co-operating organizations	Inside front cover
Foreword	iii
1 Scope	1
2 General tolerances	1
3 Threads	1
4 Hexagons	1
5 Knurling	1
6 Finish	1
Table 1 — Small base plates, cast iron	2
Table 2 — Large base plates, cast iron	2
Table 3 — Webbed angle bases, cast iron	3
Table 4 — Sandwich jig bases, cast iron	3
Table 5 — Jig plates, steel	4
Table 6 — Jig plates, cast iron	5
Table 7 — Circular jig plates, steel	6
Table 8 — Circular blanks, steel	7
Table 9 — Circular blanks, cast iron	7
Table 10 — Flanged circular blanks, cast iron	8
Table 11 — Flanged rectangular blanks, cast iron	8
Table 12 — Bolsters, cast iron	9
Table 13 — Circular adaptors, cast iron	9
Table 14 — Rectangular plates, cast iron	10
Table 15 — Square blocks, cast iron	11
Table 16 — Unequal “T” sections, cast iron	12
Table 17 — Unequal “T” sections, heavy duty, cast iron	13
Table 18 — Equal “T” sections, cast iron	14
Table 19 — Equal “T” sections, heavy duty, cast iron	15
Table 20 — Webbed “T” sections, cast iron	16
Table 21 — “L” sections, cast iron	17
Table 22 — “L” sections, heavy duty, cast iron	18
Table 23 — Webbed “L” sections, cast iron	19
Table 24 — “U” sections, cast iron	20
Table 25 — Channel sections, cast iron	21
Table 26 — Hollow rectangular blocks, cast iron	22
Table 27 — Hollow square blocks, cast iron	23
Table 28 — “H” sections, cast iron	24
Table 29 — Latch plate sections, cast iron	25
Table 30 — “V” sections, cast iron	26
Table 31 — Plain clamps, steel	27
Table 32 — Slotted clamps, steel	28
Table 33 — Heavy duty slotted clamps, steel	29
Table 34 — Double ended clamps, steel	30
Table 35 — Swing clamps, steel	31
Table 36 — Parallel clamp plates, steel	32
Table 37 — Wide clamp plates, steel	33
Table 38 — Clamp buttons	34
Table 39 — Fixed heel clamps, steel	35
Table 40 — Adjustable heel pins, steel	36

	Page
Table 41 — Jig foot bolts, steel	37
Table 42 — Jig foot nuts, steel	38
Table 43 — Jig feet, steel	38
Table 44 — Jig feet, screw retained type, steel	39
Table 45 — Thumb nuts, steel	39
Table 46 — Thumb nuts, quick release, steel	40
Table 47 — Tommy bar nuts, steel	41
Table 48 — Domed nuts, steel	42
Table 49 — Spherical seating nuts, steel	43
Table 50 — Collar nuts, steel	44
Table 51 — Coupling extension nuts, steel	45
Table 52 — Spherical seatings and washers, steel	46
Table 53 — Machine knobs, ball type	47
Table 54 — Machine knobs, taper type	48
Table 55 — Captive “C” washers, steel	49
Table 56 — “C” washers, steel	50
Table 57 — Shoulder screws, steel	51
Publications referred to	Inside back cover

Foreword

This British Standard for jig and fixture components has been prepared under the authority of the Mechanical Engineering Industry Standards Committee.

The range of components has been drawn up without elaborations or extensions of any particular design, but is a simple, basic set of essentials required for jig and fixture work. The design of the individual components has been kept as simple and as functional as possible.

Only relevant dimensions for interchangeability and overall sizes have been specified for the components. This, to a certain extent, should allow manufacturers to make the components to their own designs, yet allow complete interchangeability of items made by different manufacturers. Tolerances have been imposed only on component dimensions where interchangeability will be affected, or where special fits are required.

In general, chamfers, radii and other manufacturing necessities have not been dimensioned, these having been left to the discretion of the manufacturer.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 52, an inside back cover 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.

1 Scope

This British Standard specifies dimensions and materials and, where appropriate, tolerances for the following jig and fixture components:

- base and jig plates
- circular and rectangular blanks, bolsters, plates and blocks
- clamps
- clamp buttons, heel pins and jig feet
- sections
- nuts
- spherical seatings and washers
- knobs
- “C” washers
- shoulder screws.

A reference number has been allocated to each individual item to facilitate identification.

NOTE The titles of the British Standards referred to in this standard are listed on the inside back cover.

2 General tolerances

Cast iron sections, with the exception of the end faces, shall be machined to the following tolerances:

squareness	$\pm 1'$
parallelism	0.025 mm/150 mm
tolerance on general dimensions	1 % of nominal.

The ends of sections may be supplied in a sawn condition, but if so, the section shall clean up to within the tolerance for the related size.

3 Threads

All screw threads shall meet the requirements of BS 3643-2 and be to the following thread tolerance class:

tapped holes	6H
studs	4h
other male threads	6g

4 Hexagons

The hexagon sizes shown on any components, unless otherwise stated, are specified for the corresponding thread size of the component as shown in BS 3692.

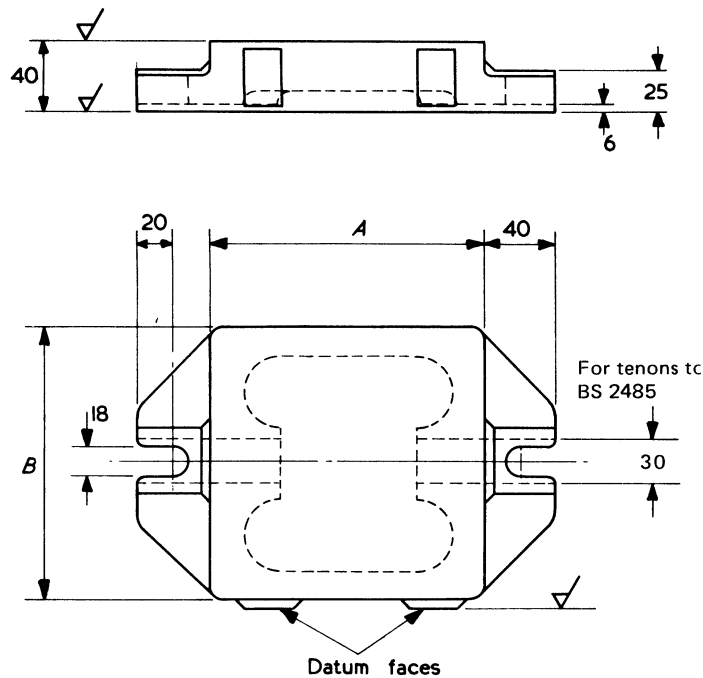
5 Knurling

Knurling on components may be either straight or diamond, as selected by the manufacturer.

6 Finish

Steel components shall be suitably protected against rust, under normal conditions, by plating or by an accepted protective finish, such as phosphate coating in accordance with BS 3189, type 1A or 1B as selected by the manufacturer.

Table 1 — Small base plates, cast iron

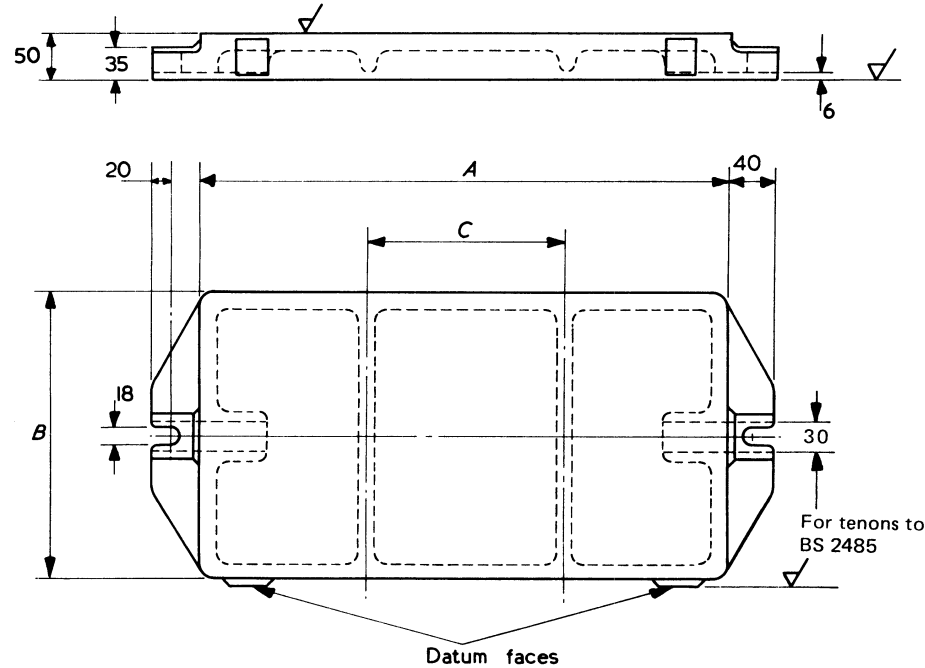


Dimensions in millimetres

1	2	3
Ref. no.	A	B
01-1	160	160
01-2	250	160
01-3	315	200
01-4	250	350
01-5	315	250
01-6	400	250

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 2 — Large base plates, cast iron

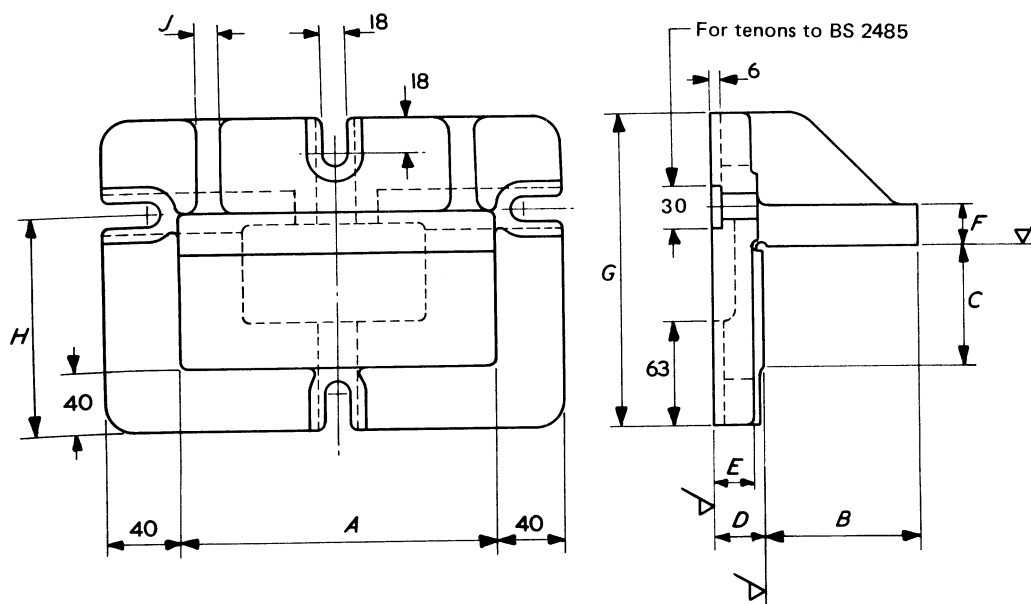


Dimensions in millimetres

1	2	3	4
Ref. no.	A	B	C
02-1	500	250	250
02-2	630	250	315
02-3	630	400	315

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 3 — Webbed angle bases, cast iron



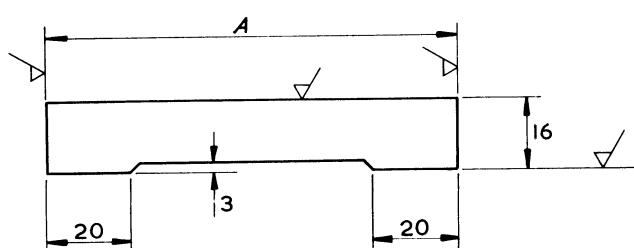
Dimensions in millimetres

1	2	3	4	5	6	7	8	9	10
Ref. no.	A	B	C	D	E	F	G	H	J
03-1	160	80	63	28	22	20	160	112	16
03-2	200	100	80	28	22	22	212	132	20
03-3	250	160	100	35	28	28	280	170	22

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 4 — Sandwich jig bases, cast iron

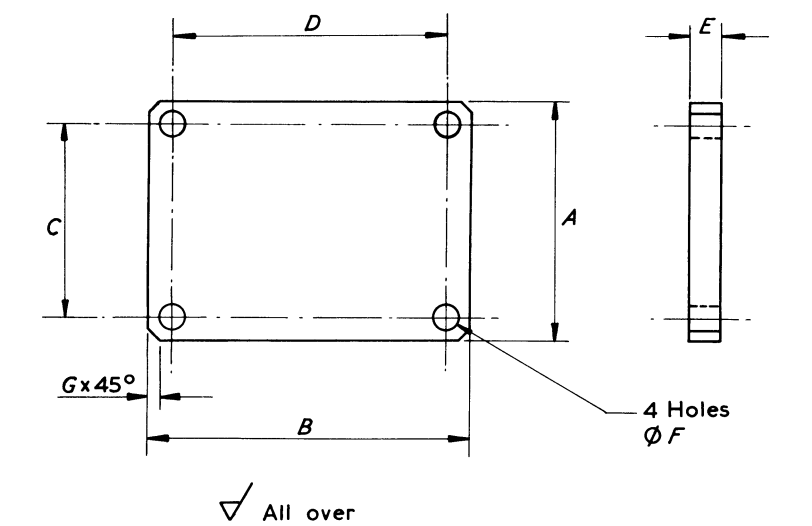
Dimensions in millimetres



1	2	3	4	5	6
Ref. no.	A	Lengths (min.)			
04-1	100	150	305	480	635
04-2	160				
04-3	200				

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 5 — Jig plates, steel



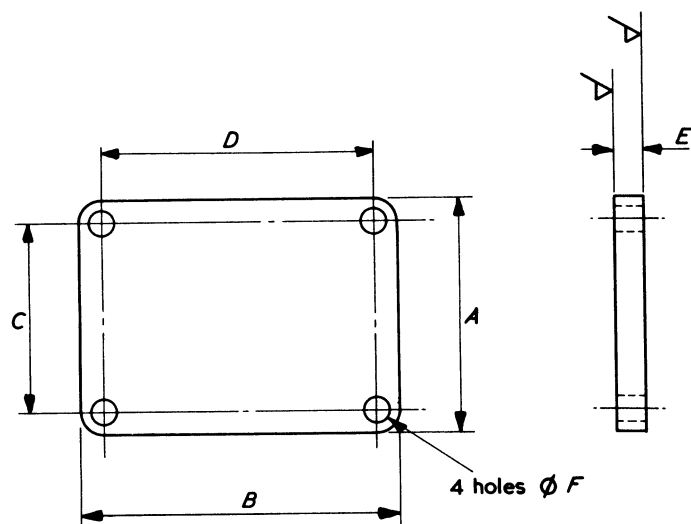
Dimensions in millimetres

1	2	3	4	5	6	7	8
Ref. no.	A	B	C	D	E	Dia. F (H7) ^a	G
05-1	80	100	60	80	12	10	5
05-2	100	100	80	80	12	10	5
05-3	125	125	105	105	12	10	5
05-4	125	160	105	140	16	10	5
05-5	160	160	140	140	16	10	5
05-6	160	200	135	175	20	12	8
05-7	200	200	175	175	20	12	8
05-8	160	250	135	225	20	12	8
05-9	200	250	175	225	20	12	8
05-10	250	250	225	225	20	12	8
05-11	250	315	225	290	22	12	8
05-12	315	315	290	290	22	12	8

^a See BS 4500

Material. Steel to BS 4360, Grade 43A, or suitable alternative.

Table 6 — Jig plates, cast iron

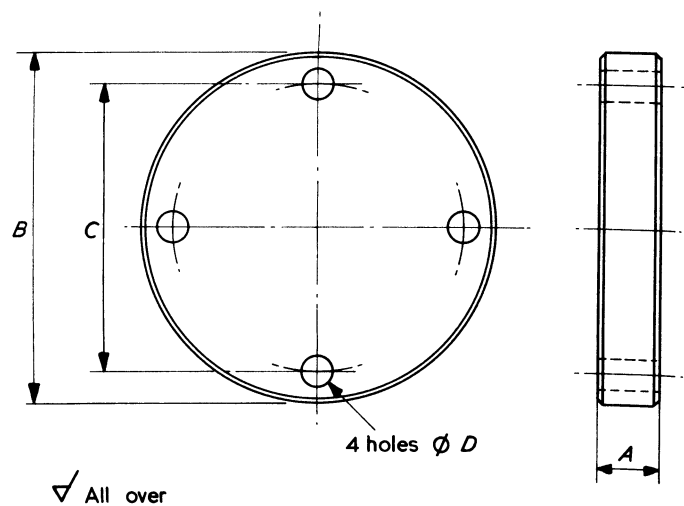


Dimensions in millimetres

1	2	3	4	5	6	7
Ref. no.	A	B	C	D	E	Dia. F (H7) ^a
06-1	90	110	60	80	12	10
06-2	110	110	80	80	12	10
06-3	135	135	105	105	12	10
06-4	135	170	105	140	16	10
06-5	170	170	140	140	16	10
06-6	170	210	135	175	20	12
06-7	210	210	175	175	20	12
06-8	170	260	135	225	20	12
06-9	210	260	175	225	20	12

^a See BS 4500.*Material.* Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 7 — Circular jig plates, steel



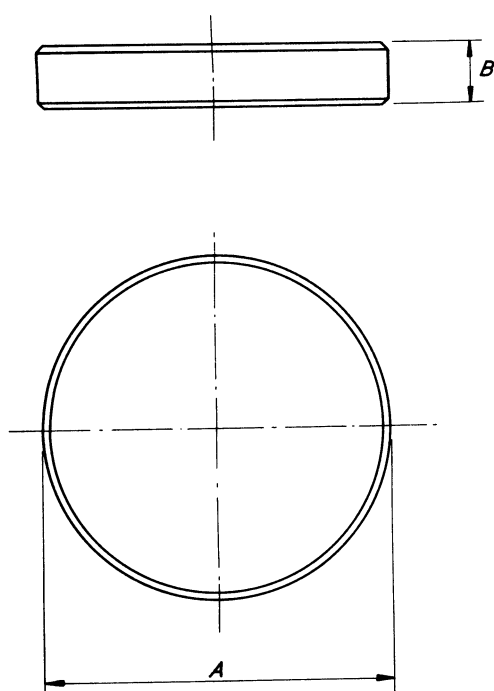
Dimensions in millimetres

1	2	3	4	5
Ref. no.	<i>A</i>	<i>B</i>	P.C.D. <i>C</i>	Dia. <i>D</i> (H7) ^a
07-1	16	100	78	10
07-2	16	125	103	10
07-3	20	160	138	10
07-4	20	200	170	12
07-5	20	250	220	12
07-6	22	315	285	12

^a See BS 4500

Material. Steel to BS 4360, Grade 43A, or suitable alternative.

Table 8 — Circular blanks, steel



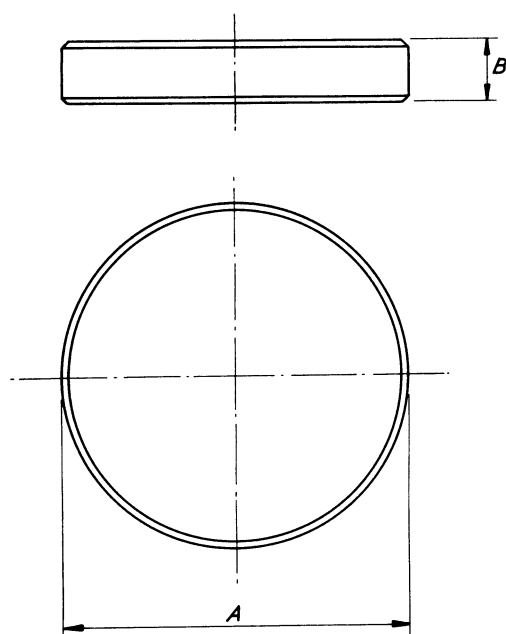
Dimensions in millimetres

1	2	
Ref. no.	A	B
08-1	100	16
08-2	125	16
08-3	160	20
08-4	200	20
08-5	250	20
08-6	315	22
08-7	400	25
08-8	500	25

✓ All over

Material. Steel to BS 4360, Grade 43A, or suitable alternative.

Table 9 — Circular blanks, cast iron



Dimensions in millimetres

1	2	3
Ref. no.	A	B
09-1	63	14
09-2	80	16
09-3	100	20
09-4	125	25
09-5	160	32
09-6	200	32
09-7	200	60
09-8	250	32
09-9	250	60

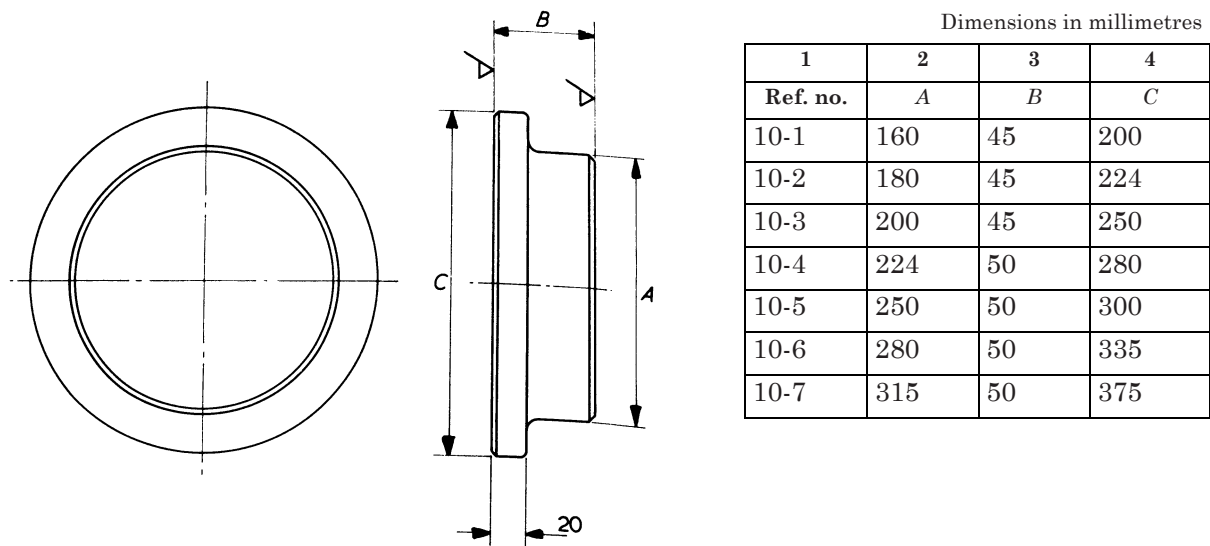
Dimensions in millimetres

1	2	3
Ref. no.	A	B
09-10	315	45
09-11	315	60
09-12	400	45
09-13	400	60
09-14	500	45
09-15	500	60
09-16	630	45
09-17	630	60

✓ All over

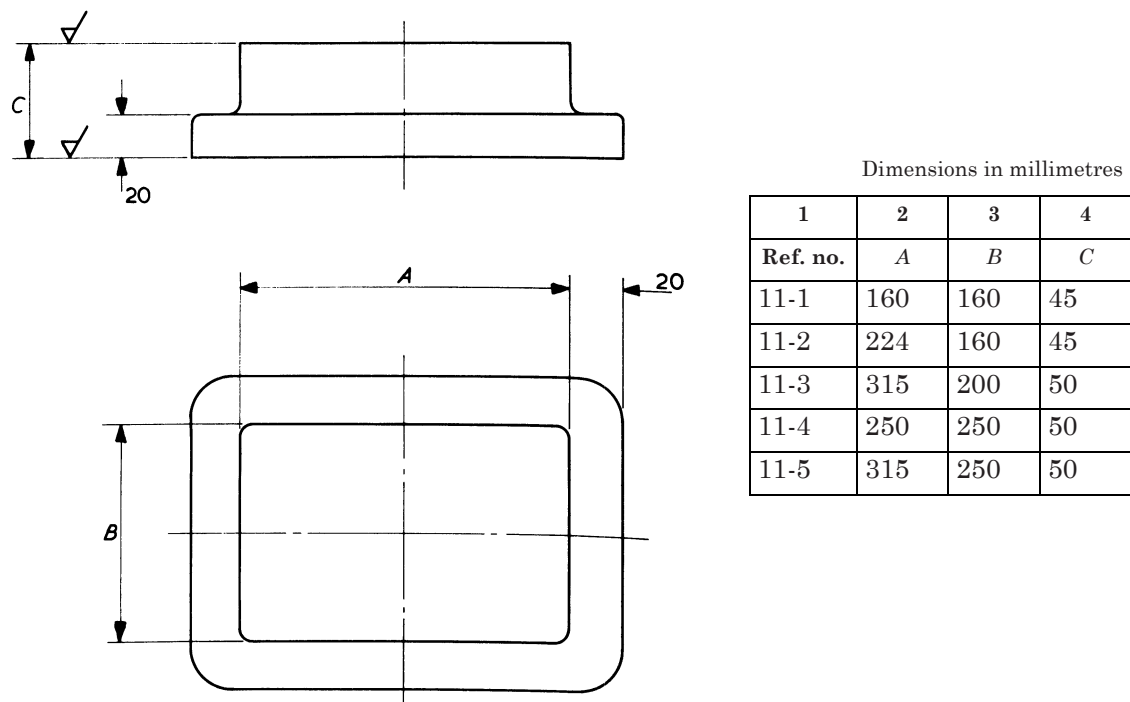
Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 10 — Flanged circular blanks, cast iron



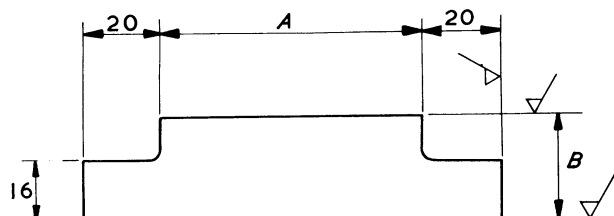
Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 11 — Flanged rectangular blanks, cast iron



Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 12 — Bolsters, cast iron



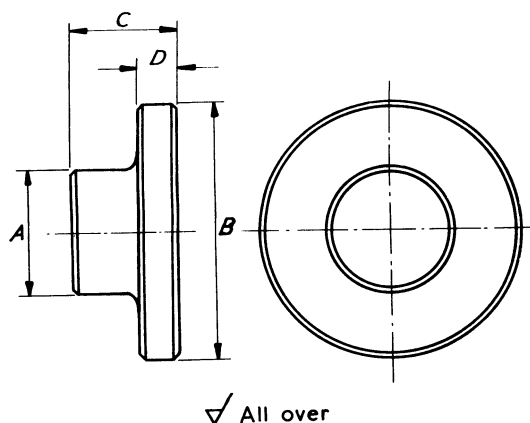
Dimensions in millimetres

1	2	3	4	5	6	7
Ref. no.	A	B	Lengths (min.)			
12-1	80	25	150	305	635	—
12-2	100	25	150	305	635	—
12-3	125	25	150	305	635	—
12-4	160	32	150	305	635	1 000
12-5	200	32	150	305	635	1 000

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 13 — Circular adaptors, cast iron

Dimensions in millimetres

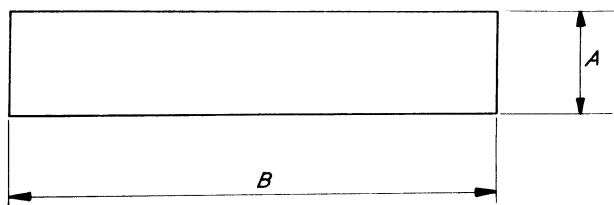


✓ All over

1	2	3	4	5
Ref. no.	A	B	C	D
13-1	100	200	80	32
13-2	100	224	90	40
13-3	100	250	90	40
13-4	160	280	100	40
13-5	160	315	112	40
13-6	160	355	112	40

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 14 — Rectangular plates, cast iron



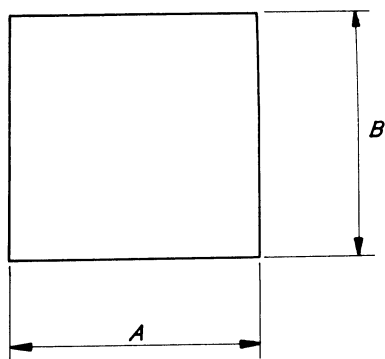
✓ All over
ends cleaned up

Dimensions in millimetres

1	2	3	4	5	6
Ref. no.	A	B	Lengths (min.)		
14-1	12	80	150	305	—
14-2	12	100	150	305	—
14-3	12	125	150	305	—
14-4	12	160	150	305	—
14-5	12	200	150	305	—
14-6	16	80	150	305	—
14-7	20	100	150	305	—
14-8	20	125	150	305	—
14-9	20	160	150	305	—
14-10	20	200	150	305	—
14-11	20	224	150	305	635
14-12	25	160	150	305	635
14-13	32	160	150	305	635
14-14	32	200	150	305	635
14-15	32	250	150	305	635
14-16	40	200	150	305	635
14-17	40	315	150	305	635

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 15 — Square blocks, cast iron



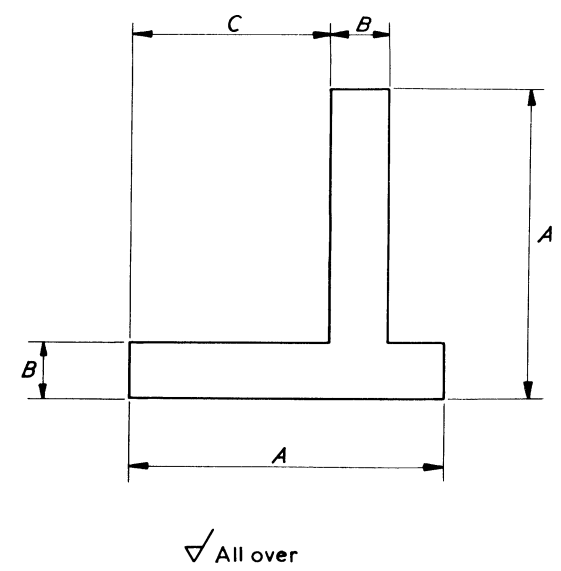
✓ All over
ends cleaned up

Dimensions in millimetres

1	2	3	4	5	6	7	8
Ref. no.	A	B	Lengths (min.)				
15-1	45	45	75	150	230	305	455
15-2	50	50	75	150	230	305	455
15-3	56	56	75	150	230	305	455
15-4	63	63	75	150	230	305	455
15-5	70	70	75	150	230	305	455
15-6	80	80	75	150	230	305	455
15-7	90	90	75	150	230	305	455
15-8	100	100	75	150	230	305	455

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.

Table 16 — Unequal “T” sections, cast iron



Dimensions in millimetres

1	2	3	4	5	6	7	8	9
Ref. no.	A	B	C	Lengths (min.)				
16-1	100	20	63	70	150	225	305	635
16-2	125	20	80	70	150	225	305	635
16-3	160	25	100	70	150	225	305	635
16-4	200	32	125	70	150	225	305	480

Material. Cast iron to BS 1452, Grade 14. To be supplied in a suitably aged condition.