

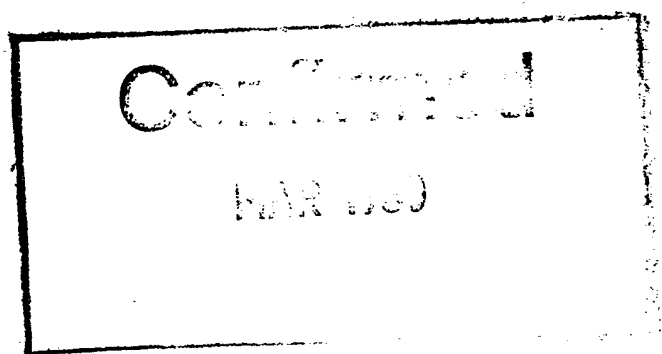
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See the BSI Catalogue for details.
September 1997

BRITISH STANDARD SPECIFICATION

ALUMINIUM RAINWATER GOODS

B.S. 2997 : 1958

Incorporating amendment issued May, 1968 (PD 6403)



THIS BRITISH STANDARD, having been approved by the Hardware and Ironmongery Industry Standards Committee and endorsed by the Chairman of the Building Divisional Council, was published under the authority of the General Council on 6th August, 1958.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 6000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook, which may be purchased from BSI Sales Department. It may also be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standards:

- B.S. 1470 Wrought aluminium and aluminium alloys.
Sheet and strip.
- B.S. 1471 Wrought aluminium and aluminium alloys.
Drawn tube.
- B.S. 1474 Wrought aluminium and aluminium alloys.
Extruded round tube and hollow sections.
- B.S. 1476 Wrought aluminium and aluminium alloys.
Bars, rods and sections.
- B.S. 1490 Aluminium and aluminium alloy ingots and castings.
- B.S. 2465 Aluminium fixing accessories for building purposes.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

The following B.S.I. references relate to the work on this standard:—
Committee reference HIB/20 Draft for comment CX(HIB) 7064

CO-OPERATING ORGANIZATIONS

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

- British Ironfounders' Association
- British Lock and Latch Manufacturers' Association
- British Plastics Federation
- *Building Industry Distributors
 - Cast Butt Hinge Manufacturers' Association
- *Distributors of Building Supplies Joint Council
- *D.S.I.R.—Building Research Station
- *Institution of Municipal Engineers
- *London County Council
 - Metal Window Association
- *Ministry of Housing and Local Government
- *Ministry of Works
 - National Brassfoundry Association
 - National Federation of Building Trade Employers
 - National Federation of Ironmongers
 - National General Export Merchants Group
- *Royal Institute of British Architects
- *Royal Institution of Chartered Surveyors

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:

- Admiralty
- Aluminium Development Association
- Aluminium Industry Council
- Associated Master Plumbers and Domestic Engineers
- Copper Development Association
- Gutter Bracket Manufacturers' Association
- Light Metal Founders' Association
- Royal Society for the Promotion of Health
- Zinc Development Association

BRITISH STANDARD SPECIFICATION FOR ALUMINIUM RAINWATER GOODS

FOREWORD

This British Standard issued under the authority of the Hardware and Ironmongery Industry Standards Committee now covers the whole range of aluminium alloy rainwater goods. It incorporates the requirements for cast, extruded and wrought methods of manufacture hitherto given separately in B.S. 1430 and B.S. 1543 and replaces those two standards.

It has been prepared at the request of, and in accordance with the recommendations of, the Aluminium Industry, in order that the general features of aluminium rainwater goods, including accessories, should be compatible with those of rainwater goods, in other materials, for which British Standards exist, and to ensure the use of suitable alloys.

The requirements for aluminium alloys have now been related to the appropriate British Standards for materials, and therefore it is no longer necessary to give the detailed analysis hitherto appearing in B.S. 1430.

The rainwater pipes detailed in this British Standard are not intended for internal installations.

SPECIFICATION

PART 1. GENERAL REQUIREMENTS

SCOPE

1. This British Standard provides for both round and rectangular gutters, pipes, fittings and suitable accessories made from aluminium alloys by the processes of casting, extruding and fabrication from strip or sheet.

DEFINITIONS

2. For the purpose of this British Standard the following definitions shall apply:

a. Fitting. This term refers to the following articles:

(i) Angles, outlets, stop ends and double socket clips for use with gutters.

(ii) Shoes, offsets, bends, branches, union sockets and rainwater heads for use with pipes.

b. Left-hand ogee gutter or ogee gutter fitting. A gutter or gutter fitting is left-hand if the socket projects to the left when seen from the moulded or splayed side.

c. Right-hand ogee gutter or gutter fitting. A gutter or gutter fitting is right-hand if the socket projects to the right when seen from the moulded or splayed side.

d. Accessory. This term refers to the following articles:

- (i) Gutter brackets.
- (ii) Bolts, nuts and washers.
- (iii) Fixing screws.

e. Aluminium. This term is used in this standard to refer to the relevant alloys. The British Standards for aluminium alloys referred to in this standard are:

- B.S. 1470 Wrought aluminium and aluminium alloys. Sheet and strip.
- B.S. 1471 Wrought aluminium and aluminium alloys. Drawn tube.
- B.S. 1474 Wrought aluminium and aluminium alloys. Extruded round tube and hollow sections.
- B.S. 1476 Wrought aluminium and aluminium alloys. Bars, rods and sections.
- B.S. 1490 Aluminium and aluminium alloy ingots and castings.

MATERIAL

3. Aluminium rainwater goods shall be made from any of the aluminium alloys indicated for the specific items.

Bolts, nuts and washers, fixing screws and other accessories shall be of aluminium. Aluminium fixing accessories shall comply with B.S. 1494 : Part 1*. *As altered May, 1968*

MANUFACTURE AND WORKMANSHIP

4. Gutters, pipes, fittings and accessories shall be true to the dimensions specified on the drawings. The articles shall be soundly constructed and shall be free from harmful defects. Cylindrical pipes will normally be supplied, unless other shapes are specified. Pipes and gutters shall be made in one of the following ways:

- a.* Cast wholly in one piece.
- b.* An extruded or drawn pipe with a cast socket either cast on or attached by other means not less satisfactory.
- c.* An extruded, formed or drawn pipe with a formed socket.
- d.* An extruded gutter with a formed socket.

* B.S. 1494, 'Fixing accessories for building purposes', Part 1, 'Fixings for sheet, roof and wall coverings'.

The method of attaching the sockets fitted under *b* or *c* shall be either by casting on or by expansion or contraction, and the length of the overlap shall be at least 1 in.

Any jointing in the manufacture of gutters, pipes and fittings formed from sheet or strip shall be by single lock seaming, welding or brazing.

Fixing arrangements may be integral with the gutter provided that the water capacity of the gutter is not reduced thereby.

DIMENSIONS AND TOLERANCES

5. The dimensions of the articles and the tolerances permitted shall be in accordance with the requirements of Parts 2 and 3.

FACILITIES FOR INSPECTION

6. The purchaser or his representative shall, if he so requires, be given facilities at the works of the manufacturer at all reasonable times for the purpose of carrying out inspection of the goods being supplied to his order during manufacture.

The manufacturer shall, at his own cost, supply labour and any apparatus for such inspection as may be carried out on his premises.

FINISH

7. If required to be primed for painting this shall be by arrangement between manufacturer and supplier.

COMPLIANCE

8. Any goods which do not comply with all the relevant requirements of this Specification shall be deemed not to comply with this British Standard.

MANUFACTURER'S CERTIFICATE AND MARKING

9. Articles shall be either marked indelibly with the manufacturer's name or trade mark and the number of this British Standard, or the manufacturer shall certify that the goods comply with this British Standard.

PART 2. SPECIFIC REQUIREMENTS CASTINGS AND EXTRUSIONS

*As altered
May, 1968*

SECTION A. GUTTERS, HALF-ROUND AND OGEE

TYPES

10. There shall be two types of gutter:

- a. Half-round.
- b. Ogee.

MATERIALS

11. *Gutters.* The gutters shall be made from one of the following alloys:

Castings: B.S. 1490, LM-2M; LM-4M; LM-6M; LM-20M; LM-21M.

Extruded sections: B.S. 1476, HE-9M; HE-9W; HE-20W; HE-30W; HE-30M.

DIMENSIONS

12. The thickness at any part of a gutter or fittings shall be not less than the following:

For castings	2 in.
For extrusions	$\frac{1}{16}$ in.

The effective length, i.e. exclusive of the depth of the socket, shall be 6 ft or over. Lengths of less than 6 ft shall be specially ordered. The shape and dimensions of gutters shall comply with Fig. 1 and Table 1, and the shape of ogee gutters shall comply with Fig. 2 and Table 2.

The range of sizes of gutter shall be:

For half-round gutters	4 in., 4½ in., 5 in. and 6 in.
For ogee gutters	4 in., 4½ in. and 5 in.

FITTINGS

13. The range of fittings for gutters shall be as indicated in the appropriate drawings (see Figs. 3-14 and 17-27 inclusive). The wall thickness of any fitting shall be not less than that of the gutter with which it is to be used.

ACCESSORIES

14. The range of accessories for gutters shall comprise the following in cast or wrought aluminium as shown in Figs. 15, 16 and 28.

- a. *For half-round gutters:*
 - Side rafter brackets.
 - Fascia brackets.
- b. *For ogee gutters:*
 - Fascia brackets.

MATERIALS FOR ACCESSORIES

15. Aluminium alloys to B.S. 1470, NS4-0; NS4-½H; NS5-0; NS5-¼H; B.S. 1490, LM-2M; LM-4M; LM-6M; LM-20M; LM-21M.

*As altered
May, 1968*

SECTION B. RAINWATER PIPES

MATERIALS

16. Rainwater pipes shall be made from the following alloys:

Castings: B.S. 1490, LM-2M; LM-4M; LM-6M; LM-20M; LM-21M.

Extrusions: B.S. 1476, HE-9M; HE-9W; HE-20W; HE-30M; HE-30W.

Tubes: B.S. 1471, T1C-H; HT-9M; HT-9W; HT-9WP; HT-20W; HT-30W.

DIMENSIONS

*As altered
May, 1968*

17. Unless specially ordered, straight pipes shall be supplied in 6 ft lengths, but they are available up to 24 ft by arrangement, such lengths being exclusive of the internal depth of the socket, and shall comply with the dimensions shown in Figs. 29 and 30 and Table 5. The thickness of pipes and fittings shall in no place be less than 0.040 in.

SOCKETS

18. Dimensions of sockets shall be as indicated in Fig. 29. External beads may be omitted provided that the wall thickness of the socket is increased to provide at least the same strength against splitting if caulked joints are used. Combinations of the features of both types of socket may be used. Extruded pipes may have internal or external 'telescoped' joints as in Fig. 30.

EARS

*As altered
May, 1968*

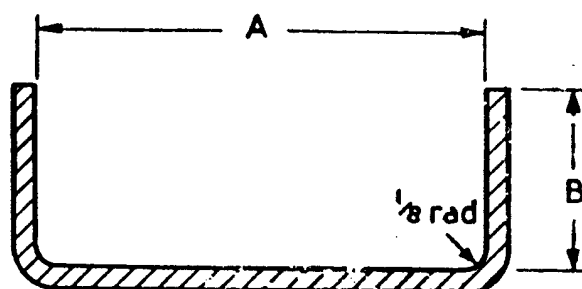
19. All pipe sockets, shoes, union sockets and hopper type heads shall be fitted with ears which shall be integrally formed and shall comply with the appropriate dimensions specified in Figs. 29, 32, 33, 37 and 39 in conjunction with Tables 5, 7, 10 and 12. Other fittings shall not be provided with ears.

FITTINGS

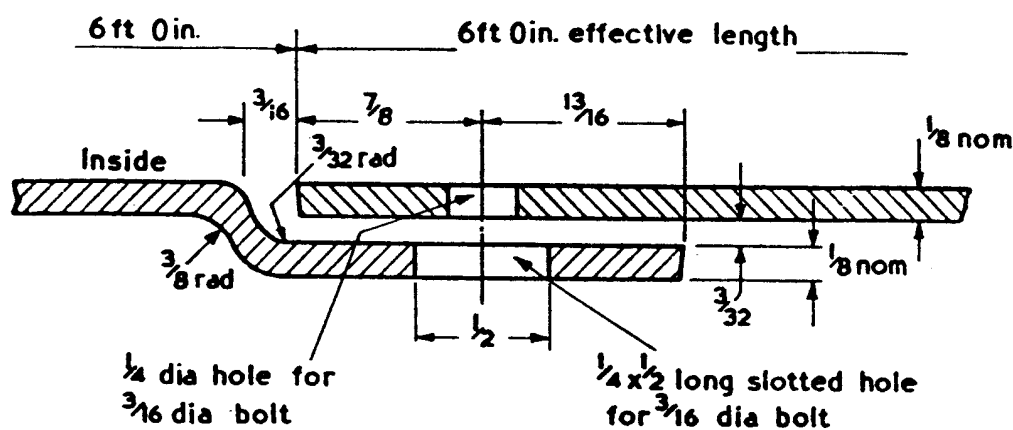
20. The range of fittings for pipes shall be as indicated in the appropriate drawings and tables (see Figs. 31-39 and Tables 6-12 inclusive). The thickness of any fitting shall not be less than that of the pipes with which it is to be used.

TABLE 1. DIMENSIONS OF GUTTERS

Nominal size	4 in.	4½ in.	5 in.	6 in.
A	4	4½	5	6
B	2	2¼	2½	3
C	⅝	¾	⅞	1



Section through rectangular gutter



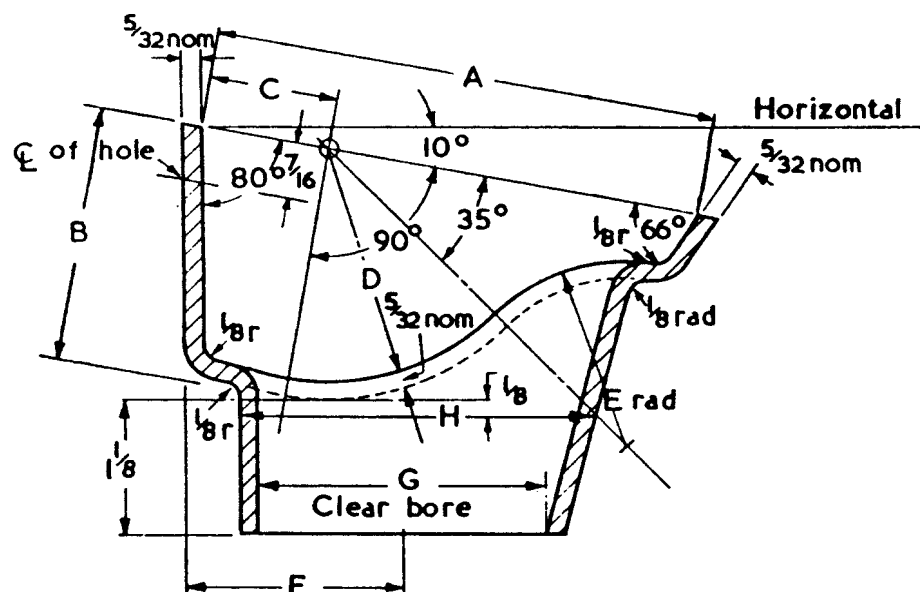
Section through joint of gutters and fittings

Fig. 1. Half-round cast gutter sections and jointing

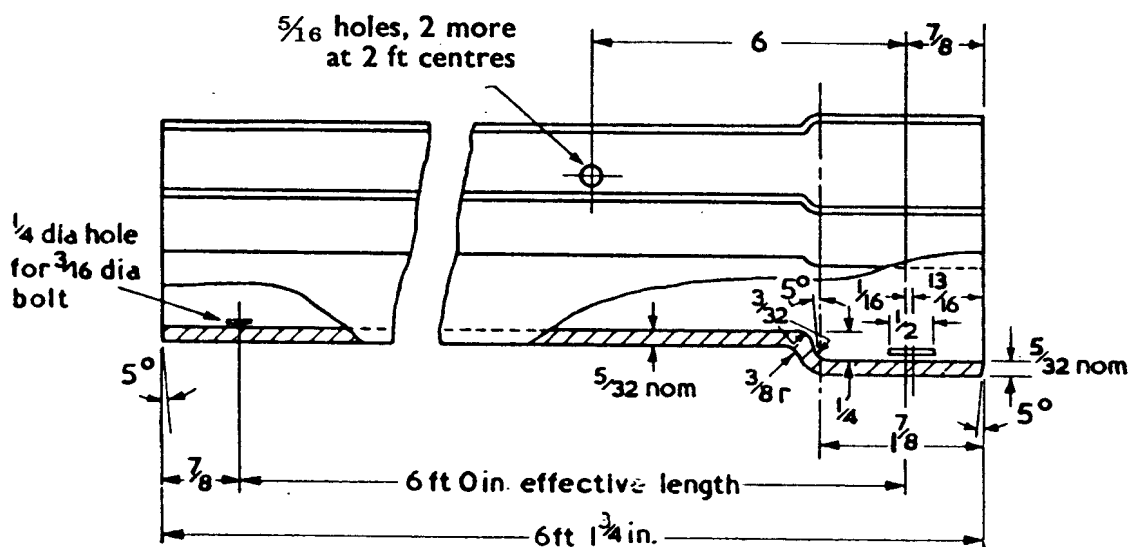
All dimensions in inches except where otherwise stated

TABLE 2. DIMENSIONS OF OGEE GUTTERS

Nominal size	A	B	C	D	E	F	G	H
in.	in.	in.	in.	in.	in.	in.	in.	in.
4	4	2 $\frac{1}{8}$	1	2	1 $\frac{1}{2}$	1 $\frac{11}{16}$	2 $\frac{3}{8}$	2 $2\frac{7}{32}$
4 $\frac{1}{2}$	4 $\frac{1}{2}$	2 $\frac{3}{8}$	1 $\frac{1}{8}$	2 $\frac{1}{4}$	1 $\frac{5}{8}$	1 $\frac{11}{16}$	2 $\frac{3}{8}$	2 $2\frac{7}{32}$
5	5	2 $\frac{5}{8}$	1 $\frac{1}{4}$	2 $\frac{1}{2}$	1 $\frac{3}{4}$	1 $\frac{15}{16}$	2 $\frac{7}{8}$	3 $1\frac{1}{32}$



Section through gutter and the accessories and fittings, Figs. 17 to 28



View of gutter showing fixing and joint holes

Fig. 2. Cast ogee gutters

All dimensions, except overall, are in inches

FITTINGS FOR HALF-ROUND GUTTERS

All dimensions are in inches
ANGLES

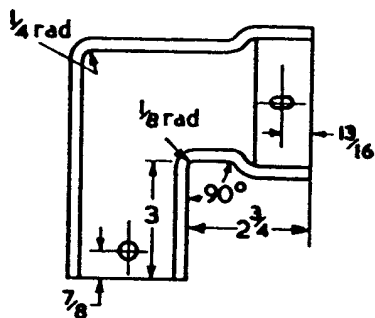


Fig. 3. Square—Left-hand

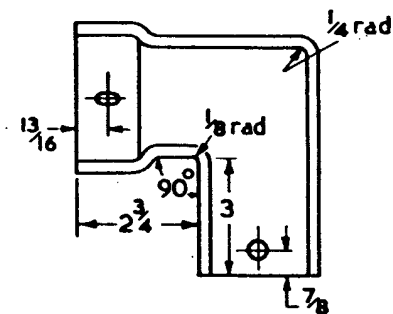


Fig. 4. Square—Right-hand

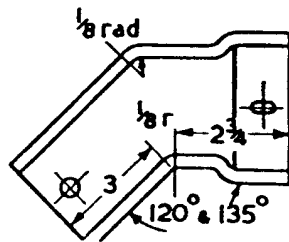


Fig. 5. Obtuse—Left-hand

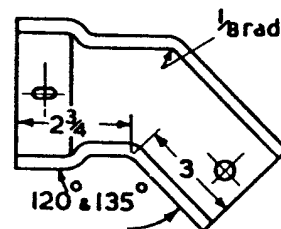


Fig. 6. Obtuse—Right-hand

OUTLETS

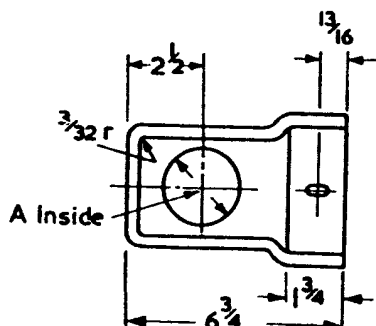


Fig. 7. Stop end outlet with socket

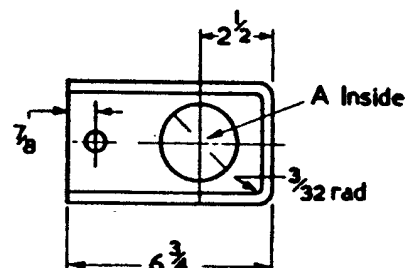


Fig. 8. Stop end outlet with spigot

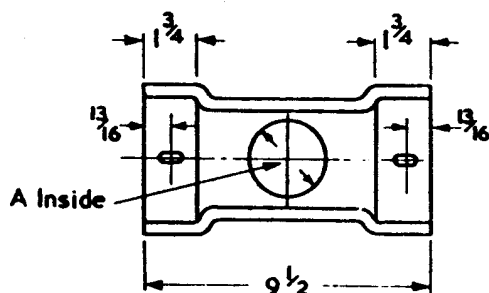


Fig. 9. Double socket nozzle piece

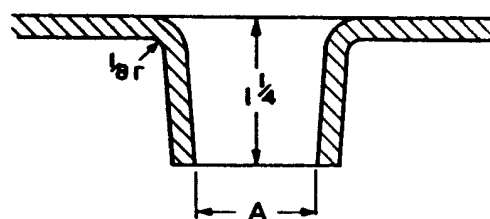


Fig. 10. Section of outlets

TABLE 3. RELATIONSHIP OF OUTLET TO R.W.P.

Nominal size of gutter	Diameter of nozzle—A	Nominal dia. of R.W.P.
in.	in.	in.
4 } 4 1/2 }	2 3/8	2 1/2
5	2 7/8	3
6	3 7/8	4

DOUBLE SOCKET CLIPS AND STOPENDS

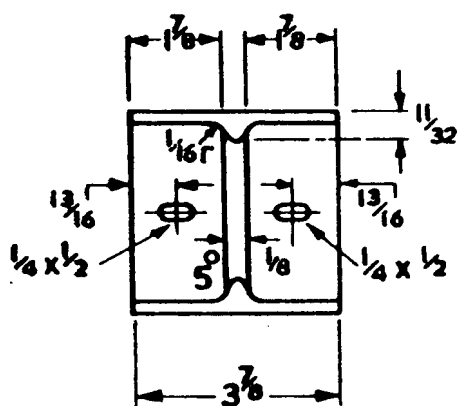


Fig. 11
Double socket clip

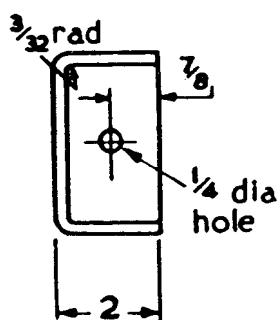


Fig. 12
Stop end for spigot

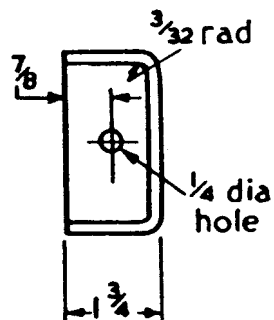


Fig. 13
Stop end for socket

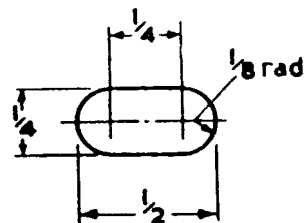


Fig. 14
Socket joint hole

ACCESSORIES FOR HALF-ROUND GUTTERS

NOTE. All brackets holed for woodscrews.
All dimensions are in inches

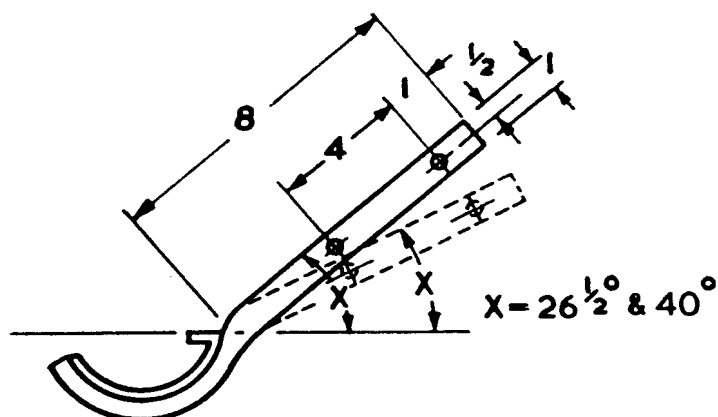


Fig. 15. Side rafter (cast aluminium)

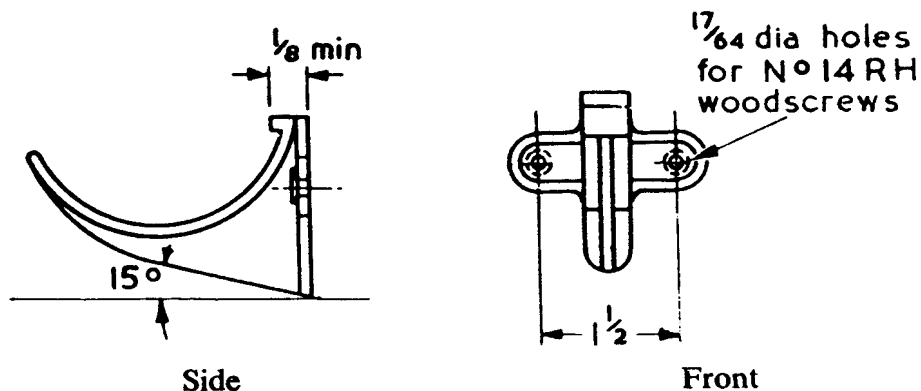


Fig. 16. Cast aluminium fascia bracket

FITTINGS FOR OGEE GUTTERS

All dimensions are in inches

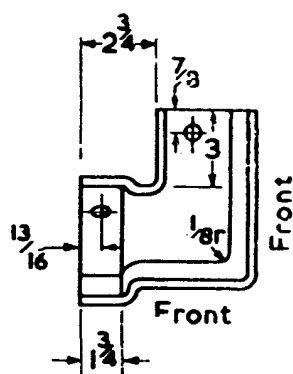


Fig. 17. Square external angle

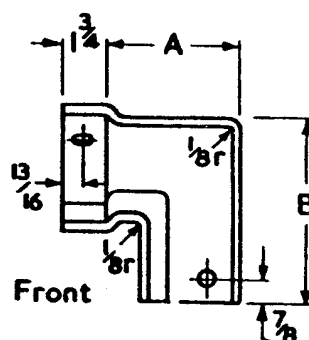


Fig. 18. Square internal angle

TABLE 4
DIMENSIONS OF ANGLES

Nom. size	Square		120°		135°	
	A	B	C	D	C	D
in.	in.	in.	in.	in.	in.	in.
4	5 1/4	7 1/4	3 1/2	5 1/2	2 3/4	4 3/4
4 1/2	5 3/4	7 3/4	3 3/4	5 3/4	3	5
5	6 1/4	8 1/4	4	6	3 1/4	5 1/4

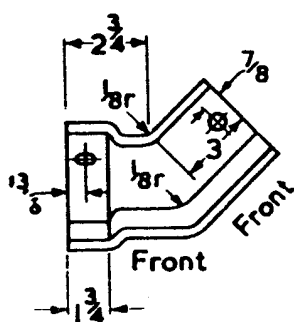


Fig. 19. Obtuse external angle

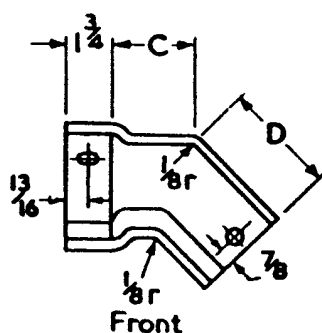


Fig. 20. Obtuse internal angle

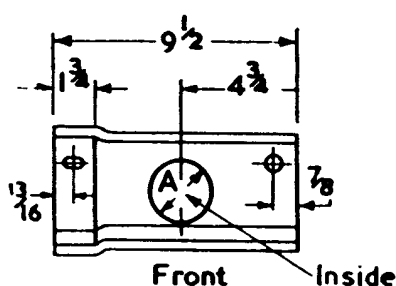


Fig. 21. Outlet piece

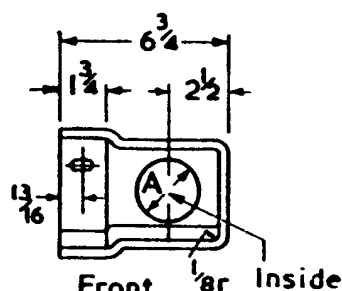


Fig. 22. Stop end for spigot

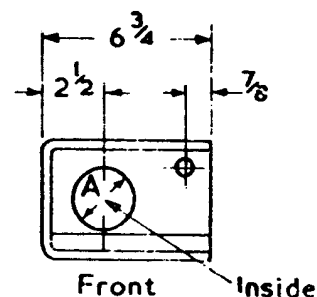


Fig. 23. Stop end for socket

Nominal (2 1/2 in.) outlet for 4 in. and 4 1/2 in. A = 2 3/8 in.

Nominal (3 in.) outlet for 5 in. A = 2 7/8 in.