BRITISH STANDARD

BS 787-3:1971

Specification for

Mining type flameproof gate-end boxes —

Part 3: Gate-end boxes with lighting transformers

Confirmed
January 2011

Co-operating organizations

The Mining and Quarrying Requisites Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government department and scientific and industrial organizations:

Association of Mining Electrical and Mechanical Engineers*
British Electrical and Allied Manufacturers' Association*
British Steel Industry
Department of Trade and Industry*
Engineering Equipment Users' Association
Federation of Associations of Mining Equipment Manufacturers
Federation of Manufacturers of Construction Equipment and Cranes
Institute of Quarrying
Institution of Mechanical Engineers
Institution of Mining Engineers
Mechanical Handling Engineers' Association
National Coal Board*

The Government department 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:

Council of Underground Machinery Manufacturers

This British Standard, having been approved by the Mining and Quarrying Requisites Industry Standards Committee, was published under the authority of the Executive Board on 26 March 1971

The following BSI references relate to the work on this standard:
Committee reference MQE/16
Draft for comment 70/4838

ISBN 0 580 06079 9

Amendments issued since publication

Amd. No.	Date	Comments

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Foreword

This standard makes reference to the following British Standards:

BS 88, *Cartridge fuses of voltage ratings up to 660 volts.*

BS 159, *Busbars and busbar connections.*

BS 171, *Power transformers.*

BS 229, *Flameproof enclosure of electrical apparatus.*

BS 542, *Cable glands and sealing boxes for association with apparatus for use at mines.*

BS 775, *Contactors.*

BS 861, *Air-break switches and isolators.*

BS 1259, *Intrinsically safe electrical apparatus and circuits for use in explosive atmospheres.*

BS 3454, *3.3 kV 300 A interchangeable bolted flameproof cable couplers and adaptors (including 660 V 300 A adaptors) primarily for use in mines.*

BS 3871, *Miniature and moulded case circuit-breakers.*

This British Standard has been prepared, under the authority of the Mining and Quarrying Requisites Industry Standards Committee, to standardize the main features of gate-end boxes used primarily in coal mining in the United Kingdom.

It is recognized that the term "gate-end box" is quite general and may be applied to boxes containing different essential components, such as contactors, circuit-breakers, lighting transformers, etc., depending upon the purpose for which they are to be used.

BS 787 was issued in 1938, and has been revised and re-issued as BS 787-1 and BS 787-2 to cover gate-end boxes in which the essential apparatus is, respectively, an air-break electrically operated contactor and an air-break circuit-breaker. This additional specification, designated as BS 787-3, extends the scope of the original BS 787 by covering gate-end boxes in which the essential apparatus is a lighting transformer.

It is envisaged that an additional part of this British Standard will be issued to cover gate-end boxes for drill units.

NOTE Where metric equivalents have been given (see Appendix A), the figures in imperial units are to be regarded as the standard. The metric conversions are approximate. More accurate conversions should be based on the relevant tables in BS 350, "*Conversion factors and tables*".

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 and ii, pages 1 to 12, 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 covers flameproof gate-end boxes designed primarily for use, in the mining industry, on a 3-phase a.c. system having a line voltage of up to 650 V, to provide electrical supply for single-phase lighting circuits.

2 Definitions

For the purposes of this British Standard, the following definitions apply:

2.1
gate-end box

a flameproof enclosure containing electrical apparatus such as switchgear and/or protective gear designed primarily for use underground

NOTE For the purposes of this standard the apparatus is essentially an air-cooled transformer with associated equipment to provide electrical supply for lighting circuits.

2.2
isolating switch

a switch which isolates a circuit and is capable of making and breaking not less than its rated current at rated voltage

2.3
transformer

a piece of apparatus without moving parts which, by electro-magnetic induction, transforms alternating voltage in one winding into alternating voltage in one or more other windings, usually at different values

2.4
cable coupling unit (flit plug)

a unit consisting of a cable sealing box and cable gland together with means for connecting the cable conductors to insulated contact tubes within the sealing box. The unit is designed to receive the cable; to provide room to spread and connect the cores; to protect the cores; to allow for the attachment of the cable gland; to provide for sealing the insulating materials of the cable, and to facilitate ready connection to or disconnection from a similar unit or other apparatus

2.5
cable coupler adaptor

a device used to connect a cable coupling unit to apparatus. It may either be separate from or integral with the flameproof enclosure of the apparatus to which the cable coupling unit is to be connected

for the purposes of this standard, the term “adaptor” also includes the unit to connect other types of cable terminations to apparatus

2.6
cable sealing and dividing box

a box designed to receive and protect the end of the cable, with provision for sealing the conductors and the insulating material of the cable with a suitable compound, and having a cable gland for attaching the cable to the box, together with any terminals provided for connection to the conductors of the cable within the box. The box may form part of, or be detachable from, the apparatus with which it is associated

2.7
detachable cable sealing box

a cable sealing box so designed that it can be detached from associated apparatus without cutting the cable and without disturbing the sealing

2.8
flameproof enclosure

a flameproof enclosure for electrical apparatus is one that will withstand, without injury, any explosion of the prescribed flammable gas that may occur within it under practical conditions of operation within the rating of the apparatus (and recognized overloads, if any, associated there-with) and will prevent the transmission of flame such as will ignite the prescribed flammable gas which may be present in the surrounding atmosphere

2.9
bolted plug and socket

a plug and socket, the two portions of which, when fully engaged, are designed to be held together by one or more bolts or screws, or studs and nuts, in such a way that they cannot be disengaged without the use of tools

2.10
rating

the value assigned by the manufacturer to some limits of performance under certain specified conditions known as the “rated conditions”

2.11
intrinsically safe circuit

a circuit in which any electrical sparking that may occur in normal working, under the conditions specified by the certifying authority, and with the prescribed components, is incapable of causing an ignition of the prescribed flammable gas or vapour

3 Service conditions

Gate-end boxes in accordance with this specification are suitable, within the limits of their ratings, for installations where the service conditions are not more severe than the following.

3.1 Ambient temperature. A peak value not exceeding 40 °C with an average value not exceeding 35 °C over 24-hour periods.

3.2 Altitude. An altitude not exceeding 3 300 ft (1 000 m) above sea-level.

NOTE When a gate-end box intended for service at high altitude is tested near sea-level, the limits of temperature rise, as indicated in **6.12**, should be reduced by 1 % for each 1 000 feet (300 m) above sea-level at which the gate-end box is intended to work in service. The correction does not apply for altitudes below 3 300 feet (1 000 m).

4 Ratings

4.1 Supply voltage. The maximum supply line voltage shall be 650 V. Standard gate-end boxes shall be suitable for a voltage variation at least 10 % below and at least 6 % above the declared voltage of the supply for which they are designed, subject again to the maximum of 650 V.

4.2 Supply frequency. The standard frequency shall be 50 Hz. Gate-end boxes designed for other that the standard frequency, within the range of 42–60 Hz, provided they satisfy all other requirements specified herein, shall be deemed to comply with this standard.

4.3 Output voltage. The following are the preferred output voltages:

115 V and 125 V
or 115 V and 230 V
or 125 V and 250 V.

Other voltages may be agreed between supplier and purchaser.

4.4 Output. The following are the preferred output kV A ratings:

1.0 kV A
or 2.5 kV A
or 4.5 kV A.

Other ratings may be agreed between supplier and purchaser.

4.5 Current rating of busbars. The standard current rating of busbars, where fitted, shall be 300 A. Busbars of other ratings agreed between manufacturer and purchaser shall also be deemed to comply with this specification.

5 Marking

5.1 Nameplates. All gate-end boxes shall be permanently marked with the following particulars:

1) The registered trade name or trademark of the manufacturer or his agent.

2) Manufacturer's type or reference.

3) Manufacturer's serial number.

4) Maximum rated output in kV A.

5) Supply voltage or voltage range.

6) Output voltage or voltage range.

7) Frequency.

8) The number of the flameproof certificate and the number or numbers indicating the group of gases and vapours covered by the certificate.

9) A reproduction of the registered flameproof mark (if the manufacturer holds a licence to apply this mark), or any other mark required by the Department of Trade and Industry.

10) Where applicable the intrinsic safety certificate details as required by the Department of Trade and Industry.

11) Additional marking as may be required by any other certifying authority.

5.2 Terminal marking. Terminal markings, if required, for incoming and outgoing connections shall be agreed between manufacturer and purchaser.

5.3 Busbar interconnecting trunks. All busbar interconnecting trunks (see **6.3**) shall be permanently marked with the following particulars:

1) Manufacturer's registered trade name or trademark.

2) Manufacturer's type or reference.

5.4 Busbar end covers. All busbar end covers (see **6.4**) shall be marked with the following particulars:

1) Manufacturer's registered trade name or trademark.

2) Manufacturer's type or reference.

5.5 Diagrams. Diagrams of connections, which shall be durable and legible, shall be securely attached in an accessible position within the main chamber.

6 Design and construction

A gate-end box in accordance with this specification shall comply with the requirements of BS 229[1)] and shall have been certified, by the Department of Trade and Industry, as flameproof for Group I gases (methane/firedamp). The gate-end box may also be certified for any group of gases by any appropriate certifying authority, as may be required.

NOTE When applying for flameproof certification, it will be necessary, for compliance with BS 229, "*Flameproof enclosure of electrical apparatus*", for the manufacturer to specify the types of fittings for which he has made provision in accordance with **6.2** to **6.6** inclusive.

Unless otherwise agreed between manufacturer and purchaser no external component shall be made of aluminium, magnesium or titanium, neither shall any alloy containing aluminium and/or magnesium and/or titanium be used unless the total content of these three constituents does not exceed 15 % by weight, and in which the content of magnesium and titanium together does not exceed 10 % by weight. No external part shall be painted or coated with preparations containing, in metallic form, aluminium, magnesium or titanium.

NOTE These limitations have been imposed to avoid the hazards of incendive sparking due to friction between rusted steel or iron and the metals described.

The following subclauses relate to the basic unit:

6.1 Enclosing case
6.5 Outgoing cable(s)
6.7 Means of isolation
6.8 Transformer
6.9.1 Overcurrent and short circuit protection
6.10 External controls
6.11 Provision for earthing

The following subclauses relate to optional items:

6.2 Incoming and throughgoing cable
6.3 Coupling of units
6.4 Busbar end covers
6.6 Busbars
6.9.2 Earth fault protection and electrical lockout for outgoing circuit(s)

The following subclauses relate to both the basic and optional items:

6.12 Temperature limits
6.13 Clearances

6.1 Enclosing case. The enclosing case shall comprise a main chamber and isolator/busbar chamber, each with suitable access cover, and shall incorporate, or be adapted for mounting on, skids to facilitate transport.

The design shall include such provision as will permit, without structural alteration, the attachment of adaptors, cable fittings, interconnecting trunks, etc., as specified in **6.2** to **6.5**, in any combination that may be required for normal installation and operation of the gate-end box. To facilitate this, a preferred design of busbar-coupling flange is shown in Figure 1 but other designs shall be deemed to comply with this standard provided they satisfy all other requirements specified herein.

6.2 Incoming and throughgoing cable. For the attachment of incoming or throughgoing cables the busbar chamber shall be fitted at either end, or both ends, as required, with:

1) an adaptor suitable for the reception of a cable coupling unit (flit plug), e.g. as specified in BS 3454[2)],

2) a detachable cable sealing and dividing box, e.g. as specified in BS 542[3)], or

3) any other fitting which is approved by the certifying authority.

6.3 Coupling of units. When two or more gate-end boxes are required to be coupled together, this shall be achieved either by:

1) the bolting together of appropriate flanges, or

2) the fitting of interconnecting busbar trunking. Where the preferred design of busbar flange indicated in **6.1** is adopted the interconnecting busbar trunk shall conform to the dimensions and tolerances shown in Figure 2. The preferred minimum width of flange shall be 1 in.

The coupling arrangements shall be such as to prevent, in normal use, undue strain being placed on the flanges of the gate-end box or those of the interconnecting busbar trunking.

Where skids are provided, it is usual for the skids to be either continuous or, where individual skids are fitted, for coupling plates to be bolted between the skids. Where the preferred design of busbar trunking [see **6.3** 2)] is adopted, the design of coupling plate shall conform to Figure 3.

NOTE In some designs the bottom of the enclosing case may be utilized as an individual skid.

[1)] BS 229, "*Flameproof enclosure of electrical apparatus*".
[2)] BS 3454, "*3.3 kV 300 A interchangeable bolted flameproof cable couplers and adaptors (including 660 V 300 A adaptors) primarily for use in mines*".
[3)] BS 542, "*Cable glands and sealing boxes for association with apparatus for use at mines*".

6.4 Busbar end covers. When required, a suitable cover shall be fitted to either end of the busbar chamber, as appropriate, to complete the enclosure when a cable fitting is provided at one end only. Where the preferred design of busbar flange specified in **6.1** is adopted the end cover shall conform to the dimensions and tolerances shown in Figure 4. The preferred minimum width of flange shall be 1 in.

6.5 Outgoing cable(s). For the attachment of the outgoing cable(s) (the number being agreed between supplier and purchaser) the case of the gate-end box shall be fitted with:

1) detachable cable sealing and dividing box(es) as specified in BS 542[4] or, alternatively,

2) adaptor(s) suitable for the reception of bolted cable attachment(s) of the plug-in type.

6.6 Busbars. When required, provision shall be made for the fitting of three throughgoing busbars complying with BS 159[5].

6.7 Means of isolation

6.7.1 ***Main circuit isolation.*** A double pole isolating switch, having a continuous current rating of not less than 15 A and being capable of making and breaking its rated current at 650 V, shall be provided in the busbar chamber. It shall not be possible to open the main chamber unless the isolator is in the OFF position, or to close the isolating switch while the main chamber is open. The ON and OFF positions of the isolating switch shall be clearly indicated and provision shall be made for locking in the OFF position.

6.7.2 ***Outgoing circuit isolation.*** Where required, a suitably rated double pole ON/OFF isolating switch or circuit breaker with external operating handle capable of being locked in the OFF position may be provided to isolate separately each outgoing circuit.

6.8 Transformer. The transformer shall be of the single phase double wound type "AN" conforming to BS 171[6] and shall have a continuous rating in accordance with the declared kV A output stated in **4.4**, when enclosed in the case. Primary tappings may be provided as agreed between the supplier and the purchaser. Secondary tappings may be provided (see **4.3**).

Where a change in secondary tappings necessitates a change in the secondary protection device(s) (e.g. fuse or overcurrent) then this shall be clearly indicated alongside the tapping links together with the manufacturer's recommendations.

The midpoint of the transformer secondary winding shall be brought out and connected to earth through a removable link. No automatic circuit-breaker or fuse shall be placed in this connection to earth, but where required for the purpose of protection a means of current limitation may be incorporated.

6.9 Protection

6.9.1 ***Overcurrent and short circuit protection***

6.9.1.1 *Primary circuit protection.* Two suitably rated HBC fuses complying with the requirements of BS 88[7], category AC 16 as minima, shall be provided in the circuit to the transformer primary winding.

6.9.1.2 *Outgoing circuit overcurrent and short circuit protection.* A suitably rated HBC fuse complying with the requirements of BS 88[7], category AC 16 as minima, shall the connected in each line of each outgoing circuit. Additionally, or alternatively, a suitably rated double pole circuit-breaker complying with category M1 of BS 3871[8] may be provided for each outgoing circuit.

6.9.2 ***Earth fault protection and electrical lockout for outgoing circuit(s).*** Provision may be made in the gate-end box for the fitting, when required, of earth fault protection. Additionally, means may be provided for locking out the circuit electrically while an earth fault exists, but any such arrangement shall be of a type certified as intrinsically safe.

The earth fault protection shall operate to remove power from any outgoing defective circuit when the earth fault current attains 5 A or such lower figure as may be agreed between purchaser and supplier. The earth fault trip shall not be self-resetting unless earth fault electrical lockout, which is not self-resetting, is provided.

Resetting of either the earth fault trip or the electrical lockout shall be arranged for external operation by hand, means being provided to prevent operation by unauthorized persons.

[4] BS 542, "*Cable glands and sealing boxes for association with apparatus for use at mines*".
[5] BS 159, "*Busbars and busbar connections*".
[6] BS 171, "*Power transformers*".
[7] BS 88, "*Cartridge fuses of voltage ratings up to 660 volts*".
[8] BS 3871, "*Miniature and moulded case circuit-breakers*".

In all cases:

1) visible indication of the earth fault trip shall be provided, and

2) it shall be possible for an authorized person, without opening the enclosure, to test that the protection functions correctly.

6.10 External controls. The external handles, levers or push buttons shall be so designed and arranged as to minimize the risk of inadvertent operation, damage or distortion due to mishandling, falls of roof, or collision with other gear. When the components are fitted to the side of the unit they shall be placed on the right-hand side widen viewed from the front.

6.11 Provision for earthing. An external earthing terminal, with brass nuts, in size not less than ½ in Whitworth, shall be provided to enable the containing case to be earthed, irrespective of any means provided for attaching the metallic covering of the cable feeding the apparatus, and be so designed that the connection between an earthing conductor and the casing can be made mechanically secure and electrically efficient.

6.12 Temperature limits. The temperature limits of individual components shall comply with the appropriate British Standards when tested in accordance with such standards.

NOTE In this connection the following particular British Standards are quoted for reference:

BS 88, *Cartridge fuses of voltage ratings up to 660 volts.*
BS 159, *Busbars and busbar connections.*
BS 171, *Power transformers.*
BS 775, *Contactors.*
BS 861, *Air-break switches and isolators.*
BS 3871, *Miniature and moulded case circuit-breakers.*

Where the temperature reached by a component in a fully assembled unit could, due to the heating effect of other component(s), exceed the temperature limit prescribed by the relevant British Standard, the design shall be such that this excess temperature does not cause deterioration of performance of the component(s), to a value below that specified in the relevant British Standard.

NOTE Reference should be made to Clause **3** for service conditions.

6.13 Clearances. The minimum clearance in air between live parts at different potentials, and between live parts and earth, shall be such that no flash-over occurs when the gate-end box is tested in accordance with **7.2** and **7.3**.

NOTE There is at present insufficient evidence available to determine the minimum safe creepage distance for any class of insulating material. The creepage distance between live parts at different potentials, and between live parts and earth, may vary according to the expected surface resistivity of the insulating material under service conditions.

7 Tests

7.1 General. Tests shall be made to prove compliance with all the requirements of this standard. It is not intended, nor is it recommended, that all tests shall be made on every gate-end box supplied. Two kinds of tests are recognized, as follows:

1) *Type tests*, which shall be made on a representative sample of each particular type of box.

2) *Routine (individual) tests*, which shall be made on each gate-end box manufactured to this standard.

All tests shall be carried out with the box in clean and new condition.

7.2 Type tests. Unless otherwise specified when inviting tenders, type tests on boxes identical in essential respects with those purchased shall be regarded as evidence of compliance of the boxes with the general requirements of this standard.

Type tests shall be made by a recognized authority who, except for tests for flameproofness and intrinsic safety, may be the manufacturer, unless the purchaser specifies otherwise.

Records of all type of tests, with appropriate detailed drawings of the box, as tested, shall be held available by the manufacturer.

7.2.1 ***Temperature rise tests.*** Tests shall be made on a fully assembled unit with all covers closed and all apparatus energized at the declared voltage and frequency, to ensure compliance with **6.12**.

The tests shall be conducted at the declared output kV A with the transformer connected on both primary and secondary windings to the tapping giving the maximum power loss, with a secondary current of sinusoidal wave form.

Where a range of frequencies is declared the tests shall be conducted at the frequency giving the maximum power loss. Compliance shall be made with **4.1** to **4.4** for supply voltage, supply frequency, output voltage and output kV A.

7.2.2 ***Performance tests.*** Tests shall be made on a completely assembled gate-end box with all covers closed to ensure that:

1) the isolating switch shall be capable of breaking *a.* the magnetizing current of the transformer on no-load, and *b.* the full rated kV A of the transformer;

2) where outgoing circuit isolating switch(es) are fitted these shall be capable of breaking the full rated kV A of the outgoing circuit;

3) where outgoing circuit-breaker(s) are fitted these shall be capable of interrupting the prospective fault current;

4) any combination of fuses and contactor, used to control outgoing circuits, shall be capable of making and interrupting the prospective fault current.

The isolating switch and outgoing circuit isolator(s) shall be operated 5 times at 10 s intervals; fuses shall be replaced by links for the circuit-breaker test.

7.2.3 ***Flameproofness.*** The gate-end box shall comply with the test requirements of BS 229[9] for Group I (methane/firedamp) gas, and the requirements of any certifying authority as may be required.

Any circuits required to be intrinsically safe shall comply with the test requirements of BS 1259[10] appropriate to Class 1 and shall be certified as intrinsically safe by any certifying authority as may be required.

7.2.4 ***Mechanical tests.*** A mechanical endurance test for the isolating switch and secondary circuit switches or circuit-breakers shall be carried out in accordance with the relevant clauses of BS 861[11] or BS 3871[12].

7.3 Routine (individual) tests

7.3.1 ***High voltage test.*** The gate-end box shall be capable of withstanding a high voltage test when in clean new condition, with the cover (or covers) closed after being exposed to ordinary atmosphere with the cover (or covers) open for at least 24 h prior to the test.

In carrying out the following test it shall be ensured that the test voltage is applied in such manner as to avoid overstressing the transformer insulation by induced overvoltage.

Each test shall be made with an approximately sinusoidal a.c. voltage, of frequency between 42 Hz and 60 Hz; the test voltage shall be 1 000 V plus twice the working voltage of the circuit being tested and shall be applied for at least 1 min. Alternatively, a value of 1 250 V plus twice the working voltage of the circuit being tested may be applied for at least 3 s, as follows:

1) Test *a.* between phases and *b.* between phases and earth on incoming and outgoing circuits, also between the incoming and outgoing circuits, with the transformer connected or disconnected as appropriate.

2) Between the main poles and any other independent circuits.

Instruments and other ancillary apparatus may be disconnected during this test and tested separately in accordance with the appropriate British Standard.

NOTE A value of insulation resistance is not specified, as it is not practicable to prescribe limits for the range of apparatus covered by this standard. Further, it is considered that the high voltage test determines whether the insulation is satisfactory or otherwise.

7.3.2 ***Operation test.*** Tests shall be made at the manufacturer's works to ensure that the gate-end box complies with the operational requirements of this standard and, where applicable, is in accordance with the appropriate clauses of other relevant British Standard(s).

8 Information to be supplied to the manufacturer with the enquiry[13]

The purchaser should supply with the enquiry the following information:

8.1 Information relating to the supply system

1) Voltage.

2) Frequency.

8.2 Information relating to the lighting transformer gate-end boxes

1) Output kV A.

2) Current rating of busbars, when required.

3) The output voltage(s) required.

4) The number of outgoing circuits required.

5) Any other requirements (e.g. type of protection).

8.3 Cables and cable entries

1) *Provision for main supply cables.* Whether provision is required at one end or both ends of the gate-end box for main cable attachments; the type required should be stated.

2) *Provision for outgoing cables.* Details should be given as to the type of outgoing cable attachment required.

In either case, full details should be given in accordance with the appropriate British Standard.

[9] BS 229, "*Flameproof enclosure of electrical apparatus*".
[10] BS 1259, "*Intrinsically safe electrical apparatus and circuits for use in explosive atmospheres*".
[11] BS 861, "*Air-break switches and isolators*".
[12] BS 3871, "*Miniature and moulded case circuit-breakers*".
[13] It is recognized that the whole of this information may not be available at the time of the enquiry, in which case further details should be supplied with the order.

Appendix A Metric values

The following metric values are calculated equivalents of the respective inch dimensions stated on Figure 1, Figure 2, Figure 3 and Figure 4.

in	mm	in	mm
0.006	0.15	3	76.2
0.010	0.25	$3^{1}/_{4}$	82.5
$^{1}/_{8}$	3.2	$3^{5}/_{8}$	92.1
$^{3}/_{16}$	4.8	$3^{3}/_{4}$	95.2
$^{1}/_{4}$	6.4	$3^{7}/_{8}$	98.5
$^{3}/_{8}$	9.5	4	101.6
$^{7}/_{16}$	11.1	$4^{1}/_{2}$	114.3
$^{1}/_{2}$	12.7	5	127.0
$^{9}/_{16}$	14.3	$5^{3}/_{4}$	146.0
$^{5}/_{8}$	15.9	5.995	152.3
1	25.4	6	152.4
$1^{1}/_{8}$	28.6	6.005	152.5
$1^{1}/_{4}$	31.8	$6^{1}/_{2}$	165.1
$1^{3}/_{4}$	44.5	$7^{1}/_{2}$	190.5
2	50.8	9	228.6
$2^{1}/_{4}$	57.2	12	305
$2^{1}/_{2}$	63.5	$14^{1}/_{2}$	368
$2^{5}/_{8}$	66.7	$18^{1}/_{4}$	463
		$21^{1}/_{4}$	540
		26	662

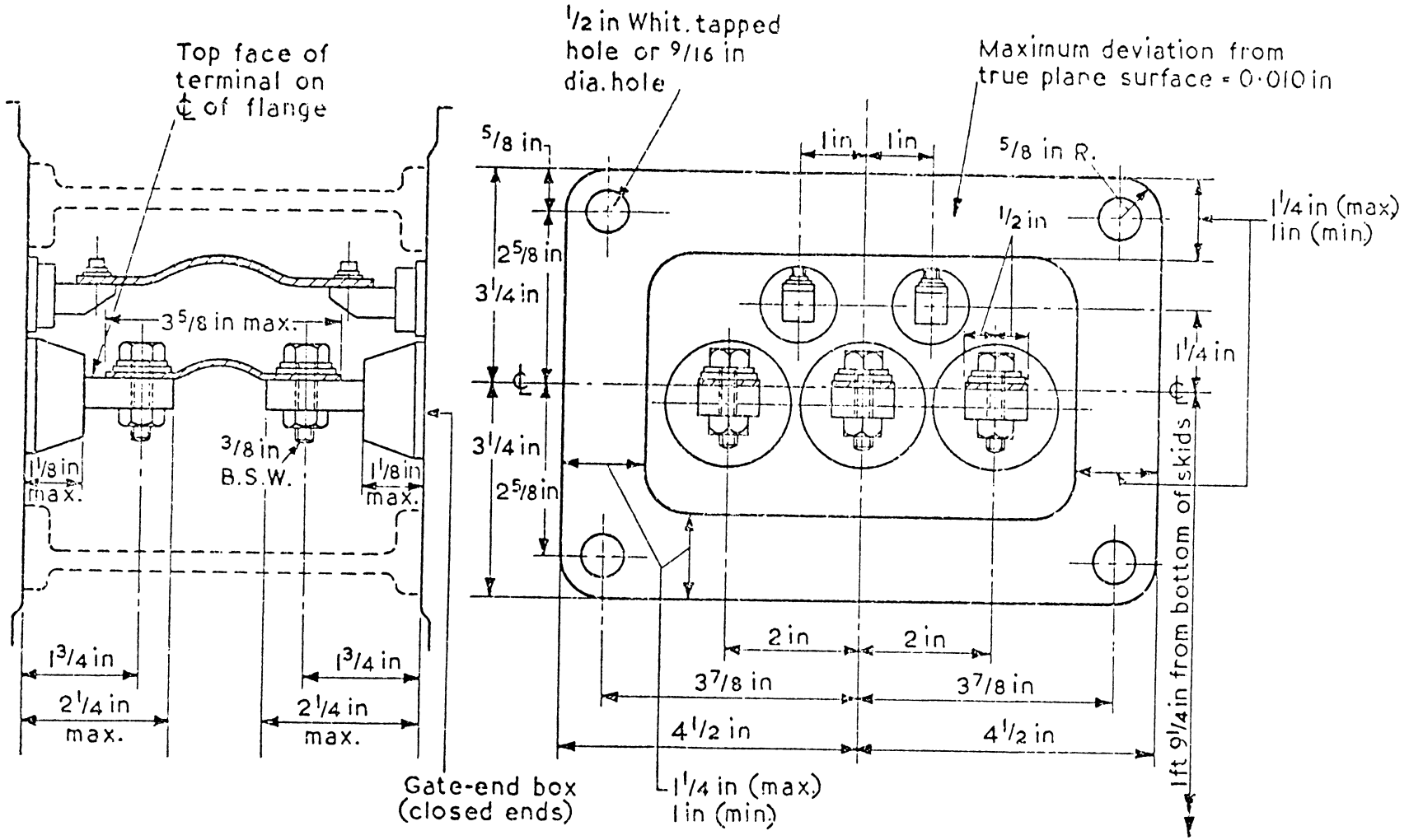

Figure 1 — Arrangement of busbar chamber end flange, terminals and interconnections (see **6.3**)

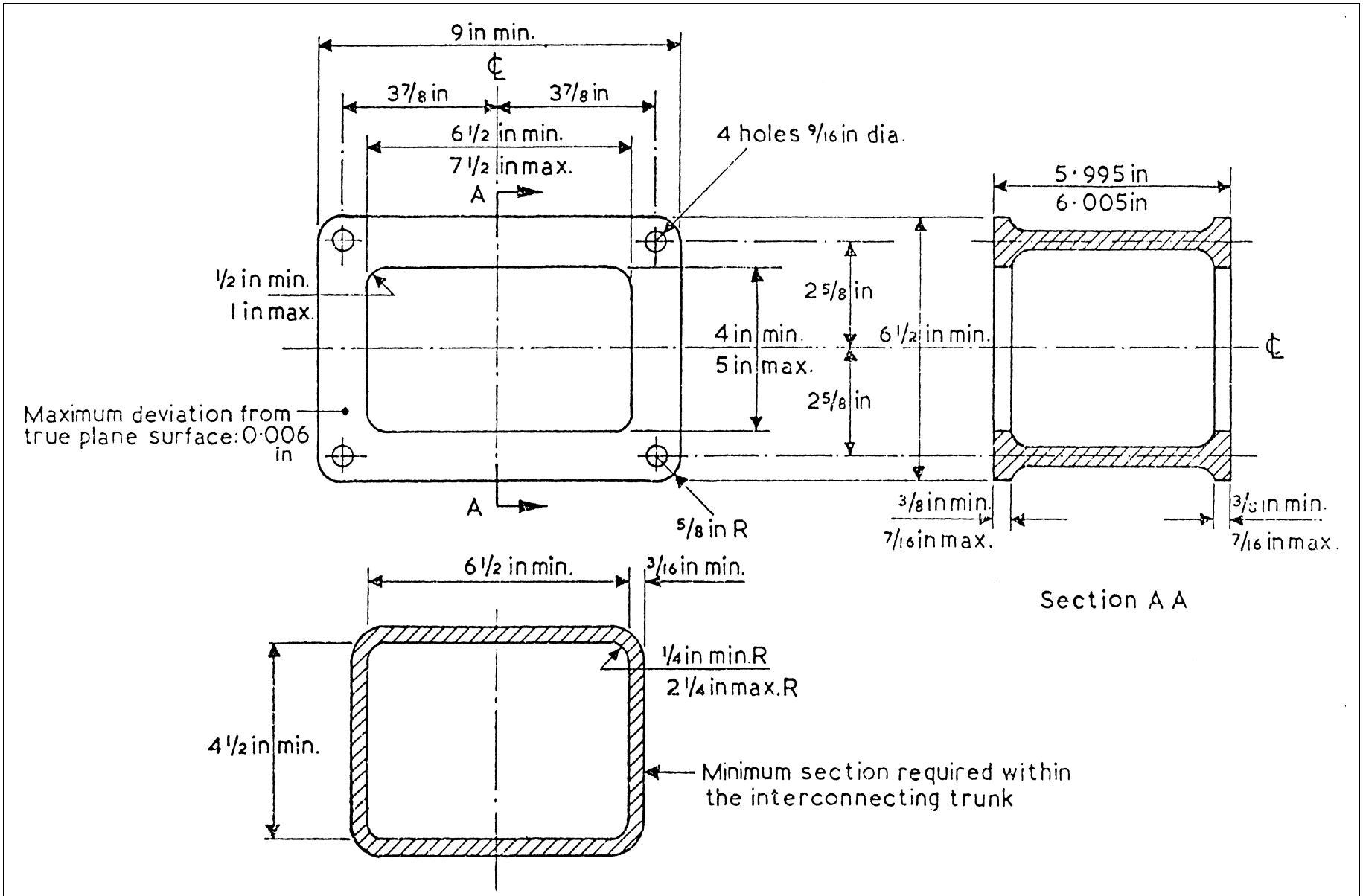

Figure 2 — Busbar interconnecting trunk

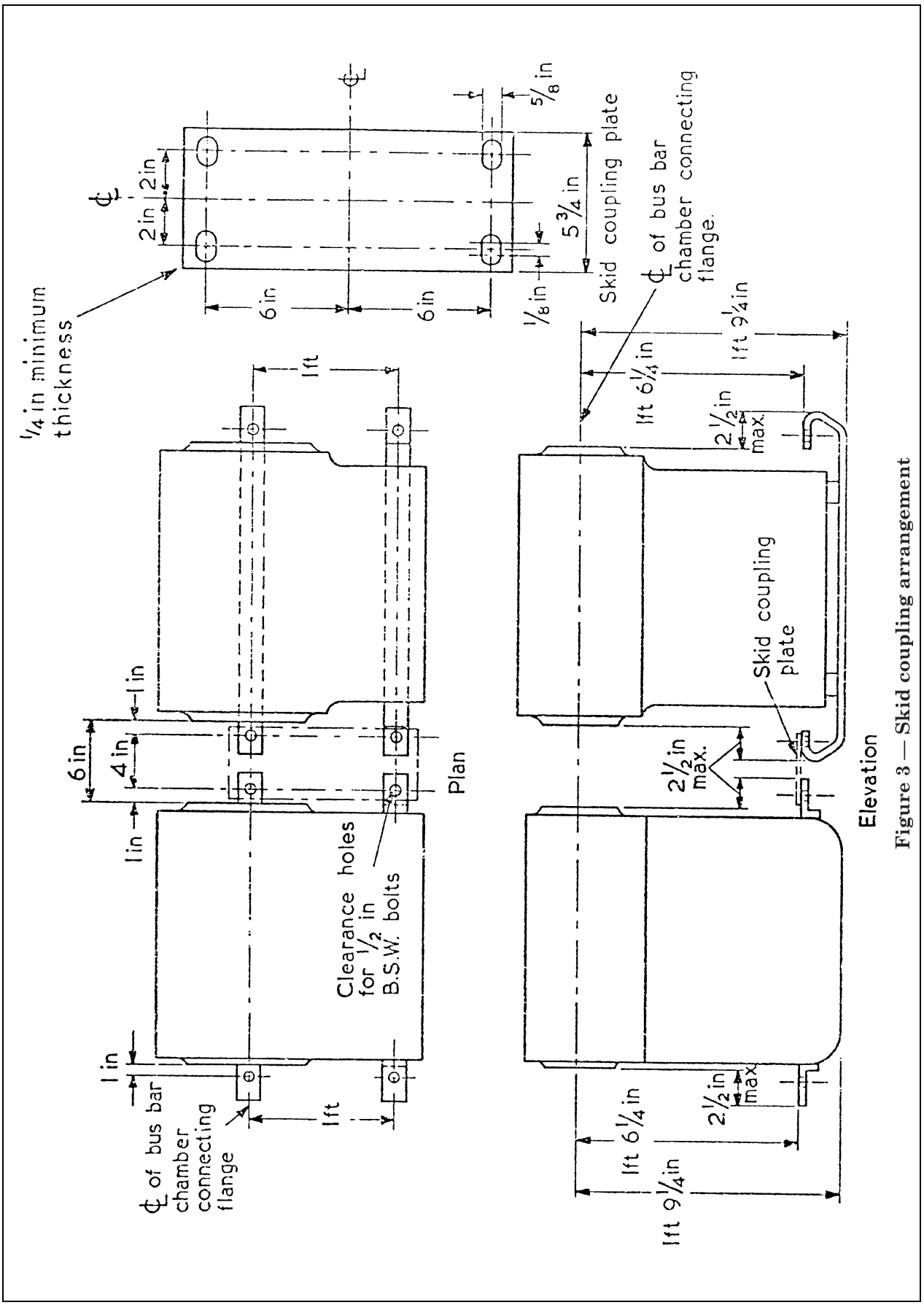

Figure 3 — Skid coupling arrangement

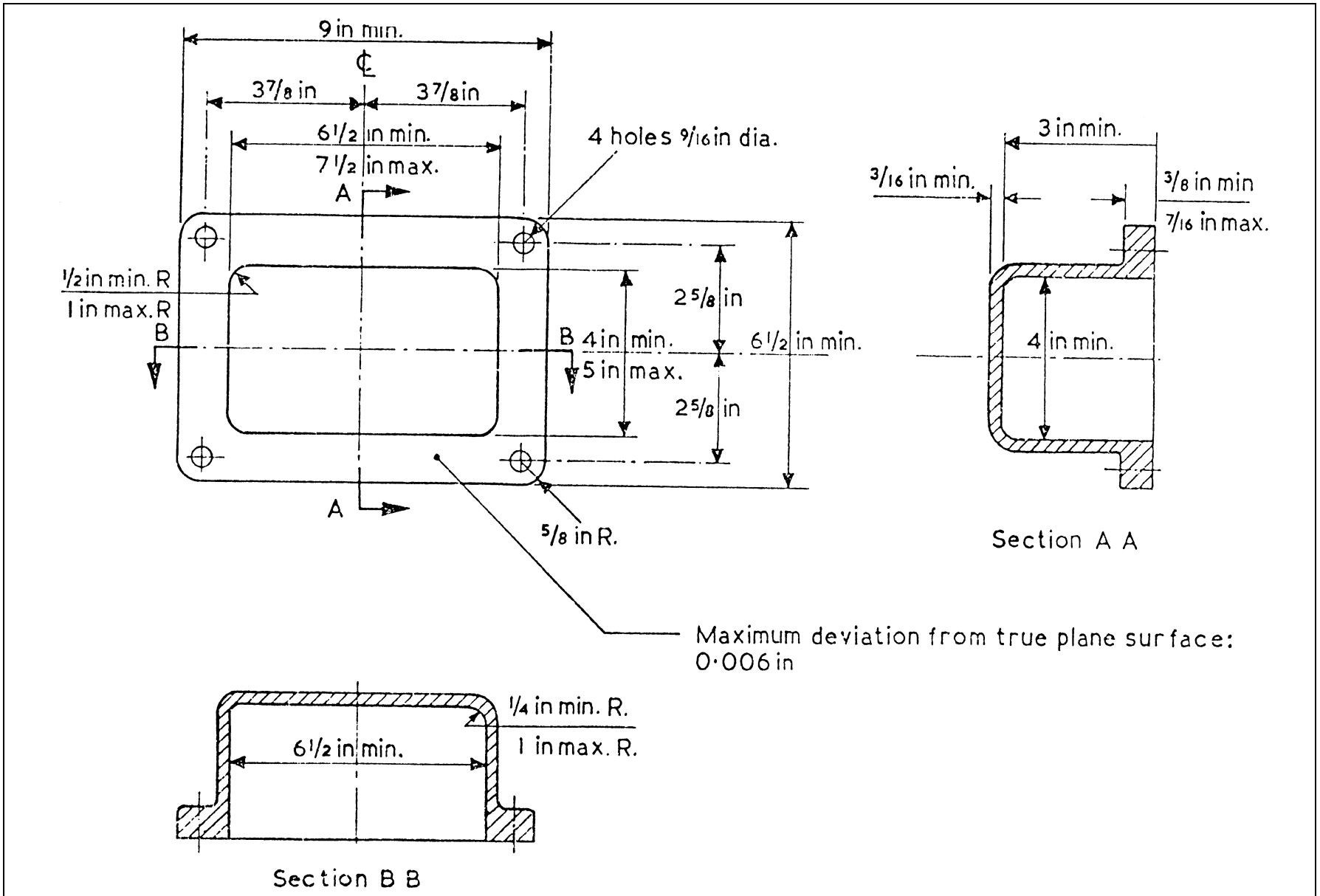

Figure 4 — Busbar end cover

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British Standards

The following are available on the application:
YEARBOOK
Including subject index and numerical list of British Standards
SECTIONAL LISTS. Gratis
Acoustics (SL 10)
Aerospace materials and components (SL 25)
Automobile (SL 34)
British Standard Handbooks (SL 27)
Building (SL 16)
Chemical engineering (SL 5)
Chemicals, fats, glues, oils, soap, etc. (SL 4)
Cinematography and photography (SL 1)
Coal, coke and colliery requisites (SL 13)
Codes of Practice (SL 8)
Consumer goods (SL 3)
Documentation, including Universal Decimal Classification (SL 35)
Drawing practice (SL 37)
Electrical engineering (SL 26)
Farming, dairying and allied interests (SL 31)
Furniture, bedding and furnishings (SL 11)
Gardening, horticulture and landscape work (SL 41)
Gas and solid fuel and refractories (SL 2)
Glassware, excluding laboratory apparatus (SL 39)
Heating, ventilating and air conditioning (SL 42)
Hospital equipment (SL 18)
Illumination and lighting fittings (SL 14)
Industrial instruments, etc. (SL 17)
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