Specification for

50A 650V flameproof, restrained and bolted plugs and sockets for use in coal mines

Confirmed
January 2011

UDC 622.005:621.316.541.1-213.34

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Mining and Quarrying Requisites Standards Policy Committee (MQE/-) to Technical Committee MQE/14, upon which the following bodies were represented:

Association of British Mining Equipment Companies
British Cable Makers' Confederation
British Coal Corporation
Council for Electrical Equipment for Flammable Atmospheres (BEAMA Ltd.)
Health and Safety Executive
Institution of Mining Electrical and Mining Mechanical Engineers
Institution of Mining Engineers
Rotating Electrical Machines Association (BEAMA Ltd.)
Transmission and Distribution Association (BEAMA Ltd.)

This British Standard, having been prepared under the direction of the Mining and Quarrying Requisites Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 31 July 1990

First published August 1974
Second edition July 1990

The following BSI references relate to the work on this standard:
Committee reference MQE/14
Draft for comment 87/71282 DC

ISBN 0 580 18482 X

Amendments issued since publication

Amd. No.	Date	Comments

Contents

Foreword

This revision of BS 5125 has been prepared under the direction of the Mining and Quarrying Requisites Standards Policy Committee. It supersedes BS 5125:1974 which is withdrawn. This revision updates the specification to reflect today's usage of 50 A restrained and bolted plugs and sockets designed primarily for equipment used in mining. Due cognizance has been taken of the relevant requirements of BS 4683-2 and BS 5501-5.

This standard is designed to ensure interchangeability of plugs and sockets of different makes, and to standardize the fixing dimensions of sockets; it specifies some electrical and mechanical requirements but does not purport to provide a fully detailed design.

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. Attention is drawn to the Health and Safety at Work etc. Act 1974, the Mines and Quarries Act 1954, the Regulations made under these Acts, and also any other appropriate statutory requirements or bye-laws. These place responsibility for complying with certain specific safety requirements on the manufacturer and the user. The address of the recognized certification authority in the UK for Group I (coal mining) apparatus for flameproof purposes is as follows.

Health and Safety Executive
HSE (M) Certification Support Unit
Harpur Hill
Buxton
Derbyshire SK17 9JN

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 16, 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 the dimensional and test requirements for 50 A flameproof restrained and bolted plugs and sockets suitable for voltages not exceeding 650 V, primarily intended for use with mining apparatus which is connected to its power supply by means of a flexible cable. These plugs and sockets incorporate three power contacts, one pilot contact for electrical interlocking, and a scraping earthing contact. Provision is also made for cable couplers, to enable lengths of flexible cable to be coupled together.

NOTE 1 The figures in this standard show only those essential features and dimensions for function and interchangeability.
NOTE 2 Appendix A lists the information to be supplied by the purchaser.
NOTE 3 The titles of publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply.

2.1
plug and socket

a device consisting of two portions having metallic contacts and arranged to engage with each other, so forming a ready means of connecting or disconnecting current-using apparatus to or from the source of electrical supply

2.2
flameproof plug and socket

a plug and socket which, when its parts are properly assembled together with the cable attached, complies with the relevant flameproof requirements

2.3
restrained plug and socket

a plug and socket in which the two portions are engaged, retained and disengaged by means of a screwed union-ring

2.4
bolted cable plug and socket

a plug and socket designed to be held together by two or more bolts or screws, or studs and nuts, in such a way that the plug and socket cannot be disengaged without the use of a tool

2.5
plug

that portion of a plug and socket having contacts consisting of tubes and which is attached to a flexible cable

2.6
socket

that portion of a plug and socket having contacts consisting of pins and which is designed for the insertion and engagement of a plug

2.7
fixed socket

a socket incorporating a flange for attachment to associated apparatus

2.8
coupler socket

a socket which embodies a cable gland for attachment to a flexible cable

2.9
cable coupler

an assembly of a plug and a coupler socket

2.10
scraping earthing contact

a device to ensure electrical continuity of the earthing connection between a plug and socket

2.11
cable gland

a device designed to secure the end of a cable by means appropriate to the type of cable, and which may include provision for making electrical connection to any screen or metallic covering

2.12
closer cap

a cap primarily intended for blanking off motor sockets (see note to clause **10**)

3 Metallic components

The material for external components and enclosures shall be one of the following:

a) a corrosion resistant ferrous alloy;

b) a non-ferrous metal, other than aluminium, magnesium or titanium;

c) an alloy containing the metals aluminium, magnesium, titanium, either singly or in combinations, providing that the total content of these three constituents does not exceed 15 % (*m*/*m*) of the alloy and the combined content of magnesium and titanium does not exceed 6 % (*m*/*m*) of the alloy.

No component part shall be painted or coated with preparations containing, in metallic form, aluminium, magnesium or titanium.

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

4 Insulation

4.1 Insulation materials

Properties of materials for electrical insulating components shall comply with Table 1.

4.2 Insulators

Insulators shall be free from voids, cracks and deleterious inclusions and shall comply with **13.8**.

5 Contacts

Each plug and socket shall be provided with three power contacts and one auxiliary contact, i.e. contact tubes or contact pins, as appropriate, arranged as shown in Figure 1 to Figure 4.

NOTE Provision for one of the power contacts and/or the pilot contact may be omitted from a bolted socket, subject to compliance with all other requirements of this standard.

6 Terminals

6.1 General

Terminals shall be bored to suit the size of cable to be used and shall be capable of being bored to a maximum diameter of 8 mm. For applications where the cable size is not given, terminals shall be bored to a diameter of 6 mm. Terminals shall be integral with contact tubes and contact pins.

NOTE This does not preclude the use of dissimilar metals for contact and terminals.

Where screws are used as the clamping device on a terminal, not less than two such screws shall be provided and they shall be flat point hexagon socket screws complying with BS 4168.

Each terminal shall provide for the entry of the conductor to a minimum depth of 15 mm.

6.2 Earthing

Earthing terminals shall be provided in the plugs and shall be capable of securely accommodating conductors of 6 mm^2 to 25 mm^2 cross-sectional area. Additional terminals shall be provided to accommodate securely any metallic screens.

7 Plug

7.1 Case

The general dimensions of the case of the plug shall be as given in Figure 1 or Figure 3 and Figure 5 or Figure 6 as appropriate. The engaging portion of the case of the plug which protects the contact tubes shall be of metal having a tensile strength of not less than 450 N/mm^2 when determined in accordance with BS 18.

The remaining portion of the case shall be of metal having a tensile strength of not less than 225 N/mm^2.

The external surface of the engaging portion of the plug casing shall form part of a scraping earthing contact and shall be electrically continuous with the remainder of the plug casing (see **8.3**).

7.2 Contact tubes (power and pilot)

The dimensions of the tubes shall be as shown in Figure 1 or Figure 3 as appropriate, and when assembled they shall be self-adjusting to the extent necessary to accommodate at least the permitted tolerances on position shown in Figure 1 or Figure 3.

Contact tubes shall be of any suitable metal having:

a) a hardness of not less than 70 HB when determined in accordance with BS 240;

b) a volume resistivity of not more than 11 $\mu\Omega$ cm at a temperature of 20 °C.

Table 1 — Properties of electrical insulating materials

Property	Value	Test method
Electric strength (90 °C)	8 kV/mm (min.)	BS 2782-2, method 220 or 221[a]
Volume resistivity	1×10^{13} Ω cm (min.)	BS 2782-2, method 230A[b]
Tensile strength	34.5 N/mm^2 (min.)	BS 2782-3, method 320D
Flexural strength	60 N/mm^2 (min.)	BS 2782-3, method 335A
Impact strength	10 kJ/m^2 (min.)	BS 2782-3, method 359
Water absorption[c]	50 mg (max.)	BS 2782-4, method 430A
Comparative tracking index[c]	CTI 400 (min.)	BS 5901
Oxygen index	28 % (min.)	BS 2782-1, method 141

NOTE 1 N/mm^2 = 1 MPa.
[a] Also numbered BS 903-C4.
[b] Also numbered BS 903-C2.
[c] Preparatory to any testing for these properties remove not less than 0.5 mm by machining from all the surfaces of the test specimen and then finish smoothly.

Contact tubes shall make good electrical contact with the pins when the plug is inserted in the socket and shall comply with **13.2**, **13.3** and **13.4**.

7.3 Cable glands

A cable gland shall be provided, suitable for the size and type of cable to be accommodated, up to a maximum overall diameter of 55 mm. Cable glands shall be of the compression type and shall be provided with the following:

a) the means to comply with the relevant requirements of BS 5501-5 for flameproof cable entries;

b) the means to secure the cable;

c) the means to seal the assembly against ingress of moisture.

Where a pliable wire armoured cable is to be accommodated in the gland, a device shall be provided to clamp the armour wires in such a way that a good electrical connection is made to the casing.

NOTE 1 Where non-metallic screens in direct contact with the earthing conductor are incorporated in a cable, it is not necessary to connect these screens to the additional terminals provided in accordance with **6.2**.

NOTE 2 The following types of cable are normally employed:

a) flexible cable with individually screened power cores;

b) flexible cable with collectively screened cores;

c) pliable wire armoured flexible cable with or without individually screened power cores.

NOTE 3 The purchaser should state in the enquiry or order the type of cable to be accommodated in the cable gland (see Appendix A).

8 Socket

8.1 Case

The case of the socket shall be of metal having a tensile strength of not less than 225 N/mm^2 when determined in accordance with BS 18 and shall have the general dimensions shown in Figure 2 or Figure 4 and Figure 5 or Figure 6 as appropriate.

8.2 Contact pins (power and pilot)

Contact pins shall be solid and of any suitable metal having:

a) a hardness of not less than 70 HB determined in accordance with BS 240;

b) a volume resistivity of not more than 11 $\mu\Omega$ cm at a temperature of 20 °C.

Contact pins shall comply with the dimensions in Figure 2 and Figure 4.

8.3 Scraping earthing contact

The earth continuity circuit between a plug and socket shall be made by contact between the external surface of the engaging portion of the plug casing and the internal surface of scraping contacts mechanically attached and electrically connected to the socket casing.

The contact shall comply with **13.9**.

The design shall be such that the earthing contact shall be made before the power contact pins and tubes come into contact and shall not be broken until the contact pins and tubes have separated.

9 Retaining device

9.1 Restrained type

Of the two portions, i.e. the plug, and the socket or coupler socket, arranged to engage with each other, the plug shall be provided with an internally threaded union-ring capable of rotating on it but not readily detachable from it, and the socket or the coupler-socket shall be provided with an external thread suitable to take the thread of the screwed union-ring. The construction shall be such that the contact pins and contact tubes of the two portions do not come into contact until the union-ring has at least three threads in engagement.

NOTE The union-ring thus forms an operating and retaining device for engaging and disengaging the two portions. Particulars of the union-ring on the plug and the external threads on the socket are shown in Figure 3 and Figure 4 respectively.

The ring shall be drilled with two 9 mm diameter holes positioned diametrically opposite to each other to enable a padlock to be fitted.

9.2 Bolted type

Both portions arranged to engage with each other shall be provided with an external flange, the plug portion shall have clearance holes and the socket portion tapped holes, suitable for taking securing screws. The external flange of the plug portion shall be provided with the means for shrouding the socket heads of the securing screws. The dimensions of the coupling screws, also the dimensions and positions of the holes and of the means of shrouding, shall be as shown in Figure 1 and Figure 2.

10 Closer cap for bolted socket

The closer cap shall be of metal having a tensile strength of not less than 225 N/mm^2 when determined in accordance with BS 18 and shall display the following warning note (see also Figure 7).

"WARNING: PINS MAY BE LIVE DUE TO MOTOR ROTATION"

NOTE The closer cap is intended for use on motor sockets. It does not have clearances suitable for blanking off sockets on switchgear where socket contact pins are energized at mains voltage.

11 Dimensions

The dimensions of the plug and socket assembly shall be as shown in Figure 5 and Figure 6, as appropriate. The dimensions of the closer cap for use with bolted sockets shall be as shown in Figure 7.

NOTE The dimensions of the associated mounting flange and external overall dimensions are given in Figure 8 to assist the manufacturers of associated equipment.

12 Flameproof enclosure

Plugs, sockets and closer caps shall comply with the requirements for flameproof enclosure Group I apparatus in accordance with BS 5501-5.

NOTE 1 The dimensions shown in Figure 1 to Figure 8 comply with the requirements for flameproof enclosure Group I apparatus in accordance with BS 5501-5.

NOTE 2 Existing policy within the Health and Safety Executive [HSE(M)] is to certify plugs and sockets as Ex components complying with BS 5501-1 and BS 5501-5. The annex of each component certificate is so worded to permit the plug or socket (either restrained or bolted types as the case may be) to be used in combination with any restrained or bolted plug or socket (as appropriate) which complies with the dimensional requirements for flamepaths and fixing centres of this standard, and has been certified by HSE(M) for flameproof enclosure Group I apparatus. In this way plugs and sockets complying with this standard and certified as complying with BS 5501 or BS 4683 or BS 229 can be intermixed without restriction in UK mines.

13 Type tests

13.1 General

Type tests to establish that the design complies with this standard shall be carried out, on a representative plug and socket.

13.2 First temperature rise test

13.2.1 *Requirement*

When tested as described in **13.2.2**:

a) the highest measured temperature within the plug and socket shall not exceed the temperature reached by the cable conductor by more than 10 K;

b) the highest measured temperature rise within the plug and socket shall not be greater than 45 K.

13.2.2 *Procedure*

13.2.2.1 Conduct the test under draught-free conditions.

13.2.2.2 Mount the socket on the outside of a non-metallic enclosure, the volume of which shall not exceed 0.05 m^3. Attach an insulated flexible conductor of 16 mm^2 cross-sectional area and having a length of between 0.5 m and 1 m to each power terminal of the socket.

Attach the plug to a 2 m length of flexible cable having three power conductors each of 16 mm^2 cross-sectional area. Where screws are employed, the conductors shall be secured in their respective terminals solely by means of such screws.

13.2.2.3 Place seven temperature sensing devices, such as thermocouples, in positions as follows to determine the temperature rise within the plug and socket assembly.

a) Attach one device to the terminal of each power contact tube, adjacent to the flexible cable conductor.

b) Attach one device to the terminal of each power pin contact, adjacent to the conductor.

c) Insert one device into one of the power conductors in the flexible cable at a point approximately 1 m from the cable gland, the device entering through a small hole bored in the cable sheath and insulation.

13.2.2.4 With the plug and socket engaged, pass an alternating current of 50 A, 40 Hz to 62 Hz through the cable, plug and socket, and flexible tails; record the temperature indicated by each sensing device at regular timed intervals.

13.2.2.5 Continue the test until the temperature of the plug and socket has attained a stability within 1 K/h.

13.3 Mechanical endurance test

13.3.1 *Requirement*

The plug and socket shall withstand 500 insertions and withdrawals without displaying deterioration.

13.3.2 *Procedure*

Immediately on completion of the first temperature rise test (see **13.2**) secure the assembly to a test rig that enables the plug to be both rapidly inserted into, and withdrawn from, the socket for 500 operations. The assembly under test shall be clean, dry and free from any lubricant.

NOTE For this test either the socket or plug may form the moving portion and the trailing cables may be suitably supported to prevent flexing; the retaining device, i.e. the screw for bolted units, may be omitted.

13.4 Second temperature rise test

13.4.1 *Requirement*

When tested as described in **13.4.2**, the plug and socket shall comply with **13.2.1**.

13.4.2 *Procedure*

On completion of the test described in **13.3** insert the plug into the socket and conduct a second temperature rise test as given in **13.2.2**.

13.5 High voltage tests

13.5.1 *Requirement*

When tested as described in **13.5.2**, a plug and socket assembly shall withstand, i.e. show no visible signs of disturbance such as burning, for a period of not less than 15 min, the test voltages in items a) to c) below. The test voltages shall be a.c. of approximate sine wave form and of any frequency between 40 Hz and 62 Hz. The test voltages are as follows:

a) 3 kV between each contact pin and tube assembly and each of the other contact pin and tube assemblies;

b) 3 kV between each power contact pin and tube and the metallic casing;

c) 0.5 kV between the auxiliary contact pin and tube and the metallic casing.

13.5.2 *Procedure*

Prepare a plug and socket assembly as in **13.2.2.2**. With the plug and socket engaged commence the test at a voltage of about one-third of the appropriate test voltage and increase to the full test voltage as rapidly as is consistent with its value being indicated. Maintain the test voltage for not less than 15 min.

13.6 Rated short time current test

13.6.1 *Requirement*

When tested as described in **13.6.2**, an assembled plug and socket shall withstand a current of 8 kA r.m.s. symmetrical for 0.2 s with an asymmetrical peak value of not less than 16 kA. The plug and socket assembly shall be deemed to withstand the test if there are no visible signs of disturbance.

NOTE Light welding of the contacts is permitted, providing the plug can be withdrawn by hand. If any burning is visible the first temperature rise test described in **13.2**, should be repeated without reconditioning.

13.6.2 *Procedure*

Prepare a plug and socket assembly as in **13.2.2.2**. With the plug and socket engaged pass the current through the assembly at any convenient voltage.

13.7 Cable gland testing

13.7.1 *Requirement*

When tested as described in **13.7.2** cables shall comply with BS 5501-5.

13.7.2 *Procedure*

Carry out the test for cable entry as specified in BS 5501-5. Take account of the type of cable used.

13.8 Insulator heat test

13.8.1 *Requirement*

When tested as described in **13.8.2** visual examination of the insulator shall not reveal any form of surface cracking or scaling. The insulator dimensions shall not depart from the original dimensions by more than 0.2 %

13.8.2 *Procedure*

Heat an insulator to 120 ± 5 °C and maintain that temperature for a period of 24 h, after which, allow it to cool to ambient temperature.

13.9 Scraping earthing contact test

13.9.1 *Requirement*

When tested as described in **13.9.2**, the axial force necessary to withdraw a mandrel from a scraping earthing contact (when assembled in a socket casing) shall be not less than 20 N. The mandrel shall be of plain carbon steel, 57.10 mm to 57.15 mm in diameter, clean, dry, smooth, cylindrical and having a surface texture not exceeding a roughness value of 1.6 μm in accordance with BS 1134-1.

13.9.2 *Procedure*

Measure the force necessary to withdraw a mandrel from a scraping earthing contact when assembled in the socket casing.

Table 2 — Contact tube conditioning data

Type	Diameter of test pin		Depth of engagement		Withdrawal force
	max.	min.	max.	min.	min.
	mm	mm	mm	mm	N
Power pin	7.90	7.88	13.0	12.0	20
Pilot pin	9.45	9.43	7.5	6.5	20

13.10 Contact tube conditioning test

13.10.1 *Requirement*

When a contact tube, complete with the means of springing, is conditioned and tested for contact pressure as described in **13.10.2**, the axial force necessary to withdraw a test pin shall comply with Table 2.

13.10.2 *Procedure*

Insert a contact tube into a sleeve which has an internal diameter equal to the upper limit of the tube insulator bore. Fully expand the tube by the insertion of a suitable tapered pin.

NOTE The test pin should be hardened and ground steel complying with the diametral sizes given in Table 2; check that the axial force necessary for its withdrawal complies with Table 2.

14 Routine tests

14.1 Batch testing

Routine sampling tests as specified in **14.2**, **14.3** and **14.4** shall be made on representative plugs and sockets on a percentage basis.

20 % of each of the first five batches shall be tested.

If any of the 20 % of each of the first five batches being tested fail to comply with **14.2**, **14.3** or **14.4**, then all of the relevant batch shall be tested.

If the rejection rate of the 20 % of each of the first five batches being tested is zero, then it is permitted to reduce the percentage being tested to 2 % of each batch and it to remain at that level.

If any of the 2 % of a batch being tested fail to comply with **14.2**, **14.3** or **14.4**, then all of the relevant batch shall be tested and the 20 % test percentage shall then be reinstated. When a rejection rate of zero for five batches has been achieved, then it is permitted to reinstate the reduced test percentage of 2 %.

14.2 Electric strength (high voltage) test

14.2.1 *Requirement*

When tested as described in **14.2.2** the insulation of plugs and sockets shall withstand an electric strength test for a minimum period of 5 s, without flashover or breakdown occurring.

14.2.2 *Procedure*

Apply an alternating test voltage of any frequency between 40 Hz and 62 Hz and of approximately sine wave form as follows:

a) 2.5 kV between each contact pin or tube, and each of the other contact pins or tubes;

b) 2.5 kV between each power pin or tube, and the metallic casing;

c) 0.5 kV between the auxiliary contact pin and tube, and the metallic casing.

14.3 Scraping earthing contact test

14.3.1 *Requirement*

Scraping earthing contacts shall be tested as described in **14.3.2**; they shall comply with **13.9.1**.

NOTE Where the scraping earthing contact is a separate component, it may be tested in a simulated socket.

14.3.2 *Procedure*

Test scraping earthing contacts in accordance with **13.9.2**.

14.4 Contact tubes test

14.4.1 *Requirement*

Contact tubes shall be tested as described in **14.4.2**, and shall comply with **13.10.1**.

14.4.2 *Procedure*

Test contact tubes in accordance with **13.10.2**.

15 Marking

All plugs and sockets complying with this standard shall be legibly and permanently marked with at least the following:

a) the registered trade name or trademark of the manufacturer, or of his agent;

b) the manufacturer's type designation;

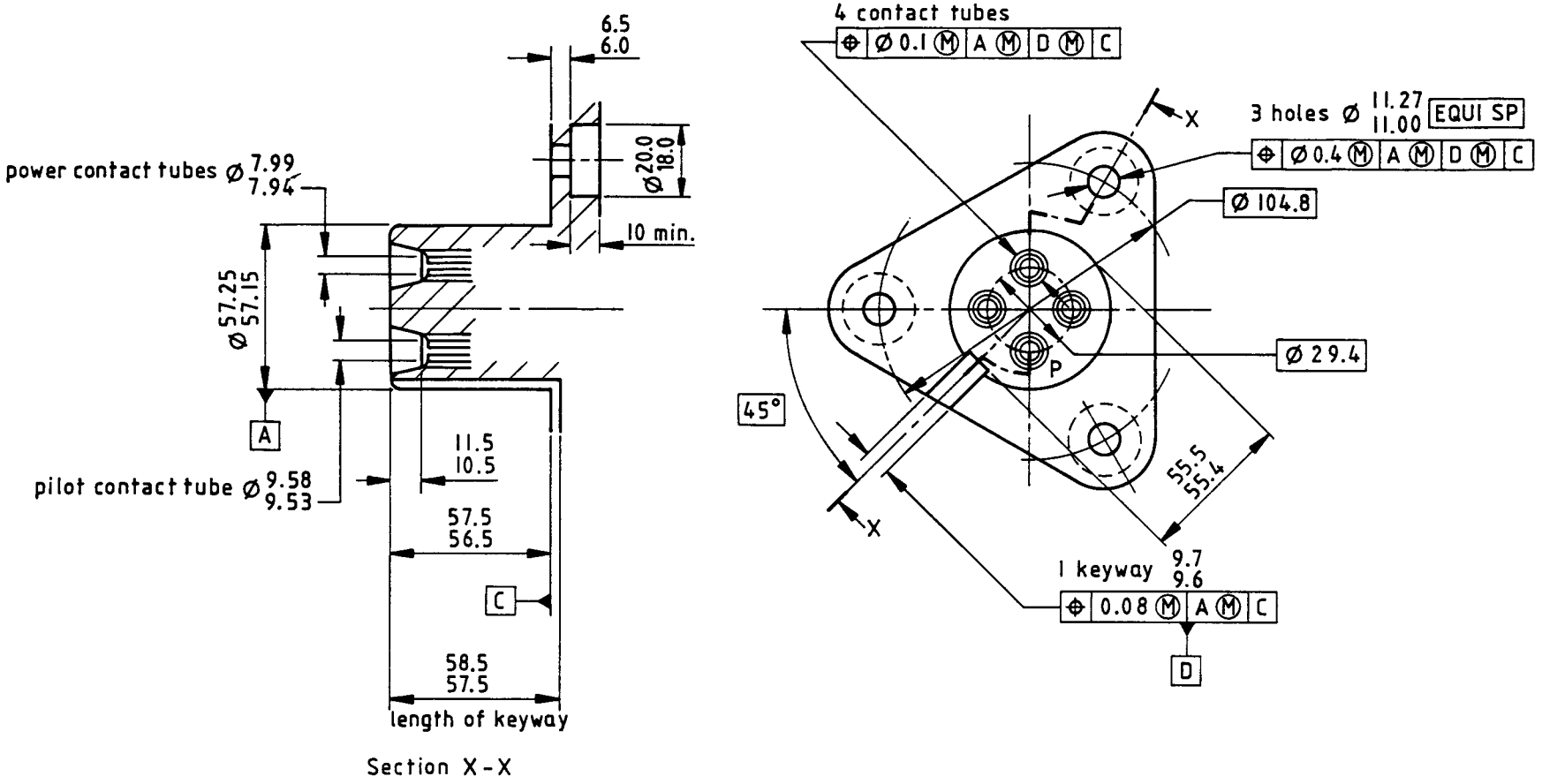
c) the voltage and current rating;

d) the number and year of this British Standard, i.e. BS 5125:1990[1)];

e) a warning "DO NOT SEPARATE WHEN ENERGIZED" on the plug of a bolted type plug and socket.

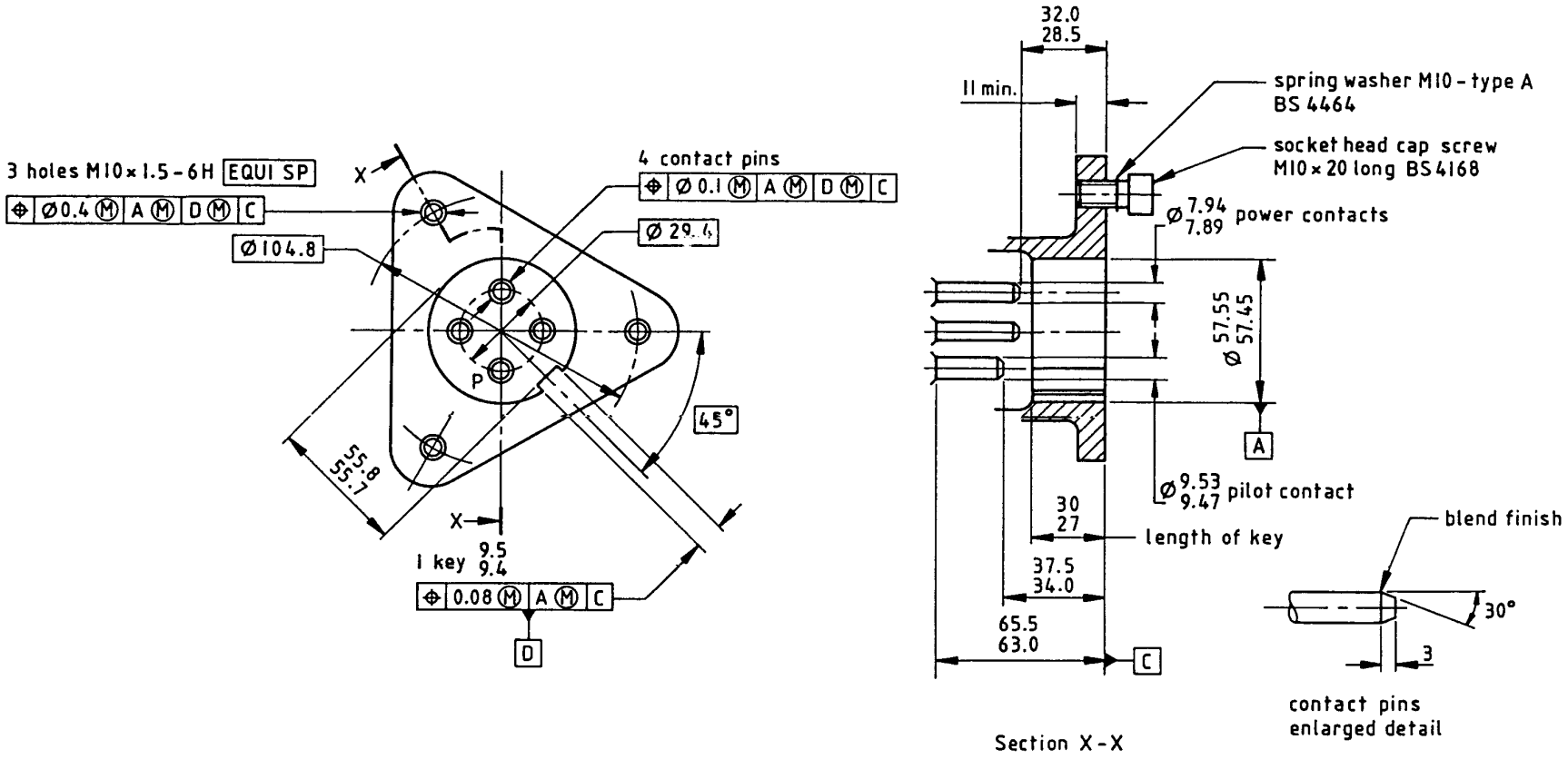
NOTE When a certificate has been obtained any additional marking requirements should be requested by the testing authority concerned.

[1)] Marking BS 5125:1990 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.



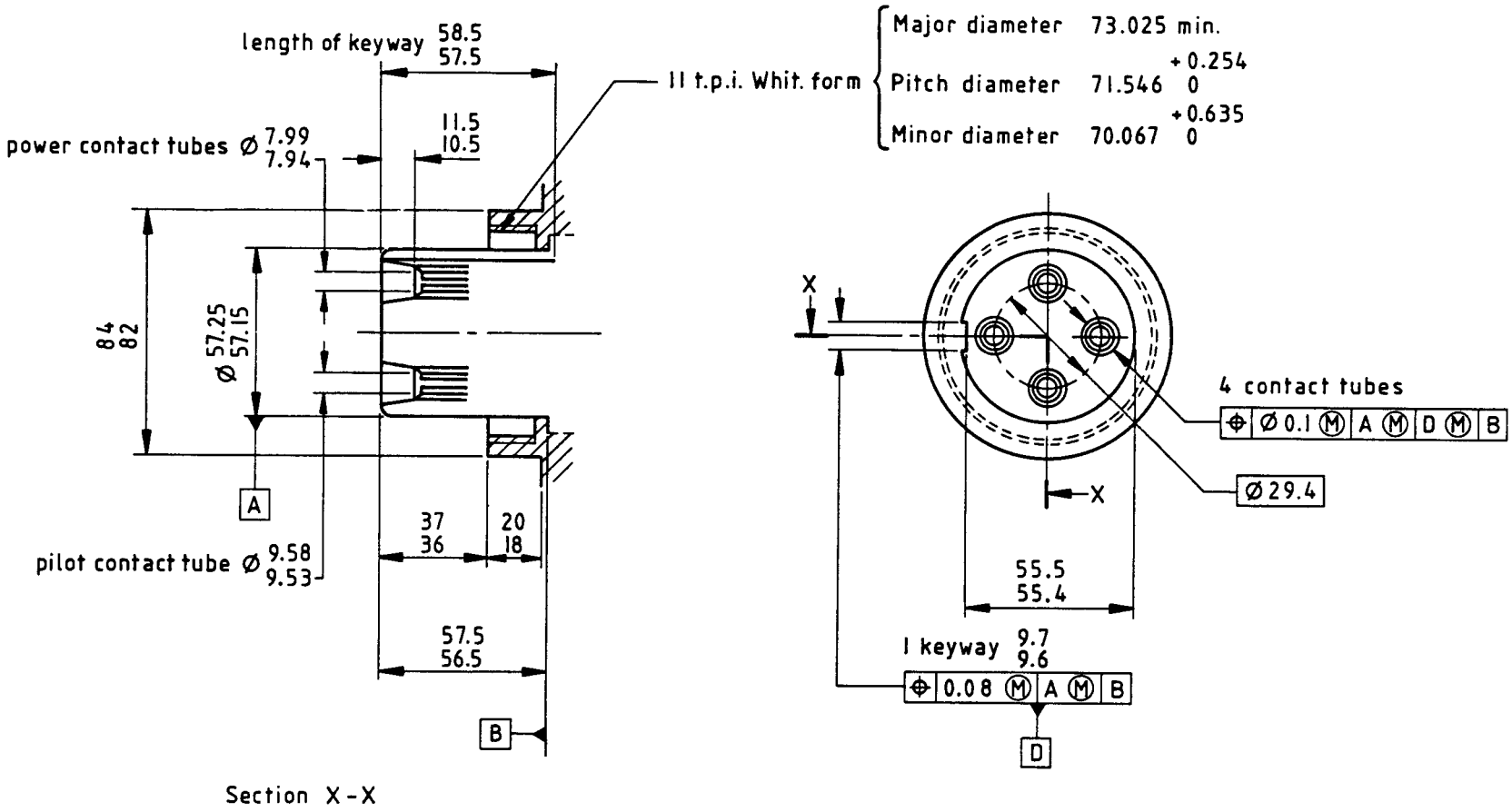
NOTE Contact tube bore dimensions are applicable prior to slotting.
Linear dimensions are in millimetres.

Figure 1 — Bolted plug



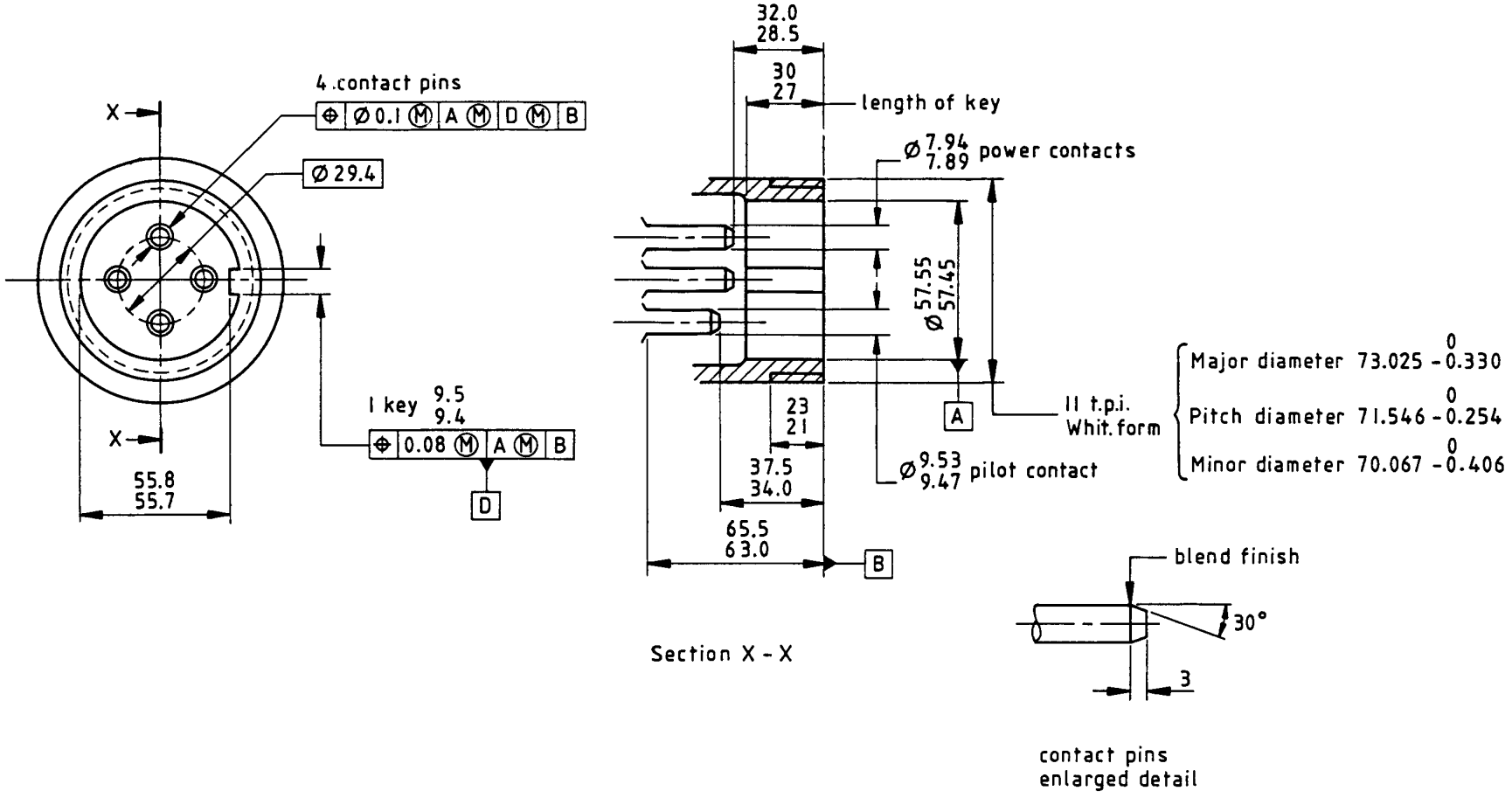
Linear dimensions are in millimetres.

Figure 2 — Bolted socket



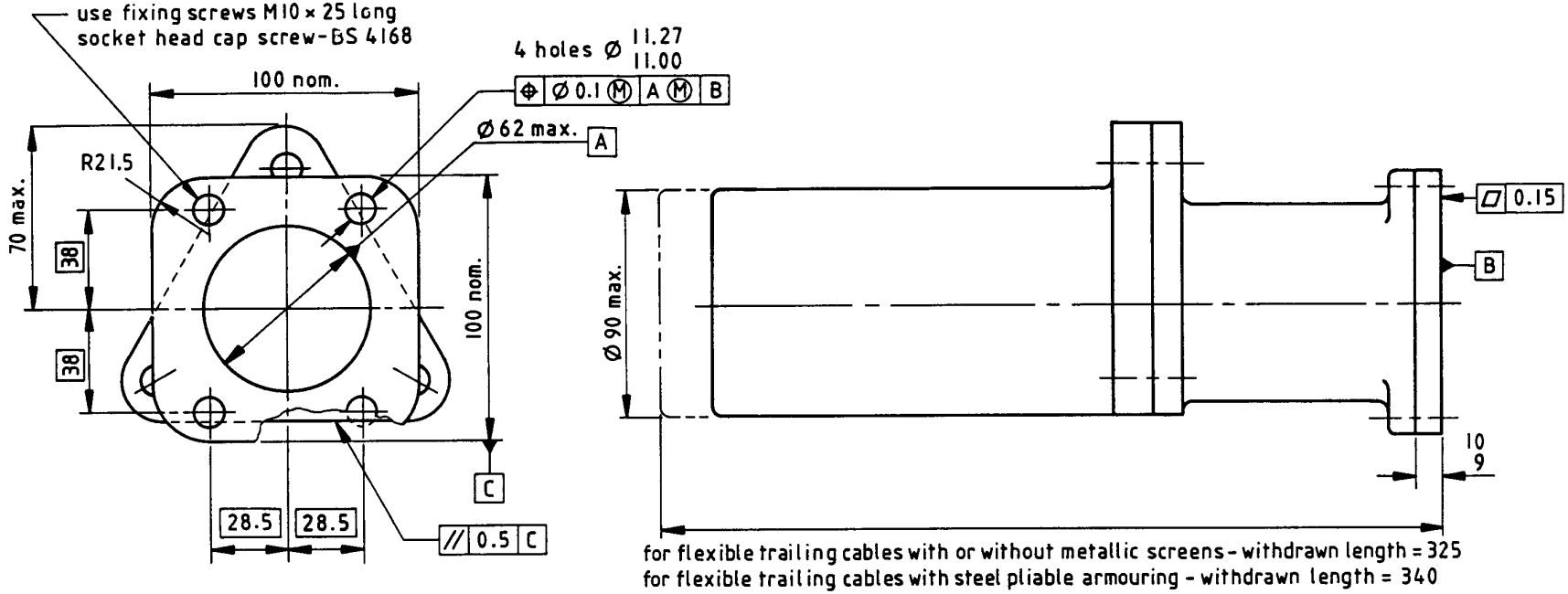
NOTE Contact tube bore dimensions are applicable prior to slotting.
Linear dimensions are in millimetres except where otherwise stated.

Figure 3 — Restrained plug



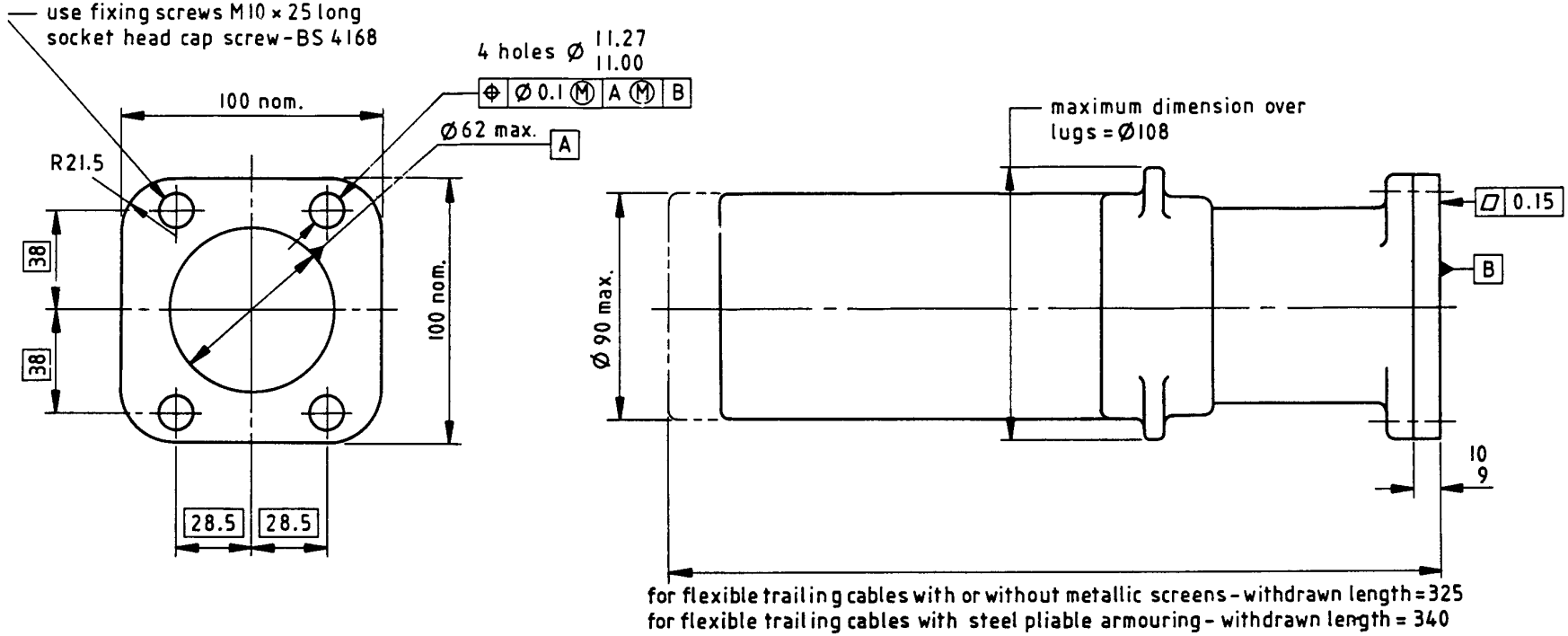
Linear dimensions are in millimetres except where otherwise stated.

Figure 4 — Restrained socket



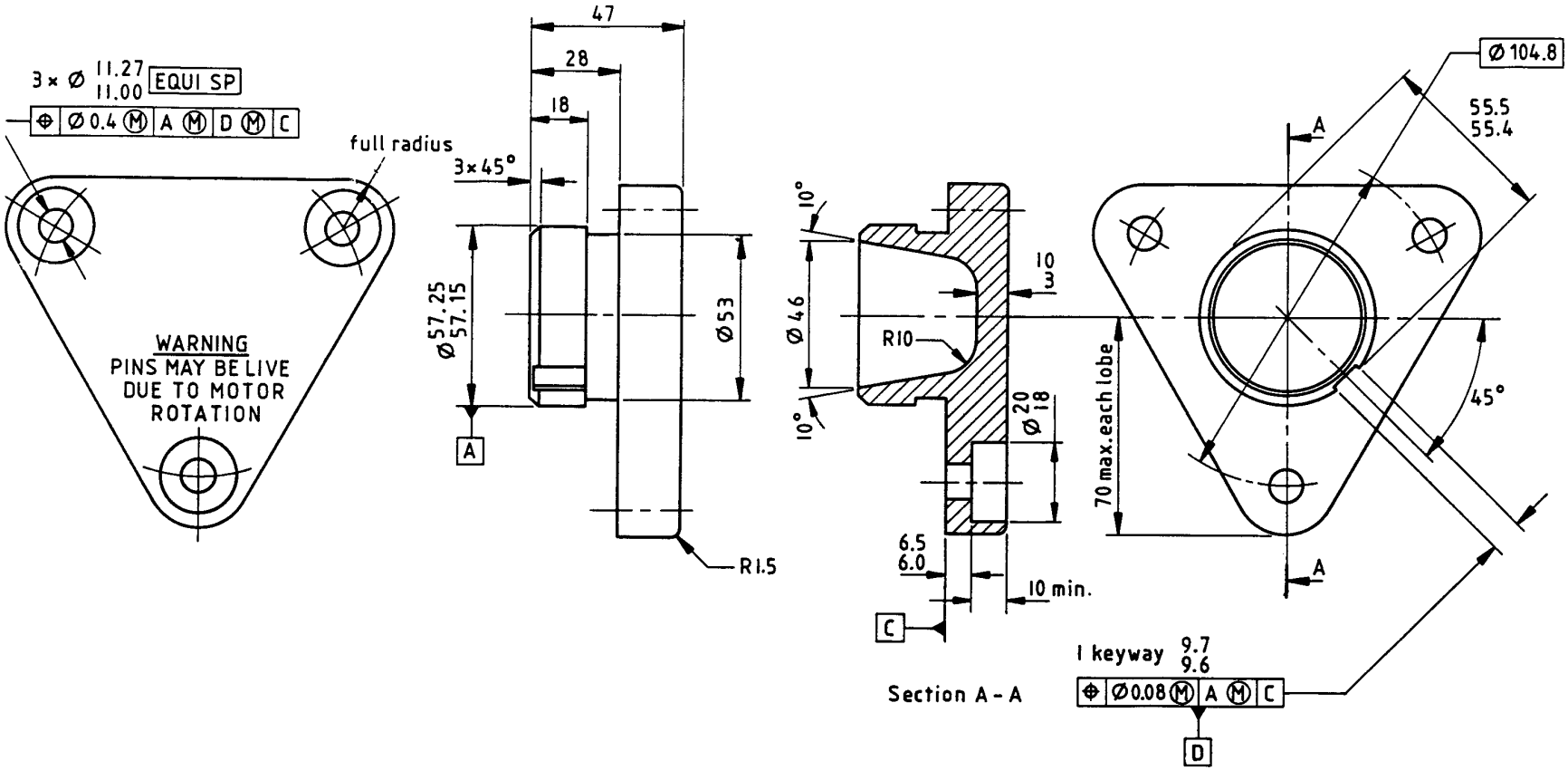
Dimensions are in millimetres.

Figure 5 — Bolted plug and socket assembly



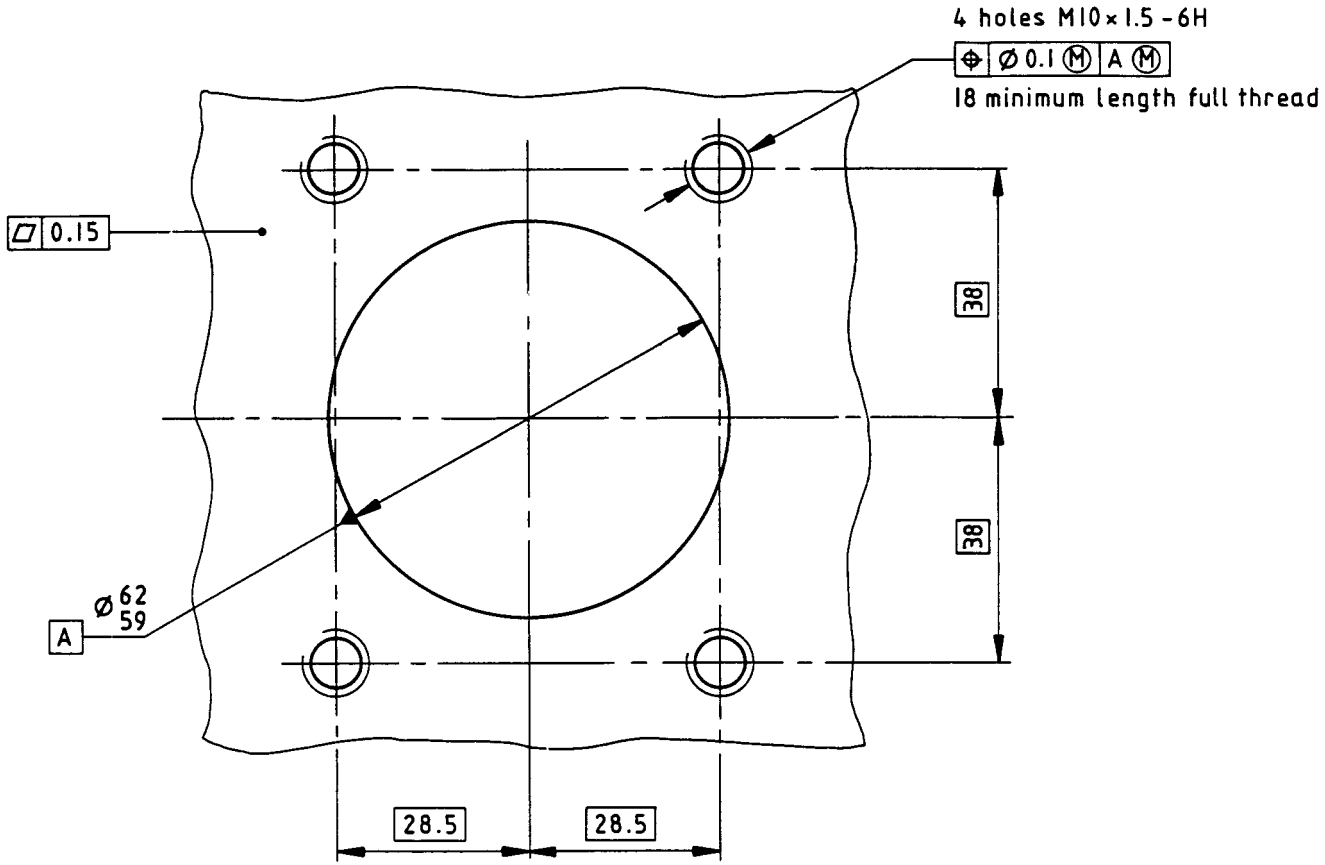
Dimensions are in millimetres.

Figure 6 — Restrained plug and socket assembly



Linear dimensions are in millimetres.

Figure 7 — Closer cap for bolted socket



All dimensions are in millimetres.

NOTE The external profile of the associated mounting flange may be of any convenient shape, provided that the external profile of the socket flange lies within it at all points, see Figure 6 and Figure 7.

Figure 8 — Associated mounting flange

Appendix A Information to be provided with enquiry and order

When requiring plugs and/or sockets to this specification, purchasers should give at least the following information:

a) the number of this British Standard, i.e. BS 5125;

b) nominal size of conductors (in mm^2);

c) the type of cable: if manufactured to a British Standard or other recognized standard specification, the appropriate specification number should be quoted; for other cables, complete details of the cable construction and dimensions should be given (see **7.3**);

d) the type of plugs and/or sockets required; i.e. restrained or bolted and, for sockets, whether of the fixed or the coupler variety.

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Publications referred to

BS 18, *Method for tensile testing of metals (including aerospace materials).*

BS 229, *Specification. Flameproof enclosure of electrical apparatus*[2)].

BS 240, *Method for Brinell hardness test and for verification of Brinell hardness testing machines.*

BS 903, *Methods of testing vulcanized rubber.*

BS 903-C2, *Determination of volume resistivity.*

BS 903-C4, *Determination of electric strength.*

BS 1134, *Assessment of surface texture.*

BS 1134-1, *Methods and instrumentation.*

BS 2782, *Methods of testing plastics.*

BS 2782-1, *Thermal properties.*

BS 2782-1:Method 141, *Determination of flammability by oxygen index.*

BS 2782-2, *Electrical properties.*

BS 2782-2:Methods 220 and 221, *Determination of electric strength: rapidly applied voltage method. Determination of electric strength: step-by-step method.*

BS 2782-2:Method 230A, *Determination of volume resistivity.*

BS 2782-3, *Mechanical properties.*

BS 2782-3:Methods 320A to 320F, *Tensile strength, elongation and elastic modulus.*

BS 2782-3:Method 335A, *Determination of flexural properties of rigid plastics.*

BS 2782-3:Method 359, *Determination of Charpy impact strength of rigid materials (Charpy impact flexural test).*

BS 2782-4, *Chemical properties.*

BS 2782-4:Methods 430A to 430D, *Determination of water absorption at 23 °C. Determination of water absorption at 23 °C with allowance for water-soluble matter. Determination of boiling water absorption. Determination of boiling water absorption with allowance for water-soluble matter.*

BS 4168, *Hexagon socket screws and wrench keys: metric series.*

BS 4464, *Specification for spring washers for general engineering and automobile purposes. Metric series.*

BS 4683, *Specification for electrical apparatus for explosive atmospheres.*

BS 4683-1, *Classification of maximum surface temperatures.*

BS 4683-2, *The construction and testing of flameproof enclosures of electrical apparatus.*

BS 5501, *Electrical apparatus for potentially explosive atmospheres.*

BS 5501-1, *General requirements.*

BS 5501-5, *Flameproof enclosure "d".*

BS 5901, *Method of test for determining the comparative and the proof tracking indices of solid insulating materials under moist conditions.*

[2)] Obsolescent. Replaced by BS 4683-2:1971, but remains current to maintain the validity of existing certificates and to grant supplementary certificates.

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