Amendment 1 - April 1990.

Dup

Superseded by AS 1299-1993

AS 1299—1989

Australian Standard®

# Electrical equipment for coal mines—Flameproof restrained plugs and receptacles

E



STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee EL/23, Electrical Equipment in Coal Mines. It was approved on behalf of the Council of Standards Australia on 3 December 1987 and published on 14 July 1989.

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The following interests are represented on Committee EL/23:

Australian Coal Association

Australian Electrical and Electronic Manufacturers Association

Confederation of Australian Industry

Department of Minerals and Energy, N.S.W.

Department of Mines, Qld

Joint Coal Board

Institution of Mining Electrical and Mining Mechanical Engineers

Regulatory authorities (electrical)

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*This Standard was issued in draft form for comment as DR 86116.*

STANDARDS AUSTRALIA

# Amendment No 1
# to
# AS 1299—1989
# Electrical equipment for coal mines—
# Flameproof restrained plugs and receptacles



**REVISED TEXT**

The 1989 edition of AS 1299 is amended as follows; the amendment(s) should be inserted in the appropriate place.

*SUMMARY*: This Amendment applies to Table 1.1, Table 2.1, Table 3.1, Clause 3.3.7.2, Clause 3.3.7.3, Table 3.3, Figure 1.13 and Figure 1.14.

Published on 2 April 1990.

AMDT No 1 APRIL 1990

## Page 5. Table 1.1.

*Add* the following:

| Voltage | Maximum current A | Colour code to AS 2700 | For dimensions refer to |
|---|---|---|---|
| 660 V | 425 | X15/N24 | Figure 1.13 |
| 1100 V | 425 | B24/N24 | Figure 1.14 |

AMDT No 1 APRIL 1990

## Page 17. Table 2.1.

*Add* the following:

| Rating A | Main core | | Pilot core | |
|---|---|---|---|---|
| | Diameter | Insertion depth | Diameter | Insertion depth |
| 425 | 23 | 25 | 7 | 10 |

AMDT No 1 APRIL 1990

## Page 19. Table 3.1.

*Add* the following:

| Current rating A | Axial force, newtons | |
|---|---|---|
| | To insert | To withdraw |
| 425 | $\leqslant 150$ | $\geqslant 60$ |

AMDT No 1 APRIL 1990

## Page 20. Clause 3.3.7.2.

*Add* the following:

| Current rating A | Cross-sectional area $mm^2$ |
|---|---|
| 425 | 185 |

AMDT No 1 APRIL 1990

## Page 20. Clause 3.3.7.3.

*Add* the following:

| Current rating A | Cross-sectional area $mm^2$ |
|---|---|
| 425 | 185 |

AMDT No 1 APRIL 1990

## Page 21. Table 3.3.

*Add* the following:

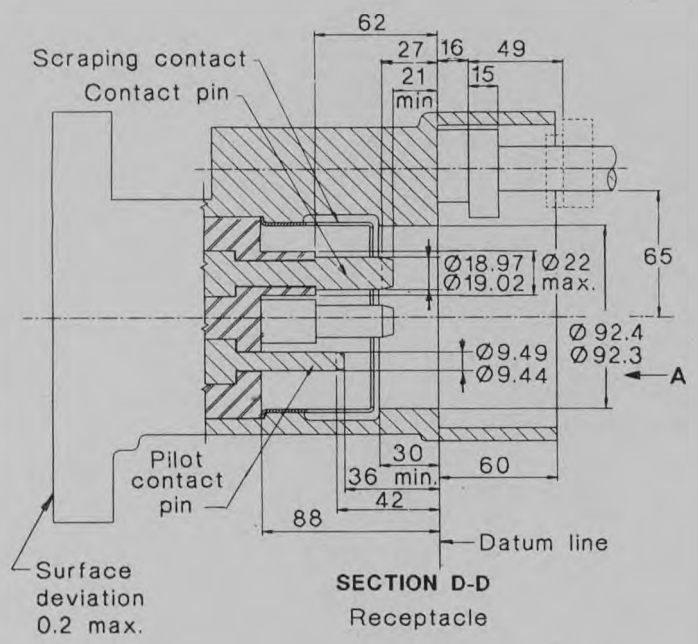
| Current rating, A | Test current, kA | | Asymmetrical peak factor | Power factor |
|---|---|---|---|---|
| | Rated voltage | | | |
| | 660/1.1 kV | 3.3 kV | | |
| 425 | 25 | — | 2.0 | 0.3 |

*Add* Figures 1.13 and 1.14.



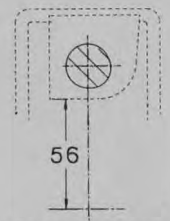


ISBN 0 7262 6130 0

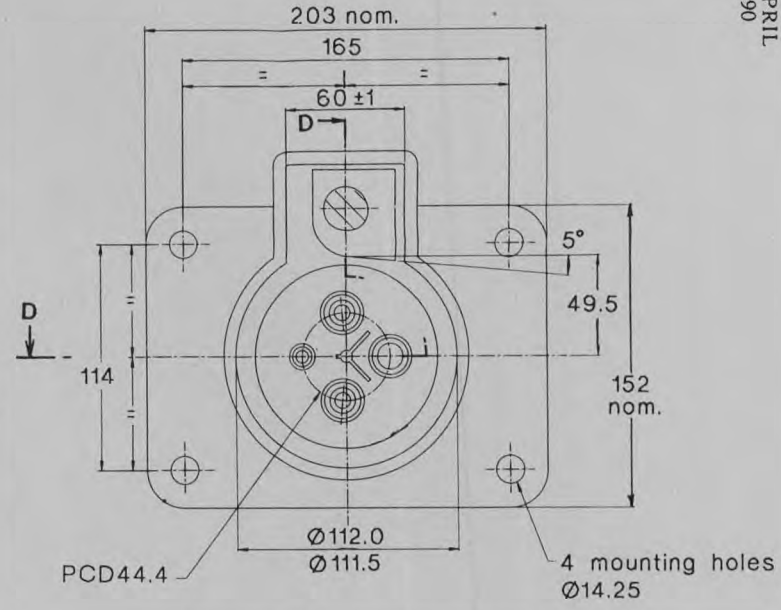



**SECTION D-D**

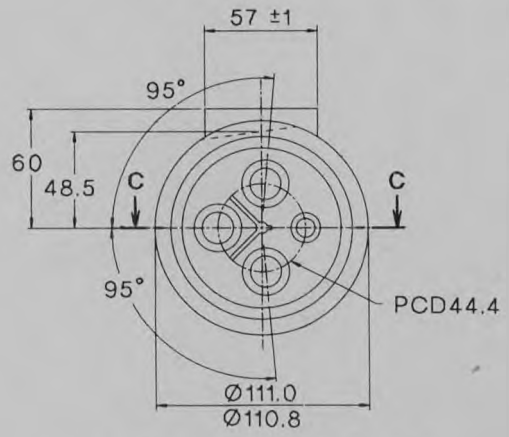
Receptacle



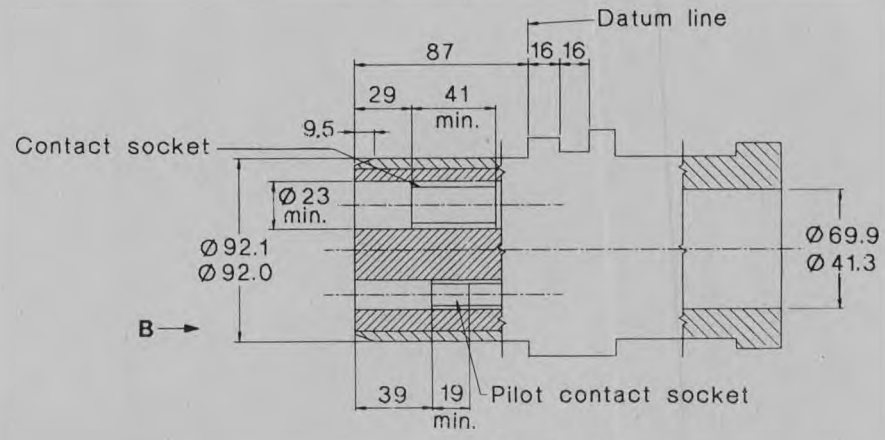

Position of pawl
with plug withdrawn




View in direction of arrow A




View in direction of arrow B

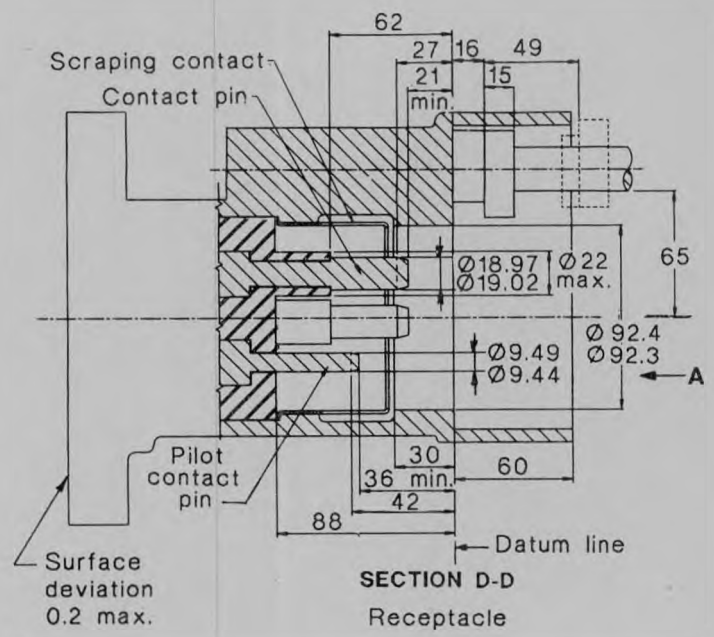



**SECTION C-C**

Plug

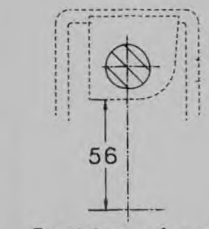
Untoleranced dimensions ±0.5
NOT TO SCALE
DIMENSIONS IN MILLIMETRES

FIGURE 1.13 PLUG AND RECEPTACLE, 660 V, 425 A

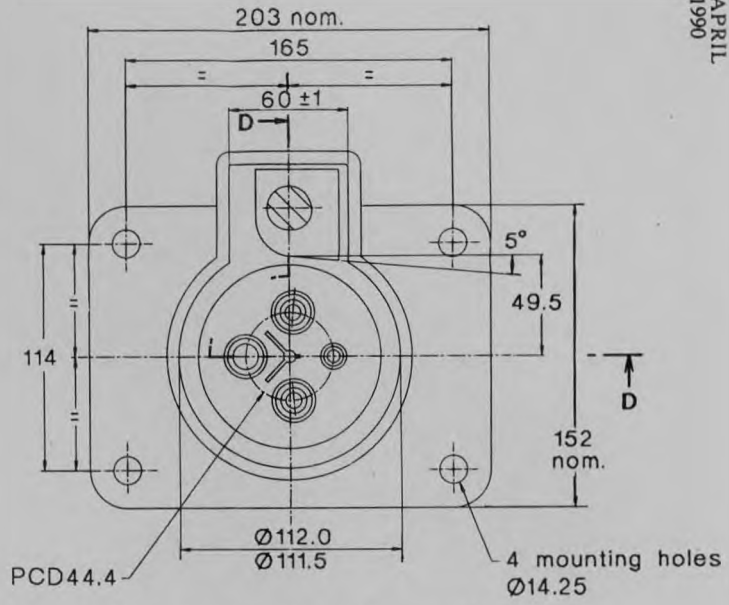



SECTION D-D

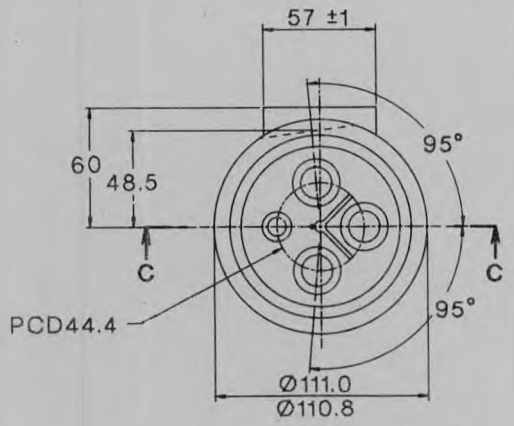
Receptacle



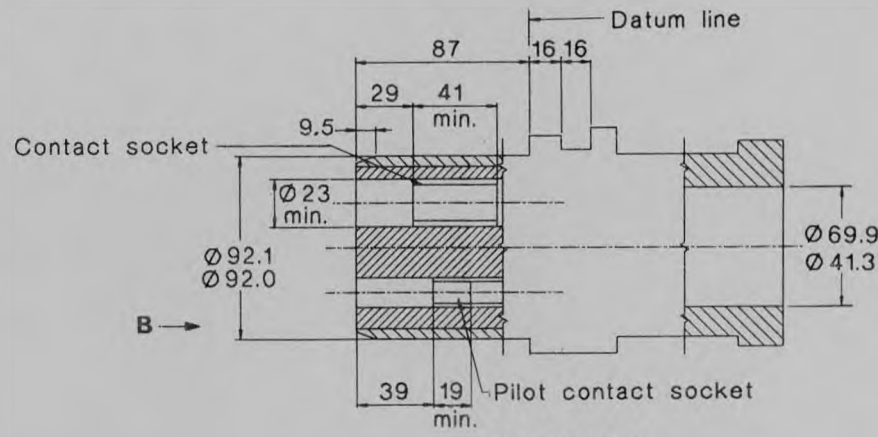

Position of pawl
with plug withdrawn




View in direction of arrow A




View in direction of arrow B




SECTION C-C

Plug

Untoleranced dimensions ±0.5
NOT TO SCALE
DIMENSIONS IN MILLIMETRES

FIGURE 1.14 PLUG AND RECEPTACLE, 1.1 kV, 425 A

AS 1299—1989

Australian Standard®

# Electrical equipment for coal mines—Flameproof restrained plugs and receptacles

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# PREFACE

This Standard was prepared by Standards Australia's Committee on Electrical Equipment in Coal Mines and supersedes AS 1299—1984. It is intended for the guidance of manufacturers, users, regulatory authorities and associated interests and for use with Australian Standards and relevant mining regulations.

Major changes are as follows:

(a) Provision for 3.3 kV rated plugs necessitating changes in appropriate tables, drawings and clauses.

(b) Changes to material tensile strength requirements of Clause 2.3 from 220 MPa to 450 MPa.

(c) Removal of minimum terminal crimping pressure requirement in Clause 2.6.1.

(d) Altered requirement for the PHASE BARRIER in Clause 2.9.

(e) Revision of the requirements of Clause 3.2.4, Insulation test.

(f) Incorporation of the 'cable gland (slip load) test' procedure into Clause 3.3, Type tests.

(g) Alterations to the time and voltage requirements of Clause 3.3.6, High voltage test.

(h) Stipulation of maximum ambient temperature for the temperature rise test in Clause 3.3.7.1.

(i) Incorporation of a table for TEST CURRENT in Clause 3.3.9, Short-circuit (through-fault) test.

(j) The plug and receptacle diagrams (Figures 1.3 to 1.12) are listed in the order given in Table 1.1 (by voltage).

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STANDARDS AUSTRALIA

# Australian Standard

# Electrical equipment for coal mines—Flameproof restrained plugs and receptacles

## SECTION 1. SCOPE AND GENERAL

**1.1 SCOPE.** This Standard specifies the dimensional and test requirements for flameproof restrained plugs and receptacles, incorporating three power contacts, one auxiliary contact, a scraping earth contact and an earthed phase barrier, intended for use with restricted earth-fault systems in coal mines. Provision is also made for plug coupling units which enable lengths of trailing cable to be coupled together.

Restrained plugs and receptacles to this Standard are not intended to be coupled or uncoupled while the circuit is energized.

The Standard prescribes the dimensions necessary to provide for the interconnection of restrained plugs and receptacles of different makes; it also deals with some electrical and mechanical requirements including the provision of earthed phase barriers for protection against interphase faults. It does not, however, purport to otherwise specify a fully detailed design.

The Standard provides for plug and receptacle discrimination, i.e. an arrangement whereby fitting of plugs and receptacles of different rated voltages is physically prevented from engagement.

NOTES:

1. The term 'receptacle' as used in this Standard is synonymous with the term 'socket-outlet' in AS 3000. The term 'receptacle' has been chosen to avoid confusion with the individual sockets within the plug.
2. Appendix A lists information which should be supplied by a user with any inquiry or order.
3. A typical plug and receptacle assembly is shown in Figure 1.1 and a typical plug coupling unit is shown in Figure 1.2.

**1.2 REFERENCED DOCUMENTS.** The documents below are referred to in this Standard.

AS

1147 Plastics insulating materials of mouldings for cable connecting devices for use in coal mines

1802 Reeling and trailing electric cables for underground coal mining purposes

1828 Electrical equipment for explosive atmospheres—Cable glands

1856 Electroplated coatings of silver for engineering applications

1972 Cables for use below ground in coal mines (Other than trailing cables)

2380 Electrical equipment for explosive atmospheres—Explosion protection techniques

2380.6 Part 6: Increased safety

2480 Electrical equipment for explosive atmospheres—Flameproof enclosure—Type of protection d

2700 Colour standards for general purposes

3000 SAA Wiring Rules

3147 Approval and test specification—Electric cables—Thermoplastic insulated for working voltages up to and including 0.6/1 kV

**1.3 DEFINITIONS.** For the purpose of this Standard the definitions below apply.

**1.3.1 Approved**—approved by a Regulatory Authority.

**1.3.2 Cable gland**—device to secure the end of a cable, by means appropriate to the type of cable, and may include provision for making earthing connections.

**1.3.3 Contact pin**—rigid conducting member for electrical power circuits intended to be inserted in a main contact socket of suitable form so as to make electrical contact.

**1.3.4 Contact socket**—resilient conducting member for electrical power circuits intended to receive a suitable main contact pin so as to make electrical contact.

**1.3.5 Cable reel receptacle, left hand**—one that is fitted to a standard drive shuttle car. (See Figure 1.5.)

**1.3.6 Cable reel receptacle, right hand**—one that is fitted to an opposite standard drive shuttle car. (See Figure 1.5.)

**1.3.7 Phase barrier**—metallic barrier which is electrically connected to earth, and is situated in the contact insulation in both the restrained plug and receptacle for the purpose of preventing an interphase fault within the unit.

**1.3.8 Pilot contact pin**—rigid conducting member for other than electrical power circuits intended to be inserted in a pilot contact socket of suitable form so as to make electrical contact.

**1.3.9 Pilot contact socket**—resilient conducting member for other than electrical power circuits intended to receive a suitable pilot contact pin.

**1.3.10 Plug**—that portion of a restrained plug and receptacle having contacts consisting of sockets and which is attached to a trailing cable and is designed for engagement within the receptacle.

**1.3.11 Receptacle**—that portion of a restrained plug and receptacle having contacts consisting of pins and which is designed to receive the plug.

**1.3.12 Regulatory Authority**—relevant authority responsible for the implementation of Government regulations applying to coal mines in each of the States and Territories of Australia.

**1.3.13 Restrained cable reel plug and receptacle**—special form of restrained plug and receptacle shaped to suit a right-angled entry into, and the periphery of, a cable reel drum.