

**JOHANNESBURG WATER (SOC) Ltd.**

**BULK WASTEWATER**

**PARTICULAR SPECIFICATION**

**E07 : ELECTRICAL INDUSTRIAL WELDING**

**PLUGS, COUPLERS AND SOCKET OUTLETS**



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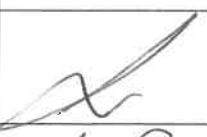
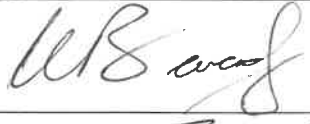

## DOCUMENT CONTROL SHEET

**Document Title:** Particular Specification – E07 : Electrical Industrial Welding Plugs, Couplers and Socket Outlets

**JW Reference:** BWW523C

**Document Ref. No:** E07

### DOCUMENT APPROVAL

ACTION	FUNCTION	NAME	DATE	SIGNATURE
Prepared	Senior Electrical Engineer	B Pieterse	August 2019	
Reviewed	Director	R Baard	August 2019	
Approved	Regional Maintenance Manager	T Thabeng	August 2019	

### RECORD OF REVISIONS

Date	Revision	Author	Comments
4	2019-08-20	B Pieterse	Review of Electrical Standards, plus New Design Guidance
3	2014-06-03		Review of Mechanical / Electrical and Control / Instrumentation Standards, plus New Design Guidance
2	2012-05-30		Review of Mechanical / Electrical and Control / Instrumentation Standards, plus New Design Guidance
1	2009-05-12		Review of Mechanical / Electrical and Control / Instrumentation Standards, plus New Design Guidance

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## **E07.1 SCOPE**

This specification covers the procurement, supply, delivery, installation testing and commissioning of the required industrial welding plugs, couplers and socket outlets for industrial purposes.

## **E07.2 STANDARDS**

### **E07.2.1 National Standards**

The latest edition, including all amendments up to date of tender of the following particular national specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

- (a) SANS 1222 : Enclosures for electrical equipment classified by IP code
- (b) SANS 1239 : Plugs, socket-outlets and couplers for industrial purposes
- (c) SANS 6309 : Plugs, socket-outlets and couplers for industrial purposes
- (d) SANS 1091 : National colour standard
- (e) SANS164-2 Plug and socket-outlet systems for household and similar purposes for use in South Africa Part 2: Two-pole and earth and 2 pin (Class II), 16 A 250 V a.c. system.
- (f) SANS 10142-1 : The Wiring of Premises Part 1 – Low Voltage Installations

### **E07.2.2 Particular specifications to be read in conjunction with this specification**

- (a) E26 : ELECTRICAL SPECIFICATION FOR COLOUR CODES
- (b) G02 : PARTICULAR SPECIFICATION FOR CORROSION PROTECTION
- (c) E06 : ELECTRICAL MEDIUM AND LOW VOLTAGE CABLE INSTALLATION
- (d) E08 : WIRING

## **E07.3 GENERAL REQUIREMENTS**

Switched 400V 3-phase, 3-wire and earth 63A industrial welding socket outlet plus a switched 230V, single phase, 3-wire 16A industrial socket outlet shall be supplied. A 4-core cable shall be used with an earth included in the supply cable.

### **E07.3.1 Single phase 16A household and similar purpose socket outlet**

Applied to general household, commercial and light industrial installations up to 250Vac 16 A.

- (a) Compliance: SANS 164-2/SANS10142-1
- (b) Wall mounted socket;
- (c) Be of the two-pole earthing contact type;
- (d) Incoming power supply via a 2-pole earth leakage protection unit located in the upstream distribution board;

### **E07.3.2 Single phase 16A industrial socket outlet**

- (e) Wall mounted socket;

- (f) Pin and sleeve configuration;
- (g) 2 pole, 3-wire with 2P+E 230V ac, 16A;
- (h) Incoming power supply via a 2-pole earth leakage protection unit located in the upstream distribution board;
- (i) Ingress protection IP67 (SANS 1222);
- (j) Switched locally on the socket outlet;
- (k) Mechanical interlock to prevent plugs from being engaged or disengaged under load;
- (l) Lockable by a padlock (40mm) at the switch-off position.

#### E07.3.3

##### Three phase 63A industrial welding socket outlet (5-pin)

- (a) Compliance: SANS 60309-1
- (b) 415Vac 3phase, neutral and protective earth (5 pin), 63A current rating
- (c) Housing: Powder coated die-cast aluminium
- (d) Colour: Electric orange RAL B26
- (e) Wall mounted socket with top cable entry with removable flange;
- (f) Pin and sleeve configuration;
- (g) 3-phase earth leakage protection unit mounted in the feeder cubicle in the MCC/DB;
- (h) Rated ingress protection IP55 (SANS 1222);
- (i) Switched locally on the socket outlet, lockable by a padlock (40mm) at the switch-off position;
- (j) Mechanical interlock: The isolator cannot be "Switched ON" without the plug inserted and the plug cannot be removed while the isolator is in "ON" position
- (k) Matching metal clad plug top, 415Vac 3-phase 5 pin, 63A, IP55 to be supplied with the socket outlet.

Where pilot wire connections are required, they shall disconnect before the main phase connectors disconnect.

The equipment enclosures shall be IP55 to SANS 1222. Socket outlets that are exposed to the atmosphere or installed in damp areas, shall be minimum rated at IP 56 or as otherwise specified by the engineer. All sockets shall be constructed of corrosive resistant materials.

Both types of sockets shall be mounted on a 304 stainless steel heavy duty pedestal. The socket outlet mounting height shall be 1200 mm above finished ground level.

A purpose made metal junction box of IP65 rating to SANS 1222 fitted with a canopy shall be provided and mounted on the stand above the socket outlet in such a way that the junction box does not interfere with the use of the socket outlet. The supply cable to the welding socket shall be terminated in the junction box. Where the cross sectional area of the cores of the supply cable to the welding socket outlet exceeds 16 mm<sup>2</sup>, the cable core size from the junction box terminals to the socket outlet shall be 16mm<sup>2</sup>, 4-core. The 16A single-phase socket shall have its own dedicated supply.

The junction box including the canopy and the welding socket stand shall be powder coated /painted B26 – Light Orange (1673-Y48R) to SANS 1091.

#### E07.4

##### **TESTING AND COMMISSIONING**

During testing and commissioning, the contractor shall:

- (a) Perform a visual inspection to ensure that the installation complies to the requirements specified herein as well as in detailed specifications;
- (b) The rating of all equipment is as specified;

(c) Test all earth leakage protection units supplied to confirm the tripping current.

**E07.5**

**MEASUREMENT AND PAYMENT**

Measurement and payment will distinguish between supply / delivery and installation / commissioning of industrial welding plugs, sockets, connectors etc.

**Item**

**Unit**

Supply and deliver of welding plugs and switched socket outlets complete with plugs ..... No

The unit of measurement shall be the number of plugs and switched socket outlets including stands and junction boxes supplied and delivered.

Separate items shall be scheduled in the schedule of quantities for different types of switched socket outlets.

The tendered rate shall include all costs related to the supply and delivery of the specified switched socket outlet and plugs and shall include for the stands and junction boxes required.

**Item**

**Unit**

Install and commission welding plugs and switched socket outlets ..... No

The unit of measurement shall be the number of plugs and switched socket outlets including stands and junction boxes installed and commissioned.

Separate items shall be scheduled in the schedule of quantities for different types of switched socket outlets and whether the plug must be installed on a cable or whether the plug must be handed over to the employer.

The tendered rate shall include full compensation for the installation of the switched socket outlet and plugs as detailed in the detail specification including all required material and labour to render a complete and working installation, including all labour and material required for installing the plug on the cable as detailed or for handing over the plug (free issue) to the employer and obtaining a receipt therefore.