

**JOHANNESBURG WATER (SOC) Ltd.**

**BULK WASTEWATER**

**PARTICULAR SPECIFICATION**

**E03 : ELECTRICAL ISOLATOR**

**PUSHBUTTON STATION**

**(LOCAL START/STOP) EQUIPMENT**



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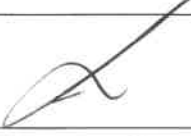


## DOCUMENT CONTROL SHEET

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## 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
5	2019-08-20	B Pieterse	Review of Electrical Standards, plus New Design Guidance
4	2014-06-03		Review of Mechanical / Electrical and Control / Instrumentation Standards, plus New Design Guidance
3	2012-05-30		Review of Mechanical / Electrical and Control / Instrumentation Standards, plus New Design Guidance
2	2010-05-03		Review Electrical Standards
1	2009-05-12		Review of Mechanical / Electrical and Control / Instrumentation Standards, plus New Design Guidance

**PARTICULAR SPECIFICATION: VOLUME E03: ELECTRICAL ISOLATOR PUSHBUTTON STATION  
(LOCAL START/STOP) EQUIPMENT**

**CONTENTS**

<b>E03.1</b>	<b>SCOPE.....</b>	<b>3</b>
<b>E03.2</b>	<b>STANDARDS.....</b>	<b>3</b>
<b>E03.3</b>	<b>GENERAL REQUIREMENTS.....</b>	<b>3</b>
<b>E03.3.1</b>	<b>Particular specifications to be read in conjunction with this specification.....</b>	<b>3</b>
<b>E03.3.2</b>	<b>General Requirements.....</b>	<b>3</b>
<b>E03.4</b>	<b>DIMENSION FOR ISOLATOR STATION.....</b>	<b>4</b>
<b>E03.5</b>	<b>FASTENERS.....</b>	<b>4</b>
<b>E03.6</b>	<b>MEASUREMENT AND PAYMENT.....</b>	<b>4</b>

### **E03.1 SCOPE**

This section covers the requirements for local isolator/start/stop pushbutton stations. Local isolator/start/stop pushbutton stations shall be supplied, delivered, installed and commissioned for each mechanical equipment driven by a motor.

### **E03.2 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 62262 : Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)
- (b) SANS 60529 : Degrees of protection provided by enclosures (IP code)
- (c) SANS 10142-1 : The wiring of premises Part 1 Low-voltage installations
- (d) SANS 60439-1 : Low-voltage Switchgear and Control gear Assemblies Part 1 Type-tested and partially type-tested assemblies
- (e) SANS 60439-2 : Low-voltage Switchgear and Control gear Assemblies Part 2 Particular requirements for busbar trunking systems (busways)
- (f) SANS 60439-3 : Low-voltage Switchgear and Control gear Assemblies Part 3 Particular requirements for low-voltage switchgear and control gear assemblies intended to be installed in places where unskilled persons have access for their use - Distribution boards
- (g) SANS 60947-1 : Low-voltage Switchgear and Control gear Part 1 General rules
- (h) SANS 60947-2 : Low-voltage Switchgear and Control gear Part 2 Circuit breakers
- (i) SANS 60947-3 : Low-voltage Switchgear and Control gear Part 3 Switches, disconnectors, switch-disconnectors and fuse-combination units
- (j) BSI-BS 3858 : Specification for Binding and identification sleeves for use on electric cables and wires
- (k) SANS 1091 : National colour standard

### **E03.3 GENERAL REQUIREMENTS**

#### **E03.3.1 Particular specifications to be read in conjunction with this specification**

This specification shall be read in conjunction with the following specifications:-

E26: ELECTRICAL SPECIFICATION FOR COLOUR CODES

G02: PARTICULAR SPECIFICATION FOR CORROSION PROTECTION

E08: WIRING

#### **E03.3.2 General Requirements**

- (a) The enclosure will be manufactured from 3CR12 stainless steel.
- (b) The enclosure will be rated IP65 to SANS 60529 and shall be fitted with a canopy.
- (c) The enclosure shall be painted electric orange (B26).
- (d) The Isolator Pushbutton Station will be equipped with

- A green flush START pushbutton with spring return. In case of a bidirectional drive a START FORWARD and START REVERSE pushbutton will be installed;
- A red flush STOP pushbutton with spring return;
- A red mushroom head EMERGENCY STOP button with mechanical latching, turn to release. The emergency stop pushbutton will be lockable (key reset) and not a padlockable unit. This will not be a lockout point, but will be used for Process use only.
- A three-pole non-fusible disconnect switch complete with a shaft extension and a door interlocked red and yellow padlockable rotary handle mounted on the door. The current rating of the disconnect switch must match the motor rating as specified in the motor equipment schedule (rated for on-load conditions).
- All equipment must be installed in one box (power and control).

- (e) The Isolator Pushbutton Station will be clearly labelled with an identity label, engraved with 30mm high black on white characters, and shall be mounted on top of the enclosure. The name of the associated drive will be shown.
- (e) All pushbuttons shall be labelled with an identity label, engraved with 10mm high black on white characters and shall be mounted above the pushbutton.
- (f) The Isolator Pushbutton Station shall be mounted within a radius of 1000mm maximum from the associated drive. If this is not possible, the Engineer will indicate the position of the Pushbutton Station.
- (g) The station shall be pedestal mounted at least 1100mm above floor level. The pedestal design shall be approved by the Engineer.
- (h) The pedestal base plate shall be installed on 10mm of epoxy grout to prevent crack corrosion.
- (i) The pedestal material shall be Stainless steel (3CR12) and have minimum thickness of 6mm. The pedestal shall be painted electric orange (B26).
- (j) The station enclosure shall be designed to provide adequate space for the following:
  - The required pushbuttons, the disconnect switch and the respective labels.
  - A single multi-core control cable (including glanding) shall be installed from the MCC to the station, from where the required signals shall be individually wired, as per the cable schedule.
  - Power cable/s (including glanding) shall be installed from the MCC to the station, providing power to the associated motor, as per the cable schedule.

#### **E03.4      DIMENSION FOR ISOLATOR STATION**

The dimensions of the start/stop isolator pushbutton stations shall allow ample space to accommodate all the equipment, taking into account the bending radius of all cables and minimum clearances. The contractor must supply design drawings of the Isolator Pushbutton Station to Johannesburg Water or their representative for approval prior to manufacturing.

#### **E03.5      FASTENERS**

All fasteners in concrete shall be 316 stainless steel. Pedestal bases shall be sealed against the ingress of any crevice corrosion by means of a suitable non-shrink cementitious grout and approved by the Engineer.

#### **E03.6      MEASUREMENT AND PAYMENT**

<u>Item</u>	<u>Unit</u>
Supply and delivery of local start/stop isolator pushbutton stations .....	No

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The unit of measure shall be the number of stations supplied and delivered.

The tendered rate shall include all costs related to the manufacture, supply and delivery of the local start/stop isolator pushbutton or control stations (as detailed in the schedule of quantities), including support pedestal in accordance with this specification and the additional requirements detailed in the detail specification complete with all mounting brackets.

Separate items will be scheduled in the schedule of quantities for different types and sizes, defined by the kW rating of the driven equipment, of pushbutton / control stations.

<b><u>Item</u></b>	<b><u>Unit</u></b>
Install local start/stop isolator pushbutton stations .....	No

The unit of measure shall be the number of stations installed.

The tendered rate shall include full compensation for installing, testing and commissioning of the local start/stop isolator or control stations as specified. The rate shall further include for pedestal support securing and sealing preventing crevice corrosion.

Separate items will be scheduled in the schedule of quantities for different types of pushbutton / control stations.

Separate items will be scheduled in the schedule of quantities for different types and sizes, defined by the kW rating of the driven equipment, of pushbutton / control stations.