

A division of Transnet limited

TECHNICAL RAILWAY ENGINEERING

SPECIFICATION CONTROL PAGE

450 VOLT GAS ARRESTER SPARKGAP FOR TRACTION POWER SUPPLIES

Statement of authorisation:

There is no SABS specification available for similar material / equipment and as far as can be ascertained no other specification / standard suitably covers SpoorNet requirements. The specification has been compiled in a manner which shall favour / encourage local manufacture of material / equipment to a maximum degree.

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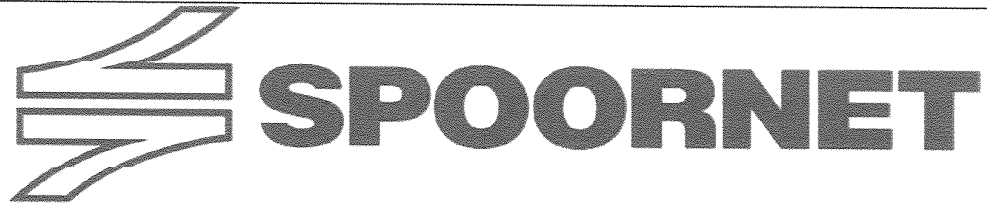
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**TECHNICAL
RAILWAY ENGINEERING
SPECIFICATION**

**450 VOLT GAS ARRESTER SPARKGAP FOR
TRACTION POWER SUPPLIES**

Circulation restricted to:

Technical: Maintenance (Infrastructure)

Technical: Maintenance

Technical: Resource Evaluation Acquisition & Review

Technical: Railway Engineering

Specialised Business: COALink

1.0 SCOPE

- 1.1 This specification covers Spoornet's requirements for the manufacturing and supply of the 450 Volt gas arrester spark gap for use in traction power supply systems.

2.0 DEFINITION

- 2.1 The spark gap assembly is a voltage limiting device which consists of a gas arrester and is contained in a housing according to Spoornet drawing BBB0906.

3.0 BACKGROUND

- 3.1 The spark gaps assemblies are used to limit voltages between the earthing system and the traction negative return system i.e. to limit contact voltages for the protection and safety of the staff and the public
- 3.2 Spark gaps are used at substations, bridges, station platforms sidings, Switching structures, H-masts, etc.

4.0 STANDARDS AND PUBLICATIONS

The following publication to be referred to.

- 4.1 Spoornet Drawing BBB 0906. - Spark Gap Assembly

5.0 METHOD OF TENDERING

- 5.1 Tenderers shall indicate clause by clause compliance with the specifications. This shall take the form of a separate document listing all the specifications clause numbers indicating the individual statement of compliance or non-compliance. This document can be used by tenderers to elaborate on their response to a clause.
- 5.2 A statement of non-compliance shall be motivated by the tenderer.
- 5.3 The tenderer shall ensure that he has all the latest relevant documents.

6.0 SERVICE CONDITIONS

- 6.1 The equipment shall be designed and rated for operation under the following environmental conditions:

Altitude	:	0 to 1 800m above sea level
Ambient temperature range	:	Minus 5 °C to plus 50 °C
Relative humidity	:	10% to 90%
Lightning conditions	:	11 ground flashes per square kilometre per annum.

7.0 TECHNICAL REQUIREMENTS.

- 7.1 The spark gap shall be fitted with a gas arrester similar to the Surge Technology/DEHN + SÖHNE type, part No SDS 923116.
- 7.2 The gas arrester device shall be of the type that will return to its initial state after discharging the impulse current in case of over voltages due to lightning effects.
- 7.3 The gas arrester shall comply with the following parameters.
1. AC- spark over voltage – 50 Hz voltage ramp: $400V \leq U_{ac} \leq 550V$
(U_{ac} - Rating of the gas arrester: 450V.)

2. Impulse spark over voltage – 1,2/50 μ s Impulse voltage: $\leq$ 1000V
 3. Impulse current without welding: 0,5 to 5 kA (10/350 μ s)
 4. Impulse current without mechanical failure: 25 kA (10/350 μ s)
 5. Short circuit current: 14kA to 28kA (peak) 50Hz: $t > 30$ ms
- 7.4 In the event of failure the gas arrester shall fail to a short circuit mode.
- 7.5 The spark gap housing shall be manufactured in accordance to drawing No. BBB0906 and its associated drawings.
- 7.6 The spark gap shall be assembled with the gas arrester installed according to the drawing BBB0906.
- 7.7 The complete assembled spark gap shall be torqued to a value of 60 Nm to ensure sufficient surface contact between the gas arrester and spark gap housing.
- 8.0 QUALITY ASSURANCE AND INSPECTIONS.**
- 8.1 Spoorinet reserves the right to inspect the tenderers facilities for manufacturing the spark gap assemblies prior to awarding the contract.
- 8.2 Spoorinet reserves the right to test a sample of the spark gaps in service for a period during the lightning season.
- 8.3 The issuing of acceptance certificates will be authorised by the quality assurance section of Spoorinet.
- 8.4 The tenderer shall supply test certificates for the gas arresters.
- 8.5 Tests shall be carried out on the gas arresters to verify the spark over voltage rating.
- 8.6 Type test certificates shall be provided by the tenderer for the spark gap assembly to show compliance with clauses 7.2, 7.3 and 7.4 of this specification.

END