DESIGN DETAILS

1.0 General

1.1 Type Designation

1.2 Governing Standard
   IEC 62271-100 / IS 13118 (1991)

2.0 Technical Data

2.1 System Parameters
   .1 Rated Voltage kV 245 kV
   .2 Frequency Hz 50
   .3 No. of Poles Three
   .4 Ambient Temperature Range °C -30 to +50

3.0 Operating Data

3.1 Type of Operating Mechanism
   Spring Energy Stored

3.2 Mechanism is electrically gang operated
   Yes

3.3 Operating Data
   .1 Closing mSec. 62 ± 6
   .2 Breaking mSec. 60 max
   .3 Opening Time mSec. 37(max)(rated voltage)
   .4 Arcing Time mSec. ≤20

3.4 Switching Data
   .1 Rated normal current A 3150
   .2 Rated short circuit breaking current kA 40
   .3 Rated short time current kA 40, (3sec.)
   .4 Rated short circuit making current kA 100
   .5 First pole to clear factor 1.3
   .6 Out-of-phase breaking current kA 10
   .7 Rated line charging breaking current A 125
   .8 Rated cable charging breaking current A 250

3.5 Rated operating sequence
   O - 0,3sec - CO - 3min - CO

4.0 Basic Insulation Level

4.1 Rated power frequency withstand voltage (1min, 50 Hz)
   .1 Phase to earth kV 460
2. Across the open breaker  kV  460
3. Between phases  kV  460

4.2 Rated lightning impulse withstand voltage
   (1.2 / 50 micro sec.)
   1. To earth  kVp  1050
   2. Across the open breaker  kVp  1050
   3. Between phases  kVp  1050

4.3 Creepage distance
   1. To earth  mm  6125mm or 25 mm/kV Minimum
   2. Across the open breaker  mm  6125mm or 25 mm/kV Minimum
   3. Insulator type  Combination shed

5.0 Construction

5.1 Clearance
   1. To earth  mm  2400
   2. Across the open breaker  mm  1900
   3. Phase to phase  mm  4000
   4. Pole to pole center distance  mm  4415

5.2 Arc quenching Medium
   1. Nominal pressure SF6 (@20°C)  bar  6.0 rel.
   2. Signal loss of SF6 (@20°C)  bar  5.2 rel.
   3. General lockout (@20°C)  bar  5.0 rel.
   4. Quantity of SF6 gas required per pole of breaker  kg  7.3
   5. Breaker Poles (3 nos.) will be pre filled with transport pressure of 0.5 Bar gauge.
   6. Gas being supplied per breaker  kg  3

5.3 Installation
5.4 Approx. weight of breaker.  kg  3000 approx.

6.0 Structures

6.1 Material  Mild Steel
6.2 Surface Treatment  Hot Dip Galvanized

7.0 Base Frame

7.1 Material  Mild Steel
7.2 Surface Treatment  Hot Dip Galvanized

8.0 Control Cubicle

Client: Bihar Power Transmission Company Ltd.
Project:

<table>
<thead>
<tr>
<th>Item No</th>
<th>Qty : 10x</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description: 245kV, 40kA, 3150A, SF6 CB</td>
<td></td>
</tr>
<tr>
<td>Work:</td>
<td></td>
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</tbody>
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Details: DESIGN DETAILS
8.1 Construction
.1 Material of enclosure
   CR Sheet Steel
.2 Thickness of sheet steel
   mm 2.5
.3 Painting for control cubicle
   Epoxy / Polyester paint
.4 External shade
   RAL 7032
.5 Degree of protection of enclosure
   IP 55
.6 Padlocking facility for cubicle
   Provided
.7 Glass window to see spring status
   Provided on control cubicle

8.2 Wiring
.1 Control wiring
   .1 Size
     2.5 sq. mm, flexible copper conductor
   .2 Insulation
     Grey 1100V Grade
.2 Earth Wiring
   .1 Size
     2.5 sq. mm, flexible copper conductor
   .2 Insulation
     Yellow Green 1100V Grade

8.3 Control Terminals
.1 Type
   Stud type
.2 Make
   Connectwell
.3 Size
   mm² 4
.4 Spare unwired terminal
   % 20

8.4 Auxiliary Supply

<table>
<thead>
<tr>
<th>Circuit</th>
<th>Rated Voltage</th>
<th>Source</th>
<th>Range</th>
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<tbody>
<tr>
<td>Spring Charging Motor</td>
<td>240V AC</td>
<td>External</td>
<td>85 - 110%</td>
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<tr>
<td>Closing Coil</td>
<td>220V DC</td>
<td>External</td>
<td>85 - 110%</td>
</tr>
<tr>
<td>Trip Coil – 1 &amp; 2</td>
<td>220V DC</td>
<td>External</td>
<td>70 – 110%</td>
</tr>
<tr>
<td>Space Heater / Socket / Illumination</td>
<td>240V AC</td>
<td>External</td>
<td>–</td>
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</table>

Spare:
Terminal connector-Terminal connector suitable for single ACSR Zebra

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Description: - 245kV, 40kA, 3150A, SF6 CB
Sh. 3
Work: -
4 Sh.
Details: - DESIGN DETAILS