



**PREFORMED** LINE PRODUCTS  
The connection you can count on.

## Section 2 - Substation Switchgear

<b>Table of Contents</b>	<b>Section/Page</b>
Introduction to DB36 - D362 Disconnectors (36kV - 362kV).....	2-2
Popular Options For DB36, DB72 & DB145.....	2-3
Specifications.....	2-3
Popular Options For DB245 - DB362.....	2-5
Specifications.....	2-5

# Substation Switchgear

---



## DB36 - D362 Disconnectors

---

### 36kV - 362kV

The AEM type High Voltage (HV) Double Break Disconnectors are designed for outdoor transmission substation isolation duty in power transmission networks.

Rated up to 4000A continuous current and fault withstand up to 50kA rms for 1 second (125kAp), with remote automatic operation and associated earth switches, the proven safety and reliability it a first choice for a long life quality disconnector.

PLP's local engineering team can design structure heights, spacing, insulator options and configuration to suit your site and operating standards.

The AEM type DB disconnectors comply with AS62771.102-2005 and IEC62271.102-2003.

#### **Safety:**

- Robust mechanical and electrical interlocking to ensure operator and network safety
- Mechanical interlocks prevent dangerous earth switch - phase switch combinations
- Optional solenoid bolt interlocks are available for remote interlocking of associated earth switches and stand alone earth switches.
- Electrical interlocking with the optional motor actuator prevents incorrect remote operation
- Disconnectors are designed to comply with AS1170.2-2002 (Wind load code - tropical cyclone) and AS1170.4-2007 (seismic) when so specified

#### **Performance:**

- Self gripping contact design for high short circuit current capability
- Low operating force for easy manual operation
- "Easy Open" earth switch operation

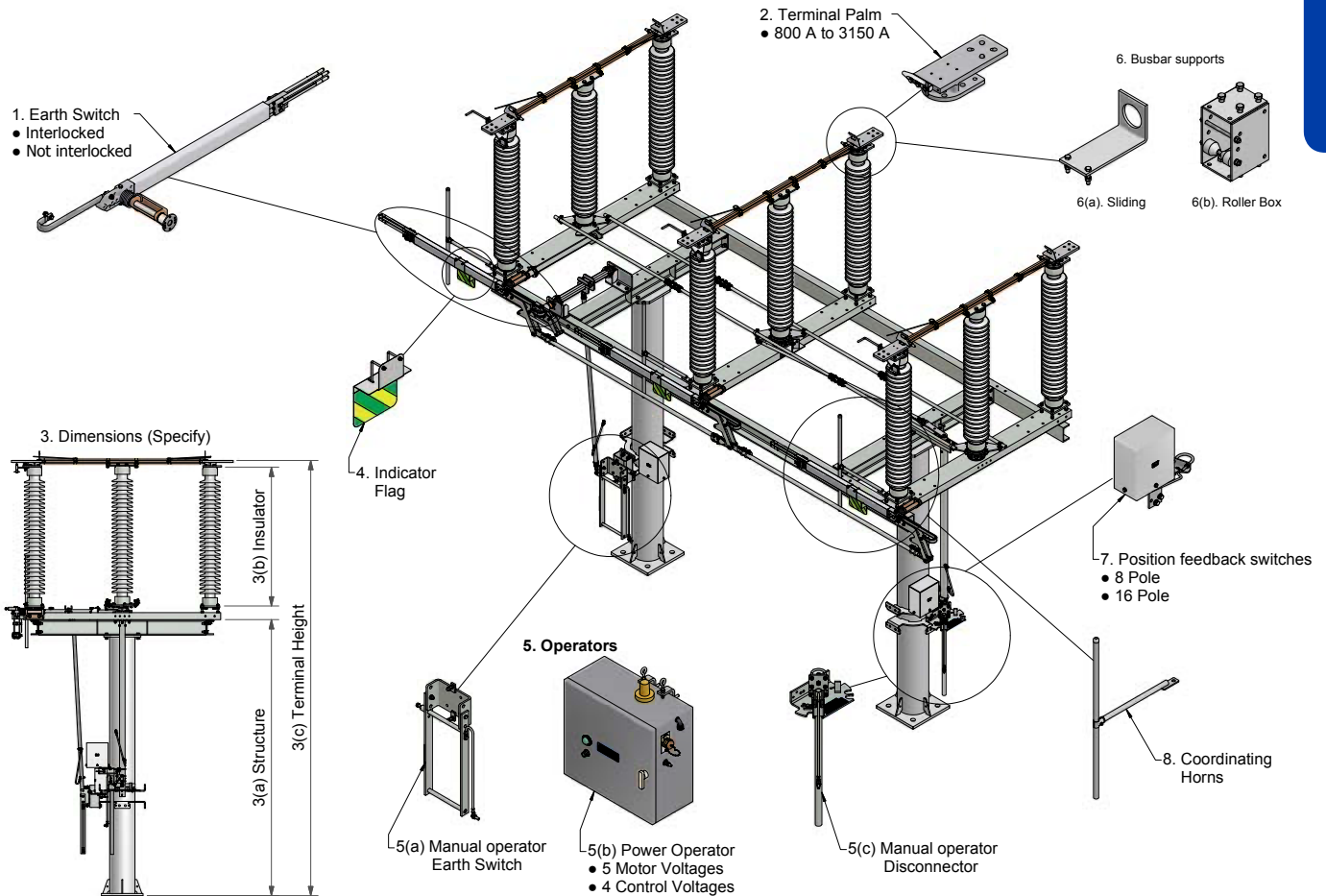
#### **Reliability:**

- Corrosion resistant galvanised structures
- Maintenance free linkages and PTFE bearings
- Comprehensive installation, operation and maintenance manuals plus drawings are provided
- Quick Field replacement of contact system
- Overcentre mechanism to ensure positive locking in open or close positions

# Substation Switchgear

## Popular Options For DB36, DB72 & DB145

(each numbered item is a set of options)



## Specifications

Ratings	DB36	DB72	DB145
Disconnecter Designation (Type)	DB36 (Double Break)	DB72 (Double Break)	DB145 (Double Break)
Earthing Switch Designation (Type)	SE36 (Vertical Break)	SE72 (Vertical Break)	SE145 (Vertical Break)
Rated Voltage	36kV	72.5kV	145kV
Disconnecter Endurance Class	M1	M1	M1
Earthing Switch Endurance Class	M1	M1	M1
Rated Frequency	50Hz	50Hz	50Hz
Rated Normal Current	800A to 3150A	800A to 3150A	800A to 3150A
Rated Peak Withstand Current	50 to 100kAp	50 to 125kAp	40 to 125kAp
Rated Short Time Current/ 1 sec - STC	20kA to 40kA rms	16kA to 50kA rms	16kA to 50kA rms
Resistance of Main Circuit	<98 $\mu$ $\Omega$	<144 $\mu$ $\Omega$	<202 $\mu$ $\Omega$
Rated 1 minute Power Frequency Withstand Voltage : To Earth	>7kV rms	>140kV rms	>275kVrms
Rated 1 minute Power Frequency Withstand Voltage : Across Open Gap	>80kV rms	>160kV rms	>315kV rms
Rated Lightning Impulse Withstand Voltage: To Earth	>200kVp	>350kV rms	>650
Rated Lightning Impulse Withstand Voltage: Across Open Gap	>230kVp	>402.5kVp	>750kVp
Max RIV @ 1MHz and 23kV	N/A	N/A	<2500 $\mu$ V
Max Permissible Load on Terminal	500N	500N	500N

# Substation Switchgear

## Specifications

Contacts/ Terminals	DB36	DB72	DB145
Contact Type: Disconnecter & Earthing Switch	Rod & Wedge	Rod & Wedge	Rod & Wedge
Number of Breaks per Phase: Disconnecter (Earthing Switch)	2 (1)	2 (1)	2 (1)
Contact Material	Silver Plated Copper	Silver Plated Copper	Silver Plated Copper
Rated Contact Force	110N	110N	110N
Recommended Contact Lubricant:	KOPRCOTE	KOPRCOTE	KOPRCOTE
Terminal Material	Aluminium or Copper	Aluminium	Aluminium

Drive Gear	DB36	DB72	DB145
Operating Method	Power or Manual	Power or Manual	Power or Manual
Max Operating Effort of Manual Handle: Vertical Spade Type	<250N	<250N	<250N
Max Operating Effort of Manual Handle: Horizontal Type	<250N	<250N	<250N
Max Operating Effort of Manual Handle: Rotary Crank Type	<90N	<90N	<90N
Construction of Main Bearing : Disconnecter	Laminated PTFE on stainless steel shaft	Laminated PTFE on stainless steel shaft	Laminated PTFE on stainless steel shaft
Construction of Main Bearing :Earthing Switch	Bronze on stainless steel shaft	Bronze on stainless steel shaft	Bronze on stainless steel shaft
Construction of Linkage Bearings: Disconnecter & Earthing Switch	PTFE on Brass	PTFE on Brass	PTFE on Brass
Recommended Maintenance Interval on Drive Gear	Maintenance Free	Maintenance Free	Maintenance Free

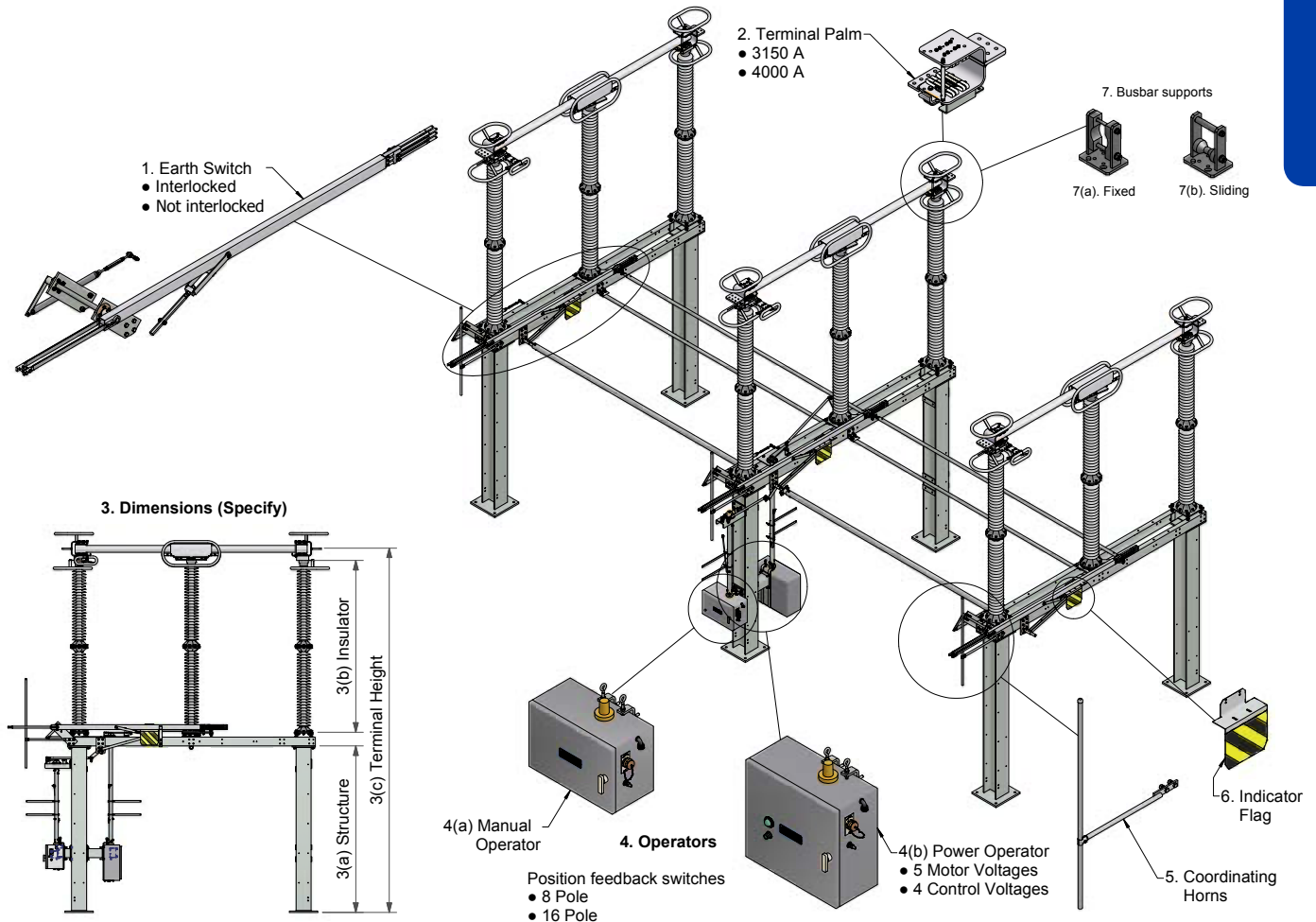
Auxiliary Devices	DB36	DB72	DB145
Power Operator Voltage: Motor	32 to 250V DC & 230/240V AC	32 to 250V DC & 230/240V AC	32 to 250V DC & 230/240V AC
Power Operator Voltage: Control	32 to 250V DC	32 to 250V DC	32 to 250V DC
Control Box with Solenoid Bolt Interlock Voltage	32 to 250V DC	32 to 250V DC	32 to 250V DC
Auxiliary Switch Size	4, 6, 8, 12, 16 Pole	4, 6, 8, 12, 16 Pole	4, 6, 8, 12, 16 Pole
Number of Breaks per Auxiliary Switch Pole	2	2	2
Rated Continuous Current of Auxiliary Switch 125V DC	10A	10A	10A

Typical Mass and Bundling Data	DB36	DB72	DB145
Mass of Disconnecter (c/w Power Operator)	180kg (285kg)	220kg (325kg)	475kg (580kg)
Mass of Earthing Switch	125kg	125kg	200kg
Mass of Support Structure up to 2500mm high	255kg	315kg	675kg
Mass of Insulator	21kg ea	45kg ea	95kg ea

# Substation Switchgear

## Popular Options For DB245 - DB362

(each numbered item is a set of options)



## Specifications

Ratings	DB245	DB362
Disconnecter Designation (Type)	DB245 (Double Break)	DB362( Double Break)
Earthing Switch Designation (Type)	SE245 (Vertical Break)	SE362 (Vertical Break)
Rated Voltage	245kV	362kV
Disconnecter Endurance Class	M1	M1
Earthing Switch Endurance Class	M1	M1
Rated Frequency	50Hz	50Hz
Rated Normal Current	2500A to 4000A	2500A to 4000A
Rated Peak Withstand Current	100 to 125kAp	100 to 125kAp
Rated Short Time Current/ 1 sec - STC	40kA to 50kA rms	40kA to 50kA rms
Resistance of Main Circuit	<85 $\mu\Omega$	<85 $\mu\Omega$
Rated 1 minute Power Frequency Withstand Voltage : To Earth	>450kV rms	>460kV rms
Rated 1 minute Power Frequency Withstand Voltage : Across Open Gap	>460kV rms	>520kV rms
Rated Lightning Impulse Withstand Voltage: To Earth	>1050kVp	>1300kVp
Rated Lightning Impulse Withstand Voltage: Across Open Gap	>1095kVp	>1380kVp
Max RIV @ 1MHz and 23kV	<2500 $\mu$ V	<2500 $\mu$ V
Max Permissible Load on Terminal	4.1kN	4.1kN

# Substation Switchgear

## Specifications

Contacts/ Terminals	DB245	DB362
Contact Type: Disconnecter (Earthing Switch)	Roll Over Reverse loop (Rod & Wedge)	Roll Over Reverse loop (Rod & Wedge)
Number of Breaks per Phase: Disconnecter (Earthing Switch)	2 (1)	2 (1)
Contact Material	Silver Plated Copper	Silver Plated Copper
Rated Contact Force	110N	110N
Recommended Contact Lubricant:	KOPRCOTE	KOPRCOTE
Terminal Material	Aluminium	Aluminium

Drive Gear	DB245	DB362
Operating Method	Power or Manual	Power or Manual
Max Operating Effort of Manual Handle: Vertical Spade Type	<250N	<250N
Max Operating Effort of Manual Handle: Rotary Crank Type	<90N	<250N
Construction of Main Bearing : Disconnecter	PTFE on galvanised steel	<90N
Construction of Main Bearing :Earthing Switch	Bronze on stainless steel shaft	Laminated PTFE on stainless steel shaft
Construction of Linkage Bearings: Disconnecter (Earthing Switch)	PTFE on stainless steel (Bronze on stainless steel)	Bronze on stainless steel shaft
Recommended Maintenance Interval on Drive Gear	Maintenance Free	PTFE on Brass

Auxiliary Devices	DB245	DB362
Power Operator Voltage: Motor	32 to 250V DC & 230/240V AC	32 to 250V DC & 230/240V AC
Power Operator Voltage: Control	32 to 250V DC	32 to 250V DC
Auxiliary Switch Size	4, 6, 8, 12, 16 Pole	4, 6, 8, 12, 16 Pole
Number of Breaks per Auxiliary Switch Pole	2	2
Rated Continuous Current of Auxiliary Switch 125V DC	10A	10A

Typical Mass and Bundling Data	DB245	DB362
Mass of Disconnecter (c/w Power Operator)	1355kg	140kg
Mass of Earthing Switch	410kg	420kg
Mass of Support Structure up to 2500mm high	3600kg	3600kg
Mass of Insulator	155kg ea	200kg ea