Smart solutions.
Strong relationships.

Condenser Bushings

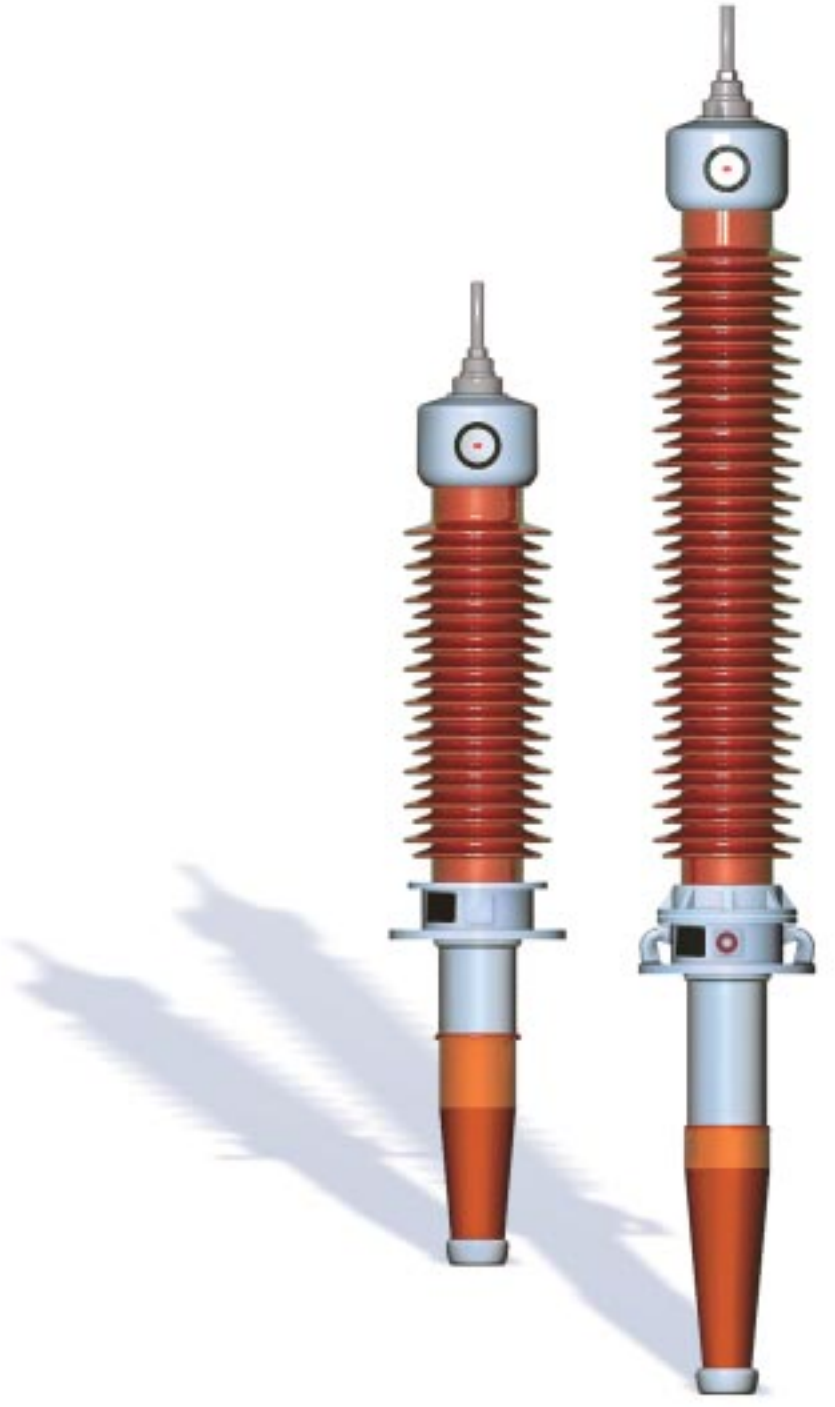
Business Edge

The Switchgear Works of Crompton Greaves is located on a 1,32,540 sq.mtrs. plot in Nashik on the Mumbai Agra National Highway and is demarcated in four main divisions: EHV SF6 Gas Switchgear, EHV Instrument Transformer, Medium Voltage Vacuum Switchgear and Lightning Arresters. Operations commenced in 1980 with the manufacture of Medium Voltage Switchgear, which was relocated from Kanjur Mumbai Works.

A specialised Business Unit spearheads the export thrust for in-house products as well as carefully out-sourced synergestic products for supply to Trade, Industry, OEMs and Power Utilities.

Our regional establishments throughout India have factory-trained personnel to provide prompt after sales service, supporting our service personnel located at the factory.

CG House, Mumbai



Global Leadership

Today, Crompton Greaves is well on its way to becoming a Global Leader in the field of Transmission & Distribution. In May 2005, CROMPTON GREAVES acquired the entire Pauwels Group, a leading transformer manufacturer in Europe. With this acquisition, it has become one of the top 10 transformer manufacturers in the world. To further augment its position in the Transmission & Distribution sector, CROMPTON GREAVES has recently acquired two Hungarian companies. Ganz Transelektro, engaged in manufacture of EHV Transformers, Gas Insulated Switchgear, rotating machines and Ganz Transverticum, involved in the project business & specializing in high-end engineering & substation capabilities.

With the latest acquisition, the turnover of CROMPTON GREAVES has crossed the US$ 2 billion mark; making it the first truly Indian multinational. CROMPTON GREAVES has manufacturing facilities on all five continents spanning - India, Belgium, Ireland, USA, Canada, Indonesia, Hungary. International business today accounts for over 50% of the sales.

Crompton Greaves already possesses the distinction of producing world-class, quality products that are globally competitive. The acquisition has given CROMPTON GREAVES access to new technologies – 765kV transformers, GIS upto 300kV. The integration process now underway will strengthen the technological capability of CROMPTON GREAVES and its subsidiaries and allow the CROMPTON GREAVES group to emerge as leader at the cutting edge of Transmission & Distribution business on a global scale.

Condenser Bushings

SS Sigma Series

Introduction

Our S1-division manufactures EHV instrument transformers & condenser bushing and is certified to ISO 9001 since 1993, since 1985, we have successfully manufactured & supplied more than 25000, air to oil type condenser bushings upto 420kV.

Recently the new SS series of bushings have been successfully developed by using the measure – analyze – improve – control methodology. This has resulted in achieving breakthrough quality at design, component & process level. Failsafe designs with large margins on power frequency withstand voltage have been established.

The significant features of these Bushings are :

- "O" Ring Sealing for Leakproofness.
- Large Size Oil Level Indicator with Float for Better Visibility.
- Provision for Oil Sampling at Mounting Flange Level for Health Monitoring.
- Shatterproof Epoxy Resin Cast Oil End Insulator.
- Partial Discharge Free Performances at Rated Voltage.
- Dielectric Loss lower than 0.005.

Special Features

- Standard : IEC 60137
- Insulation : Oil Impregnated paper
- Low Dielectric Losses
- Shatterproof Epoxy Oil End Insulator
- Six Sigma Quality Components & Processes for Enhanced Quality & Reliability

Construction

Condenser Core Winding – The High Quality Insulating Paper is wound on Aluminium Tube for Currents upto 1250 amps) / on Copper Rod for Current Ratings of 2000 Amps / 3150 Amps. The winding machine has close looped controls to ensure consistency of winding parameters such as tension, pressure and temperature. At predecided locations by the winding program, precisely cut Aluminium Foils are inserted to achieve the uniform condenser grading. During the winding process partial drying of the Paper Insulation is achieved.

Drying & Impregnation – The Condenser Cores are then completely dried and impregnated in Vacuum Drying Chambers in various stages such as Air Heating, Rough Vacuum, Fine Vacuum. The level of Fine Vacuum is a critical parameter of Effectiveness of Drying. The Drying cycles are concluded based on Quality of Fine Vacuum measured on Pirani Gauges. After the drying cycle is concluded, the oil impregnation is carried out at a predetermined rate of flow of Oil Inlet which is in relation with the Capillary Rise of the Paper Insulation.

Assembly – The Impregnated Condenser Cores are then assembled with the assembly components such as Air End Porcelain Insulator, Oil End Epoxy Insulator etc. The Entire Assembly is a Tie Rod Assembly with the "O" Rings used at all sealing locations. The Assembly is held together by a Pre Loaded Coil Spring Stack which ensures perfect sealing at highest operating temperatures and also supports the assembly against the Loads applied at HV Terminal. Gravity Die Cast Aluminium Conservator & Mounting Flanges are used on the Bushing assembly upto 245 kV. For Bushings upto 1250 Amps Aluminium Cast Electrodes with external surface painted with PU Paint are used which forms an integral part of the assembly. An extra tapped hole is provided on the Mounting Flange for fixing the substation earth flat. Self Earthing type Test Tap / Capacitance & Tan Delta Measurement Tap & Oil Filling, Sampling Valves are provided at Mounting Flange Level.

Oil Flooding under Vacuum – The Fully Assembled & Leaktested Bushing is then filled with High Dielectric Strength Oil under Vacuum at Room Temperature for predecided duration & fine vacuum level.

Primary Terminations – The Primary Terminations are of Draw Lead Type for current ratings upto 800 Amps & they are of Draw Rod Type for Current Ratings upto 1250 Amps with Cable Joint at MountingFlangeLevel. The Primary Terminals are manufactured from Copper Alloys. For 2000 Amps & 3150 Amps current ratings, Flat Palm type Copper Terminal Pad is provided on Oil End Side.

Available On Request

- Total Creepage Distance higher than 25mm/kV.
- Increased Air End Insulator Height for Altitudes above 1000 meters from MSL.
- Arcing Horns.

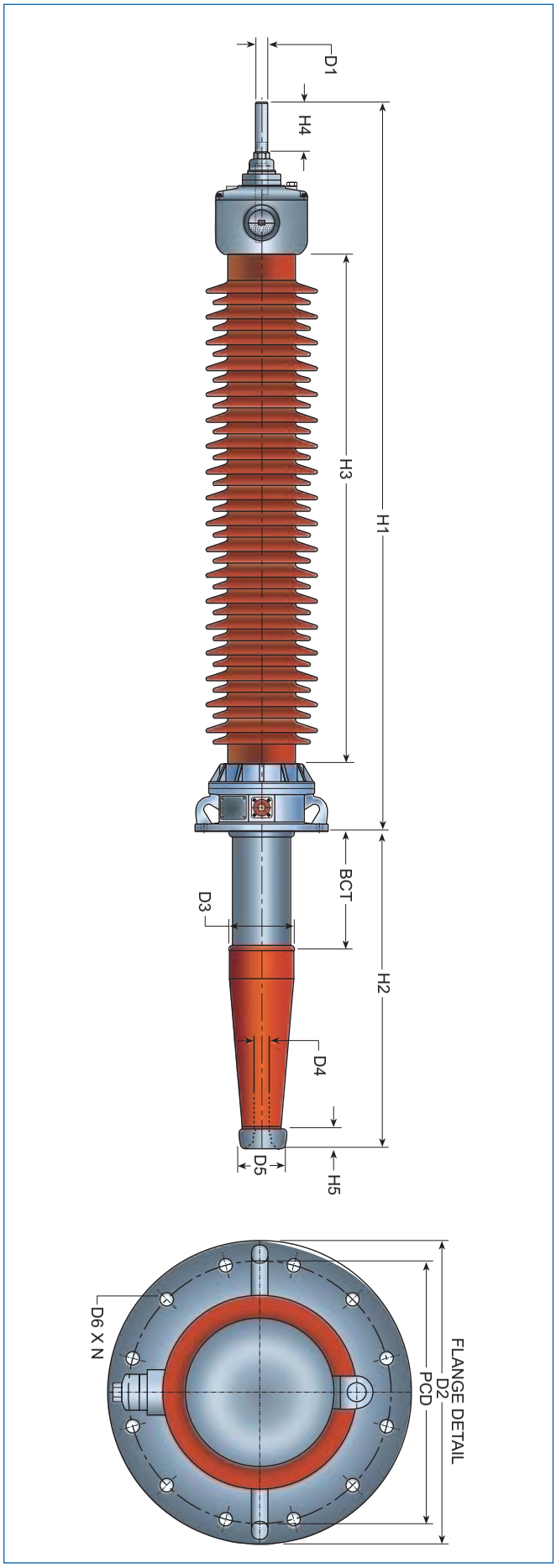
Bushing Test Lab

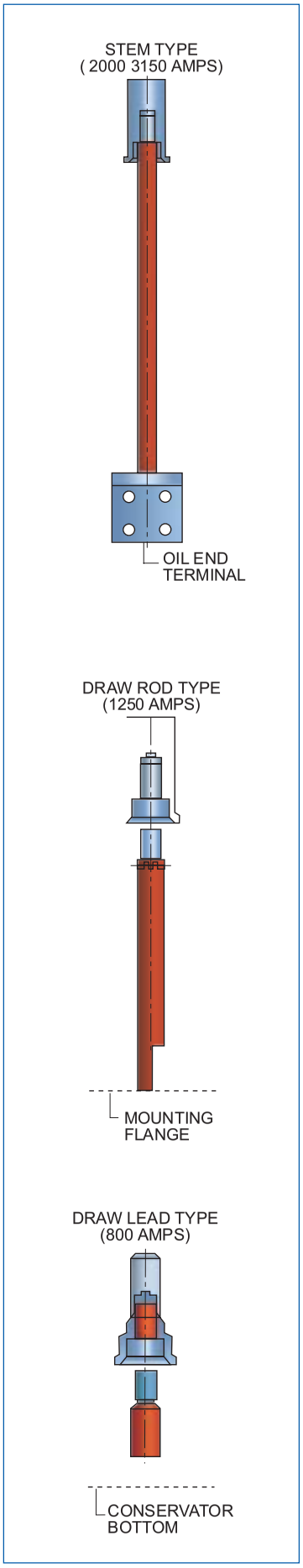
Type Reference	kV Class	Insulation Level	Rated Current	Current Termination Types	Available BCT	D1	D2	D3	D4	D5	D6XN	PCD	H1	H2	H3	H4	H5	Approx. Weight (kgs)
SS-250-800	52	105kV /250 kVp	800	Draw Lead	100/300/600	30	225	115	38	110	15X6	185	905	560	460	125	32	40
SS-250-1250			1250	Draw Rod		60	225	115	–	110	15X6	185	905	650	460	125	32	50
SS-250-2000			2000	Stem		60	335	115	–	115	15X12	290	950	675	460	125	–	70
SS-250-3150			3150	Stem		60	335	115	–	115	15X12	290	950	675	460	125	–	70
SS-325-800	72.5	140kV /325kVp	800	Draw Lead	0/100/300/600	30	225	115	38	110	15X6	185	1110	600	660	125	50	60
SS-325-1250			1250	Draw Rod		60	225	115	–	110	15X6	185	1110	695	660	125	50	70
SS-325-2000			2000	Stem		60	335	115	–	115	15X12	290	1120	695	660	125	–	80
SS-325-3150			3150	Stem		60	335	115	–	115	15X12	290	1120	695	660	125	–	80
SS-650-800	145	275kV /650kVp	800	Draw Lead	100/300/600	30	335	164	38	120	15X12	290	1835	800	1280	125	50	135
SS-650-1250			1250	Draw Rod		60	335	164	38	120	15X12	290	1815	800	1280	125	50	145
SS-650-2000			2000	Stem		60	335	164	–	190	15X12	290	1795	920	1280	125	170	160
SS-750-800	170	325kV /750kVp	800	Draw Lead	100/300/600	30	335	164	38	120	15X12	290	1985	850	1430	125	50	150
SS-750-1250			1250	Draw Rod		60	335	164	38	120	15X12	290	1965	850	1430	125	50	160
SS-750-2000			2000	Stem		60	335	164	–	190	15X12	290	1945	970	1430	125	170	180
SS-1050-800	245	460kV /1050kVp	800	Draw Lead	100/300/600	30	450	230	49	150	20X12	400	2815	1130	2145	125	70	420
SS-1050-1250			1250	Draw Rod		60	450	230	49	150	20X12	400	2815	1130	2145	125	70	420
SS-1050-2000			2000	Stem		60	450	230	–	240	20X12	400	2815	1230	2145	125	190	450
SS-1425-800	420	630kV /1425kVp	800	Draw Lead	400	30	720	360	73	330	24X12	660	4240	1640	3315	125	280	975
SS-1425-1250			1250	Draw Lead		60	720	360	73	330	24X12	660	4240	1640	3315	125	280	975

Notes: 1) Dimensions given for BCT = 300 ,
2) All dimensions are in mm

Condenser Bushings

Diagram





* Diagram not to scale

Condenser Bushings

OUR INTERNATIONAL PRESENCE

Smart solutions.
Strong relationships.

Data subject to change

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AVANTHA
GROUP COMPANY

Cat.No. CB -112 (4/10/1K) / Sangam