

# High Current Bushings

**Insulation:** Oil Impregnated Paper/Oil Filled – Hermetically Sealed/Oil Communicating

**Application:** Transformer – Outdoor

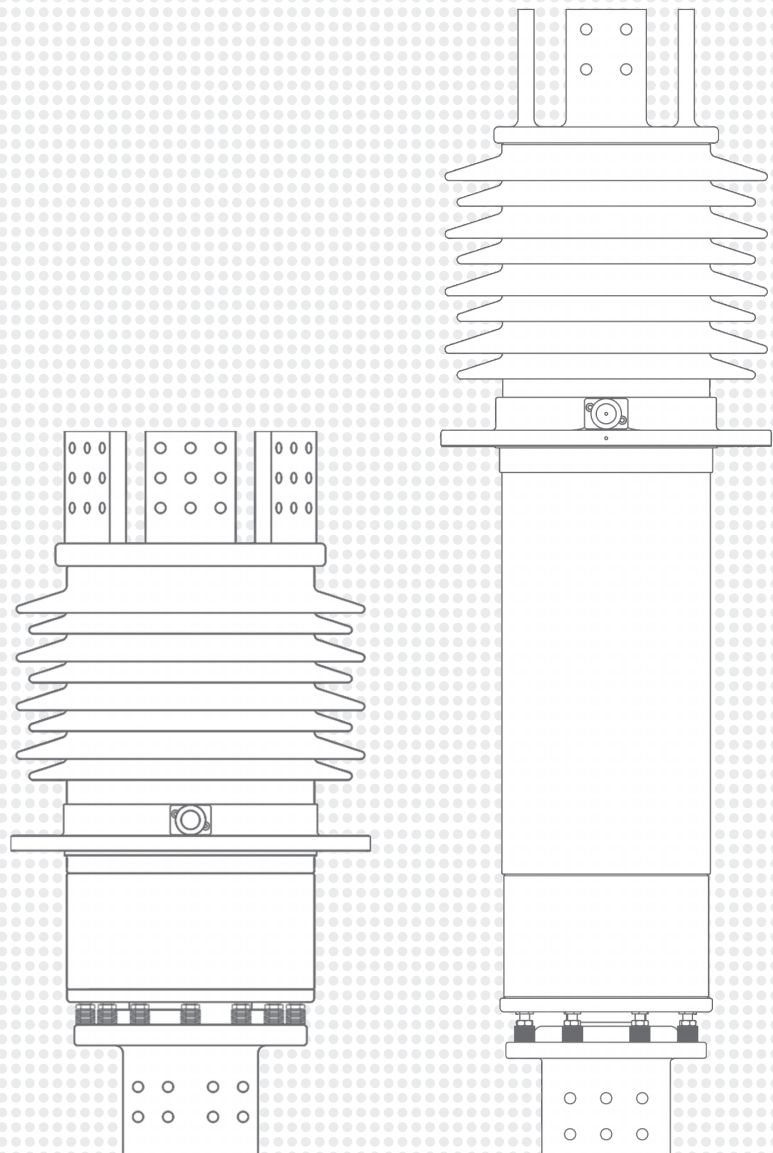
**Type:** Oil to Air

**Rated Voltage:** 24 kV – 52 kV

**Rated Current:** Up to 25000 A

**Standards:** IEC 60137:2017/IEEE C.57.19.00/01/

Other Equivalent

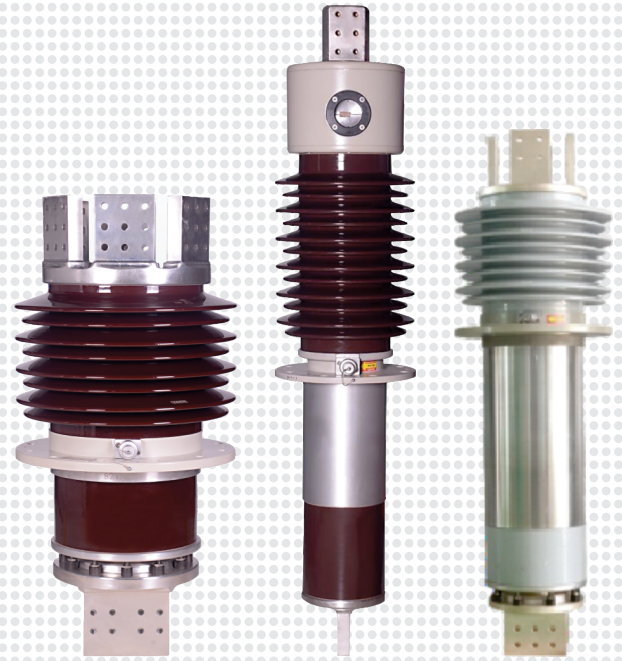


# Salient Features

- Exact interchangeability with global reputed makes.
- Robust solid rod construction with oil end termination integrally milled on the conductor.
- No joint on the conductor below the top cap level.
- SS Helicoil inserts on oil end termination holes to enable direct bolting of transformer lead for aluminium design bushings.
- Manufacturing and field experience of more than 4000 bushings up to 25 kA.
- Finely graded capacitive insulation for optimum electrical field distribution.
- Partial discharge free and low dissipation factor.
- Excellent thermal performance.
- High seismic and short circuit load withstand capacity.
- Self-cleaning alternate shed profile according to IEC and IEEE standards.
- Viton material O-rings for oil sealing.
- Provision of test tap for insulation health monitoring.
- Highly customizable design in terms of mounting and terminal connection.
- Provision for accommodating special CT pocket length requirements.
- Suitable for Bus-duct operation.
- Shortest lead time industry-wide.
- High strength porcelain as per IEC 60815.

## Additional Information

- The bushings comply with the performance requirements of IEC and IEEE standards for application in GSU power transformers, station transformers, unit auxiliary transformers and others.
- The main component in OIP Insulated Bushings is the active part and is manufactured using insulating kraft paper wound around a solid conductor. OIP condenser core is standard from 36 kV onwards but is available for lower voltage upon request.
- During paper winding, aluminium foils are embedded in the paper, co-axially at pre-calculated locations to optimize the radial and axial electrical field along the bushing.
- After winding, the paper core is dried under vacuum at elevated temperatures and subsequently impregnated with high-quality, vacuum-dried and degassed insulating mineral oil.
- For Oil Insulated Bushings, oil serves as major insulation.
- Bushing is assembled in a controlled environment and filled under vacuum with vacuum-dried and degassed insulating mineral oil.
- After oil filling, each bushing is subjected to oil over-pressure test for verification of joint sealing.
- Appropriate cushion is incorporated after pressure test on top of oil level to allow for expansion, and the space is purged with high purity nitrogen before sealing.
- All bushings are tested in accordance with IEC 60137/IEEE C.57.19.00/01/other equivalent.
- High density poly urethane packing cushion for impact resistance in transit and for ease of repackaging.



☐ **Fully type tested product range at accredited laboratories.**

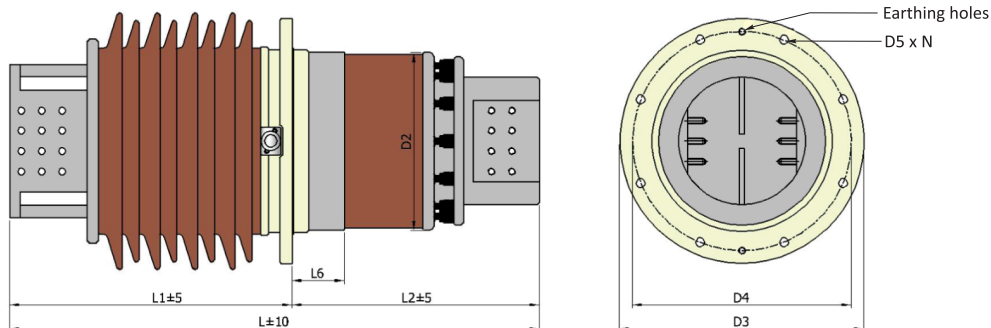
☐ **Multiple satisfactory performance credentials from customers and end users.**



**Table - 1 - Standard dimensions of High Current bushings rated 24kV - 52kV, current 5000 A up to 25000 A\***  
(All dimensions are in mm)

| Model      | Conductor and Terminal material | Insulation | HSV, kV | BIL, kV/p | AC test load, kV | Rated current, Amp (I) | Creepage distance | Cantilever load, N | L1 - Air end length | L2 - Oil end length for 0 mm BCT(**) | L - Total length | L6 - BCT space                                       | D2 - Oil side max. diameter | D3 - Outer diameter of flange | D4 - PCD of flange | D5 - x N - Mounting holes |
|------------|---------------------------------|------------|---------|-----------|------------------|------------------------|-------------------|--------------------|---------------------|--------------------------------------|------------------|--|-----------------------------|-------------------------------|--------------------|---------------------------|
| HOA.2405   | Aluminium                       | Oil filled | 24      | 125       | 55               | 5000                   | 25                | 3150               | 430                 | 330                                  | 760              | Standard: 0<br>Other CT space upon request, upto 600 | 200                         | 324                           | 286                | 8 x 18                    |
| HOA.2405HC | Aluminium                       | "          | 24      | "         | "                | 5000                   | 31                | 3150               | 510                 | 330                                  | 840              |  | 200                         | 324                           | 286                | 8 x 18                    |
| HOA.2408   | Aluminium                       | "          | 24      | "         | "                | 8000                   | 25                | 3150               | 435                 | 415                                  | 850              |  | 276                         | 400                           | 350                | 8 x 20                    |
| HOA.2408HC | Aluminium                       | "          | 24      | "         | "                | 8000                   | 31                | 3150               | 480                 | 415                                  | 895              |  | 276                         | 400                           | 350                | 8 x 20                    |
| HOA.2410   | Aluminium                       | "          | 24      | "         | "                | 10000                  | 31                | 3150               | 500                 | 415                                  | 915              |  | 276                         | 400                           | 350                | 8 x 20                    |
| HOA.2413   | Aluminium                       | "          | 24      | "         | "                | 12500                  | 31                | 3150               | 500                 | 415                                  | 915              |  | 335                         | 480                           | 430                | 8 x 20                    |
| HOA.2416   | Aluminium                       | "          | 24      | "         | "                | 16000                  | 31                | 3150               | 500                 | 415                                  | 915              |  | 364                         | 480                           | 430                | 8 x 20                    |
| HCA.3605   | Aluminium                       | OIP        | 36      | 170       | 77               | 5000                   | 25                | 3150               | 510                 | 330                                  | 840              |  | 200                         | 324                           | 286                | 8 x 18                    |
| HCA.3605HC | Aluminium                       | OIP        | 36      | "         | "                | 5000                   | 31                | 3150               | 630                 | 330                                  | 960              |  | 200                         | 324                           | 286                | 8 x 18                    |
| HCA.3608   | Aluminium                       | OIP        | 36      | "         | "                | 8000                   | 25                | 3150               | 500                 | 415                                  | 915              |  | 276                         | 400                           | 350                | 8 x 20                    |
| HCA.3608HC | Aluminium                       | OIP        | 36      | "         | "                | 8000                   | 31                | 3150               | 555                 | 415                                  | 970              |  | 276                         | 400                           | 350                | 8 x 20                    |
| HCA.3610   | Aluminium                       | OIP        | 36      | "         | "                | 10000                  | 25                | 3150               | 500                 | 415                                  | 915              |  | 276                         | 400                           | 350                | 8 x 20                    |
| HCA.3610HC | Aluminium                       | OIP        | 36      | "         | "                | 10000                  | 31                | 3150               | 555                 | 415                                  | 970              |  | 276                         | 400                           | 350                | 8 x 20                    |
| HCA.3613   | Aluminium                       | OIP        | 36      | "         | "                | 12500                  | 25                | 3150               | 500                 | 415                                  | 915              |  | 335                         | 480                           | 430                | 8 x 20                    |
| HCA.3613HC | Aluminium                       | OIP        | 36      | "         | "                | 12500                  | 31                | 3150               | 555                 | 415                                  | 970              |  | 335                         | 480                           | 430                | 8 x 20                    |
| HCA.3616   | Aluminium                       | OIP        | 36      | "         | "                | 16000                  | 25                | 3150               | 500                 | 415                                  | 915              |  | 364                         | 480                           | 430                | 8 x 20                    |
| HCA.3616HC | Aluminium                       | OIP        | 36      | "         | "                | 16000                  | 31                | 3150               | 555                 | 415                                  | 970              |  | 364                         | 480                           | 430                | 8 x 20                    |
| HOC.2406   | Copper                          | Oil filled | 24      | 125       | 55               | 6300                   | 31                | 3150               | 495                 | 340                                  | 835              |  | 200                         | 324                           | 286                | 8 x 18                    |
| HOC.2410   | Copper                          | "          | 24      | "         | "                | 10000                  | 31                | 3150               | 495                 | 385                                  | 880              |  | 276                         | 400                           | 350                | 8 x 20                    |
| HOC.241    | Copper                          | "          | 24      | "         | "                | 12500                  | 31                | 3150               | 610                 | 385                                  | 995              |  | 276                         | 480                           | 434                | 12 x 14                   |
| HOC.2416   | Copper                          | "          | 24      | "         | "                | 16000                  | 31                | 3150               | 600                 | 415                                  | 1015             |  | 276                         | 430                           | 400                | 12 x 15                   |
| HOC.2420   | Copper                          | "          | 24      | "         | "                | 20000                  | 31                | 3150               | 505                 | 410                                  | 915              |  | 335                         | 480                           | 430                | 8 x 20                    |
| HCC.3606   | Copper                          | OIP        | 36      | 170       | 77               | 6300                   | 25                | 3150               | 495                 | 340                                  | 835              |  | 200                         | 324                           | 286                | 8 x 18                    |
| HCC.3613   | Copper                          | OIP        | 36      | "         | "                | 12500                  | 25                | 3150               | 555                 | 385                                  | 940              |  | 276                         | 450                           | 400                | 12 x 16                   |
| HCC.3613HC | Copper                          | OIP        | 36      | "         | "                | 12500                  | 31                | 3150               | 610                 | 385                                  | 995              |  | 276                         | 450                           | 400                | 12 x 16                   |
| HCC.3616   | Copper                          | OIP        | 36      | "         | "                | 16000                  | 25                | 3150               | 545                 | 415                                  | 960              |  | 276                         | 430                           | 400                | 12 x 15                   |
| HCC.3616HC | Copper                          | OIP        | 36      | "         | "                | 16000                  | 31                | 3150               | 600                 | 415                                  | 1015             |  | 276                         | 430                           | 400                | 12 x 15                   |
| HCC.3620   | Copper                          | OIP        | 36      | "         | "                | 20000                  | 25                | 3150               | 505                 | 410                                  | 915              |  | 335                         | 480                           | 430                | 8 x 20                    |
| HCC.3620HC | Copper                          | OIP        | 36      | "         | "                | 20000                  | 31                | 3150               | 560                 | 410                                  | 970              |  | 335                         | 480                           | 430                | 8 x 20                    |
| HCC.5206   | Copper                          | OIP        | 52      | 250       | 105              | 6600                   | 25                | 3150               | 850                 | 355                                  | 1205             |  | 200                         | 335                           | 290                | 8 x 22                    |

\*25000 A Bushing's dimension is available upon request.



**Model selection:**

HOA – High current bushing with aluminium conductor, and main insulation as electrical insulating transformer oil.

HCA – High current bushing with aluminium conductor, main insulation as OIP capacitive insulation, and also transformer oil.

HOC – High current bushing with copper conductor, and main insulation as electrical insulating transformer oil.

HCC – High current bushing with copper conductor, and main insulation as OIP capacitive insulation, in addition to electrical insulating transformer oil.

How to select and indicate the desired model number from table 1:

Specify "Model No./BCT".

For example, to select a bushing with:

- Conductor/Terminal material = aluminium
- Highest System Voltage (HSV) = 36kV
- Rated Current = 16,000A

- Creepage = 31mm/kV

- L6 (BCT) = 100 mm

the appropriate model would be "HCA/3616HC/100."

The same model for L6 (BCT) = 300 mm would be "HCA/3616HC/300."

The same model required with L6 (BCT) = 0 mm would be "HCA/3616HC/0."

\*\*L2 depends on L6. L2 values in above table are valid for L6 = 0 mm.

If L6>0 mm is required, the additional L6 will be added to the L2 shown in table 1, to receive new L2.

Special creepage distances are available upon request. For Air end and Oil end terminal dimensions refer to the detailed bushing drawing.

For any non-standard, customized dimensions other than the ones stated in the table, please contact us. ^

For detailed dimensions of terminal connections, terminal hole diameters, terminal hole pitch, and their detailed GA drawing, please contact us. ^

^ Refer to the back page for contact details.

# Product Range



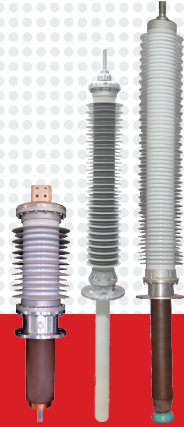
## OIP CONDENSER BUSHINGS

Rated Voltage:  
**24 kV – 245 kV**  
Rated Current  
**Up to 3150 A\***  
Standards:  
**IEC 60137:2017/ANSI/  
IEEE C.57.19.00/01/Others**

Connections:  
**Draw lead/Draw Rod/  
Stem type**

Housing:  
**Porcelain/Composite**

\*Customized rated current > 3150 A are available upon request.



## RIP/RIS CONDENSER BUSHINGS

Rated Voltage:  
**24 kV – 245 kV**  
Rated Current  
**400 A – 3150 A\***

Standards:  
**IEC 60137:2017**

Connections:  
**Draw lead/Draw Rod/  
Stem type**

Housing:  
**Composite/Silicone  
Rubber**

\*6300 A and other special current ratings also available on request.

Technology collaboration  
 **MOSER GLASER**



## OIP WALL BUSHINGS/ OIL TO OIL BUSHINGS

Rated Voltage:  
**24 kV – 245 kV**  
Rated Current  
**400 A – 3150 A\***

Standards:  
**IEC 60137:2017/  
IEEE C.57.19.00/01/Others**

Connections:  
**Draw lead/Draw Rod/  
Solid Conductor**

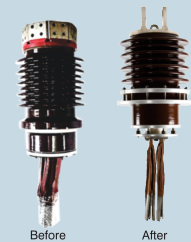
Housing:  
**Porcelain/Composite  
Silicone – Polymer**

\*Customized rated current > 3150 A are available upon request.



## RETROFIT SOLUTIONS

Interchangeable solutions for OIP to OIP (Oil Impregnated Paper), OIP to RIP (Resin Impregnated Paper), and OIP to RIS (Resin Impregnated Synthetic) up to 245 kV for any globally reputed make bushings.



# YASH

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