

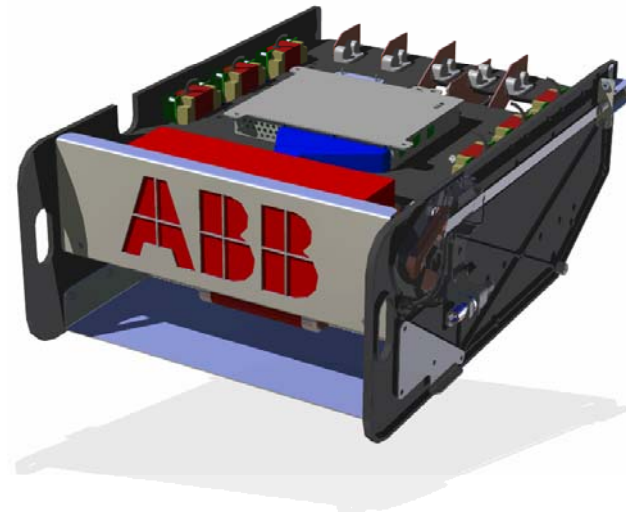
**ACS 2000  
Service & Commissioning  
Course G780**



**4 KV Phase Module  
Replacement**



- Power electronic building block
- Integrated logic for control of IGBTs
- Identical for operation in inverter and active rectifier
- High availability due to fast module exchange
- Converter downtime (MTTR) in the range of 20 min



# Maintenance

## Phase modules



Phase module  
A  
Phase module  
B  
Phase module  
C

Inverter Unit  
(INU)

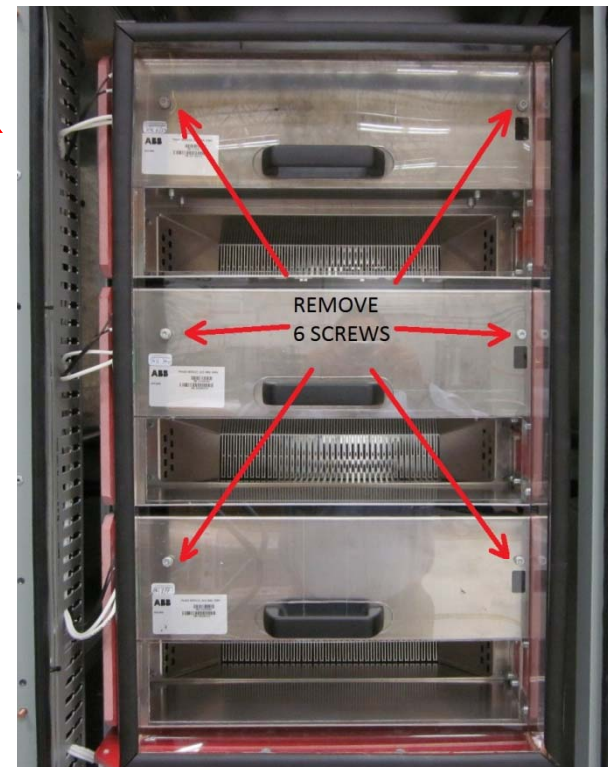
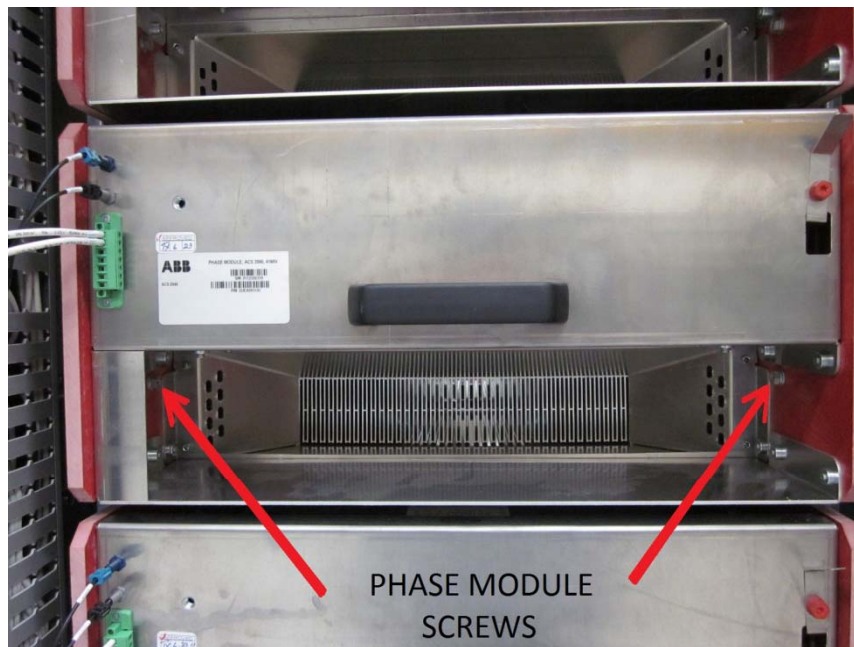
Phase module  
A  
Phase module  
B  
Phase module  
C

Active Front End  
(AFE)



## Exchanging phase modules

1. Turn off main incoming supply and ground the converter  
Use Lock-Out-Tag Out procedure and open converter door
2. Turn off auxiliary power supply of the phase modules
3. Remove the Plexiglas cover
4. Remove the screws on the left/right side of the phase module





# Maintenance Phase modules

5. Insert the module tray into the cabinet along the lower sides of the phase module.
6. Slide the phase module tray tool in until it makes contact with the metal flange on both sides of the NP frame.
7. Open the securing hinges of the tray tool to secure the tray tool to the drive frame (This is to prevent movement of the tray tool while removing module).



## Phase modules

8. Unplug fiber optic cables and control wiring connector from the front of the phase module. Carefully position so as to not damage the cables when changing phase module.



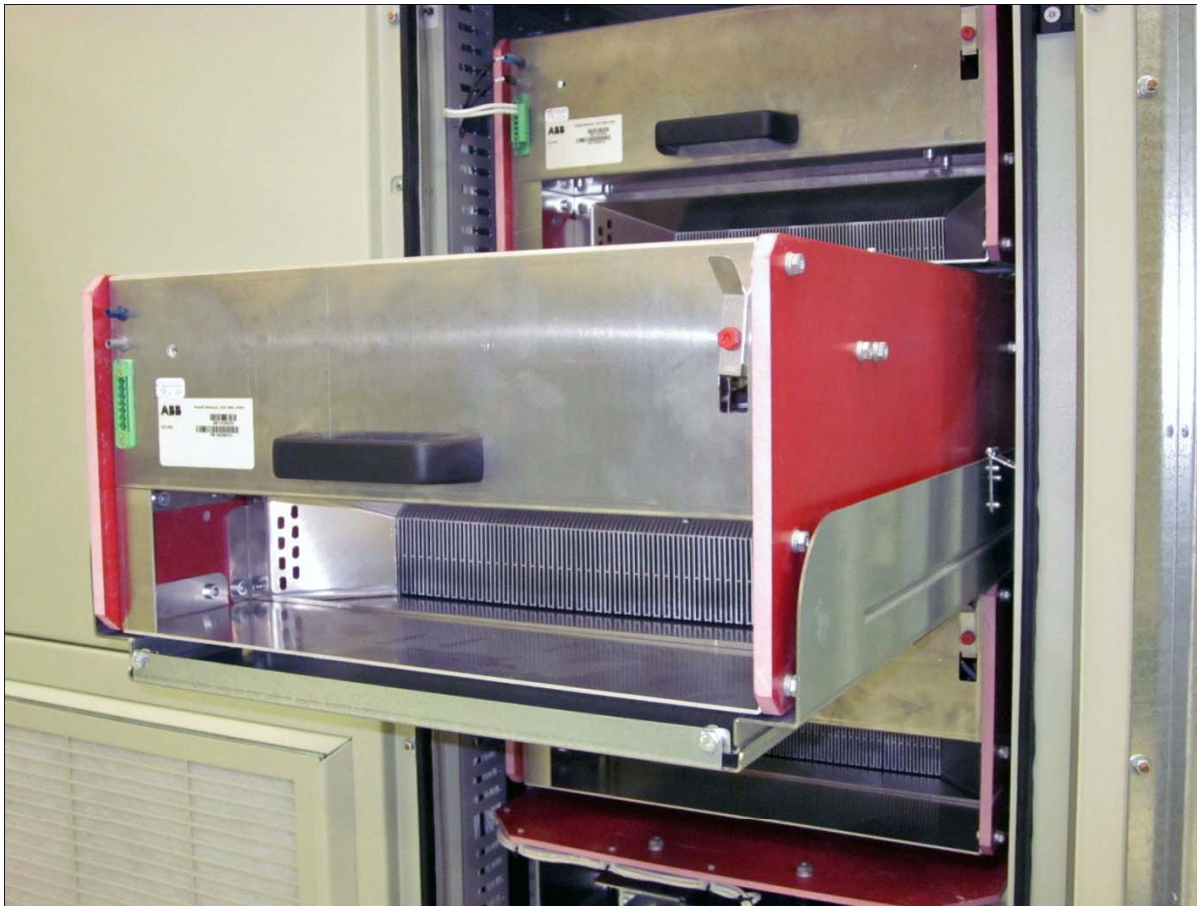
9. Hold the phase module by the handle and pull slowly, verifying that the Module Tray tool is firmly in place.





# Exchanging phase modules

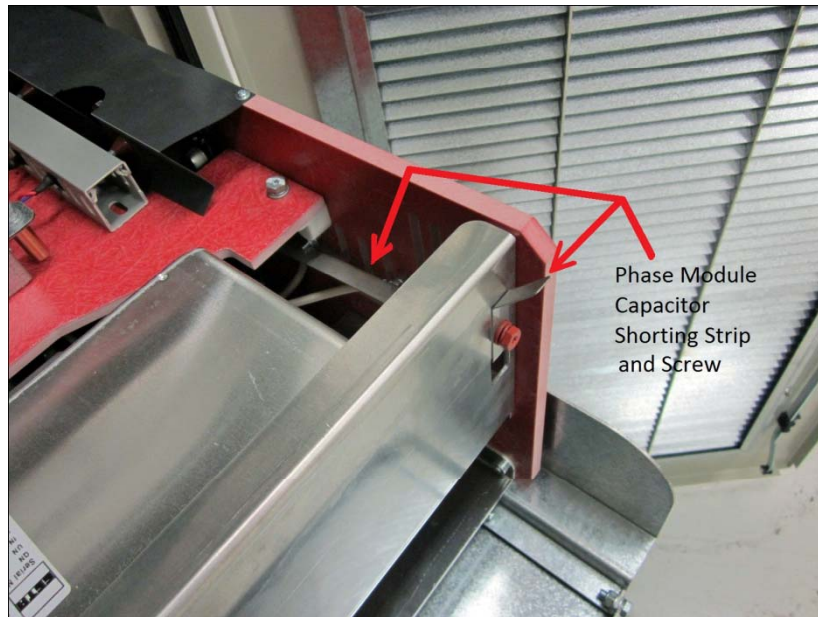
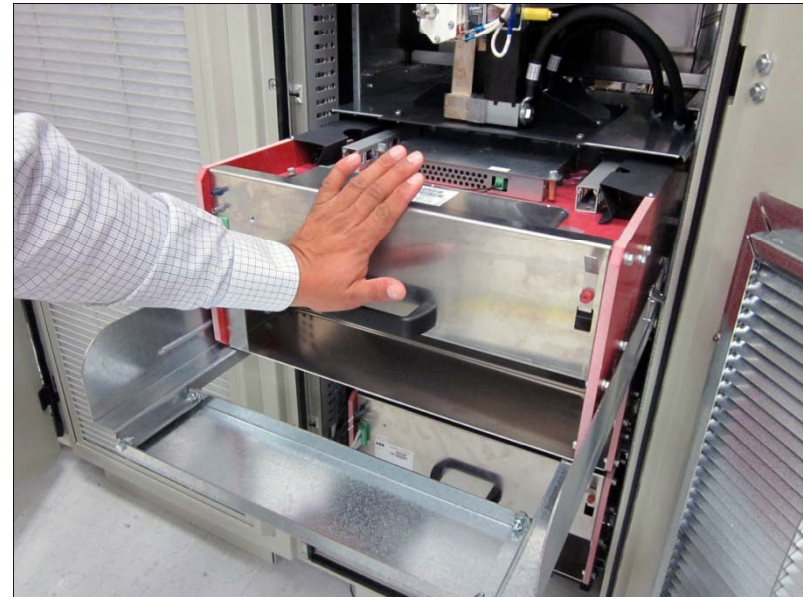
10. Lift the phase module off of the tray. The phase module weighs approximately 35 kg [77 lbs.] . It is recommended that two people, one on each side lift the phase module.





# Exchanging phase modules

11. Place new phase module on tray and gently push into place, being careful not to damage fiber optic and power cables. Tighten the fastening bolts that secure module to cabinet on each side.



**NOTE:** Once in place, remove the phase capacitor shorting strip. Install strip on phase module that was removed.



## Exchanging phase modules



12. Remove Phase module tray tool.



13. Reconnect fiber optic and power cables.

14. Reinstall the plexiglass air plenum.
15. Switch on all miniature circuit breakers in the control compartment.
16. Close door, remove Lock-Out-Tag-Out
17. Unground the drive and use standard drive start up procedures.

**ABB**