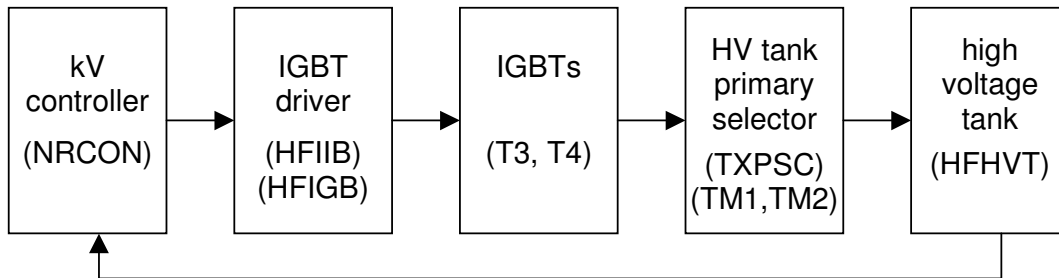


## TESTS FOR ERROR 39

Error code 39 means that there is no (or not enough) output kV from high voltage tank. The following components can cause this error:

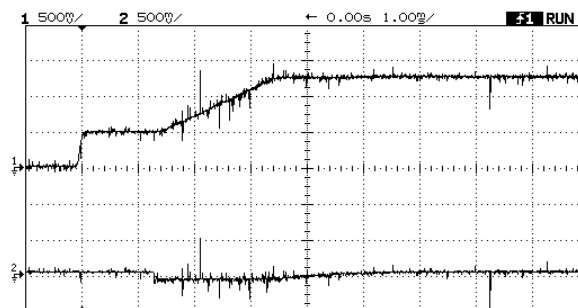


You can make the following tests to check which component is damaged:

### 1. Checking high voltage tank

There is a possibility that anode or cathode side of the high voltage transformer is damaged. In this case there is an asymmetry between sides. This can be checked the following way:

- Connect channel 1 of oscilloscope to test point NRCON / TP17 (kV REF).
- Connect channel 2 of oscilloscope to test point NRCON / TP19 (unfortunately there is no test pin here).
- Connect GND of oscilloscope to NRCON / TP4 (GND).
- Set both channels to 500mV/div, 1 ms/div, trigger from channel 1, trigger level 500mV.
- Enter service mode on generator, Calibrations / Radiographic calibration (manual). Make exposure on 40kV, 3A filament current.
- The amplitude of kV asymmetry signal should be below 500mV:

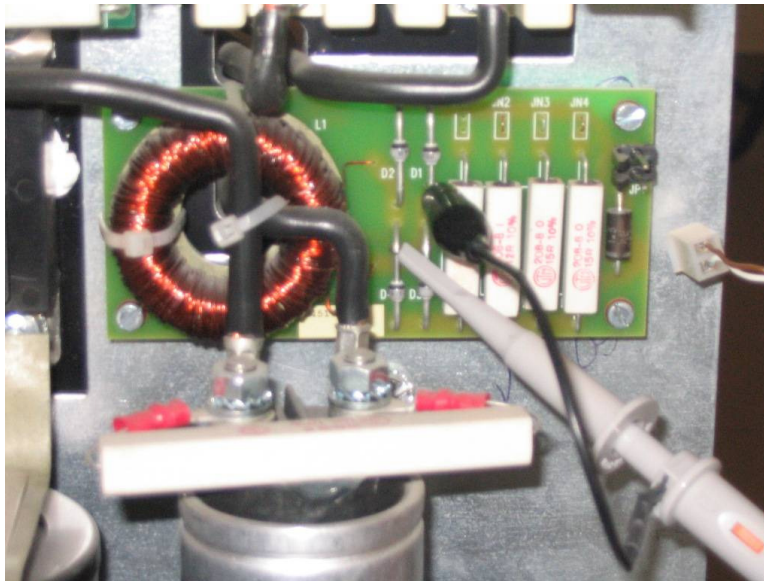


If amplitude on channel 2 is too high, check feedback also on NRCON/J4. Check feedback cable NRCON/J4 – HFHVT/J3. If OK, replace high voltage tank.

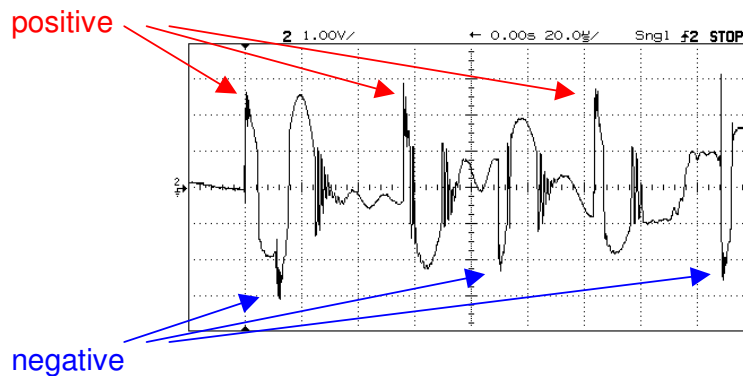
## 2. Checking IGBT driver and inverter

You can check that all IGBTs are working by checking inverter current signal.

- Remove connector from TXAVB/JP1.
- Connect oscilloscope to the current transformer coil of TXAVB:



- Set oscilloscope: 20us/div, 1V/div, trigger level 1V, single trigger mode
- Enter service mode on generator, Calibrations / Radiographic calibration (manual). Make exposure on 40kV, 3A filament current.
- Check that positive and negative periods are following each other:



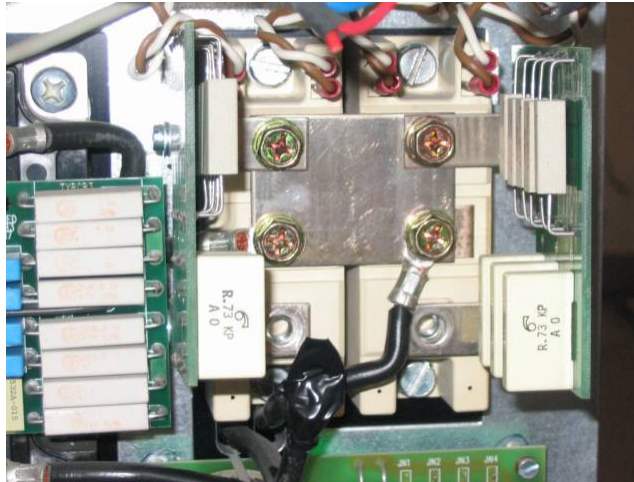
- If positive or negative periods are missing, check IGBTs. When capacitor bank is discharged, check IGBT inputs (gate-emitter) with resistance

measurement (infinity ohms if OK) and IGBT outputs with checking diode between collector (cathode) and emitter (anode).

- If IGBTs are OK, check IGBT driving signals with oscilloscope (NRCON, HFIIB, HFIGB).

### 3. Checking HV tank primary selector

- Disconnect and insulate high voltage tank primary from thyristor TM2.
- Short circuit thyristor TM1:



- Make exposure on 40 kV.
- If exposure OK, check TXPSC: LEDs D20, D21 should be ON during preparation.