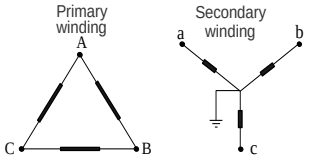
DISTRIBUTION COMMISSIONING FORM (DCF) 3.2 – Non-MPS MK II Distribution Transformer - Commissioning



Purpose: This instruction covers the testing and commissioning for all replacements or new installations of non-modular package substation (non-MPS) ground-mounted transformers up to 1,000 kVA before energisation.

For more information refer to the *Distribution Commissioning Forms Guideline (EDM 34137510)*

Notes: The following tests and checks must be carried after installation and before the transformer is put into service.

Address/Pole No.			
Work Package No.		**SPIDAWeb Pick ID:**	

1. Insulation Resistance Test

Insulation resistance test on the transformer winding Measure resistance after 1 minute of testing for a stable reading. (Short circuit all winding terminals of the same voltage level together)	Ensure that the high voltage (HV) and low voltage (LV) windings of the transformer are de-energised. Disconnect all connections on transformer HV and LV bushings, including the MEN/N-E connections.				
	Test Connection	Test Voltage	Actual result	Expected Results	
	Primary/HV to tank	2.5 kV	Ω	>1 GΩ	
	Primary/HV to Secondary/LV	1 kV	Ω	>100 MΩ	
	Secondary/LV to tank	1 kV	Ω	>100 MΩ	

2. Handover of Responsibility for the Completion of Item 1

I hereby certify that item 1 has been completed with satisfactory results.			
Tested by		NAC	
Signature		Date & Time	

3. Installation and Construction Checks

Inspect the following: • rating plate • tank and bushings • tap setting • oil level • HV terminations • LV terminations • neutral connection • MEN/N-E connections	Transformer installed as per construction standards and applicable design drawings.	
	Transformer matches system voltage.	
	Transformer tap is at the position as per network planning or previously installed transformer. Tap position:	
	Transformer oil level satisfactory (if visible).	
	Transformer bushings and tank in good condition (no oil leaks).	
	HV cables properly terminated and connected on transformer HV bushings, if applicable.	
	The dead end plugs are correctly installed (transformers with 2 sets of HV bushings).	
	LV cables properly terminated and connected on transformer LV bushings, if applicable.	
	Neutral connected and earthed on transformer earth bar (N-E connections).	
	All SPIDAWeb labels fitted and numbered correctly as per SPIDAWeb sheet.	
	LV connections to the transformer LV bushings are correct as per construction standards (for new connection) or as per markings in item 3.1.4.14 of the decommissioning sheet (for replacement transformers).	

4. MCCB Settings Check (for 630kVA and 1000kVA Non-MPS transformer)

Check the following to confirm correct MCCB settings have been applied. (For 630kVA and 1000kVA transformers)	Confirm transformer make, Tyree or ETEL	
	Confirm transformer configuration / supply arrangement (either single or parallel)	
	Confirm that the correct MCCB settings as per DCCR 1-00-5 and DCCR 1-00-6 have been applied	
	Take a photo of the MCCB with settings applied	

5. Handover of Responsibility for the Completion of Items 1, 3 & 4

I confirm that items 1, 3 and 4 have been completed with satisfactory results.			
Tested by		NAC	
Signature		Date & Time	

6. Pre-energising checks

1	Ensure that the earth resistance has been tested and is acceptable. DCF 4.1 completed and attached.	
2	Ensure all electrical connections have been completed, including N-E connections.	

7. Energisation of Transformer without Load

• Check that the transformer LV is not connected to the LV network. • Check the HV fuse rating before energising the transformer HV. • Conduct a voltage and phase rotation test on the LV once the transformer is energised.	Confirm the correct HV fuse type and rating. Record fuse rating A				
	Energise the transformer HV as per HV switching program (and check for abnormal noise). Record the switching program number:				
	Conduct a voltage and phase rotation test on the LV side of the transformer, preferably at the LV disconnect or fuse box, and record results below. (Acceptable results in brackets.)				
	R to N V	W to N V	B to N V	Phase-to-neutral voltages (216–253 V)	
	R to W V	W to B V	B to R V	Phase-to-phase voltages (376–440 V)	
	Phase rotation test result:				

8. LV Phase Out Test

Conduct a phase-out test on open points of the LV network, where the LV supply is coming from another transformer.	Conduct the phase-out test under a switching program at ALL points where the commissioned transformer can be paralleled with another energised transformer. This test ensures interconnections of transformers are made or can be made for operational purposes. 1. If the LV conductors are energised from an interconnected transformer, conduct the phase-out test at the new transformer's LV disconnector or fuse box. 2. If the LV conductors are not energised, proceed to item 7 (ENERGISATION OF THE LV NETWORK) and conduct the phase-out test on normally open points where it can be interconnected from another transformer.

9. Energisation of the LV Network

Conduct a voltage test on the LV side of the transformer (with load).	If applicable, ensure all short-circuiting equipment is removed from the LV network.				
	If applicable, check that the LV fuses are healthy.				
	Energise the LV circuits in accordance with the LV switching program. Record the switching program number:				
	Ensure that the LV network is returned to its normal operating configuration. If applicable, ensure that the LV circuits are not interconnected with any other transformers and are supplied only from the supply transformers.				
	Conduct a voltage test on the LV disconnector or fuse box of the new transformer to ascertain whether the transformer supply is within statutory limits during load conditions and record results.				
	R to N V	W to N V	B to N V	Phase-to-neutral voltages (216–253 V)	
	R to W V	W to B V	B to R V	Phase-to-phase voltages (376–440 V)	
	Record final tap position				
	Conduct a service connection test on all installations where the service connections have been disturbed.				

10. Handover of Responsibility

I confirm that all items have been completed with satisfactory results and transfer control to the network operating authority.			
Commissioned by		NAC	
Signature		Date & Time	

1. Ensure the work area is left tidy with no hazards to the public.
2. Hand over responsibility to the operating authority.
3. The completed form must be returned to the project file/work pack**.**