DISTRIBUTION COMMISSIONING FORM (DCF) 4.5 – Pole Mounted Capacitor Bank

Purpose: This form covers the testing and commissioning of all replacements or new installations of pole mounted capacitor banks before energisation.

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

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

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

1. Pre-Installation Checks

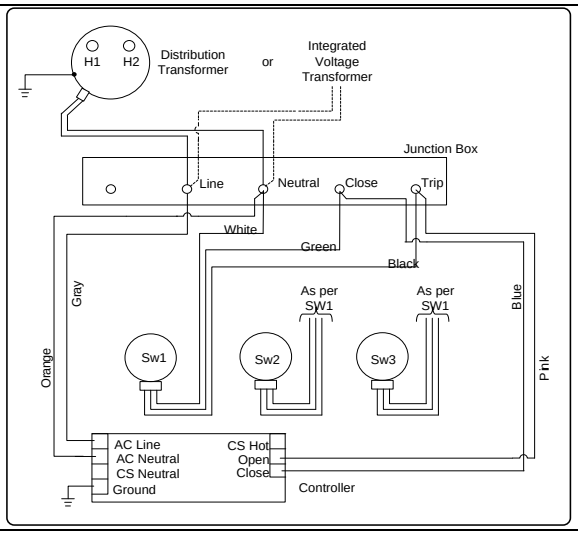
Earth resistance test and nameplate	Ensure that the earth resistance test (DCF 4.1) has been completed with acceptable results (<30 Ω) prior to commissioning.	☐
	Ensure the capacitor bank rating matches the system voltage.	☐

2. Installation Check

Structure	Check that the construction complies with the distribution construction standards and applicable design drawings.	☐
	Check that all the earth connections (including the capacitor and control) are properly connected and are bonded to earth.	☐
	Ensure that the insulated caps have been fitted to all the high voltage (HV) connections.	☐
	Check that the anti-climbing guards and danger plate are fitted and correctly numbered.	☐
Capacitor	Check the capacitor for damage, tank, bushings, cracks in boots and excessive dirt.	☐
	Confirm that all electrical connections are tight.	☐
	Check that all the HV lightning arresters have bird caps fitted and are tensioned correctly.	☐
Structure	Confirm that the fuse element size corresponds to the table below.	

kVAR	kV			
	11	22	33	☐
500	40	20	16	☐
1,000	80	40	31.5	☐

Control unit	Confirm all secondary connections are as per the wiring diagram.	☐



3. Handover of Responsibility for the Completion of Items 1-2

I hereby certify that items 1 to 2 have been completed with the above results and transfer control to the network operating authority.			
Inspected by		NAC	
Signature		Date & Time	

1. **DO NOT ENERGISE:** All dropout fuses and capacitor bank switches must be open.
2. Lock control unit doors with two (NMK2) Western Power approved padlocks.
3. Attach an **"Out Of Service (Warning)"** tag to the padlock on the front of the control cabinet.
4. Inform Network Operations of the status of the capacitor.
5. Ensure the work area is tidy with no hazards to the public.
6. Hand over responsibility to Field Services (Primary Response Group) for the commissioning of alarms and remote controls.

4. Control Setting and Testing

Controller power supply setting instructions	**Integrated Voltage Transformer Supplied**	**Distribution Transformer Supplied**	☐
	Check that all the dropout fuses and capacitor bank switches are open.		☐
	Disconnect the L and N from the voltage transformer at the junction box and leave it safe.	N/A ☐	☐
	Ensure SCADA CONTROL is set to LOCAL.		☐
	Ensure OPERATION MODE is set to MANUAL.		☐
	Connect the interface between the controller and the control cable.		☐
	Supply the controller (through an interface) from a reliable 240 V source. If a normal 240 V supply is unavailable, use a minimum 3 kVA generator. Conduct a polarity test on the 240 V supply. For testing purposes, use an effective earthed reference point spaced more than 2 meters from any electrically conductive object embedded in the ground. Press the switch on the interface to power up the controller.	Close the distribution transformer dropout fuses to power up the controller, and conduct a polarity test on the 240 V supply.	☐
Controller setting and testing instructions	**Non-telemetered**	**Telemetered IntelliCap Plus Controller**	
	Upload the settings (.cfg) to the controller and adjust the date and time.		☐
	Temporarily change the Max Daily Ops to 1.		☐
	Press the CLOSE button/toggle switch.	Change SCADA CONTROL to REMOTE.	
		Request an integrity scan to wake up the communications.	
		Operate SCADA CONTROL REMOTE/LOCAL (Supervisory Control) to test the uncontrolled change of state (UCOS) alarm. Leave in REMOTE.	
		Operate OPERATION MODE AUTO/MANUAL to test the UCOS alarm. Leave in MANUAL.	☐
		Disconnect and reconnect the load fuse to test the UCOS alarm. Request a remote close command to test the remote control function.	
	Check if the CLOSE LED/Lamp is blinking continuously and the manual operation delay (30 s) is activated.		☐
	Wait for the capacitor bank to close.		☐

Controller power supply setting instructions	Press the OPEN button/toggle switch.	Request a remote open command to test the remote control function.	☐
	The OPEN LED/Lamp blinks continuously and the manual operation delay (30 s) is activated. Note: There is a 5 min delay (Reclose Block) between consecutive close commands. This allows time for the capacitors to discharge. Any close commands within this period are denied by the controller.		☐
	Wait for the capacitor bank switches to open.		☐
	Check that the Reclose Block and the Max Daily Cycle are active.	Change SCADA CONTROL to LOCAL.	☐
	Change the Max Daily Ops back to its original setting.		☐
	Ensure that SCADA CONTROL is set to LOCAL.		☐
	Ensure that OPERATION MODE is set to AUTO.		☐

5. Putting the Capacitor into Service

	Integrated Voltage Transformer Supplied	Distribution Transformer Supplied	
Controller setting and testing instructions	Press the switch on the controller interface to OFF. Remove the controller interface and reconnect the control cable to the controller. Reconnect the L and N in the junction box and close the capacitor bank dropout fuses as per the switching program. Conduct a polarity test on the 240 V supply.	Close the capacitor bank dropout fuse as per the switching program and conduct a polarity test on the 240 V supply.	☐
	Set the controller to AUTO and either REMOTE (if there is a SCADA/comms link) to East Perth Control Centre (EPCC) or LOCAL (if there is no SCADA/comms link) to the EPCC. **Do not manually close the capacitor bank onto the network**.		☐
	After seven days in service, download a full report (.csv) from the controller. Save the file to the relevant document management file and notify Network Planning.		☐
	Remove the “Out Of Service (Warning)” tag from the padlock on the front of the control cabinet.		☐

6. Handover of Responsibility

I hereby certify that items 4 to 5 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.