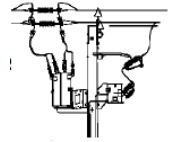




**DISTRIBUTION COMMISSIONING TEST SHEET – NULEC POLE MOUNTED RECLOSER  
HPC-4DL-07-0026-2014**



This commissioning test sheet covers the checking, testing and commissioning of all replacement or new installations of Nulec pole mounted reclosers before energisation.

**NOTE:** Tests must be carried out after the installation, alteration or repair and before putting back to service.  
**SAFETY:** At all times maintain suitable clearance to all other electrical equipment and verify planned escape routes.  
 In preparation for the tests, wherever possible, disconnect the conductors from the equipment on both sides and make the area safe.

<b>DATE:</b>		<b>Project No.</b>		<b>Name of Officer</b>	
<b>Pole Mounted Recloser Location:</b>					

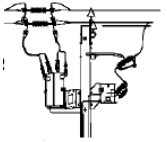
**1. POLE MOUNTED RECLOSER DESCRIPTION**

Rated Voltage	kV	Label/GIS ID code		Stock code		Serial Number	
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**2. VISUAL INSPECTION AND SAFETY CHECK**

Inspect the following: <ul style="list-style-type: none"> <li>• Structure</li> <li>• Control Cabinet</li> <li>• Antenna</li> <li>• Earth connections</li> </ul>	1	Check that the installation complies with the distribution construction standards and applicable design drawings.		<input type="checkbox"/>	
	2	Check that Public Safety has been considered (e.g. cabinets secured and locked, trip hazards removed, anti-climbing devices applied where applicable).		<input type="checkbox"/>	
	3	Check the supply to the recloser, that it is switched off and isolated as per switching sheet and permit (this includes the auxiliary power supply to control box).		<input type="checkbox"/>	
	4	Confirm (with approved testing device) that the recloser is de-energised.		<input type="checkbox"/>	
	5	Ensure that the earth system is complete, undamaged and bonded to earth points (recloser and control cabinet).		<input type="checkbox"/>	
	6	Check that the nearest conductive material is at least two (2) metres away from the earth system (take a photo if possible).	Measured distance	m	<input type="checkbox"/>
	7	Check the maximum separation between the down earth and the recloser umbilical cable, as per construction drawing.			<input type="checkbox"/>
	8	Recloser voltage rating matches system voltage. <b>Note:</b> Three-phase reclosers with internal voltage transformers (identified by three nameplates) can only be removed under an electrical access permit; an insulation resistance test between V1 and W1 is not applicable.			<input type="checkbox"/>
	9	Check the recloser for damage, tank, bushings, cracks in boots and excessive dirt.			<input type="checkbox"/>

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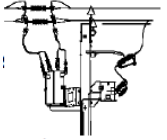
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10	For relocated reclosers, all the HV boots must be removed, cleaned and repacked with silicon grease. Ensure the boots are filled fully with silicon grease and that no air gaps or moisture are present.	<input type="checkbox"/>
11	Ensure the bushing palms and the lugs have the correct torque: For three-phase reclosers apply 44 Nm to two M10 bolts per lug. For single-phase reclosers use PG-clamp.	<input type="checkbox"/>
12	Check that all the HV lightning arresters have bird caps fitted and are tightened correctly.	<input type="checkbox"/>
13	Check that the anti-climbing guards and danger plate are fitted and correctly numbered.	<input type="checkbox"/>
14	Check that the antenna surge diverter is fitted at the base of the control box (if applicable).	<input type="checkbox"/>
15	Check that the antenna is aligned to the correct bearing (applicable to radio comms only) and installed correctly (with elements vertical and drain hole down). Antenna pole brackets with open slotted fixing holes are not permitted (if applicable).	<input type="checkbox"/>
16	Check that auxiliary power supply cable (2.5 mm) has been connected correctly and has suitable surge diverter applied. Control box protection device limits the current to 5 Amps.	<input type="checkbox"/>
17	Check the control unit and batteries for signs of damage.	<input type="checkbox"/>
18	Attach switch instruction/information including logbook to inside of control unit.	<input type="checkbox"/>
19	All labels fitted and numbered correctly.	<input type="checkbox"/>

**3. EARTH RESISTANCE TEST**

1	Test earth resistance using one of the following DCT's and record value in 3.4.	<input type="checkbox"/>							
2	New earth stake, use HPC-4DL-07-0038-2017 DCT- Earth Testing of Distribution Poles, to test the earth.	<input type="checkbox"/>							
3	Existing earth stake, use HPC-4DL-07-0037-2017 DCT- Earth Testing of Altered Systems, to test the earth.	<input type="checkbox"/>							
4	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:25%;">Previous test value if known</td> <td style="width:15%;">= _____Ω</td> <td style="width:25%;">Measured value</td> <td style="width:15%;">= _____Ω</td> <td style="width:20%;">Value acceptable</td> <td style="width:10%;">Yes <input type="checkbox"/></td> <td style="width:10%;">No <input type="checkbox"/></td> </tr> </table>	Previous test value if known	= _____Ω	Measured value	= _____Ω	Value acceptable	Yes <input type="checkbox"/>	No <input type="checkbox"/>	<input type="checkbox"/>
	Previous test value if known	= _____Ω	Measured value	= _____Ω	Value acceptable	Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Measured value would be acceptable if <b>below 30 Ohms</b> or a value between 0.8 and 1.2 which is obtained when dividing the Measured value by the Previous test value. <b>Note:</b> If previous test value is not known a value less than or equal to, 30 Ohms is acceptable.									
5	Earth stake resistance <b>above 30 Ohms or outside of an acceptable value</b> must be communicated to the formal leader or Asset manager.	<input type="checkbox"/>							

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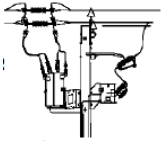
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**4. INSULATION RESISTANCE (FOR A SINGLE-PHASE RECLOSER)**

1	Ensure the recloser is opened prior to conducting the IR test			<input type="checkbox"/>
2		Test Connection	Expected Results	Test Results
Insulation resistance test: Use a 5 kV insulation resistance tester. Measure resistance after 1 minute. Discharge after each IR test.		Between contacts X & I	>100 MΩ	MΩ
		Short-circuit all bushings and test simultaneously to tank.	>100 MΩ	MΩ
3	Confirm recloser has been discharged after each test.			<input type="checkbox"/>

**5. INSULATION RESISTANCE (FOR A THREE-PHASE RECLOSER)**

1	Ensure the recloser is opened prior to conducting the IR test			<input type="checkbox"/>	
2		Test Connection	Expected Results	Test Results	
Insulation resistance test: Use a 5 kV insulation resistance tester. Measure resistance after 1 minute. Discharge after each IR test.		Supply side	Red (U1) phase to white (V1) phase	>100 MΩ	MΩ
			White (V1) phase to blue (W1) phase	>100 MΩ	MΩ
			Blue (W1) phase to red (U1) phase	>100 MΩ	MΩ
		Load side	Red (U2) phase to white (V2) phase	>100 MΩ	MΩ
			White (V2) phase to blue (W2) phase	>100 MΩ	MΩ
			Blue (W2) phase to red (U2) phase	>100 MΩ	MΩ
		Between contacts	Red (U1) phase to red (U2) phase	>100 MΩ	MΩ
			White (V1) phase to white (V2) phase	>100 MΩ	MΩ
			Blue (W1) phase to blue (W2) phase	>100 MΩ	MΩ
		Short-circuit all bushings	Bushings to tank	>100 MΩ	MΩ
<b>Note:</b> When a pole-mounted recloser is closed, the insulation resistance between contacts of the same phase (U1-U2, V1 – V2 and W1-W2) should be zero.					
3	Confirm recloser has been discharged after each IR test.			<input type="checkbox"/>	



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**6. ENERGISATION**

1	Ensure that all working earths and programmed earths are removed (if applicable)	<input type="checkbox"/>
2	Where the recloser can be connected to the distribution network, phase out under HPCC switching schedules at a HV point such as a pole-top switch.	<input type="checkbox"/>
3	Ensure that the switch is in the open position.	<input type="checkbox"/>
4	Energise the switch as per the switching program and/or network configuration.	<input type="checkbox"/>
5	Remove all bypass jumpers (if applicable)	<input type="checkbox"/>
6	Disable or disconnect the trip and close coils, comms device (radio etc...).	<input type="checkbox"/>
7	Energise the control box and conduct an insulation/polarity test on the 240 V supply and the 240 V surge arrester.	<input type="checkbox"/>
8	Ensure that the control unit indication matches the switches status.	<input type="checkbox"/>
9	Check for any signs of abnormality.	<input type="checkbox"/>

**7. HANDOVER OF RESPONSIBILITY FOR THE COMPLETION OF SECTIONS 1 TO 6**

I hereby certify that sections 1 to 6 have been completed with satisfactory results and transfer control to the commissioning officer.

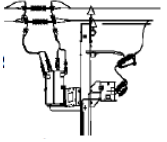
Commissioning Officer: \_\_\_\_\_ Pay Number: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: DD/MM/YY Time: HH:MM

1. Lock the control unit doors using two approved (NMK2) Western Power padlocks. NK6 padlocks must not be reused.
2. Attach an “Out of Service (Warning)” tag to the padlock on the front of the control cabinet.
3. Ensure that the work area is left tidy with no hazards to the public.
4. Hand over responsibility to the Field Services for the commissioning of alarms and remote controls.



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**8. ALARM AND CONTROL TESTING**

The Field Services Officer shall conduct test of the alarms and control appropriate for the unit.

I hereby certify that alarm and control testing been completed with satisfactory results. This equipment is ready to be **SAFELY** energised.

Field Services Officer: \_\_\_\_\_ Pay Number: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: DD/MM/YY Time: HH:MM

Notes:

**9. OPERATIONAL HANDOVER**

The commissioning officer must ensure that all checks are completed and the test results comply with the minimum standards.

I hereby certify that all sections have been completed with satisfactory results and transfer responsibility to the network operating authority. This equipment is ready to be **SAFELY** energised.

Commissioning Officer: \_\_\_\_\_ Pay Number: \_\_\_\_\_  
Signature: \_\_\_\_\_ Date: DD/MM/YY Time: HH:MM

1. Ensure the work area is left tidy with no hazards to the public.
2. Hand over responsibility to the operating authority
3. Return this sheet to the project/working file as a record of commissioning and as a document required for the Handover Certificate.