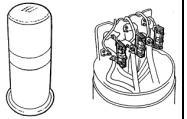




**DISTRIBUTION COMMISSIONING TEST SHEET – LV VOLTAGE CABLES WITH/WITHOUT PILLARS/PITS**  
**HPC-4DL-07-0016-2014**

This commissioning test sheet covers the checking, testing and commissioning of all replacement or new installations of low voltage cross-linked polyethylene (XLPE) cable with or without pillars/pits.



**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 and fire risks.  
 In preparation for the tests, wherever possible, de-energise and disconnect the LV cables from the equipment and make the area safe.

<b>DATE:</b>		<b>Project No.:</b>		<b>Name of Officer:</b>	
<b>Location of Equipment:</b>					
<b>Equipment Description</b>		<b>Quantity as per drawings</b>		<b>Actual quantity</b>	
<b>Working ends</b>					
<b>Uni-pillars</b>					
<b>Mini-pillars</b>					
<b>Below Ground Service Pit</b>					

**1. LOCATION OF THE PILLARS/PITS (lot number and road name)**

A:	F:
B:	G:
C:	H:
D:	I:
E:	J:

**2. CABLE WITHOUT PILLARS (SINGLE RUN) use column X**

Size of conductor	(mm <sup>2</sup> )	Length of cable (approximately)	(m)
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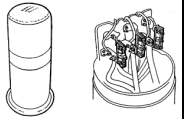
**3. VISUAL INSTALLATION AND SAFETY CHECKS**

<i>DESCRIPTION</i>		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>	<i>X</i>
1	Confirm that the cable is de-energised (with approved testing device).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Check that the pillars/pits “finished ground level” is satisfactory.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
3	Check that all the cables and pillars/pits are correctly installed and that there is no sign of damage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

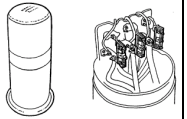


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4	Check that there are no loose connections or unconnected cables in the pillars/pits. Ensure that the customer connections, streetlights, and unmetered supplies are disconnected.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
<i>DESCRIPTION</i>		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>	<i>X</i>
5	Check that the phase and neutral conductor arrangement inside the pillars/pits is correct.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Check that the neutral screens are all solidly and separately bolted to the neutral bar/block.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Check that all the cables are correctly connected in accordance with the design drawings and protected against mechanical damage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Check that the labelling is correct as per the standard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Normally open points (NOP) on Uni-pillars: Cables are identified by labels that show their first points of isolation from that source. Check the labelling to identify the correct circuit in all pillars/pits. Ensure that red reflective labels are placed on the outside of the uni-pillars.	NOP 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		NOP 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
		NOP 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	N/A
10	Check that no cables are exposed and backfill if required.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Check that the final positions of the top and bottom busbars of the universal pillars are correctly aligned to accept fuses or links.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Disconnect the neutral of the cable under test from the MEN and N-E connections.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**4. CONTINUITY AND PHASING TEST**

This test verifies the continuity of the circuit. Connect the four-lead resistor box at the beginning of the cable.

**Example:** At the transformer's low voltage connection point, between phases and neutral, carry out the test using a 500 V insulation resistance tester at the pillars/pits.

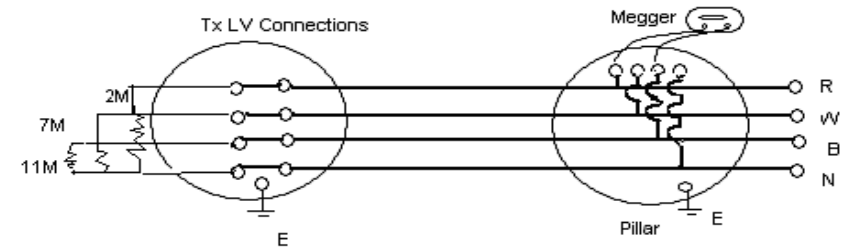
Correct resistance values should be measured between R-N, W-N, and B-N, respectively.

A value of more than 10 MΩ should be measured between N-E.

**Ensure all the MEN link and N-E connections at the uni-pillars, mini-pillars, pits, and low voltage connection points are disconnected for this test.)**

Resistor box values (MΩ)

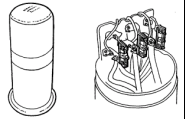
Red phase	White phase	Blue phase



DESCRIPTION	A	B	C	D	E	F	G	H	I	J
Red phase to neutral	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
White phase to neutral	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
Blue phase to neutral	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ

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**5. INSULATION RESISTANCE TEST (DISCONNECT THE RESISTOR BOX IN PREPARATION FOR INSULATION RESISTANCE TEST)**

**Note:** If an NOP is in the circuit, relocate the resistor box.

This test is to be carried out using a 1 kV (never use 5 kV insulation testers for this test) between phase to phase, phase to neutral, and neutral to earth for 1 minute.

Values greater than 10 MΩ for new cables and 1 MΩ for existing cables are acceptable.

Ensure that all persons are clear of the circuit before testing.

DESCRIPTION	A	B	C	D	E	F	G	H	I	J
Red phase to white phase	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
White phase to blue phase	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
Blue phase to red phase	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
Red phase to neutral	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
White phase to neutral	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
Blue phase to neutral	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ

**6. SHEATH INTEGRITY TEST: NEUTRAL-TO-EARTH TEST AT 1 KV**

This test confirms the integrity of the cable sheath. Damaged or punctured sheaths allow moisture to enter the cable. Use a 1 kV insulation resistance tester for 1 minute with all the neutral connections disconnected within the circuit of the cable being tested.

If the sheath integrity is <10 MΩ for new cables or <1 MΩ for existing cables, report unsatisfactory results to the appropriate authorities for further testing or repair; otherwise proceed.

DESCRIPTION	A	B	C	D	E	F	G	H	I	J	X
Neutral to earth	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ

**7. REINSTATEMENT OF ALL MEN LINKS AND N-EARTH CONNECTORS AND INSULATION RESISTANCE TEST BETWEEN PHASES AND NEUTRAL**

Confirm cables have been discharged after testing. Yes

All connections reinstated as per section 4 above Yes  No

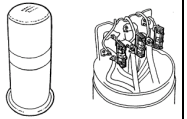
**Note:** A final insulation resistance test must be performed between all phases and neutral/earth on all low voltage circuits before energising for the first time.

If energisation occurs more than two weeks after this commissioning test, conduct a final insulation resistance test to ensure the cable is safe to energise.



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

I hereby certify that sections 1 to 7 have been completed with satisfactory results and transfer responsibility to the commissioning officer.

Testing Officer/Cable Joiner/CPM: \_\_\_\_\_ Pay Number: \_\_\_\_\_  
 Signature: \_\_\_\_\_ Date: DD/MM/YY Time: HH:MM

**9. ENERGISATION**

Ensure that all persons and equipment are clear of the circuit and all pillars and units are secured.	<input type="checkbox"/>
Check that the LV fuses are correct (if applicable).	<input type="checkbox"/>
Conduct a service connection test on all installations where the service connections have been disturbed.	<input type="checkbox"/>

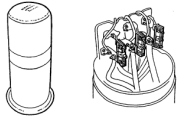
**10. RECORD VOLTAGES AT LV CONNECTION POINTS**

Phase out at the feeder pillars and LV connection points, because cross-phasing is likely to occur at these points.										
<i>DESCRIPTION</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>
Phase-to-same-phase tests, acceptable results 0~10 V:										
Red phase to red phase										
White phase to white phase										
Blue phase to blue phase										
Phase-to-other-phase tests, acceptable results 400~440 V:										
Red phase to white phase	V	V	V	V	V	V	V	V	V	V
White phase to blue phase	V	V	V	V	V	V	V	V	V	V
Blue phase to red phase	V	V	V	V	V	V	V	V	V	V



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DESCRIPTION	A	B	C	D	E	F	G	H	I	J
Phase-to-neutral tests, acceptable results 225~254 V:										
Red phase to neutral	V	V	V	V	V	V	V	V	V	V
White phase to neutral	V	V	V	V	V	V	V	V	V	V
Blue phase to neutral	V	V	V	V	V	V	V	V	V	V
Check correct phase-rotation at all LV connection points.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**11. 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.