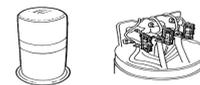


DISTRIBUTION COMMISSIONING FORM (DCF) 2.6 – Low Voltage Cable with/without pillars



Purpose: This instruction covers the testing and commissioning of all replacements or new installations of low voltage cross-linked polyethylene (XLPE) cable with or without pillars.

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

Note: The following tests must be carried out after installation, alteration, repair or jointing and before the cable is put into service. If the circuit contains more than nine pillars, another set of test sheets must be used.

Work Package No:		Test Site:	
Description of equipment	Actual quantity		Quantity as per drawings
Working ends			
Uni-pillars			
Mini-pillars			

1. Location of Pillars (Lot No. and Road Name)

A		F	
B		G	
C		H	
D		I	
E		J	

2. Cable without Pillars (Single Run) – Column X

Size of Conductor:	mm ²	Length of cable (approx.):	m
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3. Replacing a cable

1	Before de-energising the cable to be replaced, record the phase sequence	∅	∅	∅
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4. Visual Inspection and Safety Check

Description		A	B	C	D	E	F	G	H	I	J	X
1	Confirm that the cable is de-energised (with an approved testing device) before proceeding.											
2	Check that the pillars finished ground level is satisfactory.											N/A
3	Check that all the cables and pillars are correctly installed and that there is no sign of damage.											
4	Check that there are no loose connections or unconnected cables in any of the pillars. Ensure customer connections are disconnected.											N/A
5	Check that the neutral and phase conductor arrangement inside the pillars is correct.											
6	Check that the neutral screens are all solidly and separately bolted to the neutral bar/block.											
7	Check that all the cables are correctly connected in accordance with the design drawings and protected against mechanical damage.											

Description		A	B	C	D	E	F	G	H	I	J	X
8	Check that the labelling is correct as per the standard.											
9	Normally open point (NOP). 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 Ensure that red reflective labels are placed on the outside of the uni-pillars.	NOP 1										
		NOP 2										N/A
		NOP 3										N/A
10	Check that no cables are exposed and backfill if required.											
11	Check that the final positions of the top and bottom busbars of the universal pillars are correctly aligned to accept fuses or links.											
12	Disconnect the neutral of the cable under test from MEN and N-E connections.											

5. Continuity and Phasing Test

This test verifies the continuity of the circuit. If using Western Power equipment, connect the four-lead resistor box at the beginning of the cable.

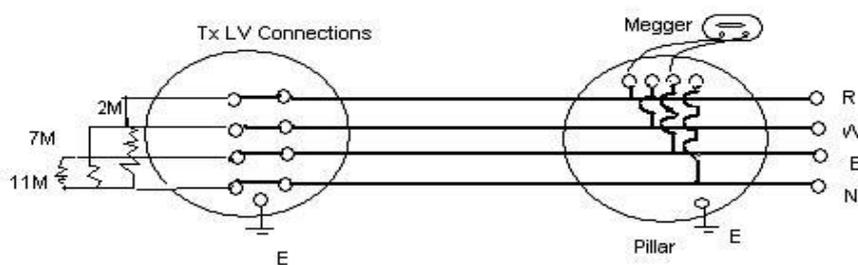
Example: At the transformer's low voltage connection point, between phases and neutral, carry out the test using a 500 V insulation resistance tester at the pillars.

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 and low voltage connection points are disconnected for this test.

Resistor box values (MΩ):	Red phase	White phase	Blue phase
	MΩ	MΩ	MΩ



Description	A	B	C	D	E	F	G	H	I	J
R – N MΩ										
W – N MΩ										
B – N MΩ										

6. 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.

New	Existing
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Ensure that all persons are clear of the circuit before testing. Record actual values in MΩ.

Description	A	B	C	D	E	F	G	H	I	J
R – W MΩ										
W – B MΩ										
B – R MΩ										
R – N MΩ										
W – N MΩ										
B – N MΩ										

7. Sheath Integrity Test: Neutral to Earth Test at 1kV

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. Record actual values in MΩ.

Description	A	B	C	D	E	F	G	H	I	J
Neutral – earth MΩ										

8. Reinstatement of All Men Links and N-E Connections and Insulation Resistance Test between Phases and Neutral

Reinstate all connections which were disconnected as per item 5 above.	
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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.

9. Handover of Responsibility for the Completion of Items 1-8

I hereby certify that items 1 to 8 have been completed with satisfactory results and transfer control to the person responsible for commissioning.			
Testing officer/cable jointer/CPM		NAC	
Signature		Date & Time	



10. Energisation

Energisation of the overhead LV network	Ensure that all persons and equipment are clear of the circuit and all pillars and units are secured.				
	Ensure that all short-circuiting equipment has been removed.				
	Check that the LV fuses are correct (if applicable).				
	Energise the circuit in accordance with the low voltage switching program and record the switching program number: Click here to enter text.				
	Test and record voltages at the pillar terminals.	Expected Value 216–253V	Red - Neutral	V	
			White - Neutral	V	
			Blue - Neutral	V	
		Expected Value 376–440V	Red to White	V	
			White to Blue	V	
			Blue to Red	V	
	Confirm correct phase sequence. (See step 3)		∅	∅	∅
	Conduct a service connection test on all installations where the service connections have been disturbed.				
	Phase out at the feeder pillars, mini-pillars and LV connection points, because cross-phasing is likely to occur at these points.				
Red – red		V	Acceptable results (0–10 V)		
White – white		V			
Blue – blue		V			

11. Handover of Responsibility

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

I hereby certify 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.