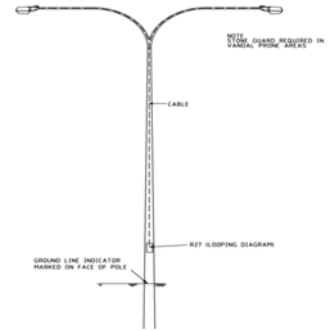


## DISTRIBUTION COMMISSIONING FORM (DCF) 2.7 – Steel Standard Streetlights (Double Insulated (DI))



**Purpose:** This form covers the electrical testing and commissioning of supply cables, cut-outs, internal wiring and luminaires of double insulated (class II) streetlight assemblies mounted on steel standards. This form can be used for new streetlight circuits, brownfield pole replacement and fault repairs.

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

### Parameters

- The following tests must be performed before energisation or re-energisation.
- Test results that do not meet requirements (in brackets) must be repaired before energising
- Measures to prevent unauthorised access to steel standards must be implemented during testing procedures.
- Refer to the Distribution Construction Standards Handbook Part 2, design drawings R26 series.
- Explanatory notes are also provided at the end of this commissioning form.

### 1. Task Details

<b>Work Package No:</b>		<b>Fed From:</b>		Pick ID	
<b>Instrument</b>		<b>Serial No.</b>		Cal Date	
<b>Instrument</b>		<b>Serial No.</b>		Cal Date	

### 2. Location of Streetlight column (Lot No. and Road Name)

A		F	
B		G	
C		H	
D		I	
E		J	

### 3. Visual Inspection and Safety Check

Description		A	B	C	D	E	F	G	H	I	J
1	Install an independent earth > 2 metres from the steel standard. Perform a touch test between the streetlight column and the independent earth. (< 6V)	Volts									
2	Confirm the supply isolated; lock and tag appropriately										
3	Remove the inspection cover. Ensure that the streetlight is correctly installed.										

Note: Refer to the *Distribution Construction Standards Handbook (DCSH) Part 8 (drawings S08 – S12)*; cut-outs must comply with DCSH Part 2 - R26 series

#### 4. Luminaire TPS Cable Insulation Test

Note: To prevent failure of electronic components in the luminaire, DO NOT test between the active and neutral when testing.

Description		A	B	C	D	E	F	G	H	I	J
1	With cut-out fuse link covers removed, check the correct polarity of the luminaire cable connections, and the screws are tight. (See explanatory note 1 at the end of the form)										
2	Test insulation resistance of the luminaire cables to bare metal on the steel standard: (> 1 MΩ at 500VDC)	MΩ									
	Active - steel std										
	Neutral - steel std										

#### 5. Supply Cable Insulation Resistance Test

Note: Mark "not applicable" for brownfield pole replacement when the supply cable is in service and is not damaged. Newly installed 16mm single core neutral screened cable must be tested.

Description		A	B	C	D	E	F	G	H	I	J
1	Ensure all the cut-out fuse link covers on the streetlight circuit are removed										
2	Check that all the cables and streetlight standards are correctly installed as per the work package and that there are no signs of damage.										
3	Use an insulation resistance tester to test at the supply connection point; active to neutral, active to earth.  (> 1 MΩ at 500VDC)	Active - neutral					Active - earth				
		MΩ					MΩ				

#### 6. Handover after Completion of Above Tests

I hereby certify that items 1 to 5 have been completed and that the circuit is ready for commissioning.			
Testing officer/cable jointer/CPM		NAC	
Signature		Date & Time	

#### 7. Supply Polarity and Impedance Test

**Note:** Perform steps 1 - 13 at each streetlight before moving to the next one. Start at the streetlight closest to the point of supply.

Description		A	B	C	D	E	F	G	H	I	J
1	Ensure the cut-out fuse link covers which isolate the luminaires from the supply are removed.										
2	For <b>loop-in loop-out</b> supply; <ul style="list-style-type: none"> <li>• <b>Isolate the supply cable and test for de-energised at the cutout.</b></li> </ul> Remove the <b>loop-out</b> phase and neutral from the cut-out terminals, separate and make safe.										
3	Ensure all streetlight standards are safe to energise and that unauthorised access is prevented.										
4	Energise the streetlight supply cable at the point of supply.										
5	For testing purposes, use an effective earthed reference point spaced at least 2 meters from any electrically conductive object embedded in the ground.										

			Volts											
6	Record voltages between: • line active and line neutral • line active to independent earth (PE) • line neutral and independent earth	A – N (226 – 254 V)												
		A – PE (226 – 254 V)												
		N – PE < 6 V												
7	Record loop impedance (Z $\Omega$ )	A – N < 6.6 Z $\Omega$												
8	For <b>loop-in loop-out</b> supply; • Isolate the supply cable and test for de-energised at the cutout. • Reconnect the loop-out active and neutral to test at the next streetlight standard.													
9	Energise the streetlight supply cable at the point of supply.													
10	Connect a voltmeter between the steel standard and the independent earth (See explanatory note 2)													
11	Confirm correct fuse rating and continuity in the fuse link cover and reinstall to energise the unit.													
12	Whilst reinserting the cutout, observe the voltmeter. If 6V or more is recorded, cease testing and DO NOT bring into service. Investigate the source of the voltage and/or report this to your supervisor.		Volts											
13	On completion of all works, perform a final touch potential test between the steel column and the independent earth (< 6V).													

**8. Declaration**

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 that all the metal inspection covers are replaced, and 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.

**Explanatory notes**

1. In section 4 Luminaire TPS cable insulation test: Sometimes the old superseded type 1 (Separate Neutral-Earth) cut-out will be supplied, these have a directly connected neutral connection block. In this case, the TPS neutral wire must be removed from the neutral terminal block for insulation testing (Neutral - steel standard), and then securely replaced. There must not be a neutral to earth link.

2. In Section 7 step 7 - Loop impedance: Use a low fuse rating to ensure adequate capacity for inrush and load, but to also ensure fast fault clearance

**Table 1:** From AS 3017

Supply fuse rating (A)	Maximum earth fault loop impedance (Z $\Omega$ )
10	6.65
16	3.19
20	2.17

3. In Section 7 steps 10, 11, 12: Some PE cells have a very short delay-off time (2 – 5 sec) after initial energising. Connect the voltmeter between the steel standard and independent earth before replacing the cut-out, select “Peak-hold” if possible. Observe the voltmeter when replacing the cut-out; a constant (<6V) should be maintained. De-energise the steel standard and investigate for a result of 6V or greater.