

**DISTRIBUTION CODE REVIEW PANEL  
SULTANATE OF OMAN**



**TECHNICAL CHECKLISTS  
FOR  
LT, 11KV & 33KV PRODUCTS & MATERIALS**

**MAY-2012**

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## GENERAL REQUIREMENTS

1. ALL PRODUCTS SHALL CONFORM TO THE LATEST OMAN ELECTRICAL STANDARD (OES) FOR THE RESPECTIVE ITEM.
2. ALL PRODUCTS SHALL COMPLY WITH OES-II "GENERAL SPECIFICATION FOR ELECTRICAL MATERIALS AND EQUIPMENT" IN ADDITION TO THE RESPECTIVE APPLICABLE STANDARD FOR THE PRODUCT.

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PART – I

33 KV

### 33 KV ON-LOAD DISCONNECTOR

Description		Requirements
1.	Standard to comply with	OES - 18
2.	Check List to be filled and submitted By the manufacturer	Check List No, 1
3.	Technical Literature to be submitted	Technical Details of all components
4.	Drawings Required	Complete Assembly Drawings with all details marked
5.	Installation and Operation instructions If applicable,	Installation and Operation Manual Required,
6.	Sample complying with the standard To be submitted with the request	Required,
7.	Test Certificates required from Independent and recognized testing Laboratory	i) Type Test Certificate is required ii) Routine Test certificates in accordance With BS 5253 are required,
8.	Installation in the system for accessing The performance	Not required
9.	Documents to be submitted with the Approval request,	i) Check list signed and stompmed by the Manufacturer ii) Technical literature iii) Installation & Operation manual iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO.1

### 33 KV MAST HEAD ON-LOAD DISCONNECTOR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Outdoor Mounting on H-Type Wood Pole Structure		
02	Conforming To	OES - 11 & 18		
03	Conforming To	BS 5253		
04	Mounting Height of the Switch	9000 MM		
05	Phase Centers	1200 MM		
06	Pole Centers	1800 MM		
07	Mounting Height of Operating Handle	1200 MM		
08	Assembly Components	Load Interrupter Head. Phase Coupling Rod. Operating Rod with well Treated Wood Insulation Inserted at 4500 MM from Ground Level. Rod Guides. Galvanized Supporting Steel Work, Bolts. Nuts and Works.		

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**Note :-** If any of the above Is not complied with. the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
09	Interrupter Head	Lined with Horn Fiber or Head equivalent for ARC Quenching and Contacts Tipped with Copper Tungsten ARC Extinguishing contact follower, Large Volume Exhaust Muffler.		
10	Off/On Indicator	Required		
11	Pad Locking	Required		
12	Cree page of Insulators	1320 MM		
13	Sheds of Insulator	Aero foil Open Profile		
14	Load Breaking	400A at 0.70 pf		
15	On-Load Switching	400A at 0.70 pl		
16	Off Load Switching	30A at 0 . 15 pf		
17	Short Circuit Rating	25KA for 3 Sec.		
18	Current Rating	400A		
19	Galvanizing of To Steel Parts	To BS 729 Min. Thickness 127 Microns.		
20	Sample	Required		
21	Operation Checking	Required		
22	Test Certificate from Independent Authority	Required		
23	Reference List	Required		

**Note** :- If any of the above IS not complied with. the product approval application will not be accepted.

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# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. IA

### 33 KV ON-LOAD DISCONNECTOR - VERTICAL MOUNTING

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Outdoor - Vertical Mounting on H-Type Wood Pole Structure		
02	Conforming To	OES - 18 & 11		
03	Standard,	BS 5253/ IEC 129		
04	Mounting Height of they Switch	7700 MM		
05	Phase Centers	1200 MM		
06	Wood Pole Centers H-Type Construction	1800 MM		
07	Mounting Height of Operating Handle	1200 MM		
08	Assembly Components	Load Interrupter Head, Phase Coupling Rod, Operating Rod with Well Treated Wood I n solution Inserted at 4500 MM from Ground Level, Rod I Guides, Supporting Steel Work. Bolts, Nuts and Washers,		

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**Note :-** If any of the above Is not complied with. the product approval application will not be accepted.



SL No.	Items	Requirement	Submission	Compliance
09	Interrupter Head	Lined with Horn Fiber or Head equivalent for ARC Quenching and Contacts Tipped with Copper Tungsten ARC Extinguishing contact follower, Large Volume Exhaust Muffler.		
10	Off/On Indicator	To be provided		
11	Pad Locking	Required		
12	Cree page of Insulators	1320 MM		
13	Sheds of Insulator	Aero foil Open Profile		
14	Load Breaking	400A at 0.70 pf		
15	On-Load Switching	400A at 0.70 pl		
16	Off Load Switching	30A at 0 . 15 pf		
17	Short Circuit Rating	25KA for 3 Sec.		
18	Current Rating	400A		
19	Galvanizing of To Steel Parts	To BS 729 Min. Thickness 127 Microns.		
20	Sample	Required		
21	Operation Checking	Required		
22	Test Certificate from Independent Authority	Required		
23	Reference List	Required		

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### 33 KV AUTO RECLOSERS

Description	Requirements
1. Standard to comply with	OES - 20
2. Check List to be filled and submitted By the manufacturer	Check List No.2
3. Technical literature to be submitted	All details pertaining to material. installation and operation
4. Drawings Required	General Assembly Drawing Mounting arrangement Drawing Control and Protection Circuit Diagram
5. Installation and Operation instructions If applicable.	Required
6. Sample complying with the standard To be submitted with the request	Required
7. Test Certificates required from Independent and recognized testing Laboratory	i) Sort Circuit Test Certificate is required ii) Type Tests iii) Functional Test Certificate is required
8. Installation in the system for accessing The performance	Required
9. Documents to be submitted with the Approval request.	i) Check list Signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

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## CHECK LIST NO.2

### 33 KV AUTO RECLOSER

MANUFACTURER :

AGENT :

DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Wood Pole Mounted SF6 Insulating Medium and Vacuum Interrupter		
02	Service Voltage	33 KV		
03	Highest System Voltage	36 KV		
04	Normal Current Rating	400 A		
05	Breaking Capacity	6 KA		
06	Impulse Withstand	170 KV		
07	Short Circuit Tests	To IEC 56/BS 5311		
08	Operating Duty	Up to 4 Clearances in Succession		
09	Cree page Of bushing	1320 MM		
10	Power Frequency Withstand Test:- - Dry for 60 Sec. - Wet for 60 Sec	70 KV 60 KV		
11	33 KV Bushing	Porcelain or Silicon Rubber Required		

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**Note :-** If any of the above Is not complied with. the product approval application will not be accepted.

### 33 KV AUTO RECLOSER

SL No.	Items	Requirement	Submission	Compliance
12	Control	1. Fully Micro-processor Controlled and Programmable Settings. Controls and Settings are to be Programmable by hand held device at Local/Site without PC or Laptop  2. Type		
13	Control Cable	6 Meter Length Required		
14	Power Supply for Control	a). Battery Supply 15 V/12 V. 10 Ahrs Non rechargeable Battery, replaceable after 10 years use or 10000 operations OR b), 230 V A C 50 Hz Supply 1), 11.5 KV /230 Voltage TX with HRC Dropout Fuses on 11 ,5 KV Side and MCB for LT Side, 2). Emergency Rechargeable 12V / 15V, 10 Ahrs Battery, Charge and Voltage are maintained for 48 Hrs in the event of failure of AC Supply,		

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### 33 KV AUTO RECLOSER

SL No.	Items	Requirement	Submission	Compliance
15	Protection:- - Over Current Setting - Over Current Instantaneous' - Over Current Time Multiplier - Earth Fault Current Setting - Earth Fault Instaneous (Selective) - Earth Fault Time Delay - Recluse Time Selectable - Reclaim Time Selectable - Local Control	25% - 200% in Steps of 25%  4 – 20  0,1 - 1.5 in Steps of 0,1  10% - 80% In Steps of 10%  4 – 20  0.2 - 25 Secs,  1 - 60 Secs  1 - 180 Secs  Local Control Operated manually with Hook Stick Comprising. A) Manual Close B) Close and Lock-In C) Trip and Lock-Out D) Earth Fault In/Out		
16	Mounting Bracket	Required		
17	Painting and Finish	Required		
18	Test Certificate from Independent Authority	Required		

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### 33 KV STAY WIRE INSULATOR

Description	Requirements
1. Standard to comply with	OES - 1
2. Check List to be filled and submitted By the manufacturer	Check List No.3
3. Technical literature to be submitted	All details pertaining to material. installation and operation
4. Drawings Required	General Assembly Drawings with all Dimensions marked
5. Installation and Operation instructions If applicable.	Installation Instructions Required.
6. Sample complying with the standard To be submitted with the request	Required
7. Test Certificates required from Independent and recognized testing Laboratory	<ul style="list-style-type: none"> <li>i) Dry Lightning Impulse Test</li> <li>ii) Wet Power Frequency Withstand Test</li> <li>iii) Performance Test</li> <li>iv) Mechanical Failing Load Test</li> <li>v) Porosity Test</li> <li>vi) Galvanizing Test</li> </ul>
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	<ul style="list-style-type: none"> <li>i) Check list Signed and stamped by the Manufacturer</li> <li>ii) Technical literature</li> <li>iii) Installation &amp; Operation manual if applicable</li> <li>iv) Drawings</li> <li>v) Experience List</li> <li>vi) Test Certificates</li> <li>vii) Sample</li> </ul>

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## CHECK LIST NO.3

### 33 KV STAY WIRE INSULATOR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Material	Impregnated Laminated Wood I or Fiber Polyester Resin		
02	Breaking Strength	12000 KG		
03	Steel Work	To BS 1449		
04	Galvanizing	To BS 729. Minimum Thickness 127 Microns		
05	Dimensions	As per Drawing No. MEW/OH/015A/015C		
06	Test Certificate From Independent Authority	Required		
07	Sample	Required		
08	Reference List	Required		

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### 33 KV XLPE CABLES

Description	Requirements
1. Standard to comply with	OES - 2
2. Check List to be filled and submitted By the manufacturer	Check List No.4
3. Technical literature to be submitted	All details pertaining to cable manufacturing process. technical data to be submitted.
4. Drawings Required	Dimensional Cross Section Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required
7. Test Certificates required from Independent and recognized testing Laboratory	i) High Voltage Test li) Conductor Resistance Test lii) Galvanizing Test for Armour IV) Insulation, Bedding and Sheath Test v) Accelerated Treeing Test
8. Installation In the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer li) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample



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## CHECK LIST NO.4

### 33 KV XLPE CABLES

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	IEC 302 and OES - 2		
02	Highest System Voltage	36 KV		
03	Conductor	Compact Circular as per IEC 228 Class - 2		
04	Conductor Shield	Extruded Semi-Conductive Layer		
05	Insulation	Cross Linked Polyethylene		
06	Thickness	9MM		
07	Insulation Shield	Extruded Semi-Conducting Layer, Phase Identification - Red, Yellow and Blue, Bare Copper Shielding Tape applied with a Lap		
08	Assembly	Fillers and Bound with Non Vulcanizable Tape suitable for Conductor Temperature 900 DEG,C		
09	Sheath	Extruded PVC B 6746 - Table-I, Type-9		

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**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
10	Thickness of Sheath	2 MM		
11	Bedding	Over the Sheath Bedding Fabric Tape		
12	Thickness of Bedding	0.6 MM		
13	Armour	Single Galvanized Steel Wires BS 1442. Aluminium Armour Wires for Single Core Cable		
14	Overall Serving	Extruded PVC Type-9 Table BS6746		
15	Thickness	3.0MM Fire Retardant, Termite Resistant		
16	Cross Sectional Drawing of the Cable	To be submitted		
17	Test Certificate From Independent Authority	To be Submitted		
18	Reference List	Required		
19	Sample	Required		

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## 33 KV LINE POST INSULATOR

1. Standard to comply with	OES - 26 - B
2. Check List to be filled and submitted By the manufacturer	Check List NO.6
3. Technical Literature to be submitted	Yes
4. Drawings Required are	Dimensional Drawing with all details of sheds, top, base etc.
6. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and Recognized Testing Laboratory	<ol style="list-style-type: none"> <li>1 . Dry lightning impulse withstand</li> <li>2. Wet power frequency withstand</li> <li>3. Performance Test</li> <li>4. Radio Interference Test</li> <li>6. Temperature Cycle Test</li> <li>6. Mechanical Failing load Test</li> <li>7. Porosity Test</li> <li>8. Galvanizing Test</li> </ol>
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	<ol style="list-style-type: none"> <li>a) Check list signed and stamped by the Manufacturer</li> <li>b) Technical literature</li> <li>c) Installation &amp; Operation manual if applicable</li> <li>d) Drawings</li> <li>e) Experience List</li> <li>f) Test Certificates</li> <li>g) Sample</li> </ol>

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**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

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## CHECK LIST NO.5

### 33 KV LINE POST INSULATORS

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Glazed Porcelain		
02	Nominal System Voltage	33 KV		
03	System Highest Voltage	36 KV		
04	Minimum Dry Impulse Withstand	250 KV		
05	Minimum Wet Power Frequency Withstand	135 KV		
06	Minimum Mechanical Failing Load	11 KN		
07	Minimum Cree page	1320 MM		
08	Profile	Aerodynamic Open Profile Sheds Top and Side Groves Uniform Sheds		
09	Metal Base	Malleable Iron		

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**Note :-** If any of the above Is not complied with. the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
10	Fixing Stud :- - DIA - Length (A) - Length (B) - Thread (A) - Thread (B)	16 MM - 86MM - 203MM - 71.4 MM - 102MM		
11	Protection of Hot Ferrous Parts	Hot DIP Galvanized BS 729 Minimum Thickness 127 Microns		
12	Marking	Trade Mark Year Failing Load		
13	Test Certificate From Independent Authority	Required		
14	Sample Predicted For Inspection	Required		
15	Reference List	Required		

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### 3, 6, 10 & 20 MVA POWER TRANSFORMERS

1. Standard to comply with	OES - 6
2. Check List to be filled and submitted By the manufacturer	Check List NO.6
3. Technical Literature to be submitted	Technical Details of each sub-assembly and technical data of each component
4. Drawings Required	1. General layout, elevation, plan and side view with dimensions marked 2. Rating and diagram plate drawing 3. Cable box drawing 4. Drawing of each individual part 5. Core assembly 7. Foundation drawing
5. Installation and Operation instructions If applicable.	NIA
6. Sample complying with the standard To be submitted with the request	Not Required
7. Test Certificates required from Independent and recognized testing Laboratory	1. S/C Test Certificate required 2. Impulse withstand Test Certificate 3. Temperature rise Test Certificate 4. Routine Test Certificates 5. Power frequency High Voltage Test Certificate Required
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

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**Note :-** If any of the above is not complied with,  
the product approval application will not be  
accepted.

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO.6

### 3,6, 10 & 20 MVA 33/11.5 KV TRANSFORMERS (GENERAL REQUIREMENTS)

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	IEC 76 BS 171		
02	Temp. rise over Ambient of 50 Deg.C:- - 011 by Thermometer -Winding by Resistance	40 Deg. C 50 Deg. C		
03	Maximum continuous Rating	3/6/10/20 MVA		
04	Duty under fault condition S.C. Type Test Certificate	Required		
05	Impulse Level:- - 33 KV - 11 KV	170 KV 75 KV		
06	Harmonic Suppression (3rd and 5 <sup>th</sup> )	Required		
07	Vibration & Noise Level			
08	Core Quality of Steel.	Low loss cold rolled grain oriented Electrical Steel Laminations		
09	Flux Density	Not to exceed 16000 Lines/SQ. MM.		
10	Power Frequency High Voltage Level	33 KV - 70 KV 11 KV-50KV		

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**Note :-** If any of the above is not complied with. the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
10	Core:- A) Core Plate/ Lamination Insulation B) Core Clamping Bolts and Plate Insulation C) Core Lifting Device D) Provision for support to prevent movement during transport	Required  Required  Required  Required		
11	Winding:- A) Conductor B) Max. Current density C) Type of Winding D) Method of Bracing and Clamping E) Ability to withstand shock during handling and transport	High Conductivity Electronic Copper not greater than 2.6A/SQ.MM.		
12	Winding Insulation	Class - A		
13	Ability to withstand lightning surges and switching surges			



SL No.	Items	Requirement	Submission	Compliance
14	Internal earthing arrangement for core clamping STR., damping bolts and coil clamping ring			
15	Earth Connector cross sectional area	Not less than 400 Sq. M.M.		
16	<p>Main Tanks:-</p> <p>A) Lifting arrangement</p> <p>B) Accessibility to termination of windings and earthing point without emptying the oil tank</p> <p>C) Tank withstand pressure when empty</p> <p>D) Painting Inside the tank</p> <p>E) Jacking lugs - 4 Nos.</p>	<p>Required</p> <p>Required A vacuum of 50 CM of mercury or vacuum required for drying out whichever IS Greater</p> <p>Required</p> <p>50 CM above the ground level</p>		

## 3 MVA 33/11.5 KV TRANSFORMERS

### (PARTICULAR REQUIREMENTS)

SL No.	Items	Requirement	Submission	Compliance
01	Type	OMAN		
02	Voltage Ratio	33/11.5 KV		
03	Connections	Delta/Star		
04	Vector Group	Dyn 11		
05	Tapping: - Range - Step	Off Load  + 5"10 to - 10"10 2.5"10		
06	Pad Locking Facilities	Required		
07	Impedance	6%		
08	Termination; - 33 KV Side  Cree page Clearance Phase to Phase  -11 KV Side  Clearance Phase to Phase Neutral Cree page	Outdoor Bushing  40 MM/KV  700MM  Outdoor Bushing  450MM  Bushing 40 MM/KV		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
09	Fittings:- - Conservator Tank - Silicagel Breather - Ammeter 0 - 400A with Hand Reset maximum demand indicator - Pressure relief device - Oil Temp. Indicator - Lifting and Jacking Lugs - Thermometer Pocket - Earthing Terminals - Rating and Diagram Plates - Single Phase Current T ransformer 400/5A fitted on 11 KV "Y" Phase for Ammeter Service			
10	Main Tank Thickness of Plates:-  - Top - Bottom - Sides - Radiator	15 MM 15MM 8MM 1.2 MM		

**Note** :-If any of the above is not complied with, the product approval application will not be accepted.

Signature:

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## 6 MVA 33/11.5 KV TRANSFORMERS

### (PARTICULAR RQUIREMENTS)

SL No.	Items	Requirement	Submission	Compliance
01	Type	OMAN		
02	Voltage Ratio	33/11,5 KV		
03	Connections	Delta/Star		
04	Vector Group	Dyn 11		
05	Tapping: - Range - Step	Off Circuit  + 5% to - 10% 2,5%		
06	Pad Locking Facilities	Required		
07	Impedance	6%		
08	Termination:  - 33 KV Side  Cree page Clearance Phase to Phase  - 11 KV Side  Clearance 450MM Phase to Phase Neutral Outdoor Bushing Creepage	Outdoor Bushing  40 MM/KV  700MM  Outdoor Bushing  450MM  Outdoor Bushing 40 MM/KV		

SL No.	Items	Requirement	Submission	Compliance
09	Fittings:- - Conservator Tank - Silicagel Breather - Ammeter 0 - 400A with Hand Reset maximum demand Indicator - Pressure relief device - Oil Temp, Required Indicator - Lifting and Required Jacking Lugs - Thermometer Pocket - Earthing Terminals - Rating and Diagram Plates - Single Phase Current Transformer 400/5 fitted on 11 KV Class 5PIO	Required Required  Required  Required  Required  Required Required  Required Required		
10	Main Tank Thickness of Plates:  - Top - Bottom - Sides - Radiator	  15 MM 15 MM 8MM 1.2 MM		

**Note :-** If any of the above is not complied with, the product approval application will not be accepted,

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**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

## 10 MVA 33/11.5 KV TRANSFORMERS

### (PARTICULAR REQUIREMENTS)

SL No.	Items	Requirement	Submission	Compliance
01	Type	OMAN		
02	Voltage Ratio	33/11,5 KV		
03	Connections	Delta/Star		
04	Vector Group	Dyn 11		
05	Tapping: - Range - Step	On Load  + 5% to - 15% 1.66%		
06	Impedance	7.5%		
07	Termination: -33 KV Side  Clearance Creepage  - 11 KV Side  Clearance  Creepage of Bushing  - Neutral  Creepage of Busing Creepage  - Cable Glands Suitable for above cable with associated fittings	Cable Box Suitable for 3C x 300 Sqm X LPE Cable - 500 MM Creepage Phase to Earth - 400 MM 805MM  Cable Box - Suitable for 1 1 C X 500 Sqms X LPE Cable  Phase to Phase - 300 MM Phase to Earth - 170 MM  Creepage of 295MM Bushing  External Bushing 440MM  Required		

SL No.	Items	Requirement	Submission	Compliance
08	<p><b>Current Transformer</b> 33 KV Side '-</p> <p>1st) Separate C.T.S for differential protection</p> <ul style="list-style-type: none"> <li>- Ratio</li> <li>- Class</li> <li>- VK</li> </ul> <p>2 Double Core C.T. for <i>OIC</i>. EIF and metering Ratio,</p> <ul style="list-style-type: none"> <li>- Class</li> </ul> <p>11 KV Side -</p> <ul style="list-style-type: none"> <li>- REF Protection</li> <li>- Ratio</li> <li>- Class X</li> <li>- Standby EIF</li> <li>- Ref Relay</li> <li>- Ratio</li> <li>- Class</li> </ul>	<p>200/1 X 330V</p> <p>200/1A Class-5PIO for protection and Class - 1 for metering</p> <p>600/IA X</p> <p>600/IA 5P 10</p>		
09	<p>Main Tank Thickness of Plates:</p> <ul style="list-style-type: none"> <li>- Top</li> <li>- Bottom</li> <li>- Sides</li> <li>- Radiator</li> </ul>	<p>20 MM</p> <p>20 MM</p> <p>10 MM</p> <p>1.2 MM</p>		

SL No.	Items	Requirement	Submission	Compliance
10	Buchholz Relay Type and Make	Required		
11	On-Load Tap Changer Type and Make			
12	Marshalling KIOSK	<ul style="list-style-type: none"> <li>- Oil Temp. Indicator</li> <li>- Winding Temp. Indicator</li> <li>- Terminal Blocks and Test Links</li> <li>- Local Tap Change Selector and control Switch Local /Remote</li> </ul>		
13	Tap Changer Control Panel	<ul style="list-style-type: none"> <li>-Tap Position Indicator</li> <li>Tap change raise and lower</li> <li>Spring Load Switches or</li> <li>- Push Button</li> <li>Tap change control</li> <li>- Selectors/Switch</li> <li>Remote / Supervisory</li> <li>- Tap change Indication / progress  </li> <li>- Lamp &amp; Buzzer</li> <li>Out of step Lamp</li> <li>Voltage Regulations relay</li> <li>With Time Delay</li> <li>Operating Coil</li> <li>30V DC/ 11 OV DC</li> </ul>		

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

Signature:

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PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.



## 20 MVA 33/11.5 KV TRANSFORMERS

### (PARTICULAR REQUIREMENTS)

SL No.	Items	Requirement	Submission	Compliance
01	Type	ONAN		
02	Voltage Ratio	33/11.5 KV		
03	Elect. Connection	Delta/Star		
04	Vector Group	Dyn 11		
05	Tapping: - Range - Step	On Load  + 5"10 to - 15"10 1.667"10		
06	Impedance Voltage	12.5%		
07	Terminations: - 33 KV Side:-  Cable Box To BS2562 - Clearance:- Phase To Phase Phase to Earth - Creepage - Drawing  - 11 KV Side:- Cable Box To BS2562 - Clearance:- Phase To Phase Phase to Earth - Creepage of Bushing - Neutral Busing Creepage	Suitable for 3C X 300 Sq. M.M. XLPE Cable 500MM 400MM 805MM Required  Suitable for 6 X 1 C 500 Sq. MM. XLPE Cable  300MM 170 MM 295MM  440MM		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
08	Current Transformers. Particulars:- 33 KV Side:- Separate 3 Phase set of CT's for diff. Protection - Ratio - Class 11 KV Side :- For REF - Ratio - Class 2. Stand by E/F & Meters - Ratio - Class	400/1A  1200/1A X  1200/1 5P10		
09	Main Tank Material Thickness - Top - Bottom - Sides - Radiator	20 MM 20 MM 10 MM 1,2 MM		
10	Buchholz Protection For Main TX  On-Load Tap Changer - Type - Make Buchholz Protection for On - Load, Tap Changer Required	Required		
11	Tap change Motors Supply - ARV Relay - Type - Aux, Supply	240V A.C.   30V or 110 D,C.		

**Note :-** If any of the above is not complied with, the product approval application will not be accepted,

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SL No.	Items	Requirement	Submission	Compliance
12	Marshalling KIOSK:- - Location - Winding Temp. Indicator - Oil Temperature Indicator - Local/Remote Tap change Selector Switches	Adjacent or on the Top		
13	Safety Pressure Release Device for Main TX.	Operated By Spring Loaded Mechanism Required,		
14	Safety Pressure Release Device for On- Load Tap Changer	Diaphragm Rupturing Type -Required		

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SL No.	Items	Requirement	Submission	Compliance
15	Tap change	1 Digital Tap Position Indicator		
	control Panel	2 Tap Change Raise and lower Spring loaded switches or push Button		
		3 Tap Changer Control Switch Remote! /Supervisory		
		4 Tap Change in Progress indication and buzzer		
		5 Out of Stop Lamp indication		
		6 Voltage Regulating Relay with Time Delay		
		7 Tap Changer Control Auto/Non-Auto Selector Switch		
		8 A VR Voltage Reference Adjuster		
		9 VT Fail Alarm		
		10 Supply Voltage of OLTC failure - Amber Lamp		
		11 0-IS KV Voltmeter		
		12 Tap Changer Motor MCB OFF indication (Amber)		
		13 Emergency Stop Push Botton		
		14 Oil Temp. Alarm		
		15 Oil Temp, Trip		
		16 Winding Temp, Alarm		
		17 Winding Temp Trip		
		18 Buchholz Relay Alarm		
		19 Buchholz Re-lay Trip		
		20 Oil Level Low Alarm		
		21 Pressure Device Trip		

**Note:-** If any of the above Is not complied with, the product approval application will not be accepted,

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PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above Is not complied with. the product approval application will not be accepted.

## 33 KV OUTDOOR BREAKER

1. Standard to comply with	OES - 34
2. Check List to be filled and submitted By the manufacturer	Check List NO.7
3. Technical Literature to be submitted	Technical Details of each assembly and technical data.
4. Drawings Required	General Assembly Drawing with all components shown Foundation Drawing
5. Installation and Operation instructions If applicable.	Installation, Operation and Maintenance Manual
6. Sample complying with the standard To be submitted with the request	Not Required
7. Test Certificates required from Independent and recognized testing Laboratory	1 , Type Test Certificate required 2. Temperature Rise Test Certificate required 3, Routine Test Certificate required
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

**Note** :- If any of the above is not complied with, the product approval application will not be accepted.

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO.7

### 33 KV OUT DOOR BREAKER

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Metal Clad. Fully SF6 Breaker or Vacuum Interrupter With SF6 Insulating Medium		
02	Rupturing Capacity	25 KA for 3" Duration		
03	Standard	BS 5311/IEC 56 / OES - 34		
04	Degree of Protection	IP 65		
05	System Normal Voltage	33 KV		
06	Highest System Voltage	36 KV		
07	Normal Current	600A / 1200A Feedes/ Bus Section		
08	Impulse Level	170 KV		
09	Frequency	50 HZ		
10	Operating Mechanism :- - Spring Charged Motor - Closing Coil Voltage - Shunt Trip Coil - Manual Charging Indicator - On/Off Control Local/Remote	240V 50 CIS  110V or 30V DC  110Vor 30V DC Required  Required		

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**Note :-** If any of the above Is not complied with. the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
11	Operating Cubicle ;- - Weather Proof - Highest Live Part from Bottom 3.0 MTR	Required		
11 A	Degree of Protection	IP 55.		
12	Current Transformers	Required		
13	Labels and Fuses	Required		
14	Heater	Required		
15	Type Tests Certificate from Independent Lab	Required		
16	Terminal Bushing - Type - Creepage - Clearance - Phase to Phase	Aerofil Open Profile 1320 MM  470MM		
17	Breaker Operation Counter	Required		
18	Terminals	Copper		
19	Mounting Structure ;- - Protection against Corrosion	Galvanizing Thickness 127 Microns		
20	Smallrings	2.5Sqmm Stranded Copper PVC Insulated. All terminations Filled With Ferrules and circuit number		
21	Earthing	Two Earthing Terminal of Brass or Stainless Steel suitable for Connecting 10 Sqmm Cu. Conductor		

**Note :-** If any of the above IS not complied with. the product approval application will not be accepted.

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**Note :-** If any of the above Is not complied with. the product approval application will not be accepted.

## **PART II 11 KV**



## 11 KV ON - LOAD DISCONNECTOR

1. Standard to comply with	OES – 17
2. Check List to be filled and submitted By the manufacturer	Check List NO.21
3. Technical Literature to be submitted	All details pertaining to material, installation and operation
4. Drawings Required	Complete Assembly Drawings with all Dimensions marked
5. Installation and Operation instructions If applicable.	Installation and Operation Manual Required,
6. Sample complying with the standard To be submitted with the request	Required
7. Test Certificates required from Independent and recognized testing Laboratory	i) Type Test Certificate is required ii) Routine Test Certificates in accordance with BS 5253 are required
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 21

### 11 KV MAST HEAD ON-LOAD DISCONNECTOR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Outdoor for Mounting on "H" Type Wood Pole Structure		
02	General Requirement Conforming To	OES - 11		
03	Standard	BS 5253		
04	Mounting Height of the Switch	9000 MM		
05	Phase Centers	1050 MM		
06	Pole Centers	1800 MM		
07	Mounting Height of Operating Handle	1200 MM		
08	Assembly Components	Load Interrupter Head, Phase Coupling Rod, Operating Rod with well Treated Wood Insulator Inserted at 450 MM from Ground Level, Rod Guides, Galvanized Supporting Steel Work, Bolts, Nuts and Washers		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
09	Interrupter Head	Contacts Tipped with Copper Head or Tungsten, Long Life are resistant Horn Fiber Bore Lining ARC Extinguishing contact follower, Large Volume Exhaust Muffler,		
10	Off/On Indicator	Required		
11	Pad Locking Facilities	Required		
12	Creepage of Insulators	440MM		
13	Sheds of Insulator	Aero foil Open Profile		
14	Load Breaking Capacity	400A at 0,70 pf		
15	On-Load Switching	400A at 0 .70 pi		
16	Off Load Switching	30A at 0 , 15 pf		
17	Short Circuit Rating	25KA for 3 Sec,		
18	Current Rating	400A		
19	Galvanizing of Steel Parts	To BS 729 Min, Thickness 127 Microns,		
20	Sample	Required		
21	Operation	Required		
22	Test Certificate from Independent Authority	Required		
23	Reference List	Required		

**Note** :- If any of the above Is not complied with, the product approval application will not be accepted,

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**Note** :- If any of the above Is not complied with. the product approval application will not be accepted.

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 21 A

### 11 KV ON-LOAD DISCONNECTOR - VERTICAL MONTING

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Outdoor Vertical Mounting on H-Type Wood Pole Structure		
02	General Requirement Conforming To	OES - 11		
03	Standard	BS 5253		
04	Mounting Height of the Switch	7700 MM		
05	Phase Centres	1050 MM		
06	Wood Pole Centers H-Type Construction	1800 MM		
07	Mounting Height of Operating Handle	1200 MM		
08	Assembly Components	Load Interrupter Head, Phase Coupling Rod, Operating Rod with well Treated Wood Insulation Inserted at 4500 MM from . Ground Level, Rod Guides, Supporting Steel Work, Bolts, , Nuts and Works.		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with. the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
09	Interrupter Head	Lined with Horn Fiber or equivalent for ARC Quenching and Contacts Tipped with Copper Tungsten; ARC Extinguishing contact follower; Large Volume Exhaust Muffler.		
10	Off/On Indicator	To be Provided		
11	Pad Locking	Required		
12	Creepage of Insulators	440MM		
13	Sheds of Insulator	Aero foil Open Profile		
14	Load Breaking	400 A at 0.70 pf		
15	On-Load Switching	400 A at 0.70 pf		
16	Off Load Switching	30A at 0.15 pf		
17	Short Circuit Rating	18.4 KA for 3 Secs.		
18	Current Rating	400A		
19	Galvanizing of Steel Parts	To BS 729 Min. Thickness 127 Microns.		
20	Sample	Required		
21	Operation Checking	Required		
22	Test Certificate from Independent Authority	Required		
23	Reference List	Required		

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## 11 KV DROP OUT FUSE

1. Standard to comply with	OES – 8
2. Check List to be filled and submitted By the manufacturer	Check List NO.22
3. Technical Literature to be submitted	All details pertaining to material, installation and operation
4. Drawings Required Are	Complete Assembly Drawings detailed parts Drawing are required
5. Installation and Operation instructions If applicable.	Required,
6. Sample complying with the standard To be submitted with the request	Required
7. Test Certificates required from Independent and recognized testing Laboratory	Type Test Certificate is required
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	<ul style="list-style-type: none"> <li>i) Check list signed and stamped by the Manufacturer</li> <li>ii) Technical literature</li> <li>iii) Installation &amp; Operation manual if applicable</li> <li>iv) Drawings</li> <li>v) Experience List</li> <li>vi) Test Certificates</li> <li>vii) Sample</li> </ul>

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 22

### 11 KV DROP OUT FUSE

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Rating ;- - Nominal Volt. - Max. Voltage - Bill - Cont. Current  - Interrupting Current - Leakage Symmetrical Distance of Support Insulators - Characteristics	11 KV 12.5 KV 95 KV Different for Different Rating (KV A) for distribution Transformers 4.5 KA 440MM  Fast acting (Fuse should Blow first for Short Circuit inside Transformer)		
02	Construction	1. Single Vent at the bottom of Fuse Tube 2. Screw Cap 3. Two Insulation Support 4. Base Channel 5. Live Parts Cemented to Insulators		
03	Live Parts	Contact Silver Plated. Stainless Steel Spring		
04	Ferrous Parts	Hot Dip Galvanized minimum thickness of Galvanizing 127 Microns		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with. the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
05	Fuse Tube	<ul style="list-style-type: none"> <li>- Epoxy Fiber Glass Liner with Horn Fiber</li> <li>- Outer surface protected with an Ultra-Violet resistance finish</li> <li>- Fire retardant</li> <li>- Lifting ring for handling with a hook stick</li> </ul>		
06	Arcing Horn	<ul style="list-style-type: none"> <li>- Galvanized Malleable iron adjustable 4 CM to 8 CM</li> <li>- Clearance 6 CM from Insulator Shed</li> </ul>		
07	Centre Distance from Support Insulators	394MM		
08	Phase Centers	1050 MM		
09	Test Certificate from Independent Authority	Required		
10	Reference List	Required		
11	Sample	Required		
12	Operation Check	Required		

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PRODUCT APPROVAL WORKING GROUP – DCRP

**Note** :- If any of the above is not complied with, the product approval application will not be accepted.



## 11 KV AUTO RECLOSERS

1. Standard to comply with	OES – 20
2. Check List to be filled and submitted By the manufacturer	Check List NO.23
3. Technical Literature to be submitted	All details pertaining to material, installation and operation
4. Drawings Required	Complete Assembly Drawings Mounting Drawing Control Circuit Diagram
5. Installation and Operation instructions If applicable.	Required,
6. Sample complying with the standard To be submitted with the request	Required
7. Test Certificates required from Independent and recognized testing Laboratory	i) Short Circuit Test Certificate is required ii) Functional Test Certificate is required iii) High Voltage Power Frequency Test Certificate Required. iv) Impulse Voltage Test Certificate Required.
8. Installation in the system for accessing The performance	Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates from Independent Lab vii) Sample (when requested)

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 23

### 11 KV AUTO RECLOSERS

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Wood Pole Mounted SF6 Insulating Medium with Vacuum Interrupter and HV Bushings Porcelain or Silicon Rubber		
02	Service Voltage	11.5 KV		
03	Highest System Voltage	12.5 KV		
04	Nominal Current Rating	400 A		
05	Breaking Capacity	6 KA		
06	Impulse Withstand	110 KV		
07	Short Circuit Tests	To IEC 56/BS 53) 1		
08	Operating Duty	Up to 4 Clearances in Succession		
09	Creepage of Busing	440MM		
10	Power Frequency Withstand - Dry for 60 Sec. - Wet for 60 Sec.	50 KV 45KV		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
11	Protection :- - Over Current Setting  - Over Current Time Multiplier - Earth Fault Current Setting - Earth Fault Instantaneous (Selective) - Earth Fault Time Delay - Recluse Time Selectable - Reclaim Time Selectable - Local Control	25"10 - 200"10 in Steps of 25"10  0.1 - 1.5 in Steps of 0.1  I – 10%  80 - 120 Ms.  0.2 - 25 Secs.  1 To 60 Secs.  1 To 180 Secs.  Local Control Operated manually with Hook Stick Comprising: To be Submitted A) Manual Close B) Close and Lock In C) Trip and Lock out D) Auto/Non-Auto E) Earth Fault in/out		
12	Mounting Bracket	Required		
13	Painting and Finish	Required		
14	Test Certificate from Independent Authority	Required		
15	Reference List	Required		
16	Performance over one Load Cycle	Required		

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Signature:

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PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

## 11 KV SWITCHGEAR

1. Standard to comply with	OES – 14
2. Check List to be filled and submitted By the manufacturer	Check List NO.24
3. Technical Literature to be submitted	Technical details of all equipment, rating. operation and maintenance
4. Drawings Required are	1. General Assembly, Layout of the Panels 2. Circuit Diagram of Controls & Protection 3. Foundation drawing
5. Installation and Operation instructions If applicable.	O & Manual required
6. Sample complying with the standard To be submitted with the request	Not Required
7. Test Certificates required from Independent and recognized testing Laboratory	1. Test Certificate of complete Switchgear Panel is required 2. Temperature rise, Feeder Panel, Transformer Panel and Switchgear Panel Test Certificates are required
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 24

### 11 KV SWITCHGEAR (INDOOR)

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Indoor Metal Clad Compartmental		
02	Standard	BS 5227 / IEC 298		
03	Rating:- - Normal Voltage - Highest Voltage - S,S,C, Voltage - Impulse	11 KV 12,5 KV 18,4 KA 75 KV		
04	Current Rating:- For Feeder For Transformer For Bus Section For Bus Bar	400A 1200 A  2000 A		
05	For Bus Bar	Hard Drawn High Conductivity Copper Bar Silicon Rubber Insulated Bus Bar		
06	Circuit Breaker ;- - Type - Rupturing Capacity 11 KV	Vacuum 350 MVA Motor AC240 V Spring Closing 30VDC Required Required Required Required Required		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
07	Circuits :-  No. of Panels Standard Arrangement of S.G. Panels - Panel No.1 and 16 - Panel No.2 - Panel Nos. 3 To 7&11To15  - Panel No.8 and 10 Control  - Panel No.9	16  Capacitor Control Stn. Tx. Control  Feeder Control For 20 MVA Tx. Incomer   Bus Section		
08	Feeder Control Panel:- A) One Circuit Breaker B) Three Current Transformers (Double Core) C) One Cable Box for 11 KV  D) One Circuit Breaker Control Switch Located on Front the Panel E) CB. "Closed" and "Open" Red and Green Indication Lamps 5 Watts	Required Required   Required   Required		

SL No.	Items	Requirement	Submission	Compliance
	F) One Local! Remote Selector Switch on Front of Panel G) One Healthy Trip Indication Lamp 5 Watts, 30V DC with Resistance and Push Button H) Auto Trip Amber Indication Lamp 5W, 30VDC I) Two over Current and One Earth Fault IDMT Relays J) One Ammeter Scaled 0-400 AMPS 400/5A K) Single Shot Auto Reclose Relay 30V DC with Time Delay of 0 To 5 Minutes L) Integral Earthing M) One Blank Circuit Label 30CMX8CM Mounted on Front of Panel and a Small Blank Circuit Label on Rear of Panel	Required  Required  5W, 30V DC  Required  Required  Required  Required Required		





SL No.	Items	Requirement	Submission	Compliance
09	<p>Aux. Transformer Control Panel:-</p> <p>A) One Circuit Breaker 350 MVA 3 Phase 11 KV. 400 AMPS</p> <p>B) Three Current Transformers Double core 100/50/5A 15VA capacity Class 1 - metering Class 5 PIO protection</p> <p>C) One Cable Box 11 KV 3 Core Cross Linked Polyethylene Steel Wire Armored PVC Sheathed - Cable Size 50 Sq. MM</p> <p>D) One Circuit Breaker Control Switch Mounted on Front of the Panel</p> <p>E) One Local/ Remote Selector Switch Mounted on Front of the Panel ,</p> <p>F) One Healthy Trip Indication Lamp</p>	<p>Required</p> <p>5w. 30 VDC with Resistance and Push Button</p>		

SL No.	Items	Requirement	Submission	Compliance
10	Bus Section Panel:- A) One C.B. B) Three Current Transformers C) One C.B, Control Switch located on front of the Panel D) One Local/ Remote Selector Switch Mounted on Front of the Panel E) C.B, "Closed" and "Open" Red and Green Indication Lamps F) One Healthy Trip Indication Lamp G) Auto Trip Amber Indication Lamp H) One Three Pole over Relay I) One Blank Circuit Label 30CM X8 CM Mounted on front of Panel and one Small Blank Circuit Label on Rear of Panel	350 MV A 1600 Amps. 3 Phase 11 KV Ratio 1200/-, 5A 15VA Minimum Capacity  Required  Required  5W, 30V DC  5W, 30 V DC With Series Resistance and Push Button  5W,30VDC  IDMT 50 To 200%		

SL No.	Items	Requirement	Submission	Compliance
11	<p>20MVA 33/11 .5KV Incomer Transformer Control Panel:-</p> <p>A) One C.B.</p> <p>B) Three Current TXS. Class "X" for overall biased differential TX. Protection with 1200/1Amp. Ratio with CT Characteristics to suit the Characteristics of the Current TX. Son 33 KV side which shall have a ratio of 400/1 A</p> <p>C) Double Core Current Transformers. One Core for Restricted Earth Fault Protection Ratio 1200/1 AMP, Class "X" and to match with Line CTS. The other core For SBEF protection 1200/1 A 5PIO.</p> <p>D) Three Double Core Current TX. Ratio 1200/1A 15VA Class 5PIO Accuracy for Directional O/C Protection and Other Core Class I for Metering</p>	<p>350 MV A . 3 Phase 11 KV 1200Amps</p> <p>Required</p> <p>Required</p> <p>Required</p>		



SL No.	Items	Requirement	Submission	Compliance
	<p>K) One Pilot Wire Protection Relay Panel with 15 KV Isolating Transformer with Inter Trip Guard and Pilot Supervision Equipment to Match Existing Solkar RF Pilot Wire Protection at sending end Substation, The Protection to Operate from 3 Nos,400/1A. 33KV CT's Class "X" Provided on the 33KV Side of 20MVA. 33/11.5 KV Transformer (in the cases of 33 KV Cable Feeder only),</p> <p>L) One Duo-Bias differential Relay with Harmonic Resistant,</p> <p>M) One High Impedance restricted Earth Fault Relay</p> <p>N) One Three Element Directional O/C Relay with 90 Deg,-45 Deg, connection and 45 Deg, MTA - 5 To 15% settings) with time delay,</p> <p>O) One standby Earth Fault relay IDMT 10 To 40%</p>	<p>Required</p> <p>Required</p> <p>Required</p> <p>Required</p> <p>Required</p>		

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**Note :-** If any of the above is not complied with. the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
	<p>P) One Ammeter</p> <p>Q) One Three Phase Voltage Transformer</p> <p>R) One Voltmeter</p> <p>S) One Voltmeter Selector Switch To Read Voltages between Phases and Neutral One Blank Circuit Label 30CM Mounted on Front of the Panel and a Small Blank Circuit Label on Rear of Panel.</p>	<p>Scaled 0-1200 Amps. Suitable Connection to 1200/1 Amp. C.T's with Selector Switch. Star/Star 11000/13 110/13 Volts 200VA Per Phase Class "I" Accuracy connected on 11 KV incoming supply from 20MVA Tx.</p> <p>Scaled 0-15KV To Operate from Voltage Transformer.</p> <p>Required</p> <p>Required</p>		

SL No.	Items	Requirement	Submission	Compliance
12	Capacitor Control Panel:- A) One Circuit Breaker B) Three Double Ratio Current Transformers 400/5A 15VA Min. Capacity. Accuracy Class 5P 10 for over Current and Earth Fault Protection and Class 1 for Metering. C) One Cable compartment for 11 KV 3C 240 SQ, MM XLPEI PVC/SWA/PVC D) One Circuit Breaker Control Switch Located on Front of the Panel E) Circuit Breaker "Close" and "Open" Red and Green Indication Lamps. F) One Local/ Remote Selector Switch on Front of Panel G) One Healthy Trip Indication Lamp H) Auto Trip Amber Indication Lamp I) Two Over Current and One Earth Fault IDMT Relays J) One Ammeter Scaled 0-400Amps with Select or Switch	350 MV A 3 Phase 11 KV 400 A  Required  Required  Required  5W30VDC  5W 3V DC with Series Resistance and Push Button 5W30VDC  Required  Required		

SL No.	Items	Requirement	Submission	Compliance
13	Isolation and Interlock:- 1) Locking out each C.B, in the Isolated or off position, 2) Locking movable shutters Greening Live Parts (Lock to be Coloured Red) 3) Locking C.B, Control Switch 4) Locking V.T, in the Rack in Position 5) Locking V,T, Spout Shutters, All Locks to differ and shall have individual keys 6) Manual Opening/ Closing of Shutters	Required  Required  Required  Required  Required		
14	C.B, Isolating Equipment A) Integral Earthing through C,B, for Circuit Earthing B) Mechanical Interlock C) Earthing of Bus Bar for the TX, through the C.B, D) Interlock with Bus Section Breakers E) Switchboard Earth C U, Bus Bar 50X4MM	Required  Required  Required  Required  Required		



SL No.	Items	Requirement	Submission	Compliance
	F) Metal Instrument and Relay cases connected to Earth Bar by 2,5 Sq, MM, Copper Wire G) Heaters of each Panel CAC 240V) H) Instruments:- Voltmeter and Ammeter.  I) Auxiliary Switch for DC Supply J) Spare Way Aux, Switch K) Indication Lamp  L) Local/Remote, Select, SW, M) Test Terminal Blocks N) Remote Alarm	Required  Required  Dial Type Type: Flush Mounting Moving Iron Deflection: 270 Size 96 x 96  MCB 2 N,C, & 2 N,O, MCB 5 W 30V DC  Required Required Required		
15	Additional Equipment:- Testing Plugs Tool Cabinet Key Cupboard Permit To work Locking off Boxes			
16	Test Certificate from Independent Authority	Required		

**Note** :- If any of the above is not complied with, the product approval application will not be accepted,

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note** :- If any of the above is not complied with, the product approval application will not be accepted.

## 11 KV /433 V DISTRIBUTION TRANSFORMERS

1. Standard to comply with	OES – 5
2. Check List to be filled and submitted By the manufacturer	Check List NO.25
3. Technical Literature to be submitted	All details pertaining to material, installation and operation
4. Drawings Required	1. General Assembly, 2. Cable Box Drawing 3. Terminal Bushing Drawing 4. Core and Winding Assembly Drawing 5. Foundation Drawing
5. Installation and Operation instructions If applicable.	Installation and Operation Manual Required
6. Sample complying with the standard To be submitted with the request	Sample is required after approval of the Drawing (1 No. 315KVA. and 1 No. 1000 KVA
7. Test Certificates required from Independent and recognized testing Laboratory	i) SIC Test Certificate is required ii) Impulse Withstand Test Certificates is required iii) Temperature Rise Test Certificate is Required iv) High Voltage Power Frequency Test Certificate is Required
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 25

### 11 KV /433 DISTRIBUTION TRANSFORMERS

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	OES-5		
02	Rating under Oman Condition	100/200/315/500/1 000 KVA		
03	Voltage Ratio	11000/433V		
04	Temperature Rise:- - Oil - Winding	40 Deg. C 50 Deg. C		
05	Off-Circuit Tapping Locking Facilities	+ 5% To - 5% In Steps of 2.5%		
06	Vector Group	DYN 11		
07	Impedance	4.75%		
08	System Highest Voltage	12.5 KV		
09	Winding Insulation	Class - A BS 2751		
10	Tank Minimum Thickness Bottom Sides Top Radiator/Fins	5MM 4MM 5MM 1.2 MM		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
11	<p>Terminal Arrangement</p> <p>1 ) Pole Mounted Transformer Outdoor Bushing Creepage Insulator Shed Clearances Phase to Phase HV LV Terminals Suitable for</p> <p>2) Ground Mounted Transformer Cable Box Phase To Phase HV LV Phase to Earth HV Bushing Terminal Suitable for Cable Size</p> <p>LV</p>	<p>440MM</p> <p>Aerofoil Open Profile</p> <p>270 MM 150 MM 50 SQ. M. M Copper conduct for HV Side 4C X 185 SQ. M. M For 100 &amp; 200 KVA TX Two 4C X 185 SQ. MM For 315 KV A. TX on LV Side</p> <p>180 MM 120 MM HV 100 MM 4C X 50 SQ. M. M Side 630 SQ. MM 2 Single Core/Phase + Neutral for 1000 KV A. TX. One Single Core 630 Sqmm / Phase + Neutral For 500 KV A TX</p>		

SL No.	Items	Requirement	Submission	Compliance
12	Length of Pole Mounted Transformer	< 1400 MM		
13	Two Earthing Terminals	Required		
14	Fittings:- 1) Conservator Vessel Complete with Filling Cap and Drain Valve 2) Lifting Lugs 3) Oil Level Gauge 4) Main Tank Drain Valve 5) Conservator To Main Tank Valve 6) Dial Type Thermometer with Maximum Reading Pointer 7) Thermometer Pocket 8) Rating Diagram Plates 9) Silicagel Breather Container Vandal Proof and Tansparen	Required  Required Required Required  Required  Required  Required  Required		
15	Gaskets	Cork or Similar Material as Base Bonded by Oil Resistance Synthetic Material or Rubber in One Piece		

SL No.	Items	Requirement	Submission	Compliance
16	Mounting of Silicagel Breather in the Pole Mounted Transformer	20 CM from the Bottom		
17	Insulation of End connection of Winding	Required		
18	Earthing of Core	Required		
19	Clamping Bracket for Core	To be Provided		
20	Clamping Core Bolt Insulation	To be Provided		
21	Insulation Barner between Windings	To be Provided		
22	Sample	Required		
23	Test Certificate from Independent Authority	Required		
24	Reference List	Required		
25	Performance Checking through Load Cycle	Required		

**Note** :- If any of the above Is not complied with, the product approval application will not be accepted,

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – MEW

**Note** :- If any of the above Is not complied with. the product approval application will not be accepted.

## 11 KV RING MAIN UNIT

1. Standard to comply with	OES – 09
2. Check List to be filled and submitted By the manufacturer	Check List NO.26
3. Technical Literature to be submitted	All details pertaining to material, installation and operation
4. Drawings Required	<ol style="list-style-type: none"> <li>1. General Assembly Drawing</li> <li>2. Control and Protection Circuit Drawing</li> <li>3. Fuse Assembly Drawing</li> <li>4. Foundation Drawing</li> </ol>
5. Installation and Operation instructions If applicable.	Installation and Operation Manual Required
6. Sample complying with the standard To be submitted with the request	Sample is required after approval of the Drawing
7. Test Certificates required from Independent and recognized testing Laboratory	<ol style="list-style-type: none"> <li>i) S/C Test Certificate required</li> <li>ii) Impulse Withstand Test Certificates</li> <li>iii) Power Frequency Withstand Test Certificate required</li> </ol>
8. Installation in the system for accessing The performance	Required after approval of sample
9. Documents to be submitted with the Approval request.	<ol style="list-style-type: none"> <li>i) Check list signed and stamped by the Manufacturer</li> <li>ii) Technical literature</li> <li>iii) Installation &amp; Operation manual if applicable</li> <li>iv) Drawings</li> <li>v) Experience List</li> <li>vi) Test Certificates</li> <li>vii) Sample</li> </ol>

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 26

### 11 KV RING MAIN UNIT

MANUFACTURER :

AGENT :

DATE :

SL No.	Items	Requirement	Submission	Compliance
01	General Requirements	OES - 11		
02	Assembly	Two 3 Phase Ring Main Switches 400 A and One 3 Phase Tee off Switch 150 A		
03	Switches & Fuse Assy. Oil Immersed or SF6 Gas Insulation and Current Interruption with either H RC Fuses in Air or SF6 Circuit Breaker	Required		
04	Metal Clad			
05	Degree of Protection	IP 54		
06	Extensible			
07	Switches/Co B. Position - On - Off/Earth off - Earth			
08	Pad Locking	Required		
09	Rated Voltage	11 KV		
10	Highest System Voltage	12.5 KV		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.



SL No.	Items	Requirement	Submission	Compliance
11	Impulse Withstand Voltage	75 KV		
12	Power Frequency Test	27 KV		
13	Rated Normal Current (Site Rating) - Ring Main Switch - Tee off Switch/ Circuit Breaker	400A  150 A		
14	Fusing Rating of Tee off Switch Fuse	63A		
15	Tee off Circuit Transformer Rating	1000 KVA		
16	Rated Breaking Current of Ring Main Switch	400A		
17	Foul Rating (Line and Earth Switch)	350 MV A at 11 KV		
18	Rated Short Time Current for 3 Secs. - All Switches including Ring Main Earth Switches - Tee off Earth Switch	18.4 KA  2 KA		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
19	Operating and Interlocks	As per OES 19		
20	SF6 Switchgear:- Pressure Gauge Gas Leak	Less than 1% per Annum		
21	Cable Boxes Ring Main Circuit T-Off Circuit	Suitable for Dry Type Termination  3C X 185 To 300 SQ. MM XLPE Cable  3C X 50 Sq. MM. XLPE Cble		
22	Test Plugs	To be Approved		
23	Earth Fault Indicator together with the Relative Core Balance Current Transformer			
24	Sample	Required		
25	Test Certificate from Independent Authority	Required		
26	Reference List	Required		

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

## 11 KV CABLES

1. Standard to comply with	OES – 2
2. Check List to be filled and submitted By the manufacturer	Check List NO.27
3. Technical Literature to be submitted	All details pertaining to cable manufacturing process and technical data to be submitted.
4. Drawings Required	Dimensional Cross Section Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	i) High Voltage Test ii) Conductor Resistance Test iii) Galvanizing Test for Amour iv) Insulation, Bedding and Sheath Test v) Accelerated Treeing Test
8. Installation in the system for accessing The performance	Required after approval of sample
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 27

### 11 KV CABLES

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	IEC 502		
02	Highest System Voltage	12.5 KV		
03	Conductor	Compact Circular IEC 228 Class - 2		
04	Conductor Shield	Extruded Semi Conductivity Layer		
05	Insulation Thickness	Cross Linked Polyethylene 3.4MM		
06	Insulation Shield	Extruded Semi Conductivity Layer. Phase Identification - A Bare Copper Shielding Tape Applied with Tape		
07	Assembly	Non Hygroscopic Filler bound with Non Vulcanisable Tape Temp. 90 Deg. C.		
08	Sheath Thickness	Extruded PVC BS 6746 Table-I Type-9.2mm		
09	Bedding Thickness	Over the Sheath Bedding Fabric Tape 0.5mm		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
10	Armour	Single Galvanized Steel Wires BS 1442. Aluminum Armour for Single Core Cable		
	Overall Serving Thickness	Extruded PVC Type-9 Table - 1 BS 676 2,8 MM Fire Retardant Termite Resistant		
	Cross Sectional Drawing of the Cable	To be submitted		
	Test Certificate from Independent Authority	Required		
	Reference List	Required		
	Sample	Required		

**Note** :- If any of the above is not complied with, the product approval application will not be accepted,

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note** :- If any of the above is not complied with, the product approval application will not be accepted.

## 11 KV LINE POST INSULATOR

1. Standard to comply with	OES - 26-C
2. Check List to be filled and submitted By the manufacturer	Check List No. 28
3. Technical Literature to be submitted	Yes
4. Drawings Required are	Dimensional Drawings with all details of Sheds, top, base etc.
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	1) Dry Lighting Impulse Withstand 2,) We Power Frequency Withstand 3) Performance Test 4) Radio Interference Test 5) Temperature Cycle Test 6) Mechanical Failing Load Test 7) Porosity Test 8) Galvanizing Test
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 28

### 11 KV LINE POST INSULATOR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Type	Glazed Porcelain		
02	Nominal System Voltage	11 KV		
03	System Highest Voltage	12.5 KV		
04	Minimu Dry Impulse withstand (Peak)	110 KV		
05	Minimum Wet Power Frequency Withstand	50 KV		
06	Mechanical Failing Load	11 KV		
07	Creepage	440MM		
08	Profile	Aero Dynamic Open Profile Sheds Top and Side Groves Uniform Sheds		
09	Metal Base	Malleable, Iron		

SL No.	Items	Requirement	Submission	Compliance
10	Fixing Stud:- - Length CA) - Length CB) - Thread CA) - Thread CB)	54MM 191 MM 39.7 MM 102 MM		
11	Protection of Ferrous Parts	Hot Dip Galvanized BS 729 Ferrous Thickness 127 Microns		
12	Marking	Trade Mark !Year /Failing Load		
13	Test Certificate from Independent Authority	Required		
14	Sample Produced For Inspection	Required		
15	Reference List	Required		

**Note:-** If any of the above is not complied with, the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.



## 11 KV STAY INSULATOR

1. Standard to comply with	OES - 26-D
2. Check List to be filled and submitted By the manufacturer	Check List No. 29
3. Technical Literature to be submitted	Yes
4. Drawings Required are	Dimensional Drawings with all details of Sheds, top, base etc.
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	1) Dry Lighting Impulse Withstand 2,) We Power Frequency Withstand 3) Performance Test 4) Radio Interference Test 5) Temperature Cycle Test 6) Mechanical Failing Load Test 7) Porosity Test 8) Galvanizing Test
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 29

### 11 KV STAY INSULATOR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	BS 137		
02	Material	Glazed Porcelain		
03	Performance Requirement:- - Nominal System Voltage - System Highest Voltage - 50 Cycles Dry Flashover - 50 Cycles Wet Flashover - Leakage Distance - Tensile Strength	11 KV  12.5 KV  40 KV  22 KV  80MM 90 KN		
04	Appearance	Smoothly Glazed Free from Defects and Blemishes		
05	Co lour	Brown/Chocolate		
06	Marking:-	- Manufacturer's Name - Year of Manufacture - Mechanical Failing Load		
07	Test Certificate from Independent Authority	Required		
08	Sample	Required		
09	Reference List	Required		

Note :- If any of the above is not complied with. the product approval application will not be accepted.

Signature:

Seal:

**PART 111**  
**L.T.**

## 800 A/1600 A FEEDER PILLARS

1. Standard to comply with	OES - 21
2. Check List to be filled and submitted By the manufacturer	Check List No. 41
3. Technical Literature to be submitted	<b>All</b> Details Pertaining to Material. Installation and Operation
4. Drawings Required	1. General Arrangement Drawing 2. Foundation Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Sample is Required after Approval of Drawing
7. Test Certificates required from Independent and recognized testing Laboratory	S/C Test Certificate
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 41

### 800/1600 A FEEDER PILLARS

MANUFACTURER :

AGENT :

DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Test Certificate			
02	Short Circuit Test:- - 46 KA for 0,3 Sec,			
03	Doors	Double Leaf Opening 180 Deg,		
04	Degree of Protection	IP 55		
05	Thickness of Sheet	2MM		
06	Danger Plate	Enameled Arabic/English		
07	Door Operated Internal Light and 13 A Socket Outlet	Required		
08	Lifting Lugs	Required		
09	Earthing Terminals	Required		
10	A) Incoming Unit Rating B) 3 C.T,'s C) Max, Demand Indicators D) 1 KWH Meter Three Potential Circuit Fuses E) Terminals for Single Core 630 Sq, MM, XLPE Aluminum F) Spacing between the Termination and Bottom Plate	8001600 A Site Rating 800/5 or 1600/5 Class -1 Moulded Type  400MM		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above Is not complied with. the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
11	Outgoing Ways No. of Bays 6/8:- - Glands with Earth Tap and Plastic Shroud - Clearance - Fuse Grip Handle - Phase Barriers - Spacing Termination and Bottom Plate	45MM  Flame and arc resistance  450MM		
12	Bus Bars:- A) Phase B) Neutral C) Earth Bar	50 X 10/100 X 10 MM 50X5/50X 10 MM 25 X 5/50 X 5 MM		
13	Painting	Five Year Guarantee		
14	Pad Locking and Handle	To be Provided		

**Note :-** If any of the above is not complied with, the product approval application will not be accepted,

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

## 400 A MINI FEEDER PILLAR

1. Standard to comply with	OES - 21
2. Check List to be filled and submitted By the manufacturer	Check List No. 42
3. Technical Literature to be submitted	Technical Details of all Components
4. Drawings Required	1. General Arrangement Drawing 2. Foundation Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	S/C Test Certificate
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 42

### 400 A 6 WAY MINI FEEDER PILLAR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Test Certificate	Independent Authority		
02	S.c. Test 46 KV for 0.3 Sec.	46 KV for 0.3 Sec.		
03	Doors	Single Door 180 Deg. Opening		
04	Degree of Protection	IP 55		
05	Thickness of Sheet	2MM		
06	Danger Plate	Arabic and English Enameled		
07	Door Operated Internal Light	Required		
08	Lifting Lugs	Removable Lifting Device Required		
09	Earthing Terminals	12 MM" 2 Nos.		
10	Name Plate	Engraved Name Plate :- 1) Sl. No. 2) Year 3) Normal CT Rating of Bus Bar 925 X 10 MM) 4) Normal CT Rating of Incoming Unit (400 A) 5) Cross Weight 6) Manufacturer's Name and Ref. No.		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.



SL No.	Items	Requirement	Submission	Compliance
11	Busbar Material and Size	Tinned Copper Ph: 25 X 10M MNVT25X 10 MM Earth 25 X 10 MM		
12	Spacing between Termination and Bottom Plate	400MM		
13	Outgoing Ways:- A) Glands with Earth Tag and PVC Shroud B) Clearance between Fuse Ways C) Fuse Grip Handle	6 Ways Rated 100 Amps each  45MM  To be Provided		
14	Painting – Co-lour:- A) Alternative - 1 Method of 100 Microns Painting Thickness Primer B) Approved Paint Alternative - 2 Painting C) Alternative - 3 Painting	Grey Brush/ 2 Coats 2 Coats Phosphate Treatment and Painting Epoxy Power Paint Finish 60 Microns Thickness		
15	Guarantee Period	5 Years		
16	Type of Fuse	HRC/DIN		
17	Details of Barrier between Phases	Flame and Arc Resistance Material		
18	Incoming Unit:- A) Current Rating B) Isolation  C) Terminal  D) Location	400 A Off - Load – Link Manually Operated with Insulated Handle Suitable for 4C X 240 Sq mm. XLPE Cable at each end of Bus bar for loop in and Loop out.		

**Note** :- If any of the above is not complied with. the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note** :- If any of the above is not complied with. the product approval application will not be accepted.

## 400 A CUTOUT BOX

1. Standard to comply with	OES - 28 (Revised)
2. Check List to be filled and submitted By the manufacturer	Check List No. 43
3. Technical Literature to be submitted	Technical details of enclosure and components to be submitted
4. Drawings Required	1. General Assembly Drawing 2. Individual Component Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	1) SIC Test Certificate
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 43

### 400 A CUTOUT BOX

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Test Certificate from Independent Laboratory	Required		
02	Single Door With Brass or Gun Metal Hinges and Pad Locking Arrangement	Required		
03	Degree of Protection	IP 55		
04	Thickness of Sheet	2MM		
05	Danger Plate	Arabic and English Enameled		
06	Mounting Bracket			
07	Name Plate	Engraved Name Plate with: A) Sl. No. B) Manufacturer's Name & Ref, Number		
08	Busbar Material Size	Tinned Copper Phase' 40 X 5MM Neutral: 30 X 5		
09	Busbar Supports	Synthetic Material ARC Proof		
10	Clearance of Busbar from Enclosure	50MM		
11	Fuse Carrier	Din Type Base Rated for 400A.		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
12	Gripping Handle	Required		
13	Barrier	Required		
14	Insulated Shield between Front Door and Live Contacts	Required		
15	Marking of Phase	Required		
16	Earthing Terminal	Required		
17	Cable Entry	Required		
18	Double Compression Glad in Case of Top I Entry	Required		
19	Painting Finish:- A) Brush or Spray Painting B) Phosphate Treatment - Phosphate Coating - Prime Coats - Finishing Coat C) Epoxy Powder Painting	100 Microns  1.2 Microns 20 - 25 Microns 40 Microns		
20	Thickness	60 Microns		
21	Guarantee for Painting	5 Years		
22	Dimensions	900 X 600 X 300 MM		

**Note** :- If any of the above is not complied with, the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note** :- If any of the above is not complied with, the product approval application will not be accepted.

## CONSUMER UNIT

1. Standard to comply with	OES - 7
2. Check List to be filled and submitted By the manufacturer	Check List No. 44
3. Technical Literature to be submitted	Technical Details of all Components
4. Drawings Required	General Assembly Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	Individual Test Certificate for each component
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	<ul style="list-style-type: none"> <li>i) Check list signed and stamped by the Manufacturer</li> <li>ii) Technical literature</li> <li>iii) Installation &amp; Operation manual if applicable</li> <li>iv) Drawings</li> <li>v) Experience List</li> <li>vi) Test Certificates</li> <li>vii) Sample</li> </ul>

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 44

### CONSUMER UNIT (SINGLE PHASE AND THREE PHASE)

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Box Material	Synthetic Material		
02	Size of Box:- 3 Phase - Width - Height - Depth Single Phase - Width - Height - Depth	300MM 600MM 240MM 350MM  400MM 200MM		
03	Single Phase/Three Phase Cutout	Approved Type P & N Cutout 3P & N Cutout with Sealing Provision		
04	KWH Meter	Single Phase 3 Phase Meter		
05	Lock Arrangement	Locking Arrangement to be Provided. Cylinder Type Locking with Master Pad Lock		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
06	Mounting Arrangement	Holes at 4 Corners		
07	Degree of Protection	IP 55		
08	Viewing Window	Vandal Proof Perspex Window		
09	Cable Entry	Two Cable Entry with Compression Type Glands at the Bottom for 35 Sq. MM Cable		
10	Cutout:- - Rating - Type of Fuse	100 A Cartridge Paved TYPD		
11	Colour	Grey		

**Note :-** If any of the above is not complied with. the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with. the product approval application will not be accepted.

## LT. SHACKLE INSULATOR

1. Standard to comply with	OES - in Accordance with Drawing No. MEW/OH/041
2. Check List to be filled and submitted By the manufacturer	Check List No. 45
3. Technical Literature to be submitted	N/A
4. Drawings Required	Dimensional Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	i) Mechanical Tensile Strength b) Dry Flashover c) Wet Flashover
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample



# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 45

### SHACKLE INSULATOR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Material	Porcelain Brown Glazed		
02	Dimensions	As per Drawing No. MEWjOhj039 Rev. A		
03	Dry Flashover	17 KV		
04	Wet Flashover	9KV		
05	Transverse Strength	13 KN		
06	Test Certificate from Independent Authority	Required		
07	Sample	To be Submitted		
08	Reference List	Required		

**Note** :- If any of the above is not complied with. the product approval application will not be accepted.

Signature:

Seal:

## LT. STAY INSULATOR

1. Standard to comply with	OES - and Drawing No. MEW /OH/041
2. Check List to be filled and submitted By the manufacturer	Check List No. 46
3. Technical Literature to be submitted	All details pertaining to Material. Installation and Operation
4. Drawings Required	Dimensional Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	i) Dry Flashover ii) Wet Flashover c) Mechanical Failing Tensile Load
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 36

### LT. STAY INSULATOR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	<b>Material</b>	Porcelain Brown Glazed		
02	Dimensions			
03	Tensile Strength	60 KN		
04	Dry Flashover	25 KV		
05	<b>Wet</b> Flashover	12 KV		
06	Test Certificate from Independent Authority	Required		
07	Sample	To be Submitted		
08	Reference List	Required		

**Note** :: If any of the above is **not** complied with, the product approval application will not be accepted,

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note** :- If any of the above is not complied with, the product approval application will not be accepted.

## L.V. CABLES

1. Standard to comply with	OES - 2
2. Check List to be filled and submitted By the manufacturer	Check List No. 47
3. Technical Literature to be submitted	All details pertaining to Material. Installation and Operation
4. Drawings Required	Dimensional Cross Section Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	<ul style="list-style-type: none"> <li>i) High Voltage Test</li> <li>ii) Conductor Resistance Test</li> <li>iii) Galvanizing Test for Armour</li> <li>iv) Insulation, Bedding and Sheath Test</li> <li>e) Accelerated Treeing Test</li> </ul>
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	<ul style="list-style-type: none"> <li>i) Check list signed and stamped by the Manufacturer</li> <li>ii) Technical literature</li> <li>iii) Installation &amp; Operation manual if applicable</li> <li>iv) Drawings</li> <li>v) Experience List</li> <li>vi) Test Certificates</li> <li>vii) Sample</li> </ul>

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 47

### L.V. CABLES

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	BS 5467		
02	Conductor	Stranded Copper or Solid Aluminium. Phase and Neutral same size		
03	Shape of Wire	Shaped or Circular Extruded Type		
04	Insulation Thickness - 240 Sq. M - 185 Sq. M - 120 Sq. M - 70 Sq. M - 35 Sq. M - 25 Sq. M - 16Sq. M	1.7 <b>MM</b> 1.6 <b>MM</b> 1.2 <b>MM</b> 1.1 <b>MM</b> 0.9 <b>MM</b> 0.9 <b>MM</b> 0.7 <b>MM</b>		
05	Sheath  Thickness:- - 240 Sq. M - 185 Sq. M - 120 Sq. M - 70 Sq. M - 35 Sq. M - 25 Sq. M - 16 Sq. M	Extruded PVC Type-9 Table of BS 6746 Thickness as per Bs 5462  1.6 <b>MM</b> 1.4 <b>MM</b> 1.4 <b>MM</b> 1.2 <b>MM</b> 1.0 <b>MM</b> 0.8 <b>MM</b>		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
06	Armour:- - 16 Sq. M - 35 Sq. M - 70 Sq. M - 120 Sq. M - 240 Sq. M	Single Galvanized Steel Wires to BS 1442 Aluminium Armour for Single Core Cables. dia. of Wires 1.25 MM 1.6 MM 2.0 MM 2.5 MM 2.5 MM		
07	Serving Thickness - 240 Sq. M - 185 Sq. M - 120 Sq. M - 70 Sq. M - 35Sq. M - 25 Sq. M - 16 Sq. M	Extruded PVC Type - 9. Table of BS 6746 2.7 MM 2.6 MM 2.3 MM 2.1 MM 1.8 MM 1.7 MM 1.6 MM		
08	Cross Section Drawing of the Cable	To be Provided		
09	Test Certificate from Independent Authority	Required		
10	Reference List	Required		
11	Sample	To be Submitted		

**Note :-** If any of the above is not complied with. the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with. the product approval application will not be accepted.

**XLPE COVERED ALUMINIUM CONDUCTOR**  
**FOR LT. OVERHEAD LINES**

1. Standard to comply with	Check List No. 48
2. Check List to be filled and submitted By the manufacture	Check List No. 48
3. Technical Literature to be submitted	Yes
4. Drawings Required	Dimensional and Cross Section Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	i) Spark Test Certificate ii) Measurement of Thickness of Covering iii) Conductor Resistance Test iv) Insulation Resistance v) High Voltage Test
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

**PRODUCT APPROVAL WORKING GROUP**  
**CHECK LIST NO. 48**  
**XLPE COVERED ALUMINIUM CONDUCTOR FOR LT. OVERHEAD LINES**

MANUFACTURER :  
 AGENT :  
 DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	BS 6485		
02	Conductor Details:- - Section Area: 200Sq. MM 120 Sq. MM 70Sq. MM 35 Sq. MM  - Stranding/DIA 200Sq. MM 120 Sq. MM 70 Sq. MM 35 Sq. MM  - Overaii/DIA 200Sq. MM 120 Sq. MM 70Sq. MM 35 Sq. MM - Weight/KM  (KGS) 200Sq. MM 120 Sq. MM 70 Sq. MM 35 Sq. MM  - Ultimate Strength (KGS) 200Sq. MM 120 Sq. MM 70Sq. MM 35 Sq. MM	BS 6485   119.51 73.51 37.10   19/3.78 19/2.83 7/3.66 7/2.6   18.90 MM 14.21 MM 10.97 MM 7.80 MM   587.00 329.39 202.77 101.50   3240 1991.8 1216.0 576.0		



SL No.	Items	Requirement	Submission	Compliance
03	Construction:~ - Conductor - Covering  - Minimum Thickness (MM) 200Sq. MM 120 Sq. MM 70Sq. MM 35Sq. MM	Compacted Circular Stranded as per BS 215 ~Part 1 Cretruded Black Gross Linked Polyethylene as per IES 502  1.8 1.6 1.4 1.2		
04	Marking Voltage Grade Marking	600/1000V  Size Voltage Grade Manufacturer's Name Country of Orig;n Year of Manufacture		
05	Test Certificate from Independent Authority	Required		
06	Sample	Required		
07	Reference List	Required		

**Note:-** If any of the above Is not complied with, the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above Is not complied with, the product approval application will not be accepted.

## SINGLE PHASE/THREE PHASE KWH METERS

1. Standard to comply with	OES- 22
2. Check List to be filled and submitted By the manufacture	Check List No. 49
3. Technical Literature to be submitted	Technical details of all components
4. Drawings Required	1. Complete Assembly Drawing 2. Drawing without Casing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	i) Spark Test Certificate ii) Measurement of Thickness of Covering iii) Conductor Resistance Test iv) Insulation Resistance v) High Voltage Test
8. Installation in the system for accessing The performance	Not Required
10. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

**PRODUCT APPROVAL WORKING GROUP**  
**CHECK LIST NO. 49**  
**KWHR METERS - SINGLE PHASE/THREE PHASE**

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	BS 5685/IEC 521		
02	Performance:- - Current - Voltage - Frequency - Accuracy - Max. Ambient - Temperature	20-200 A 240/415 V 50 HZ Class 2 50 Deg. C		
03	Construction  Bearing  Register	Phenol Moulded Case Integral Terminal Block  Terminals Suitable for 35 Sq. MM Cable Minimum 8 MM  Magnetic Repulsion  Five Digit/Six Digit Number 1n White on a Black Back Ground		
04	Test Certificate from International recognized testing Laboratory	Required		
05	Sample	Required		
06	Reference List	Required		

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

## **PART IV GENERAL**

## DISC INSULATOR

1. Standard to comply with	OES- 26- A
2. Check List to be filled and submitted By the manufacture	Check List No. 61
3. Technical Literature to be submitted	Yes
4. Drawings Required	Dimensional Drawing Showing all Details of Shed Profile, Metallic Parts etc.
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	<ol style="list-style-type: none"> <li>1. Dry Lightning Impulse Withstand</li> <li>2. Wet Power Frequency Withstand</li> <li>3. Performance Test</li> <li>4. Radio Interference Test</li> <li>5. Temperature Cycle Test</li> <li>6. Mechanical Failing Load Test</li> <li>7. Porosity Test</li> <li>8. Galvanizing Test</li> </ol>
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	<ol style="list-style-type: none"> <li>i) Check list signed and stamped by the Manufacturer</li> <li>ii) Technical literature</li> <li>iii) Installation &amp; Operation manual if applicable</li> <li>iv) Drawings</li> <li>v) Experience List</li> <li>vi) Test Certificates</li> <li>vii) Sample</li> </ol>

**PRODUCT APPROVAL WORKING GROUP**  
**CHECK LIST NO. 61**  
**DISC INSULATOR**

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	BS 137		
02	Material Profile	Glazed Porcelain Aerofoil Open Porfile		
03	Creepage	280 MM		
04	Min. Mechanical Failing Load	80 KN		
05	Min. Electrical Characteristics - Power Frequency Flashover Dry Wet - Impulse Flashover Positive Negative - Power Frequency withstand Voltage Dry Wet - Impulse withstand Voltage - Power Frequency Puncture Voltage	68 KV 50 KV  100 KV 100 KV  64 KV 45 KV 90 KV  120 KV		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above Is not complied with.  
the product approval application will not be  
accepted.

SL No.	Items	Requirement	Submission	Compliance
06	Construction Appearance	Without Blemishes		
07	Cementing			
08	Colour	Brown/Chocolate		
09	Caps of Insulator	Malleable Iron		
10	Security Clips for with Ball and Socket	BS 3288		
11	Protection of Ferrous Parts	Hot Dip Galvanizing BS 729 Min. Thickness 127 Microns		
12	Marking:-	-- Manufacturer's Name and Trade Mark - Year of Manufacture - Mechanical Failing Load		
13	Test Certificate from Independent Authority	Required		
14	Sample	To be Submitted		
15	Reference List	Required		

**Note:-** If any of the above 1s not complied with, the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above 1s not complied with, the product approval application will not be accepted.

## ACSR CONDUCTORS

1. Standard to comply with	OES- 25- A
2. Check List to be filled and submitted By the manufacture	Check List No. 62
3. Technical Literature to be submitted	Yes
4. Drawings Required	Conductor Cross Section Drawing Showing Number of Layers and Conductors to be Submitted
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Required.
7. Test Certificates required from Independent and recognized testing Laboratory	<p><b><u>Aluminum Wires</u></b>            i) Tensile Test            ii) Wrapping Test            iii) Resistively Test</p> <p><b><u>Steel Wires</u></b>            i-) Determination of Stress at 1% Elongation            ii) Tensile Test            iii) Wrapping Test            iv) Galvanizing Test</p> <p><b><u>Completed Conductor</u></b>            i) Lay Ratio of each Layer            ii) Tensile Strength            iii) Measurement of Weight            iv) Resistance Test</p>
8. Installation in the system for accessing The performance	Not Required
9. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with.  
the product approval application will not be  
accepted.



# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 62

### ACR CONDUCTOR

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	BS 215 Part- 2 IEC- 209		
02	Conductor Specification :- - Area Panther Wolf Dog - Standing Al/ Steel Panther Wolf Dog - Overall DIA. (MM) Panther Wolf Dog - Weight Per KM (KGS) Panther Wolf Dog - Ultimate Strength (KGS) Panther Wolf Dog	261.2Sq" MM 195.0 Sq" MM 118.8 Sq" MM  NO/DIA. NO/DIA. 30/3.00 7/3.00 30/2"59 7/2 59 6/4.72 7/2.57  21 MM 18.13 MM 14.50 MM  976 727 394  9085   727 3310		
03	Aluminum Wires	To BS 2627		
04	Purity of Aluminum	99.5%		

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

SL No.	Items	Requirement	Submission	Compliance
05	Joints in Aluminum Strands:- - Outer Most Layers - Inter Layer	No Joints Permitted Joints not less than 15 M Apart		
06	Joints in Galvanized Steel Wire	Not Permitted		
07	Galvanized Steel Wires:- - Minimum Thickness of Coating Panther Wolf Dog	BS 443 and OES- 11  37 Microns (260 GM/Sq. M)  34 Microns (240 GM/Sq. M)  31 Microns (215 GM/Sq. M)		
08	Standing and Lay Ratio	As Per BS 215 Part 2		
09	Greasing	Anti Corrosive Grease having High Melting point and 250 Deg. C Resistance To oxidization		
10	D.C. Electrical Resistance OHMS/KM Panther Wolf Dog	0.1363 0.1828 0.2733		
11	Test Certificate From Independent Authority	Required		
12	Sample	To be Submitted		
13	Reference List	Required		

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

Signature:

Seal:

## TENSION CLAMP

1. Standard to comply with	OES- and Drawing No. MEW/OH/004
2. Check List to be filled and submitted By the manufacture	Check List No. 63
3. Technical Literature to be submitted	All details pertaining to Material, Installation and Operation
4. Drawings Required	Dimensional Drawing with all details
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Yes
7. Test Certificates required from Independent and recognized testing Laboratory	i) Mechanical Strength Test ii) Galvanizing Test in case of malleable casting
8. Installation in the system for accessing The performance	Not Required
10. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

# PRODUCT APPROVAL WORKING GROUP

## CHECK LIST NO. 63

### TENSION CLAMP

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Material	Malleable Iron/ Aluminum Alloy		
02	User	Aluminum		
03	Clamping Bolts	4		
04	Dimensions	As per Drg. No. MEW/OH/004		
05	Minimum Failing Load			
06	Galvanizing	Thickness 127 Microns		
07	Connector:- - Material - Failing Load - Dimension - Galvanizing	Galvanized Malleable Iron 80 KN As per Drawing 127 Microns		
08	Ball Eye: - Material - Failing Load - Dimensions	Malleable iron 80 KN As per Drawing		
09	Test Certificate from Independent Authority	Required		
10	Reference List	Required		
11	Sample	To be Submitted		

**Note:-** If any of the above is not complied with, the product approval application will not be accepted.

Signature:

Seal:

PRODUCT APPROVAL WORKING GROUP – DCRP

**Note :-** If any of the above is not complied with, the product approval application will not be accepted.

## STAY WIRE FOR OVERHEAD LINES

1. Standard to comply with	OES - 1 for 11 KV and 33 KV /OH Lines
2. Check List to be filled and submitted By the manufacture	Check List No. 64
3. Technical Literature to be submitted	Technical details such as wire, stranding etc.
4. Drawings Required	Cross sectional Drawing.
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Sample is required
7. Test Certificates required from Independent and recognized testing Laboratory	i) Mechanical Strength Test ii) Galvanizing Test i
8. Installation in the system for accessing The performance	Not Required
11. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

**PRODUCT APPROVAL WORKING GROUP**  
**CHECK LIST NO. 64**

**STAY WIRE FOR OVERHEAD LINES**

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Diameter of Wire:- Item- 1 Item- 2	3.25 MM 4.00 MM		
02	No, of Strands	7		
03	Standard Specification	BS 183 Grade 1150		
04	U.T, Strength:- Item- 1 Item- 2	66,8 KN/Sq. MM 101 KN/Sq, MM		
05	Galvanising:- Item- 1 Item- 2	460 G/Sq. M 460 G/Sq. M		
06	Test Certificate	Required		
07	Sample	Required		
08	Reference List	Required		

**Note:-** If any of the above is not complied with, the product approval application will not be accepted,

Signature:

Seal:

## CABLE COVER TILES

1. Standard to comply with	OES as Per Drawing No. MEW /E/UG/01 09 (Revised)
2. Check List to be filled and submitted By the manufacture	Check List No. 65
3. Technical Literature to be submitted	All details pertaining to Material.
4. Drawings Required	General Drawing
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	Sample is required after approval of Drawing
7. Test Certificates required from Independent and recognized testing Laboratory	Impact Test Certificate
8. Installation in the system for accessing The performance	Not Required
12. Documents to be submitted with the Approval request.	<ul style="list-style-type: none"> <li>i) Check list signed and stamped by the Manufacturer</li> <li>ii) Technical literature</li> <li>iii) Installation &amp; Operation manual if applicable</li> <li>iv) Drawings</li> <li>v) Experience List</li> <li>vi) Test Certificates</li> <li>vii) Sample</li> </ul>

**PRODUCT APPROVAL WORKING GROUP**  
**CHECK LIST NO. 65**

**CABLE COVERING TILES**

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Material	Polyethylene 1 Recycled Polyethylene		
02	Length	1 Mr. (Between)		
03	Thickness	6 MM		
04	Width	200 MM		
05	Color	Yellow 1n the Centre Black/Red at Side		
06	Letter Color	Black in Arabic and English		
07	Specification	As per Drawing No. MEW/E/ UG/0109- Revised		
08	Joining Peg	To be Provided		
09	Distance from Hole Centre to Edge	20 MM		
10	Impact Test	No Break		
11	Test Certificate	To be Submitted		

**Note:-** If any of the above 1s not complied with. the product approval application will not be accepted.

Signature:

Seal:



## WOOD POLES

1. Standard to comply with	OES- 29
2. Check List to be filled and submitted By the manufacture	Check List No. 66
3. Technical Literature to be submitted	All details Pertaining to Manufacturing Process
4. Drawings Required	N/A
5. Installation and Operation instructions If applicable.	N/A
6. Sample complying with the standard To be submitted with the request	N/A
7. Test Certificates required from Independent and recognized testing Laboratory	i) Ultimate Breaking Load Test ii) Creosoting Test
8. Installation in the system for accessing The performance	Not Required
13. Documents to be submitted with the Approval request.	i) Check list signed and stamped by the Manufacturer ii) Technical literature iii) Installation & Operation manual if applicable iv) Drawings v) Experience List vi) Test Certificates vii) Sample

**PRODUCT APPROVAL WORKING GROUP**  
**CHECK LIST NO. 66**

**WOOD POLES**

MANUFACTURER :  
AGENT :  
DATE :

SL No.	Items	Requirement	Submission	Compliance
01	Standard	BS 1990		
02	Creosoting	BS 913 Retention of 140KGS/CU. M		
03	Species	Pinus Silvestre's/ Douglas fir		
04	Minimum Fibre Stress	5.448 X 106 KG/Sq. MM		
05	Region	North of Lat. 60 Deg. N.		
06	Size:- - Medium 90 M But DIA. - Light 9.0 M - Medium II M - Stout II M - Extra Long 13M	150-220 MM  125- 180 MM 150-240 MM 190-295 MM 195- 320 MM		
07	Cracks: - Width - Depth	3MM 20MM		
08	Marking	As per Bas 1990		
09	Place of Creosoting	To be Mentioned		
10	Ultimate Load	To be Mentioned		
11	Modules of Elasticity	To be Mentioned		
12	Inspection Agency	Required		
13	Test Certificate	Required		
14	Reference List	Required		

**Note:-** If any of the above is not complied with. the product approval application will not be accepted.

Signature:

Seal: