



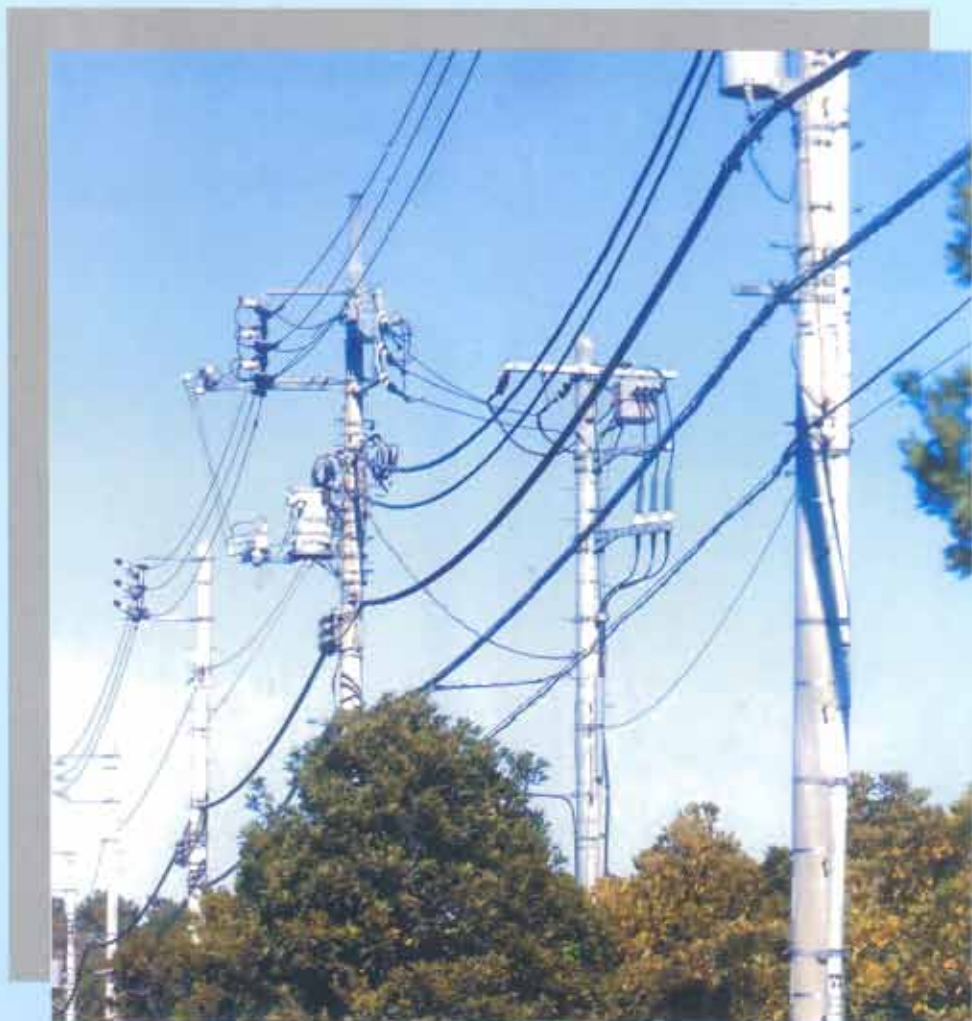
**UNIVERSAL  
CABLES  
LIMITED**



***UNI*★*STAR*®**

**AERIAL  
BUNCHED  
CABLES**

**for  
Over-head  
Power  
Distribution**





**"UNISTAR"** Aerial Bunched Conductor (ABC) is a very novel concept for Over Head power distribution. When compared to the conventional bare conductor over head distribution system, ABC provides higher safety and reliability, lower power losses and ultimate system economy by reducing installation, maintenance and operative cost. This system is ideal for rural distribution and specially attractive for installation in difficult terrains such as hilly areas, forest areas, coastal areas etc.

ABC is also considered to be the best choice for power distribution in congested urban areas with narrow lanes and by-lanes. In developing urban complex, ABC is the better choice because of flexibility for re-routing as demanded by changes in urban development plan.

### **CONSTRUCTION OF ABC**

XLPE insulated power conductors of Aluminium ( neutral conductor and street lighting conductors, if and when necessary ) are laid together (twisted) around a high tensile stranded and galvanized steel (Aluminium Alloy may be used but sparingly) bare or insulated messenger wire to form the Aerial Bunched Cable. This assembly is directly strung on to distribution pole / towers by means of standard hardwares available in the market.

XLPE is cross-linkable low density polyethylene which is made thermoset by special formulation from base polymer of thermoplastic low density polyethylene. XLPE combines the best electrical properties of LDPE and superior thermo mechanical properties.

Details of common types and sizes of ABC

are furnished in this Catalogue:

Table 1 & 1A : 1.1 kV Aerial Bunched Cables generally to IS:14255

(Three phase and one insulated reduced neutral conductor around bare steel messenger).

Table 2 & 2A : 1.1 kV Aerial Bunched Cables generally to IS:14255

(Three phase and one insulated neutral conductor around bare steel messenger).

Table 3 & 3A : 11 kV Aerial Bunched Cables generally to IS:7098/Part-2

(Three phase conductors around bare steel messenger).

### **STRINGING**

No difficulty is envisaged during stringing of ABC in the conventional method but care shall be taken that insulated conductors do not get damaged during installation. Dragging the ABC on the ground is to be avoided. Tension to be applied during stringing shall be 25% of the breaking load of the messenger wires. This will allow line to have sag within specified limit of 1.5% of the span at the lowest ambient temperature.

### **JOINTING**

While mid-span jointing is permissible for 1.1 KV ABC system by conventional technique, our recommendation will be to draw the line in such a way as to bring the joints at the supports. Mid-span jointing is



not at all recommended in the case of HT lines. Under unavoidable circumstances, line tapping at the support points may be allowed through suitably designed clamp connectors/PG clamps. The semi conducting screen continuity shall be maintained at all joints as far as possible to avoid fluctuations during system disturbances. The 3-phase screens may be shorted and earthed through suitable non-linear surge arrestor. Attempting to make a tap-off from power conductors in the region where catenary is under tension is not recommended.

### **SURGE / LIGHTNING ARRESTORS**

The usage of conventional surge / lightning arrestors on the main line is recommended as in the case of bare conductor lines to protect line and equipment, especially at terminal ends and at open tap-off poles (At least one set in every KM span).

### **APPLICATION**

ABC can be conveniently used :

- a) as replacement of bare lines in Rural areas, in woods and in other localities where the spare is limited,
- b) as replacement of bare lines where reliability of supply is of prime importance,
- c) as replacement of bare lines where high degree of stability of supply voltage is of importance,
- d) in hilly terrains where cost of erection of overhead lines or under ground cable becomes very high,
- e) for temporary supplies.

### **ADVANTAGES**

In comparison to bare overhead power distribution lines, ABC has very high reliability in maintaining services because power and neutral conductors are insulated with the best dielectric medium, resulting in the following advantages :

- 1) Less fault rate on account of good protection against line and ground faults by high winds or falling trees or birds especially in hilly areas & forests as encountered in Rural distribution networks.
- 2) High insulation resistance to earth in all seasons and polluted atmospheres. Negligible leakage currents and low losses.
- 3) Multiple circuits of Power and Telephone cables could be strung in the same set of poles or any other supports.
- 4) Better adaptability to run concurrently with existing over-head bare conductor system without any interference.
- 5) High capacitance and low inductance leading to low impedance of lines.
- 6) Lower voltage drop, higher current capacities. VIS-À-VIS Better Voltage Regulation.
- 7) Longer spans and longer distance lines are possible with better system stability.

**TABLE 1**
**1.1 KV AERIAL BUNCHED CABLES GENERALLY TO IS:14255**

(Three phase and one insulated reduced neutral conductor around bare steel messenger).

	Phase Conductor ⇨		3x25	3x35	3x50	3x70	3x95
	Neutral Conductor ⇨		1x16	1x16	1x25	1x35	1x50
	Messenger Conductor ⇨		1x35	1x35	1x35	1x55	1x55
1	Trade Name		UNISTAR				
2	Rated Voltage	Volts	1100	1100	1100	1100	1100
3	Reference Standard		Generally to IS 14255/1995				
4	<b>PHASE CONDUCTOR</b>						
4.1	<b>Conductor</b>						
i)	Material		Aluminium to IS 8130/84, H4 Grade				
ii)	Nominal cross-sectional area	Sqmm	25	35	50	70	95
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2	Class 2
iv)	Shape of conductor		Stranded, compacted circular				
v)	Max. DC resistance at 20°C	Ω/km	1.2	0.868	0.641	0.443	0.32
4.2	<b>Insulation</b>						
i)	Material		Cross-linked Polyethylene to IS 14255/95, Black colour				
ii)	Nominal thickness	mm	1.2	1.2	1.5	1.5	1.5
iii)	Nominal dia over insulation	mm	8.8	9.9	11.7	13.4	15.3
5	<b>NEUTRAL CONDUCTOR</b>						
5.1	<b>Conductor</b>						
i)	Material		Aluminium to IS 8130/84, H4 Grade				
ii)	Nominal cross-sectional area	Sqmm	16	16	25	35	50
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2	Class 2
iv)	Shape of conductor		Stranded, compacted circular				
v)	Max. DC resistance at 20°C	Ω/km	1.91	1.91	1.2	0.868	0.641
5.2	<b>Insulation</b>						
i)	Material		Cross-linked Polyethylene to IS 14255/95, Black colour				
ii)	Nominal thickness	mm	1.2	1.2	1.2	1.2	1.5
iii)	Nominal dia over insulation	mm	7.7	7.7	8.8	9.9	11.7
6	<b>MESSENGER CONDUCTOR (BARE)</b>						
i)	Material		High Tensile galvanized steel strand to IS 398 (Part 2)/96				
ii)	Nominal cross-sectional area	Sqmm	35	35	35	55	55
iii)	Shape of conductor		Stranded Circular				
iv)	Min. Breaking load	KN	41	41	41	62	62
v)	Approx. messenger diameter	mm	7.8	7.8	7.8	9.5	9.5
7	<b>Number of Conductor</b>						
i)	Phase conductors		3	3	3	3	3
ii)	Neutral conductor		1	1	1	1	1
iii)	Bare Steel messenger		1	1	1	1	1
8	<b>Identification of Conductors</b>						
i)	Phase conductors		By providing one, two & three ridges				
ii)	Neutral conductor		By providing four ridges				
9	<b>Assembly</b>		Phase & Neutral conductors twisted around Bare messenger in RH lay not exceeding 35 times the diameter of insulated Phase conductor				
10	Approx Cable weight	Kg/km	630	720	895	1260	1545
11	Continuous current carrying capacity of cable when laid freely in air at 50oC ambient air temperature	Amps	85	105	130	165	200
12	Short circuit rating of conductor for one second duration	KA	2.4	3.3	4.7	6.6	9.0

**TABLE 1A**
**1.1 KV AERIAL BUNCHED CABLES GENERALLY TO IS:14255**

(Three phase and one insulated reduced neutral conductor around bare steel messenger).

	Phase Conductor ⇨		3x120	3x150	3x185	3x240
	Neutral Conductor ⇨		1x70	1x70	1x95	1x120
	Messenger Conductor ⇨		1x55	1x55	1x55	1x55
1	Trade Name		UNISTAR			
2	Rated Voltage	Volts	1100	1100	1100	1100
3	Reference Standard		Generally to IS 14255/1995			
4	<b>PHASE CONDUCTOR</b>					
4.1	<b>Conductor</b>		Aluminium to IS 8130/84, H4 Grade			
i)	Material		Aluminium to IS 8130/84, H4 Grade			
ii)	Nominal cross-sectional area	Sqmm	120	150	185	240
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2
iv)	Shape of conductor		Stranded, compacted circular			
v)	Max. DC resistance at 20°C	Ω/km	0.253	0.206	0.164	0.125
4.2	<b>Insulation</b>		Cross-linked Polyethylene to IS 14255/95, Black colour			
i)	Material		Cross-linked Polyethylene to IS 14255/95, Black colour			
ii)	Nominal thickness	mm	1.8	1.8	1.8	2.0
iii)	Nominal dia over insulation	mm	17.2	18.6	20.2	23.0
5	<b>NEUTRAL CONDUCTOR</b>					
5.1	<b>Conductor</b>		Aluminium to IS 8130/84, H4 Grade			
i)	Material		Aluminium to IS 8130/84, H4 Grade			
ii)	Nominal cross-sectional area	Sqmm	70	70	95	120
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2
iv)	Shape of conductor		Stranded Compacted Circular			
v)	Max. DC resistance at 20°C	Ω/km	0.443	0.443	0.32	0.253
5.2	<b>Insulation</b>		Cross-linked Polyethylene to IS 14255/95, Black colour			
i)	Material		Cross-linked Polyethylene to IS 14255/95, Black colour			
ii)	Nominal thickness	mm	1.5	1.5	1.5	1.8
iii)	Nominal dia over insulation	mm	13.4	13.4	15.3	17.2
6	<b>MESSENGER CONDUCTOR (BARE)</b>		High Tensile galvanized steel strand to IS 398 (Part 2)/96			
i)	Material		High Tensile galvanized steel strand to IS 398 (Part 2)/96			
ii)	Nominal cross-sectional area	Sqmm	55	55	55	55
iii)	Shape of conductor		Stranded Circular			
iv)	Min. Breaking load	KN	62	62	62	62
v)	Approx. messenger diameter	mm	9.5	9.5	9.5	9.5
7	<b>Number of Conductor</b>					
i)	Phase conductors		3	3	3	3
ii)	Neutral conductor		1	1	1	1
iii)	Bare Steel messenger		1	1	1	1
8	<b>Identification of Conductors</b>					
i)	Phase conductors		By providing one, two & three ridges			
ii)	Neutral conductor		By providing four ridges			
9	<b>Assembly</b>		Phase & Neutral conductors twisted around Bare messenger in RH lay not exceeding 35 times the diameter of insulated Phase conductor			
10	Approx Cable weight	Kg/km	1870	2120	2520	3160
11	Continuous current carrying capacity of cable when laid freely in air at 50oC ambient air temperature	Amps	235	270	315	380
12	Short circuit rating of conductor for one second duration	KA	11.3	14.2	17.5	22.6



**TABLE 2**  
**1.1 KV AERIAL BUNCHED CABLES GENERALLY TO IS:14255**

(Three phase and one insulated neutral conductor around bare steel messenger).

	Phase Conductor ⇨		3x16	3x25	3x35	3x50	3x70	3x95
	Neutral Conductor ⇨		1x16	1x25	1x35	1x50	1x70	1x95
	Messenger Conductor ⇨		1x35	1x35	1x35	1x35	1x55	1x55
1	Trade Name		UNISTAR					
2	Rated Voltage	Volts	1100	1100	1100	1100	1100	1100
3	Reference Standard		Generally to IS 14255/1995					
<b>4</b>	<b>PHASE CONDUCTOR</b>							
4.1	<b>Conductor</b>							
i)	Material		Aluminium to IS 8130/84, H4 Grade					
ii)	Nominal cross-sectional area	Sqmm	16	25	35	50	70	95
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
iv)	Shape of conductor		Stranded, compacted circular					
v)	Max. DC resistance at 20°C	Ω/km	1.91	1.2	0.868	0.641	0.443	0.32
4.2	<b>Insulation</b>							
i)	Material		Cross-linked Polyethylene to IS 14255/95, Black colour					
ii)	Nominal thickness	mm	1.2	1.2	1.2	1.5	1.5	1.5
iii)	Nominal dia over insulation	mm	7.7	8.8	9.9	11.7	13.4	15.3
<b>5</b>	<b>NEUTRAL CONDUCTOR</b>							
5.1	<b>Conductor</b>							
i)	Material		Aluminium to IS 8130/84, H4 Grade					
ii)	Nominal cross-sectional area	Sqmm	16	25	35	50	70	95
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
iv)	Shape of conductor		Stranded, compacted circular					
v)	Max. DC resistance at 20°C	Ω/km	1.91	1.2	0.868	0.641	0.443	0.32
5.2	<b>Insulation</b>							
i)	Material		Cross-linked Polyethylene to IS 14255/95, Black colour					
ii)	Nominal thickness	mm	1.2	1.2	1.2	1.5	1.5	1.5
iii)	Nominal dia over insulation	mm	7.7	8.8	9.9	11.7	13.4	15.3
<b>6</b>	<b>MESSENGER CONDUCTOR (BARE)</b>							
i)	Material		High Tensile galvanized steel strand to IS 398 (Part 2)/96					
ii)	Nominal cross-sectional area	Sqmm	35	35	35	35	55	55
iii)	Shape of conductor		Stranded Circular					
iv)	Min. Breaking load	KN	41	41	41	41	62	62
v)	Approx. messenger diameter	mm	7.8	7.8	7.8	7.8	9.5	9.5
<b>7</b>	<b>Number of Conductor</b>							
i)	Phase conductors		3	3	3	3	3	3
ii)	Neutral conductor		1	1	1	1	1	1
iii)	Bare Steel messenger		1	1	1	1	1	1
<b>8</b>	<b>Identification of Conductors</b>							
i)	Phase conductors		By providing one, two & three ridges					
ii)	Neutral conductor		By providing four ridges					
<b>9</b>	<b>Assembly</b>		Phase & Neutral conductors twisted around Bare messenger in RH lay not exceeding 35 times the diameter of insulated Phase conductor					
10	Approx Cable weight	Kg/km	540	660	780	970	1370	1692
11	Continuous current carrying capacity of cable when laid freely in air at 50oC ambient air temperature	Amps	65	85	105	130	165	200
12	Short circuit rating of conductor for one second duration	KA	1.5	2.4	3.3	4.7	6.6	9.0

**TABLE 2A**  
**1.1 KV AERIAL BUNCHED CABLES GENERALLY TO IS:14255**  
 (Three phase and one insulated neutral conductor around bare steel messenger).

	Phase Conductor ⇨		3x120	3x150	3x185	3x240
	Neutral Conductor ⇨		1x120	1x150	1x185	1x240
	Messenger Conductor ⇨		1x55	1x55	1x55	1x55
1	Trade Name		UNISTAR			
2	Rated Voltage	Volts	1100	1100	1100	1100
3	Reference Standard		Generally to IS 14255/1995			
4	<b>PHASE CONDUCTOR</b>					
4.1	<b>Conductor</b>					
i)	Material		Aluminium to IS 8130/84, H4 Grade			
ii)	Nominal cross-sectional area	Sqmm	120	150	185	240
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2
iv)	Shape of conductor		Stranded, compacted circular			
v)	Max. DC resistance at 20°C	Ω/km	0.253	0.206	0.164	0.125
4.2	<b>Insulation</b>					
i)	Material		Cross-linked Polyethylene to IS 14255/95, Black colour			
ii)	Nominal thickness	mm	1.8	1.8	1.8	2.0
iii)	Nominal dia over insulation	mm	17.2	18.6	20.2	23.0
5	<b>NEUTRAL CONDUCTOR</b>					
5.1	<b>Conductor</b>					
i)	Material		Aluminium to IS 8130/84, H4 Grade			
ii)	Nominal cross-sectional area	Sqmm	120	150	185	240
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2
iv)	Shape of conductor		Stranded Compacted Circular			
v)	Max. DC resistance at 20°C	Ω/km	0.253	0.206	0.164	0.125
5.2	<b>Insulation</b>					
i)	Material		Cross-linked Polyethylene to IS 14255/95, Black colour			
ii)	Nominal thickness	mm	1.8	1.8	1.8	2.0
iii)	Nominal dia over insulation	mm	17.2	18.6	20.2	23.0
6	<b>MESSENGER CONDUCTOR (BARE)</b>					
i)	Material		High Tensile galvanized steel strand to IS 398 (Part 2)/96			
ii)	Nominal cross-sectional area	Sqmm	55	55	55	55
iii)	Shape of conductor		Stranded Circular			
iv)	Min. Breaking load	KN	62	62	62	62
v)	Approx. messenger diameter	mm	9.5	9.5	9.5	9.5
7	<b>Number of Conductor</b>					
i)	Phase conductors		3	3	3	3
ii)	Neutral conductor		1	1	1	1
iii)	Bare Steel messenger		1	1	1	1
8	<b>Identification of Conductors</b>					
i)	Phase conductors		By providing one, two & three ridges			
ii)	Neutral conductor		By providing four ridges			
9	<b>Assembly</b>		Phase & Neutral conductors twisted around Bare messenger in RH lay not exceeding 35 times the diameter of insulated Phase conductor			
10	Approx Cable weight	Kg/km	2040	2365	2800	3530
11	Continuous current carrying capacity of cable when laid freely in air at 50oC ambient air temperature	Amps	235	270	315	380
12	Short circuit rating of conductor for one second duration	KA	11.3	14.2	17.5	22.6



**TABLE 3**  
**11 KV(E) AERIAL BUNCHED CABLES GENERALLY TO IS:7098/PART - 2**  
 (Three phase conductors around bare steel messenger).

	Phase Conductor ⇨		3x25	3X35	3X50	3X70	3X95	3X120	3X150
	Messenger Conductor ⇨		1X35	1X35	1X35	1X55	1X55	1X55	1X55
1	Trade Name		UNISTAR						
2	Rated Voltage	Kv	6.35/11						
3	Reference Standard		Generally to IS 7098 (Part 2)/85						
4	<b>PHASE CONDUCTOR</b>								
4.1	<b>Conductor</b>								
i)	Material		Aluminium to IS 8130/84, H4 Grade						
ii)	Nominal cross-sectional area	Sqmm	25	35	50	70	95	120	150
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
iv)	Form of Conductor		Stranded Compacted Circular						
v)	Max. DC resistance at 20°C	Ω/km	1.2	0.868	0.641	0.443	0.32	0.253	0.206
vi)	Approx conductor diameter	mm	6.2	7.3	8.4	10.1	12.0	13.2	14.6
4.2	<b>Conductor Screen</b>								
i)	Material & Type		Extruded semi-conducting layer						
ii)	Min. thickness	mm	0.3	0.3	0.3	0.3	0.3	0.3	0.3
4.3	<b>Insulation</b>								
i)	Material		Cross-linked Polyethylene to IS 7098 (Part 2) / 85						
ii)	Nominal thickness	mm	3.6	3.6	3.6	3.6	3.6	3.6	3.6
4.4	<b>Insulation screen (Non-Metallic)</b>								
i)	Material & Type		Extruded semi-conducting layer						
ii)	Min. Thickness of extruded layer	mm	0.3	0.3	0.3	0.3	0.3	0.3	0.3
4.5	<b>Insulation screen (Metallic)</b>								
i)	Material & Type		Copper type applied helically with overlap						
ii)	Approx. thickness of copper tape	mm	0.045	0.045	0.045	0.045	0.045	0.045	0.045
4.6	<b>Sheath</b>								
i)	Material & Type		PVC Type ST2 to IS 5831/84, Black Colour						
ii)	Nom. thickness	mm	2.0	2.0	2.0	2.0	2.0	2.0	2.0
4.7	Approx. diameter of Power core	mm	20.4	21.5	22.6	24.3	26.2	27.4	28.8
5	<b>Bare Messenger</b>								
i)	Material		High Tensile galvanized steel strand to IS 398 (Part2) / 96						
ii)	Nom. Cross Sectional Area	Sqmm	35	35	35	55	55	55	55
iii)	Form of conductor		Stranded Circular						
iv)	Approx. breaking load	kn	41	41	41	62	62	62	62
v)	Approx. messenger diameter	mm	7.8	7.8	7.8	9.5	9.5	9.5	9.5
6	<b>Number of Cores</b>								
i)	Phase Conductor		3	3	3	3	3	3	3
ii)	Bare Messenger		1	1	1	1	1	1	1
7	Identification of Phase conductor		By one, two & three ridges on outer sheath						
8	Cable assembly		Phase conductor laid up around the bare messenger						
9	Approx weigh of cable	kg/km	1590	1760	1940	2385	2490	3040	3370
10	Continuous current carrying capacity cable when laid freely in air at 50°C ambient Air temp.	Amps	95	115	140	175	215	250	280
11	Short circuit rating for one second duration								
i)	Phase Conductor	KA	2.4	3.3	4.7	6.6	9.0	11.3	14.2
ii)	Copper Screen	Amp	200	200	200	200	200	200	200

**Note:**

Copper tape screen has been designed for earth fault current of 200 Amp. for 1 second duration. However if required it can be suitably redesigned to meet specific requirement if any.

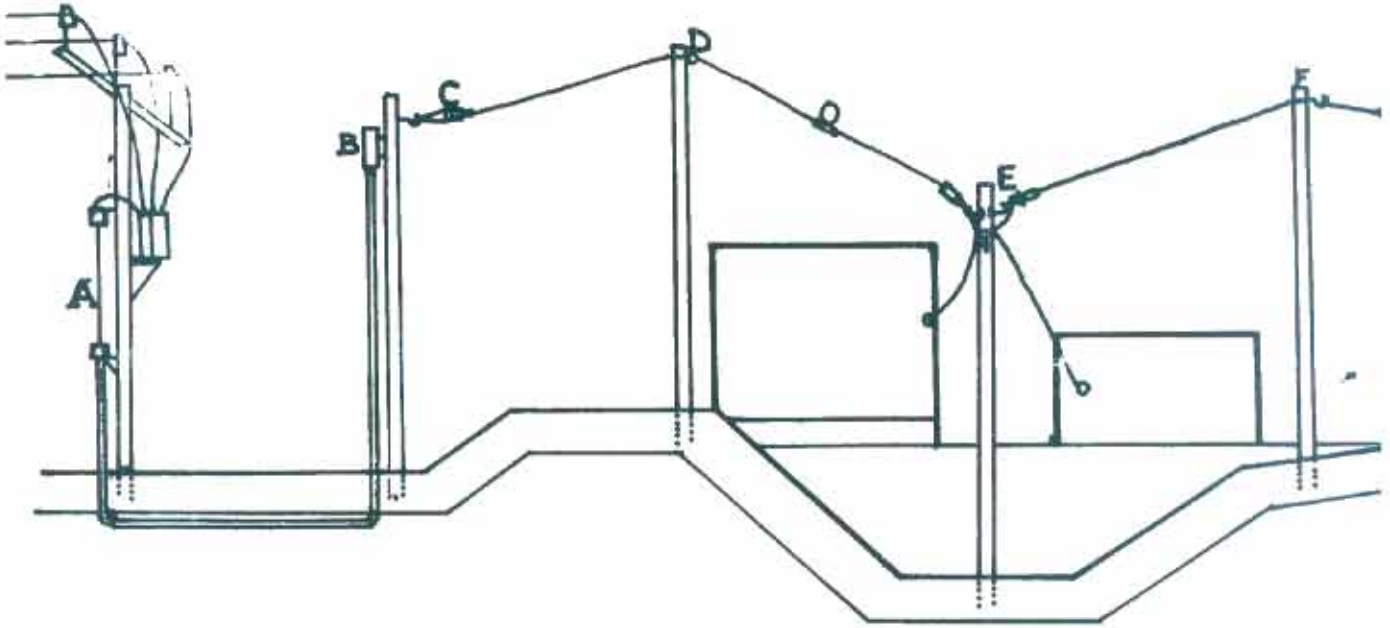


**TABLE 3 A**  
**11 KV(E) AERIAL BUNCHED CABLES GENERALLY TO IS:7098/PART - 2**  
 (Three phase conductors around bare steel messenger).

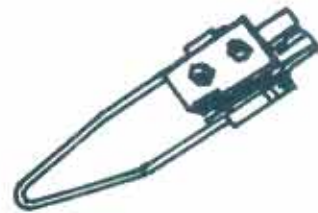
	Phase Conductor ⇨		3x185	3x240	3x300
	Messenger Conductor ⇨		1x90	1x90	1x90
1	Trade Name		UNISTAR		
2	Rated Voltage	Kv	6.35/11		
3	Reference Standard		Generally to IS 7098 (Part 2) / 85		
4	<b>PHASE CONDUCTOR</b>				
4.1	<b>Conductor</b>				
i)	Material		Aluminium to IS 8130/84, H4 Grade		
ii)	Nominal cross-sectional area	Sqmm	185	240	300
iii)	Flexibility class as per IS 8130		Class 2	Class 2	Class 2
iv)	Form of Conductor		Stranded Compacter Circular		
v)	Max. DC resistance at 20°C	Ω/km	0.164	0.125	0.1
vi)	Approx conductor diameter	mm	16.2	18.6	20.6
4.2	<b>Conductor Screen</b>				
i)	Material & Type		Extruded semi-conducting layer		
ii)	Min. thickness	mm	0.3	0.3	0.3
4.3	<b>Insulation</b>				
i)	Material		Cross-linked Polyethylene to IS 7098 (Part 2) / 85		
ii)	Nominal thickness	mm	3.6	3.6	3.6
4.4	<b>Insulation screen (Non-Metallic)</b>				
i)	Material & Type		Extruded semi-conducting layer		
ii)	Min. Thickness of extruded layer	mm	0.3	0.3	0.3
4.5	<b>Insulation screen (Metallic)</b>				
i)	Material & Type		Copper tape applied helically with overlap		
ii)	Approx. thickness of Copper Tape	mm	0.045	0.045	0.045
4.6	<b>Sheath</b>				
i)	Material & Type		PVC Type ST2 to IS 5831/84, Black Colour		
ii)	Nom. thickness	mm	2.2	2.2	2.2
4.7	Approx. diameter of Power core	mm	30.8	33.2	35.2
5	<b>Bare Messenger</b>				
i)	Material		High Tensile galvanized steel strand to IS 398 (Part2) / 96		
ii)	Nom. Cross Sectional Area	Sqmm	90	90	90
iii)	Form of conductor		Stranded Circular		
iv)	Approx. breaking load	kn	103	103	103
v)	Approx. messenger diameter	mm	12.3	12.3	12.3
6	<b>Number of Cores</b>				
i)	Phase Conductor		3	3	3
ii)	Bare Messenger		1	1	1
7	Identification of Phase conductor		By one, two & three ridges on outer sheath		
8	Cable assembly		Phase conductor laid up around the bare messenger		
9	Approx weigh of cable	kg/km	4160	4820	5515
10	Continuous current carrying capacity cable when laid freely in air at 50°C ambient Air temp.	Amps	325	400	445
11	Short circuit rating for one second duration				
i)	Phase Conductor	KA	17.5	22.6	28.3
ii)	Copper Screen	Amp	200	200	200

**Note:**

Copper tape screen has been designed for earth fault current of 200 Amp. for 1 second duration. However if required it can be suitably redesigned to meet specific requirement if any.



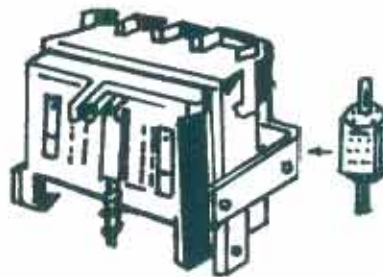
**C. Dead end clamp**



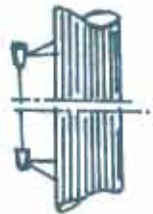
**D. Suspension Clamp with running out Device**



**A. Riser**

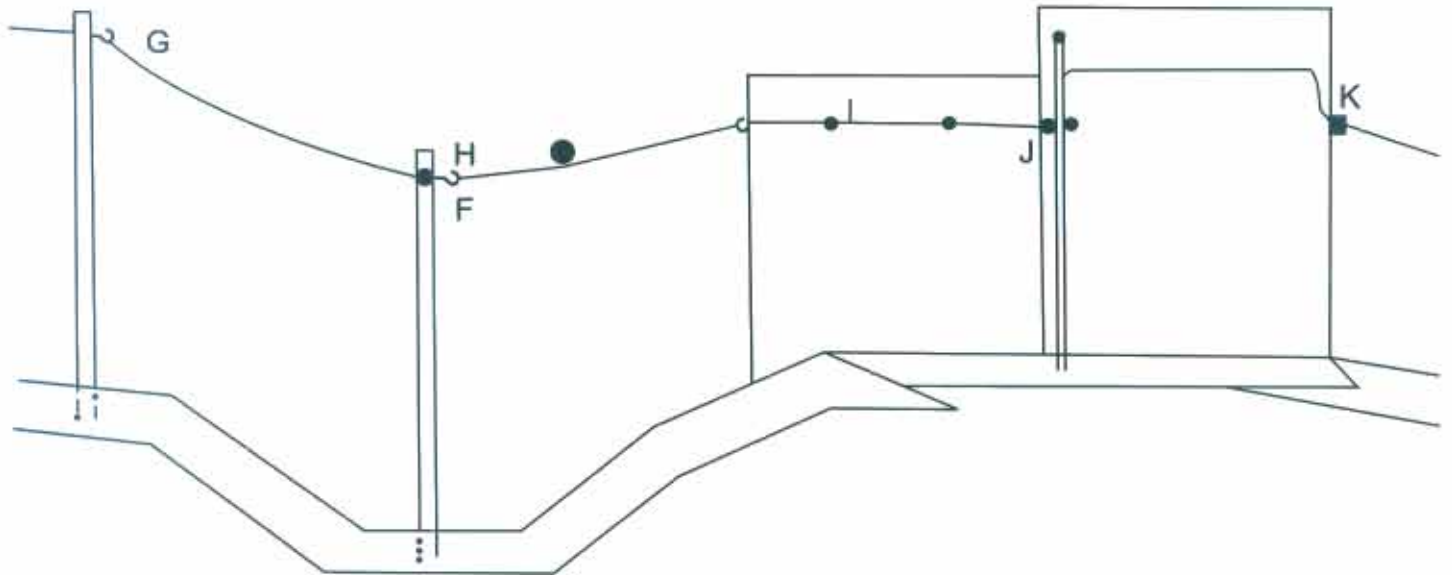


**B. FUSE Switch**



**E. Insulation piercing connector**

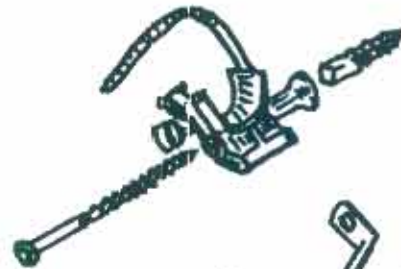




**G. Dead end clamp**



**H. Suspension Clamp**



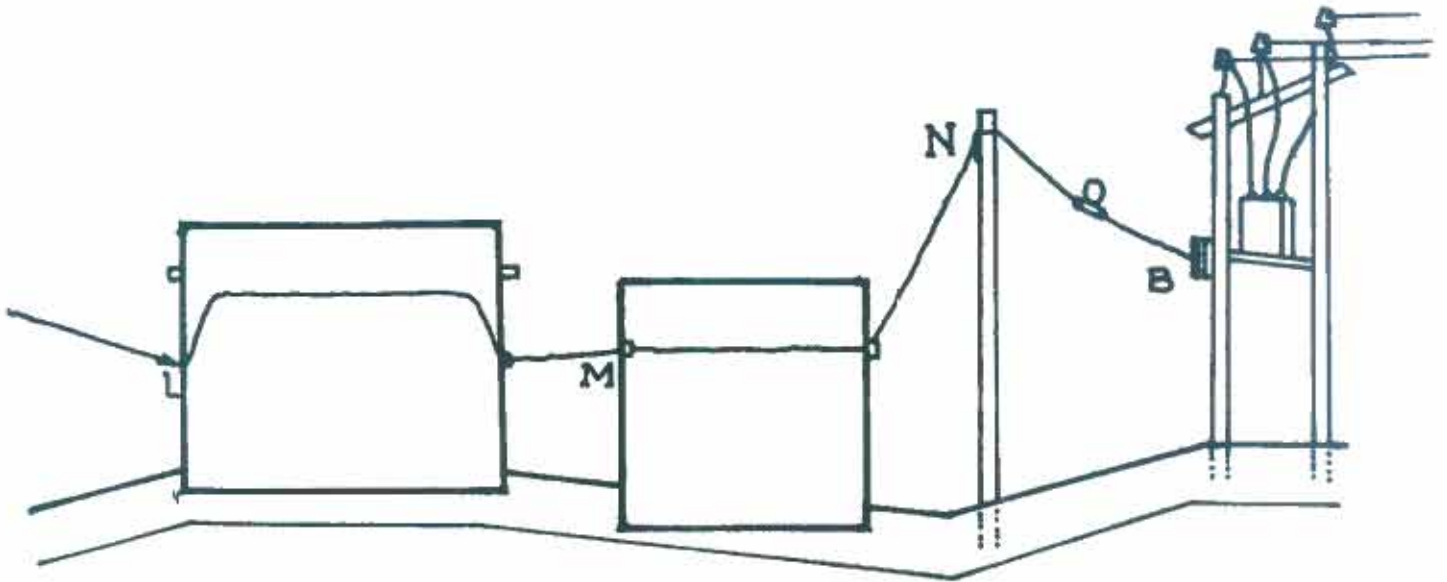
**I. Distance nail**



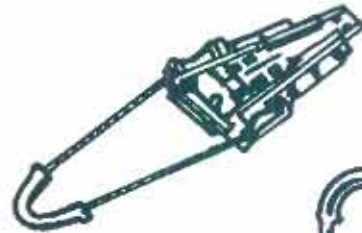
**J. Cable protection**



**K. Hook plates**



**L. Dead end clamp**



**N. Suspension Clamp**



**O. Tension splice connector**

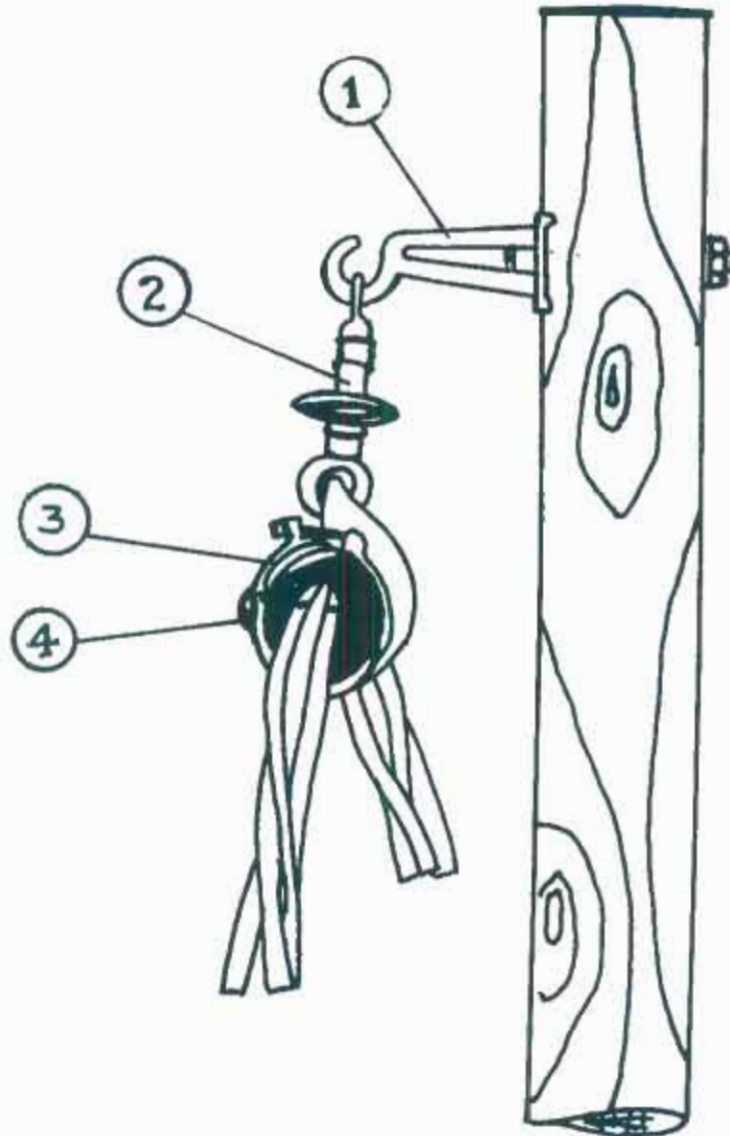


**M. Universal brackets**





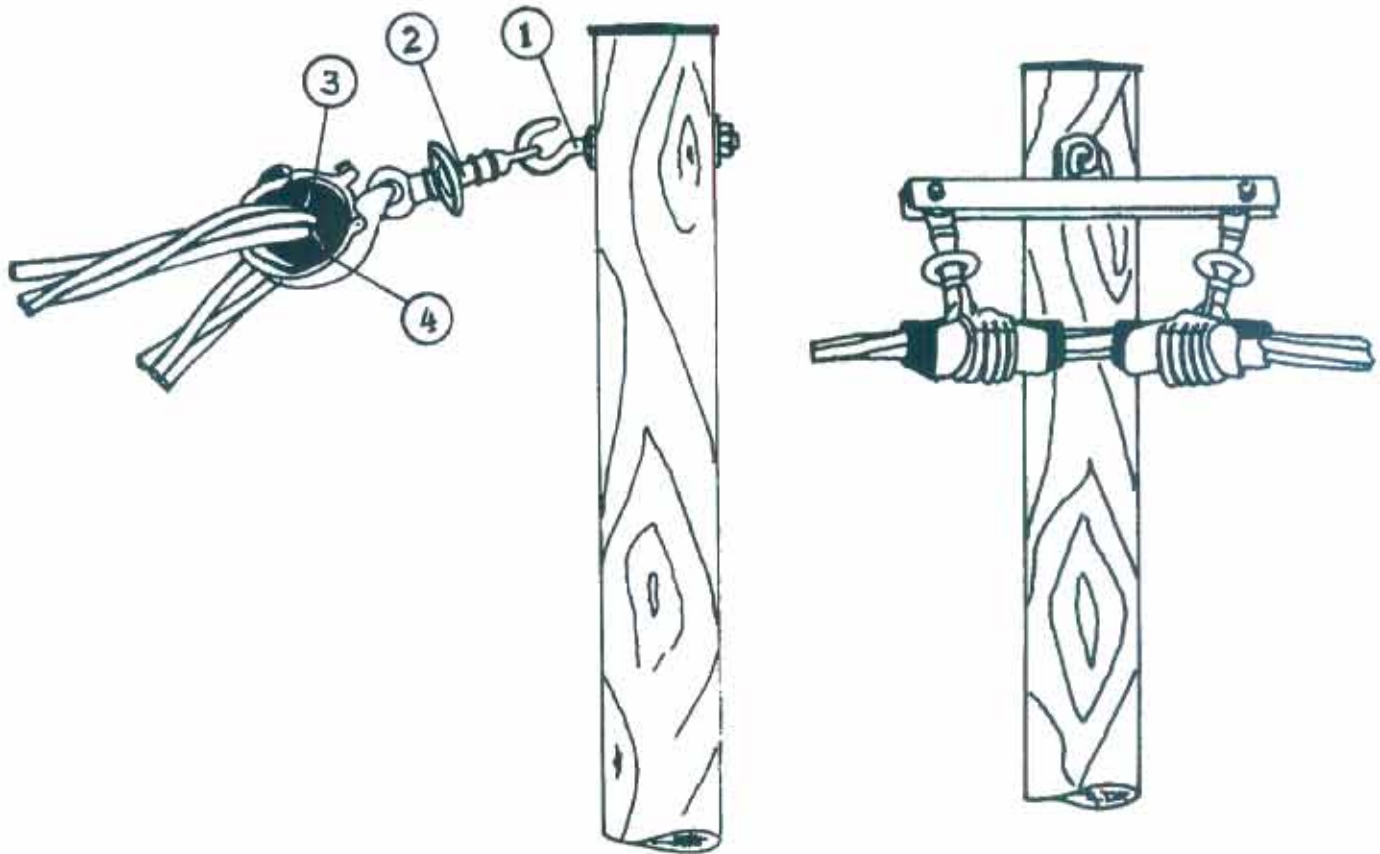
## Suspension construction Straight lines



It consists of

1. Suspension hook.
2. Insulator
3. Suspension clamp.
4. Rubber insert.

## Suspension Construction Angles up to 90°

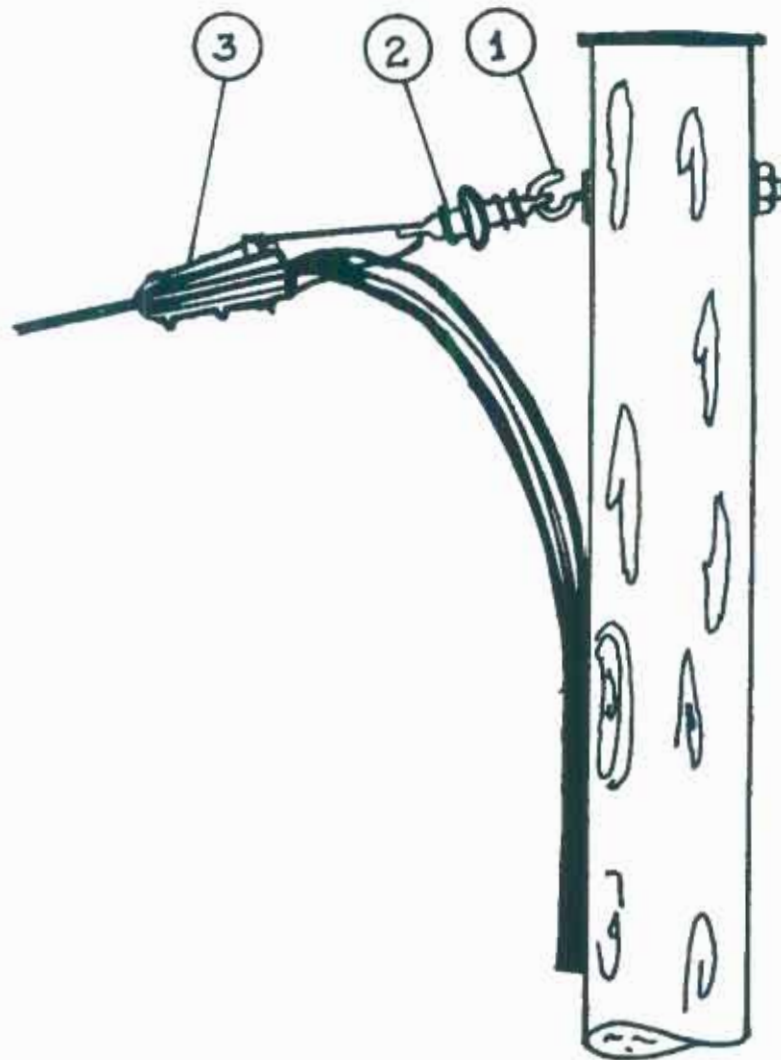


It Consists of

1. Connection Plate
2. Insulator
3. Suspension Clamp (2 pcs)
4. Rubber Insert (2 pcs)



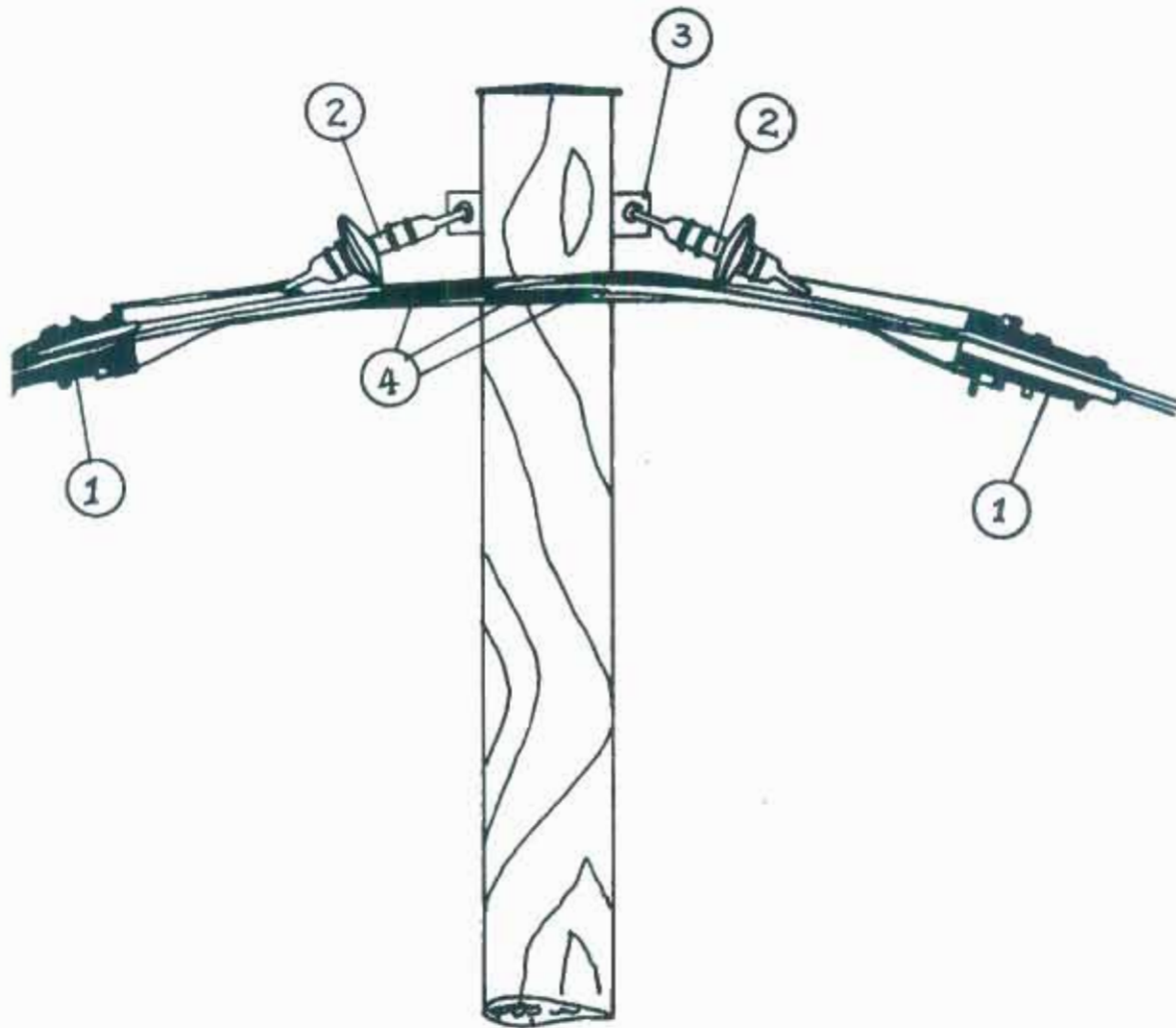
## Dead. End Construction



It Consists of

1. Steel hook
2. Insulator
3. Dead end clamp

## Jointing Construction



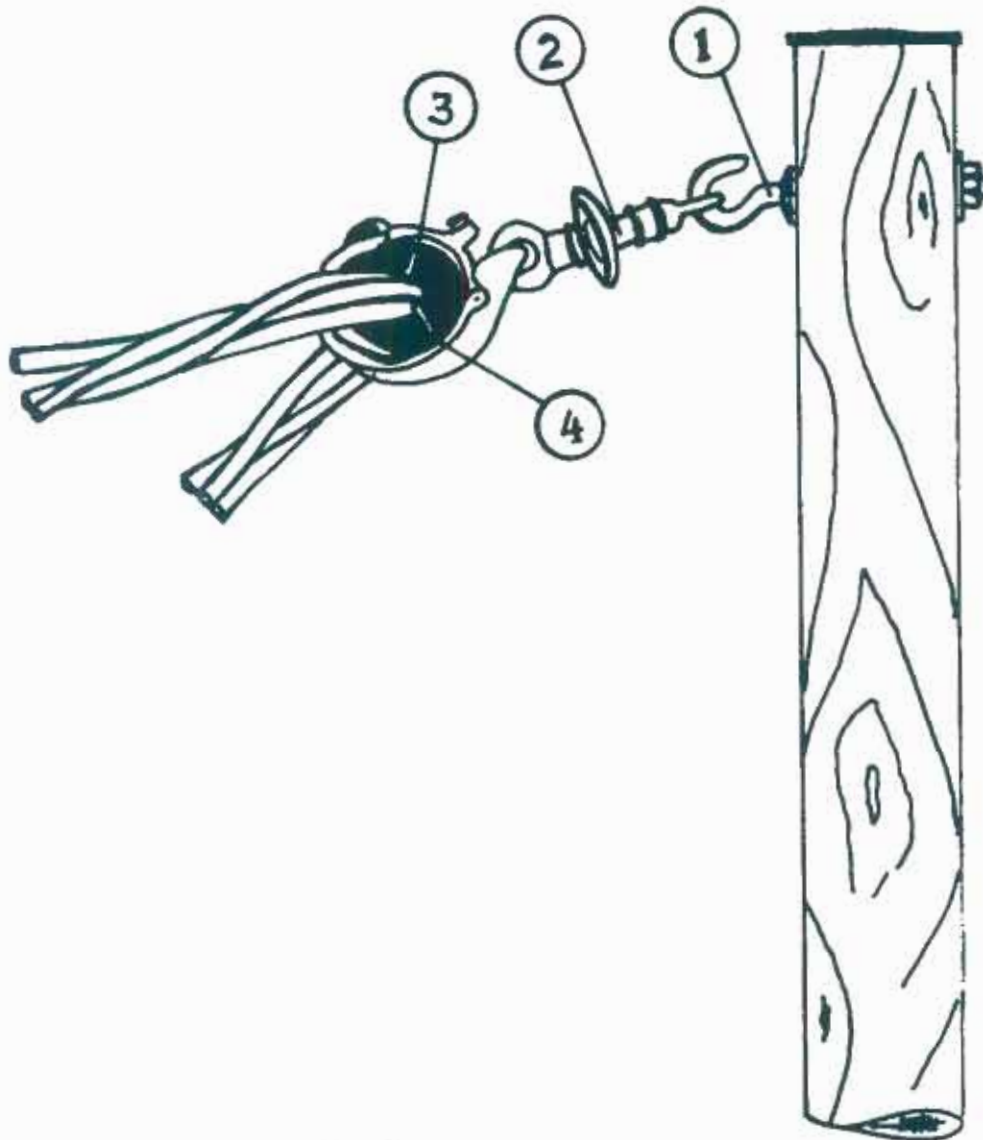
It Consists of

1. Dead-end clamp (2 pcs)
2. Insulator (2 pcs)
3. Fork Plate (2 pcs)
4. Cable joining (3 pcs)





## Suspension Construction Angles UP to 60°



It Consists of

1. Steel hook
2. Insulator
3. Suspension Clamp
4. Rubber insert