

**Standardised Technical Particulars of Hardware Fittings and Accessories for Quad
ACSR Bersimis Conductor for 765kV lines**

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CC\ENGG-TL\GTP-HW&ACC\765kV\QUAD ACSR BERSIMIS

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**1. SUSPENSION HARDWARE FITTINGS FOR QUAD ACSR BERSIMIS CONDUCTOR
FOR 765kV TRANS.LINES**

Sl.	Description	Unit	Particulars/ Value		
			<u>Suspension Strings</u>		<u>Suspension PILOT Strings</u>
			Single 'V' / Double 'V' / Double 'I'		Single 'I' / Single 'V'
			AGS clamp	Free Centre clamp	Envelope clamp
1.	Maximum magnetic power loss of one suspension assembly at sub-conductor current of 500 amperes	Watt	4		8
2.	Slipping strength of suspension assembly	KN	20-29		20-29
3.	Particulars of standard/ AGS preformed armour rod set for suspension assembly				
	a) No. of rods per set	No.	13		NA
	b) Direction of lay		Right hand		NA
	c) Overall length after fitting on conductor	mm	2235	2540	NA
	d) Diameter of each rod	mm	9.27		NA
	e) Tolerance in				
	i) Diameter of each rod	±mm	0.10		NA
	ii) Length of each rod	±mm	25		NA
	iii) Difference of length between the longest and shortest rod in a set	±mm	13		NA
	f) Type of Aluminium alloy used for manufacture of PA rod set		6061/ 65032		NA
	g) Minimum UTS of each rod	Kg/mm²	35		NA
4.	Particulars of Elastomer (For AGS Clamp only)				
	a) Type of elastomer		Chloroprene/ Neoprene Rubber	NA	NA
	b) Shore hardness of elastomer		65 to 80	NA	NA
	c) Temperature range for which elastomer is designed		Upto 95° C	NA	NA
	d) Moulded on insert		Yes	NA	NA
5.	Minimum Mechanical strength of suspension fitting (excluding suspension clamp)	KN	Single 'V' : 230 kN Double 'V' : 460 kN Double 'I' : 270 kN		130 kN
6.	Mechanical strength of suspension clamp	KN	Single 'V' : 70kN Double 'V' : 120 kN Double 'I' : 70 kN		70 kN
7.	Galvanising				
a)	Minimum weight of Zinc coating for steel parts	gm/m²	600		
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)		
c)	Min. No. of dips in standard preece test the ferrous parts can withstand	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute c) all others: 6 dips of 1 minute		

2. TENSION HARDWARE FITTINGS FOR QUAD ACSR BERSIMIS CONDUCTOR FOR 765kV TRANS.LINES

Sl.	Description	Unit	Particulars/ Value
			Quadruple Tension String
1.	Mechanical strength of Tension fitting (excluding dead end clamp)	KN	920
2.	Type of dead end assembly		Compression
3.	Compression pressure	MT	100
4.	Maximum electrical resistance of dead end assembly as a percentage of equivalent length of Conductor	%	75
5.	Slip strength of dead end assembly	KN	146.3
6.	Galvanising		
a)	Minimum weight of Zinc coating for steel parts	gm/m ²	600
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)
c)	Min. No. of dips in standard preece test the ferrous parts can withstand	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute c) all others: 6 dips of 1 minute

3. REPAIR SLEEVE FOR ACSR BERSIMIS CONDUCTOR FOR 765kV TRANS.LINES

Sl.	Description	Unit	Particulars/ Value
1.	Material		Aluminium of minimum purity 99.5%
2.	<u>Dimension of Aluminum sleeve Before compression</u>		
i)	Inside diameter	mm	37.40 ± 0.5
ii)	Outside diameter	mm	58.4 ± 1.0
iii)	Length	mm	530 ± 5
3.	<u>Dimensions of Aluminum Sleeve After compression</u>		
i)	Outside dimension (Corner to corner)	mm	57.40 ± 0.5
ii)	Outside dimension (face to face)	mm	49.70 ± 0.5
iii)	Length	mm	570 (approx)
4.	Minimum corona Extinction voltage kV (rms) under dry condition	kV	510
5.	Maximum Radio Interference Voltage at 1 MHz for phase to earth voltage of 510 kV (rms) under dry condition	Micro Volts (µV)	1000

4. MID SPAN COMPRESSION JOINT FOR ACSR BERSIMIS CONDUCTOR FOR 765kV TRANS.LINES

Sl.	Description	Unit	Particulars/ Value	
			<u>Aluminium Sleeve</u>	<u>Steel Sleeve</u>
1.	Material of Joint		Aluminium of purity 99.5%	Mild Steel(Fe-410, IS:2062)
2.	Range of Hardness of the steel sleeve (Brinell hardness)	BHN	From 100 to 200	
3.	Dimension of sleeve Before compression		<u>Aluminum sleeve</u>	<u>Steel sleeve</u>
i)	Inside diameter	Mm	37.40 ± 0.5	8.10 ± 0.2
ii)	Outside diameter	Mm	58.4 ± 1.0	20.70 ± 0.5
iii)	Length	Mm	865 ± 5	220 ± 5
4.	Dimensions of Sleeve after compression		<u>Aluminum sleeve</u>	<u>Steel sleeve</u>
i)	Outside dimension(Corner to corner)	Mm	57.40 ± 0.5	20.50 ± 0.5
ii)	Outside dimension (face to face)	Mm	49.70 ± 0.5	17.50 ± 0.5
iii)	Length	Mm	935 (approx)	250 (approx)
5.	Slip strength	KN	146.3	
6.	Maximum resistance of the compressed unit expressed, as percentage of the resistance of equivalent length of bare conductor.	%	75	
7.	Minimum corona Extinction voltage kV (rms) under dry condition	kV	510	
8.	Maximum Radio Interference Voltage at 1 MHz for phase to earth voltage of 510 kV (rms) under dry condition	Micro Volts	1000	
9.	Galvanising			
a)	Minimum weight of Zinc coating for steel parts	gm/m ²	600	
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)	
c)	Min. No. of dips in standard preece test the ferrous parts can withstand	No.	6 dips of 1 minute	

5. QUAD SPACER DAMPER FOR QUAD ACSR BERIMIS CONDUCTOR FOR 765KV TRANS.LINES

Sl.	Description	Unit	Particulars / Value		
1.	Type of Clamps		Bolted / Nut cracker / Hinged open / Boltless / Preformed rods.		
2.	Type of Damping element		Spring / Elastomer / EPDM		
3.	Material of				
	(a) Clamp		Al Alloy IS:4600 or Equivalent		
	(b) Body		Galvanised Steel / Al Alloy 4600 or Equivalent		
4.	Elastomer (<i>if used</i>)				
	(a) Shore hardness		50 - 80		
	(b) Temp. range for which designed	°C	Upto 95°C		
5.	Minimum ultimate tensile strength of spacer				
	(a) Compressive load	kN	15		
	(b) Tensile load	kN	7.5		
6.	Slipping strength of spacer clamp				
	(a) Before vibration test	kN	Clamp type	Longitudinal Load (kN)	Maxm Slip permitted (mm)
			Metal – Metal Bolted	6.5	1
			Rubber loaded	2.5	2.5
			Preformed rods	2.5	12
	(b) After vibration test	kN	80% of the above values		
7.	Maximum magnetic power loss of at sub conductor current of 500 amperes, 50Hz AC	Watts	Below 1 watt.		
8.	Minimum corona Extinction voltage kV (rms) under dry condition	kV	510		
9.	Radio Interference Voltage at 1 MHz for phase to earth voltage of 510 kV (rms) Microvolts under dry condition	µV	Below 1000		
10.	Galvanising				
a)	Minimum weight of Zinc coating for steel parts	gm/m ²	600		
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)		
c)	Min. No. of dips in standard preece test the ferrous parts can withstand	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute c) all others: 6 dips of 1 minute		

6. QUAD RIGID SPACER FOR QUAD ACSR BERSIMIS CONDUCTOR FOR 765kV TRANS.LINES

Sl.	Description	Unit	Particulars / Value		
1.	Material of				
	(a) Clamp		Al Alloy IS:4600 or Equivalent		
	(b) Body		Galvanised Steel / Al Alloy 4600 or Equivalent		
2.	Elastomer (<i>if used</i>)				
	(a) Shore hardness		65 - 80		
	(b) Temp. range for which designed	°C	Upto 95°C		
3.	Minimum ultimate tensile strength of spacer				
	(a) Compressive load	kN	15		
	(b) Tensile load	kN	7.5		
4.	Slipping strength of spacer clamp	kN	Clamp type	Longitudnal Load (kN)	Maxm Slip permitted (mm)
			Metal – Metal Bolted	6.5	1
			Rubber loaded	2.5	2.5
			Preformed rod	2.5	12
5.	Maximum magnetic power loss of at sub conductor current of 500 amperes, 50Hz AC	Watts	Below 1 watt.		
6.	Minimum corona Extinction voltage kV (rms) under dry condition	kV	510		
7.	Radio Interference Voltage at 1 MHz for phase to earth voltage of 510 kV (rms) Microvolts under dry condition	µV	Below 1000		
8.	Galvanising				
a)	Minimum weight of Zinc coating for steel parts	gm/m2	600		
b)	Purity of Zinc used for galvanising	%	99.95 (IS 209) or 98.5 (IS 13229)		
c)	Min. No. of dips in standard preece test the ferrous parts can withstand	No.	a) Fasteners: 4 dips of 1 minute b) Spring washers: 3 dips of 1 minute c) all others: 6 dips of 1 minute		