

TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED**STANDARDISED GUARANTEED TECHNICAL PARTICULARS FOR
MOOSE, ZEBRA & PANTHER ACSR CONDUCTORS**

Sl. No.	Description	Units	MOOSE conductor	ZEBRA conductor	PANTHER conductor
1	Standard according to which the conductor will be manufactured and tested. However if any amendments are there they shall also to be taken into consideration.		IS:398 (part-5) 1992	IS:398 (part-2) 1996	IS:398 (part-2) 1996
	The type tests should have been conducted not earlier than 5 years in the Standard third party laboratory. The Manufacturer shall produce the type test reports at the time of acceptance tests.				
2	Quality of material & applicable standard		BIS	BIS	BIS
	The Manufacturer shall produce the valid BIS certification at the time of acceptance tests.				
3	Number of strands				
a)	Aluminium	Nos.	54	54	30
b)	Steel	Nos.	7	7	7
5	I) Diameter of Strands (Aluminium / Steel)				
a)	Nominal	mm	3.53 / 3.53	3.18 / 3.18	3.00/3.00
b)	Maximum	mm	3.55 / 3.60	3.21 / 3.24	3.03/3.06
c)	Minimum	mm	3.51 / 3.46	3.15 / 3.12	2.97/2.94
	II) Overall diameter of Conductor	mm	31.77	28.62	21.00
6	Cross Sectional Area of				
a)	Whole Conductor	Sq. mm	597	484.5	261.5
b)	Each Strand	Sq. mm	9.787	7.942	7.069
7	Purity of Aluminium rods - min	%	99.6	99.6	99.6
8	Percentage of carbon in steel wire	%	0.5 to 0.85	0.5 to 0.85	0.5 to 0.85
9	Number of Strands				
a)	Centre wire (steel)	Nos.	1	1	1
b)	First Layer (steel)	Nos.	6	6	6
c)	Second Layer (Aluminium)	Nos.	12	12	12
d)	Third Layer (Aluminium)	Nos.	18	18	18
e)	Fourth Layer (Aluminium)	Nos.	24	24	-
10	Weight of				
a)	Whole Conductor	kG/kM	2004	1621	974
b)	Aluminium Strand (At Nominal Dia.)	kG/kM	26.45	21.47	19.11
c)	Steel Strand (At Nominal Dia.)	kG/kM	76.34	61.95	55.13

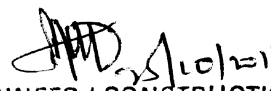
APPROVED FOR TURNKEY PROJECTS

[Signature] 25/10/2011
CHIEF ENGINEER, CONSTRUCTION-1
APTRANSCO/VIDYUTH SOUDHA/HYD.

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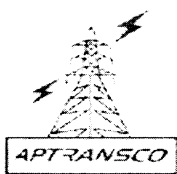
Sl. No.	Description	Units	MOOSE conductor	ZEBRA conductor	PANTHER conductor
11	Calculated DC resistance at 20 degC				
a)	Whole Conductor	Ohms/kM	0.05552	0.06868	0.139
b)	Strands, Aluminium.	Ohms/kM	2.921	3.626	4.079
12	Ultimate Tensile Strength				
I)	Whole Conductor	kN/ Min	161.20	130.32	89.67
II)	Min. breaking load before stranding				
a)	Aluminium strand	kN/ Min	1.57	1.29	1.17
b)	Steel strand	kN/ Min	12.86	10.43	9.29
III)	Min breaking load after stranding				
a)	Aluminium strand	kN/ Min	1.49	1.23	1.11
b)	Steel strand	kN/ Min	12.22	9.91	8.83
13	Modulus of elasticity of				
a)	Aluminium strand	gN/Sq. m	10	10	10
b)	Steel strand	gN/Sq. m	59	59	59
c)	whole conductor	gN/Sq. m	69	69	80
14	Co-efficient of linear expansion per degree centigrade of				
a)	Aluminium strand	per °C	23.0×10^{-6}	23.0×10^{-6}	23.0×10^{-6}
b)	Steel strand	per °C	11.5×10^{-6}	11.5×10^{-6}	11.5×10^{-6}
c)	Conductor	per °C	19.3×10^{-6}	19.3×10^{-6}	17.8×10^{-6}
15	Resistivity of EC grade Aluminium rods	Ohms Sq.mm / Mtr	Max. 0.028264 at 20 °C		
16 a)	Continuous max. current rating of conductor in still air at ambient Temperature (40 °C)	Amp	950	800	486
b)	Temperature rise for the above 75 degree C	°C	35	35	35
17	Lay Ratios		Min. Max.	Min. Max.	Min. Max.
	Steel wire : 1st Layer (6 Wires)		16 18	13 18	13 18
	Aluminium : 2nd Layer (12 Wires)		12 14	12 14	12 14
	3rd Layer (18 Wires)		11 13	11 13	10 12
	4th Layer (24 Wires)		10 12	10 12	-

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Sl. No.	Description	Units	MOOSE conductor	ZEBRA conductor	PANTHER conductor
18	Zinc coating of steel strand		As per IS 4826-1979		
a)	Thickness of coating number and duration of dips (Precede test).		3 dips- 1 minute each		
b)	Minimum weight of coating	gm/Sq. m	270	270	270
19	Maximum working tension.		70% of UTS of Conductor		
20	Maximum single length of conductor which can be manufactured	kM	1.1	1.1	1.3
21	Tolerance, if any, on standard lengths.		± 5 %	± 5 %	± 5 %
22	No. of standard lengths in one reel.		1(one)	1(one)	1(one)
23	Weight of the conductor in one reel	kG	2204.4	1783.1	1266.2
24	Weight of the drum	kG	350 Kgs ± 5%	350 Kgs ± 5%	250 Kgs ± 5%
25	Gross weight of the reel including weight of the conductor	kG	2554.4	2133.1	1516.2
26	Drum (Reel) details				
a)	Dimensions of the reel	mm	1725 x 710 x 812	1725 x 710 x 812	1370 x 600 x 710
b)	Whether the drum on which the conductor is wound conforms to the specification		IS 1778/1980	IS 1778/1980	IS 1778/1980
c)	Other particulars, if any.	Company Name and other details are to be provided on the surface of drum as per the specification.			
27	Raw Materials are to be procured directly from the Primary Producers so as to ensure the quality of raw materials. The test certificates of raw materials and invoices shall be produced at the time of inspection.				
a)	Aluminium wire	BALCO/HINDALCO/ NALCO/VEDANTA			
b)	Steel Wire	TATA/RATLAM/HILAS.			
c)	Complete Conductor.	As per the approved list of conductor Manufacturers indicated in the specification			
28	Important Packing & Markings: For the detailed package and markings please refer the specification.	Medium grade Kraft paper shall be used in between the layers of the conductor. After reeling the conductor, the exposed surface of the outer layer of conductor shall be wrapped with thin polythene sheet across the flanges to preserve the conductor from dirt, grit and damage during transportation and handling and also to prevent ingress of rain water during storage/transport.			



Standardised Guaranteed Technical Particulars for
Moose, Zebra and Panther ACSR Conductors

STD/GTP-DWG/Approval No. 1 / Revision No. 0

Prepared & Approved during October - 2011

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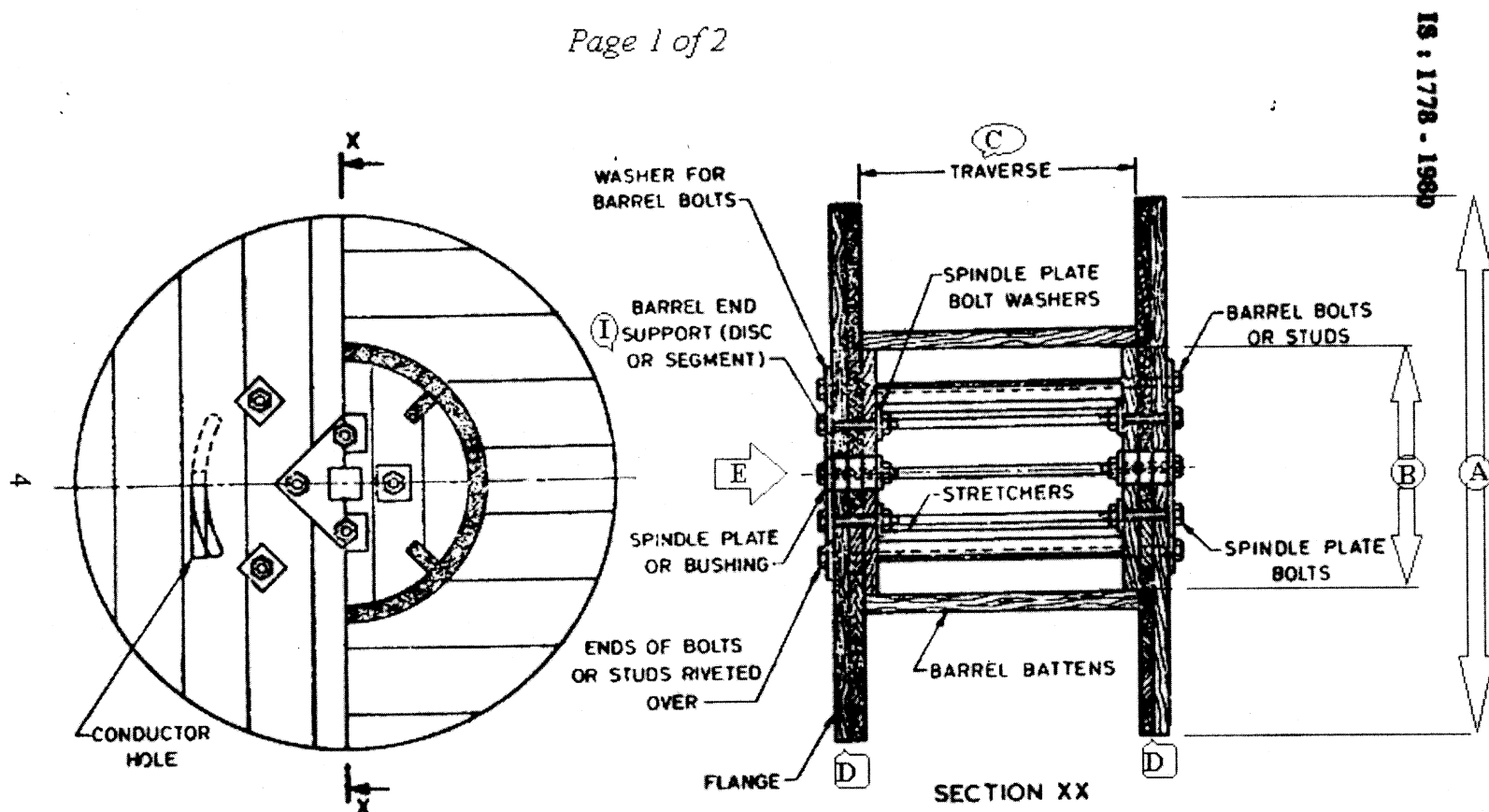
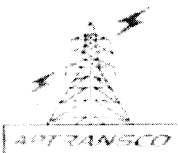


FIG. 1 DRUM NOMENCLATURE IS : 1778 - 1960

- Note:
- The Projection of the flanges beyond the outer most layer of the conductors shall be atleast 75 mm.
 - The wooden componenets shall be manufactured out of ascu treated wood as per IS 401-1967.
 - If the lenght of the conductor increased for river crossings etc., the drum size shall be selected so as to fullfill the condition (a) mentioned above.



Standardised Drum Drawing for Packing of Moose, Zebra, Panther Conductors and HTGS Earth wire.

STD/GTP-DWG/Approval No. 2 / Revision No. 0

Prepared & Approved during October - 2011

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HTGS
WIRE
2.0KMPanther
1.3 KM

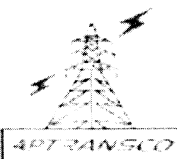
TABLE CONSTRUCTION DETAILS FOR DRUMS

(Clauses 3.2, 3.7, 4.1 and 5.2.1.1)

Moose / Zebra
1.1 KM

DRUM COMPONENT	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
A) Flange diameter		965	1 065	1 195	1 220	1 345	1 370	1 475	1 615	1 725	1 100	1 900	2 180
B) Barrel diameter		585	600	600	600	600	600	600	685	710	750	1 500	1 830
C) Traverse		510	710	710	710	710	710	710	812	812	600	600	750
D) Flange thickness		2×25	2×33	2×33	2×33	2×33	2×33	2×33	2×38	2×38	2×38	2×38	2×38
E) Bore diameter		80	80	80	80	80	80	80	100	100	54×54	105×105	105×105
F) Nail circle		3	5	5	5	5	5	5	6	6	5	5	5
G) Nail length		65	75	75	75	75	75	75	89	89	75	75	89
H) Nail size (M/n)		3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.65	3.65	3.25	3.65	3.65
I) Thickness of barrel end supports		38	38	38	38	38	50	50	50	50	38	50	50
J) Thickness of barrel end lagging		38	38	38	38	38	38	50	50	50	38	50	50
K) No. of stretchers		4	4	4	4	4	6	6	6	6	4	4	6
L) Stretcher size		100×38	100×38	100×38	100×38	100×38	100×38	100×50	100×50	100×50	75×50	75×75	127×76
M) No. of bolts		4	4	4	4	4	6	6	6	6	4	4	6
N) Diameter of bolt (M/n)		12	12	12	12	12	12	19	19	19	19	22	22
O) Size of square washer		50×6	50×6	50×6	50×6	50×6	50×6	50×6	50×6	50×6	75×6	100×6	100×6
P) Size of spindle plate		150×150×6	150×150×6	150×150×6	150×150×6	150×150×6	230×230×6	230×230×6	230×230×6	230×230×6	230×230×6	380×380×6	380×380×6
Q) Diameter of spindle plate hole		90	90	90	90	90	90	90	90	90	—	—	—
R) No. of spindle plate bolt		4	4	4	4	4	4	4	4	4	4	4	4
S) Spindle plate bolt diameter		12	12	12	12	12	12	12	12	12	16	16	16
T) Thickness of external lagging		38	38	38	38	38	38	50	50	50	38	50	50
U) No. of binders over the external lagging		2	2	2	2	2	3	3	3	3	2	3	3

IS : 1778 - 1980



Standardised Drum Drawing for Packing of Moose, Zebra,
Panther Conductors and HTGS Earth wire.

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